



COPADATA
do it your way

zenon Analyzer Manual

zenon Analyzer

v.2.20





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1. Welcome to COPA-DATA help

GENERAL HELP

If you cannot find any information you require in this help chapter or can think of anything that you would like added, please send an email to documentation@copadata.com (<mailto:documentation@copadata.com>).

PROJECT SUPPORT

You can receive support for any real project you may have from our Support Team, who you can contact via email at support@copadata.com (<mailto:support@copadata.com>).

LICENSES AND MODULES

If you find that you need other modules or licenses, our staff will be happy to help you. Email sales@copadata.com (<mailto:sales@copadata.com>).

2. zenon Analyzer

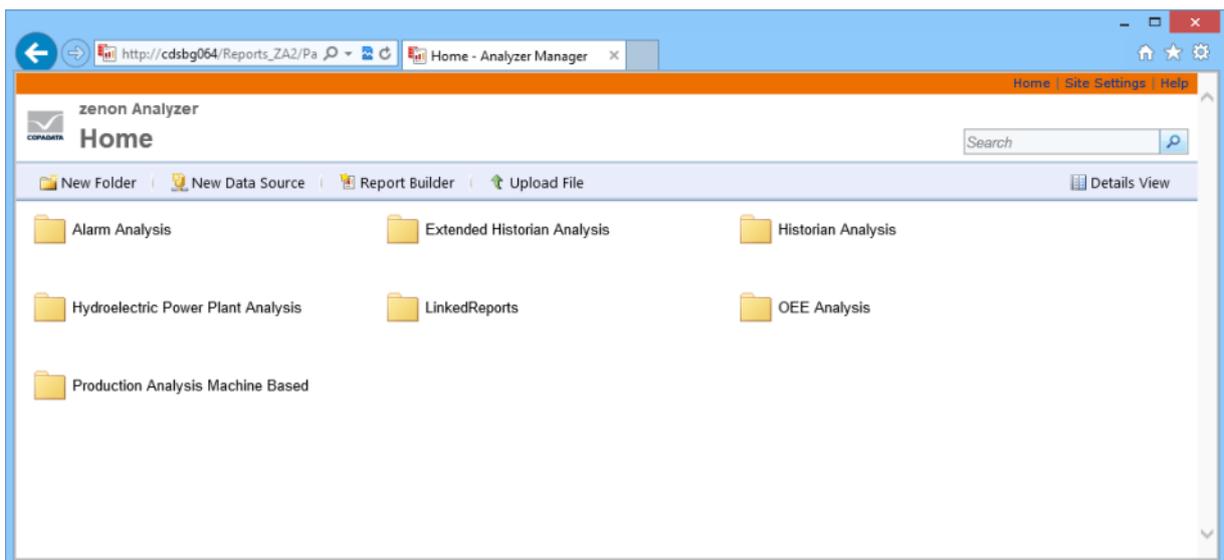
The zenon Analyzer offers near management and controlling views of all online and offline available data via system-spanning analyses. It summarizes tasks which were separated until now and it eliminates friction losses which emerge due to parallel set-ups, maintenance and the coordination of different IT systems. The zenon Analyzer:

- ▶ condenses and accounts data from different sources in different formats

- ▶ compares them to one another
- ▶ display the results in graphical form as report

License information

The zenon Analyzer must be licensed. For further details see chapter Licensing (on page 38)



Attention

Only 64-bit operating systems are supported from Version 2.0 onwards.

OVERVIEW

When using the zenon Analyzer, the production process is not interrupted. The zenon Analyzer can be implemented in an existing production system without the need to reconfigure the system. At data collection and report creation the production system continues to run smoothly. The existing infrastructure is embedded in the reporting of the zenon Analyzer independent of the manufacturers.

For accessing the evaluation all you need is a standard Microsoft browser. You do not have to install, adapt or maintain any additional software. You can embed evaluations without any additional components or plug-ins in the intranet of a company. Default reports are already shipped with the zenon Analyzer. At any time you can create, save and distribute your own evaluations. To create reports from process level, you must install a Connector Container (on page 29) on the respective Runtime computers. This installation does not affect the running system.



Information

The zenon Analyzer uses components from Microsoft Reporting Service.

You can find detailed guides for the Microsoft Reporting Services on the Microsoft homepage:

- ▶ German (<http://msdn.microsoft.com/de-de/library/ms159106.aspx>)
- ▶ English (<http://msdn.microsoft.com/en-us/library/ms159106.aspx>)
- ▶ French (<http://msdn.microsoft.com/fr-fr/library/ms159106.aspx>)
- ▶ Italian (<http://msdn.microsoft.com/it-it/library/ms159106.aspx>)

OVERVIEW OF THE HELP OF THE ZENON ANALYZER

In the help of the zenon Analyzer you can find information about:

- ▶ Basics (on page 16) about architecture, data structure and data preparation
- ▶ Installation (on page 29) of the modules of the zenon Analyzer
- ▶ Rights management (on page 152)
- ▶ Configuration and operation (on page 152) of site, folders and Reports (on page 207)
- ▶ ZAMS - zenon Analyzer Management Studio (on page 226): Create and administer reports, administer users, administer servers
- ▶ Manual Data Editor (on page 620): Used for the editing of the tables for price and standard values in a zenon Analyzer metadata database.
- ▶ Supplied report templates (on page 650): Documentation for the report templates supplied with the zenon Analyzer.
- ▶ Example project (on page 1338)



Information

For the engineering of individual reports, please refer to the respective manual. You will receive this manual after completing the corresponding training at COPA-DATA. For information and training and the manual for developers, please contact sales@copadata.com by email.

3. Upgrade information

Note when switching to a version prior to version 2.20:

ERROR LOGGING

For error logging (on page 1356), the zenon logging service diagnosis viewer is used to compile and display error messages. This is not available under Windows XP. In this case, error messages are saved locally as before.

IMPORT OF MEANINGS, WATERFALL MODELS AND VISUAL NAMES FROM ZENON

Up to version 2.10, the data from zenon that was required was entered into the `Resources` label variable property. From version 2.20, this depends on the version of zenon that is used. Nothing changes up to zenon 7.11. From zenon version 7.20, there are new properties available in the new `Analyzer` property group. (**Meanings**) and waterfall models can thus be defined in separate properties. There is now also a separate property for the display names zenon Analyzer.

Note: The `Parametrization Wizard` was renamed to `Meaning and Waterfall Chart Wizard`.

The following properties in the zenon `Analyzer` variable properties group provide information for reports in the zenon Analyzer:

- ▶ `Visual name`: Entry of a display name of the variable in zenon Analyzer. This must be unique in the project. The check is not carried out when issued in zenon, but when imported into zenon Analyzer. If this property is changed after the first export to a zenon Analyzer, these changes are not applied in the zenon Analyzer.

- ▶ **Meaning:** Entry of the (Meaning) of a variable in the zenon Analyzer. Entry is manual or by means of the **Meaning and Waterfall Chart Wizard**. Several meanings are separated by a comma.
Syntax: [Meaning1], [Meaning2], ..., [MeaningN]
- ▶ **Parameter for waterfall diagram:** Parameters of a variable for a waterfall diagram in zenon Analyzer. Entry is manual or by means of the **Meaning and Waterfall Chart Wizard**. The individual parameters are separated by a comma. Several waterfalls are divided by a semicolon.
Syntax: [model name], [row index], [index in row], [color code];

All properties are limited to 255 characters.

When exporting to zenon Analyzer, both the previous `Resources` label property and the new one are checked. If both are assigned, the entries of the new properties are taken on. Entries that are created using the Meaning and Waterfall Chart Wizard are always entered into the new properties.

CONVERSION OF DATABASES

Note most of all when converting databases:

- ▶ If a database with a version number of less than 2 is converted, then the SCADA SQL connector must be newly created, in order to:
 - Have emulated archives available in reports
 - Have archives available for import from third-party databases
- ▶ If a database with a version number of less than 3 is converted, then the SCADA SQL connector must be newly created, in order to:
 - Have archives available for import from third-party databases

REPORT CONVERSION

zenon Analyzer 2.20 cannot open databases and report templates from older versions. Report templates from version 2.10 or earlier must be converted into version 2.20. When connecting to a database with older versions, you receive corresponding information. You convert databases via the *SQL Server -> Convert databases* (on page 425) menu .

REPORT LICENSING

To be able to use report templates and reports, they must be licensed. You can find out which report templates and reports are available to you on your license form. You can find details on licensing in the Licensing (on page 38) and Supplied report templates (on page 650) chapters.

TIMES

When configuring times for fixed time periods, the following is now used in contrast to previous versions:

| Time | Previously | New |
|------------------|-----------------------------------|---|
| End of the year | 31. December 23:59:59 | 1 January of the subsequent year, 00:00:00 |
| End of the month | Last day of the month, 23:59:59 | First day of the subsequent month, 12:00:00 AM |
| End of the week | Sunday with end of day (23:59:59) | Monday of the subsequent calendar week with the start of the day (00:00:00) |
| End of day | 23:59:59 | d 00:00:00 of the subsequent day |

WIZARDS

There are three wizards available from version 7.10 for zenon Analyzer for use with the SCADA system zenon:

- ▶ **Analyzer Export Wizard** (on page 76)
- ▶ **Meaning and Waterfall Chart Wizard** (on page 108)
- ▶ **Sankey Wizard** (on page 127)

Wizards have no longer been installed with <CD_ZRS since zenon Analyzer 2.20 >. From zenon 7.20, installation is carried out with the installation of zenon. For zenon versions 7.10 and 7.11, the wizards can be installed or updated manually using build setups.

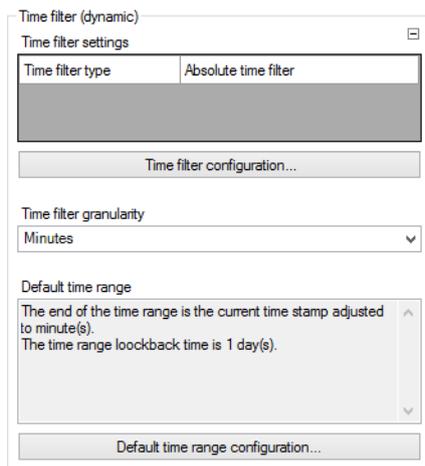
To install wizards manually:

1. Open the \zenon_Build_Setups folder on the zenon Analyzer installation medium.
2. Select the desired build.
3. Start the installation.

Attention: With a build update, the complete version of zenon on the computer is updated to the selected build. Only builds for already-installed versions can be executed.

TIME FILTER

The control elements for the configuration and time points and time intervals have been enhanced.



- ▶ The time filter configuration now allows the configuration of different pre-filter ranges.
- ▶ The granularity of the time filter is a separate control element.
- ▶ The standard time range configuration allows the configuration of two time ranges if different pre-filter ranges have been defined.

The corresponding control elements have been enhanced in the Analyzer Manager.

4. Basics

The zenon Analyzer uses data from different, independent and not cross-linked systems. Data from heterogeneous environments are joined and evaluated.

The zenon Analyzer:

1. acquires data
2. compresses data

3. manages meta data such as equipment structure
4. manages templates
5. manages access rights and authorizations
6. calculates evaluations
7. distributes evaluations to Clients



Attention

Variable names must not contain two or more consecutive spaces. If several consecutive spaces are included, this can lead to a Javascript error when called up in the Analyzer Manager (**Error 500**).

GENERAL REQUIREMENTS

zenon Analyzer needs for:

- ▶ the creation and management of reports:
 - An SQL Server 2012 database and
 - the SQL Server 2012 reporting services
- ▶ the display of reports: standard browser

A good knowledge of SQL and MS Report Builder 3.0 is required in order for you to create your own reports.

For details about the technical requirements see chapter Technology (on page 20).

HARDWARE AND SOFTWARE REQUIREMENTS

HARDWARE

Analyzer Server:

| TAGs | Recommended | Minimum |
|-------------|--|-----------|
| CPU | Quad-Core Server CPU (maximum 16 cores/4 sockets) | Quad-core |
| RAM | 12 GB or more | 8 GB |
| Free memory | 200 GB | 10 GB |

Engineering computer:

| TAGs | Recommended | Minimum |
|------------------|-------------|------------|
| CPU | Dual Core | Pentium IV |
| RAM | 4 GB | 1 GB |
| Free memory | 200GB | 2 GB |
| Monitor (pixels) | 1920 x 1080 | 1024 x 768 |

SOFTWARE

Analyzer Server:

A 64-bit operating system is required for the database server. The following are supported:

- ▶ Windows Server 2012 R2
- ▶ Windows Server 2012 SP0 64-Bit
- ▶ Windows Server 2008 R2 SP1 64-Bit
- ▶ Windows Server 2008 SP2 64-Bit
- ▶ Windows 8 Professional 64-Bit
- ▶ Windows 8 64-Bit
- ▶ Windows 7 SP1 64-Bit Ultimate
- ▶ Windows 7 SP1 64-Bit Enterprise
- ▶ Windows 7 SP1 64-Bit Professional

Engineering computer:

- ▶ Windows Server 2012 R2
- ▶ Windows Server 2012 SP0

- ▶ Windows Server 2008 R2 SP1 family
- ▶ Windows Server 2008 SP2 family
- ▶ Windows 8 family
- ▶ Windows 7 SP1 family
- ▶ Windows Vista SP2 family

Web browser:

- ▶ Internet Explorer 11 (compatibility view only)
- ▶ Internet Explorer 10 (compatibility view only)
- ▶ Internet Explorer 9 (normal view only)
- ▶ Internet Explorer 8 (normal view only)

Recommended HMI/SCADA system:

- ▶ zenon 7.10 or higher

DATA PREPARATION

The data preparation (on page 44) is done in several levels. With this data from different sources and formats can be evaluated universally and maintained easily.

DATA STRUCTURES

The data origin either from static project data or from dynamic user data. For details see chapter Data structure.

DATA COLLECTION

The zenon Analyzer accesses data non-invasively via connectors. Source systems need not be reconfigured. The existing infrastructure is embedded in the reporting of the zenon Analyzer independent of the manufacturers. For systems other than zenon 6.x, only a connector container is installed. This installation does not interfere in the Runtime system and does not interrupt the process.

4.1 Technology

In this section you learn about the technically needed requirements for

- ▶ Server
- ▶ Client
- ▶ Data Sources
- ▶ Development station

and the supported standards for

- ▶ Interfaces

SERVER

SQL SERVER 2012 DATABASE

In the database there are the meta data and possibly also user data saved in SQL. For the query, stored procedures (Level 2 (on page 46)) are executed. They again revert to `user defined functions` for data acquisition and data abstraction. If needed, they load the connector stub which requests the user data from the target system online. In addition there are the `user defined functions` which provide auxiliary functions for the evaluation.

SQL SERVER 2012 REPORTING SERVICES

The reporting services run as web application and as web server provide the Clients with all reports for displaying in the web browser. In addition, the parameters for the data source, reports, etc. are set using the `Analyzer Manager` web front end.

The path to the `Analyzer Manager` is: `http://[computer name]/Reports_za2`.

REPORTING LICENSE SERVICE (ZRSLICSRV)

The reporting license service checks the CodeMeter dongle and the license (on page 38) available at the Server and forwards the licensing information to all involved components. It also has the list of all Client leases.

CLIENT

WEB BROWSER

To display reports from the Server, you only need a web browser at the Client.



Information

The zenon Analyzer was designed and tested for and with Microsoft Internet Explorer version 8 and higher.

***Attention:** The compatibility view in Internet Explorer 8 and 9 must be deactivated for the correct display of reports. The compatibility view must be activated for later versions of Internet Explorer.*

DATA SOURCE

CONNECTOR CONTAINER

On all computers which can server as data source, the connector container together with its different connectors must be installed and started. The TCP port of the connector container must be reachable from outside.

DEVELOPMENT STATION

ANALYZER EXPORT WIZARD

The Analyzer Export Wizard (on page 76) is integrated in the zenon Editor and is used to import the metadata to the SQL Server 2012 database. The wizard offers full support for zenon 7.xx. Older versions of the zenon Editor are not supported.

INTERFACES

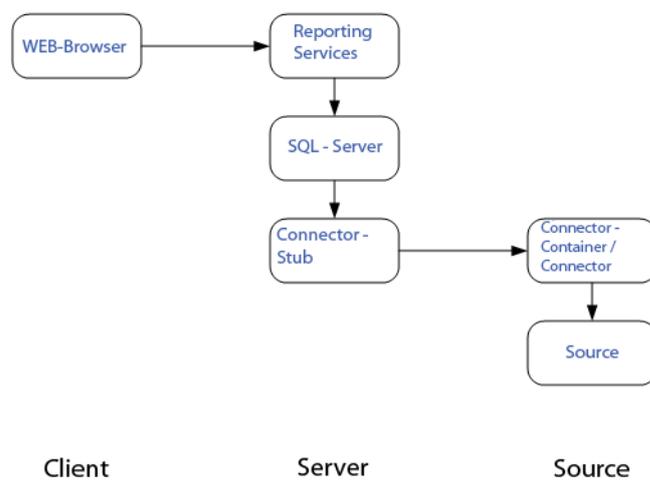
The zenon Analyzer supports the following interfaces:

- ▶ zenon Runtime 5.50, 6.x, 7.x
- ▶ SQL

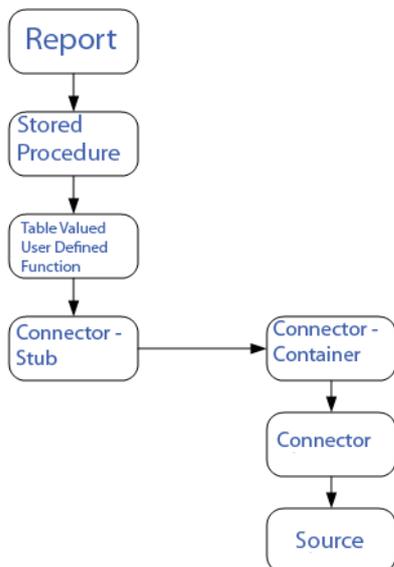
4.2 Architecture

The zenon Analyzer links data from different, heterogeneous sources to valid reports in real time. The reports react dynamically to data base changes.

COMMUNICATION FROM PROCESS POINT OF VIEW



COMMUNICATION FROM DATA POINT OF VIEW



ZENON ANALYZER

The zenon Analyzer consists of:

- ▶ Data sources
- ▶ Connectors to the data sources
- ▶ Container for connectors and data harmonization
- ▶ Data filing
- ▶ Report Builder with filter and calculations
- ▶ zenon Analyzer Management Studio for creating and administering reports (on page 226)
- ▶ Web Server
- ▶ User interface at the Client for calling up and managing reports at the Client

PROCESSES

Reports are configured and published by administrators or users.

Reports can also be created by the administrator using Microsoft Report Builder 3.0. Prerequisite is a wide knowledge in SQL. For information about MS Report Builder refer to the corresponding help of the Microsoft Report Builder. End-users call up reports via the interface of their Client.

Data required for the report is collected via connectors and harmonized before use. With this, reports are also meaningful for different sources, time zones, etc.

4.3 Time formats

Three time formats are used:

- ▶ Local time: is used in reports
- ▶ UTC: is used in abstracted historical and current values and in database tables
- ▶ Unix time: is used in SQL tables

LOCAL TIME

Queries in the report and the display of results is done in local time.

UTC

Abstracted historical and current values are stated in UTC. For the display in the reports it is converted to local time.

UTC means Coordinated Universal Time. The time unit is second. UTC is the uniform basis for the international time determination and is made available to the public via time senders and other time services. Dependent on the time zone certain time periods must be added or subtracted to or from UTC. This time period can vary one hour because of the day light saving time.

Example:

| Country | Local time |
|--|------------|
| Alaska | UTC -9 |
| Australia, Queensland | UTC +10 |
| Bulgaria | UTC +2 |
| United Kingdom | UTC |
| Korea | UTC +9 |
| Central Europe (CET) | UTC +1 |
| Central Europe (CET) Day Light Saving Time | UTC +2 |
| Saudi Arabia | UTC +3 |
| USA East coast | UTC -5 |
| United Arabic Emirates | UTC +4 |

CONSEQUENCES TO THE CONFIGURATION

Engineered date and time mean different date and time depending on the execution location of the Runtime.

For example: In the Editor you engineer in the PFS for the execution of a function in time zone UTC +1 the local time 14:00 o' clock. After transferring the files to a Runtime in tiem zone UTC +10, the function is carried out at 23:00 o' clock. Unix time

In the SQL databases Unix time is used, e.g.:

- ▶ evacuated archives
- ▶ exported archives
- ▶ exported alarms
- ▶ exported CEL

PROCESS

- ▶ Query in reports are dispalyed in local time.
- ▶ The hand over from report to the table valued user defined functions is done in UTC.

- ▶ Query to SQL are converted to Unix time.
- ▶ Results are converted to UTC and displayed in the report as local time.

4.4 Prerequisites

The following prerequisites are applicable for work with the zenon Analyzer:

ANALYZER SERVER HARDWARE AND SOFTWARE

HARDWARE

Analyzer Server:

| TAGs | Recommended | Minimum |
|-------------|--|-----------|
| CPU | Quad-Core Server CPU (maximum 16 cores/4 sockets) | Quad-core |
| RAM | 12 GB or more | 8 GB |
| Free memory | 200 GB | 10 GB |

Engineering computer:

| TAGs | Recommended | Minimum |
|------------------|-------------|------------|
| CPU | Dual Core | Pentium IV |
| RAM | 4 GB | 1 GB |
| Free memory | 200GB | 2 GB |
| Monitor (pixels) | 1920 x 1080 | 1024 x 768 |

SOFTWARE

Analyzer Server:

A 64-bit operating system is required for the database server. The following are supported:

- ▶ Windows Server 2012 R2
- ▶ Windows Server 2012 SP0 64-Bit

- ▶ Windows Server 2008 R2 SP1 64-Bit
- ▶ Windows Server 2008 SP2 64-Bit
- ▶ Windows 8 Professional 64-Bit
- ▶ Windows 8 64-Bit
- ▶ Windows 7 SP1 64-Bit Ultimate
- ▶ Windows 7 SP1 64-Bit Enterprise
- ▶ Windows 7 SP1 64-Bit Professional

Engineering computer:

- ▶ Windows Server 2012 R2
- ▶ Windows Server 2012 SP0
- ▶ Windows Server 2008 R2 SP1 family
- ▶ Windows Server 2008 SP2 family
- ▶ Windows 8 family
- ▶ Windows 7 SP1 family
- ▶ Windows Vista SP2 family

Web browser:

- ▶ Internet Explorer 11 (compatibility view only)
- ▶ Internet Explorer 10 (compatibility view only)
- ▶ Internet Explorer 9 (normal view only)
- ▶ Internet Explorer 8 (normal view only)

Recommended HMI/SCADA system:

- ▶ zenon 7.10 or higher

CONNECTORS

The following applies for connectors:

- ▶ Timeout: 5 minutes (independent of report timeout)

- ▶ Variables: Only variables that are listed in metadata are requested
- ▶ String variable: maximum of 4000 characters

The performance of a connector depends on the:

- ▶ Performance of the Analyzer server
- ▶ Performance of the Runtime server
- ▶ Load of the Runtime servers (connector runs with low priority)
- ▶ Network performance and network load

PROJECTS AND FILTERS

Reports on several projects can be created, except when using filters for shifts or lots. In this case, reports are limited to one project.



Attention

Only archive data with variables from its own project can be evaluated.

This means: For example, in an integration project, if a variable from a subproject is archived in an archive, then zenon Analyzer cannot access this variable.

SCHEDULES

- ▶ Days per month are limited to 1 – 28 (corresponds to February in non-leap years)
- ▶ The "Month end" event is not available

ANALYZER EXPORT WIZARD

The Analyzer Export Wizard works with zenon from version 7.10 SP0. There is a separate wizard available for each supported version of zenon.

5. Installation and updates

The installation of zenon Analyzer consists of several components:

- ▶ **Analyzer Server:**
Central SQL server.
- ▶ **zenon Analyzer Management Studio (on page 226):**
Tool for the administration of zenon Analyzer and to create reports. It must be installed on the engineering computer:
- ▶ **Connector:**
Connector for Runtime. This is installed on the Runtime computer.
The TCP port of the connector container must be accessible from outside. This installation does not interfere in the Runtime system and does not interrupt the process.

You can find the hardware and software requirements in the Prerequisites (on page 26) chapter.

NOTE:

- ▶ **.NET Framework 3.5**
.NET Framework 3.5 has to be already run capable on the target computer in order to end the installation successfully. Otherwise, an error notification from the <CD-ZRS> setup will show up and the installation process will be canceled.
- ▶ **Remote installation**
The installation medium must be on the local computer. Network drives may not be available punctually for a reboot during installation. For remote installations and virtual installations, copy the content of the installation medium to a temporary folder on the computer and start the setup.



Attention

Take care of sufficient licensing (on page 38).

NOTE FOR WIZARDS

There are three wizards available from version 7.10 for zenon Analyzer for use with the SCADA system zenon:

- ▶ **Analyzer Export Wizard** (on page 76)
- ▶ **Meaning and Waterfall Chart Wizard** (on page 108)
- ▶ **Sankey Wizard** (on page 127)

Wizards have no longer been installed with <CD_ZRS since zenon Analyzer 2.20 >. From zenon 7.20, installation is carried out with the installation of zenon. For zenon versions 7.10 and 7.11, the wizards can be installed or updated manually using build setups.

To install wizards manually:

1. Open the `\zenon_Build_Setups` folder on the zenon Analyzer installation medium.
2. Select the desired build.
3. Start the installation.

Attention: With a build update, the complete version of zenon on the computer is updated to the selected build. Only builds for already-installed versions can be executed.

CARRYING OUT AN INSTALLATION OR UPDATE

To install zenon Analyzer components:

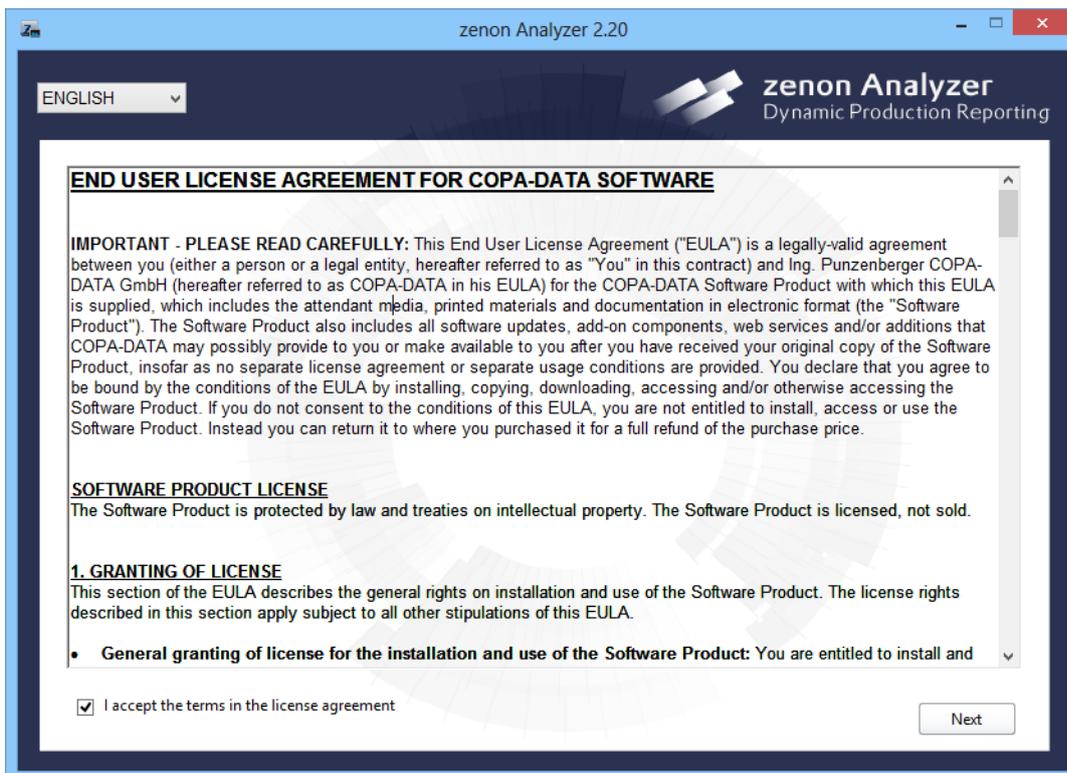
1. Connect the installation medium to the computer or copy its contents to a local folder.
If Autorun does not automatically start the setup, use the file named `start.exe`.
2. Select the desired language from the drop-down list
3. Accept the license agreements
4. Click on the **Next** button.
5. If necessary, update components or select the desired components.
6. Click on the **Next** button.
7. The installation or the update will start.
8. Follow the instructions given to you by the installation wizard.

 **Attention**

When updating an existing installation, the addition of new components is carried out in two stages:

- ▶ Pre-existing components are updated.
- ▶ The setup must be restarted. New components can be added.

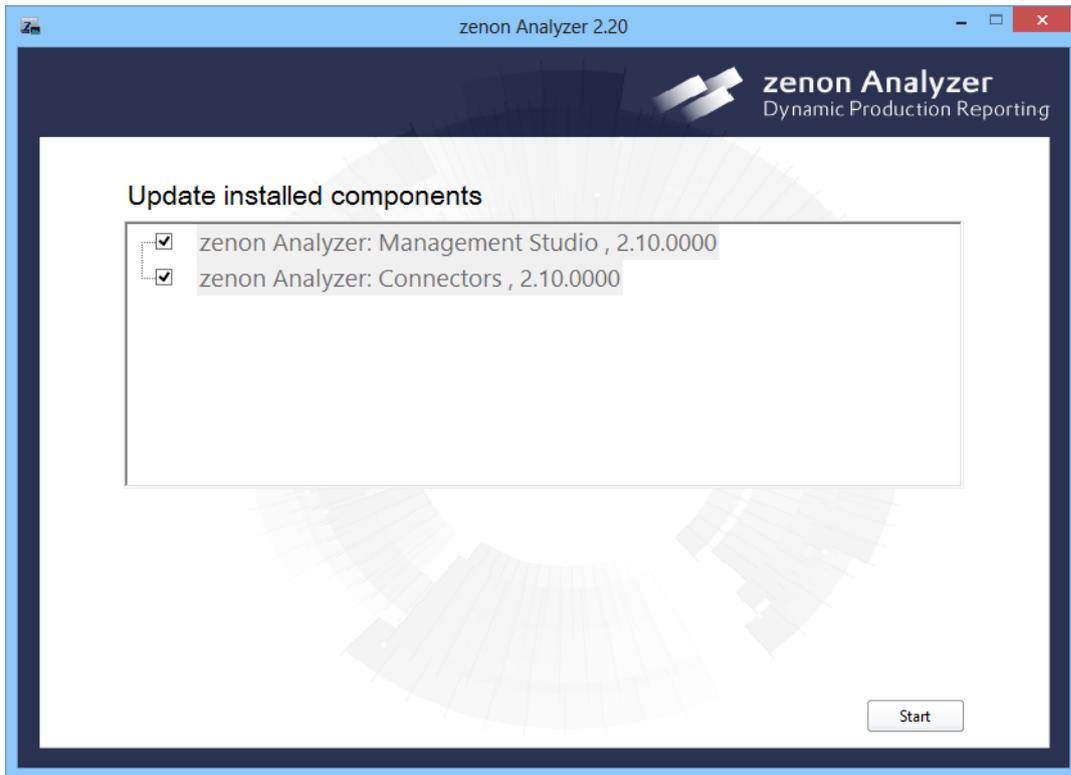
START WINDOW



| Parameters | Description |
|---------------------------|--|
| Drop-down list "Language" | <p>Selection of the language for the installation. Available are:</p> <ul style="list-style-type: none"> ▶ German ▶ English ▶ French ▶ Italian ▶ Spanish |
| License agreements | <p>License agreement with conditions of use for zenon Analyzer. For installation, the requirements must be accepted by clicking on the I accept the conditions of the license agreement checkbox.</p> |
| Next | <p>Switches to the next step of the installation. Only active if the license agreements have been accepted.</p> |

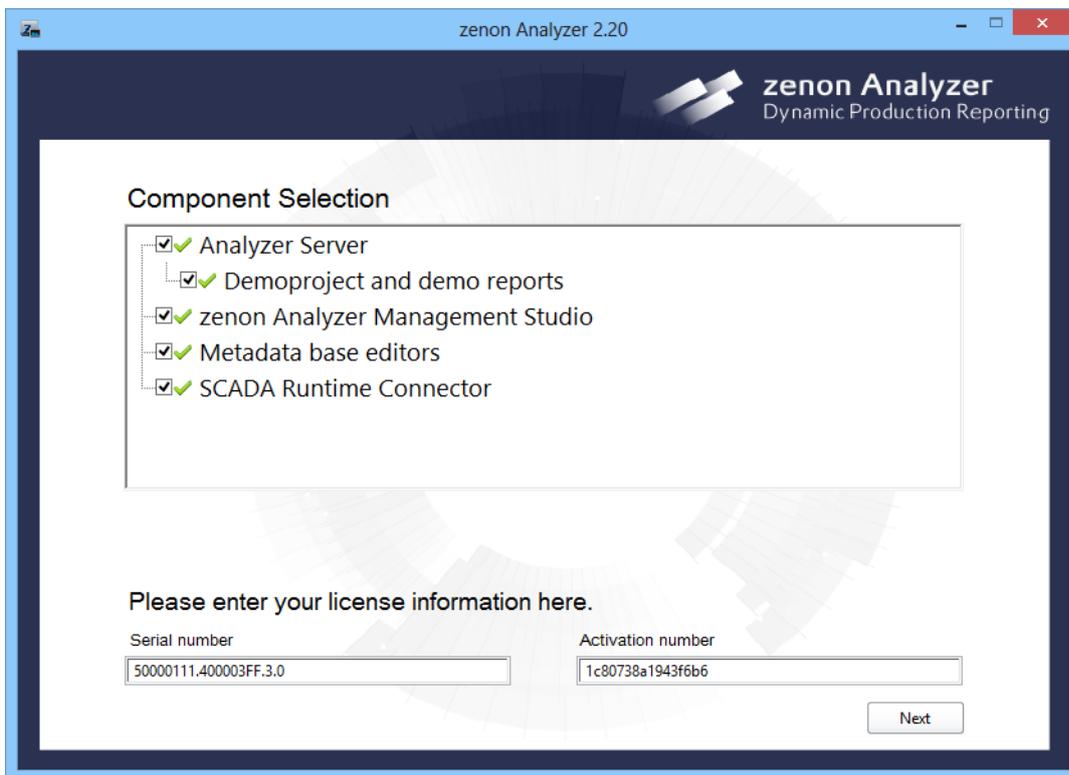
UPDATE OF PREVIOUS VERSIONS

If components from previous version are discovered during installation, you are asked if you want to update these. Updates can be carried out for zenon Analyzer versions 2.00 and 2.10. Additional components can only be installed once the updates have been carried out. To do this, **start.exe** must be called up again.



| Parameters | Description |
|-------------|--|
| Update list | Shows the components that are to be updated during the installation. No individual components can be selected. If no update is carried out, the current zenon Analyzer cannot be installed. The installation can be canceled by closing the window. |
| Start | Starts the update of the existing components. If additional components are to be installed, start the setup again. |

MODULE SELECTION



zenon Analyzer 2.20

zenon Analyzer
Dynamic Production Reporting

Component Selection

- ✓ Analyzer Server
- ✓ Demoproject and demo reports
- ✓ zenon Analyzer Management Studio
- ✓ Metadata base editors
- ✓ SCADA Runtime Connector

Please enter your license information here.

Serial number: 50000111.400003FF.3.0

Activation number: 1c80738a1943f6b6

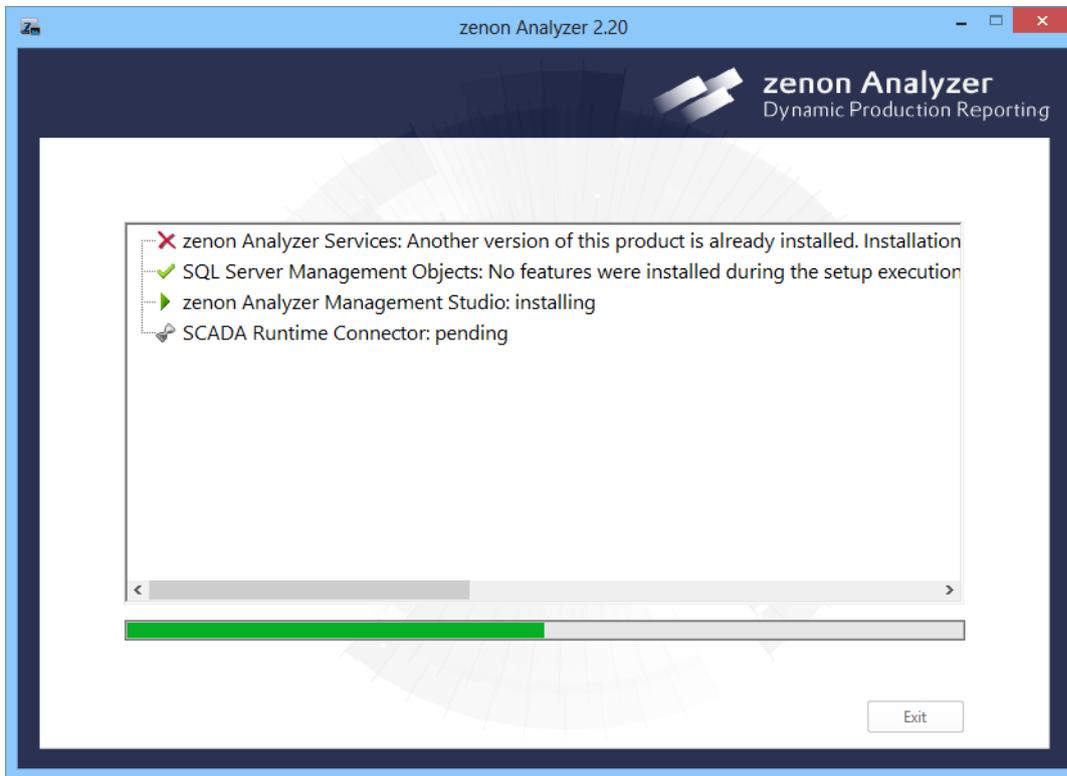
Next

| Parameters | Description |
|--------------------|---|
| Module selection | <p>Selection of the components to be installed by activating the corresponding checkbox.</p> <ul style="list-style-type: none"> ▶ Analyzer Server: Central SQL server. Requirements: 64-bit operating systems ▶ Demo project and demo reports: Example database Requirements: 64-bit operating system ▶ zenon Analyzer Management Studio (on page 226): Tool to create and administer sever connections and reports. Pre-requisite: 32-bit or 64-bit operating system. ▶ Metadata database editors: ▶ SCADA Runtime Connector: Connectors for Runtime and SQL. Prerequisite: 32-bit or 64-bit operating system. |
| Serial Number | <p>Entry of the serial number for licensing (on page 38).</p> <p>Only present if the Analyzer Server is to be installed. If there is already a serial number on the system, this is entered automatically.</p> |
| Activation number: | <p>Entry of the activation number.</p> <p>Only present if the Analyzer Server is to be installed. If there is already an activation number on the system, this is entered automatically.</p> |
| Next | <p>Starts the installation. Only active if modules are selected for installation.</p> |

SYMBOLS MODULE SELECTION

| Symbol | Meaning |
|--------|----------------------------------|
| ✓ | Installation can be carried out. |
| ✗ | Installation not possible. |

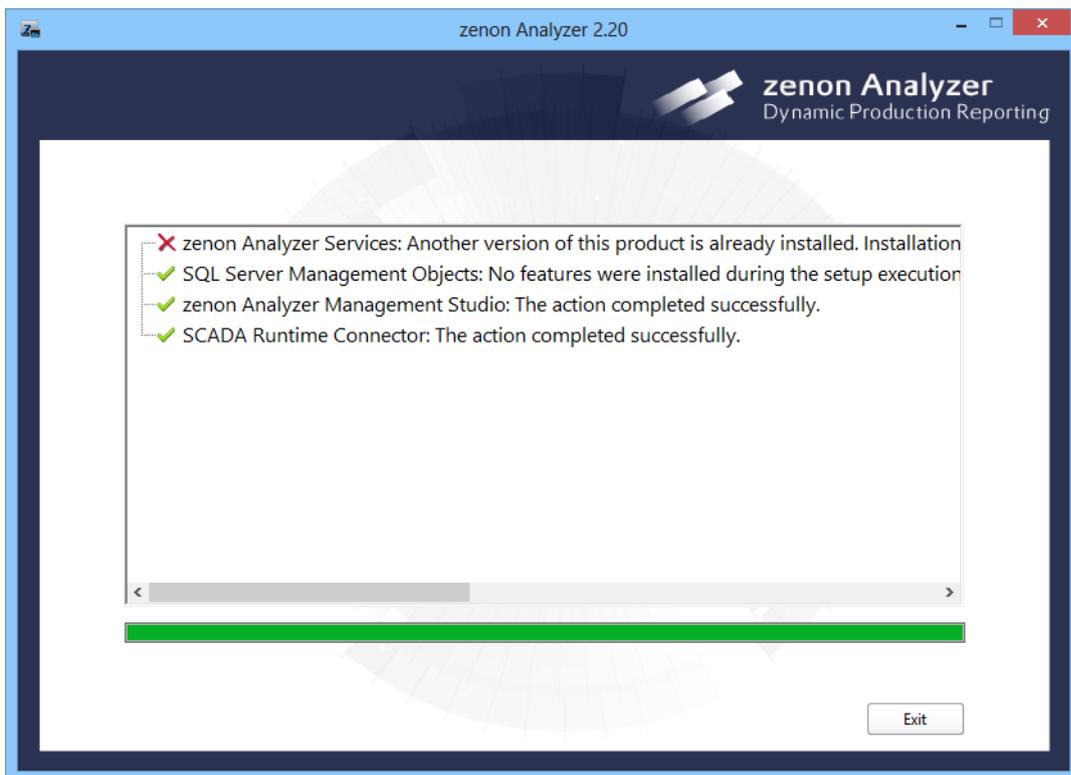
INSTALLATION PROGRESS



The course of installation is shown in its own window with symbols:

| Symbol | Meaning |
|---|------------------------------|
|  | Not yet installed |
|  | Is currently being installed |
|  | Installation OK |
|  | Installation failed |

After successful installation of all desired components, end the installation wizard by clicking on the **End** button.



INSTALLATION ON THE CLIENT

On the Client, all you need is the current Microsoft Internet Explorer. The language that is set in Internet Explorer determines the language for the Analyzer Manager (on page 152). The language for zenon Analyzer Management Studio (on page 226) is specified in the ZAMS options (on page 574).

5.1 Licensing

In order to license the zenon Analyzer a CodeMeter dongle is a prerequisite.

Without a valid license:

- ▶ no external access via the default access site is possible
- ▶ no connector functionality is available
- ▶ ZAMS cannot be started
- ▶ Report templates and reports (on page 650) cannot be used

Entry of the license data is carried out during installation for the Analyzer Server and via the zenon Analyzer Management Studio (on page 226) or the zenon licensing for all other components as required.

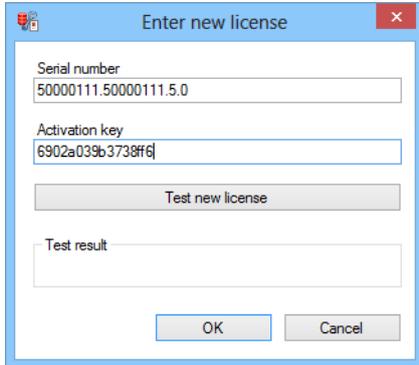
Note: A new zenon Analyzer license is only accepted if you have enough client licenses for all users with a dedicated license (on page 543).

LICENSING VIA ZAMS - ZENON ANALYZER MANAGEMENT STUDIO

To enter new license data:

1. Select, in the **Analyzer Server** menu or in the **Display license** (on page 328) dialog, the **Enter new license** command
2. the drop-down list with the license information is opened
3. **enter serial number and activation number**
4. Click on **Check new license**
5. If the result is positive, click on **OK** to activate the license

ENTER DIALOG LICENSE



| Parameters | Description |
|-------------------------|---|
| Serial number | Entry of the serial number. |
| Activation key | Entry of the activation key. |
| Test new license | <p>Clicking on this button tests inputs before they are written to the license server, to see if:</p> <ul style="list-style-type: none"> ▶ License data entered has the correct syntax ▶ a license can be occupied on a CodeMeter dongle with the data entered ▶ The activation key corresponds with the serial number <p>In order for the test to be started, both <code>serial number</code> and <code>activation key</code> must have been entered.</p> |
| Test result | Displays the test result of Test new license . |
| OK | <p>Writes the license entered to the license service on the Analyzer server and closes the dialog. The result of writing the license is displayed in the output window.</p> <p>In order for the license data to be written, both <code>serial number</code> and <code>activation key</code> must have been entered.</p> |
| Cancel | Closes the dialog without writing data to the license service. |

 **Attention**

*If incorrect license data is entered, the access to the Analyzer server is blocked for all clients. Always check the new license data by clicking on the **Test new license** button before you set the license by clicking on **OK**.*

ENTRY IN ZENANALYZER.INI

The license information are saved in file `zenAnalyzer.ini` in the zenon system folder.

- ▶ Section [DEFAULT])
 - Entry `SERIAL7=`
 - Entry `ACTIVATIONKEY7=`

The CodeMeter check and management of simultaneous access is done via service `zrsLicSrv`.

For details about licensing and the CodeMeter dongle, see the Licensing manual, CodeMeter chapter.

5.2 Uninstallation of zenon Analyzer version 1.6 and 2.0

GENERAL RECOMMENDATIONS

- ▶ Test installations: These are best installed in a virtual environment.
- ▶ Prerequisites: Can also be required by other programs. Only uninstall these if you are sure that they are no longer needed.
- ▶ LOG files: Can be deleted in principle.
- ▶ Registry: Changes to entries should only be made by qualified people.

UNINSTALLATION

Depending on the components installed, the uninstallation processes are different for:

- ▶ zenon Analyzer 1.6 (on page 41)
- ▶ zenon Analyzer 2.0 (on page 42)

5.2.1 Uninstallation of zenon Analyzer 1.6

INSTALLED COMPONENTS

The installation of zenon Analyzer 1.6 consists of the prerequisites and four main categories.

PREREQUISITES

- ▶ Microsoft Visual C++ 2010 Redistributable Package (x86)

CATEGORIES

- ▶ Analyzer (Server)
- ▶ Analyzer Connector
- ▶ Analyzer Wizard (can only be installed if the zenon 6.51 Editor is already present)
- ▶ Analyzer Assistant

UNINSTALLATION

ANALYZER (SERVER)

- ▶ Uninstall: Control Panel -> Programs and Features -> zenon Analyzer
- ▶ Uninstall: Control Panel -> Programs and Features -> zenon Analyzer: License
- ▶ Delete folder: `C:\ProgramData\COPA-DATA\zenonAnalyzer`

ANALYZER CONNECTOR

- ▶ Uninstall: Control Panel -> Programs and Features -> zenon Analyzer: Connectors
- ▶ Delete folder: `C:\Program Files (x86)\Common Files\COPA-DATA\Connectors`
- ▶ Delete the registry entry:
[HKEY_LOCAL_MACHINE\SOFTWARE Wow6432Node\Microsoft\Windows\CurrentVersion\Run]
`COPA-DATA Connector=C:\Program Files (x86)\COPA-DATA\zenon Analyzer\zrsConnector.exe`

ANALYZER EXPORT WIZARD

- ▶ Uninstall: Control Panel -> Programs and Features -> zenon Analyzer: **Export Wizard**
- ▶ Delete folder:
C:\ProgramData\COPA-DATA\zenon651\WizardsVSTA\ZRS_MetadataExport
- ▶ Configure the file
C:\ProgramData\COPA-DATA\zenon651\WizardsVSTA\wizards.ini:

[DEFAULT]
COUNT=x -> decrement to x-1
[WIZARD_X] -> delete complete entry with all sub-lines

ANALYZER ASSISTANT

- ▶ Uninstall: Control Panel -> Programs and Features -> zenon Analyzer:
Report_Assistant
- ▶ Delete folder: C:\Program Files (x86)\COPA-DATA\zenon Analyzer

5.2.2 Uninstallation of zenon Analyzer 2.0 and 2.10

INSTALLED COMPONENTS

The installation of zenon Analyzer 2.0 or 2.10 consists of four main categories:

- ▶ Analyzer (Server)
 - Demo projects
- ▶ ZAMS (zenon Analyzer Management Studio)
- ▶ Analyzer Connector
- ▶ Analyzer Wizard

UNINSTALLATION

ANALYZER (SERVER)/DEMO PROJECTS

- ▶ Uninstall: Control Panel -> Programs and Features -> zenon Analyzer: **Server**

- ▶ Uninstall: Control Panel -> Programs and Features -> zenon Analyzer: **License**
- ▶ Uninstall: Control Panel -> Programs and Features -> zenon Analyzer: **Demo**
- ▶ Delete folder: C:\ProgramData\COPA-DATA\zenonAnalyzer
- ▶ Delete the registry entry:
HKEY_LOCAL_MACHINE\SOFTWARE\COPA-DATA\zenonAnalyzer

ZENON ANALYZER MANAGEMENT STUDIO (ZAMS)

- ▶ Uninstall: Control Panel -> Programs and Features -> zenon Analyzer: **Management Studio**
- ▶ Delete folder: C:\ProgramData\COPA-DATA\zenonAnalyzer
- ▶ Delete the registry entry:
HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\COPA-DATA\zenonAnalyzer

ANALYZER CONNECTOR

- ▶ Uninstall: Control Panel -> Programs and Features -> zenon Analyzer: **Connectors**
- ▶ Delete folder: C:\Program Files (x86)\Common Files\COPA-DATA\Connectors
- ▶ Delete the registry entry:
[HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Microsoft\Windows\CurrentVersion\Run]
COPA-DATA Connector=C:\Program Files (x86)\COPA-DATA\zenon Analyzer\zrsConnector.exe

ANALYZER EXPORT WIZARD

- ▶ Uninstall: Control Panel -> Programs and Features -> zenon Analyzer: **Export Wizard**
- ▶ Delete folder: C:\ProgramData\COPA-DATA\zenon700\WizardsVSTA\Wizard_Analyzer_Export
- ▶ Configure the file
C:\ProgramData\COPA-DATA\zenon700\WizardsVSTA\wizards.ini:
[DEFAULT]
COUNT=x -> Decrement to x-1

[WIZARD_X] -> Delete complete entry with all underscores

6. Data preparation

The data is prepared in several levels. With this data from different sources and formats can be evaluated universally and maintained easily.

- ▶ **Level 1: Data abstraction (on page 44)**
On the lowest level the data abstraction or data unification is done. It makes sure that the source data are always available in the same format and in the same type for the actual evaluation algorithm.
- ▶ **Level 2: Compression and calculation (on page 46)**
A level above the actual compression and calculation is done to create the data which should then be displayed in the report. This level is already independent of the data origin and therefore universal.
- ▶ **Level 3: Report (on page 46)**
The output data of the second level are then displayed graphically in the report as third level. The display in the report in turn is independent of the algorithms necessary for the calculation on the second level. This means that no calculation and no compression is carried out in the report, which exceed the mere display (e.g. formatting of local times or similar).

6.1 Level 1: Data abstraction

At data abstraction there are two different categories of data:

1. Engineering data

They normally remain the same during the Runtime and are called meta data there. The metadata is abstracted or harmonized by the import wizard during import into the database. Regardless of their origin they are available in the format in which they are defined in chapter data structure.

2. Runtime data

The actual Runtime data are those data which are generally used as the base for all evaluations. They are called user data there.

Runtime data is tapped via connectors. COPA-DATA provides a Runtime connector and SQL connector with zenon Analyzer. Individual additions can be integrated into the connectors by agreement with COPA-DATA.

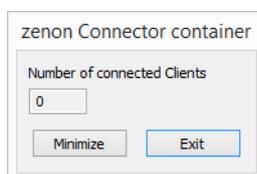
CONNECTOR CONTAINER

The connector container is an application (EXE) which runs at the source system and which loads and executes the connector plug-ins (DLLs). The connector container is a normal user process (no service) which is normally started together with the application which should deliver the data. The connector container opens a TCP port and waits for query requests from the connector stub whereon it loads the requested connector plug-in and invokes the fitting access function for the request. The return data is then sent to the connector stub. Several queries from different TCP connections can be executed in parallel if the source system supports this.

In normal operation the connector container is displayed as icon in the task tray and does not have an own main window. Additional status information can be displayed via a status dialog.

You can read more in the manual for report developers in the Connectors chapter.

DIALOG



| Parameters | Description |
|------------------------------------|--|
| Number of connected Clients | Displays the number of clients connected. |
| Minimize | Minimizes the dialog into the info area of the task bar. |
| Exit | Closes the connector container. |

RESTART

If the connector container has been closed, it can be restarted by:

- ▶ Restarting the computer.

- ▶ Manual start.
 - Under Windows 8: *Task-Manager -> Tab -> Autostart -> Connector-Container -> Open file path-> Double-click on zrsConnector.exe.*
 - Other operating systems: *Open file path-> Double-click on zrsConnector.exe.*
 - 32-bit path: C:\Program Files (x86)\Common Files\COPA-DATA\Connectors
 - 64-bit path: C:\Program Files\Common Files\COPA-DATA\Connectors

6.2 Level 2: Compression and calculation

All sorts of compression and calculation of the user data prepared in level 1 (on page 44) is carried out in the **stored procedures**. If necessary, filter criteria are handed over to them via parameters.

The **stored procedures** are independent of the format of the user data and of the visual display of the result. They contain only the calculation algorithms and the filter methods with regards to the meta data.

So far as it is technical feasible, they are also independent of specific presumptions concerning the meta data; i.e. independent of specific variable names. If this is not possible, the allocation to these fixed meta data parts is implemented as an obvious block at the beginning of the **stored procedures** in order to separate project-specific and universal evaluation part.

6.3 Level 3: Report

The result data generated in level 2 (on page 46) are formatted graphically in an SQL Server 2012 Reporting Services report. There is no calculation in the report itself. Also a direct access to database tables is never done but only to the **stored procedures** from level 2 (on page 46). With this the reports are:

- ▶ completely independent of the database structure
- ▶ universal and
- ▶ interchangeable

7. Analyzer Wizards

The zenon Analyzer has wizards that support correct setting of parameters for the SCADA system and the export of data from the SCADA system. The zenon SCADA system is currently supported.

Wizards:

- ▶ **Export Wizard for Analyzer 2.10** (on page 49): supports the export of metadata from zenon for the zenon Analyzer (on page 10) version 2.10.
- ▶ **Export Wizard for Analyzer 2.20** (on page 76): supports the export of metadata from zenon for the zenon Analyzer (on page 10) version 2.20.
- ▶ **Meaning and Waterfall Chart Wizard** (on page 108): Helps you prepare a zenon project for the processing of variable information in zenon Analyzer.
- ▶ **Analyzer Export Wizard** (on page 76): supports the export of metadata from zenon from version 7.10 SP0 for the zenon Analyzer (on page 10).
- ▶ **Sankey Wizard** (on page 127): supports you when creating Sankey diagrams that you can see in the Runtime or which are used in zenon Analyzer.

The wizards for zenon Analyzer are automatically installed when installing zenon 7.20. The **Analyzer Export Wizard** has its own DLL. **Meaning and Waterfall Chart Wizard** and **Sankey Wizard** share a DLL. Installation and maintenance thus differ from other zenon wizards. Analyzer wizards are automatically kept up to date with the updates from zenon from version 7.20. The update can, if required, also be carried out manually via the build file contained in the zenon Analyzer installation medium for zenon from version 7.10. For details, see the **Installation and Update** (on page 29) chapter in the **zenon Analyzer** (on page 10) manual.

SYNTAX FOR INPUTS IN ZENON

Input in zenon depends on the version of zenon that is used.

UP TO ZENON 7.11

Up to and including zenon version 7.11, the meaning and waterfall model is entered in the zenon `Resources` `label` property. These can contain meanings for several categories.

The following is applicable to entries in the resource label property:

- ▶ Categories are separated by a semicolon (;).

- ▶ Areas within a category are separated by a comma (,).
- ▶ Categories are marked by an index:
 - ME=: Identifies a (Meaning).
 Syntax: ME=[main meaning as text],[additional meaning as text],[additional meaning as text],...;
 Example: **ME=Station_1,Station_2;**
 - WF=: Identifies a variable for the waterfall display.
 Syntax: WF=[model name text],[line index INT],[index in column INT],[color code as text #XXXXXX];
 - Every other entry is also understood as a Meaning

Complete syntax for the `Resources` label property:

```
ME=[meaning1],[meaning2],..., [meaningN];WF=[model name],[row index],[index in row],[color code];
```

Attention: The `Resources` label property is limited to 256 characters in the zenon Editor.

FROM ZENON 7.20

From zenon 7.20, there are separate properties in zenon for the definition of Meaning and waterfall, as well as the input of a display name. These entries do not need an identification in front of them.

The following properties in the zenon `Analyzer` variable properties group provide information for reports in the zenon Analyzer:

- ▶ `Visual name`: Entry of a display name of the variable in zenon Analyzer. This must be unique in the project. The check is not carried out when issued in zenon, but when imported into zenon Analyzer. If this property is changed after the first export to a zenon Analyzer, these changes are not applied in the zenon Analyzer.
- ▶ `Meaning`: Entry of the (Meaning) of a variable in the zenon Analyzer. Entry is manual or by means of the **Meaning and Waterfall Chart Wizard**. Several meanings are separated by a comma.
 Syntax: [Meaning1],[Meaning2],..., [MeaningN]
- ▶ `Parameter for waterfall diagram`: Parameters of a variable for a waterfall diagram in zenon Analyzer. Entry is manual or by means of the **Meaning and Waterfall Chart Wizard**. The individual parameters are separated by a comma. Several waterfalls are divided by a semicolon.
 Syntax: [model name],[row index],[index in row],[color code];

Attention: All these input fields are limited to 256 characters in the zenon Editor.

When exporting to zenon Analyzer, both the previous property and the new one are checked. If both are assigned, the entries of the new properties are taken on. Entries that are created using the **Meaning and Waterfall Chart Wizard** are always entered into the new properties.

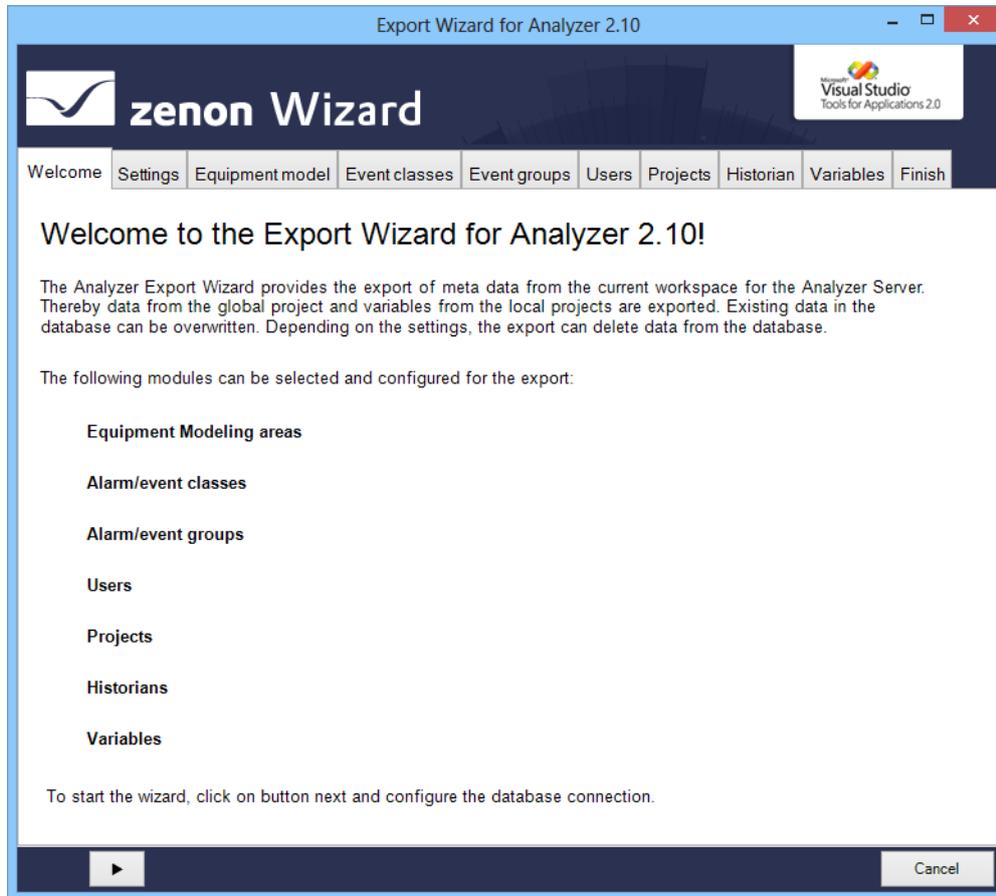
7.1 Export Wizard for Analyzer 2.10

The zenon Export Wizard for Analyzer 2.10 supports the export of metadata from zenon from version 7.10 SP0 for the zenon Analyzer (on page 10) 2.10.

The following can be exported:

- ▶ Data from the global project
 - Equipment models
 - Alarm/event classes
 - Alarm/event groups
 - User
- ▶ Data from selected projects:
 - Archives

- Variables



Note: The wizard is only available in English.

COMPATIBILITY:

The Analyzer Export Wizard works with zenon from version 7.10 SP0. There is a separate wizard available for each supported version of zenon.

7.1.1 Install and call up wizard

The wizard is automatically installed with zenon for each supported version of zenon Analyzer.

CALLING UP THE WIZARD

*For wizards to be displayed, the settings for VBA and/or VSTA must be set correctly in file **zenon6.ini**:*

[VBA]

EIN=1

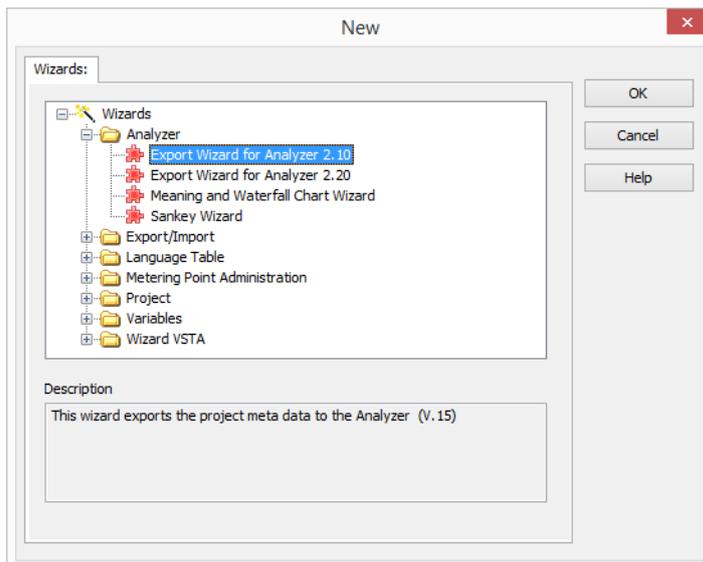
[VSTA]

ON=1

If VSTA wizards are not displayed although the settings are correct, set entry **LOADED=** to 1 in area [VSTA].

To start the wizard:

1. in zenon open menu **File**
or press the shortcut **Alt+F12**
2. select the entry **Wizards...**
3. the selection dialog is opened
4. navigate to the **Analyzer** node
5. select the **Analyzer Export Wizard**

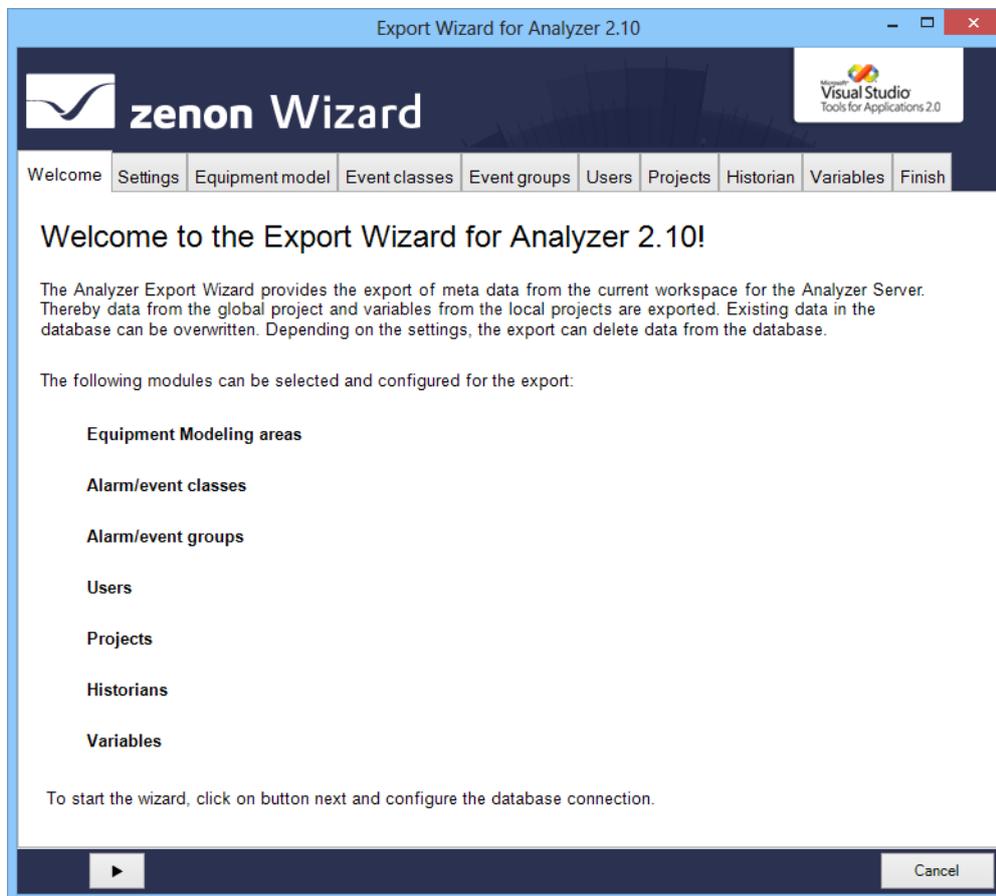


6. Start the wizard by clicking on **OK**

7.1.2 Start window

When the wizard is opened, you receive an overview page that lists all exportable objects.

The individual objects are configured for export in their own respective tabs.



Click on the button with the **arrow** to navigate through the configuration (on page 80) of the export.

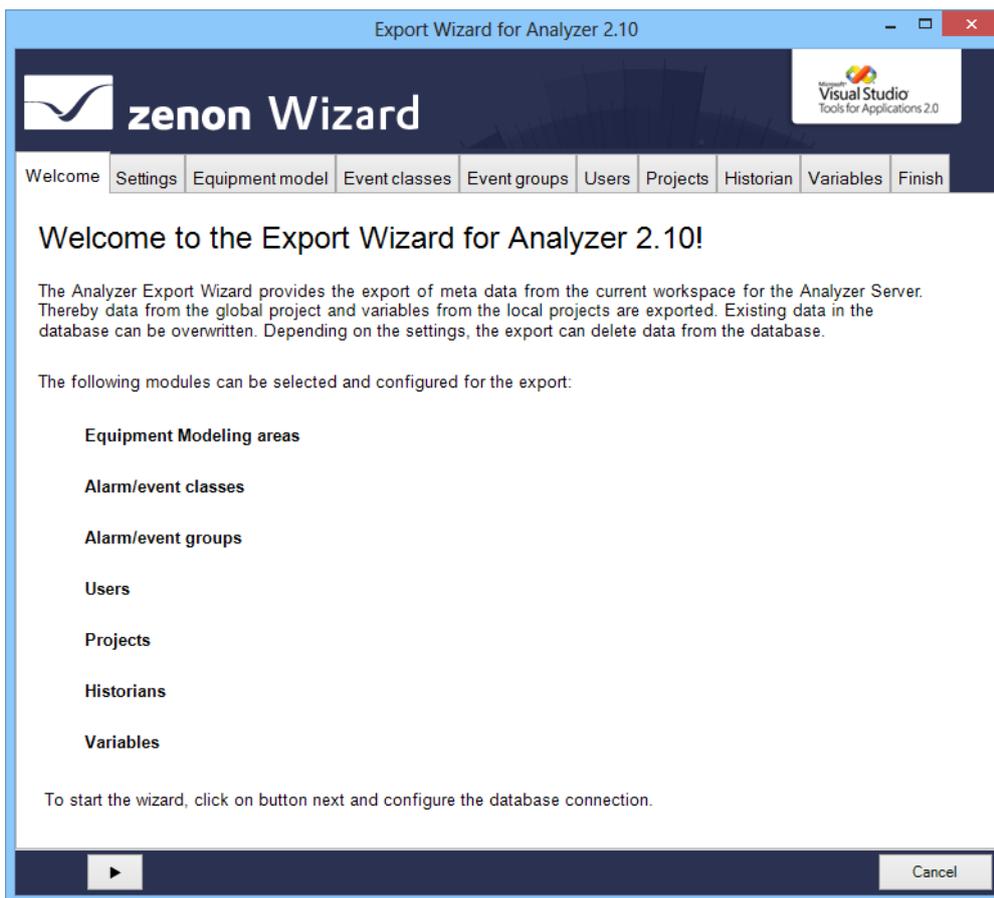
7.1.3 Configuration

When exporting with the Analyzer Export Wizard, all modules selected in the Settings (on page 82) tab are offered in sequence for detailed configuration. You get to the next level by clicking on the button with the **right arrow**. You can also select tabs directly by clicking on the title of the tab.

The following tabs are available for configuration of the export:

- ▶ Settings (on page 82): Options to collect the metadata
- ▶ Equipment model: (on page 87) Export of the model groups from the global project
- ▶ Event classes (on page 90): Alarm/Event classes from global project

- ▶ Event Event groups (on page 92): Alarm/event groups from global project
- ▶ Users (on page 94): User from global project
- ▶ Projects (on page 95): Projects from workspace
- ▶ Historian (on page 98): Archives of the selected projects
- ▶ Variables (on page 100): Variables of the selected projects
- ▶ Finish (on page 105): Start of the export and output of the result



Attention: Only one global project can be exported to the database! Workspaces with projects that are to be exported to the database must include this global project.

Navigation

Navigation through the tabs is carried out by means of the navigation bar in the lower area of the wizard window:



| Button | Description |
|-------------|---|
| Arrow left | Goes back one tab in the wizard process. |
| Arrow right | Goes forward one tab in the wizard process. |
| Export | Exports the data to the Analyzer database. Is only active if the Finish tab is opened. |
| Cancel | Closes the wizard without exporting. When closing, a dialog asks if the configuration is to be saved <ul style="list-style-type: none"> ▶ Yes: writes the settings configured in the Settings (on page 82) tab to the registry and closes the wizard; the wizard is opened with these settings the next time it is restarted ▶ No: closes the wizard without saving the configuration The configuration is saved for each specific user. |

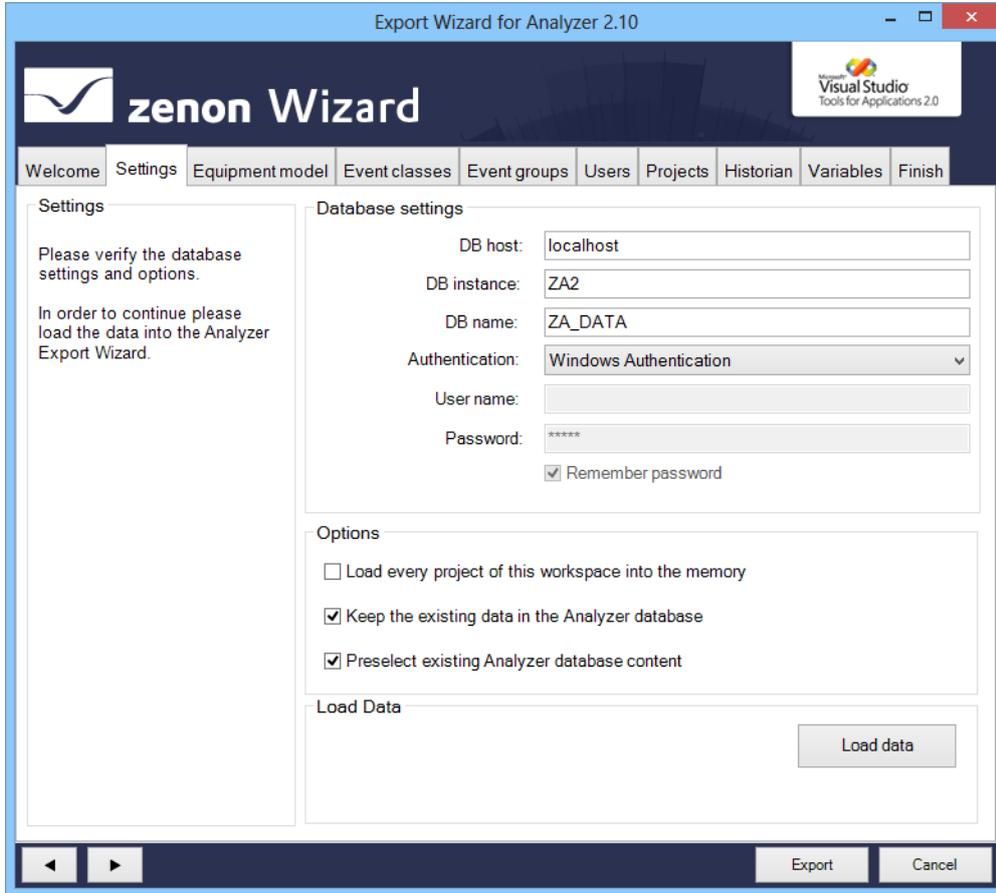
Individual tabs can also be selected by clicking directly on the title of the tab.

Settings

In this tab:

1. You define the database to which the wizard connects
2. You define general options for exporting

3. You start the data readout



Export Wizard for Analyzer 2.10

zenon Wizard

Microsoft Visual Studio Tools for Applications 2.0

Welcome Settings Equipment model Event classes Event groups Users Projects Historian Variables Finish

Settings

Please verify the database settings and options.

In order to continue please load the data into the Analyzer Export Wizard.

Database settings

DB host: localhost

DB instance: ZA2

DB name: ZA_DATA

Authentication: Windows Authentication

User name:

Password: *****

Remember password

Options

Load every project of this workspace into the memory

Keep the existing data in the Analyzer database

Preselect existing Analyzer database content

Load Data

Load data

Export Cancel

| Parameters | Description |
|--|--|
| Settings | Information and notes on current export processes. |
| Database settings | Connection settings to the Analyzer server. |
| DB host | Computer on which the database is located. |
| DB instance | Database instance |
| DB name | Name of the database. |
| Authentication | <p>Type of authentication:</p> <ul style="list-style-type: none"> ▶ Windows Authentication: Windows login information is used. ▶ SQL Server Authentication: Login with data from an SQL server user. |
| User name | <p>Entry of the user name.</p> <p>Only for login with SQL Server Authentication. Display only with Windows Authentication.</p> |
| Password | <p>Entry of the password.</p> <p>Only for login with SQL Server Authentication. No input possible with Windows Authentication.</p> |
| Remember password | <p>Password is saved for next connection.</p> <p>Only for login with SQL Server Authentication. Inactive for Windows Authentication.</p> |
| Options | General options for the export. |
| Load every project of this workspace into the memory | Active: Loads all projects present in the workspace, even if they are not active and not set to Keep project in memory . |
| Keep the existing data in the Analyzer database | <p>Active: Only entries from the workspace are written to the database.</p> <p>Inactive: Entries in the database are also updated or deleted.</p> <p>Exception: Projects are not deleted</p> |
| Preselect existing | Active: Entries already present in the database are preselected in |

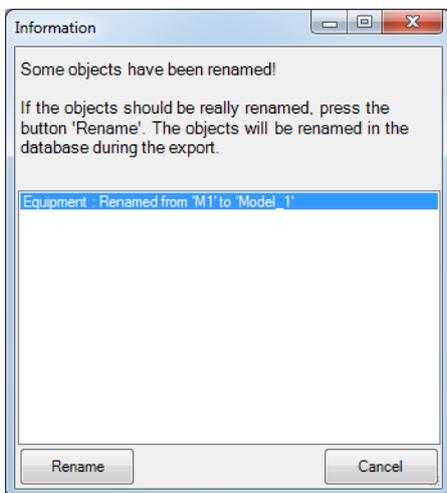
| | |
|---------------------------|--|
| Analyzer database content | the individual areas. |
| Load Data | |
| Load Data | <p>Clicking on the button loads, depending on the Load every project of this workspace into the memory parameter - the data from the currently loaded project into the wizard.</p> <p>In doing so, a check is made to see if data is present in the Analyzer database. Pre-existing data is combined with the data from the workspace and loaded into the wizard. In the event of naming conflicts, a dialog to rectify the error is called up.</p> <p>If the loading of data has been successfully concluded, the export can be configured in the following tabs.</p> |

RENAMING OBJECTS

Objects must always be named the same in the Analyzer database and in zenon. If objects that are already present in the database are renamed in zenon, these changes can be accepted or rejected when the data is combined. Rejection of the changes leads to the wizard being closed, because only objects with identical names can be handled correctly.

DIALOG FOR RENAMING

In the event of conflicts in the naming of objects, a dialog for dealing with the error is opened:



| Parameters | Description |
|-------------------------|--|
| List of amended objects | <p>Contains all objects that were changed. Previous name and new name are displayed. The following renamed objects are displayed in the list:</p> <ul style="list-style-type: none"> ▶ Name of the equipment models ▶ Names of the alarm/event classes ▶ Names of the alarm/event groups ▶ Project name ▶ Variable name <p>Exceptions:</p> <ul style="list-style-type: none"> ▶ Users are always recreated ▶ Archive names are only created once in the database as a visual name and can be overwritten in the zenon Analyzer |
| Rename | Renames all objects listed in the database, closes the dialog and stops reading in data. |
| Cancel | Leaves the previous name in the database, finishes reading in data and closes the wizard. |

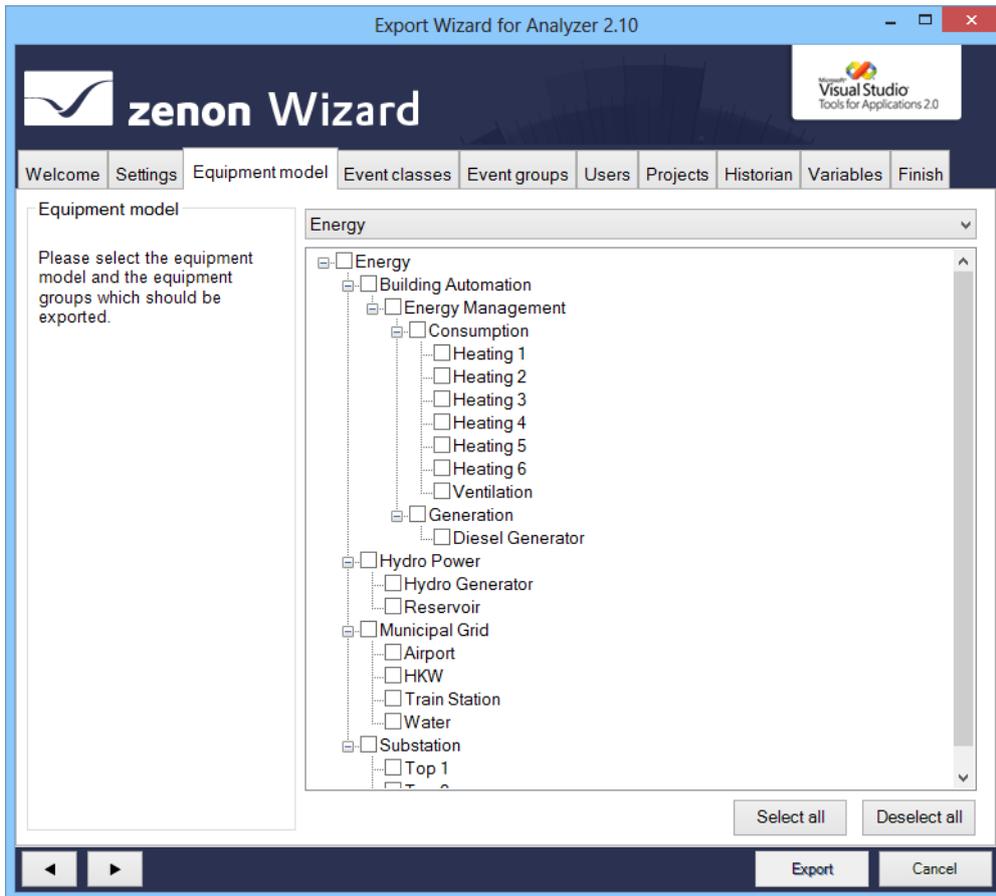
Equipment model

Configuration of the model groups to be exported from the global project.

Attention

Each equipment group in zenon may only be assigned to one individual time model.

If several time model groups are assigned, the Analyzer Wizard Export uses the first that it finds and exports this to the metadata of the Analyzer. Other time model groups are ignored.

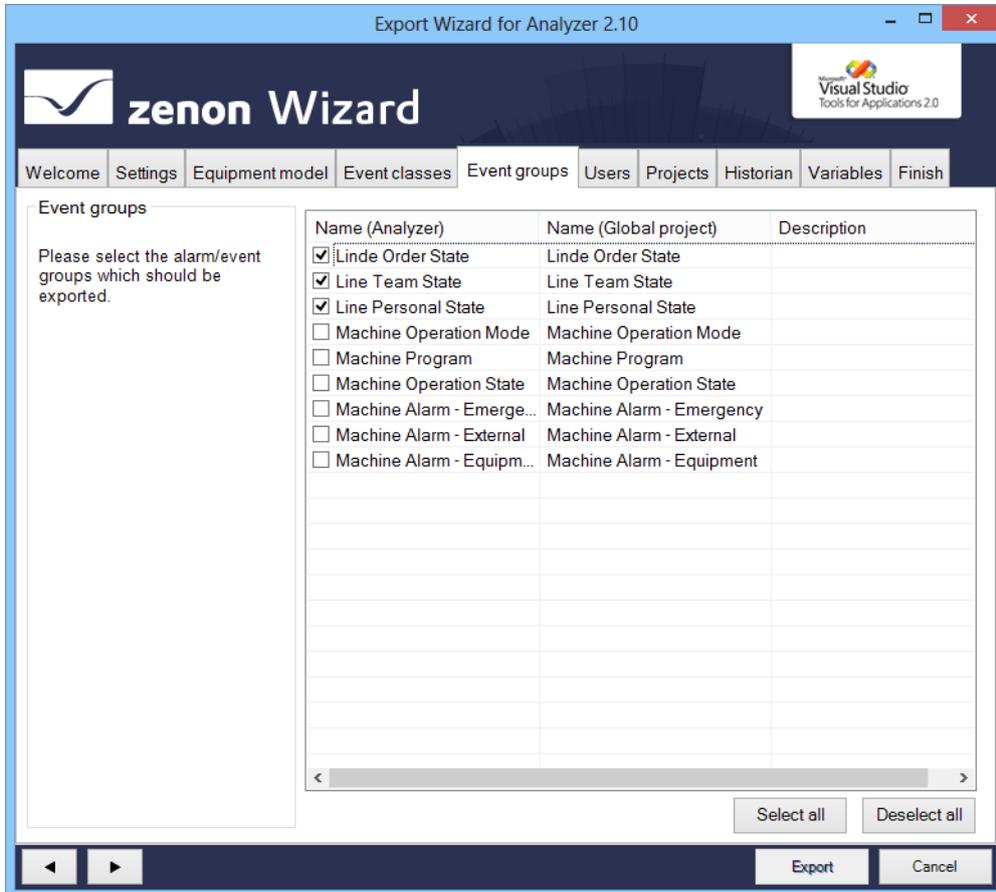


| Parameters | Description |
|---------------------------------------|--|
| Equipment modeling | Information and notes on exporting. |
| Selection of equipment/medium | <p>Drop-down list to select what is offered in List of equipment models/media for configuration:</p> <ul style="list-style-type: none"> ▶ Plant: displays equipment models ▶ Media: displays media |
| List of equipment models/media | <p>List field with the possibility to select equipment models and model groups or media. To select an entry, activate the check box in front of the entry.</p> <p>In the list field, the name is always displayed in the individual nodes as it is stored in the database. If the name was changed, the original name from the zenon project is displayed in brackets.</p> <p>Equipment groups that were deleted in the global project are no longer displayed.</p> <p>If, in the Settings tab, the option Keep the existing data in the Analyzer database was selected, amended objects in the database are deleted or updated.</p> |
| Select all | Clicking on the button selects all equipment groups |
| Deselect all | Clicking on the button deselects all equipment groups. |

| Parameters | Description |
|--|---|
| Alarm/event classes | Information and notes on exporting. |
| List of the alarm/event classes | <p>List field with the possibility to select the alarm/event classes. To select an entry, activate the checkbox in front of the entry.</p> <p>Sorting: Clicking on the column identifier sorts the entries after this column upwards or downwards.</p> <p>Multiple selection: If several rows are highlighted, a click in the check box sets the options for all selected rows.</p> <p>Alarm/event classes that were deleted in the global project are no longer displayed here.</p> <p>If, in the Settings tab, the option <code>Keep the existing data in the Analyzer database</code> was selected, amended objects in the database are deleted or updated.</p> |
| Select all | Selects all entries in the list and activates the checkboxes. |
| Deselect all | Selects all entries in the list and deactivates the check boxes. |

Event groups

Configuration of the alarm/event groups which should be exported from the global project.



| Parameters | Description |
|---------------------------------------|--|
| Alarm/event groups | Information and notes on exporting. |
| List of the alarm/event groups | <p>List field in which you can select alarm/event groups. To select an entry, activate the check box in front of the entry.</p> <p>Sorting: Clicking on the column identifier sorts the entries after this column upwards or downwards.</p> <p>Multiple selection: If several rows are highlighted, a click in the check box sets the options for all selected rows.</p> <p>Alarm/event classes that were deleted in the global project are no longer displayed here.</p> <p>If, in the Settings tab, the option <code>Keep the existing data in the Analyzer database</code> was selected, amended objects in the database are deleted or updated.</p> |
| Select all | Selects all entries in the list and activates the checkboxes. |
| Deselect all | Selects all entries in the list and deactivates the check boxes. |

| Parameters | Description |
|----------------------|--|
| Users | Information and notes on exporting. |
| List of users | <p>List field with possibility to select users. To select an entry, activate the checkbox in front of the entry.</p> <p>Sorting: Clicking on the column identifier sorts the entries after this column upwards or downwards.</p> <p>Multiple selection: If several rows are highlighted, a click in the check box sets the options for all selected rows.</p> <p>If, in the Settings tab, the option <code>Keep the existing data in the Analyzer database</code> was selected, amended objects in the database are deleted or updated.</p> <p>If a user was renamed in zenon they are considered new and recreated in the project. The previous user is deleted.</p> |
| Select all | Selects all entries in the list and activates the checkboxes. |
| Deselect all | Selects all entries in the list and deactivates the check boxes. |

Projects

Configuration of the local projects which should be exported. The names for the server and standby-server can be changed here. To do this:

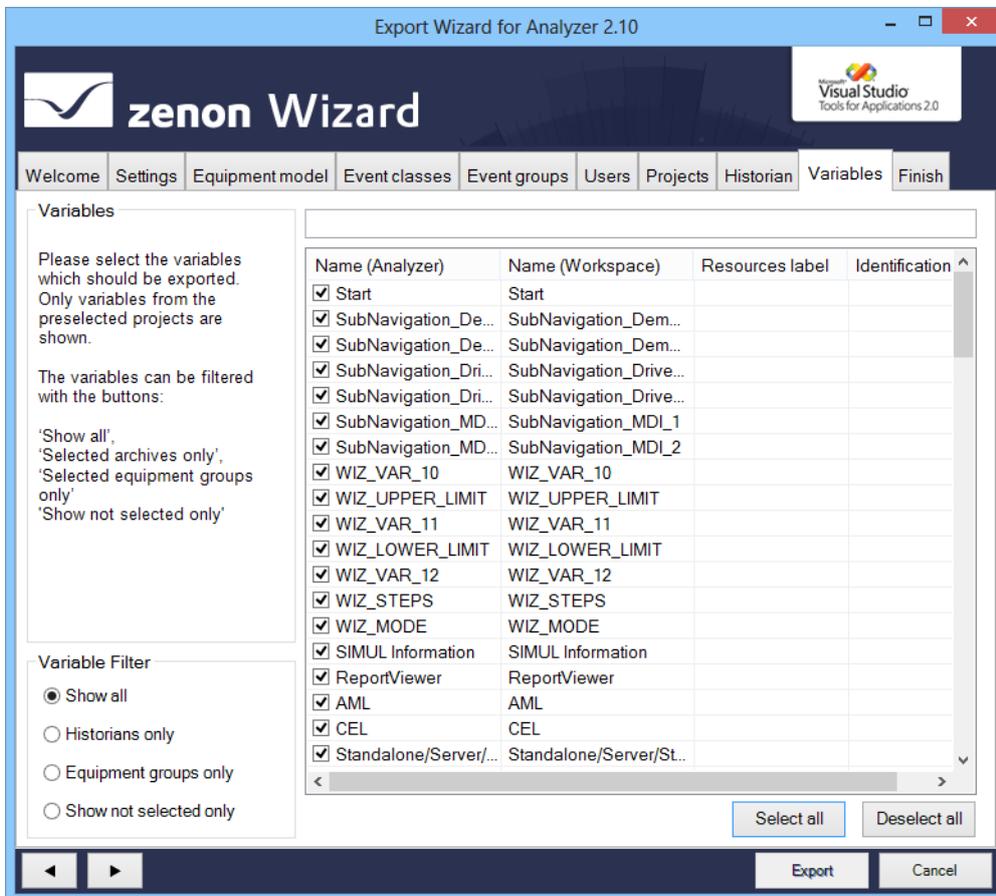
1. Highlight the project in the list of projects
2. Enter the desired name for the server and standby-server

| Parameters | Description |
|---------------------|---|
| Projects | Information and notes on exporting. |
| Project list | <p>List field with possibility to select for projects. To select an entry, activate the checkbox in front of the entry.</p> <p>Sorting: Clicking on the column identifier sorts the entries after this column upwards or downwards.</p> <p>Multiple selection: If several rows are highlighted, a click in the check box sets the options for all selected rows.</p> <p>If, in the Settings tab, the option <i>Keep the existing data in the Analyzer database</i> was selected, amended objects in the database are deleted or updated.</p> |
| Server | Address of the server for the project selected in the list window. |
| Standby | Address of the server for the project selected in the list window. |
| Select all | Selects all entries in the list and activates the checkboxes. |
| Deselect all | Selects all entries in the list and deactivates the check boxes. |

| Parameters | Description |
|--------------|---|
| Historian | Information and notes on exporting. |
| Archive list | <p>List field with possibility to select for archives. To select an entry, activate the checkbox in front of the entry.</p> <p>Sorting: Clicking on the column identifier sorts the entries after this column upwards or downwards.</p> <p>Multiple selection: If several rows are highlighted, a click in the check box sets the options for all selected rows.</p> <p>If, in the Settings tab, the option <i>Keep the existing data in the Analyzer database</i> was selected, amended objects in the database are deleted or updated.</p> |
| Select all | Selects all entries in the list and activates the checkboxes. |
| Deselect all | Selects all entries in the list and deactivates the check boxes. |

Variables

Configuration of the variables from the local project which should be exported. When selecting variables, the entries offered can be prefiltered.



| Parameters | Description |
|--------------------------|--|
| Variables | Information and notes on exporting. |
| Variable Filter | Selection of the variable filter using the following option fields: <ul style="list-style-type: none"> ▶ Show all: All variables are displayed. ▶ Historians only: Only archive variables are displayed. ▶ Equipment groups only: Only variables are displayed which are part of the selected Equipment model (on page 87). ▶ Show not selected only: Only variables that were not selected are displayed. |
| Filter row | Input of alphanumerical characters according to which the List of variables is to be filtered. |
| List of variables | List field with possibility to select variables. To select an entry, activate the checkbox in front of the entry. Sorting: Clicking on the column identifier sorts the entries after this column upwards or downwards. Multiple selection: If several rows are highlighted, a click in the check box sets the options for all selected rows. If, in the Settings tab, the option Keep the existing data in the Analyzer database was selected , amended objects in the database are deleted or updated. |
| Select all | Selects all entries in the list and activates the checkboxes. |
| Deselect all | Selects all entries in the list and deactivates the check boxes. |

RULES FOR THE EXPORT OF VARIABLES WITH REACTION MATRICES

If linked variables are exported with reaction matrices, the limit value text and the status value of the reaction matrix statuses are also exported to the **STATUSNAME** table in the metadata database of the Analyzer. Because only certain states can be evaluated in the reports, they must be pre-sorted using the wizard.

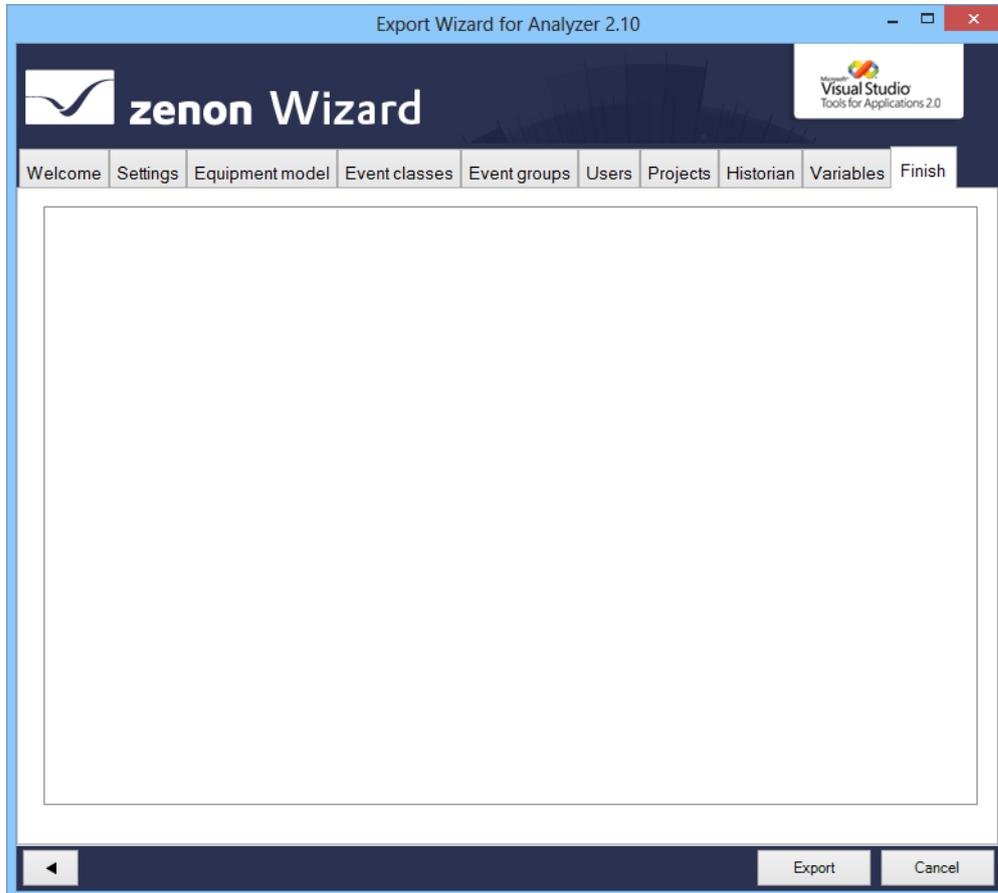
The following statuses of the reaction matrices can be exported or excluded:

| Rema | Rules |
|----------------------|--|
| Numerical | <ul style="list-style-type: none"> ▶ The default status is ignored. ▶ If several statuses with the same status and limit value condition are set, then only the first status and its status text are exported. ▶ Only statuses with a value that is equal to a limit value are exported (limit value condition). ▶ The limit value conditions <code>greater than</code>, <code>less than</code>, <code>as desired</code> and <code>range</code> are ignored. |
| Multi numeric | <ul style="list-style-type: none"> ▶ Correspond to the rules for numeric. ▶ Substatuses are also ignored. |
| Binary | <ul style="list-style-type: none"> ▶ Only statuses that have value bits set consistently from right to left in the bit mask (0 or 1) are set. <p>For example:</p> <pre>10.. 1100 100 1 </pre> <p>The following are ignored, for example</p> <pre> 100 110..100 1 </pre> |
| Multi binary | <ul style="list-style-type: none"> ▶ Correspond to the rules for Binary. ▶ In addition, substatuses and statuses are also ignored with edge definitions in the bit mask. |
| String | <ul style="list-style-type: none"> ▶ Are completely ignored and not exported. |

Finish

To export the configured data:

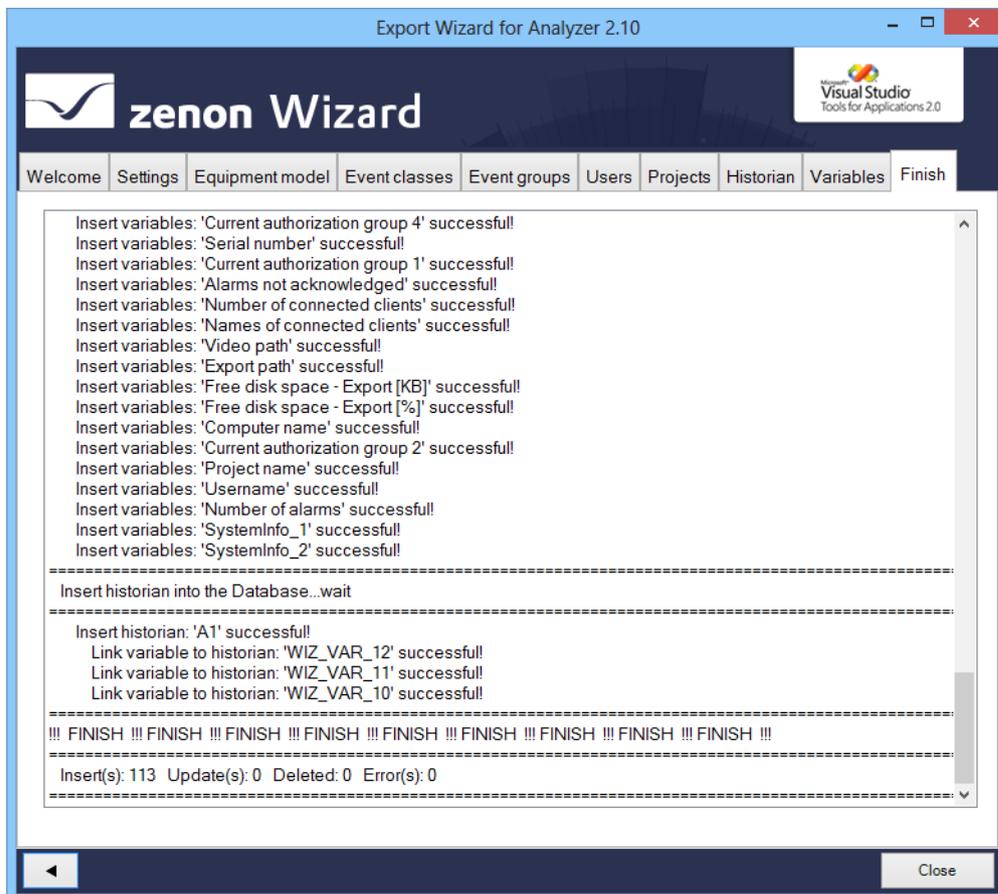
1. In the Finish tab, click on the **Export** button



2. the export is started

- The exported elements are shown in the output window with the attendant success and error messages

In addition, the number of objects that have been added, replaced or deleted, and the number of errors that occurred are shown.



- Click on **Close** to close the wizard

RECONFIGURING THE WIZARD

To reconfigure the wizard:

- Open the Settings (on page 82) tab
- click on button **Load data**
- Configure the tabs

7.1.4 Close wizard

To close the wizard:

- ▶ Click on the **cancel** button
- ▶ A dialog asks if the configuration should be saved
 - Clicking on **yes** writes the settings configured in the Settings (on page 82) tab to the registry and closes the wizard; the wizard is opened with this configuration next time it is started
 - Clicking on **no** closes the wizard without saving the configuration

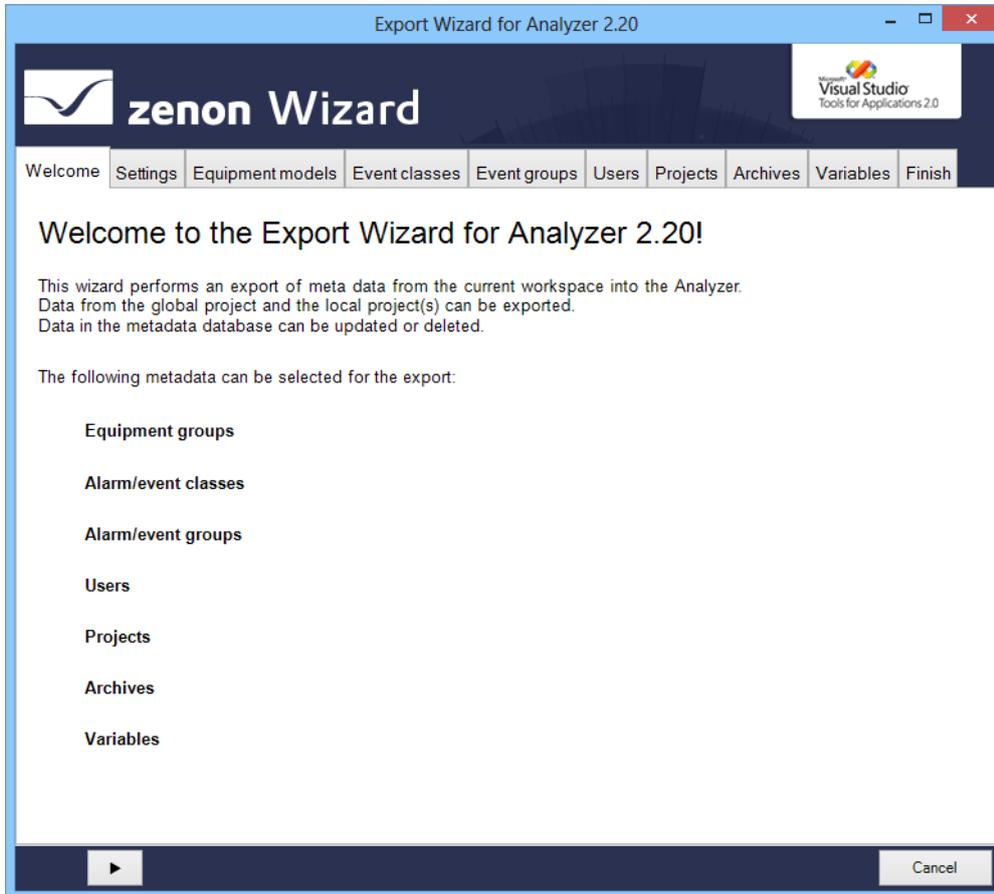
7.2 Export Wizard for Analyzer 2.20

The zenon Export Wizard for Analyzer 2.20 supports the export of metadata from zenon from version 7.0 SP0 for the zenon Analyzer (on page 10) 2.20.

The following can be exported:

- ▶ Data from the global project
 - Equipment models
 - Alarm/event classes
 - Alarm/event groups
 - User
- ▶ Data from selected projects:
 - Archives
 - Variables, with:
 - Visual name (see **visual names** (on page 104) section)
 - Meaning (see **meaning** (on page 104) section)
 - Parameter for waterfall diagram (see **parameter waterfall chart** (on page 105) section)

- ▶ Sankey diagrams (see **Sankey charts** (on page 77) section)



Note: The wizard is only available in English.

COMPATIBILITY:

The Analyzer Export Wizard works with zenon from version 7.10 SP0. There is a separate wizard available for each supported version of zenon.

7.2.1 Sankey diagrams

The wizard automatically reads the definition for Sankey diagrams from all activated projects (on page 82) and the global project. These are in the zenon project folder `\Files\Others`. For this, the following applies:

- ▶ Only valid XML files that were created for the zenon Analyzer are taken into account. Diagrams that have the `Trueand Valid` attributes set to True in the `sankey` XML file are valid. All other Sankey diagrams are ignored and not loaded.
- ▶ All Sankey diagram definitions are written to the zenon Analyzer metadata database in the `SANKEY_DIAGRAMM`, `SANKEY_OBJECT` and `SANKEY_VARIABLE` tables.
- ▶ Diagrams are added depending on the setting for the `Keep the existing data in the Analyzer database` option (on page 82):
 - `Active`: Only new diagrams are added to the Analyzer database.
 - `Inactive`: New diagrams are added and existing diagrams are updated.
- ▶ Diagrams deleted in zenon (XML files) are not deleted in the Analyzer. Diagrams can only be deleted in the database directly in zenon Analyzer.
- ▶ For the adding or updating of diagrams, the following must apply to all required zenon variables:
 - Be selected via the `variables` (on page 100) tab
or
 - already be in the database

If variables that are required for the Sankey diagram are not selected for export, the Sankey diagram is not exported.

- ▶ If the Sankey diagram already exists, the metadata database tables are updated according to the changes.
- ▶ Clicking on the **Export** button in the **Finish** tab starts the export of the Sankey diagrams from zenon in to zenon Analyzer.

The diagrams are only exported once all other data such as projects or variables have been exported. The success of the export is shown in the message list of the **Finish** tab.



Attention

The import of Sankey diagrams is carried out automatically in the background. There are no user interface or configuration options available.

7.2.2 Install and call up wizard

The wizard is automatically installed with zenon for each supported version of zenon Analyzer.

STARTING THE WIZARD

For wizards to be displayed, the settings for VBA and/or VSTA must be set correctly in file `zenon6.ini`:

[VBA]

EIN=1

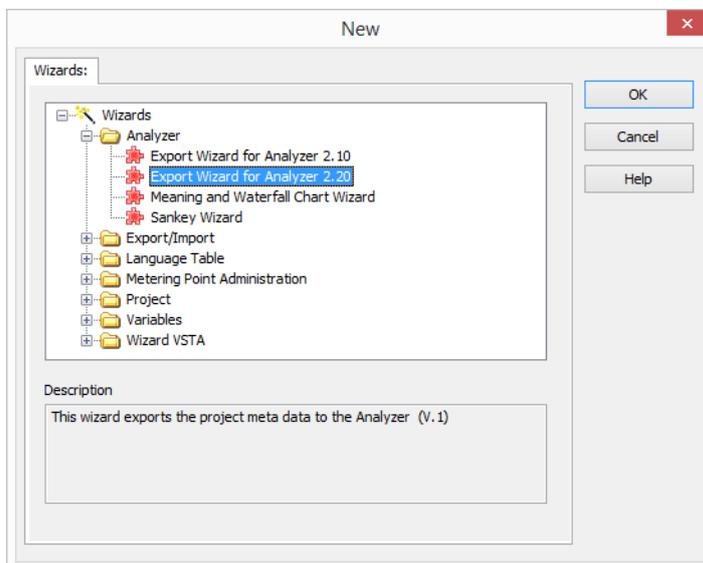
[VSTA]

ON=1

If VSTA wizards are not displayed although the settings are correct, set entry `LOADED=` to 1 in area [VSTA].

To start the wizard:

1. In zenon open menu **F**ile
or press the shortcut `Alt+F12`
2. Select the entry **Wizards...**
3. The selection dialog is opened
4. Navigate to the **Analyzer** node
5. Select the desired version of the **Analyzer Export Wizard**.

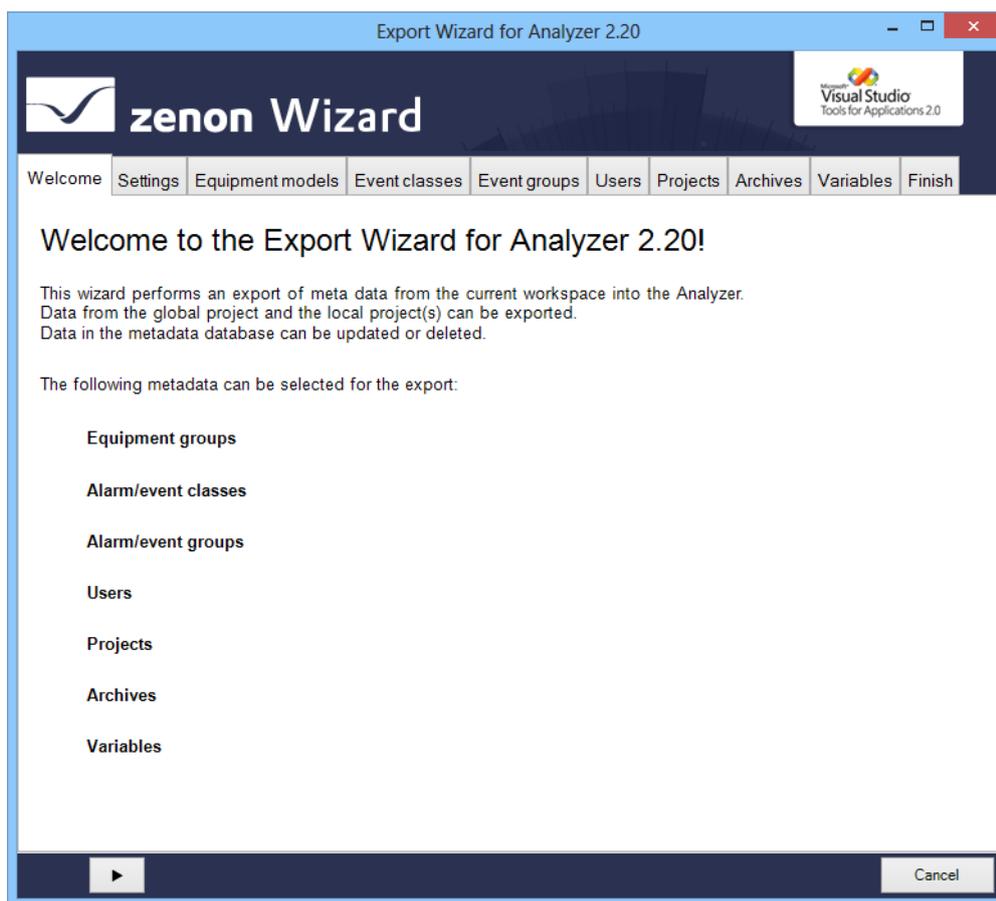


6. Start the wizard by clicking on 

7.2.3 Start window

When the wizard is opened, you receive an overview page that lists all exportable objects.

The individual objects are configured for export in their own respective tabs.



Click on the button with the **arrow** to navigate through the configuration (on page 80) of the export.

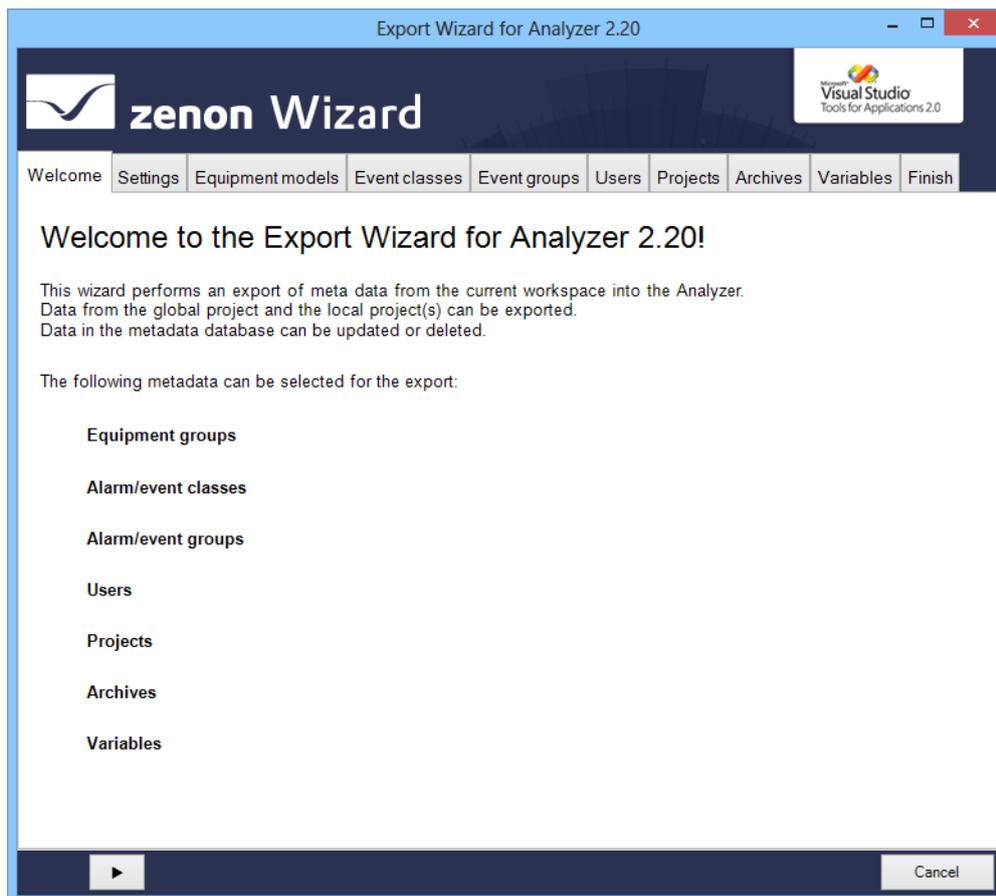
7.2.4 Configuration

When exporting with the Analyzer Export Wizard, all modules available for export are offered for detailed configuration. Only the selected data is exported. The export of Sankey diagrams (on page 77) is carried out in the background, without the possibility of configuration. You get to the next level by

clicking on the button with the **right arrow**. You can also select individual tabs directly by clicking on the title of the tab.

The following tabs are available for configuration of the export:

- ▶ Settings (on page 82): Options for the export of metadata
- ▶ Equipment models: (on page 87) Export of the equipment groups from the global project
- ▶ Event classes (on page 90): Alarm/Event classes from global project
- ▶ Event groups (on page 92): Alarm/event groups from global project
- ▶ Users (on page 94): User from global project
- ▶ Projects (on page 95): Projects from workspace
- ▶ Archives (on page 98): Archives of the selected projects
- ▶ Variables (on page 100): Variables of the selected projects
- ▶ Finish (on page 105): Start of the export and output of the result



Navigation

Navigation through the tabs is carried out by means of the navigation bar in the lower area of the wizard window:



| Button | Description |
|-------------|--|
| Arrow left | Goes back one tab in the wizard process. |
| Arrow right | Goes forward one tab in the wizard process. |
| Export | Exports the data to the Analyzer database. Is only active if the Finish tab is opened. |
| Cancel | Closes the wizard without exporting. When closing, a dialog asks if the configuration is to be saved <ul style="list-style-type: none"> ▶ Yes: Writes the settings set in the Settings (on page 82) tab to the registry and closes the wizard. The wizard is opened with this configuration the next time it is started. ▶ No: Closes the wizard without saving the configuration The configuration is saved for each specific user. |

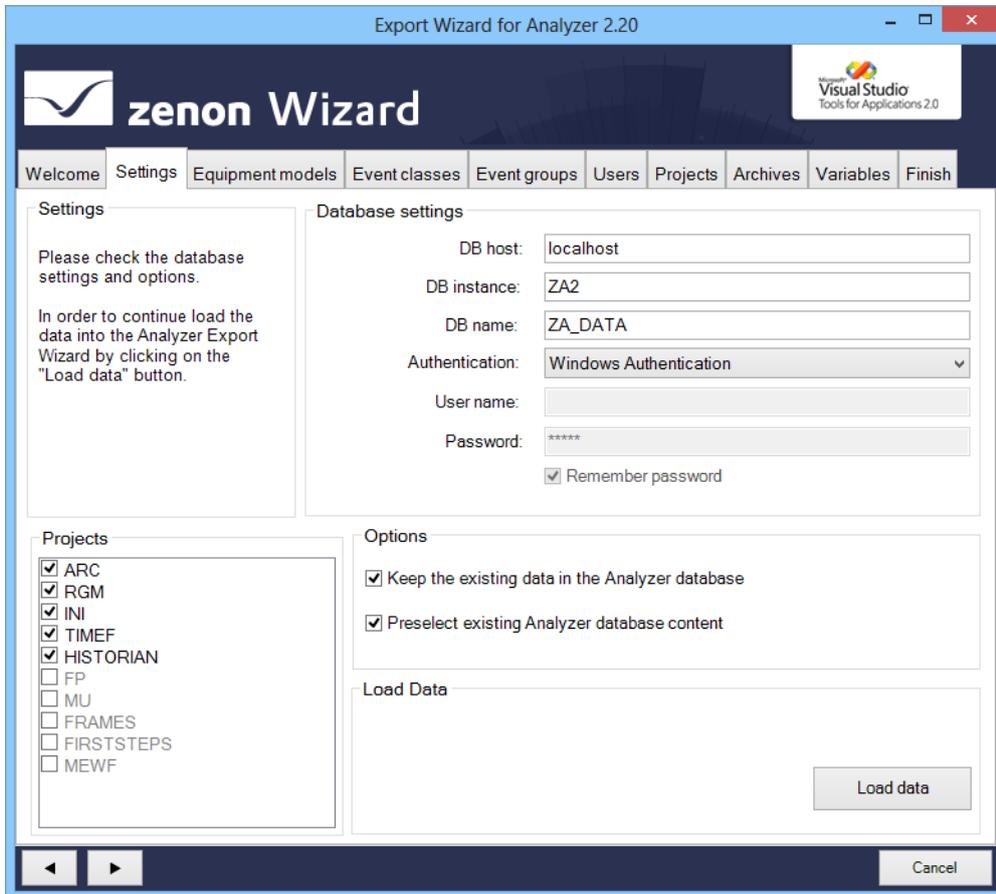
Individual tabs can also be selected by clicking directly on the title of the tab.

Settings

In this tab:

1. You define the database to which the wizard connects
2. You define general options for exporting

3. You start the data readout



SETTINGS

| Parameters | Description |
|------------|---|
| Settings | Information and hints about current export processes. |

DATABASE SETTINGS

| Parameters | Description |
|-------------------|---|
| Database settings | Connection settings to the Analyzer server. |
| DB host | Computer on which the database is located. |
| DB instance | Instance of the database. |
| DB name | Name of the database. |
| Authentication | Type of authentication: <ul style="list-style-type: none"> ▶ Windows Authentication: Windows login information is used. ▶ SQL Server Authentication: Login with data from an SQL server user. |
| User name | Entry of the user name. Only for login with SQL Server Authentication. Display only for Windows Authentication. |
| Password | Entry of the password. Only for login with SQL Server Authentication. No input possible with Windows Authentication. |
| Remember password | Password is saved for next connection. Only for login with SQL Server Authentication. Inactive with Windows Authentication. |

PROJECTS

| Parameters | Description |
|------------|--|
| Projects | List of the available projects in the current zenon workspace. The checkbox shows whether the data of the project is used: |

| | |
|--|---|
| | <ul style="list-style-type: none"> ▶ Active: Project is used. <p>Projects that are active in the memory are pre-selected. Inactive projects can be added by means of selection with a checkbox:</p> |
|--|---|

OPTIONS

| Parameters | Description |
|---|---|
| Options | General options for the export. |
| Keep the existing data in the Analyzer database | <ul style="list-style-type: none"> ▶ Active: Only completely new entries from the workspace are written to the database. Note: If linkings from variables, archives etc. are changed or new ones are created, these are not transferred. If these are also transferred, the checkbox must be set to Inactive ▶ Inactive: Entries in the database are also updated or deleted. New entries are created, amended entries are updated and deleted entries are removed. Exception: Projects and Sankey diagrams are not deleted. |
| Preselect existing Analyzer database content | <ul style="list-style-type: none"> ▶ Active: Entries already present in the database are preselected in the individual areas. |

LOAD DATA

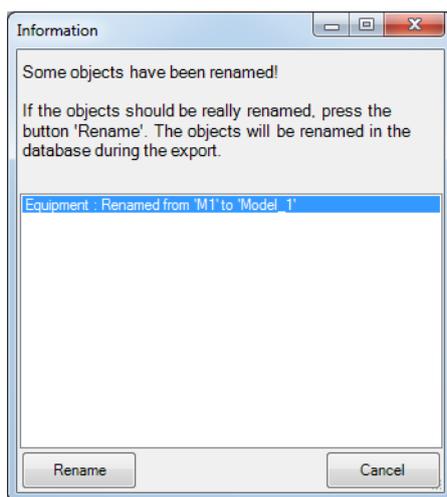
| | |
|-----------|--|
| Load Data | <p>Clicking on the button loads, depending on the Load every project of this workspace into the memory parameter - the data from the currently loaded project into the wizard.</p> <p>In doing so, a check is made to see if data is present in the Analyzer database. Pre-existing data is combined with the data from the workspace and loaded into the wizard. In the event of naming conflicts, a dialog to rectify the error is called up.</p> <p>If the loading of data has been successfully concluded, the export can be configured in the following tabs.</p> |
|-----------|--|

RENAMING OBJECTS

Objects must always be named the same in the Analyzer database and in zenon. If objects that are already present in the database are renamed in zenon, these changes can be accepted or rejected when the data is combined. Rejection of the changes leads to the wizard being closed, because only objects with identical names can be handled correctly.

DIALOG FOR RENAMING

In the event of conflicts in the naming of objects, a dialog for dealing with the error is opened:



| Parameters | Description |
|-------------------------|---|
| List of amended objects | <p>Contains all objects that were changed. Previous name and new name are displayed. The following renamed objects are displayed in the list:</p> <ul style="list-style-type: none"> ▶ Name of the equipment models ▶ Names of the alarm/event classes ▶ Names of the alarm/event groups ▶ Project name ▶ Variable name <p>Exceptions:</p> <ul style="list-style-type: none"> ▶ Users are always recreated ▶ Archive names are only created once in the database as a Visualname and can be overwritten in the zenon Analyzer |
| Rename | Renames all objects listed in the database, closes the dialog and stops reading in data. |
| Cancel | Leaves the previous name in the database, finishes reading in data and closes the wizard. |

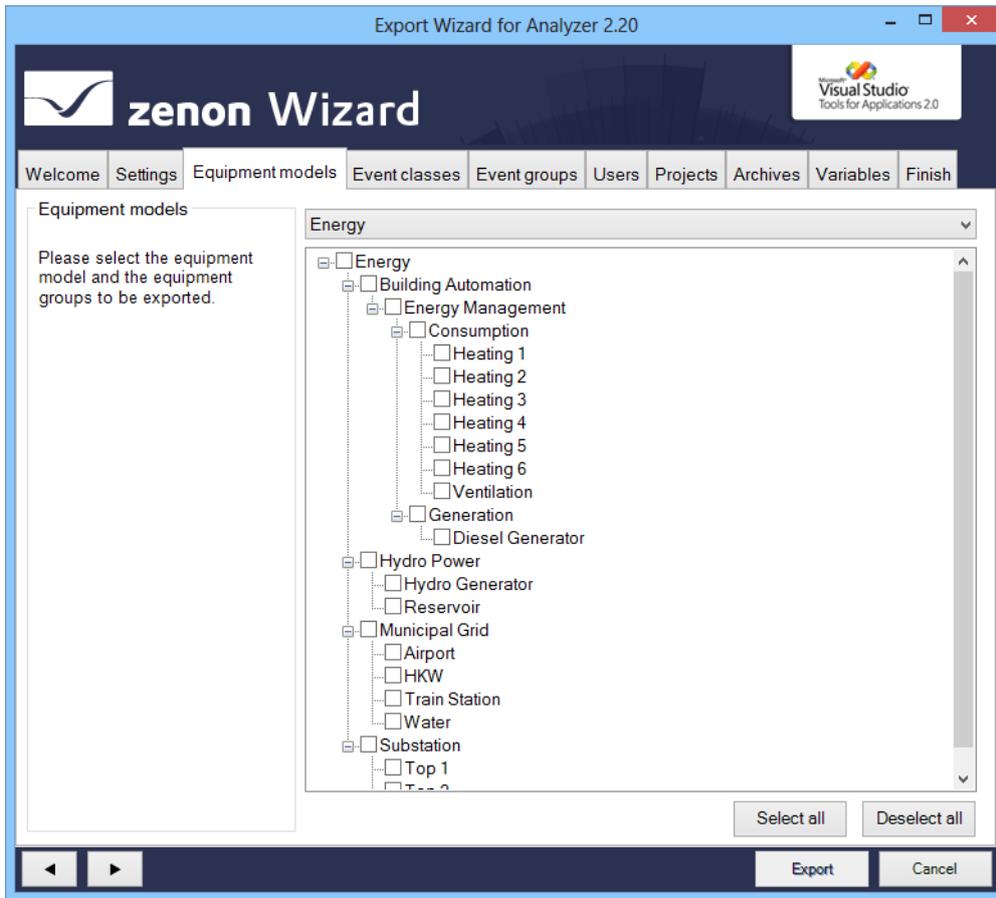
Equipment models

Configuration of the model group which should be exported from the global project.

Attention

Each equipment group in zenon may only be assigned to one individual time model.

If several time model groups are assigned, the Analyzer Wizard Export uses the first that it finds and exports this to the metadata of the Analyzer. Other time model groups are ignored.



| Parameters | Description |
|---------------------------------------|---|
| Equipment models | Information and notes on exporting. |
| Selection of equipment/medium | Drop-down list to select a model that is offered in the Equipment models/media list for configuration. |
| List of equipment models/media | <p>List field with the possibility to select equipment models and model groups or media. To select an entry, activate the check box in front of the entry.</p> <p>In the list field, the name is always displayed in the individual nodes as it is stored in the database. If the name was changed, the original name from the zenon project is displayed in brackets.</p> <p>Equipment groups that were deleted in the global project are no longer displayed.</p> <p>If, in the Settings tab, the Keep the existing data in the Analyzer database option is deselected, amended objects in the database are deleted or updated.</p> |
| Select all | Clicking on the button selects all equipment groups |
| Deselect all | Clicking on the button deselects all equipment groups. |

| Parameters | Description |
|--|--|
| Event classes | Information and notes on exporting. |
| List of the alarm/event classes | <p>List field with the possibility to select the alarm/event classes. To select an entry, activate the checkbox in front of the entry.</p> <p>Sorting: Clicking on the column identifier sorts the entries after this column upwards or downwards.</p> <p>Multiple selection: If several lines are highlighted, the selection applies for all selected lines.</p> <p>Alarm/event classes that were deleted in the global project are no longer displayed here.</p> <p>If, in the Settings tab, the <i>Keep the existing data in the Analyzer database</i> option is deselected, amended objects in the database are deleted or updated.</p> |
| Select all | Selects all entries in the list and activates the checkboxes. |
| Deselect all | Selects all entries in the list and deactivates the check boxes. |

| Parameters | Description |
|---------------------------------------|---|
| Event groups | Information and notes on exporting. |
| List of the alarm/event groups | <p>List field in which you can select alarm/event groups. To select an entry, activate the check box in front of the entry.</p> <p>Sorting: Clicking on the column identifier sorts the entries after this column upwards or downwards.</p> <p>Multiple selection: If several lines are highlighted, the selection applies for all selected lines.</p> <p>Alarm/event classes that were deleted in the global project are no longer displayed here.</p> <p>If, in the Settings tab, the <i>Keep the existing data in the Analyzer database</i> option is deselected, amended objects in the database are deleted or updated.</p> |
| Select all | Selects all entries in the list and activates the checkboxes. |
| Deselect all | Selects all entries in the list and deactivates the check boxes. |

| Parameters | Description |
|----------------------|---|
| Users | Information and notes on exporting. |
| List of users | <p>List field with possibility to select users. To select an entry, activate the checkbox in front of the entry.</p> <p>Sorting: Clicking on the column identifier sorts the entries after this column upwards or downwards.</p> <p>Multiple selection: If several lines are highlighted, the selection applies for all selected lines.</p> <p>If, in the Settings tab, the Keep the existing data in the Analyzer database option is deselected, amended objects in the database are deleted or updated.</p> <p>If a user was renamed in zenon they are considered new and recreated in the project. The previous user is deleted.</p> |
| Select all | Selects all entries in the list and activates the checkboxes. |
| Deselect all | Selects all entries in the list and deactivates the check boxes. |

Projects

Configuration of the local projects which should be exported. The names for `Server 1` and `Server 2` can be changed here.

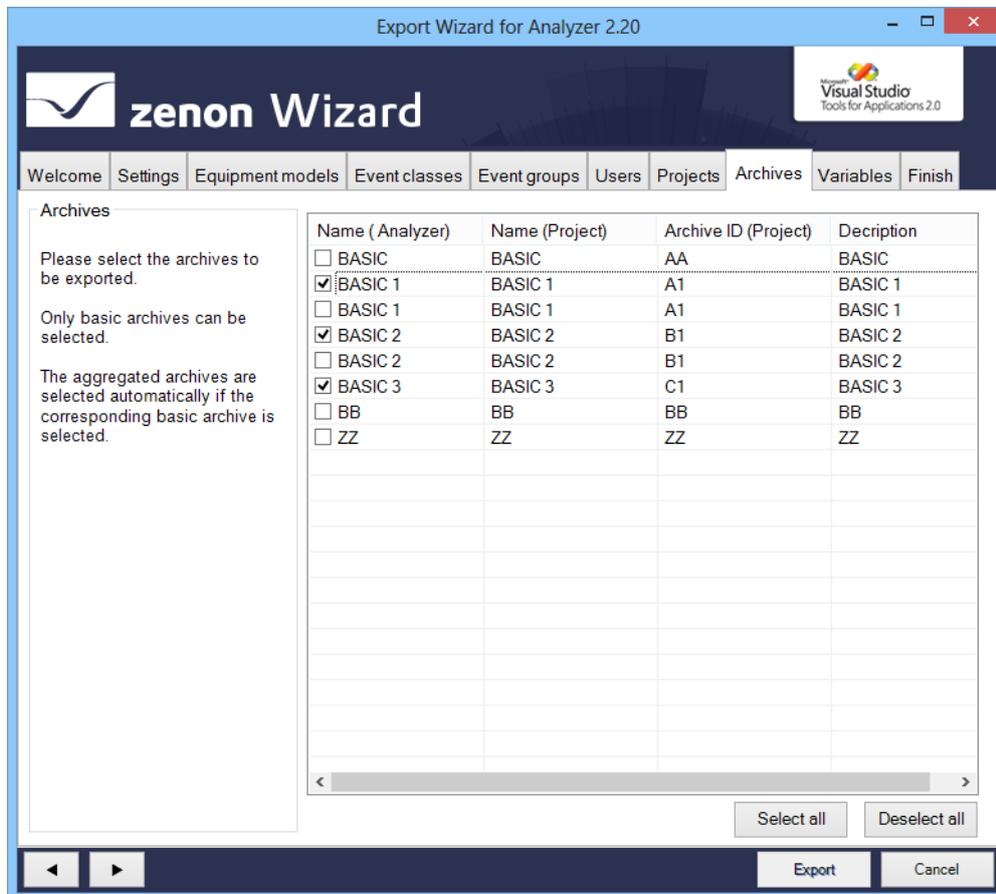
To change the name of a Server or Standby Server:

1. Highlight the project in the list of projects.
2. Enter the desired name for `Server 1` and `Server 2`.

| Parameters | Description |
|---------------------|--|
| Projects | Information and notes on exporting. |
| Project list | <p>List field with possibility to select for projects. To select an entry, activate the checkbox in front of the entry.</p> <p>Sorting: Clicking on the column identifier sorts the entries after this column upwards or downwards.</p> <p>Multiple selection: If several lines are highlighted, the selection applies for all selected lines.</p> <p>If, in the Settings tab, the Keep the existing data in the Analyzer database option is deselected, amended objects in the database are deleted or updated.</p> |
| Server 1 | Address of the Server 1 for the project selected in the list window. |
| Server 2 | Address of the Server 2 for the project selected in the list window. |
| Select all | Selects all entries in the list and activates the checkboxes. |
| Deselect all | Selects all entries in the list and deactivates the check boxes. |

Archives

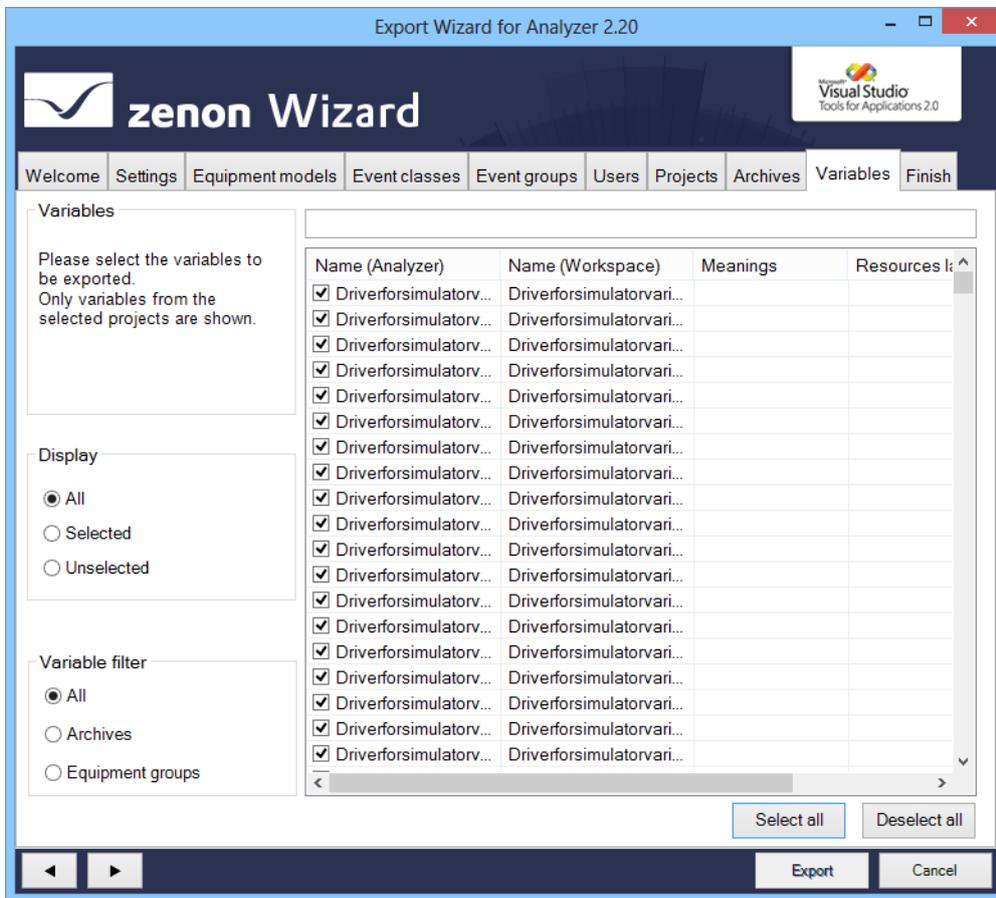
Selection of the archive from the selected projects (on page 95). Only the main archive is displayed. Compression archives are not displayed in the list, but are also selected with the main archives and written to the database.



| Parameters | Description |
|--------------|--|
| Archives | Information and notes on exporting. |
| Archive list | <p>List field with possibility to select for archives. To select an entry, activate the checkbox in front of the entry.</p> <p>Sorting: Clicking on the column identifier sorts the entries after this column upwards or downwards.</p> <p>Multiple selection: If several lines are highlighted, the selection applies for all selected lines.</p> <p>If, in the Settings tab, the Keep the existing data in the Analyzer database option is deselected, amended objects in the database are deleted or updated.</p> |
| Select all | Selects all entries in the list and activates the checkboxes. |
| Deselect all | Selects all entries in the list and deactivates the check boxes. |

Variables

Configuration of the variables to be exported from the selected local projects (on page 95). When selecting variables, the entries offered can be prefiltered.



| Parameters | Description |
|--------------------------|---|
| Variables | Information and notes on exporting. |
| Display | <p>Selection of which variables are displayed, via the following option fields:</p> <ul style="list-style-type: none"> ▶ All: All variables are displayed. ▶ Selected: Only variables that have already been selected are displayed. ▶ Unselected: Only variables that have not yet been selected are displayed. |
| Variable filter | <p>Selection of the variable filter using the following option fields:</p> <ul style="list-style-type: none"> ▶ All: All variables are displayed. ▶ Archives: Only archive variables are displayed. ▶ Equipment groups: Only variables are displayed which are part of the selected Equipment model (on page 87). |
| Filter row | Input of alphanumerical characters according to which the List of variables is to be filtered. |
| List of variables | <p>List field with possibility to select variables. To select an entry, activate the checkbox in front of the entry.</p> <p>The following are displayed:</p> <ul style="list-style-type: none"> ▶ Name (Analyzer): Name in zenon Analyzer. ▶ Name (Workspace): Can be issued from zenon 7.20 in the Editor by means of the Visual name property. Must be unique in the project. See also chapter Visual name (on page 104) ▶ Meaning: Can be issued from zenon 7.20 in the Editor by means of the Meaning property. See also chapter Meaning (on page 104) ▶ Ressource labelIt corresponds to the Resources label option in zenon. Is used for zenon up to and including version 7.11 for meaning (on page 104) and parameter waterfall diagram (on page 105). From version 7.20, there are separate properties available for this in zenon. |

| | |
|---------------------|---|
| | <p>► Identification: It corresponds to the Identification property in zenon.</p> <p>Sorting: Clicking on the column identifier sorts the entries after this column upwards or downwards.</p> <p>Multiple selection: If several lines are highlighted, the selection applies for all selected lines.</p> <p>If, in the Settings tab, the Keep the existing data in the Analyzer database option is deselected, amended objects in the database are deleted or updated.</p> |
| Select all | Selects all entries in the list and activates the checkboxes. |
| Deselect all | Selects all entries in the list and deactivates the check boxes. |

RULES FOR THE EXPORT OF VARIABLES WITH REACTION MATRICES

If linked variables are exported with reaction matrices, the limit value text, the limit value color and the status value of the reaction matrix statuses are also exported to the **STATUSNAME** table in the metadata database of the Analyzer. Because only certain states can be evaluated in the reports, they must be pre-sorted using the wizard.

The following statuses of the reaction matrices can be exported or excluded:

| Rema | Rules |
|----------------------|--|
| Numerical | <ul style="list-style-type: none"> ▶ The default status is ignored. ▶ If several statuses with the same status and limit value condition are set, then only the first status and its status text are exported. ▶ Only statuses with a value that is equal to a limit value are exported (limit value condition). ▶ The limit value conditions <code>greater than</code>, <code>less than</code>, <code>as desired</code> and <code>range</code> are ignored. |
| Multi numeric | <ul style="list-style-type: none"> ▶ Correspond to the rules for numeric. ▶ Substatuses are also ignored. |
| Binary | <ul style="list-style-type: none"> ▶ Only statuses that have value bits set consistently from right to left in the bit mask (0 or 1) are set. <p>For example:</p> <pre>10.. 1100 100 1 </pre> <p>The following are ignored, for example</p> <pre> 100 110..100 1 </pre> |
| Multi binary | <ul style="list-style-type: none"> ▶ Correspond to the rules for Binary. ▶ In addition, substatuses and statuses are also ignored with edge definitions in the bit mask. |
| String | <ul style="list-style-type: none"> ▶ Are completely ignored and not exported. |

IMPORT OF VARIABLE INFORMATION FROM ZENON

The following properties in the zenon Analyzer variable properties group provide information for reports in the zenon Analyzer:

- ▶ `Visual name`: Entry of a display name of the variable in zenon Analyzer. This must be unique in the project. The check is not carried out when issued in zenon, but when imported into zenon Analyzer. If this property is changed after the first export to a zenon Analyzer, these changes are not applied in the zenon Analyzer.

- ▶ **Meaning:** Entry of the (Meaning) of a variable in the zenon Analyzer. Entry is manual or by means of the **Meaning and Waterfall Chart Wizard**. Several meanings are separated by a comma.
Syntax: [Meaning1], [Meaning2], ..., [MeaningN]
- ▶ **Parameter for waterfall diagram:** Parameters of a variable for a waterfall diagram in zenon Analyzer. Entry is manual or by means of the **Meaning and Waterfall Chart Wizard**. The individual parameters are separated by a comma. Several waterfalls are divided by a semicolon.
Syntax: [model name], [row index], [index in row], [color code];

Visual name

The wizard reads the `Analyzer/Visual name` property when loading the zenon workspace from zenon 7.20 and displays this for each variable in the **variables** (on page 100) tab. The following applies for visual names:

- ▶ The name must be unique for each project.
- ▶ Names in a project that appear several times are highlighted in red.
- ▶ The `Visual name` are entered when writing the data to the metadata database.
- ▶ In the event of duplicated name within a project, the `Visual name` is only entered for the first variable found. For the second variable, the `Name of the variables` is entered in zenon.
- ▶ The `Visual name` is only set when the variable is exported for the first time. If this is subsequently changed in the Editor, this change is no longer applied in the metadata database. Changes are of course applied to a new metadata database when exporting to a new database.
- ▶ With a version of zenon before 7.20, the visual name is always taken from the zenon `Identification` property.

Meaning

From zenon 7.20, the wizard reads the `Analyzer/Meaning` property and displays this for each variable in the **variables** (on page 100) tab.

The following applies for meanings:

- ▶ If there are entries for `Meaning`, the corresponding entries in the `Resources label` are ignored.
- ▶ If there are no entries, corresponding entries from the `Resources label` are accepted.
- ▶ The identification `ME=` is no longer necessary but can continue to be used. If a variable is assigned several meanings, a comma is used as a separator.
- ▶ With a version of zenon before 7.20, the meaning is always taken from the zenon `Resources label` property.

Parameter waterfall diagram

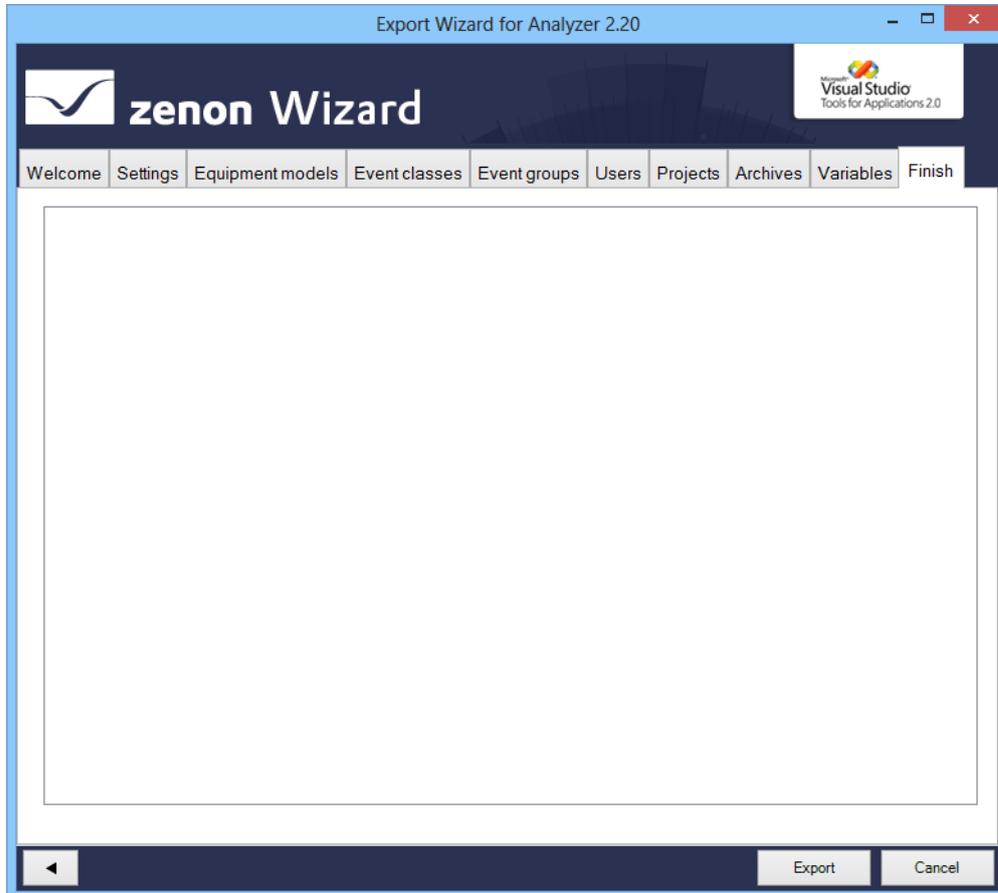
The wizard reads the `Analyzer/Parameter for waterfall diagram` property when loading the zenon workspace from zenon 7.20 and displays this for each variable in the `variables` (on page 100) tab. The following applies for waterfall:

- ▶ If there are entries for `Parameter for waterfall diagram`, the corresponding entries in the `Resources label` are ignored.
- ▶ If there are no entries, corresponding entries from the `Resources label` are accepted.
- ▶ The identification `WF=` is no longer necessary but can continue to be used. The individual elements of a model are separated by a comma. If several waterfall models are assigned to a variable, a semicolon is used as a separator.
- ▶ With versions of zenon before 7.20, the waterfall parameters are always taken from the zenon `Resources label` property.

Finish

To export the configured data:

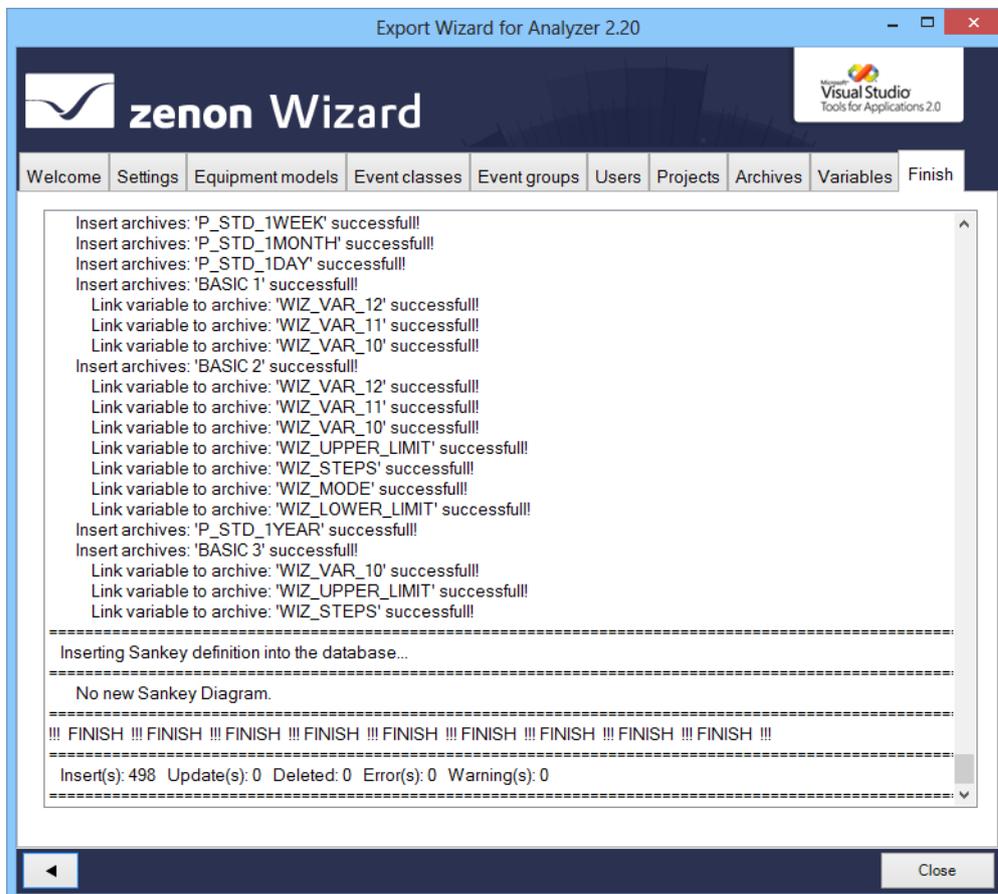
1. In the Finish tab, click on the **Export** button.



2. the export is started

- The exported elements are shown in the output window with the attendant success and error messages

In addition, the number of objects that have been added, replaced or deleted, and the number of errors that occurred are shown.



- Click the `close` button to close the wizard

RECONFIGURING THE WIZARD

To reconfigure the wizard:

- Open the `settings` (on page 82) tab.
- Click on the `Load data` button.
- Configure the tabs.

7.2.5 Close wizard

To close the wizard:

- ▶ Click on the **cancel** button .
- ▶ A dialog prompts whether the configuration should be saved.
 - **yes**: writes the settings set in the **settings** (on page 82) tab to the registry and closes the wizard. The wizard is opened with this configuration the next time it is started. The configuration is saved for each specific user.
 - **no**: Closes the wizard without saving the configuration

7.3 Meaning and Waterfall Chart Wizard

The **Meaning and Waterfall Chart Wizard** helps you prepare a zenon project for the processing of variable information in the zenon Analyzer.

Note: The wizard is only available in English.



Attention

If the **Meaning and Waterfall Chart Wizard** is for a project with distributed engineering (Multi-User), **Enable changes** must be activated in the zenon Editor for:

- ▶ The project (context menu of the project)
- ▶ The variables (context menu of the variables or the **Variables** module)

Otherwise the changes made by the **Meaning and Waterfall Chart Wizard** cannot be applied. These are then discarded.

The **Meaning and Waterfall Chart Wizard** helps you, when engineering projects in zenon, to configure:

- ▶ Meanings (Meaning)
- ▶ Waterfall charts (Waterfall)

The wizard writes the configuration in the corresponding properties of the variables selected in the wizard. The target properties depend on the version of zenon that is used.

FROM ZENON 7.20

► Meanings:

The Meanings are written in the `Analyzer/Meaning` property. Several entries are separated by a comma (,).

► Waterfall:

The parameters for waterfall diagrams are written in the `Analyzer/Parameter for waterfall diagram` property. The parameters for a diagram are separated by a comma (,). Several diagrams are separated by a semi colon (;)

The following applies for both properties: If there are still entries in the `General/Resources label` property from previous versions of zenon, these are deleted and entered in the corresponding properties for zenon 7.20.

UP TO ZENON 7.11:

Meanings and parameters for waterfall diagrams are written to the `Resources label variable` property. In doing so, the prefix `WF=` is added for meanings and the prefix `WF=` is added for waterfall parameters.

For further information, see the **Analyzer Wizards** (on page 47) chapter.

7.3.1 Install and call up wizard

The wizard is automatically installed together with zenon.

STARTING THE WIZARD

For wizards to be displayed, the settings for VBA and/or VSTA must be set correctly in file `zenon6.ini`:

[VBA]

EIN=1

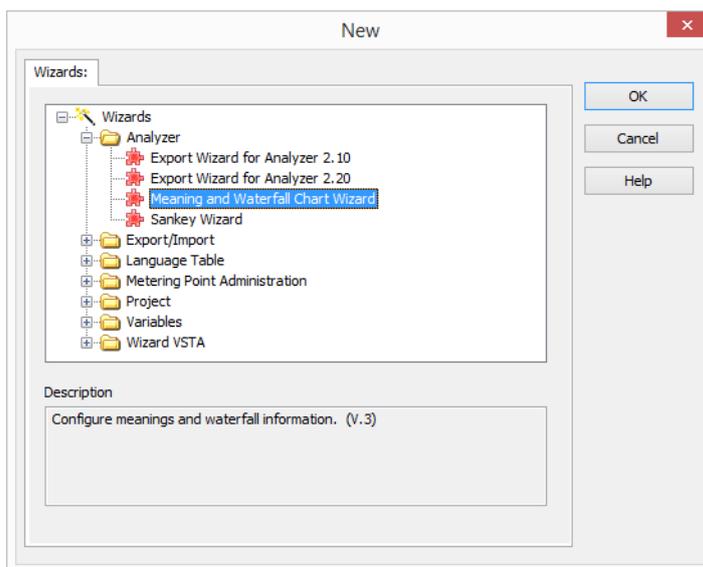
[VSTA]

ON=1

If VSTA wizards are not displayed although the settings are correct, set entry **LOADED=** to 1 in area `[VSTA]`.

To start the wizard:

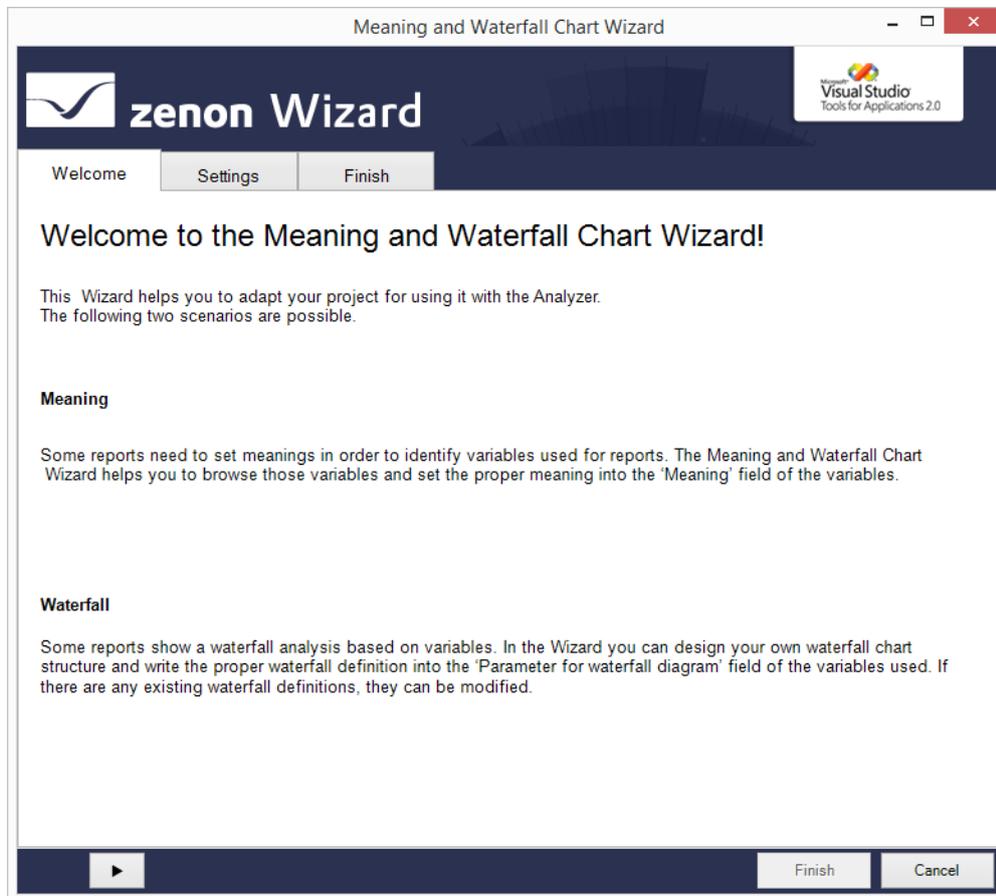
1. In zenon open menu **File**
or press the shortcut **Alt+F12**
2. Select the entry **Wizards...**
3. The selection dialog is opened
4. Navigate to the **Analyzer** node
5. Select the **Meaning and Waterfall Chart Wizard**.



6. Start the wizard by clicking on **OK**.

7.3.2 Start window

When opening the wizard, you receive an overview that lists and explains all objects that can be configured. Configuration starts with the **settings** (on page 114) tab.



MEANING

zenon variables often receive technically-orientated names in the project. This naming is often not meaningful enough for display in a zenon Analyzer report. The variables can be given a unique name for display in the zenon Analyzer report. This name is saved to the corresponding variable property depending on the zenon version. Target property and entry are automatically selected by the wizard.

After import into zenon Analyzer, this name is used for reports without the existing variable name needing to be changed. For details, see the Analyzer Wizards (on page 47) chapter in the online help.

WATERFALL

Some zenon Analyzer reports can display a waterfall diagram using zenon variables. To do this, information on the appearance of the diagram must already be present in the resource label of the selected variable. The structure and appearance of a waterfall diagram can be defined with a wizard. The waterfall information is saved to the corresponding variable property depending on the zenon version. Target property and entry are automatically selected by the wizard. For details, see the Analyzer Wizards (on page 47) chapter in the online help.

NAVIGATION

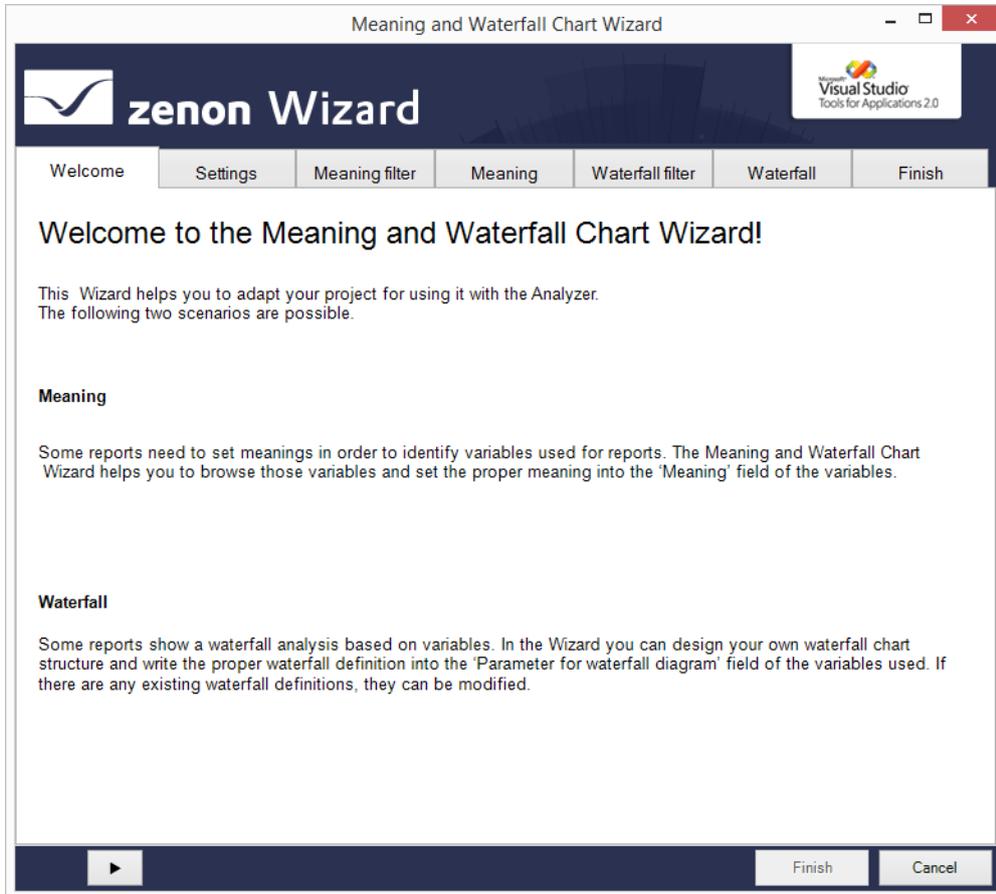
Click on the button with the **arrow** to navigate (on page 113) through the configuration (on page 112) of the export.

7.3.3 Configuration

The **Meaning and Waterfall Chart Wizard** is configured with the following tabs:

- ▶ **Settings** (on page 114): Loading the data from the projects.
Only once the data to be loaded is selected are other tabs available for meanings and/or waterfall diagrams.
- ▶ **Meaning filter** (on page 116): Filter settings for meanings.
- ▶ **Meaning** (on page 117): Selection and assignment of the meanings.
- ▶ **Waterfall filter** (on page 121): Filter settings for waterfall.
- ▶ **Waterfall** (on page 122): Selection of variables for waterfall diagram.

- ▶ **Finish** (on page 126): Acceptance of configuration and configuration by the wizard.



Navigation

Navigation through the tabs is carried out by means of the navigation bar in the lower area of the wizard window:

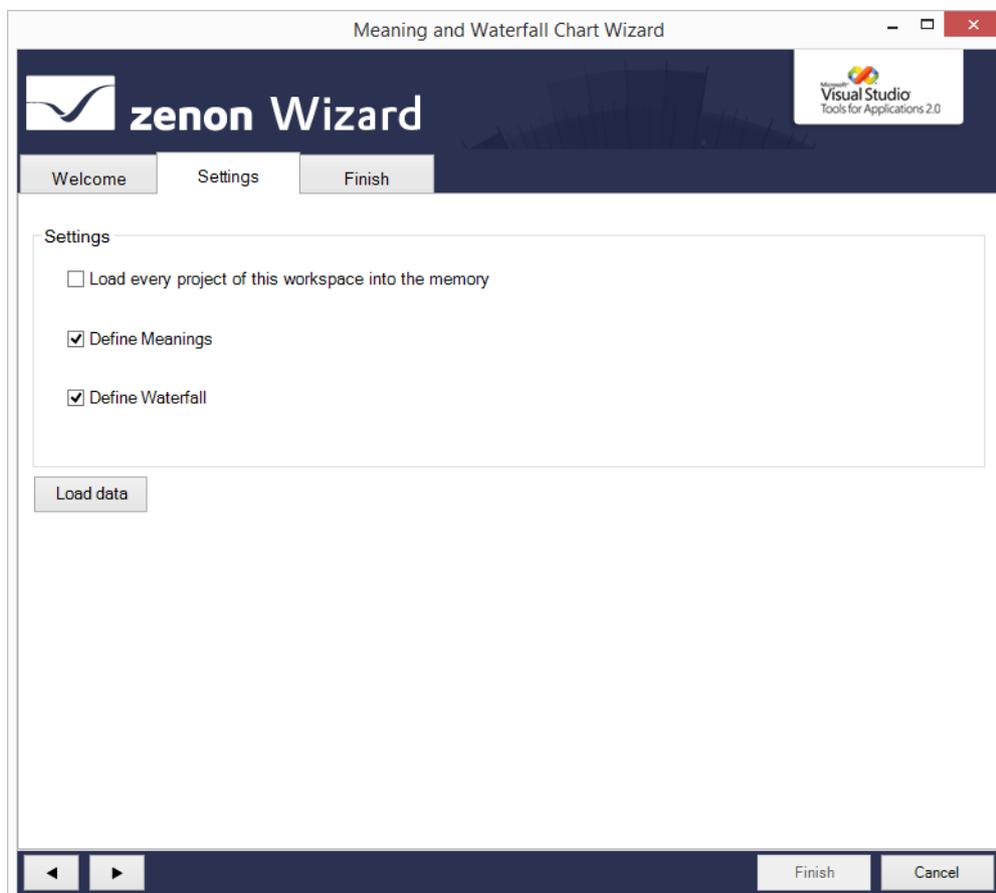


| Button | Description |
|-------------|---|
| Arrow left | Goes back one tab in the wizard process. |
| Arrow right | Goes forward one tab in the wizard process. |
| Finish | Writes all changes to the zenon variable in the Editor and closes the wizard. |
| Cancel | Ends the wizard without making changes. |

Individual tabs can also be selected by clicking directly on the title of the tab.

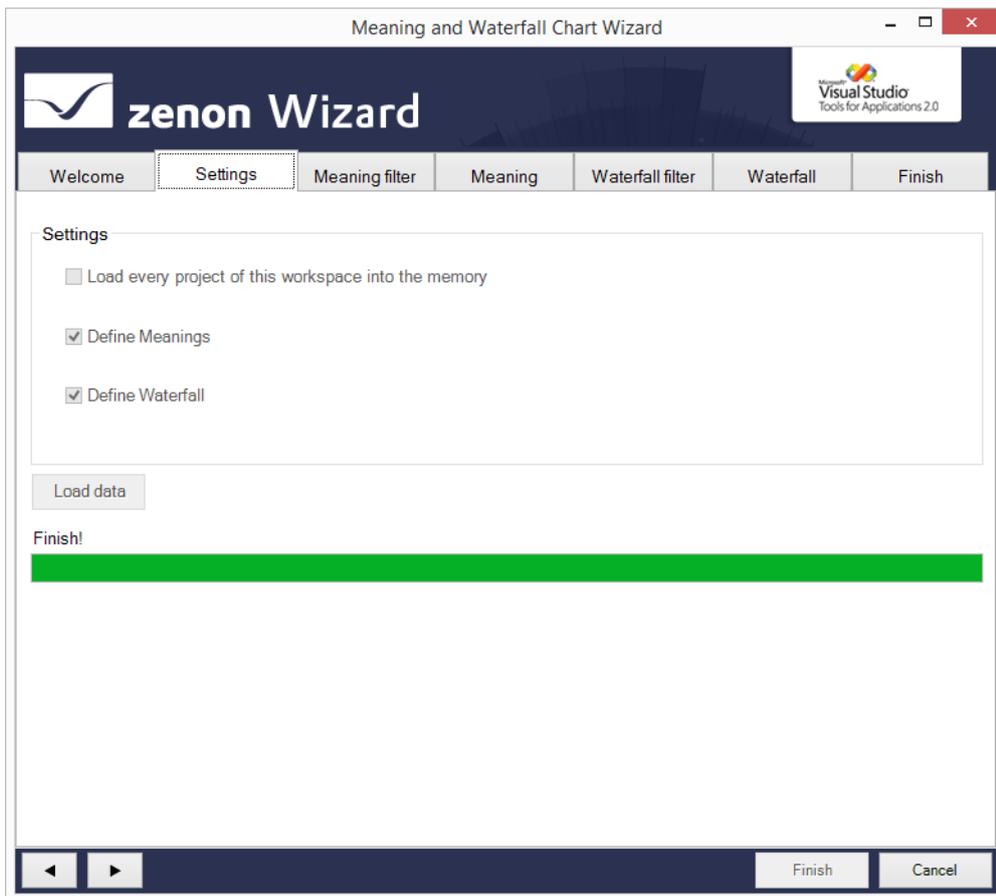
Settings

Selection and loading of the tabs to be configured.



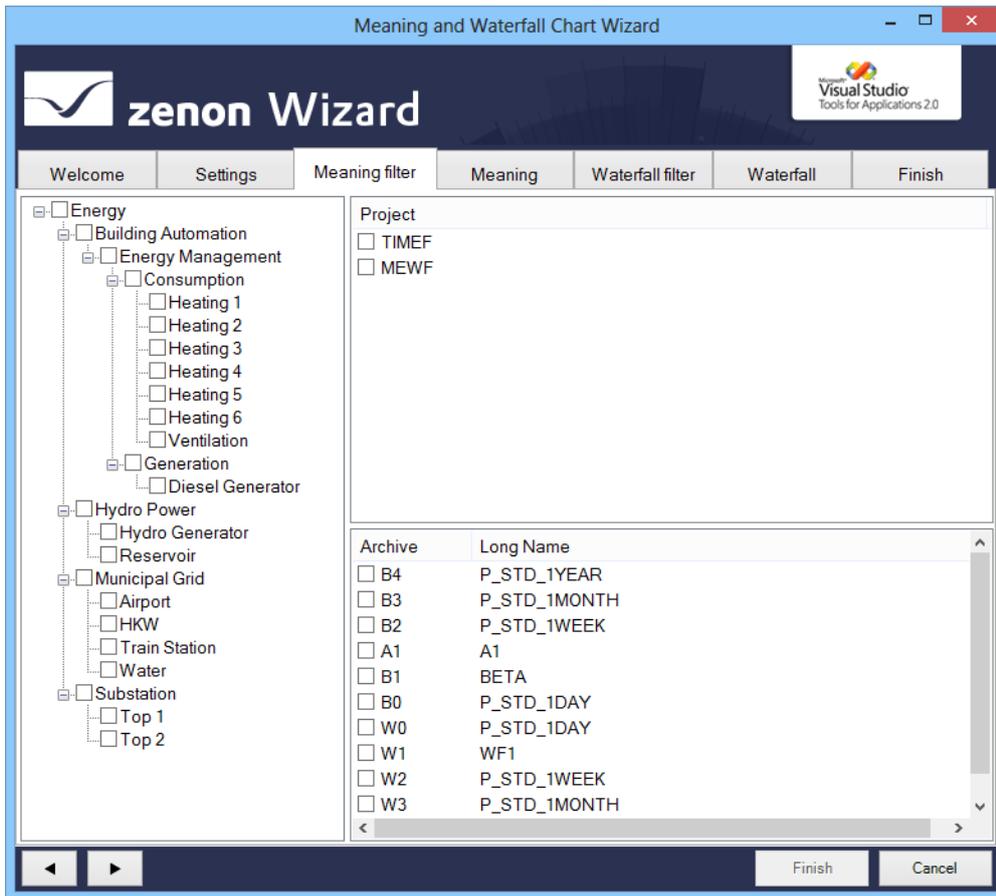
| Parameters | Description |
|--|---|
| Settings | Setting for which tabs are to be loaded. |
| Load every project of this workspace into the memory | Active: Projects from the workspace that are not in the memory are loaded. Once the wizard has been ended or once the Finish action has been executed, these are removed. |
| Define Meanings | Active: The Meaning filter (on page 116) und Meaning (on page 117) tabs are loaded. |
| Define Waterfall | Active: The Waterfall filter (on page 121) and Waterfall (on page 122) tabs are loaded. |
| Load data | Clicking on the button searches through the variables of all projects loaded in the workspace and loads the required information for the filter and editing the variables. The corresponding tabs are displayed in the wizard. A progress bar is displayed during the loading process. |

After loading, all tabs are available for configuration.



Meaning filter

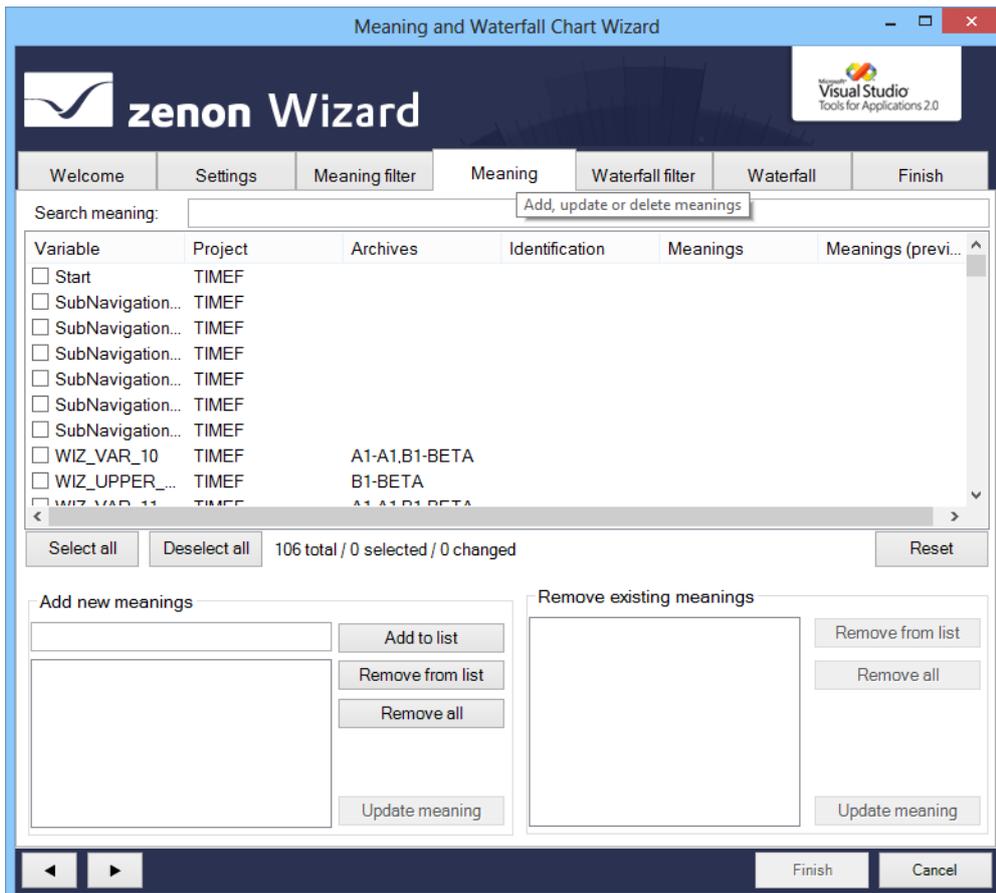
The variables to be edited are pre-filtered with this tab. If an object is not selected in any group, all variables are available in the **Meaning** (on page 117) tab.



| Parameters | Description |
|--------------------------|---|
| List of equipment groups | Filtering for individual models by activating the respective checkboxes. No selection: Variables of all equipment models are selected. |
| List of projects | Filtering for individual checkboxes by activating the respective checkboxes. No selection: Variables of all projects are selected. |
| List of archives | Filtering for individual archives by activating the respective checkboxes. No selection: Variables of all archives are selected. |

Meaning

The meanings of the variables are edited in this tab. Variables can be selected and given new meanings, and existing meanings can be removed.



VARIABLES SELECTION

| Parameters | Description |
|--------------------|---|
| Search meaning | <p>Input of a search term lists all variables with their corresponding meanings.</p> <p>The list is immediately updated with the entry of a character. Placeholders cannot be used.</p> |
| List Variablen | <p>List of the variables available after filtering.</p> <p>Selection of variables for editing: Activation of the checkbox before the variables.</p> <p>Existing meanings of the variables are shown in the Meanings column. In doing so, only meanings are displayed. Other entries or entries for the waterfall chart are hidden or ignored when editing.</p> <p>The variables can be sorted by clicking on a column label.</p> |
| Select all | Clicking this selects all variables for editing. |
| Deselect all | Clicking this deselects all variables. |
| Display statistics | <p>Display how many variables:</p> <ul style="list-style-type: none"> ▶ Are present in the list ▶ Have been selected ▶ Have been changed |
| Reset | <p>Resets all changes that have been made by clicking on Update meaning.</p> <p>Note: Changes are only accepted finally after clicking on Finish.</p> |

ADD MEANINGS

| | |
|------------------|---|
| Add new meanings | <p>Allows meanings to be added to variables.</p> <p>New meanings are entered in the input field, added to the list and assigned to the selected variables using the Update meaning button.</p> |
| Eingabefeld | <p>Entry of a new meaning.</p> <p>Maximum length: 50 characters</p> |
| Liste Meanings | Lists all meanings that have been created. |

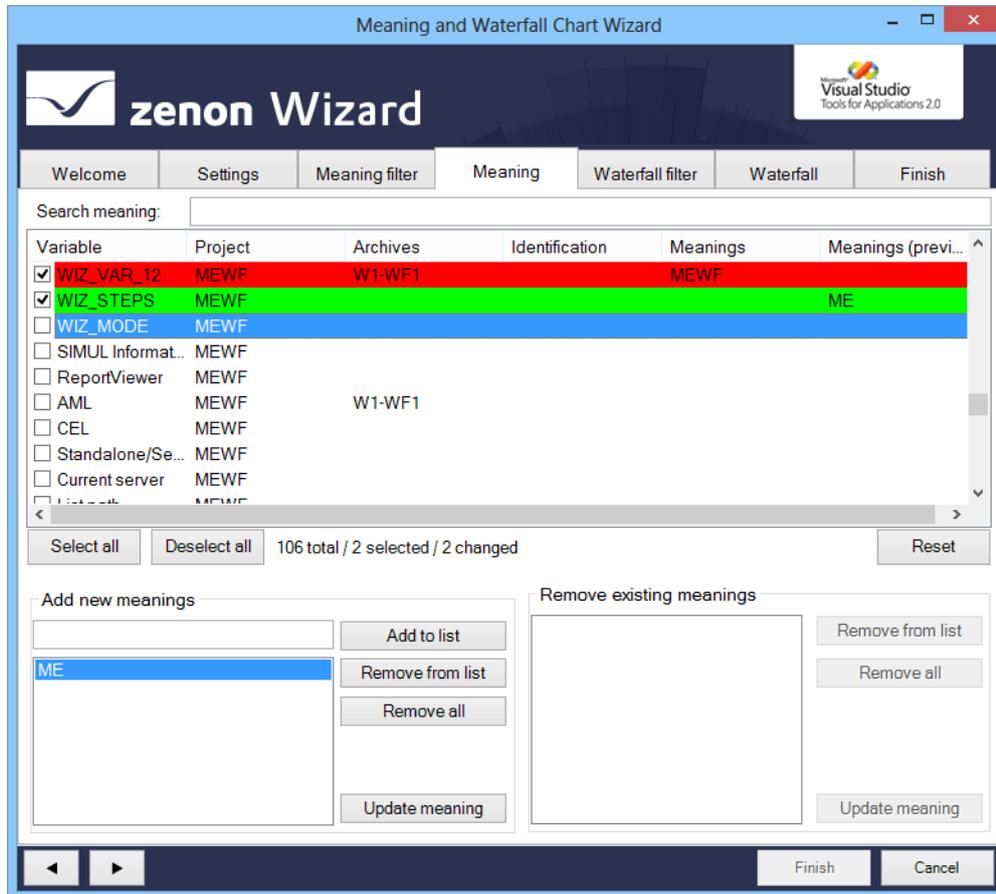
| | |
|-------------------------|--|
| Add to list | Adds entry from text field to the list of meanings. |
| Remove from list | Deletes selected entry from the list of Meanings . |
| Remove all | Deletes all entries from the list of Meanings . |
| Update meaning | Clicking this assigns a new meaning to all entries in the list of Meanings . The meanings to be added are displayed in the Meanings (preview) column; the row with the variables has a green background. |

REMOVE MEANINGS

| | |
|---------------------------------|---|
| Remove existing meanings | <p>Allows meanings to be removed from variables.</p> <p>If a variable is selected, all assigned meanings are displayed in the list of Meanings. Meanings that are to be retained are deleted from the list by clicking on the Remove from list button. Clicking on the Update meaning button removes the meanings from the selected variables.</p> |
| List Meanings | Lists all of the meanings assigned to the selected variables. |
| Remove from list | Deletes selected entry from the list of Meanings . |
| Remove all | Deletes all entries from the list of Meanings . |
| Update meaning | Clicking this removes all entries in the list of Meanings from the selected variables. The row with the variables has a red background. |

Attention: Changes and new entries are only written to the zenon variable once the **Finish** action in the **Finish** tab has been executed.

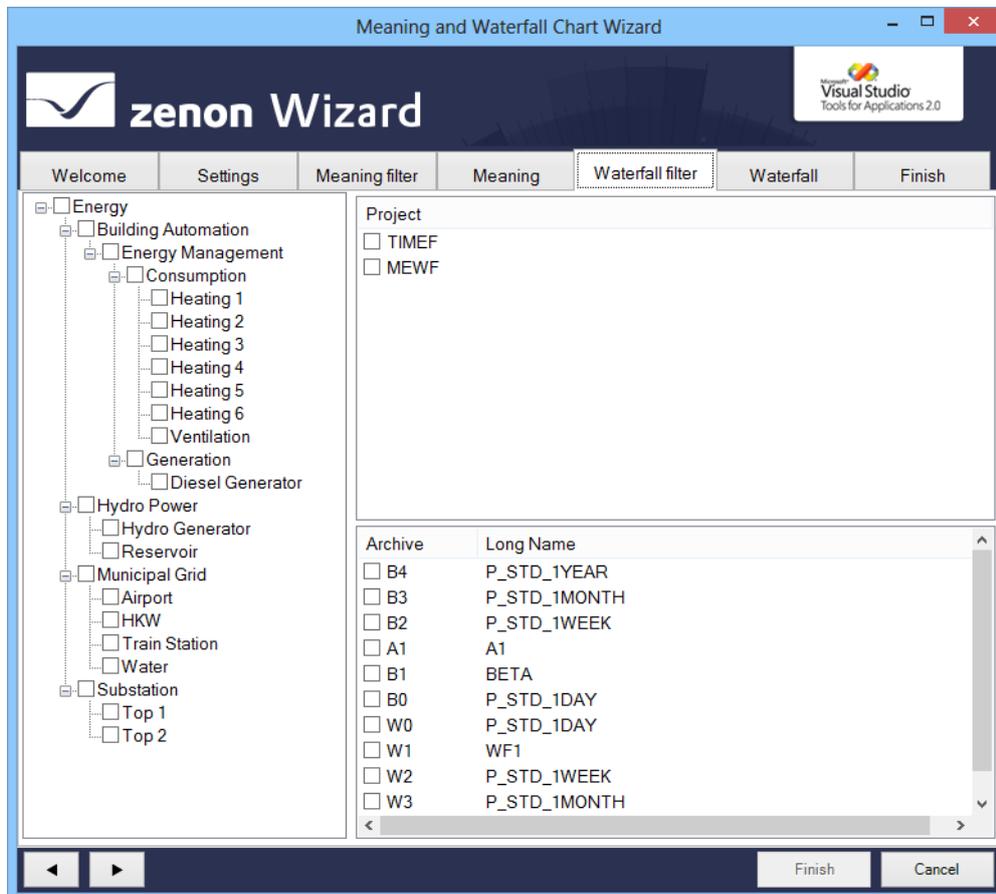
EXAMPLE OF COLOR IDENTIFICATION



- ▶ Red: All Meanings of the variable have been deleted.
- ▶ Green: Variable has received a new Meaning.

Waterfall filter

You define the waterfall diagram in this tab. To do this, all variables must be assigned to the same equipment group. If variables from an archive are used, the archive and the variables must be assigned to the same equipment group.



| Parameters | Description |
|--------------------------|----------------------------------|
| List of equipment groups | Selection of an equipment group. |
| List of projects | Selection of a project. |
| List of archives | Select an archive. |

An equipment group and a project must be selected. As an option, it is also possible to select an archive from the appropriate equipment group.

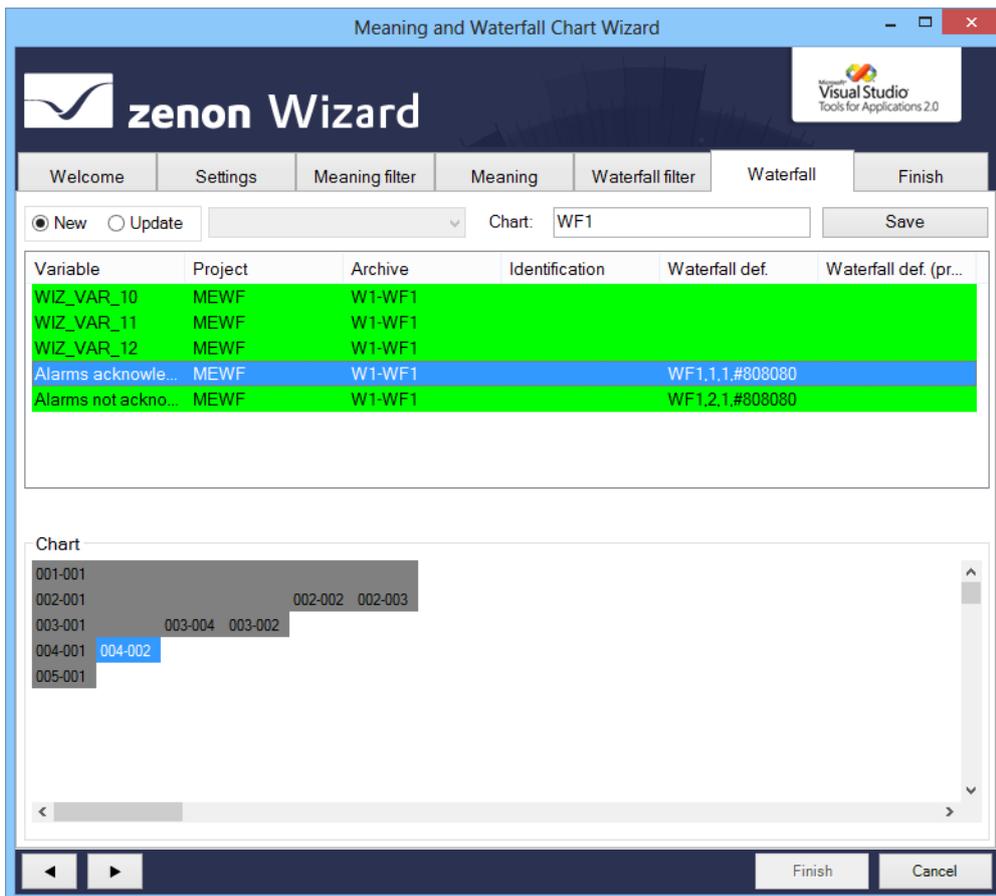
No variables can be displayed in the **Waterfall** (on page 122) tab:

- ▶ No project was selected

- ▶ No equipment group was selected
- ▶ Objects were selected that are not assigned to the same equipment group

Waterfall

Waterfall definitions can be created and edited on this tab:



The screenshot shows the 'Meaning and Waterfall Chart Wizard' dialog box. The 'Waterfall' tab is selected. The table below shows the following data:

| Variable | Project | Archive | Identification | Waterfall def. | Waterfall def. (pr... |
|---------------------|---------|---------|----------------|-----------------|-----------------------|
| WIZ_VAR_10 | MEWF | W1-WF1 | | | |
| WIZ_VAR_11 | MEWF | W1-WF1 | | | |
| WIZ_VAR_12 | MEWF | W1-WF1 | | | |
| Alarms acknowle... | MEWF | W1-WF1 | | WF1.1.1.#808080 | |
| Alarms not ackno... | MEWF | W1-WF1 | | WF1.2.1.#808080 | |

The 'Chart' section shows a waterfall chart with the following levels:

- 001-001
- 002-001
- 003-001
- 004-001
- 005-001

Additional levels shown in the chart include 003-004, 003-002, 002-002, and 002-003. The level 004-002 is highlighted in blue.

| Parameters | Description |
|-----------------------|--|
| New | Active: A new waterfall definition is created. |
| Update | Active: An existing waterfall definition is edited. Select from drop-down list. |
| Chart | Entry of a name for a new waterfall definition. |
| Save | Clicking on the button saves the entries. Note: All changes are only written to the zenon variable once the Finish action in the Finish tab has been executed. |
| Variablenliste | Lists all variables that correspond to the configuration on the Waterfall filter (on page 121) tab. Bool and String variables are not displayed. The list can also be sorted by clicking on the column heading. Existing waterfall definitions are displayed in the Waterfalls column. New or amended waterfall definitions are displayed in the Waterfalls (preview) column. |
| Chart | Waterfall definitions can be created or amended here by dragging & dropping. |

Note: All changes are only written to the zenon variable once the **Finish** action in the **Finish** tab has been executed.

CREATING A WATERFALL DEFINITION

To create a new waterfall definition:

1. Select **New**.
2. Move the desired variable by drag&drop in sequence in the **Chart** area
3. Arrange the bar according to the rules
4. Enter a name in the **Chart** input field
5. Click **save**.
6. The configuration is saved in the **Waterfalls (preview)** column
7. Switch to tab **Finish**.
8. Click **Finish**.

RULES

The following rules apply when creating and editing waterfall definitions:

1. For the first bar, the variable in the upper left corner of the character area must be dragged.
2. The second bar can only be inserted below the first bar.
3. All other bars can be inserted either below the existing bar or to the right of an existing bar.
 - The first row can only contain one bar.
 - If a bar is inserted to the right of an existing bar, the bar above this is extended.
4. The selected variable is displayed in green.
5. Each variable can only be used once.
6. The bar contains an index:
 - First number: Row index
 - Second number: Column index
7. The name of the selected variable is displayed in the tooltip of the bar.

CHANGING THE COLOR OF A BAR

To change the color of a bar:

1. Right-click on the bar
2. The dialog to select the color opened:
3. select the desired color
4. Click **OK**.

MOVING THE BAR

Bars can be moved if:

- ▶ It is a short bar
- ▶ The movement is within a row

To move a bar, drag & drop it to the new position. All other bars between the old and the new position are moved by one place.

DELETING A BAR

Bars can be deleted if:

- ▶ It is a short bar
- ▶ There is no other bar below or to the right

To delete a bar, drag & drop it to a free location outside the Chart field (but not in the variable list).

The bar is deleted. All other bars are moved accordingly.

SAVING A WATERFALL DEFINITION

To save a waterfall definition:

1. Enter a name in the **Chart** input field
2. Click on the button **Save**.
3. The definition is saved in the variable list and the new entry is displayed in the **Waterfalls (preview)** column
4. The new waterfall definition is only written to the zenon variable after clicking on the **Finish** button in the **Finish** tab.

EDITING A WATERFALL DEFINITION

To edit a new waterfall definition:

1. Select **Update**.
2. Select the desired waterfall definition from the drop-down list.

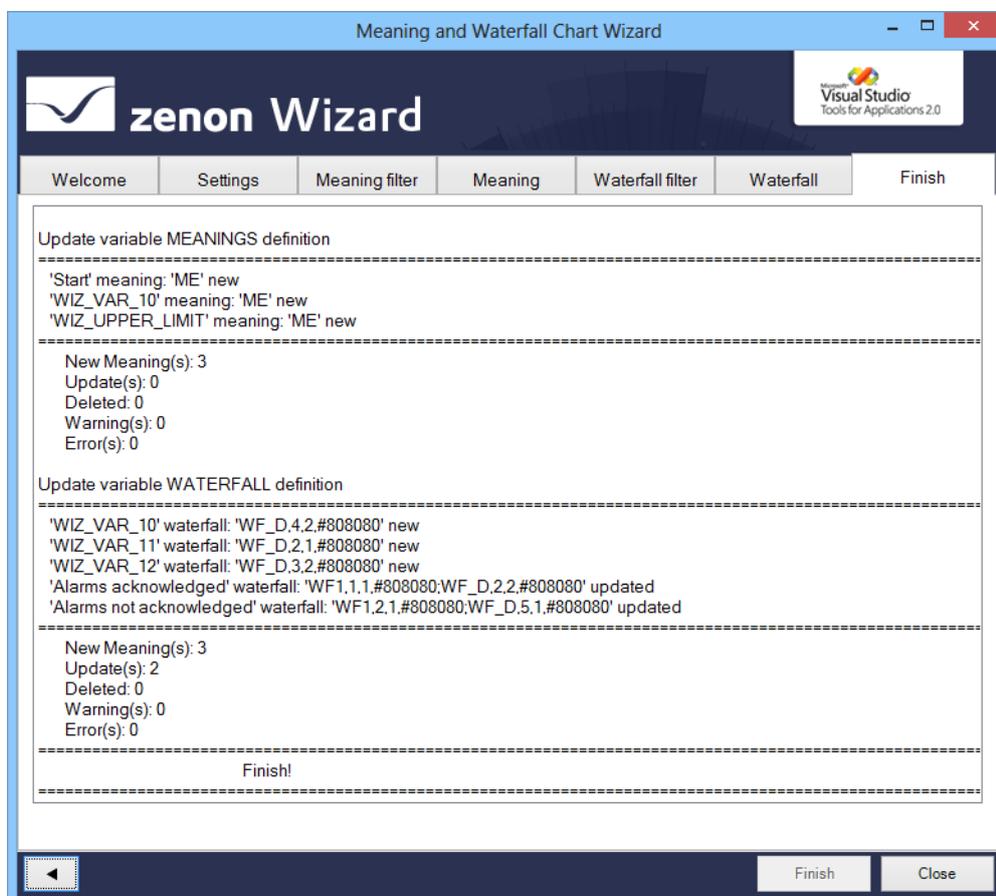
Attention: Only definitions that correspond to the configuration in the **Waterfall filter** (on page 121) tab are offered

3. The waterfall definition is displayed in the **Chart** area
4. Change the definition in accordance with the rules:
 - Adding a bar:
 - Deleting a bar: If a bar is deleted, the variable is highlighted in red in the list.
 - Moving a bar:

- Changing the color:
5. Click **save**.
 6. All changes are displayed in the **Waterfalls (preview)** column
 7. Switch to tab **Finish**.
 8. Click on **Finish**.

Finish

In this tab, the changes are written to the variables in zenon and the result is displayed in the output field.



Clicking on the 'Finish' button writes the changes to the zenon variable in the Editor.

The changes made are displayed in the output field:

- ▶ Update MEANINGS variable definition: Changes to the variables that are carried out and that concern the meanings.
- ▶ Update WATERFALL variable definition: Changes to the variables that have been carried out and that concern the waterfall definition
- ▶ Notes on new and deleted entries, warnings and error messages.

When importing into zenon, the length of the entry is checked for the corresponding properties. This must not consist of more than 250 characters. If the entry is longer, the sequence is cut off after the 250th character and an error message is written in the output field of the 'Finish' tab.

7.4 Sankey Wizard

A Sankey diagram is a graphic display of quantity flows. The quantities are displayed by arrows with a thickness proportional to the quantity. Sankey diagrams are important aids for the visualization of energy and material flows, as well as inefficiencies and potential for saving when using resources.

The **Sankey Wizard** supports you when creating Sankey diagrams that you can see in zenon Runtime and in zenon Analyzer.

Three scenarios are possible:

- ▶ Create a new Sankey diagram.
- ▶ Use a pre-existing Sankey diagram as a template.
- ▶ Edit an existing Sankey diagram.

The Sankey diagram is saved in an XML file.

Note: The wizard is only available in English.



License information

Part of the standard license of the Editor and Runtime.

7.4.1 Installing the Sankey wizard

The wizard is automatically installed together with zenon.

7.4.2 Starting the Sankey wizard

For wizards to be displayed, the settings for VBA and/or VSTA must be set correctly in file `zenon6.ini`:

[VBA]

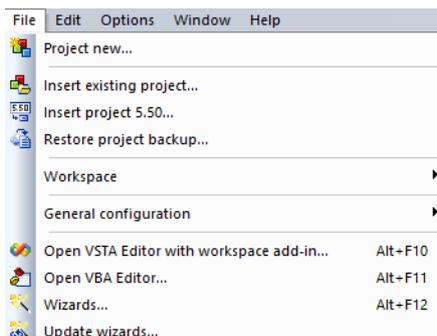
EIN=1

[VSTA]

ON=1

If VSTA wizards are not displayed although the settings are correct, set entry **LOADED=** to 1 in area [VSTA].

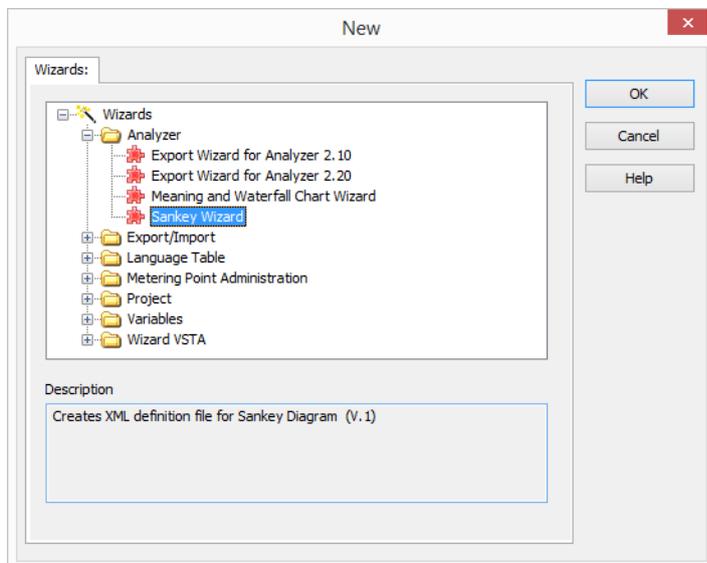
To start the Sankey wizard, proceed as follows:



1. Start the **zenon Editor**.
2. Click on **File** in the tool bar on the left.
3. Click on **Wizards**.

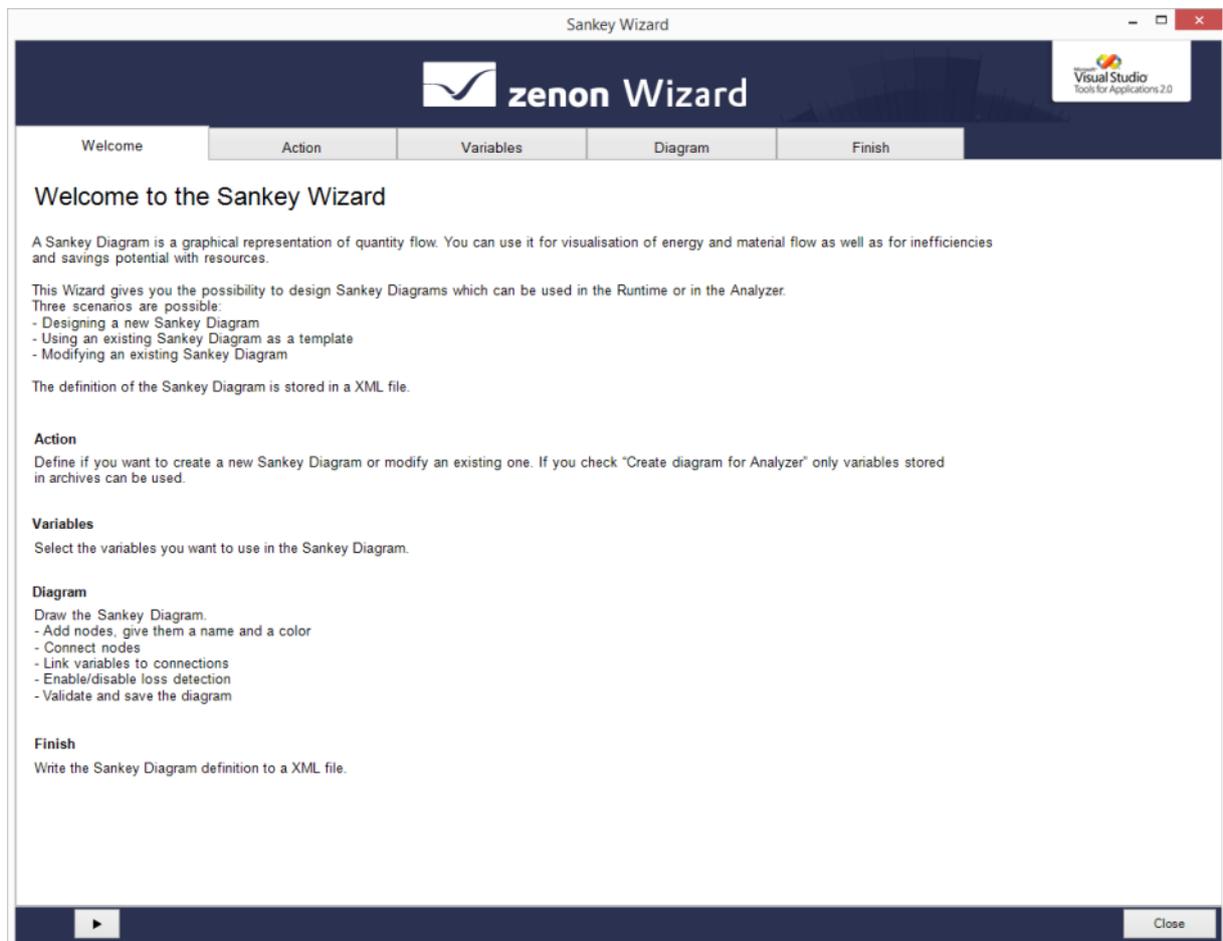
Note: You can also open the selection window with the available wizards with the key combination **Alt+F12**.

The selection window with the available wizards opens.



1. Expand the **Analyzer** node
2. Click on **Sankey Wizard** there.
3. Click on **OK**.

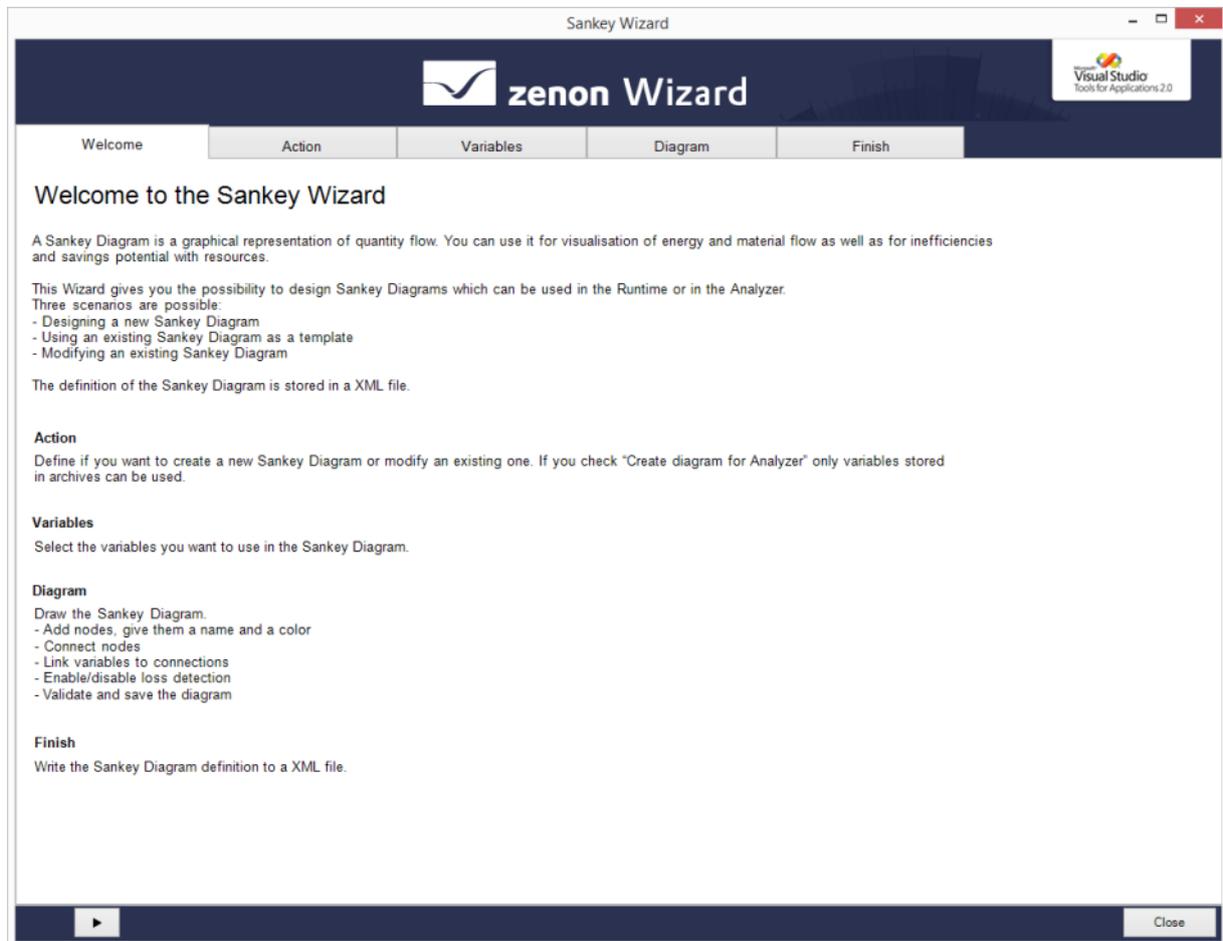
The Sankey Wizard starts with the welcome page



Click on the button with the **arrow** or on the title of the tab to navigate through the configuration of the export.

7.4.3 Start window

When opening the wizard, you receive an overview that lists and explains all objects that can be configured. Configuration starts with the **Action** tab.



Click on the button with the **arrow** or on the title of the tab to navigate through the configuration of the export.

7.4.4 Navigation

Navigation through the tabs is carried out by means of the navigation bar in the lower area of the wizard window:

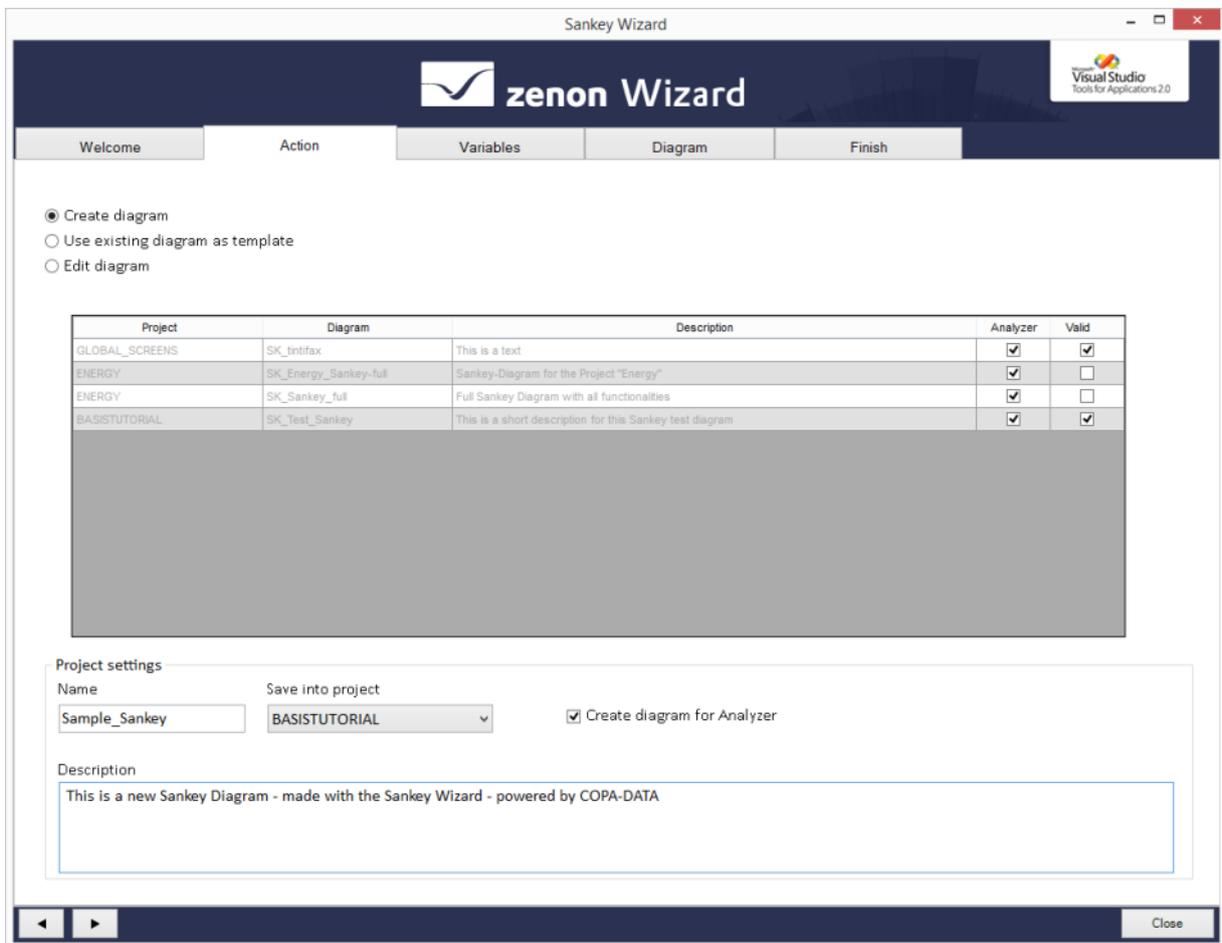


| Button | Description |
|-------------|---|
| Arrow left | Goes back one tab in the wizard process. |
| Arrow right | Goes forward one tab in the wizard process. |
| Finish | Writes all changes to the zenon variable in the Editor and closes the wizard. |
| Cancel | Ends the wizard without making changes. |

Individual tabs can also be selected by clicking directly on the title of the tab.

7.4.5 Action - select action

Select, in the Action tab, the desired action by activating it.



There are the following three possibilities:

| Parameters | Description |
|----------------------------------|---|
| Create diagram | Creates a new diagram. |
| Use existing diagram as template | Uses an existing diagram as a template. Note: In this case, variables must be linked to node connections again. The variable linkings of existing diagrams are not shown in the template. |
| Edit diagram | Allows the editing of an existing diagram. |

LIST OF THE DIAGRAMS THAT HAVE BEEN CREATED

The window in the middle shows a list with the diagrams that have already been created. The entries are grayed out if `Create_Diagram` has been selected. The following information for this is visible:

| Parameters | Description |
|-------------|--|
| Project | Name of the project in which the diagram is saved |
| Diagram | Shows the name of the diagram. |
| Description | Shows the description of the diagram. |
| Analyzer | Active: The diagram can be used in the Analyzer and in Runtime. Inactive: The diagram can only be used in Runtime. |
| Valid | Active: The diagram is valid. Inactive: The diagram is not valid. You cannot use the diagram in either the Analyzer or in Runtime. Note: In this case, edit the diagram and amend it until it is valid. |

PROJECT SETTINGS

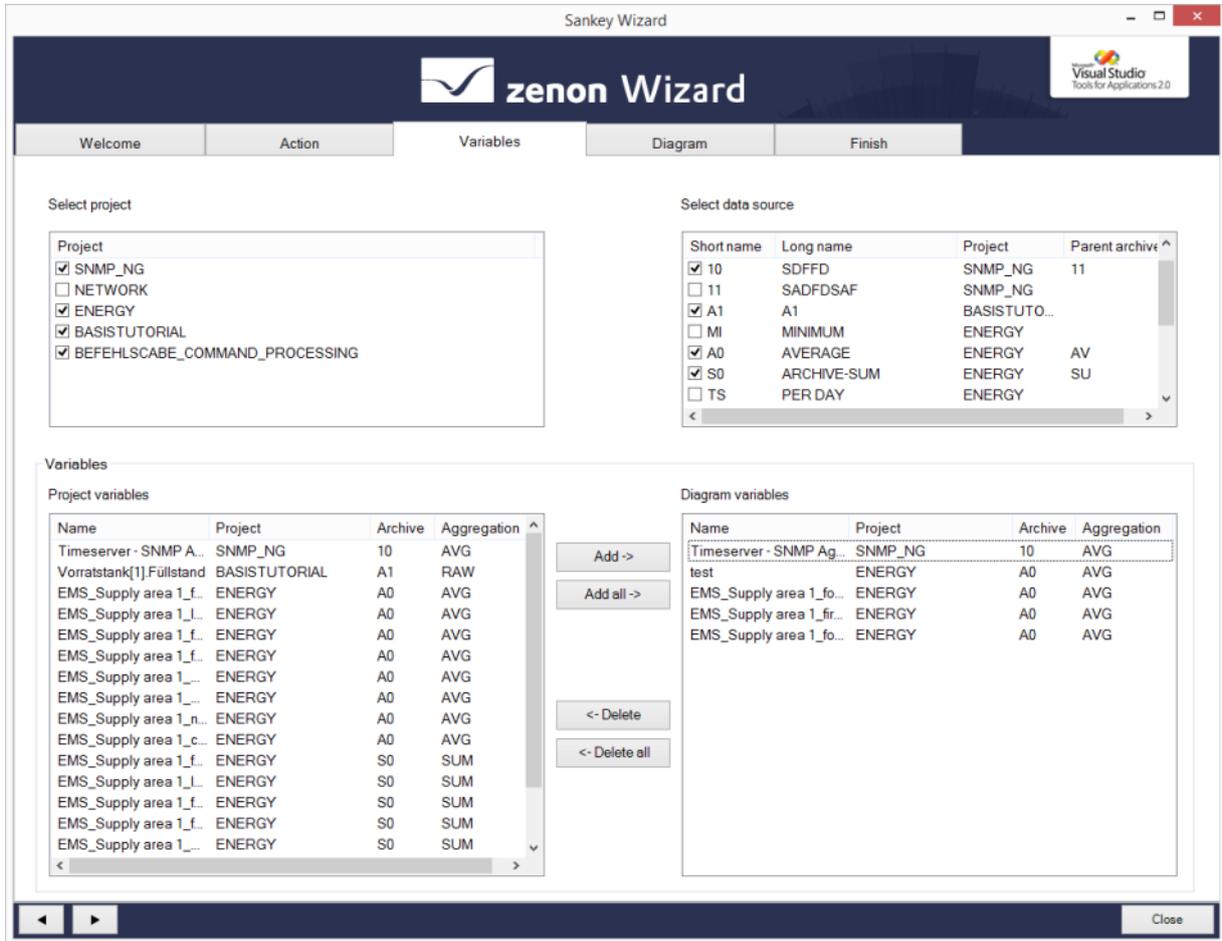
You can change the following settings for the project in this area:

| Parameters | Description |
|------------------------------------|---|
| Name | Enter a name for the project here. Note: The name must be unique. Otherwise a warning dialog will make you aware of this. A newly-created program with a name that already exists would replace the existing one if the warning dialog is confirmed. However if you click on No in the warning dialog, <code>_1</code> is automatically added to the name. |
| Save into project | Here you select the project in which your diagram is to be saved. |
| Description | Enter a description here. Note: This is optional. |
| Create diagram for Analyzer | Active: Only variables that are in archives are shown. Note: The variables that you want to use must first be exported with the Analyzer Export Wizard. Inactive: Selection of the variables is possible without limitations, however the diagram cannot be used in zenon Analyzer, only in zenon Runtime. |

Note: Once this tab is left, it is no longer possible to edit the settings that have been made.

7.4.6 Variables - select variables

You can select variables for your project in this tab.



Select project

- SNMP_NG
- NETWORK
- ENERGY
- BASISTUTORIAL
- BEFEHLSCABE_COMMAND_PROCESSING

Select data source

| Short name | Long name | Project | Parent archive |
|--|-------------|--------------|----------------|
| <input checked="" type="checkbox"/> 10 | SDFFD | SNMP_NG | 11 |
| <input type="checkbox"/> 11 | SADFDSAF | SNMP_NG | |
| <input checked="" type="checkbox"/> A1 | A1 | BASISTUTO... | |
| <input type="checkbox"/> MI | MINIMUM | ENERGY | |
| <input checked="" type="checkbox"/> A0 | AVERAGE | ENERGY | AV |
| <input checked="" type="checkbox"/> S0 | ARCHIVE-SUM | ENERGY | SU |
| <input type="checkbox"/> TS | PER DAY | ENERGY | |

Variables

Project variables

| Name | Project | Archive | Aggregation |
|--------------------------|---------------|---------|-------------|
| Timeserver - SNMP A... | SNMP_NG | 10 | AVG |
| Vorratstank[1].Fullstand | BASISTUTORIAL | A1 | RAW |
| EMS_Supply area 1_f... | ENERGY | A0 | AVG |
| EMS_Supply area 1_f... | ENERGY | A0 | AVG |
| EMS_Supply area 1_f... | ENERGY | A0 | AVG |
| EMS_Supply area 1_f... | ENERGY | A0 | AVG |
| EMS_Supply area 1_... | ENERGY | A0 | AVG |
| EMS_Supply area 1_... | ENERGY | A0 | AVG |
| EMS_Supply area 1_n... | ENERGY | A0 | AVG |
| EMS_Supply area 1_c... | ENERGY | A0 | AVG |
| EMS_Supply area 1_f... | ENERGY | S0 | SUM |
| EMS_Supply area 1_f... | ENERGY | S0 | SUM |
| EMS_Supply area 1_f... | ENERGY | S0 | SUM |
| EMS_Supply area 1_f... | ENERGY | S0 | SUM |
| EMS_Supply area 1_... | ENERGY | S0 | SUM |

Diagram variables

| Name | Project | Archive | Aggregation |
|--------------------------|---------|---------|-------------|
| Timeserver - SNMP Ag... | SNMP_NG | 10 | AVG |
| test | ENERGY | A0 | AVG |
| EMS_Supply area 1_fo... | ENERGY | A0 | AVG |
| EMS_Supply area 1_fir... | ENERGY | A0 | AVG |
| EMS_Supply area 1_fo... | ENERGY | A0 | AVG |

SELECT PROJECT

| Parameters | Description |
|----------------|---|
| Select project | <p>List of all active zenon projects.</p> <p>Select the project(s) from which you want to select variables for your diagram here.</p> <p>Note: Multiple selection is possible.</p> |

SELECT DATA SOURCE

| Parameters | Description |
|--------------------|--|
| Select data source | <p>Select the data source here (archives).</p> <p>Note: The Online Data option is available for all other variables that do not come from archives. This option can only be selected if you have not activated the create for Analyzer option in the Action tab. Live values, i.e. online values, are used for Runtime. Historical values are used for zenon Analyzer.</p> <ul style="list-style-type: none"> ▶ Short name Short identification of the archive ▶ Long name Full name of the archive ▶ Project Project name of the archive ▶ Parent archive Version of the archive used |

VARIABLES

| Parameters | Description |
|-------------------|--|
| Project variables | <p>Select the variables that you want to link to your diagram here. Multiple selection is possible.</p> <p>Possibilities for this:</p> <ul style="list-style-type: none"> ▶ Double-click on the desired variable. |

| | |
|--------------------------------|--|
| | <ul style="list-style-type: none"> ▶ Highlight the desired variable and then click on Add->. ▶ Hold down the Ctrl key, highlight several variables, click on Add->. ▶ Click on Add all-> to select all variables. <p>Variable list:</p> <ul style="list-style-type: none"> ▶ Name Name of the variable ▶ Project Name of the project of the variable ▶ Archive: Short identification of the archive ▶ Aggregation: Aggregation type of the archive <ul style="list-style-type: none"> • AVG (Average) • Max (Maximum value) • Min (Minimum value) • Sum (Sum) • RAW (Raw data format - without aggregation) |
| Add -> button | Adds selected variable(s) to the list of diagram variables. |
| Add all -> button | Adds all variables to the list of diagram variables. |
| <- Delete button | Removes selected variable(s) from the list of the diagram variables. |
| <- Delete all button | Removes all variables from the list of diagram variables. |

DIAGRAM VARIABLES

Diagram variables

You can see all selected variables here. These are relevant for the next tab when creating the diagram.

To delete variables again:

- ▶ Highlight the variable that you want to delete and click on **<-Delete**.
- ▶ Hold down the **Ctrl** key, highlight several variables that you want to delete at the same time and click on **<-Delete**.
- ▶ Click on **<-Delete all** to delete all selected variables again.

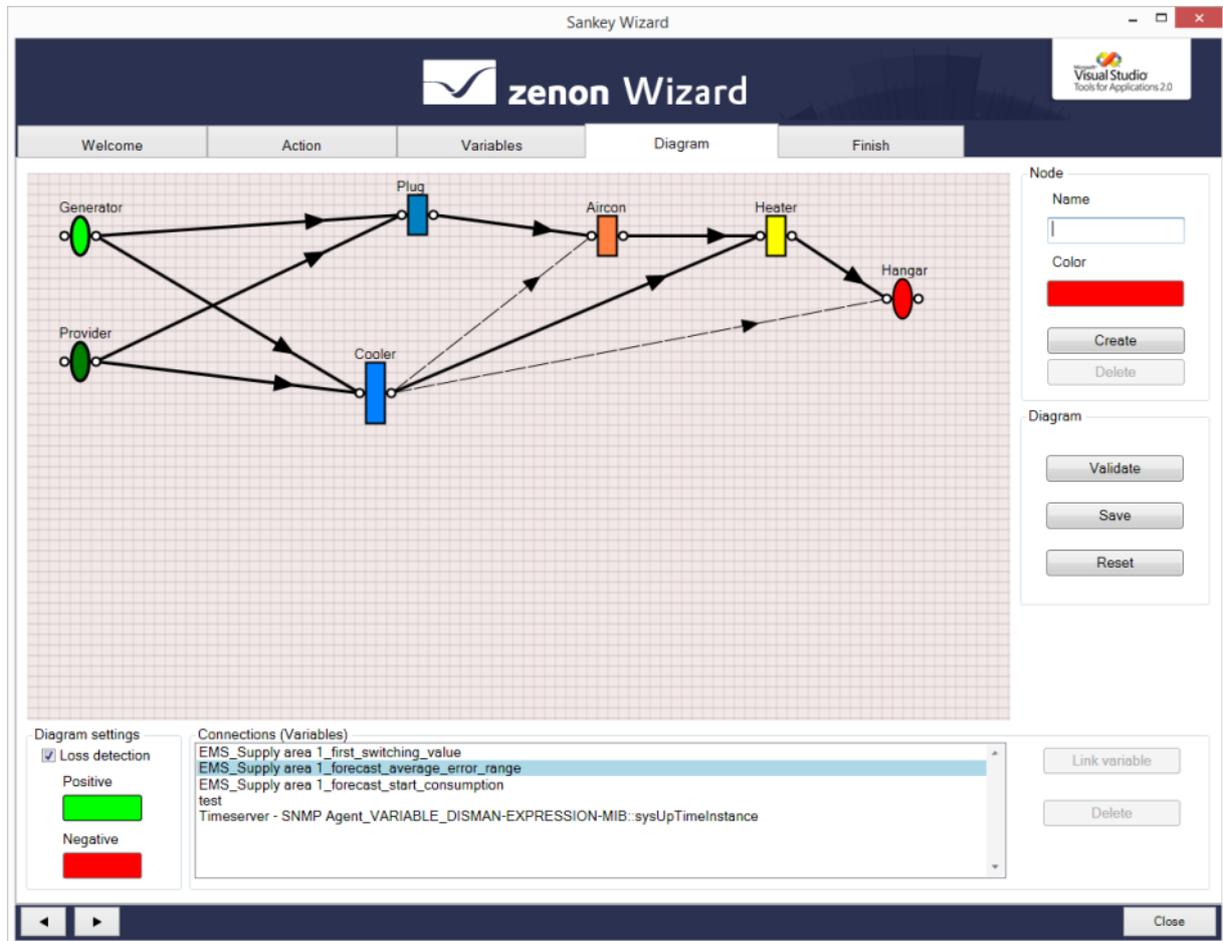
Variable list:

- ▶ Name
Name of the variable
- ▶ Project
Name of the project of the variable
- ▶ Archive:
Short identification of the archive
- ▶ Aggregation:
Aggregation type of the archive
 - **AVG (Average)**
 - **Max (Maximum value)**
 - **Min (Minimum value)**
 - **Sum (Sum)**
 - **RAW (Raw data format - without aggregation)**

Note: Once you have left this tab, changes to the settings that have been made here are possible.

7.4.7 Diagram - create diagram

You are able to draw a diagram in this tab.



DRAWING AREA

You position your nodes and connections in the drawing area.

NODE

| Parameters | Description |
|------------|---|
| Name | Node name |
| Color | Color of the node. Displays the last selected color. Clicking on the button opens the color selection dialog. |
| Create | Creates nodes and positions these on the drawing area. |
| Delete | Deletes selected nodes from the drawing area. Only active if at least one node in th drawing area has been selected. |

DIAGRAM

| Parameters | Description |
|------------|--|
| Validate | Checks whether all nodes have been linked and/or whether the links are occupied with a variable. The result of the validation is displayed in a dialog. <ul style="list-style-type: none"> ▶ Node xx is not connected! The node is not connected to another node. ▶ A connection of node xx has no variable linked! The linking of the node does not have an assigned variable. |
| Save | Saves the current project configuration. A check is also carried out before saving. |
| Reset | Deletes all nodes and previously-configured connections. |

DIAGRAM SETTINGS

| Parameters | Description |
|----------------|---|
| Loss detection | Automatic loss detection with an additional connection that visualizes the differential flow. activated: Automatic loss detection is calculated. deactivated: There is no calculation of the differential flow. |

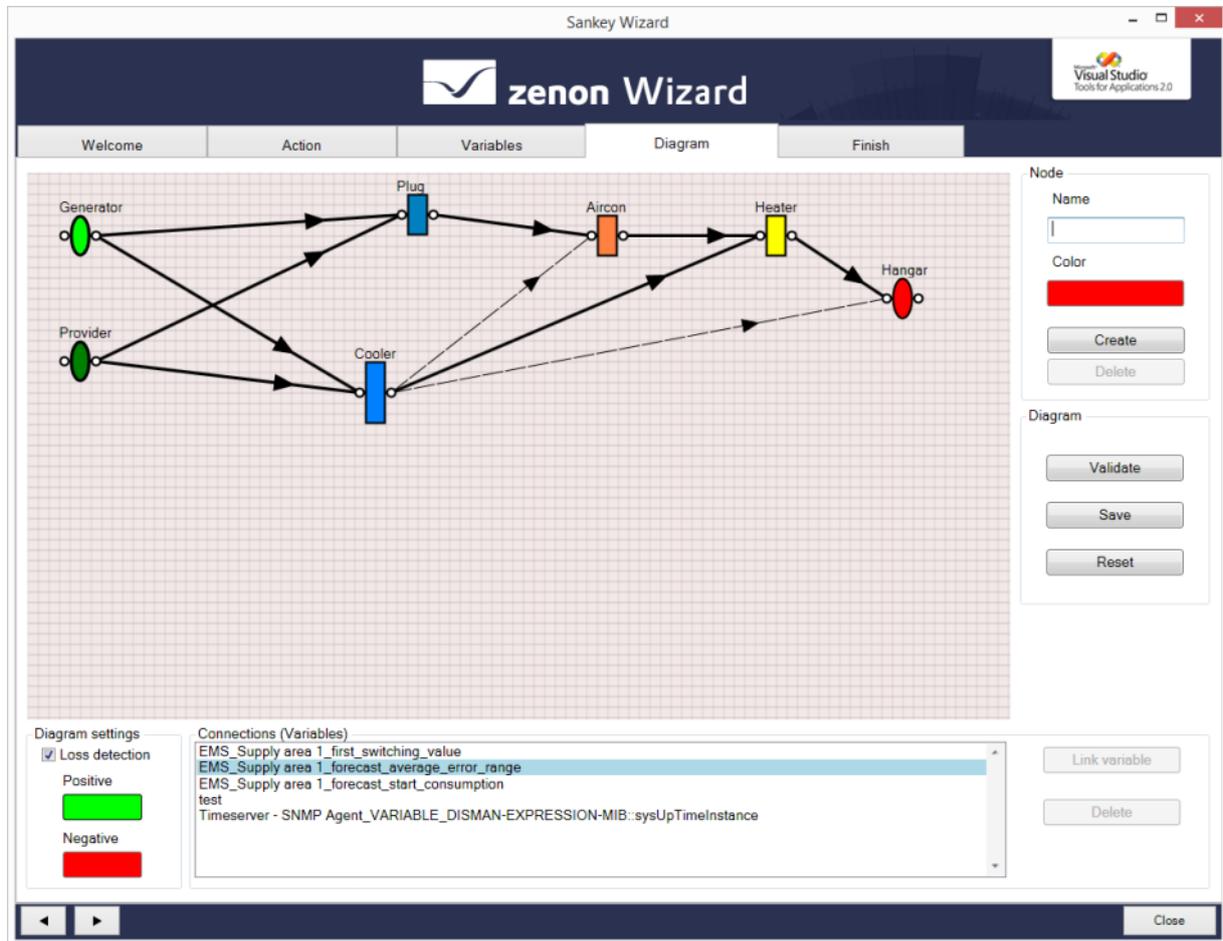
| | |
|----------|--|
| | Default: deactivated |
| Positive | <p>If, for a node, the quantity of outflows exceeds the quantity of inflows, a differential flow is displayed in the selected color.</p> <p>Only active if <code>loss detection</code> has been activated.</p> <p>Note: This differential flow is only visible in zenon Runtime or in zenon Analyzer.</p> |
| Negative | <p>If, for a node, the quantity of inflows exceeds the quantity of outflows, a differential flow in the selected color is displayed.</p> <p>Only active if <code>loss detection</code> has been activated.</p> <p>Note: This differential flow is only visible in zenon Runtime or in zenon Analyzer.</p> |

CONNECTIONS (VARIABLES)

| Parameters | Description |
|-------------------------|---|
| Connections (Variables) | <p>List of all the variables available for linking. If a variable is already linked to a connection, this variable is shown in green in the selection list.</p> <p>Note: These variables are provided in the Variables tab.</p> |
| Link variable | <p>Links the selected variable to the selected connection.</p> <p>Not active if no connection is selected.</p> <p>Note: If a second node and a variable is selected, the connection is also drawn in addition to the linking.</p> |
| Delete | <p>Deletes selected connection. Multiple selection of connections is possible.</p> <p>Not active if no connection is selected.</p> |

Create diagram

This is how you create a Sankey diagram with the Sankey wizard:



CREATING NODES AND CONNECTIONS:



1. Enter, in the **node** window, under the **name** field, a name for the node to be created.

2. Select a color for the node by clicking on the `Color` field.
3. Then click on `Create`.
4. Create as many nodes as you want and sort them as you want.
5. Connect the nodes by dragging a node output (to the right of the node) to a node input (to the left of the node).

Note: A node can have connections to several nodes or several nodes can have connections to one node. The size of the output node changes depending on how many connections there are. Nodes that are only connected on one side are displayed as round or oval. Nodes that have connections on both sides are shown as angular.

There are the following possibilities with regard to node connections:

Back-coupling: Establish a connection from the output of a node to its input

To do this:

- ▶ Double-click on the node on which you want to create the back-coupling.

or

- ▶ Drag the connection from the output of the node to its input.

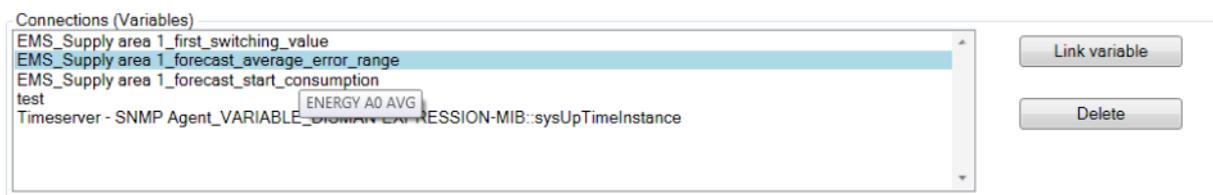
Establish a connection between 2 nodes and link a variable to it at the same time:

To do this:

1. Highlight both nodes that you want to connect and the variable that you want to link to it.
2. Click on `Link Variable`.

LINKING VARIABLES TO CONNECTIONS:

There are several possibilities for linking variables to connections:



Drag&Drop

- ▶ Drag the desired variable from the **Connections (Variables)** window to the desired node connection.

Note: Provided that you have already established the connection between the nodes.

Link Variable button

1. Highlight the desired node connection
2. Highlight the variable that you want to link to the connection.
3. Click on the **Link Variable** button.

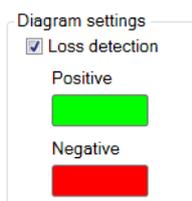
Note: You can only link one variable to each connection.

Linking a variable to several node connections:

1. Hold down the **Ctrl** key and highlight several node connections.
 2. Highlight the desired variable
 3. Click on **Link Variable**
- or
4. Drag the variable to the highlighted node connections.

Note: Move the mouse to a connection in order to see the name of the variable that is linked to the connection.

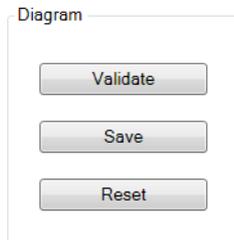
DIAGRAM SETTINGS:



If you activate the **Loss Detection** option, loss detection is calculated automatically.

You can select the colors that are to be used for the display of the differential flows in the **Positive** and **Negative** fields.

CONCLUDING THE DRAWING OF THE DIAGRAM:



Once you have finished drawing your diagram,

- ▶ Click on the **validate** button

If all your connections are correct, a dialog appears informing you that the diagram is valid. Otherwise a dialog appears informing you that there are still nodes that are not connected or that variables are not linked to the connections.

To save your diagram,

- ▶ click on the **save** button.

The diagram you have created is validated. The diagram is saved and marked as valid or invalid. You are shown the project in which it is saved.

To redraw the diagram,

- ▶ Click on the **Reset** button.

All the nodes you have drawn and your connections are thus deleted.



Information

*Clicking on the **validate** or **save** buttons orientates the nodes to the right and left side of the drawing area.*

EDITING NODES:

Once you have created some nodes, you can

Issue several nodes with the same name:

1. Hold down the **Ctrl** key.

2. Highlight the nodes that you want to name.
3. Enter a name.

Select the same color for several nodes:

1. Hold down the `Ctrl` key.
2. Highlight the nodes that you want to color.
3. Then select a color.

Moving several nodes at the same time:

1. Hold down the `Ctrl` key.
2. Select the node that you want to move.
3. Move the nodes. Your connections are also moved.

Note: You can also edit a node individually by highlighting it and make the desired change.

DELETING NODES:

1. Highlight the node that you want to delete.
2. Click, in the `Node` window, on `Delete` or on the `Del` key.

Deleting several nodes at the same time:

1. Hold down the `Ctrl` key and highlight the node that you want to delete.
2. Click, in the `Node` window, on `Delete` or on the `Del` key.

Note: When the node is deleted, its connections are also deleted.

DELETING CONNECTIONS:

1. Highlight the connection that you want to delete.
2. Click, in the `Connections (Variables)` window, on `Delete` or on the `Del` key.

Deleting several connections at the same time:

1. Hold down the `Ctrl` key and highlight the connections that you want to delete.

2. Click, in the **Connections (Variables)** window, on **Delete** or on the **Del** key.

Display of Sankey diagram in zenon Analyzer

The nodes are always rearranged in zenon Analyzer and do not follow the exact positioning in the wizard in the process. The display of the Sankey diagram is automatically optimized in zenon Analyzer for legibility and clarity.

The width of the connection is taken into account specially for this arrangement. This width is dependent on the respective values shown (the more there are, the thicker it is).

HORIZONTAL ARRANGEMENT

Nodes are distributed horizontally over the whole width in proportion to their number.

Example: With three nodes, the display of the first connection will end in the middle of the display.

VERTICAL ARRANGEMENT

The vertical arrangement of the nodes is always carried out in a vertical line in zenon Analyzer. This means that the first level is always arranged in a vertical line, regardless of the project configuration in the wizard.

The end nodes are automatically arranged from top to bottom at equal distances.



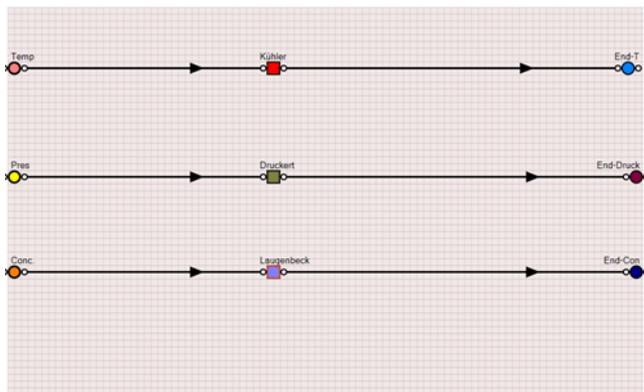
Information

Please note the following examples of views.

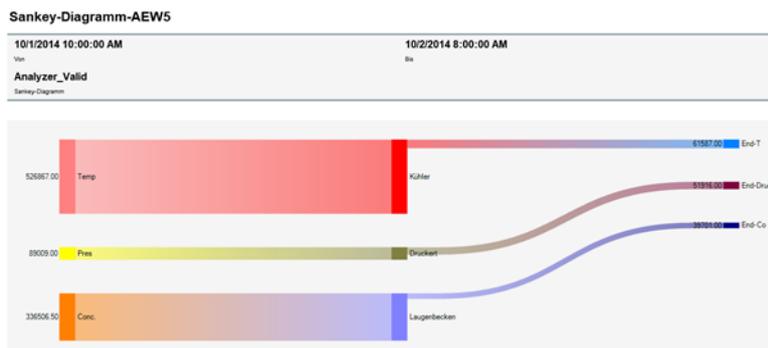
Examples of views: Wizard - zenon Analyzer

EXAMPLE OF HORIZONTAL ARRANGEMENT

SANKEY WIZARD CONFIGURATION

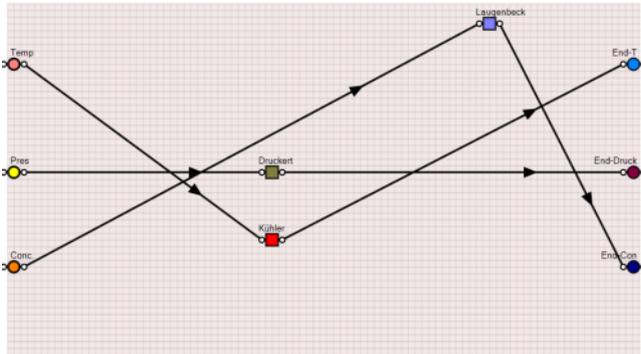


ZENON ANALYZER VIEW

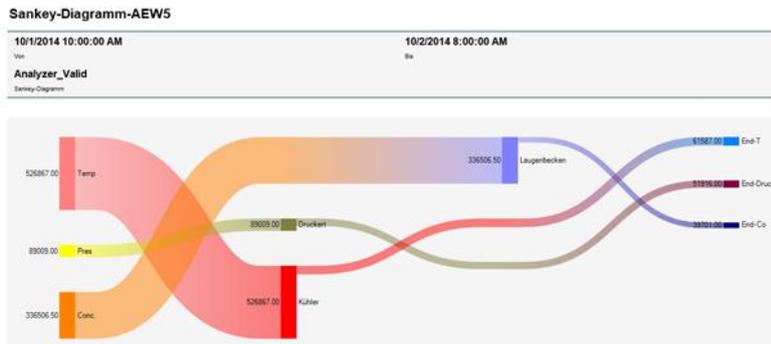


EXAMPLE OF VERTICAL ARRANGEMENT

SANKEY WIZARD CONFIGURATION

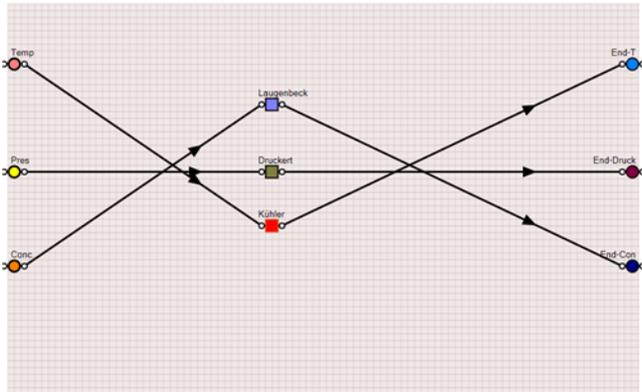


ZENON ANALYZER VIEW

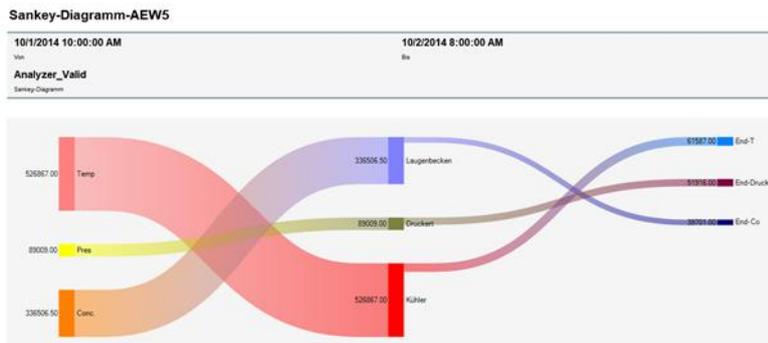


EXAMPLE OF MIXED ARRANGEMENT

SANKEY WIZARD CONFIGURATION



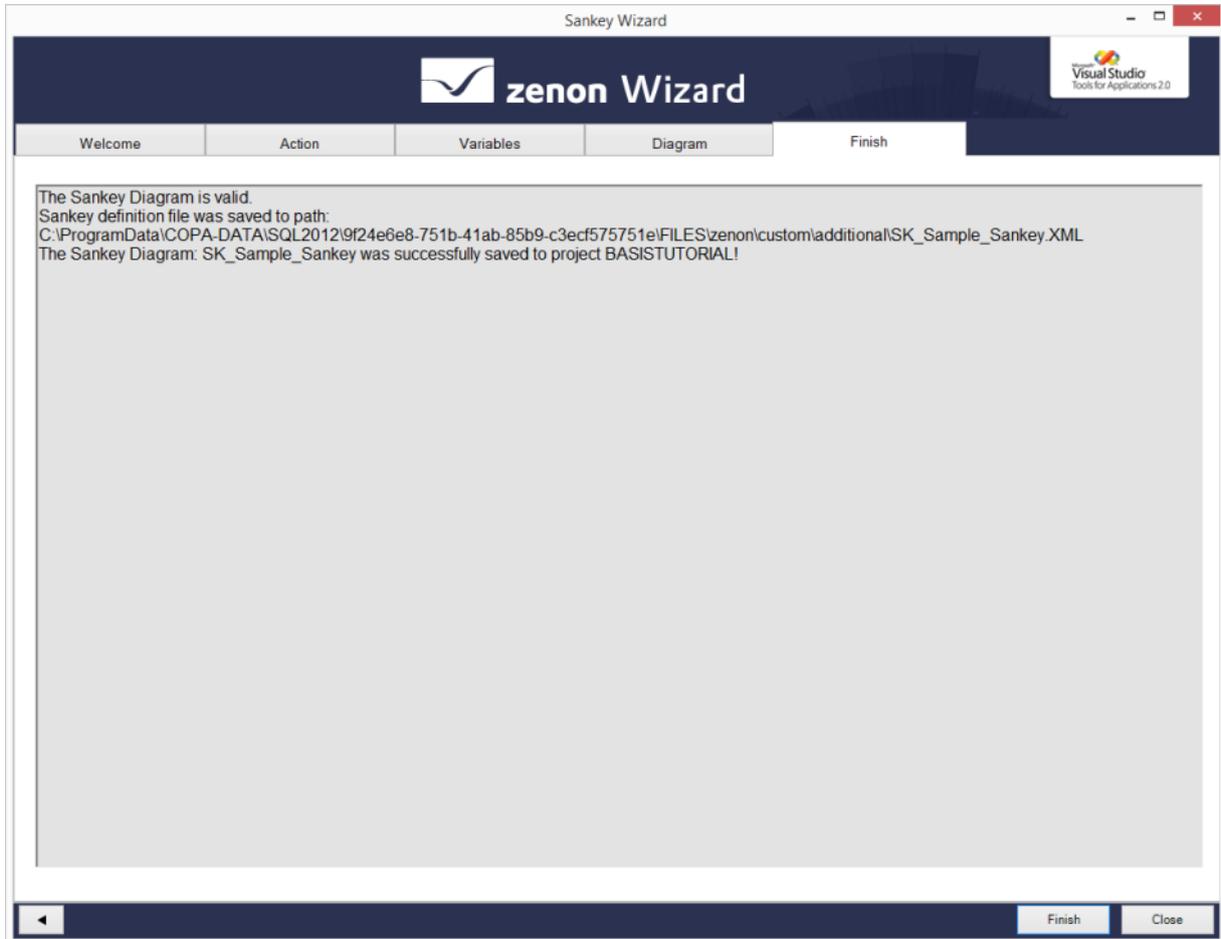
ZENON ANALYZER VIEW



7.4.8 Finish - complete

In the **Finish** tab, you can see whether the diagram you have created is valid and the location where the diagram you have created has been saved.

- ▶ Click on the **Finish** button.



To close the Sankey wizard:

- ▶ Click on the **Close** button.



Information

The configuration of your Sankey diagram is saved in an XML file.

*This is in the **Project Manager** of the selected project, in the **Files** node in the **Other** folder.*

With the Analyzer Export Wizard, you can accept the modeled Sankey diagram for use in zenon Analyzer.

You can read details of this export in the Analyzer Export Wizard. (on page 77) manual

8. Rights management

The zenon Analyzer uses role-based rights management. It controls the access to the data sources, folders, reports and all other elements. At this certain rights are assigned to a user or a group. Users and groups must already exist in the Window user administration. Authentication is not done by the zenon Analyzer but by the operating system.

User rights are set and administered in the ZAMS (on page 529).

9. Analyzer Manager: Configuration and operation

The zenon Analyzer is called up via the web browser or started via the ZAMS:

- ▶ Calling it up via the user interface: Entry of connection in address line or click on the link in the start menu of the installation computer (COPA-DATA section)
- ▶ Start via ZAMS:
The following actions start the web browser with the Analyzer Manager for the connection set up in ZAMS
 - Selection of the corresponding command from the **Report** menu (on page 237)
 - Click on the corresponding symbol in the tool bar (on page 243)
 - Click on the **Open report in the Analyzer Manager** button in a report in the ZAMS

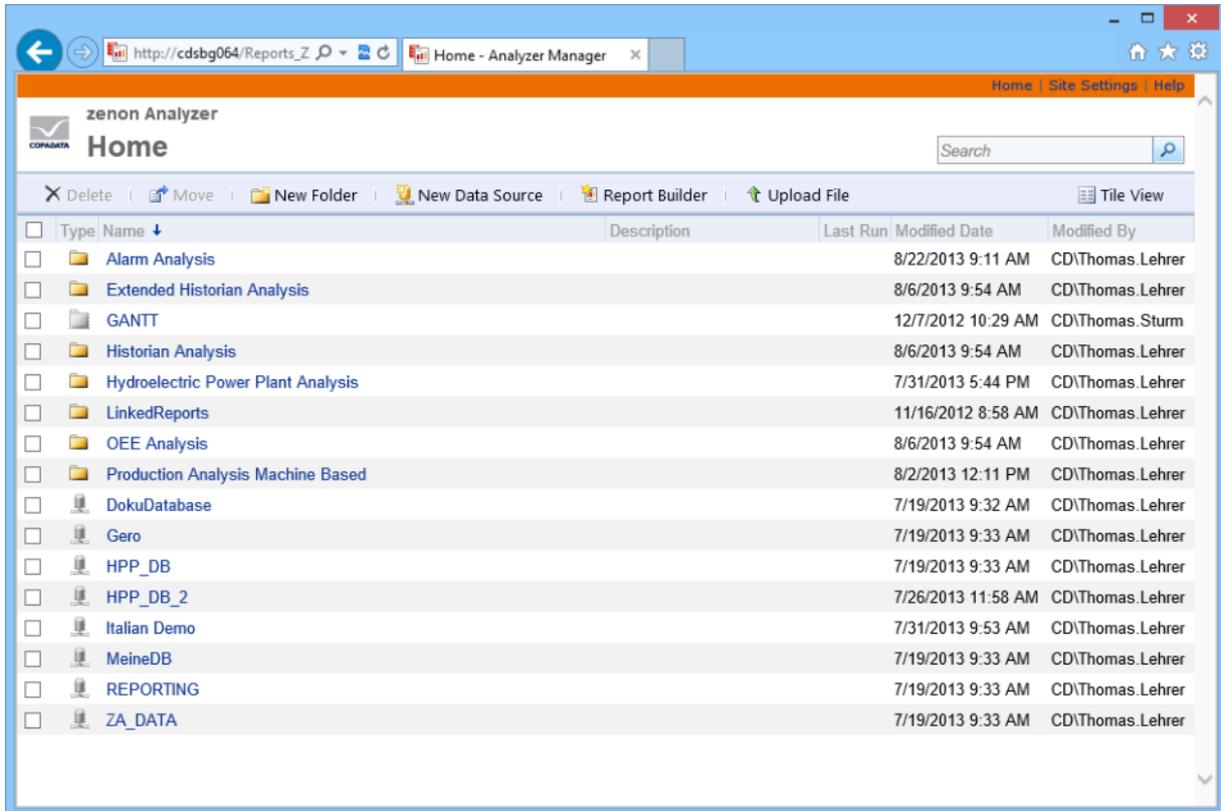
Note: Internet Explorer 8 or 9 (with normal view) or Internet Explorer 10 or higher in compatibility mode can be used as a web browser. For starting from ZAMS, the correct web browser must be set in the operating system as a standard browser.

ANALYZER MANAGER

The user interface of the Analyzer Manager gives you the possibility to:

- ▶ configure the zenon Analyzer

- ▶ create and call up reports



The screenshot shows the zenon Analyzer Manager web interface. The browser address bar displays `http://cdsbg064/Reports_Z`. The page title is "zenon Analyzer Home". The interface includes a search bar and a navigation menu with options: Delete, Move, New Folder, New Data Source, Report Builder, and Upload File. A table lists various reports and data sources with columns for Type, Name, Description, Last Run, Modified Date, and Modified By.

| Type | Name | Description | Last Run | Modified Date | Modified By |
|----------|------------------------------------|-------------|--------------------|---------------|------------------|
| Folder | Alarm Analysis | | 8/22/2013 9:11 AM | | CD\Thomas.Lehrer |
| Folder | Extended Historian Analysis | | 8/6/2013 9:54 AM | | CD\Thomas.Lehrer |
| Folder | GANTT | | 12/7/2012 10:29 AM | | CD\Thomas.Sturm |
| Folder | Historian Analysis | | 8/6/2013 9:54 AM | | CD\Thomas.Lehrer |
| Folder | Hydroelectric Power Plant Analysis | | 7/31/2013 5:44 PM | | CD\Thomas.Lehrer |
| Folder | LinkedReports | | 11/16/2012 8:58 AM | | CD\Thomas.Lehrer |
| Folder | OEE Analysis | | 8/6/2013 9:54 AM | | CD\Thomas.Lehrer |
| Folder | Production Analysis Machine Based | | 8/2/2013 12:11 PM | | CD\Thomas.Lehrer |
| Database | DokuDatabase | | 7/19/2013 9:32 AM | | CD\Thomas.Lehrer |
| Database | Gero | | 7/19/2013 9:33 AM | | CD\Thomas.Lehrer |
| Database | HPP_DB | | 7/19/2013 9:33 AM | | CD\Thomas.Lehrer |
| Database | HPP_DB_2 | | 7/26/2013 11:58 AM | | CD\Thomas.Lehrer |
| Database | Italian Demo | | 7/31/2013 9:53 AM | | CD\Thomas.Lehrer |
| Database | MeineDB | | 7/19/2013 9:33 AM | | CD\Thomas.Lehrer |
| Database | REPORTING | | 7/19/2013 9:33 AM | | CD\Thomas.Lehrer |
| Database | ZA_DATA | | 7/19/2013 9:33 AM | | CD\Thomas.Lehrer |

| Parameter | Description |
|---|--|
| Configuration menu (orange header) | |
| Home | Main view. |
| Site settings | Administration (on page 197) of site and schedules. |
| Help | Opens the Microsoft help for Reporting Services. |
| Main menu (blue bar) | |
| Delete | <p>Deletes selected reports or folders. The selection takes place by activating the check box in front of the report/folder.</p> <p>Only available for detail view.</p> |
| Move | <p>Moves selected reports or folders. The selection takes place by activating the check box in front of the report/folder.</p> <p>Only available for detail view.</p> |
| New folder | Creates a new folder (on page 203). |
| New data source | Creates a new data source (on page 201). |
| Report Generator | Opens the Report Generator (on page 209). |
| Upload file | Opens the dialog for uploading resources (on page 206) such as reports, models, data sets, etc. |
| Details view - Tile view | <p>Toggles between detail view and side-by-side/one-below-the-other view.</p> <p>Detail View: Shows details about the reports and folders and makes it possible to sort after the following criteria:</p> <ul style="list-style-type: none"> ▶ Type ▶ Name ▶ Last execution ▶ Changed on ▶ Changed by <p>Tile view: Shows all folder and reports in a compact view. In this view folders can be hidden (on page 203).</p> |

| | |
|---------------------------|---|
| | Both views provide a drop-down list (on page 155) with often needed commands for folders and reports. |
| List field Reports | Field for listing reports and folders. It is either displayed in compact view or with details. Folder and reports can be configured via a drop-down list. |



Attention

Error messages for parameters

For some parameters, the values available must be loaded via a stored procedure of Microsoft SQL Server. If this stored procedure is not successfully called up or the stored procedure returns an error, an error message is activated in the Analyzer Manager. For example, if Runtime cannot be reached, the SQL connector has not been created, etc.

For some parameters, no standard value can be issued under some circumstances, because a parameter that is to be handled beforehand does not contain a value. For example: Time filters are based on shifts, but there is no shift data available. In this case, the issue of standard values is only possible if at least 1 shift has been written.



Information

The zenon Analyzer was designed and tested for and with Microsoft Internet Explorer version 8 and higher.

Attention: *The compatibility view in Internet Explorer 8 and 9 must be deactivated for the correct display of reports. The compatibility view must be activated for later versions of Internet Explorer.*

9.1 Drop-down list for folder and reports

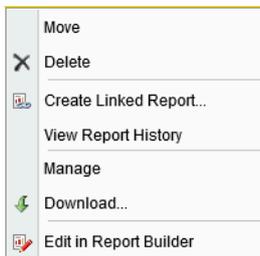
The folder and reports have a drop-down list for configuration. The menu is shown as soon as the mouse cursor is placed above the report or folder.

DROP-DOWN LIST FOLDER



| Parameters | Description |
|---------------|---|
| Move | Opens menu for selecting the new saving location. |
| Delete | Deletes selected folder. |
| Manage | Opens the dialog for managing (on page 203) the folder. |

DROP-DOWN LIST REPORT



| Parameters | Description |
|--|--|
| Move | Opens menu for selecting the new saving location. |
| Delete | Deletes selected reports. |
| Create linked report... | Opens the dialog for creating a linked report which is based on the selected report. |
| Display report history | Opens the display of the report history (on page 225). |
| Manage | Opens the dialog for managing the report (on page 218). |
| Download | Makes it possible to locally save (on page 216) reports. Opens Windows dialog for saving a file. |
| Editing in the Report Generator | Opens report in the Report Generator (on page 209). |

9.2 Settings

Data sources and reports are managed and configured via menu bars (on page 152) and drop-down lists (on page 155).

See also:

- ▶ Configuration and operation (on page 152)
- ▶ Site (on page 197)
- ▶ Folder (on page 203)
- ▶ Reports (on page 217)
- ▶ Rights management (on page 152)

9.3 Languages and time formats

USER INTERFACE LANGUAGE

The zenon Analyzer can be displayed in several languages on the web client. As far as selected in the browser, the user interface is displayed in:

- ▶ Chinese (simplified Chinese)
- ▶ German
- ▶ English
- ▶ French
- ▶ Italian
- ▶ Russian
- ▶ Spanish
- ▶ Czech

For all other languages the default language - English - is used. You can define the language in the MS Internet Explorer via *Extras -> Internet options -> General -> Languages*.

TIME FORMATS

Time formats correspond to the conventions of the language set in the browser.

Note: If one of the following symptoms is evident, check the settings for language and time stamp formats:

- ▶ Drop-down list for date and time selection does not work
- ▶ Analyzer Manager reports an incorrectly-formatted time stamp

TEXTS

Texts are displayed as they are entered in RDL or output by the server.

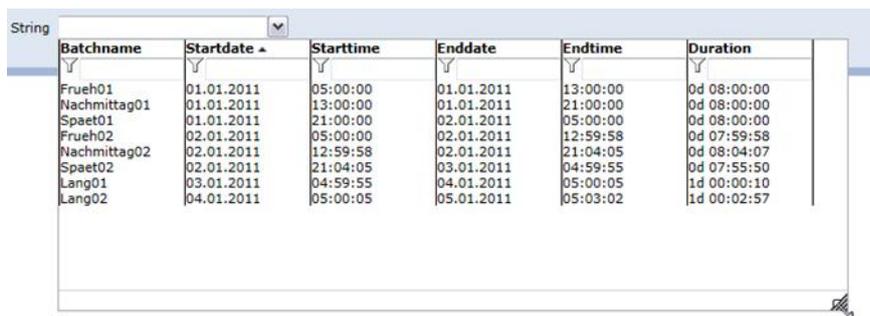
9.4 Parameters - input and selection

The user defines via dialogs and input fields (controls) the values which should be displayed in a report. The dialogs for parameter input are displayed when a report is opened which needs parameters. At this default values can already be set.

By clicking button **view report**, the parameters are sent to the zenon Analyzer. It carries out a parameter validating and checks whether the values entered by the user are valid. For valid parameters the respective report is displayed; otherwise an error message is displayed.

ADAPT DROP-DOWN LIST

There is a drop-down list available for input, selection and filtering.



| Batchname | Startdate | Starttime | Enddate | Endtime | Duration |
|--------------|------------|-----------|------------|----------|-------------|
| Frueh01 | 01.01.2011 | 05:00:00 | 01.01.2011 | 13:00:00 | 0d 08:00:00 |
| Nachmittag01 | 01.01.2011 | 13:00:00 | 01.01.2011 | 21:00:00 | 0d 08:00:00 |
| Spaet01 | 01.01.2011 | 21:00:00 | 02.01.2011 | 05:00:00 | 0d 08:00:00 |
| Frueh02 | 02.01.2011 | 05:00:00 | 02.01.2011 | 12:59:58 | 0d 07:59:58 |
| Nachmittag02 | 02.01.2011 | 12:59:58 | 02.01.2011 | 21:04:05 | 0d 08:04:07 |
| Spaet02 | 02.01.2011 | 21:04:05 | 03.01.2011 | 04:59:55 | 0d 07:55:50 |
| Lang01 | 03.01.2011 | 04:59:55 | 04.01.2011 | 05:00:05 | 1d 00:00:10 |
| Lang02 | 04.01.2011 | 05:00:05 | 05.01.2011 | 05:03:02 | 1d 00:02:57 |

The size of most of the drop-down lists can be adjusted. The exceptions to this are the parameters for the input of a time range and the selection of date and time.

To adjust the size of the drop-down list:

1. Move the mouse to the touch area in the lower right corner until the mouse pointer becomes a double-arrow
 2. With the left mouse button pressed, drag it to the desired size
- Note: the original size is the minimum size

The touch area is only available if the content of the drop-down list needs more space than the minimum offers.

VALIDATION

At the data transmission between browser and Analyzer the values of a parameter are always transmitted as text. The following parameters must always have valid values:

- ▶ Boolean
- ▶ Date and time

The following conditions are checked at the parameter validation. Errors are displayed in the view window of the zenon Analyzer:

| Entry | Limitation |
|---------------------------------|---|
| Value available | A value must have be entered or selected. This validation is always carried out before sending the parameter to the zenon Analyzer server. |
| String validation | For parameters of data type <code>Text</code> no additional validations are carried out. |
| Boolean validation | <p>For parameters of data type <code>Bool</code> the value must be either <code>true</code> or <code>false</code>. Capitalization/use of small letters is not checked.</p> <p>Comment: The Boolean selection dialog (on page 162) sends valid values but at the direct control of the zenon Analyzer via URLs the validation may be needed.</p> |
| Integer validation | <p>For parameters of data type <code>Integer</code> the value must not contain another character as the following:</p> <ul style="list-style-type: none"> ▶ A plus or a minus character as first character. ▶ All numbers allowed in the culture of the user. ▶ The thousands separator in the culture of the user. <p>All included thousands separator are removed at the beginning of the integer validation.</p> |
| Float validation | <p>For parameters of data type <code>Float</code> the value must not contain another character as the following:</p> <ul style="list-style-type: none"> ▶ A plus or a minus character as first character. ▶ All numbers allowed in the culture of the user. ▶ The thousands separator in the culture of the user. <p>All thousand separators that are included are removed at the beginning of the integer validation.</p> <ul style="list-style-type: none"> ▶ Exactly one decimal separator in the culture of the user. <p>If there are no numbers in front of or after the decimal separator, a 0 is assumed.</p> <p>Note: No numbers in front of and after the decimal separator is not allowed.</p> |
| Date and time validation | <p>For parameters of data type <code>date</code> and <code>time</code> the following criteria must be adhered to:</p> <ul style="list-style-type: none"> ▶ The value of the parameter must correspond to a valid date and time format of the culture of the user. ▶ The numbers in date and time must be able to be assigned to a valid value. <p>For example, the character string <code>45.18.2011 35:68:99</code> is invalid as there is no such date or time.</p> |

| | |
|--|--|
| | <ul style="list-style-type: none"> ▶ If the character string does not contain a time, 00 : 00 : 00 is assumed. ▶ The time is rounded to minutes. If a time contains seconds, it is rounded to the preceding minute if the value is smaller the 30. For values larger or equal to 30 it is rounded to the next minute. The rounding considers jumps for minutes, hours, days, months and years. ▶ The rounded result must lie within the following limits: Minimum = 1 . 1 . 1900 00 : 00 : 00 Maximum = 1 . 1 . [current year + 3] 00 : 00 : 00 The maximum complies to the end of the year of the year after next from the current date. |
|--|--|

CONDITIONS FOR VALUES OF THE PARAMETER

At the definition of a report (e.g. in the Report Builder (on page 209)) you must adhere to the following restrictions for parameters with predefined values:

- ▶ The value must not be **NULL**.
- ▶ The label can be **NULL**, with the exception of those for equipment group and shift. In this case the value is used as label.
- ▶ Each value must be unique.
Different predefined values with the same value field are not allowed.
- ▶ The label must be unique.
Different predefined values with the same label field are not allowed.

Exception: Values from equipment groups with the same labels are permitted if they are not in the same area of the tree. The same labels for root elements and the same labels for elements with the same superordinate nodes thus lead to errors.

Attention: A value without label can also lead to a duplicate if its label matches another predefined value.

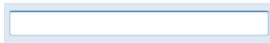


Attention

The parameter validation by the zenon Analyzer server is not a precaution against attacks via SQL injection but only a check of valid report values. Counteractions against attacks must be done by the designer of the SQL stored procedures.

9.4.1 Default input field

The default input field permits to enter exactly one value for a parameter. This input field is displayed for all parameters which do not call for a specialized dialog.



For these parameters the following requirements are true:

- ▶ The data type of the parameter is neither `Bool` nor `Date` and `time`.
- ▶ The parameter permits only to enter one single value.
- ▶ The parameter has no predefined values.

9.4.2 Boolean selection dialog

The Boolean selection dialog makes it possible to select one of the values for Boolean parameter which can receive a label:

- ▶ True
- ▶ False



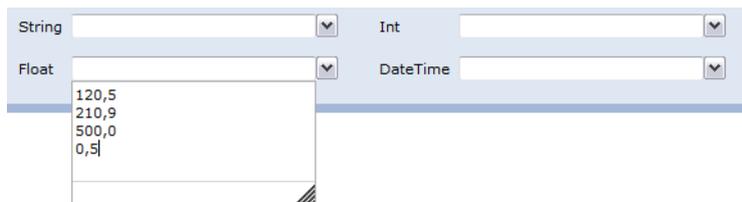
For these parameters the following requirements are true:

- ▶ The data type of the parameter is `Bool`.
- ▶ It is only possible to select one value.
If the dialog allows the selection of several values, it is ignored.
- ▶ If predefined values are available, the text of the respective radio button is overwritten by the label of the predefined value. If during the loading of this control a second label comes along, the text of the radio button is overwritten again. Predefined values always arrive in the sequence defined in the Report Builder.

9.4.3 Input or selection of several values

INPUT SEVERAL VALUES

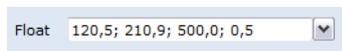
This dialog allows entering several values for a parameter. Here each line corresponds to a value. Empty lines are ignored.



The screenshot shows a configuration dialog with four input fields: String, Int, Float, and DateTime. The Float field is active, and its dropdown menu is open, displaying a list of values: 120,5; 210,9; 500,0; 0,5.

To enter values:

1. click on the input field
2. the input field is opened
3. enter the values one per line
4. click on the arrow next to the input field
5. the input field is closed
6. the values are displayed separated by semicolon



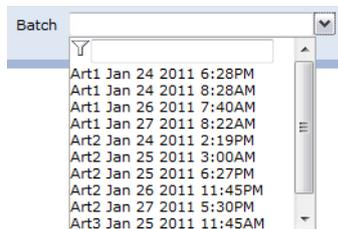
The screenshot shows the Float input field with the values 120,5; 210,9; 500,0; 0,5 displayed inside the field.

For these parameters the following requirements are true:

- ▶ The parameter does not have data type `Bool`.
- ▶ The parameter allows entering several values.
- ▶ The parameter has no predefined values.

SELECTION OF A VALUE FROM SEVERAL PREDEFINED VALUES

This dialog allows the selection of one value from several predefined values. The values are always displayed in alphabetical order.



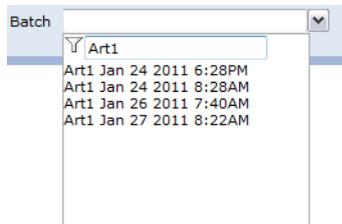
To select a value:

1. click on the input field
2. the input field is opened
3. filter the entries or select a value
4. click on the arrow next to the input field
5. the input field is closed
6. the value is displayed in the input field

For these parameters the following requirements are true:

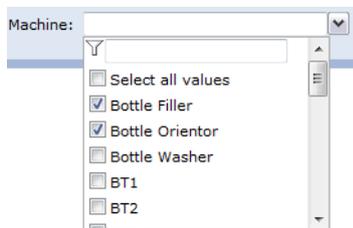
- ▶ The parameter does not have data type `Bool`.
- ▶ The parameter prevents the selection of several values.
- ▶ The parameter has predefined values.
- ▶ For parameters with data type `Text` the following is additionally true:
 - An additional, hidden parameter named `[parameter name]_type` does not exist or its default value is neither set to 1 nor to 2.

The dialog can be displayed filtered (on page 190).



SELECTION OF SEVERAL VALUES FROM SEVERAL PREDEFINED VALUES

This dialog allows the selection of several values from several predefined values. The values are always displayed in alphabetical order. The selection takes place by activating the check box in front of the entry. As soon as more than one entry is displayed, the list has a check box for selecting/deselecting all values.



To select several values:

1. click on the input field
2. the input field is opened
3. filter the entries or select the desired values
4. in order to select all values click in `Select all values`

At this the following is true:

- The first click on check box `Select all values` selects all entries.
- The second click cancels the selection.
- This selection only effects the displayed values. Filtered out values are not effected.

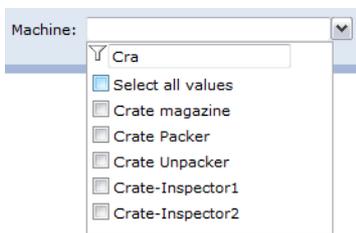
5. click on the arrow next to the input field
6. the input field is closed

7. the values are displayed separated by semicolon

For these parameters the following requirements are true:

- ▶ The parameter does not have data type `Bool`.
- ▶ The parameter allows the selection of several values.
- ▶ The parameter has predefined values.
- ▶ For parameters with data type `Text` the following is additionally true:
 - An additional, hidden parameter named `[parameter name]_type` does not exist or its default value is not set to 1.

The dialog can be displayed filtered (on page 190).



9.4.4 Date and time

The dialog for date and time have different selection possibilities, depending on the configuration of the report:

- ▶ Year: (on page 167) Selection of the year
- ▶ Month (on page 168): Selection of the month
- ▶ Day (on page 168): Selection of a day
- ▶ Hours (on page 169): Selection of the hours
- ▶ Time (on page 172): Selection of the hours and minutes

BASICS

- ▶ The calendar week and the beginning of the week in the selection dialog complies with norm `ISO 8601`. With this:

- the first weekday is always a Monday
 - and January 4 is always in the first calendar week of a year
- ▶ The display of the time in 24-hour format or 12-hour format depends on the setting of language culture (on page 29) in the browser.

Year

Selection of the year for display in the report. The time period ranges from 1900 to the next year from the current date.

SELECTION OF YEAR



| Parameters | Description |
|-----------------------|--|
| Header | <p>In the header you can jump to the decade view of the previous or next decade by clicking on the arrows. The arrows are only displayed if they are available.</p> <p>Click on:</p> <ul style="list-style-type: none"> ▶ Arrow left: Switches to the previous decade. ▶ Arrow right. Switches to the subsequent decade. <p>In view 1900 - 1910 you cannot navigate to the previous decade. In the view of the decade that contains the year after next starting from the current date, it is not possible to navigate to the next decade.</p> |
| Selection of year | <p>The selected year is displayed in bold. If there is no value set, the current year is displayed in bold.</p> <p>Clicking on a year accepts the year as a time point and closes the dialog. The day and time are defined using the two control elements <code>Beginning of the year</code> and <code>End of the year</code>.</p> |
| Beginning of the year | <p>▶ Active: 1 January, 00:00:00 is configured as the day and time.</p> |
| End of the year | <p>▶ Active: 1 January of the subsequent year, 00:00:00 is configured.</p> |

Month

Selection of a month for display in the report.

SELECTION OF MONTH



| Parameters | Description |
|------------------------|--|
| Header | <p>It is possible to change to other years in the header by clicking on the arrows. The arrows are only displayed if they are available.</p> <p>Click on:</p> <ul style="list-style-type: none"> ▶ Arrow left: Switches to the previous year. ▶ Arrow right. Switches to the following year. ▶ Year: Opens the dialog to select the year (on page 167). |
| Selection of month | <p>The selected month is displayed in bold. If there is no value, the current month is displayed in bold.</p> <p>Clicking on a month accepts the month as a time point and closes the dialog. The day and time are defined using the two control elements <code>Beginning of the month</code> and <code>End of the month</code>.</p> |
| Beginning of the month | <ul style="list-style-type: none"> ▶ Active: The first day of the month, <code>00 : 00 : 00</code>, is configured as the day and time. |
| End of the month | <ul style="list-style-type: none"> ▶ Active: The first day of the following month, <code>00 : 00 : 00</code>, is configured as the day and time. |

Day

Selection of a day in a month for display in the report.

SELECTION OF DAY

| September 2013 | | | | | | | |
|----------------|----|----|----|----|----|----|----------|
| WK | MO | TU | WE | TH | FR | SA | SU |
| 35 | 26 | 27 | 28 | 29 | 30 | 31 | 1 |
| 36 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 37 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 38 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 39 | 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 40 | 30 | 1 | 2 | 3 | 4 | 5 | 6 |

Today: 9/1/2014

Beginning of the day
 End of the day

| Parameters | Description |
|----------------------|--|
| Header | <p>It is possible to change to other months in the header by clicking on the arrows. The arrows are only displayed if they are available.</p> <p>Click on:</p> <ul style="list-style-type: none"> ▶ Arrow left: Switches to the previous month. ▶ Arrow right. Switches to the following month. ▶ Year: Opens the dialog to select a month (on page 168). |
| Selection of day | <p>The selected day is displayed in bold. If there is no value, the current day is displayed in bold.</p> <p>Clicking on a day accepts the day as a time point and closes the dialog. The time is defined using the two control elements Beginning of the month and End of the month.</p> |
| Beginning of the day | <ul style="list-style-type: none"> ▶ Active: 00:00:00 is configured as a time. |
| End of the day | <ul style="list-style-type: none"> ▶ Active: 00:00:00 of the following day is configured as a time. |

Hours

Selection of a day and an hour in a month for display in the report.

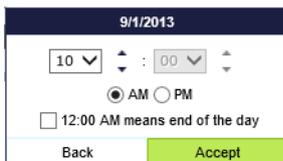


SELECTION OF DAY

| September 2014 | | | | | | | |
|-----------------------------------|----|----|----|----|----|----|----|
| WK | MO | TU | WE | TH | FR | SA | SU |
| 36 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 37 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 38 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 39 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 40 | 29 | 30 | 1 | 2 | 3 | 4 | 5 |
| Today: 9/1/2014 | | | | | | | |
| Beginning of this week: 9/1/2014 | | | | | | | |
| End of this week: 9/7/2014 | | | | | | | |
| Beginning of this month: 9/1/2014 | | | | | | | |
| End of this month: 9/30/2014 | | | | | | | |

| Parameters | Description |
|-------------------------|---|
| Header | <p>It is possible to change to other months in the header by clicking on the arrows. The arrows are only displayed if they are available.</p> <p>Click on:</p> <ul style="list-style-type: none"> ▶ Arrow left: Switches to the previous month. ▶ Arrow right. Switches to the following month. ▶ Year: Opens the dialog to select a month (on page 168). <p>The header can be used for date navigation:</p> |
| Selection of day | <p>The selected day is displayed in bold. If there is no value, the current day is displayed in bold.</p> <p>Clicking on a day accepts the day as a time point and opens the dialog to select an hour.</p> |
| Today | Accepts the current day as a date and opens the dialog to select the hour. |
| Beginning of this week | Sets Monday of the current calendar week with the start of the day (00:00:00) as the time. |
| End of this week | Sets Monday of the following calendar week with the start of the day (00:00:00) as the time. |
| Beginning of this month | Sets the first day of the current month with the start of the day (00:00:00) as the time. |
| End of this month | Sets the first day of the following month with the start of the day (00:00:00) as the time. |

SELECTION OF HOUR



9/1/2013

10 : 00

AM PM

12:00 AM means end of the day

Back Accept

| Parameters | Description |
|--------------------------------|---|
| Header | A click on the header opens the month view to navigate dates. |
| Entry of time | <p>The time is selected by means the drop-down list.</p> <p>The selection is made by clicking on the arrow of the spin control or by clicking on the desired time in the drop-down list that has been opened or by direct input using the keyboard (arrow and number keys).</p> <p>Minutes are displayed as 00 and cannot be changed.</p> |
| 00:00 means the end of the day | Active: 00:00 is interpreted as the end of the day. |
| Back | Opens month view for navigation of dates. |
| Accept | <p>Applies settings and closes the dialog.</p> <p>To cancel the input, click on the calendar symbol next to the input field.</p> |

Time

The time is selected according to the setting of the language of the browser (on page 157) in 24-hour time or in 12-hour time.

24-HOUR TIME FORMAT



21.07.2013

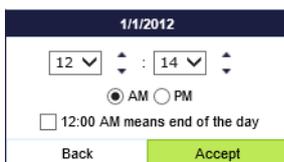
13 : 13

00:00 bedeutet Ende des Tages

Zurück Annehmen

| Parameters | Description |
|--------------------------------|--|
| Header | A click on the header opens the month view to navigate dates. |
| Entry of time | <p>The time is selected by means of two drop-down lists. Clicking on the list opens these. The selection is made by clicking on the arrow of the spin control or by clicking on the desired time in the drop-down list that has been opened or by direct input using the keyboard (arrow and number keys):</p> <ul style="list-style-type: none"> ▶ The first (left) drop-down list is for selecting the hour. The arrow on the right next to the first drop-down list increases and reduces the set hour by the value 1. At the end of the list, it goes to the start if it is increased. At the start of the list, it goes to the end if it is reduced. ▶ The second (right) drop-down list is for selecting the minute. The list contains the values 0 to 59. If the drop-down list is opened, a value can also be selected via the keyboard (arrow and number keys). |
| 00:00 means the end of the day | ▶ Active:00:00 is interpreted as the end of the day. |
| Back | Opens month view for navigation of dates. |
| Accept | <p>Applies settings and closes the dialog.</p> <p>To cancel the input, click on the calendar symbol next to the input field.</p> |

12-HOUR TIME FORMAT



| Parameters | Description |
|-------------------------------|--|
| Header | A click on the header opens the month view to navigate dates. |
| Entry of time | <p>The time is selected by means of two drop-down lists. Clicking on the list opens these. The selection is made by clicking on the arrow of the spin control or by clicking on the desired time in the drop-down list that has been opened or by direct input using the keyboard (arrow and number keys):</p> <ul style="list-style-type: none"> ▶ The first (left) drop-down list is for selecting the hour. The arrow on the right next to the first drop-down list increases and reduces the set hour by the value 1. At the end of the list, it goes to the start if it is increased. At the start of the list, it goes to the end if it is reduced. ▶ The second (right) drop-down list is for selecting the minute. The list contains the values 0 to 59. If the drop-down list is opened, a value can also be selected via the keyboard (arrow and number keys). ▶ AM: Morning (ante meridiem) ▶ PM: Afternoon (post meridiem) |
| 12:00 AM means end of the day | Active: 12:00 AM is interpreted as the end of the day. |
| Back | Opens month view for navigation of dates. |
| Accept | <p>Applies settings and closes the dialog.</p> <p>To cancel the input, click on the calendar symbol next to the input field.</p> |

9.4.5 Time span

This dialog makes it possible to enter a time period, depending on the configuration of the report.

| Ende des Intervalls | |
|---|------------------|
| Aktuelles Datum und aktuelle Uhrzeit einstellen | |
| Jahr: | 2014 ▼ |
| Monat: | 7 ▼ |
| Tag: | 22 ▼ |
| Stunde: | 11 ▼ |
| Minute: | 13 ▼ |
| Intervalldauer | |
| <input type="text" value="2"/> | Minuten ▼ |
| Vorschau | |
| Von: | 2014-07-22 11:11 |
| Bis: | 2014-07-22 11:13 |
| <input type="button" value="Annehmen"/> | |

To configure a time period:

1. Select the end time

The possibilities for selection available depend on the report:

- **Year** (on page 176)
- **Month** (on page 178)
- **Day** (on page 180)
- **Hour** (on page 182)
- **Minute** (on page 184)

2. Select the interval duration.

The interval duration defines the time period until the end time. The possibilities for selection depend on the report.

3. The selected configuration is displayed in the Preview area. Error messages are displayed here if there is an incorrect configuration.

Year

ENTRY OF THE TIME RANGE IN YEARS.

| End of the interval | |
|---|------------------|
| Set current date and time | |
| Year: | 2013 ▼ |
| <input checked="" type="radio"/> Beginning of the year <input type="radio"/> End of the year | |
| Duration of the interval | |
| | 1 ▲ ▼ Years ▼ |
| Preview | |
| From: | 2012-01-01 00:00 |
| To: | 2013-01-01 00:00 |
| Accept | |

| Parameters | Description |
|----------------------------|---|
| End of the interval | Definition of the end time. Minutes and hours are always set to 0, days are always set to 1. January. These elements cannot be configured. |

| | |
|----------------------------------|--|
| Set current date and time | Set the current time stamp when clicked. |
| Year | Input of year. Selection from drop-down list. |
| Beginning of the year | <ul style="list-style-type: none"> ▶ Active: The end time is 00 : 00 on January 1 of the selected year. |
| End of the year | <ul style="list-style-type: none"> ▶ Active: The end time is 00 : 00 on January 1 of the following year. |
| Duration of the interval | <p>Duration of the period of time that is to be analyzed.</p> <ul style="list-style-type: none"> ▶ Text input field: Defines quantity. Input of a number between 1 and 99999. The quantity can be increased or reduced with the arrows. ▶ Drop-down list: Defines granularity. Fixed setting: <code>Years</code> |
| Preview | <p>Display of the current configuration settings in local time.</p> <p>Errors are displayed by the corresponding error messages.</p> <ul style="list-style-type: none"> ▶ From: Start of the interval. Display only. ▶ To: End of the interval. Display only. |
| Accept | <p>Click on this button to accept the inputs, if they are valid, and close the dialog.</p> <p>Time stamp is converted to UTC.</p> <p>To leave the dialog without saving, click on the calendar symbol or in the toolbar with the drop-down dialog.</p> |

Month

ENTRY OF THE TIME RANGE IN MONTHS.

| End of the interval | |
|---|------------------|
| Set current date and time | |
| Year: | 2013 ▼ |
| Month: | 1 ▼ |
| <input checked="" type="radio"/> Beginning of the month <input type="radio"/> End of the month | |
| Duration of the interval | |
| 1 | Months ▼ |
| Preview | |
| From: | 2012-12-01 00:00 |
| To: | 2013-01-01 00:00 |
| Accept | |

| Parameters | Description |
|----------------------------|---|
| End of the interval | Definition of the end time. Minutes and hours are always set to 0, days are always set to 1. These elements cannot be configured. |

| | |
|----------------------------------|--|
| Set current date and time | Set the current time stamp when clicked. |
| Year | Input of year. Selection from drop-down list. |
| Month | Input of month. Selection from drop-down list. |
| Beginning of the month | <ul style="list-style-type: none"> ▶ Active: The end time is 00 : 00 on the first day of the selected month. |
| End of the month | <ul style="list-style-type: none"> ▶ Active: The end time is 00 : 00 on the first day of the following month. |
| Duration of the interval | <p>Duration of the period of time that is to be analyzed.</p> <ul style="list-style-type: none"> ▶ Text input field: Defines quantity. Input of a number between 1 and 99999. The quantity can be increased or reduced with the arrows. ▶ Drop-down list: Defines granularity. Selection of years or months. |
| Preview | <p>Display of the current configuration settings in local time.</p> <p>Errors are displayed by the corresponding error messages.</p> <ul style="list-style-type: none"> ▶ From: Start of the interval. Display only. ▶ To: End of the interval. Display only. |
| Accept | <p>Click on this button to accept the inputs, if they are valid, and close the dialog.</p> <p>Time stamp is converted to UTC.</p> <p>To leave the dialog without saving, click on the calendar symbol or in the toolbar with the drop-down dialog.</p> |

Day

ENTRY OF THE TIME RANGE IN DAYS.

| End of the interval | |
|---|---|
| Set current date and time | |
| Year: | 2013 <input type="button" value="v"/> |
| Month: | 1 <input type="button" value="v"/> |
| Day: | 1 <input type="button" value="v"/> |
| <input checked="" type="radio"/> Beginning of the day <input type="radio"/> End of the day | |
| Duration of the interval | |
| 1 | <input type="button" value="up"/> <input type="button" value="down"/> Months <input type="button" value="v"/> |
| Preview | |
| From: | 2012-12-01 00:00 |
| To: | 2013-01-01 00:00 |
| <input type="button" value="Accept"/> | |

| Parameters | Description |
|----------------------------|--|
| End of the interval | Definition of the end time. Minutes and hours are always set to 0 and cannot be configured. |

| | |
|----------------------------------|--|
| Set current date and time | Set the current time stamp when clicked. |
| Year | Input of year. Selection from drop-down list. |
| Month | Input of month. Selection from drop-down list. |
| Day | Input of day. Selection from drop-down list. |
| Beginning of the day | ▶ Active: The end time is 00 : 00 on the selected day. |
| End of the day | ▶ Active: The end time is 00 : 00 on the selected day of the following day. |
| Duration of the interval | <p>Duration of the period of time that is to be analyzed.</p> <ul style="list-style-type: none"> ▶ Text input field: Defines quantity. Input of a number between 1 and 99999. The quantity can be increased or reduced with the arrows. ▶ Drop-down list: Defines granularity. Selection between years, months and days. |
| Preview | <p>Display of the current configuration settings in local time.</p> <p>Errors are displayed by the corresponding error messages.</p> <ul style="list-style-type: none"> ▶ From: Start of the interval. Display only. ▶ To: End of the interval. Display only. |
| Accept | <p>Click on this button to accept the inputs, if they are valid, and close the dialog.</p> <p>Time stamp is converted to UTC.</p> <p>To leave the dialog without saving, click on the calendar symbol or in the toolbar with the drop-down dialog.</p> |

Hour

ENTRY OF THE TIME RANGE IN HOURS.

| End of the interval | |
|---------------------------|------------------|
| Set current date and time | |
| Year: | 2013 ▼ |
| Month: | 1 ▼ |
| Day: | 1 ▼ |
| Hour: | 0 ▼ |
| Duration of the interval | |
| 1 | Months ▼ |
| Preview | |
| From: | 2012-12-01 00:00 |
| To: | 2013-01-01 00:00 |
| Accept | |

| Parameters | Description |
|----------------------------|--|
| End of the interval | Definition of the end time. Minutes are always set to 0 and cannot be configured. |

| | |
|----------------------------------|---|
| Set current date and time | Set the current time stamp when clicked. |
| Year | Input of year. Selection from drop-down list. |
| Month | Input of month. Selection from drop-down list. |
| Day | Input of day. Selection from drop-down list. |
| Hour | Input of hour. Selection from drop-down list. |
| Duration of the interval | <p>Duration of the period of time that is to be analyzed.</p> <ul style="list-style-type: none"> ▶ Text input field: Defines quantity. Input of a number between 1 and 99999. The quantity can be increased or reduced with the arrows. ▶ Drop-down list: Defines granularity. Selection between years, months, days and hours. |
| Preview | <p>Display of the current configuration settings in local time.</p> <p>Errors are displayed by the corresponding error messages.</p> <ul style="list-style-type: none"> ▶ From: Start of the interval. Display only. ▶ To: End of the interval. Display only. |
| Accept | <p>Click on this button to accept the inputs, if they are valid, and close the dialog.</p> <p>Time stamp is converted to UTC.</p> <p>To leave the dialog without saving, click on the calendar symbol or in the toolbar with the drop-down dialog.</p> |

Minute

ENTRY OF THE TIME RANGE IN MINUTES.

| Ende des Intervalls | |
|---|------------------|
| Aktuelles Datum und aktuelle Uhrzeit einstellen | |
| Jahr: | 2014 |
| Monat: | 7 |
| Tag: | 22 |
| Stunde: | 11 |
| Minute: | 13 |
| Intervalldauer | |
| 2 | Minuten |
| Vorschau | |
| Von: | 2014-07-22 11:11 |
| Bis: | 2014-07-22 11:13 |
| Annehmen | |

| Parameters | Description |
|---------------------|-----------------------------|
| End of the interval | Definition of the end time. |

| | |
|----------------------------------|--|
| Set current date and time | Set the current time stamp when clicked. |
| Year | Input of year. Selection from drop-down list. |
| Month | Input of month. Selection from drop-down list. |
| Day | Input of day. Selection from drop-down list. |
| Hour | Input of hour. Selection from drop-down list. |
| Minute | Input of minute. Selection from drop-down list. |
| Duration of the interval | <p>Duration of the period of time that is to be analyzed.</p> <ul style="list-style-type: none"> ▶ Text input field: Defines quantity. Input of a number between 1 and 99999. The quantity can be increased or reduced with the arrows. ▶ Drop-down list: Defines granularity. Selection between years, months, days, hours and minutes. |
| Preview | <p>Display of the current configuration settings in local time.</p> <p>Errors are displayed by the corresponding error messages.</p> <ul style="list-style-type: none"> ▶ From: Start of the interval. Display only. ▶ To: End of the interval. Display only. |
| Accept | <p>Click on this button to accept the inputs, if they are valid, and close the dialog.</p> <p>Time stamp is converted to UTC.</p> <p>To leave the dialog without saving, click on the calendar symbol or in the toolbar with the drop-down dialog.</p> |

9.4.6 Equipment group

The label for an equipment group does not need to be unique. Values from equipment groups with the same labels are permitted if they are not in the same area of the tree. The same labels for root elements and the same labels for elements with the same superordinate nodes lead to errors.

Attention

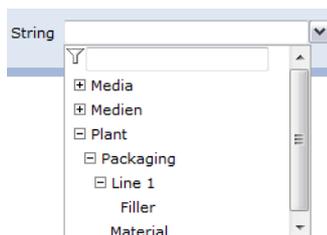
Each equipment group in zenon may only be assigned to one individual time model.

If several time model groups are assigned, the Analyzer Wizard Export uses the first that it finds and exports this to the metadata of the Analyzer. Other time model groups are ignored.

SELECTION OF AN ENTRY FROM THE EQUIPMENT MODEL

This selection dialog makes it possible to select an entry from the equipment model. The entries are displayed via a tree structure and sorted alphabetically in each level.

Subordinate elements of a level can be hidden. A plus in front of the entry means that the element contains additional subordinate elements. They are not displayed in the current view. Click on the plus sign to open the display of the sub elements. The plus sign changes to a minus sign. Click on the minus sign to close the level again.



To select an element:

1. Open the respective group if the element is a sub element and therefore is not displayed
2. Select the desired element with a mouse click.

Note: Double clicking a checkbox selects or deselects all hierarchically-subordinate checkboxes that are visible at that time.

For these parameters the following requirements are true:

- ▶ The parameter is of data type `Text`.
- ▶ The parameter prevents the selection of several values.
- ▶ The parameter has predefined values

- ▶ An additional, hidden parameter `[parameter name]_type` exists. As default value for the hidden parameter 1 is entered.

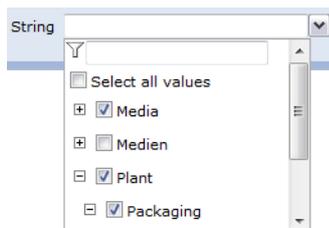
The dialog can be displayed filtered (on page 190). At this the filter criterion is only used on entries which do not have any subordinate elements.

SELECTION OF SEVERAL ENTRIES FROM THE EQUIPMENT MODEL

This selection dialog makes it possible to select several entries from the equipment model. The entries are displayed via a tree structure and sorted alphabetically in each level.

Subordinate elements of a level can be hidden. A plus in front of the entry means that: the element contains additional subordinate elements. They are not displayed in the current view. Click on the plus sign in order to open the display of the sub elements. The plus sign changes to a minus sign. Click on the minus sign in order to close the level.

At showing/hiding selected entries (tick in the check box) are also shown/hidden. The status (selected or deselected) remains the same. Double clicking a checkbox marks all hierarchically-subordinate checkboxes that are visible at that time or removes the marking.



If more than 1 value is displayed (e.g. other values collapsed or filtered) the control has a check box for selecting all displayed elements. It behaves similar to the check box for all elements at the control for selecting several predefined values.

For these parameters the following requirements are true:

- ▶ The parameter is of data type `Text`.
- ▶ The parameter allows the selection of several values.
- ▶ The parameter has predefined values
- ▶ An additional, hidden parameter `[parameter name]_type` exists. As default value for the hidden parameter 1 is entered.

The dialog can be displayed filtered (on page 190). At this the filter criterion is only used on entries which do not have any subordinate elements. If an entry is selected, you cannot filter it out.

STRUCTURE FOR PREDEFINED VALUES

Pre-defined values require a certain structure for both dialogs:

- ▶ The name which should be displayed is always in the label of the value.
- ▶ For root entries (no superordinate node exists) only the ID is in the value.
- ▶ For subordinate entries the value consists of ID of the entry and the ID of the superordinate entry separated by a linking character (pipe character |).

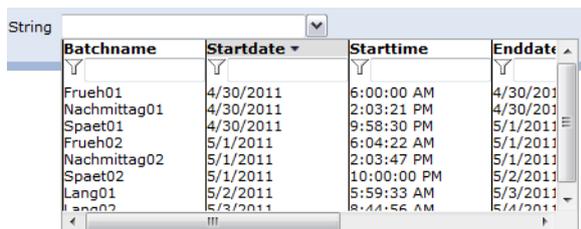
Thus: [ID of the entry] | [ID of the superordinate entry]

9.4.7 Lot and shift

This selection dialog configures the display of lots and shiftdata. Each predefined value corresponds to one line. The user can select a lot by clicking on the respective cell.

The selection dialog contains the following columns:

- ▶ Name (for lot or shift)
- ▶ Start date
- ▶ Start time
- ▶ End date
- ▶ End time
- ▶ Duration



| Batchname | Startdate | Starttime | Enddate |
|--------------|-----------|-------------|-----------|
| Frueh01 | 4/30/2011 | 6:00:00 AM | 4/30/2011 |
| Nachmittag01 | 4/30/2011 | 2:03:21 PM | 4/30/2011 |
| Spaet01 | 4/30/2011 | 9:58:30 PM | 5/1/2011 |
| Frueh02 | 5/1/2011 | 6:04:22 AM | 5/1/2011 |
| Nachmittag02 | 5/1/2011 | 2:03:47 PM | 5/1/2011 |
| Spaet02 | 5/1/2011 | 10:00:00 PM | 5/2/2011 |
| Lang01 | 5/2/2011 | 5:59:33 AM | 5/3/2011 |
| Lang02 | 5/3/2011 | 8:44:56 AM | 5/4/2011 |

The dialog can be sorted and filtered. For details, see the Filter lots (on page 191) chapter.

For these parameters the following requirements are true:

- ▶ The parameter has data type `Text`.
- ▶ The parameter prevents the selection of several values.

- ▶ The parameter has predefined values.
- ▶ An additional, hidden parameter named `[parameter name]_type` exists and its default value is set to 2.

STRUCTURE OF PREDEFINED VALUES

Predefined values call for a certain structure for this dialog:

- ▶ The lot name is always in the label of the value.
- ▶ The value filed of the label consists of:
 - `[start time]`
 - Linking character "|"
 - `[end time]`

The format of a time is `YYYY-MM-DD hh:mm:ss` in UTC.

The time is converted to the local time of the server for display.

From this the following values are generated for displaying in columns:

- ▶ Lot name
- ▶ Date on which the lot started: Input in date format of the language culture of the user; Date and time are displayed in local time of the server
- ▶ Time when the lot started: Input in time format of the language culture of the user; Date and time are displayed in local time of the server
- ▶ Date on which the lot ended: Input in date format of the language culture of the user; Date and time are displayed in local time of the server
- ▶ Time when the lot ended: Input in time format of the language culture of the user; Date and time are displayed in local time of the server
- ▶ Lot duration:
 - Format: `[#Days][Day abbreviation in the culture of the user]`
 - `[#Hours] : [#Minutes] : [#Seconds]`

EVALUATION OF LOT GROUPS

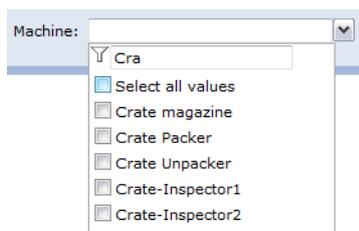
A mechanism for evaluating lot groups is available. This is based on the equipment model:

1. The necessary variables and the lot archive in which they are logged are found via the equipment model.
2. All lots for the selected point in time are obtained from the lot archives. In doing so, lots from several archives with the same lot names but different point in time are compiled into one entry.
3. The lots are displayed in a lot selection dialog via report parameters.
4. When creating a report, the lots for the respective archives are read again and the data for the time period of the lot in the archive is obtained.

9.4.8 Filter

Some dialogs can be displayed in a filtered way. For example dialogs for:

- ▶ Input or selection of several values (on page 163): Filter method see below
- ▶ Equipment group selection (on page 185): Filter method see below
- ▶ Lot selection (on page 188): For the filter method, see Lot selection (on page 191)



To filter the predefined values:

1. enter the filter criterion in the input field
2. press key `Enter`
3. the list is rebuild and only contains values which correspond to the filter criterion

To display all values:

1. delete the filter criterion from the input field
2. press key `Enter`
3. the list is rebuild and contains all predefined values

FILTER CRITERIA FOR DIALOGS WHICH CAN BE FILTERED

- ▶ The filtering is not case-sensitive.
- ▶ A question mark (?) is a wildcard for exactly one character.
- ▶ An asterisk (*) is a wildcard for any number of character.
- ▶ If there is neither * nor ? in a filter criterion, a * is appended to the filter criterion internally.
- ▶ If values are selected, they are still displayed when filtering even if they do not match the criterion.
- ▶ Equipment group: The filter criterion is only applied to entries which do not have subordinate elements (e.g. they never existed or they were filtered out previously)

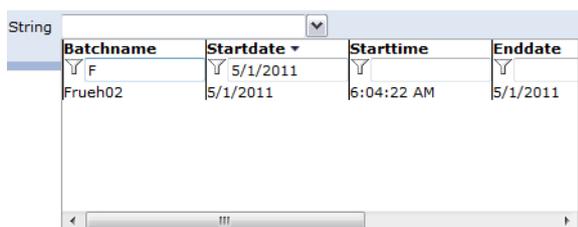
EXAMPLES

| Filter | finds |
|--------------------------|--|
| e or E or e* or E* finds | all entries starting with "e" or "E". |
| *3 | finds all entries ending with "3". |
| ?r* or ?R* | finds all entries with "r" or "R" as second character. |
| *9* | finds all entries containing "9". |

Filter lots

The entries in the lot selection dialog (on page 188) can be filtered and sorted.

FILTER VALUES



| Batchname | Startdate | Starttime | Enddate |
|---------------------------------------|-----------|-------------------------------------|-------------------------------------|
| <input checked="" type="checkbox"/> F | 5/1/2011 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Frueh02 | 5/1/2011 | 6:04:22 AM | 5/1/2011 |

To filter the predefined values:

1. in each desired column enter the filter criterion in the input field
2. press key `Enter`
3. the list is rebuild and only contains values which correspond to the filter criterion

To display all values:

1. delete the filter criterion from the input field
2. press key `Enter`
3. the list is rebuild and contains all predefined values

For the filtering the following is true:

- ▶ Each column has its own filter box.
- ▶ If a filter box is empty, it is not filtered after this column.
- ▶ For an entry to be displayed, it must fulfill the filter criteria of all columns.
- ▶ The filtering is triggered by pressing key `Enter` in any filter box.
- ▶ The following filters are used for the individual columns:
 - The lot name uses the text filter (on page 190) in the same way as the dialog for selecting one of several predefined values.
 - Start date uses the date filter.
 - Start time uses the time filter.
 - End date uses the date filter.
 - End time uses the time filter.
 - Duration uses the duration filter.

LOT NAME

| Batchname | Startdate | Starttime | Enddate |
|-----------|------------|-----------|------------|
| F* | | | |
| Frueh01 | 30.04.2011 | 06:00:00 | 30.04.2011 |
| Frueh02 | 01.05.2011 | 06:04:22 | 01.05.2011 |

For this filter the following is true:

- ▶ The filtering is not case-sensitive.
- ▶ A question mark (?) is a wildcard for exactly one character.
- ▶ An asterisk (*) is a wildcard for any number of character.
- ▶ If there is neither * nor ? in a filter criterion, a * is appended to the filter criterion internally.
- ▶ If values are selected, they are still displayed when filtering even if they do not match the criterion.

DATE FILTER

| Batchname | Startdate | Starttime | Enddate |
|--------------|-----------|-------------|----------|
| Frueh02 | 5/1/2011 | 6:04:22 AM | 5/1/2011 |
| Nachmittag02 | 5/1/2011 | 2:03:47 PM | 5/1/2011 |
| Spaet02 | 5/1/2011 | 10:00:00 PM | 5/2/2011 |

For this filter the following is true:

- ▶ The date must be entered in the date format of the language culture of the user.
- ▶ Leading zeros can be left out.
- ▶ For single elements (day, month, year) you may use * as wildcard.

For example:

May 2011: *.5.2011

Year 2011: *.*.2011

- ▶ To filter from/up to a special day you may use the following at the beginning:
 - <
 - >
 - <=
 - >=

* is not allowed.

For example:

from 1 May 2011: > 30.4.2011 OR >= 1.5.2011

up to 31 May 2011: < 1.6.2011 OR <= 31.5.2011

- ▶ If a filter criterion does not match these conditions (e.g. < and * are combined, elements are missing or are entered in the wrong date format), the whole filtering process is canceled.

TIME FILTER:

| Batchname | Startdate | Starttime | Enddate |
|-----------|------------|-----------|------------|
| Frueh01 | 30.04.2011 | 06:00:00 | 30.04.2011 |
| Frueh02 | 01.05.2011 | 06:04:22 | 01.05.2011 |

For this filter the following is true:

- ▶ The time must be entered in the time format of the language culture of the user.
- ▶ Leading zeros can be left out.
- ▶ For single elements (hours, minutes, seconds) you may use * as wildcard.

For example:

12 o' clock: 12:*:* (24-hours) or 12:*:* PM (12-hours)

13:45: 13:45:* (24-hours) or 1:45:* PM (12-hours)

- ▶ To filter from/up to a special time you may use the following at the beginning:
 - <
 - >
 - <=
 - >=

* is not allowed.

For example:

Morning including noon: < 12:00:01 OR <= 12:00:00 (24-hours) OR < 12:00:01 PM OR <= 12:00:00 PM (12-hours)

Everything starting at 8 o' clock: > 7:59:59 OR >= 8:0:0 (24-hours) OR > 7:59:59 AM OR >= 8:0:0 AM (12-hours)

- ▶ If a filter criterion does not match these conditions (e.g. < and * are combined, elements are missing or are entered in the wrong time format), the whole filtering process is canceled.

DURATION FILTER

| me | Enddate | Endtime | Duration |
|----|------------|----------|-------------|
| 3 | 03.05.2011 | 08:44:56 | 1d 02:45:23 |
| 6 | 04.05.2011 | 11:34:23 | 1d 02:49:27 |

For this filter the following is true:

- ▶ The duration must be entered in the format defined above.
- ▶ Leading zeros can be left out.
- ▶ For single elements (hours, minutes, seconds) you may use * as wildcard.

For example:

Duration: 1 day: 1d *:*:*

- ▶ To filter from/up to a certain duration you may use the following at the beginning:
 - <
 - >
 - <=
 - >=

* is not allowed.

For example:

Longer than 1 day: > 1d 0:0:0 Or >= 1d 0:0:1

Less than 12 hours: < 0d 12:0:0 Or <= 0d 11:59:59

- ▶ If a filter criterion does not match these conditions (e.g. < and * combined, elements missing), the whole filtering process is canceled.

SORT VALUES

The report can be sorted ascending or descending on any column. The current sorting order is displayed in the column after which it is sorted.

To sort a column:

1. click on the desired column title

2. the sorting is started
3. the arrow next to the column header displays whether the sorting is ascending or descending
4. another click on the column header changes the sorting order

Filtering and sorting can be used in parallel and do not influence one another.

9.4.9 Sorting of filter elements

Selection of a value from predefined values or Selection of several values from predefined values type elements have, as standard, a predefined sorting for the display of filter elements.

This applies if the parameter:

- ▶ is one of the following data types:
 - Integer
 - Float
 - Date & Time
 - Text
- ▶ Has a list of predefined values
- ▶ Is not hidden and not write-protected

The standard sorting is defined when the report template is created and cannot be changed by report developers in the Report Builder.

The following sorting is available:

- ▶ A-Z:

Sorting is in alphabetical order according to the display text of the predefined values. This is the standard action. This also applies if no special sorting has been saved.

- ▶ Z-A:

Sorting is in reverse alphabetical order according to the display text of the predefined values.

- ▶ Values upwards:

Sorting direction is upwards according to the predefined values. The data type of the parameter is not taken into account in the process.

- ▶ Values downwards:

Sorting direction is downwards according to the predefined values. The data type of the parameter is not taken into account in the process.

- ▶ In sequence:

The values are written to the list in the order in which they were provided by the SQL Server Reporting Services web service.

- ▶ In reverse sequence:

The values are written to the list in the reverse order to the order in which they were provided by the SQL Server Reporting Services web service.

9.5 Site

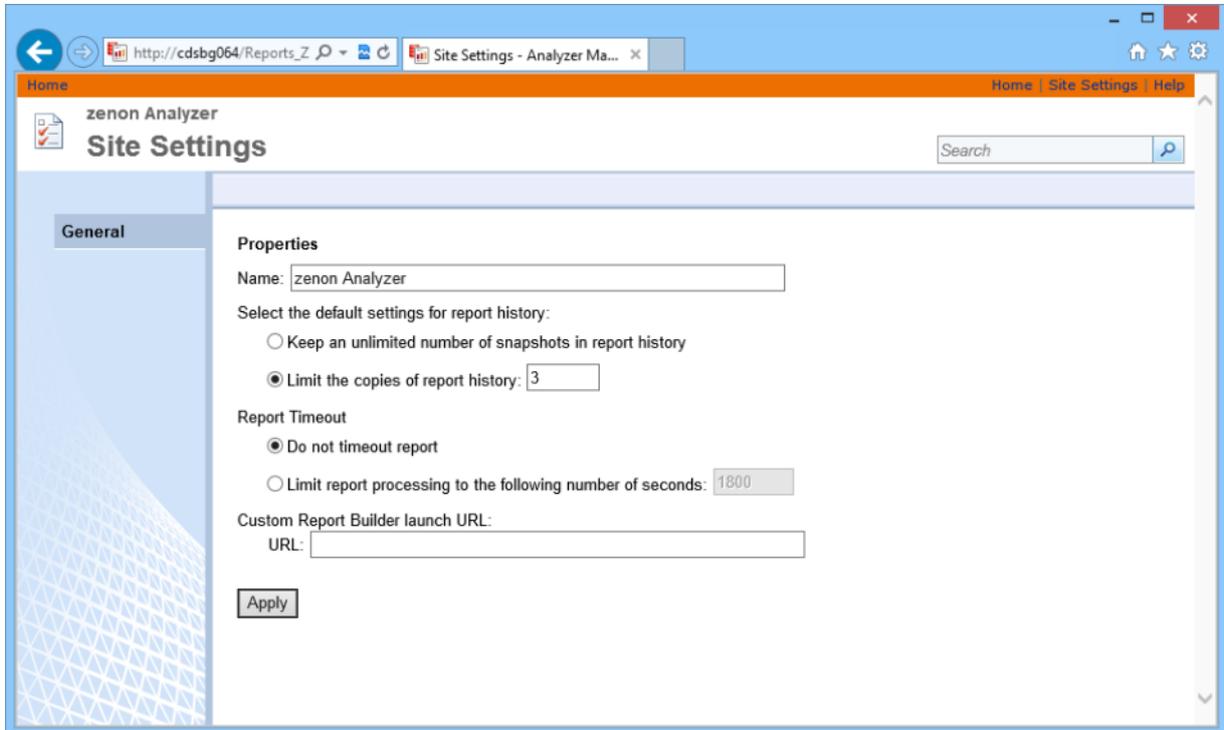
Via the site settings you configure

- ▶ General settings (on page 198) of the zenon Analyzer

User rights are set and administered in the ZAMS (on page 529).

9.5.1 General

General settings for naming the zenon Analyzer and processing the reports.

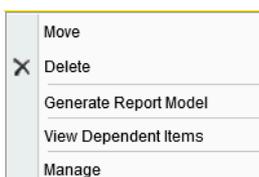


| Parameters | Description |
|---|---|
| Name | Name which is displayed in the header of the report generators. |
| Report history | Defined number of reports saved for the history. Possible settings: <ul style="list-style-type: none"> ▶ unlimited number ▶ define maximum number |
| Reporttimeout | Defines timeout for processing reports. Possible settings: <ul style="list-style-type: none"> ▶ no timeout ▶ Restriction to a second value |
| Start URL for user-defined Report Generator | Address for user-defined Report Generator. |
| Apply | Takes over changed settings Attention: If you leave the site without clicking Apply , all changes will be lost. |

9.6 Data source

To edit a data source:

1. in the detail view of the zenon Analyzer move the mouse cursor over the data source
2. the drop-down list is displayed
3. select the desired command



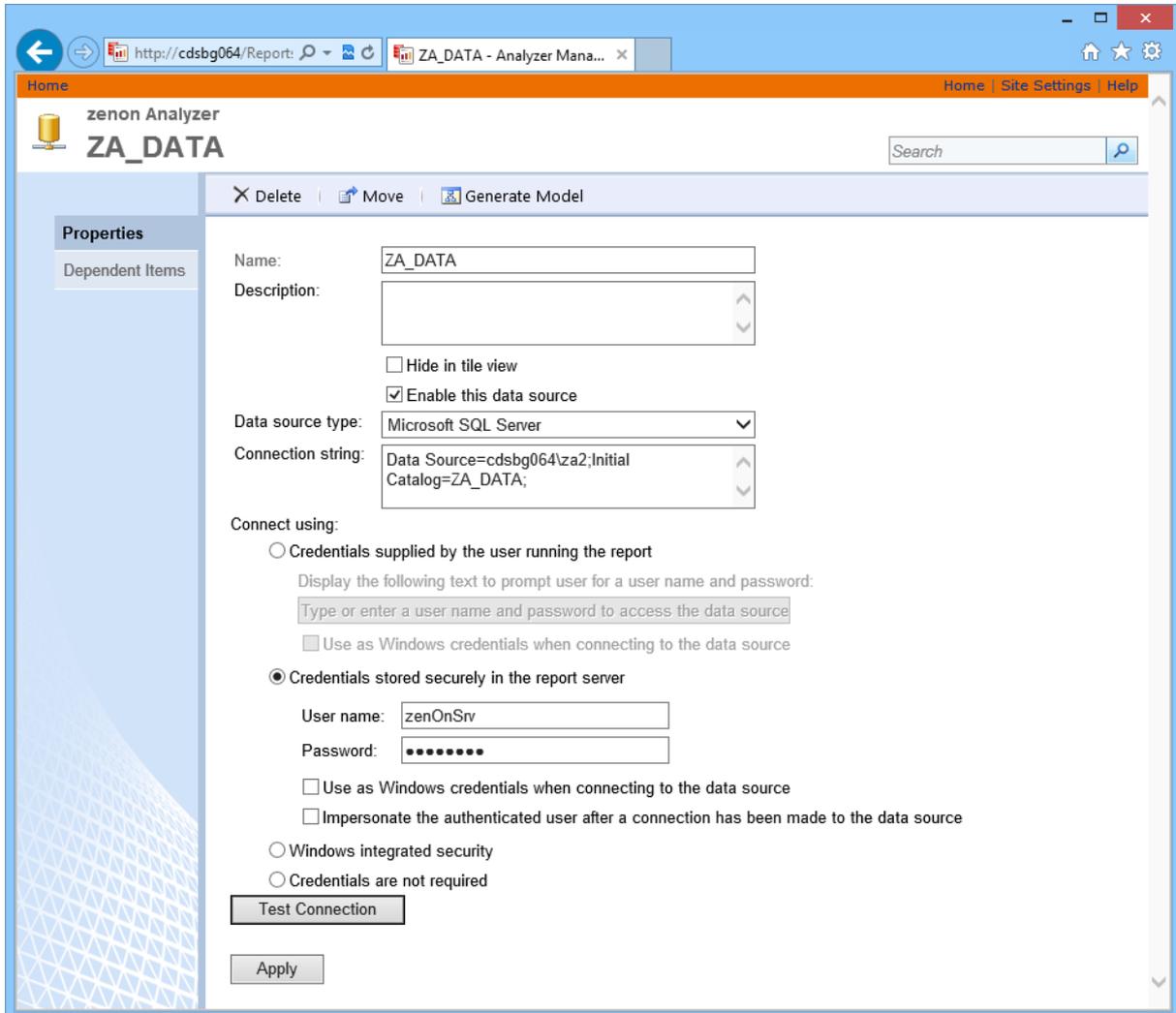
| TAGs | Description |
|-----------------------------------|--|
| Move | Opens dialog for moving elements. |
| Delete | Deletes element. |
| Generate report model | Opens dialog for creating a new report model (on page 203). |
| Display dependent elements | Displays all reports based in this data source and makes it possible to delete or move them. |
| Manage | Opens dialog for setting the properties, including the dialog for dependent elements. |

You can find detailed guides for the Microsoft Reporting Services on the Microsoft homepage:

- ▶ German (<http://msdn.microsoft.com/de-de/library/ms159106.aspx>)
- ▶ English (<http://msdn.microsoft.com/en-us/library/ms159106.aspx>)
- ▶ French (<http://msdn.microsoft.com/fr-fr/library/ms159106.aspx>)
- ▶ Italian (<http://msdn.microsoft.com/it-it/library/ms159106.aspx>)

9.6.1 Properties

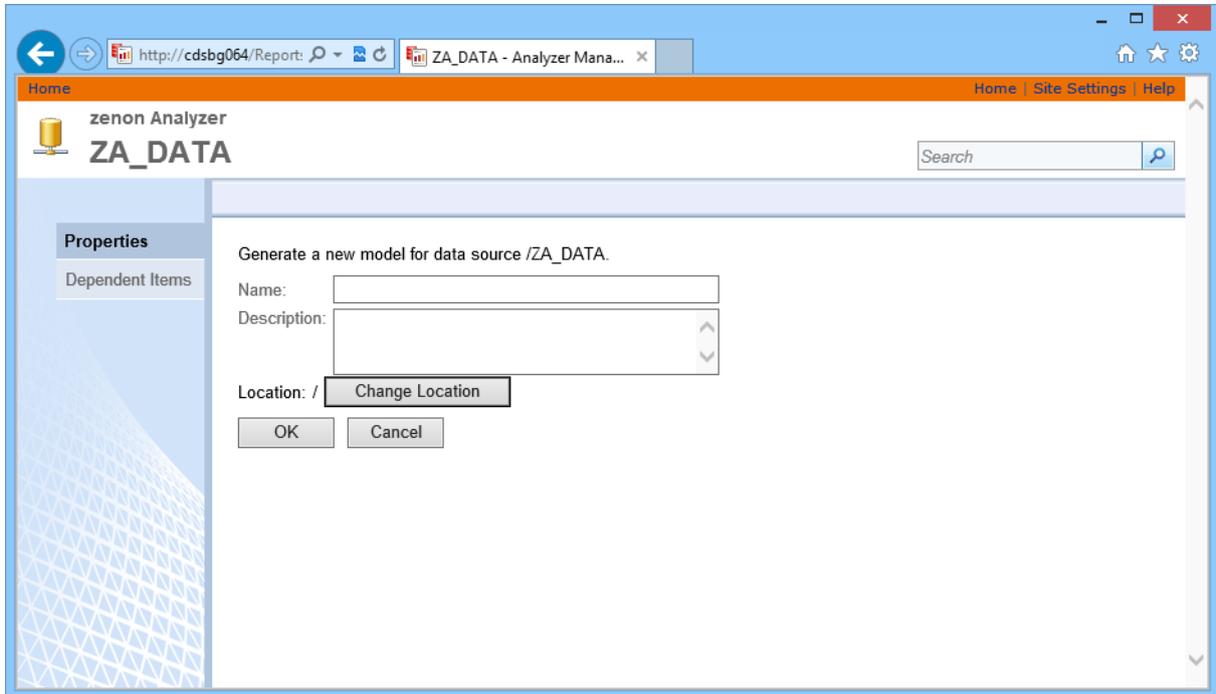
In window properties you define the basic properties of the data source and the connection parameters.



| Parameters | Description |
|---|---|
| Delete | Deletes data source. |
| Move | Moves data source. |
| Generate model | Opens dialog for creating a new model. |
| Name | Name of the data source. |
| Description | Optional, detailed description |
| Hide in side-by-side/one-below-the-other view | Active: is hidden in side-by-side/one-below-the-other view. |
| Activate this data source | Active: Data source is used. |
| Data source type | Selection of the type via drop-down list. |
| Connection string | String for establishing the connection. |
| Establish connection via | Selection of the connection method. |
| Provided login information of the user who executes the report | User must state information. It is possible to display an instruction The information can be marked as Window login information. |
| Login information which are saved securely on the report server | Login information is saved on the server. User name and password must be entered. The information can be marked as Window login information. After establishing a connection the identity of the user can be accepted. |
| Integrated Windows security | Windows security. |
| Login information is not necessary | No login information is necessary. |
| Test Connection | Checks connection and displays a success/failure message below the button. |
| Apply | Applies all settings. |

Generate model

This dialog makes it possible to create new models for the data source.



| Parameters | Description |
|--|--|
| Name | Name of the new data source. |
| Description | Optional, detailed description. |
| Saving location/change saving location | Opens dialog for defining the saving location. |
| OK | Confirms changes and opens the properties. |
| Cancel | Discards changes and closes the dialog. |

9.7 Folder

Reports are collected and grouped in folders.

Folders are configured and managed via:

- ▶ menu item **New folder** in the tool bar

- ▶ menu item **Folder settings** in the tool bar
- ▶ the drop-down list of the folder (is displayed at mouse over)

DROP-DOWN LIST FOLDER

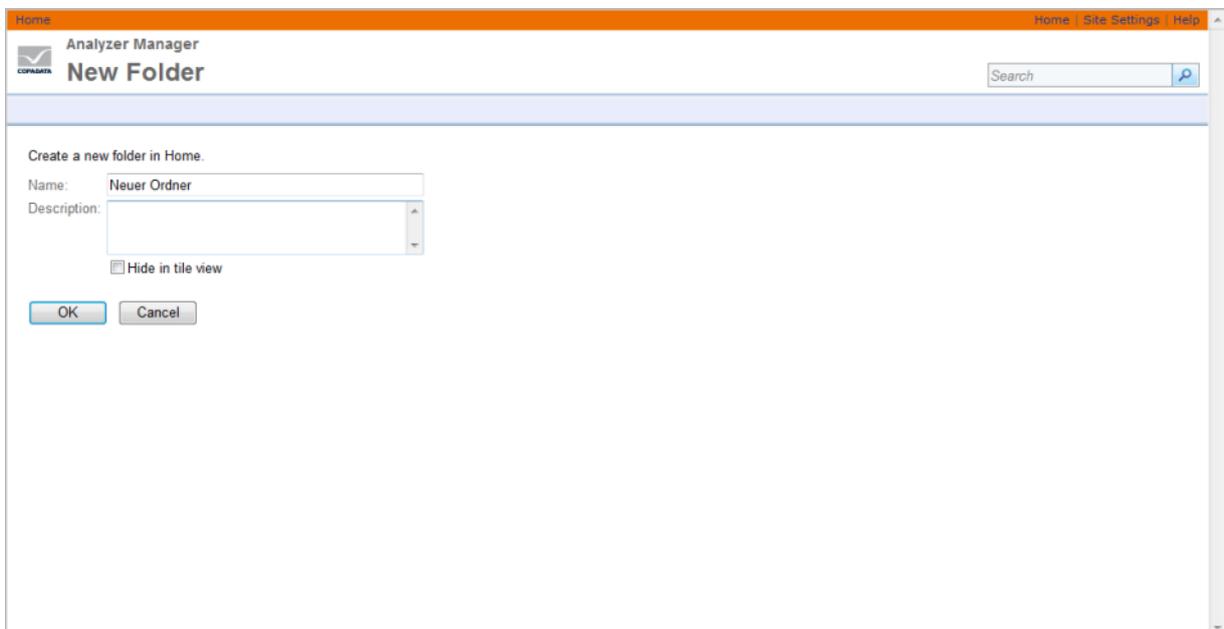
| | |
|---|--------|
| | Move |
| X | Delete |
| | Manage |

| Parameters | Description |
|---------------|---|
| Move | Opens menu for selecting the new saving location. |
| Delete | Deletes selected folder. |
| Manage | Opens the dialog for managing (on page 203) the folder. |

CREATE NEW FOLDER

To create a new folder:

1. click on menu item **New folder** in the tool bar
2. the dialog for creating a new folder is opened



Home | Site Settings | Help

Analyzer Manager
New Folder

Search

Create a new folder in Home.

Name: Neuer Ordner

Description:

Hide in tile view

OK Cancel

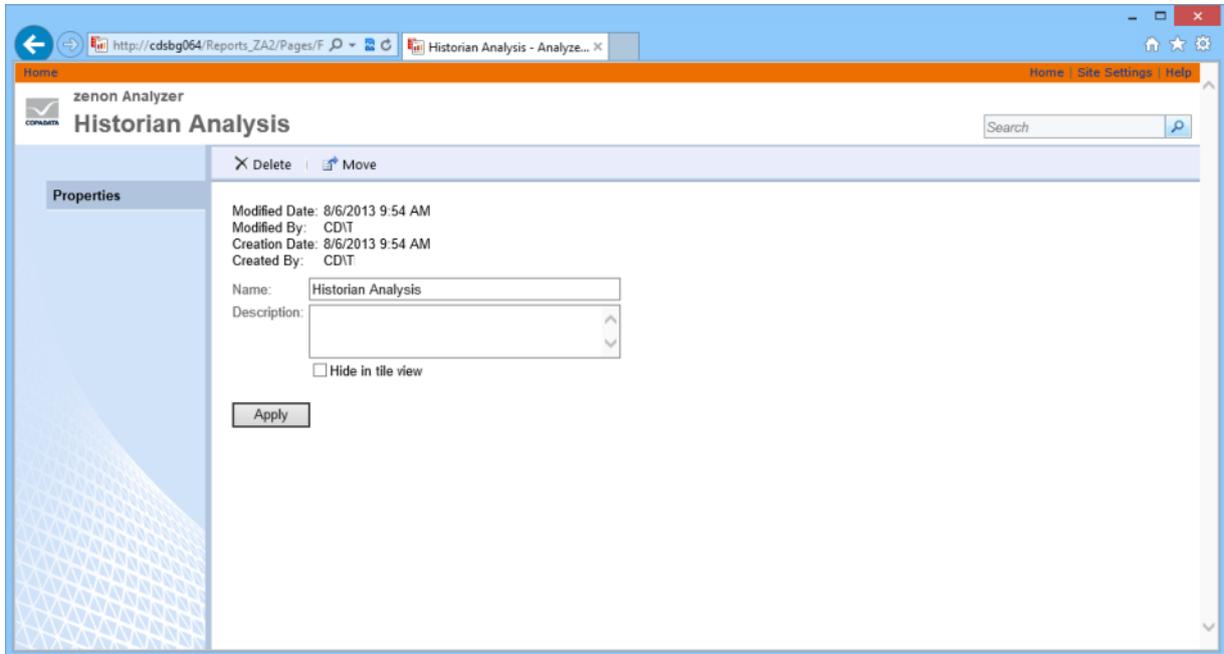
| Parameters | Description |
|---|--|
| Name | <p>Name of the folder</p> <p>Name:</p> <ul style="list-style-type: none"> ▶ must not be empty ▶ Must not consist of periods or spaces ▶ Must not contain non-permitted characters; The following are not permitted: ; ? : @ & = + \$, \ * < > " / <p>The complete path must not have more than 260 characters.</p> |
| Description | Optional description of the folder content. |
| Hide in side-by-side/one-below-the-other view | <p>Active: Folder is not displayed in side-by-side/one-below-the-other view. This setting can later be changed via menu item Management (on page 203) in the drop-down list of the folder.</p> |
| OK | Applies all settings and closes the dialog. |
| Cancel | Discards all settings and closes the dialog. |

9.7.1 Properties

The folder properties display information about the folder and offer the possibility to:

- ▶ move
- ▶ delete
- ▶ rename

- ▶ Show or hide in the symbol view



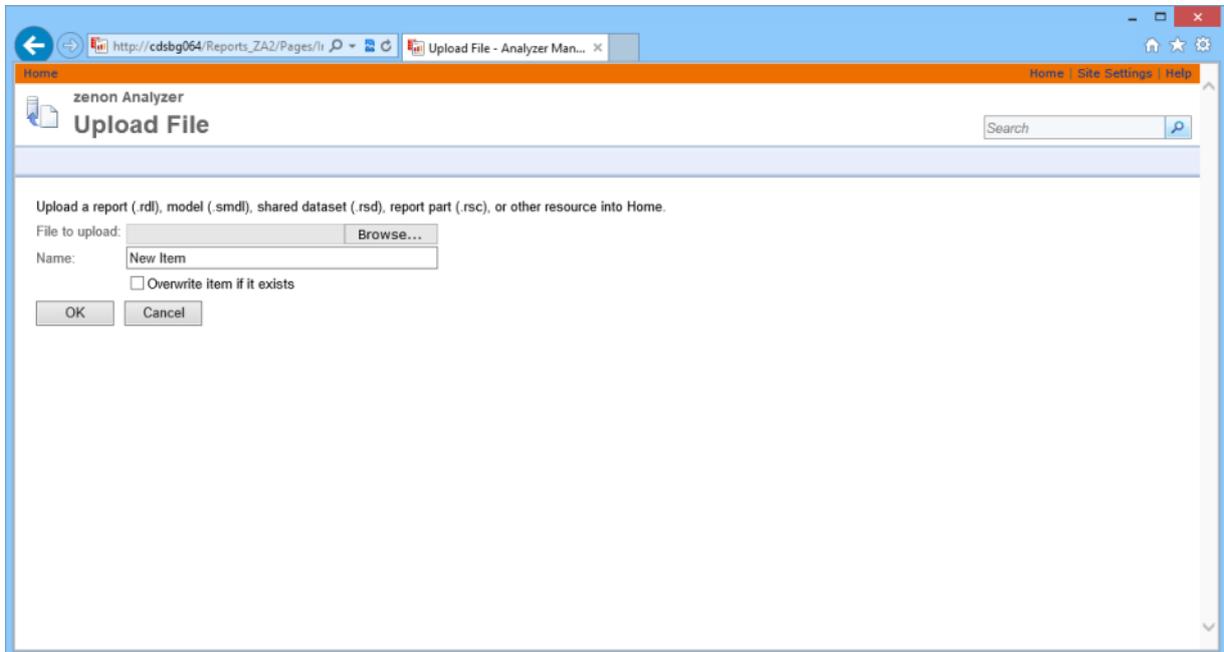
9.8 Upload file

Reports, models and other resources which are edited offline can be uploaded to the Report Server.

To upload resources:

1. in the tool bar click on icon **Upload file**
2. the dialog for uploading will be opened
3. select the desired file
4. select the desired options

- confirm the input by clicking **OK**



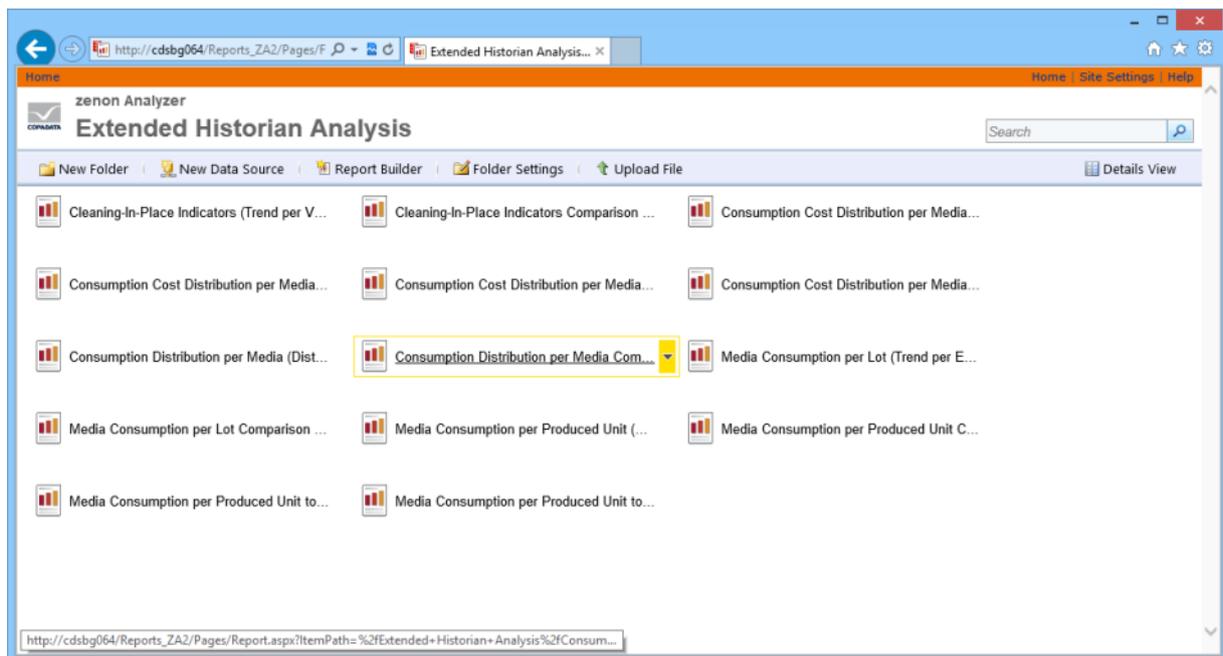
| Parameters | Description |
|----------------------------|--|
| File to be uploaded | Selection of the file which is to be uploaded. Click on button Browse to open the file manager. Multi-select is not possible. |
| Name | Freely definable name. The file name of the selected file is taken over as default value. |
| Overwrite existing element | Active: If an element with the same name already exists at the Report Server, it is overwritten. |
| OK | Information is applied, the file is uploaded and the dialog is closed. |
| Cancel | The information is discarded and the dialog is closed. |

10. Analyzer Manager: Reports

Reports display data from online sources or archives according to defined rules. The zenon Analyzer is shipped with prepared reports which can be adapted individually. You can also create your own reports. The necessary table structure is described in chapter Basics (on page 16).

For the call up and the display of reports at the Client computer, all you need is the MS Internet Explorer. All reports are displayed and adapted in the browser. Which settings are possible, depends on the rights (on page 152) of the user. Reports can be exported in other formats. Thus being used in other applications.

As supplied, pre-configured folders with reports on the respective topic areas are displayed for the demo project when zenon Analyzer is started:



Information

Only reports that are in the scope of the zenon Analyzer license are displayed.

CONFIGURATION OF REPORTS

Reports can, as described in this chapter, be configured in the browser.

Configuration and administration using the ZAMS - zenon Analyzer Management Studio (on page 226) is recommended.

PROJECTS AND FILTERS

Reports on several projects can be created, except when using filters for shifts or lots. In this case, reports are limited to one project.

 **Attention**

Only archive data with variables from its own project can be evaluated.

This means: For example, in an integration project, if a variable from a subproject is archived in an archive, then zenon Analyzer cannot access this variable.

10.1 Create report

Reports can be created with:

- ▶ ZAMS - zenon Analyzer Management Studio (on page 226)
- ▶ Microsoft Report Builder (on page 209) 3.0

For zenon an own wizard for exporting the meta data from the global project and the variables from the local projects is available. For more information about this wizard see also chapter Analyzer Export Wizard (on page 76) in section Data abstraction and data inclusion.

10.1.1 Report Builder

Reports can be created manually with the help of the Microsoft Report Builder.

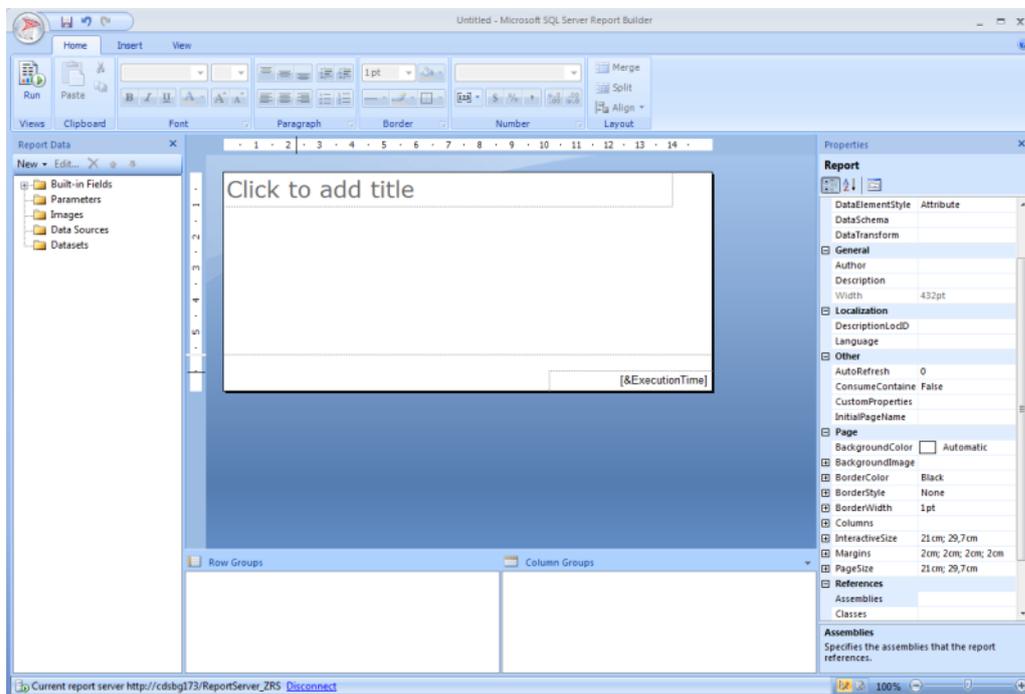
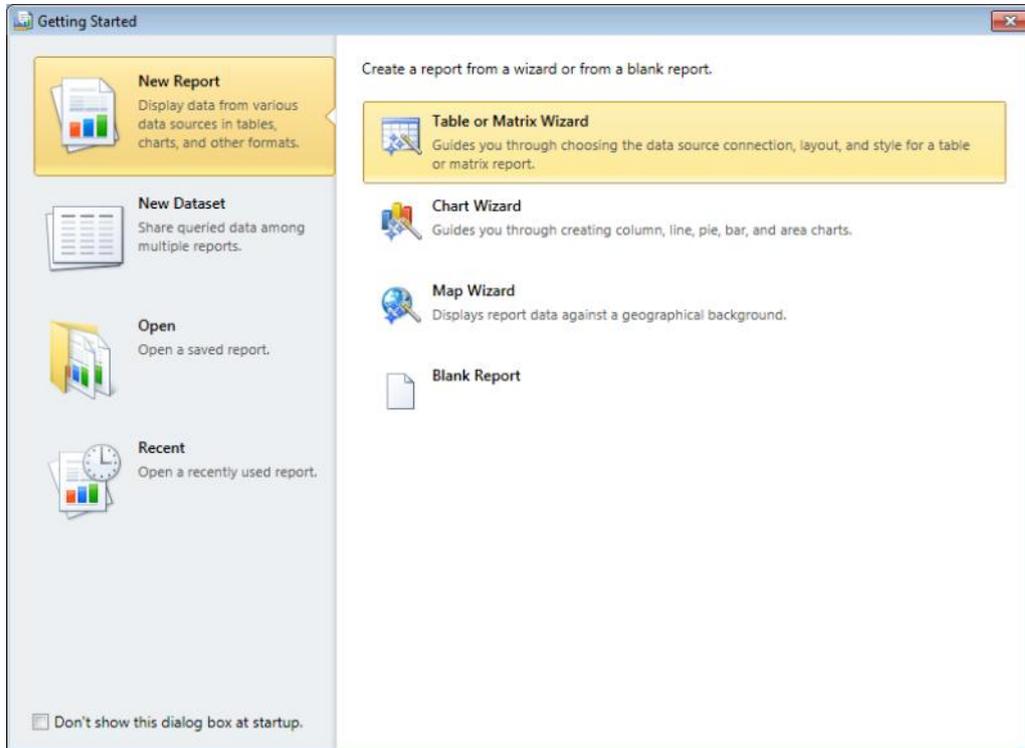
**Information**

The Report Builder is not suitable as an editor for reports with CRI (Gantt Chart) as it cannot process CRIs.

To start the Microsoft Report Builder:

1. in the tool bar click on icon **Report Generator**

- the dialog with **Getting Started** or the **Report Builder** is opened directly (depending on the settings):



You receive support for creating reports with the Report Builder via the integrated help of the Report Builder.

For the automated creation of reports the zenon Analyzer Management Studio is available from version 2 on.

You can find detailed guides for the Microsoft Reporting Services on the Microsoft homepage:

- ▶ German (<http://msdn.microsoft.com/de-de/library/ms159106.aspx>)
- ▶ English (<http://msdn.microsoft.com/en-us/library/ms159106.aspx>)
- ▶ French (<http://msdn.microsoft.com/fr-fr/library/ms159106.aspx>)
- ▶ Italian (<http://msdn.microsoft.com/it-it/library/ms159106.aspx>)

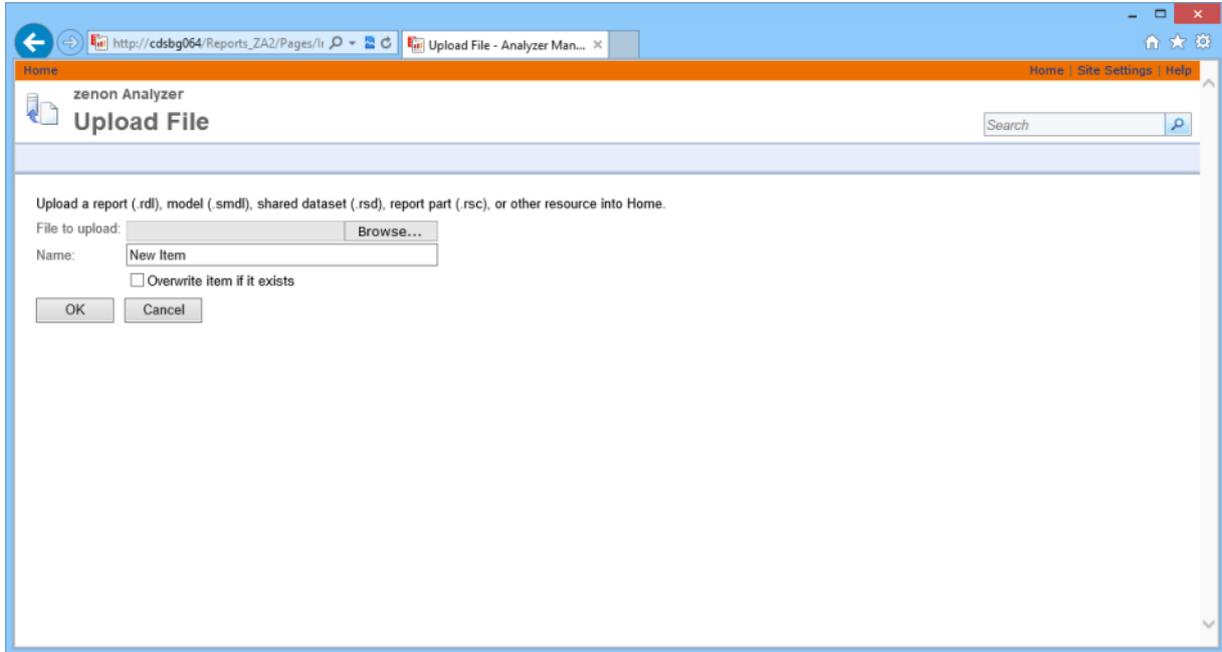
10.1.2 Upload reports

Reports which were created offline can be uploaded to the Server with the help of the zenon Analyzer.

To upload resources:

1. in the tool bar click on icon **Upload file**
2. the dialog for uploading will be opened
3. select the desired file
4. select the desired options

5. confirm the input by clicking **OK**



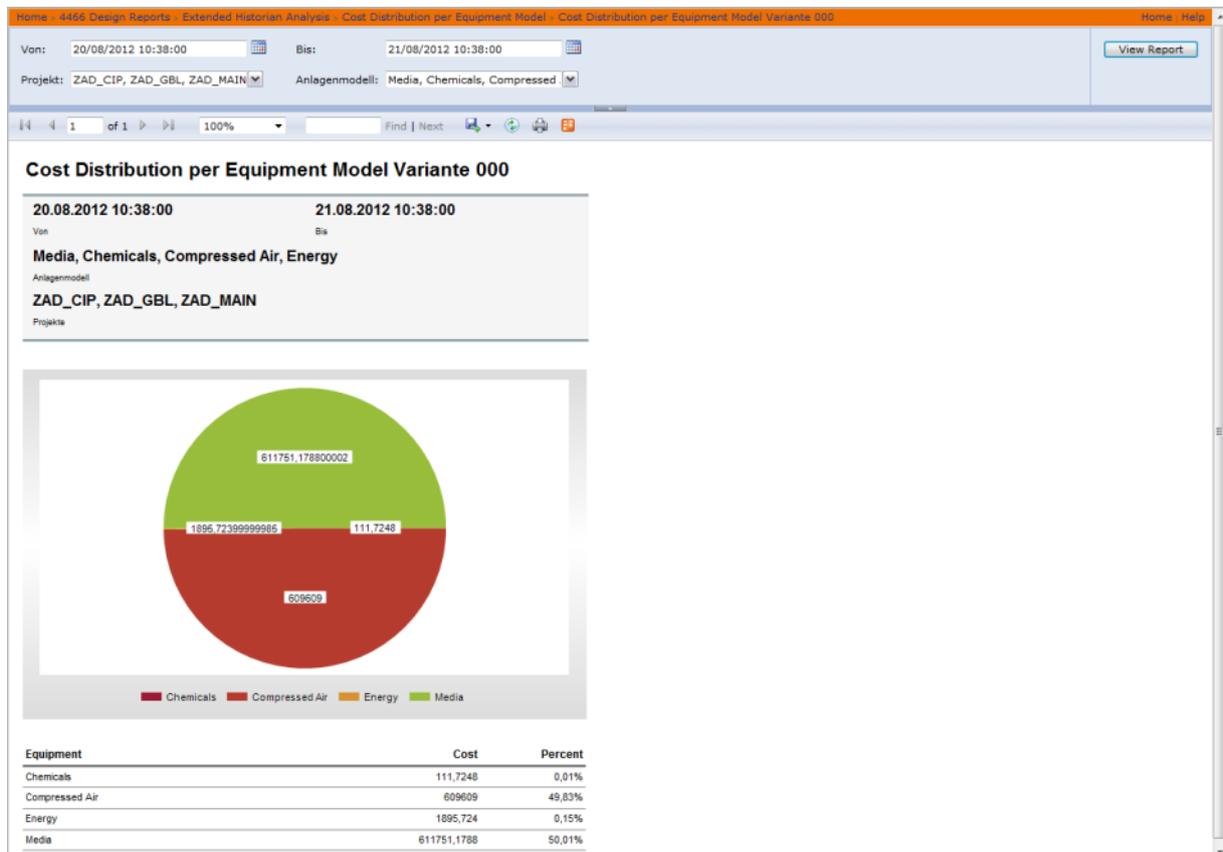
| Parameters | Description |
|----------------------------|--|
| File to be uploaded | Selection of the file which is to be uploaded. Click on button Browse to open the file manager. Multi-select is not possible. |
| Name | Freely definable name. The file name of the selected file is taken over as default value. |
| Overwrite existing element | Active: If an element with the same name already exists at the Report Server, it is overwritten. |
| OK | Information is applied, the file is uploaded and the dialog is closed. |
| Cancel | The information is discarded and the dialog is closed. |

10.2 Call up report

Reports can be called up and configured at the client computer in the browser.

To call up a report:

1. double click the folder which contains the report
or select **open** in the context menu
2. double click the desired report
3. the report is opened in the browser



10.3 Configure and export reports

Different parameters (on page 158) can be selected depending on the report type. For example:

- ▶ Time period for the report: for comparing reports two time periods are provided for configuration
- ▶ Projects whose data is being edited
- ▶ Archives
- ▶ Compression

- ▶ Variables
- ▶ Alarm groups
- ▶ Alarm Classes
- ▶ Equipment groups and media

To configure to a report:

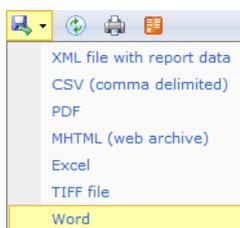
1. open the report
2. select the desired parameters
3. click on display report

EXPORT REPORT

Reports can be exported to different formats.

To export a report:

1. click on the symbol (on page 216) for the export (disk)
2. the drop-down list with the export formats is opened



3. select the desired format
4. save or open the document in the selected format

EXPORT FORMAT

For the export the following options are available:

| Parameters | Description |
|------------|--|
| XML | Report is saved as XML file. Click to open the dialog for saving/displaying the XML file. |
| CSV | Report is saved as comma-separated text file (CSV). Click to open the dialog for saving/displaying the CSV file. |
| PDF | Report is saved as PDF file. Click to open the dialog for saving/displaying the PDF file. |
| MHTML | Report is saved as web archive (.mhtml). Click to open the dialog for saving/displaying the web archive. |
| Excel | Report is saved as Excel file (.xls, for Excel 97 - 2003). Click to open the dialog for saving/displaying the XLS file. Diagram is embedded as graphic; values can be changed manually. Values changes do not effect the embedded graphic. |
| TIFF | Report is saved as graphic in the TIFF format. Click to open the dialog for saving/displaying the TIFF file. |
| Word | Report is saved as Word file (.doc, for Word 97 - 2003). Click to open the dialog for saving/displaying the DOC file. Diagram is embedded as graphic; values can be changed manually. Values changes do not effect the embedded graphic. |



Information

Reports are always defined for a certain output medium (see export formats). If they are output to other media, this can lead to the appearance being corrupted.

For example: A report configured for HTML can create page breaks that are unsuitable for PDFs. To create a report on several media, create a separate report for each medium.

10.3.1 Tool bar Report



| Parameters | Description |
|----------------------------------|---|
| Navigation arrows and <1 from 1> | Navigation in multi-sided reports. |
| 100% | zoom. Click to open a drop-down list with fixed steps. |
| Search field | Enter a search term. |
| Search | Searches defined term and displays first occurrence. |
| Next | Searches for the next occurrence. |
| Icon disk | Export of the report. Click to open the drop-down list with export formats. Possible formats: <ul style="list-style-type: none"> ▶ XML ▶ CSV ▶ PDF ▶ Web archive ▶ Excel ▶ TIFF ▶ Word |
| Icon rotating arrow | Updates data for report display. |
| Icon printer | Opens dialog for printing the report. |
| Icon book | Export in RSS feed. |

10.4 Download report

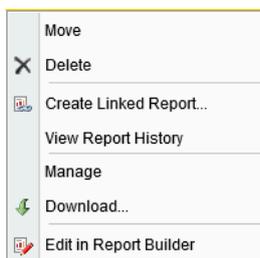
Reports can be downloaded from the Server to the local computer in order to edit or present them offline.

To download a report:

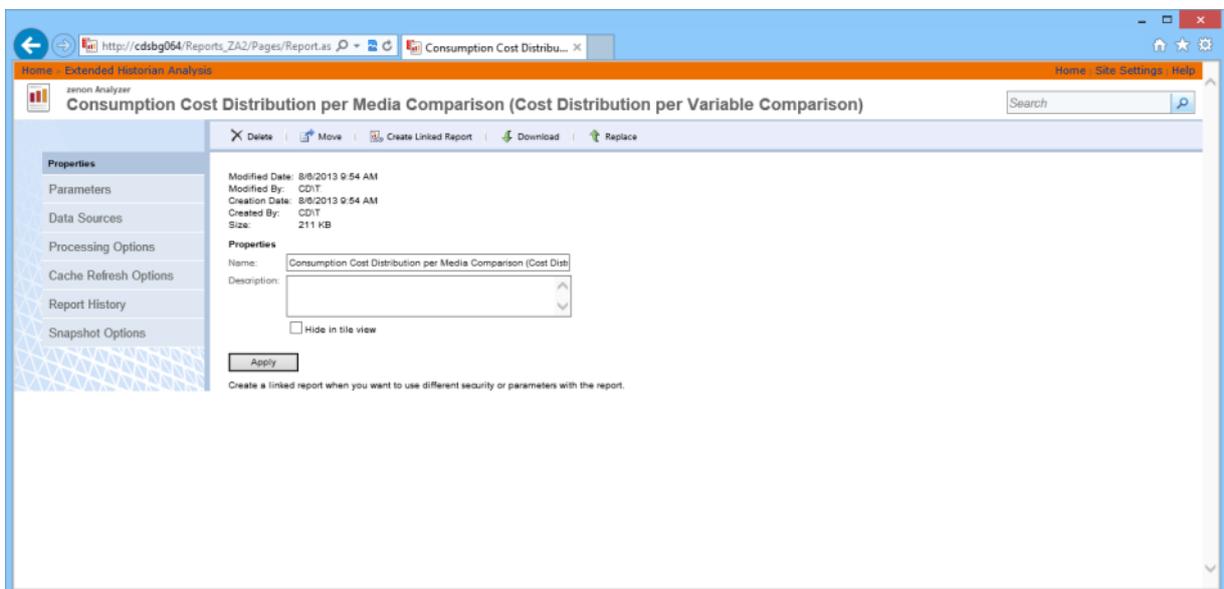
1. move the mouse over the report
2. click on the displayed drop-down list
3. select menu item **Download**
4. select the saving location on the local computer

10.5 Manage reports

Reports are managed via the drop-down list at the report.



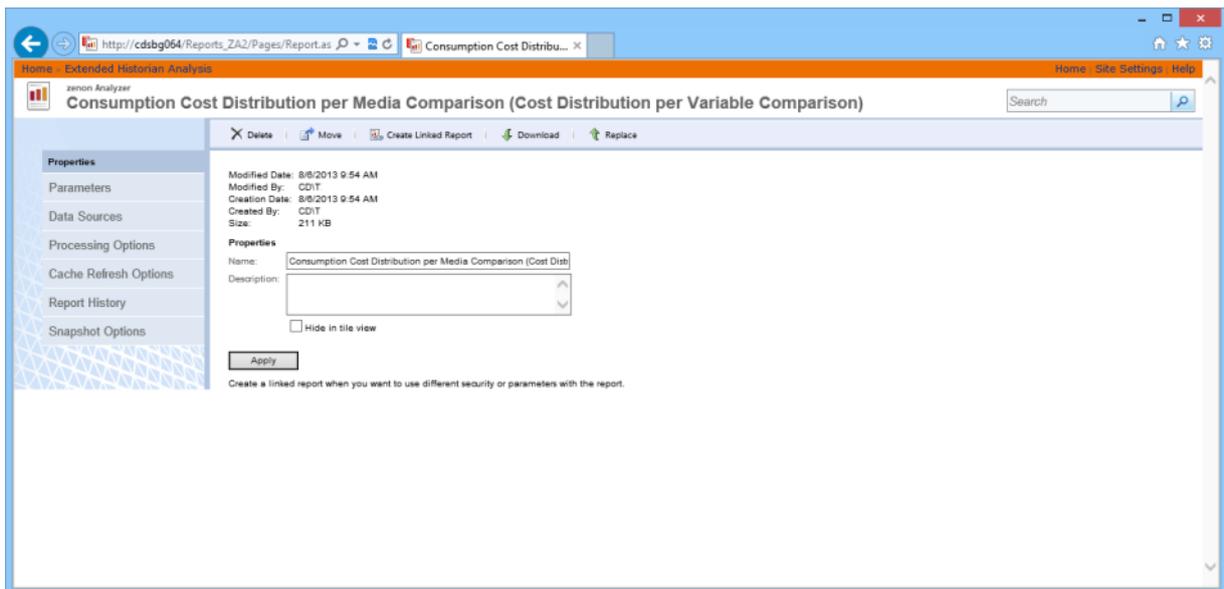
Click on **Manage** to open the dialog for managing the reports:



| Parameters | Description |
|--|--|
| Properties (on page 218) | Properties of the report. |
| Parameters (on page 219) | Configuration of the parameters of the report. |
| Data Sources (on page 223) | Selection of data sources. |
| Processing options (on page 223) | Configuration of the editing of the report. |
| Cache Refresh Options (on page 224) | Creation and editing of the plans for the cache updating. |
| Report history (on page 225) | Allows snapshots of reports to be combined into a history. |
| Snapshot Options (on page 225) | Configuration of snapshots. |

10.5.1 Properties

In window Properties basic properties are displayed and configured.



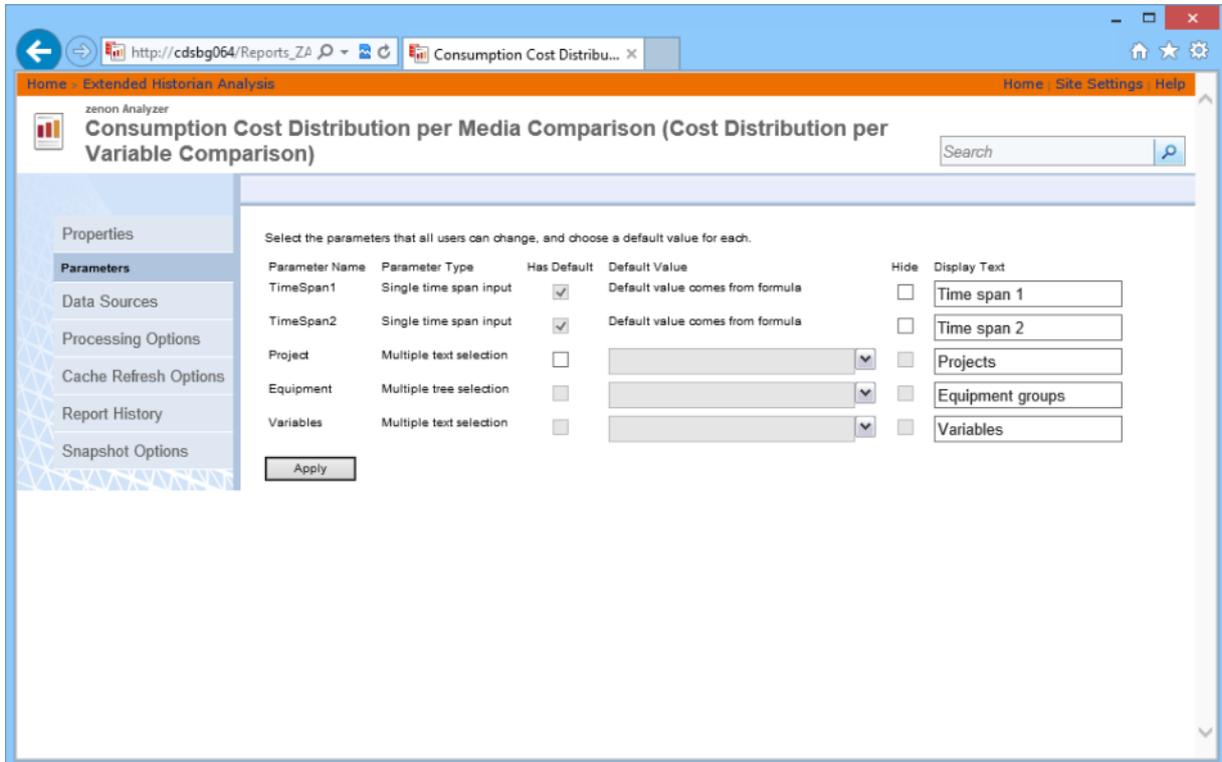
| Parameters | Description |
|---|---|
| Delete | Delete report. |
| Move | Opens the dialog for moving a report to another folder. |
| Create linked report | Opens dialog for creating a linked report. Linked reports make it possible to use different security settings for a report. |
| Download | Opens dialog for downloading (on page 216) a report. |
| Replace | Opens the dialog for uploading a report definition in order to replace the existing one. |
| Properties | |
| Name | Name of the report. Name: <ul style="list-style-type: none"> ▶ must not be empty ▶ Must not consist of periods or spaces ▶ Must not contain non-permitted characters; The following are not permitted: ; ? : @ & = + \$, \ * < > " / The complete path must not have more than 260 characters. |
| Description | Description. |
| Hide in side-by-side/one-below-the-other view | Active: Report is not displayed in side-by-side/one-below-the-other view. |
| Apply | Applies changes. |

10.5.2 Parameters

Displays the parameter of the report and makes it possible to:

- ▶ assign default values
- ▶ hide parameter for user

- ▶ to configure the text with which the parameter in the report is displayed



zenon Analyzer
Consumption Cost Distribution per Media Comparison (Cost Distribution per Variable Comparison)

Select the parameters that all users can change, and choose a default value for each.

| Parameter Name | Parameter Type | Has Default | Default Value | Hide | Display Text |
|----------------|-------------------------|-------------------------------------|----------------------------------|--------------------------|------------------|
| TimeSpan1 | Single time span input | <input checked="" type="checkbox"/> | Default value comes from formula | <input type="checkbox"/> | Time span 1 |
| TimeSpan2 | Single time span input | <input checked="" type="checkbox"/> | Default value comes from formula | <input type="checkbox"/> | Time span 2 |
| Project | Multiple text selection | <input type="checkbox"/> | [Dropdown] | <input type="checkbox"/> | Projects |
| Equipment | Multiple tree selection | <input type="checkbox"/> | [Dropdown] | <input type="checkbox"/> | Equipment groups |
| Variables | Multiple text selection | <input type="checkbox"/> | [Dropdown] | <input type="checkbox"/> | Variables |

Apply

| Parameters | Description |
|------------------|--|
| Parameter name | <p>Name of the TAG.</p> <p>Display only.</p> |
| Type of the TAG: | <p>Type of the parameter. Display only.</p> <p>Displays whether:</p> <ul style="list-style-type: none"> ▶ a parameter allows one or more values ▶ it is a specialized filter control (Bool Shift/Lot, TimeSpan, Tree) ▶ the parameter serves for the input of values or the selection of a value from a drop-down list of pre-defined values <p>For non-specialized controls, the data type is also shown.</p> |
| Has Default | <ul style="list-style-type: none"> ▶ Active: Default value is preset in the report for the input. ▶ Active and grayed out: Standard values of a parameter come from a form or a data set. Standard values cannot be changed. ▶ Inactive: No value is preset. <p>Each change to the check status of this checkbox made by the user is immediately forwarded to the server.</p> |
| Default value: | <p>The corresponding filter element for the parameter is shown here. Each parameter with the option activated must be given a standard value in this column, in order for the configuration to be valid. Each change of value by the user is immediately forwarded to the server. Possible elements:</p> <ul style="list-style-type: none"> ▶ Text element: Is displayed if the Has standard value option is active and grayed out and contains the reason why. ▶ Drop-down list: Contains selection of parameters for configurable parameters. Drop-down list can be filtered. It can be operated if the standard value of the parameter can be changed and the option Has standard value has been selected. Value changes are only accepted if the drop-down list has been closed. ▶ Input field: Allows the input of parameters for configurable parameters. Entry is possible if the standard value of the |

| | |
|--------------|--|
| | <p>parameter can be changed and the option has standard value has been selected.</p> <p>Value changes are only accepted if the input field is no longer in focus.</p> |
| Hide | <ul style="list-style-type: none"> ▶ Inactive: Parameter is shown. The <code>Display text</code> option must contain a value in order for the configuration to be valid. ▶ Active: Parameter is hidden. The <code>Display text</code> option is emptied. <p>A parameter can only be hidden if it has a valid standard value (has <code>standard value</code> option has been selected and <code>standard value</code> has been selected).</p> <p>If a parameter cannot be hidden, the checkbox is not selected and deactivated.</p> <p>Each change to the check status is immediately forwarded to the server.</p> |
| Display Text | <p>Enter the text with which the parameter will be displayed in the report.</p> <p>Only active if the <code>Hide</code> option has not been selected.</p> <p>The input field only recognizes changes if it is not in focus.</p> |
| Apply | <p>Clicking on the button accepts settings if all options have been correctly configured.</p> <p>If there are configuration errors, these are displayed next to the corresponding option.</p> <p>If the configuration has been saved, this is displayed below the button.</p> |

Note: Internal parameters that control filter controls used for other parameters or limits for diagrams or markers for archive distribution have standard values and are not shown. These parameters (name starts with `ChartStart`, `ChartEnd` or `Hidden` or name ends with `_Type`) are visible in the Report Builder, but it is not recommended that these are changed.

 **Attention**

Error messages for parameters

For some parameters, the values available must be loaded via a stored procedure of Microsoft SQL Server. If this stored procedure is not successfully called up or the stored procedure returns an error, an error message is activated in the Analyzer Manager. For example, if Runtime cannot be reached, the SQL connector has not been created, etc.

For some parameters, no standard value can be issued under some circumstances, because a parameter that is to be handled beforehand does not contain a value. For example: Time filters are based on shifts, but there is no shift data available. In this case, the issue of standard values is only possible if at least 1 shift has been written.

10.5.3 Data sources

Assigns a report to the data source.

For details about data source see chapter data source (on page 199) in section configuration and operation (on page 152).

10.5.4 Processing options

In this window you define how the report should be filled out:

- ▶ Newest data

Configuration of the buffering and process of temporary copies.

- ▶ Snapshot

Creation of the report based on a snapshot.

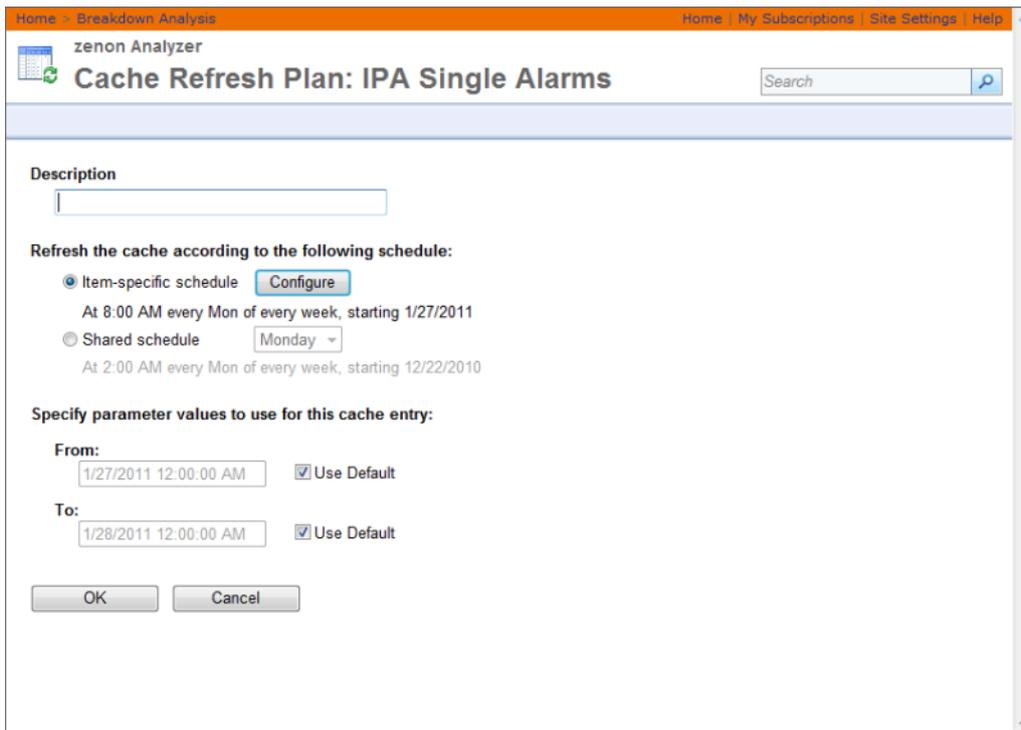
- ▶ Report timeout

Definition of the time out at the creation of the report

10.5.5 Cache Refresh Options

Makes it possible to create and to edit schedules for cache update.

Click on edit in order to open the dialog for creating and editing a schedule.



| Parameters | Description |
|--|--|
| Description | Name for plan. |
| Update cache in accordance with the following schedule | Selection of the schedule. Click on button Configure in order to open the dialog for creating a schedule. |
| State parameter values for this cache entry | Enter the parameters for the report. |
| OK | Applies entries and closes the dialog. |
| Cancel | Discards entries and closes the dialog. |



Information

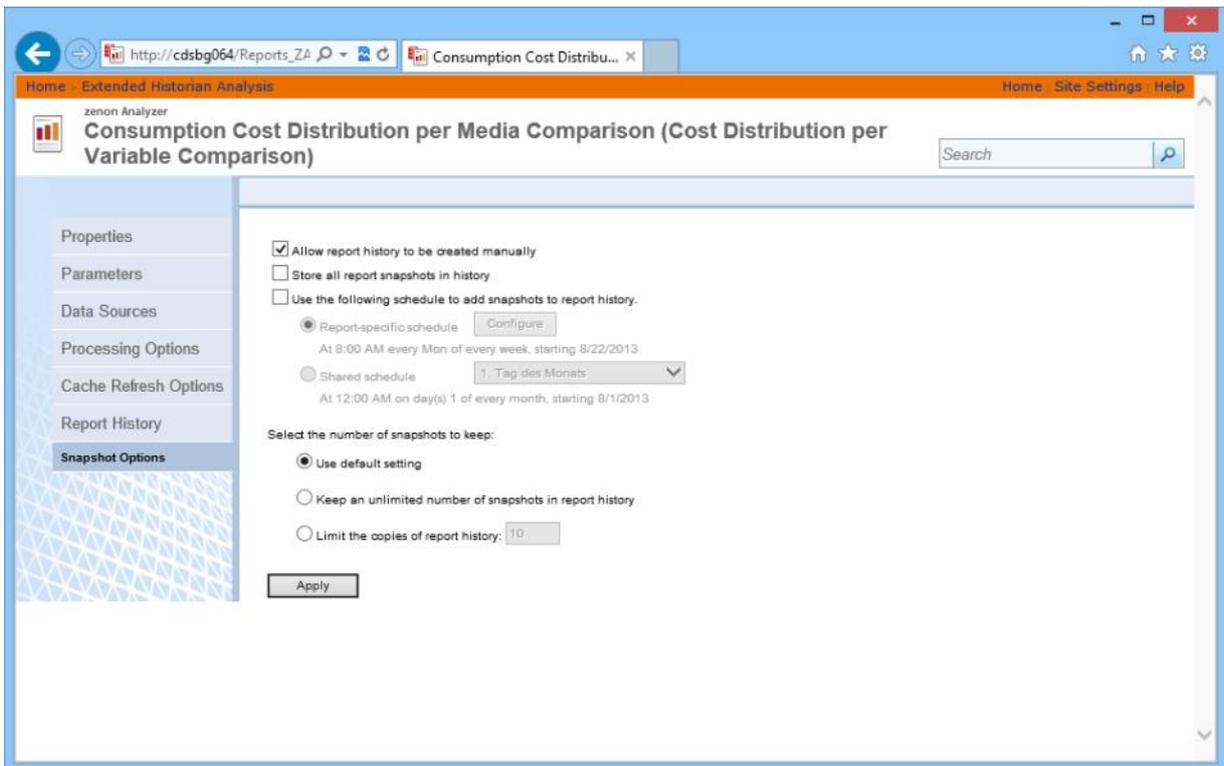
This **cache update** function only relates to the Analyzer Manager and is not identical to the **update cache** (on page 356) action in the ZAMS.

10.5.6 Report history

Assembles snapshots of reports to a history.

10.5.7 Snapshot Options

Options for snapshots.



The screenshot shows the 'zenon Analyzer' interface. The main title is 'Consumption Cost Distribution per Media Comparison (Cost Distribution per Variable Comparison)'. The left sidebar lists navigation options: Properties, Parameters, Data Sources, Processing Options, Cache Refresh Options, Report History, and Snapshot Options. The 'Snapshot Options' section is active and contains the following settings:

- Allow report history to be created manually
- Store all report snapshots in history
- Use the following schedule to add snapshots to report history.
 - Report-specific schedule [Configure](#)
 - At 8:00 AM every Mon of every week, starting 8/22/2013
 - Shared schedule [1: Tag des Monats](#)
 - At 12:00 AM on day(s) 1 of every month, starting 8/1/2013
- Select the number of snapshots to keep:
 - Use default setting
 - Keep an unlimited number of snapshots in report history
 - Limit the copies of report history:

An 'Apply' button is located at the bottom of the configuration area.

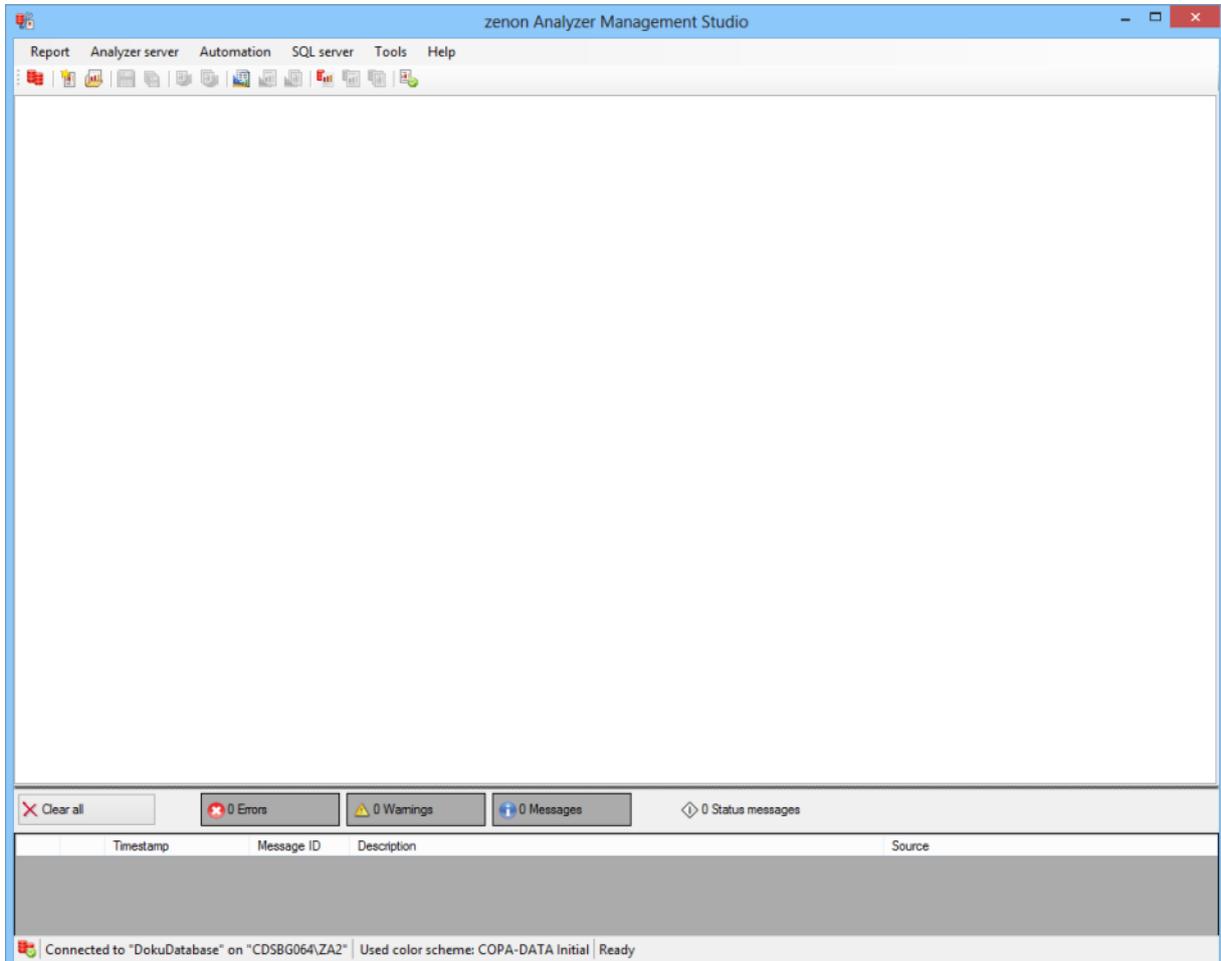
| Parameters | Description |
|---|--|
| Allow report history to be created manually: | Active: Manual snapshots are possible. |
| Save all report snapshots in the history | Active: each snapshot is also displayed in the report history. |
| Schedule | Selection of the schedule or creation of a new schedule. |
| Number of snapshots | Define how many snapshots should be saved. Options: <ul style="list-style-type: none"> ▶ Use default settings ▶ all ▶ define number |

11. ZAMS - zenon Analyzer Management Studio

The zenon Analyzer Management Studio (ZAMS) is the main application for:

- ▶ Configuration of the Analyzer
- ▶ Creation of reports from the templates supplied with COPA-DATA
- ▶ Creation, editing and deleting report subscriptions and the attendant schedules on the Analyzer server
- ▶ The display and editing of the license on the Analyzer server

- ▶ The creation and deletion of linked servers in the SQL server instance of the Analyzer server



Information

ZAMS is started in the language of the operating system. If this language is not implemented in ZAMS or the corresponding language file is missing, ZAMS is started in English. You can read details on the languages in the Language settings (on page 574) chapter.

COMMUNICATION

ZAMS communicates with the Analyzer database via Microsoft SQL Server 2012 management objects. It connects itself:

- ▶ To the **SQL Server 2012 Reporting Service Web Service endpoint ReportService2010** of the Analyzer server

- ▶ to the selected database on the Analyzer server
- ▶ To `zrsLicSrv` on the Analyzer server

SOFTWARE REQUIREMENTS

The following software is required for the use of ZAMS:

- ▶ Microsoft .NET Framework 4.0
- ▶ Microsoft SQL Server 2012 Management Objects

ERROR HANDLING

Error messages, warnings and messages are saved in the output window (on page 245), in accordance with the options (on page 573) that have been set, in LOG files (on page 248).

11.1 Starting ZAMS

The zenon Analyzer Management Studio (ZAMS) is installed together with zenon Analyzer.

During installation, the user who carries out the setup is entered as a user with dedicated license (on page 543) with authorization level 3 (on page 529).

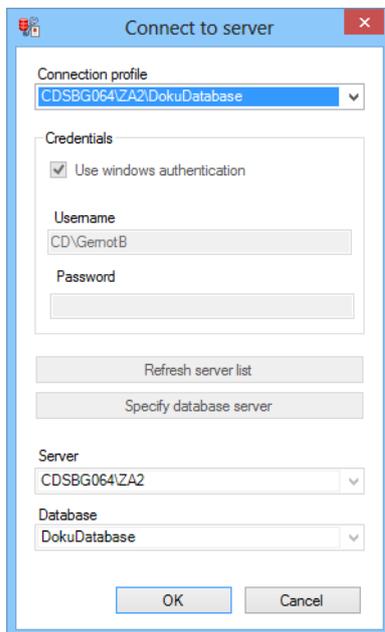
To start ZAMS:

1. In the Windows Start menu, select the *COPA-DATA -> ZAMS* entry
or
double click on a ZAMS report file (`.zams_rep`)

2. ZAMS starts and shows the started version and build number on the screen, provided that there is not another ZAMS version running:



3. The connection dialog is opened, depending on the settings in the options (on page 566),



4. Select the desired connection by clicking on `Connection profile` or create a new connection (on page 322)
5. Click on OK:
 - The connection test is carried out. A progress bar is displayed in the process.
 - The database structure is checked and the license is validated. A progress bar is displayed in the process.

- the connection will be established. A progress bar is displayed in the process.

6. ZAMS is opened.

Note: if the connection fails because there is no license, you can request (on page 328) the license status in ZAMS and enter (on page 329) new license data. Presettings for connection profiles, deployment of reports and messages in the output window can be set in the options (on page 566) in the **Tools** menu.

PROGRESS BAR AT THE START

The following happens after clicking on OK:

ACCEPTANCE OF THE CONFIGURATION FROM A PREVIOUS VERSION

When a new version of ZAMS is started, provided there are not yet any configuration files available, the configuration of the prior versions is used. To do this, its configuration files must still be present on the computer. The transfer happens separately for each user.

PROCEDURE

1. A check is made to see if the ZAMS configuration file for the current version is available. In this case, a direct jump to item 4 is made.
2. A search for folders is made in the [User path] \AppData\Local\COPA-DATA\zenon\Analyzer\ folder, the name of which consists of labels for major release, minor release and service pack of versions prior to the current version of ZAMS. From the folders found, that with the highest version number that is nevertheless lower than the current version number and that contains a ZAMS configuration file is selected. If a folder does not correspond to these conditions, the procedure of item 4 is continued.
3. All configuration files in the selected folder are copied to the folder for configuration files for the current version of ZAMS. Any files that may be present are overwritten.
4. The configuration is read off from the files in the configuration folder of the current version of ZAMS.

Please also note the messages in the output window.

EXAMPLE

Note: Version numbers in this example are for illustrative purposes only and do not reflect the actual version history of ZAMS.

Versions 2.00 SP0 and 2.10 SP0 of ZAMS were installed on a computer. ZAMS is updated to version 3.00 SP0. Installed. Both of the previously-installed versions have been used by the user `TestUser`. The same user starts ZAMS 3.00 SP0 for the first time once it has been installed. In doing so, the following happens:

1. When searching for the configuration file, the folder
`C:\Users\TestUser\AppData\Local\COPA-DATA\zenon\Analyzer\3.0.0\` is created automatically.
2. The configuration file of ZAMS version 3.00 is not found.
3. When browsing the folder
`C:\Users\TestUser\AppData\Local\COPA-DATA\zenon\Analyzer\`, the subfolders `2.0.0`, `2.10.0` and `3.0.0` are found. From this, the most suitable folder for the configuration to be transferred is selected according to the following procedure:
 - a) The folder `2.0.0` is selected, because there is a configuration file in there, that has version identification (`2.00 SP0`) that is lower than `3.00 SP0` and no folder has been selected beforehand.
 - b) The folder `2.10.0` is selected, because there is a configuration file in there with version identification (`2.10 SP0`) that is less than `3.00 SP0` and greater than `2.00 SP0`.
 - c) The folder `3.0.0` is not selected, because there is no configuration file in it.
4. All files are copied from the selected folder
`C:\Users\TestUser\AppData\Local\COPA-DATA\zenon\Analyzer\2.10.0\` to
`C:\Users\TestUser\AppData\Local\COPA-DATA\zenon\Analyzer\3.0.0\`.
5. The configuration of ZAMS 3.00 SP0 is loaded from the current configuration folder. If objects from the files must be converted up in the process, this happens automatically in the background. Settings that have been added to ZAMS are initialized with the default values.

11.2 Example of configuration

A company wants to use zenon Analyzer. The following computers are available in the company network:

- ▶ The Analyzer server, called **SRV**
- ▶ An engineering station, called **ENG**

Both are in the **TEST** domain. There are the following users in the domain:

- ▶ **TEST\Admin**: Network administrator.
Only this user can install programs on computers. This user should have access to the Analyzer as an administrator, however not permanently have a license.
- ▶ **TEST\ZamsAdmin**: This user is the future Analyzer administrator.
They should be able to use all Analyzer applications and be able to complete all administrative tasks on the Analyzer with ZAMS. A license should be reserved for this user.
- ▶ **TEST\ReportViewer1**, **TEST\ReportViewer2** and **TEST\ReportViewer3**: These three users should evaluate reports in the Analyzer and be able to execute them, however a license should not be assigned to any of these users permanently.

CONFIGURATION

1. **TEST\Admin** executes the Analyzer server setup on the computer called **SRV**. Once the setup has been completed, this user is entered as a user with dedicated license (on page 543) with authorization level 3 on the license server. They have administration rights in both the SQL server instance and Analyzer Manager. No other user has access rights to the Analyzer.
2. **TEST\Admin** executes the ZAMS setup on the computer called **ENG**.
3. **TEST\Admin** starts the ZAMS on the computer called **ENG**. The connection to the server **SRV\ZA2** and on this server to the database **ZA_DATA** is established. When making the connection, ZAMS recognizes that the user **TEST\Admin** has authorization level 3 but does not have a license (on page 38) written in the license server.
4. The user **TEST\Admin** ensures that the dongle is connected to the computer **SRV** and enters the dongle license in ZAMS on the computer called **ENG**. The license is sent via the ZAMS connection to the Analyzer server **SRV** and saved there by the license server.

5. ZAMS detects that the license on the server is valid and unlocks additional functions.
6. The user `TEST\Admin`
 - a) Starts the administration of the access rights to the Analyzer applications (on page 546) in ZAMS
 - b) Adds the user `TEST\ZamsAdmin`
 - c) Assigns the highest possible access right to this
 - d) Confirms the dialog with `OK`.
7. The user `TEST\Admin`
 - a) Starts the administration of the Analyzer Manager access rights (on page 552) in ZAMS
 - b) Adds the user `TEST\ZamsAdmin` as an administrator for the configuration of system access rights
 - c) Adds the same user for the object access rights of the root folder
 - d) Sets its access rights there to `content manager`
 - e) Confirms the dialog with `OK`.
8. The user `TEST\Admin` closes ZAMS and logs off from the `ENG` computer.
9. The user `TEST\ZamsAdmin` logs on to the `ENG` computer and starts ZAMS. The connection to the server `SRV\ZA2` and on this server to the database `ZA_DATA` is established. When establishing a connection, ZAMS detects that the user `TEST\ZamsAdmin` has the authorization level 3 and that a license for them could be established.
10. The user `TEST\ZamsAdmin`
 - a) Starts the administration of users with a dedicated license in ZAMS
 - b) Adds itself
 - c) Removes the user `TEST\Admin` from the list
 - d) Closes the dialog.
11. The user `TEST\ZamsAdmin`
 - a) Starts the administration of the access rights for the Analyzer Manager in ZAMS
 - b) Adds the three users `TEST\ReportViewer1`, `TEST\ReportViewer2` and `TEST\ReportViewer3` as a user for the configuration of the system access rights (on page 553)

- c) Adds the same three users for the object access rights (on page 556) of the root folder
- d) Leaves its access rights there on the browser
- e) Confirms the dialog with α .

The configuration was carried out successfully.

11.3 Checklist for license problems

If ZAMS cannot establish a connection or the connection is broken due to problems with the license, check the following:

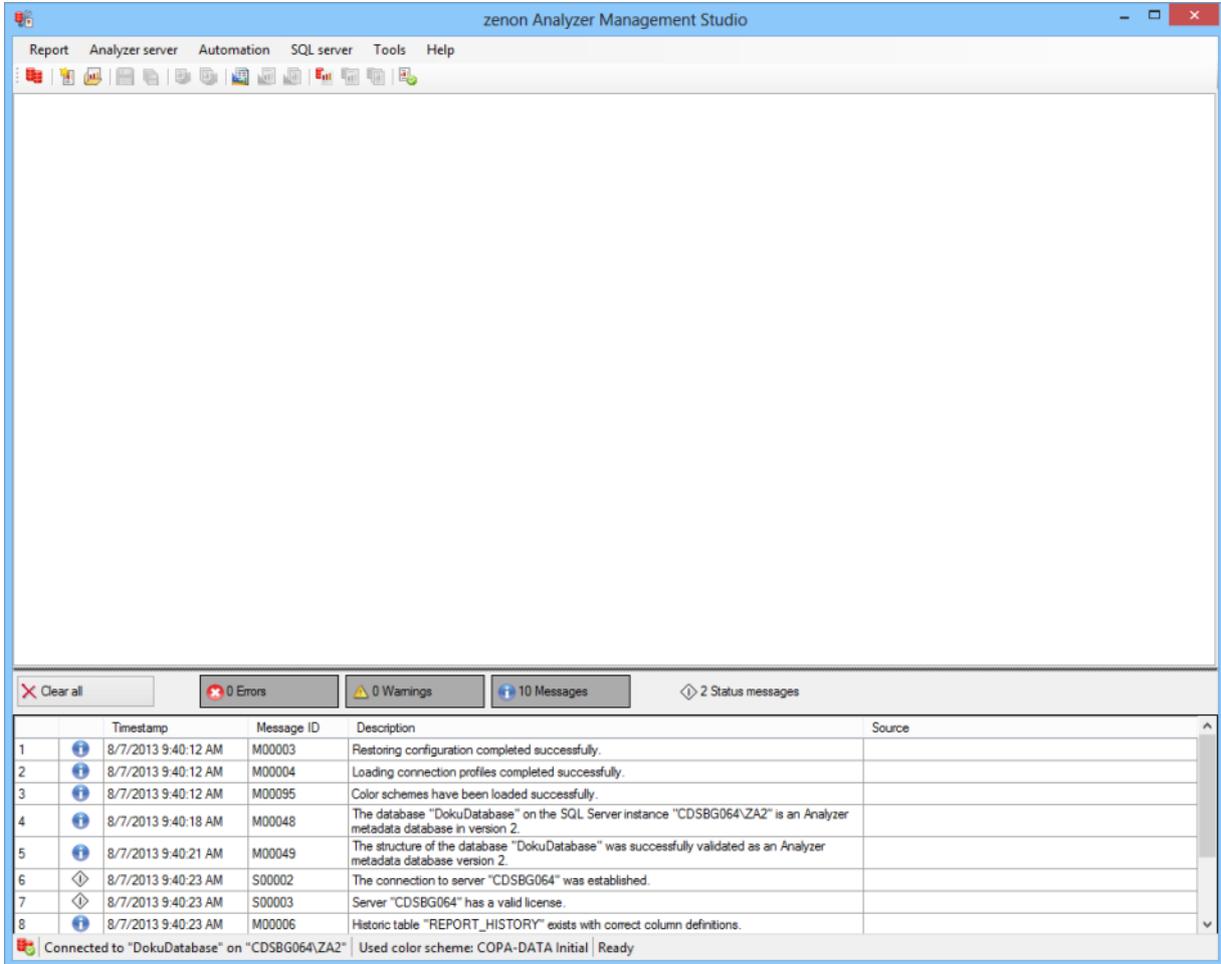
- ▶ Can the dongle be accessed from the Analyzer Server?
- ▶ Do the serial number and the activation key correspond to one another?
- ▶ Is the TCP port 50779 open on the Analyzer Server?
- ▶ Can the license client communicate with the license server?
Note: Firewalls or network failures, for example, may prevent this.
- ▶ Does the user have the required authorization levels?
- ▶ Is a license available for the user?
Note: Users with a dedicated license are assigned licenses even if they are not connected.
- ▶ Is the report template or the report included in the scope of the license?

11.4 Main window

The user interface of the ZAMS consists of:

- ▶ Menus (on page 237)
- ▶ Tool bar (on page 243)
- ▶ Report area (on page 244)

► Output (on page 245)



The screenshot shows the zenon Analyzer Management Studio window. The main area is empty. At the bottom, there is a status bar with a message log table. The status bar also shows 0 Errors, 0 Warnings, 10 Messages, and 2 Status messages.

| | Timestamp | Message ID | Description | Source |
|---|---------------------|------------|--|--------|
| 1 | 8/7/2013 9:40:12 AM | M00003 | Restoring configuration completed successfully. | |
| 2 | 8/7/2013 9:40:12 AM | M00004 | Loading connection profiles completed successfully. | |
| 3 | 8/7/2013 9:40:12 AM | M00095 | Color schemes have been loaded successfully. | |
| 4 | 8/7/2013 9:40:18 AM | M00048 | The database "DokuDatabase" on the SQL Server instance "CDSBG064.ZA2" is an Analyzer metadata database in version 2. | |
| 5 | 8/7/2013 9:40:21 AM | M00049 | The structure of the database "DokuDatabase" was successfully validated as an Analyzer metadata database version 2. | |
| 6 | 8/7/2013 9:40:23 AM | S00002 | The connection to server "CDSBG064" was established. | |
| 7 | 8/7/2013 9:40:23 AM | S00003 | Server "CDSBG064" has a valid license. | |
| 8 | 8/7/2013 9:40:23 AM | M00006 | Historic table "REPORT_HISTORY" exists with correct column definitions. | |

Connected to "DokuDatabase" on "CDSBG064.ZA2" | Used color scheme: COPA-DATA Initial | Ready

| Parameters | Description |
|----------------------------------|--|
| Menu line (on page 237) | Contains menus with commands to configure the ZAMS and create and administer reports. |
| Tool bar (on page 243) | Contains symbols with commands to configure the ZAMS and create and administer reports. |
| Report area (on page 244) | Reports are created here. |
| Separator | Dividing line with which the size ratio between the report area and the output window is defined. To change the ratio. move the mouse with the line, hold down the left mouse button and drag the splitter in the desired direction. |
| Output (on page 245) | Output of error messages, warnings and information. |
| Status Line (on page 249) | Output of status messages. |

Menus and symbols are only actively available if the corresponding function is available. This depends on whether there is a connection, whether there is a connection to the Analyzer server with a valid license and whether an action is running that blocks the function.

Whether a menu entry and the corresponding symbol is active depends on three factors:

1. Has a connection been established and does it have a valid license?
2. If reports have been opened and is the currently-active report write protected?
3. Is there currently an action running in a background thread (such as **Prepare**, **Open in Report Builder**)?

For this, the following applies: A factor is only considered if all superordinate factors see the entry as active.

If a function that can change the connection or license status is to be executed, all reports are closed beforehand. The user is notified of this and can cancel closing. The function is not executed if it is not possible to close all reports.

When ending ZAMS, the position and size of the window and the position of the dividing line are blocked.

11.4.1 Menus

The following menus are available in the main ZAMS window:

Report Analyzer server Automation SQL server Tools Help

- ▶ Report (on page 237)
- ▶ Analyzer server (on page 239)
- ▶ Automation (on page 239)
- ▶ SQL Server: (on page 241)
- ▶ Options (on page 242)
- ▶ Help (on page 242)

Key combinations are available for many menu entries: These are displayed in the menus next to the respective command.

Report

Commands in the **Report** menu

| Command | Description |
|---|--|
| New | Opens the dialog for creating a new report. |
| Open | Opens the dialog to select and open an existing report. |
| Most recently edited reports | List of the reports last worked on. Here, the reports that were open last are offered, sorted according to last use with the most recent report in the top position. The number of reports in the list is established in the Tools menu in the Options for connection profiles (on page 567). |
| Save | Saves the active report. |
| Save as | Opens the dialog to save a report under a new name. |
| Save all | Saves all opened reports. |
| Deploy | Allows deployment (on page 257) of the active report. |
| Deploy all | Allows deployment (on page 257) of all opened reports. |
| Start Microsoft Report Builder | Opens Microsoft Report Builder. |
| Open in Microsoft Report Builder | Opens the active report in Microsoft Report Builder. Note: The Report Builder was only started if the report can be found on the server. |
| Open all in Microsoft Report Builder | Opens all opened reports in Microsoft Report Builder. Note: The Report Builder is only started for reports that can be found on the server. Attention: For each report to be opened, a separate Report Builder instance is opened for each language variant. If more than 10 instances are to be opened, a warning is shown and a dialog is shown, in which the opening process can be canceled. |
| Start Analyzer Manager | Starts the Analyzer Manager. |
| Open in Analyzer Manager | Opens the report currently displayed in ZAMS in the Analyzer Manager. |
| Open all in Analyzer Manager | Opens all reports currently open in ZAMS in the Analyzer Manager. |
| Close | Closes the active report. |
| Close all | Closes all opened reports. |
| Exit | Exits ZAMS. |

Analyzer server

Commands in the **Analyzer Server** menu:

| Command | Description |
|--|---|
| Connect to server | Opens dialog with connection profiles (on page 322). |
| Server: Version information | Opens window with information on: <ul style="list-style-type: none"> ▶ Version of the operating system ▶ Version of zenon Analyzer |
| Show current license | Opens dialog (on page 328) with: <ul style="list-style-type: none"> ▶ Serial Number ▶ Activation key ▶ License status ▶ License properties ▶ Button to enter a new license |
| License product | Opens dialog to enter license data (on page 329). |
| Assigning dedicated licenses to users | Opens dialog to administer the users with a dedicated license (on page 543). |
| Manage Analyzer Tools access rights | Opens dialog to administer the access rights to the Analyzer applications (on page 546). |
| Manage Analyzer Manager access rights | Opens dialog to administer the access rights to the objects in the Analyzer Manager (on page 552). |

Automation

Commands in the **Automation** menu

| Parameters | Description |
|------------------------------------|---|
| Configure archive emulation | Opens the dialog for configuring the archive emulation (on page 486). |
| Manage Schedules | Opens dialog to manage schedules (on page 335) for the distribution of reports. |
| Manage subscriptions | Opens dialog to manage report subscriptions (on page 344). |

SQL Server:

Commands in the SQL Server menu

| Parameters | Description |
|--|---|
| Update connector functions | Renews the Connector functions (on page 359). The result is displayed in the output window. |
| Create SCADA SQL connector | Opens the dialog (on page 359) to create an SQL connector. |
| Create 3rd party database connector | Starts the configuration (on page 379) of the connector for third-party databases. |
| New Analyzer database | Opens dialog (on page 422) to create a new Analyzer database. |
| Convert databases | Starts the conversion (on page 425) of databases, the version number of which is lower than the current version number. |
| Create database backups | Opens the dialog (on page 432) for creating a project backup. |
| Restore database backup | Opens the dialog (on page 435) for renaming a profile. |
| Restore database backup file as new database | Opens the dialog (on page 439) for restoring a database backup as a new database. |
| Restore Reporting Services database backup | Opens the dialog (on page 444) for restoring the reporting services database. |
| Administrate automated database backups | Opens the dialog (on page 446) to administer the automatically-created database backups. |
| Manage database backup files | Opens the dialog (on page 470) to administer the backup files of the database. |
| Manage linked server | Opens dialog (on page 474) to manage the linked servers. |
| Manage metadata indices | Opens the dialog (on page 479) to manage the metadata indices. |

Options

Commands in the **Options** menu

| Parameters | Description |
|---|---|
| Metadata Editor (on page 585) | Makes it possible to amend display names and descriptions and to enter equipment information. |
| Manual Data Editor (on page 620) | Allows the editing of tables for price and norm values in a zenon Analyzer metadata database. |
| Manage color schemes | Opens the dialog (on page 275) to create and edit and administer color schemes. |
| Export color schemes | Opens the dialog (on page 317) for exporting color schemes. |
| Import color schemes | Opens the dialog (on page 318) for importing color schemes. |
| Manage RDL templates (on page 262) | Opens the dialog to administer RDL templates. |
| Clear cache | Updates (on page 356) the ZAMS cache. |
| Settings | <p>Opens the dialog for configuring settings (on page 566) for:</p> <ul style="list-style-type: none"> ▶ Connection profiles (on page 567) ▶ Deployment (on page 571) ▶ Output messages (on page 573) ▶ Language settings (on page 574) ▶ Database backups (on page 577) |

Help

Commands in the **Help** menu

| Parameters | Description |
|-------------------|---|
| Info about | Opens window with ZAMS version information. |
| Help | Opens online help. |

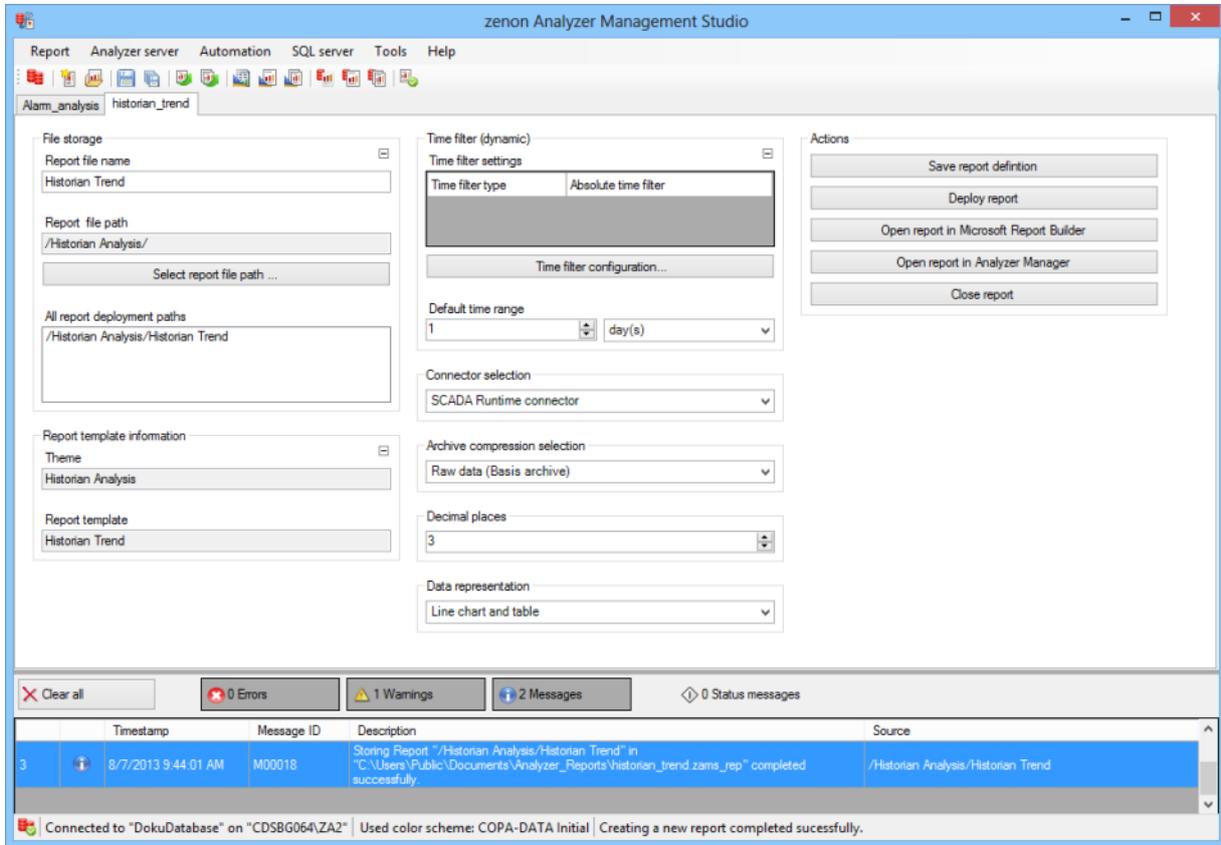
11.4.2 Tool bar



| Parameters | Description |
|---|--|
| Connect to Analyzer server | Opens dialog with connection profiles (on page 322). |
| New report | Opens the dialog for creating a new report. |
| Open report | Opens the dialog to select and open an existing report. |
| Save report | Saves active report. |
| Saving all reports | Saves all opened reports. |
| Deploy report | Allows deployment of the active report. |
| Deploy all reports | Allows deployment of all opened reports. |
| Start Microsoft Report Builder | Opens Microsoft Report Builder. |
| Open current report in Microsoft Report Builder | Opens the active report in Microsoft Report Builder. Note: The Report Builder was only started if the report can be found on the server. |
| Opening all reports in Microsoft Report Builder | Opens all opened reports in Microsoft Report Builder. Note: The Report Builder is only started for reports that can be found on the server. Attention: For each report to be opened, a separate Report Builder instance is opened for each language variant. If more than 10 instances are to be opened, a warning is shown and a dialog is shown, in which the opening process can be canceled. |
| Start Analyzer Manager | Starts the Analyzer Manager. |
| Open current report in Analyzer Manager | Opens the report currently displayed in ZAMS in the Analyzer Manager. |
| Open current report in Analyzer Manager | Opens all reports currently open in ZAMS in the Analyzer Manager. |
| Manage subscriptions | Opens dialog to manage report subscriptions (on page 344). |

11.4.3 Report area

Reports are displayed in the report area between the tool bar and the output window.



Note:

- ▶ If several reports are opened, each report is shown in its own tab. The name is displayed in the indicator of the tab.
- ▶ If the mouse pointer is moved to above the indicator of the tab, the complete path to the save location is shown.
- ▶ Reports that contain unsaved changes are highlighted with an asterisk next to the name.
- ▶ Reports that are write-protected are displayed with a corresponding notice in brackets in the register title.

DESIGN GUIDELINES

The designs are designed with the following rules:

- ▶ There are two versions of the parameter area:
 - Wide: For all comparative report templates and for alarm analyses (on page 826) and for OEE performance indicator lot archive (on page 1249).
 - Narrow: All other report templates
- ▶ If possible, figures are given units (unit of measurement, currency, percent).
- ▶ Decimal points:
 - Monetary amounts and percentage values always have 2 decimal places.

Exception: Axes. Here, percentage values 0 to 2 can have decimal points.

The number of decimal points of all other numerical values is defined individually using an input field. Exceptions to this are the vertical and horizontal axes and the value table of the archive distribution (on page 985).

- ▶ Data fonts for pie charts are always outside the pie segments.
- ▶ All reports that are supplied by ZAMS have a footer.

Attention: This footer is automatically inserted by ZAMS when provided. If there is a footer in the RDL template, it is overwritten!

Note: Because the report body is initialized with 10×10 mm and this is automatically adjusted to the necessary size by the report server when rendering, the objects from the footer appear at the same position as the parameter area (Z level behind), if the report is opened in the Report Builder after being provided. If the report is then saved in the Report Builder without changes and loaded again, the objects are correctly moved to the footer. They are always drawn correctly in the footer when the report is made.

INPUT ELEMENTS

You can find details on the input elements in the report in the Elements in the report area (on page 658) chapter and in the documentation of the Report templates (on page 650) supplied.

11.4.4 Output

The output window lists error messages, warnings, information and status messages in a table. These notices can be filtered and deleted. The types of messages that are displayed are defined in Options (on page 573). All messages in the output window are logged and saved in the LOG files (on page 248).

DISPLAY IN THE OUTPUT WINDOW

| ✖ Clear all 0 Errors 0 Warnings 10 Messages 2 Status messages | | | | |
|--|----------------------|------------|--|--------|
| | Timestamp | Message ID | Description | Source |
| 1 | 8/9/2013 12:44:05 PM | M00003 | Restoring configuration completed successfully. | |
| 2 | 8/9/2013 12:44:05 PM | M00004 | Loading connection profiles completed successfully. | |
| 3 | 8/9/2013 12:44:05 PM | M00095 | Color schemes have been loaded successfully. | |
| 4 | 8/9/2013 12:44:08 PM | M00048 | The database "DokuDatabase" on the SQL Server instance "CDSBG064.ZA2" is an Analyzer metadata database in version 2. | |
| 5 | 8/9/2013 12:44:11 PM | M00049 | The structure of the database "DokuDatabase" was successfully validated as an Analyzer metadata database version 2. | |
| 6 | 8/9/2013 12:44:13 PM | S00002 | The connection to server "CDSBG064" was established. | |
| 7 | 8/9/2013 12:44:13 PM | S00003 | Server "CDSBG064" has a valid license. | |
| 8 | 8/9/2013 12:44:13 PM | M00006 | Historic table "REPORT_HISTORY" exists with correct column definitions. | |
| 9 | 8/9/2013 12:44:13 PM | M00006 | Historic table "REPORT_DEPENDENCIES" exists with correct column definitions. | |

 Connected to "DokuDatabase" on "CDSBG064.ZA2" | Used color scheme: COPA-DATA Initial | Ready

| Parameters | Description |
|------------------------|---|
| Buttons | Control the display of the messages Setting of the buttons is saved when ZAMS is closed. |
| Delete all | Clears the whole table. |
| Errors | Displays the number of errors that can be displayed in the table. Clicking on the button switches the display in the table on or off. |
| Warnings | Displays the number of warnings that can be displayed in the table. Clicking on the button switches the display in the table on or off. |
| Messages | Displays the number of messages that can be displayed in the table. Clicking on the button switches the display in the table on or off. |
| Status messages | Displays the number of status messages that are displayed in the table. These cannot be hidden. |
| Table | <p>Contains error messages, warnings, information and status messages.</p> <ul style="list-style-type: none"> ▶ Messages can be sorted with the column titles and according to columns. Clicking on the respective column head sorts the table according to this column. A second click inverts the sorting. The standard sorting increases in accordance with column 1 (Numbering). ▶ Double clicking on a message in the table displays the report and the context in which the message was created in the report area of the main window. To do this, the report must already be open. ▶ Messages are deleted when ZAMS is closed. |
| Numbering | Contains consecutive numbering. The numbers are assigned chronologically upon receipt. |
| Symbol | <p>Symbol that displays the type of message. The symbols correspond to the symbols on the buttons.</p> <p>Sorting sequence ascending:</p> <ul style="list-style-type: none"> ▶ Error ▶ Warning ▶ Message ▶ Status message <p>Ascendant sorting is carried out in reverse order.</p> |

| | |
|--------------------|---|
| Timestamp | Displays the time stamp of the time at which the message was created. |
| Message ID | Unique ID of the message source. |
| Description | Explanation of the message. |
| Source | Name of the report concerned at the time the message was created. If the message was not created in the context of a report, this column remains empty. |

LOG files

Output window messages are logged in LOG files, regardless of whether they are displayed in the user interface or not. One LOG file is written each time ZAMS is started. If several **ZAMS_REP-** files are opened at the same time using the Windows Explorer, then the operating system starts several instances of ZAMS simultaneously. In doing so, it is ensured that the ZAMS instance that is active has a LOG file that is open.

NAME

The file name contains

- ▶ The name `ZamsLog_`
- ▶ The time stamp of the ZAMS starts in the format `[yyyy]_[MM]_[dd]_[HH]_[mm]_[ss]`
- ▶ The file suffix `.txt`

For example: `ZamsLog_2013_06_30_19_47_56.txt`

STORAGE DIRECTORY

The saving of LOG files depends on the version.

- ▶ Schema: `%ProgramData%\COPA-DATA\zenonAnalyzer\ZAMSLOG_[Major Version][2-Digit Minor Version]`
- ▶ Example: `C:\ProgramData\COPA-DATA\zenonAnalyzer\ZAMSLOG_210`

STRUCTURE

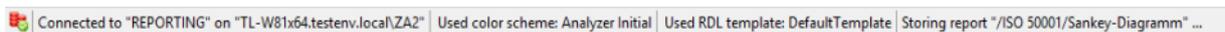
- ▶ The first message in a LOG file always shows the time stamp denoting when the LOG file was created.
- ▶ There is a blank line after the first message.
- ▶ There then follows all messages that occurred whilst ZAMS was running, regardless of whether these are displayed in the user interface or not, in the following format:
 - Message ID
 - Timestamp
 - Message text (can be several lines)
 - Empty line
- ▶ The last message in a LOG file always shows the time stamp denoting when the LOG file was ended.

ADMINISTRATION

The folder with the LOG files is searched for old files when ZAMS is started. If a LOG file is 14 days old or more, it is deleted. To do this, the creation time stamp is checked.

11.4.5 Status Line

The status display of the ZAMS consists of several sections.



Connected to "REPORTING" on "TL-W81x64.testenv.local\ZA2" | Used color scheme: Analyzer Initial | Used RDL template: DefaultTemplate | Storing report "/ISO 50001/Sankey-Diagramm" ...

- ▶ Symbol that shows the status of the connection;
Possible statuses are:
 - No connection established
 - Connection established but the Analyzer server license is not valid
 - Connection established and the Analyzer server license is valid
- ▶ Connection message: Display of the server and the database
- ▶ Display of the color scheme currently being used
- ▶ Display of the RDL template currently being used.

- ▶ Message that describes the current task
- ▶ Progress display that is shown if necessary and displays the progress during longer working stages such as:
 - Open report
 - Saving all reports
 - Deploying all reports
 - Opening all reports in Report Builder

11.5 Actions

In ZAMS, you can:

- ▶ Create and administer reports (on page 250)
- ▶ Deploy reports
- ▶ Manage RDL templates (on page 262)
- ▶ Automate report handling (on page 331)
- ▶ Display (on page 328) and enter (on page 329) licenses
- ▶ Manage Analyzer server (on page 474)
- ▶ Automating processes (on page 331)
- ▶ Clear cache (on page 356)

11.5.1 Creating, opening, saving and closing reports

For all report actions such as opening, saving etc., it is a requirement that there is a connection to an Analyzer server with a valid license and that the desired report template has been licensed.



Information

Validation: When loading from the hard drive, report templates (RTP), SQL templates (STP), SQL script templates (SST) and code templates (CTP) carry out a self-test. In doing so, a check is made to see whether all necessary data files and all referenced templates are available and that the report template is included in the scope of the license.

Contents of the data files are not checked. Structure errors in the template definition always dominate over validation errors. Errors are reported together at the end of the loading process. If an error occurs, the template concerned cannot be used. Users are thus already made aware of missing or corrupt data when a template is loaded and not just once a report has been created.

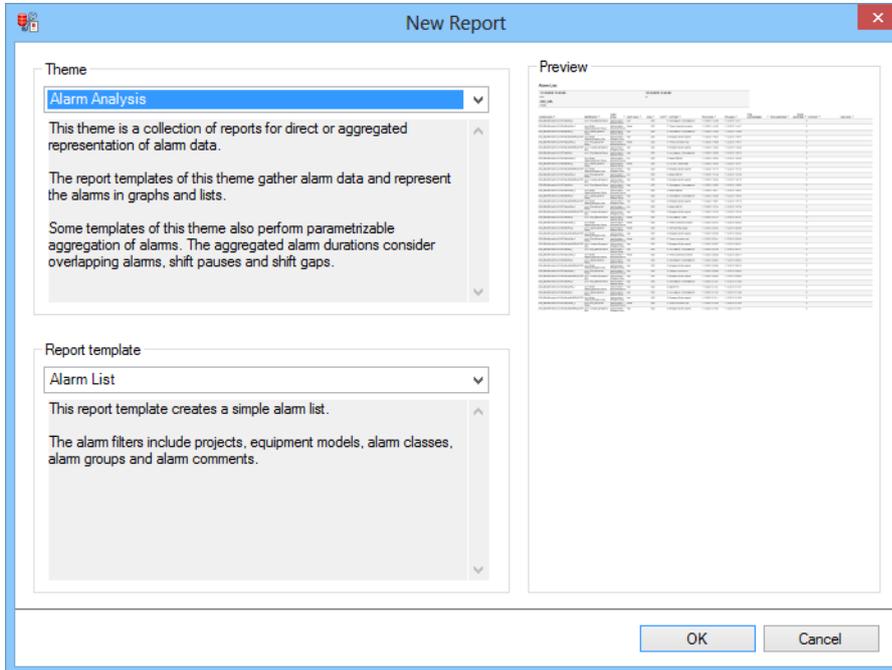
CREATE NEW REPORT

To create a new report:

1. Select, in the Report menu, the **New** command or press the key combination `Ctrl+N`
2. The dialog for configuring a new report is opened

In doing so, the RTC files stored in the data folder are read and the available color schemes for report templates are identified. As standard, these are located as a subfolder in :

`%ProgramData%\COFA-DATA\zenonAnalyzer\ZAMS_210.`



| Parameters | Description |
|-----------------|--|
| Theme | Selection of a theme from the drop-down list. After selection, a description of the class is displayed below the drop-down list. |
| Report template | Selection of a report template from drop-down list. Only available if a color scheme has been selected. After selection, a description of the template is displayed below the drop-down list. |
| Preview | Displays a preview screen of the report template selected. |
| OK | Creates a new report that is based on the selected template. The dialog to save the report is opened. After saving, the report is displayed in the report area of ZAMS as an active report. |
| Cancel | Exits the dialog without creating a report. |

OPEN REPORT

To open a report:

1. Select, in the Report menu, the **open** command or press the key combination **Ctrl+O**
2. The browser to select a saved report is opened, whereby the folder defined in the Options (on page 571) is preselected
3. Select the desired reports (multiple selection is possible)
4. Confirm the selection by clicking on OK
5. All selected reports are loaded and displayed in the report area of the ZAMS; the last report that was selected is activated

A progress display is shown when several reports are opened. If a report that has already been opened is to be opened again, this report is not opened again but is instead displayed as active and a corresponding message is displayed in the output window. When checking the report, upper-case/lower-case letters are not taken into account.

LIST OF THE REPORTS LAST OPENED.

Depending on the settings in the options, the reports that were open last are offered in a list. To open a report from this list, select, in the **Report** menu, the **Most recently edited reports** entry and select the desired report. The report that was edited last is shown at the top of the list. The number of reports offered is stipulated in the settings.

- ▶ Minimum: 1
- ▶ Maximum: 255
If the permitted maximum is exceeded by a report that is being added, the oldest entry is deleted.

The reports that are currently open are also displayed in the list. An attempt to select a report that is already open is canceled with an error message. The corresponding report is then activated in the main window.

The entries are updated if:

- ▶ A connection to an Analyzer database is established
- ▶ A report is opened from the hard drive
- ▶ An amended report is saved to the hard drive
- ▶ The maximum number of reports to be displayed is changed in the settings

OPENING A WRITE-PROTECTED REPORT

Report files that are write-protected can be opened. For these reports, in addition to the name, the notice (`write protected`) and a corresponding message are displayed in the output window. Changes to the report settings can only be saved in a new report file. The symbol and the `save` command are not available.

SAVE REPORT

To save a report:

1. Select, in the Report menu, the `save` command or press the key combination `Ctrl+S`
2. If the report has not been saved before, the dialog to select a save location is opened
3. If the report has already been saved under this name, the following is carried out regardless of the settings in the options (on page 571):
 - The existing report is overwritten
 - The changes are not saved
 - A dialog to confirm the overwriting is opened

Attention: The status message "Storing succeeded" in the output window only indicates that the process has been completed without problems, not that the changes have been saved. If changes are not saved, a warning is given and the asterisk next to the report name in the tab remains. A message is given if changes are saved.

SAVE UNDER NEW NAME

To save amended reports under a new name, select the `save as` command or the key combination `Ctrl+Shift+S`. If there is already a report with the same name, this is either not saved, overwritten or overwritten after confirmation, depending on the configuration of the options (on page 571). If an attempt is made to overwrite the saved file of another report that was open in the ZAMS, the process is canceled with an error message.

SAVE ALL OPEN REPORTS

To save open reports, select the `save` command or the key combination `Ctrl+Alt+S`. If there is already a report with the same name, this is either not saved, overwritten or overwritten after confirmation,

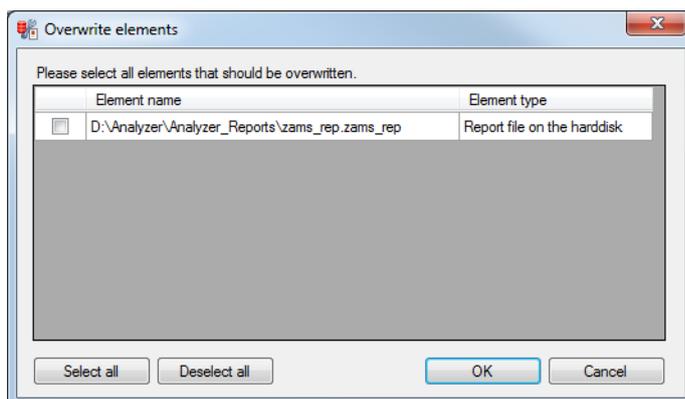
depending on the configuration of the options (on page 571). Files are only resaved if changes have actually been made.

When saving all reports:

- ▶ A check is made to see if each report has a valid save path:
If, in the event that there is not a valid path, the selection of a valid path is canceled, the saving is also canceled
- ▶ If any conflicts are recognized:
Conflicts lead to saving being canceled
- ▶ If all necessary confirmations to overwrite existing data or entries in an individual dialog have been obtained:
Saving is carried out if confirmation has been given, otherwise the process is aborted

OVERWRITE REPORT WHEN SAVING

If an existing report is to be overwritten, a dialog to confirm this is opened with the standard configuration of the options (on page 571).



| Parameters | Description |
|-----------------|---|
| List of reports | <p>Displays all reports that are overwritten when saved.</p> <ul style="list-style-type: none"> ▶ A tick in the check box allows the report to be overwritten. ▶ An empty check box prevents overwriting. |
| Select all | Selects all reports displayed to be overwritten. |
| Deselect all | Prevents all displayed reports being overwritten. |
| OK | Accepts settings, executes defined actions (overwrite/do not overwrite) and closes dialog. |
| Cancel | Discards settings and closes the dialog. |

CLOSE REPORT

To close a report:

1. Select the `close` command in the report menu
2. If the report was changed and not saved, the dialog to save reports is opened.
 - If this dialog is exited, the report is not closed
 - If the dialog is confirmed with OK, the report is closed in accordance with the requirements and removed from the report area

CLOSE ALL REPORTS

To close all reports:

1. Select the `close all` command in the report menu
2. Unchanged reports are closed
3. For reports that have been changed and has not been saved yet, the dialog to save reports is opened.
 - If this dialog is exited, the reports are not closed
 - If the dialog is confirmed with OK, the reports are closed in accordance with the requirements and removed from the report area

11.5.2 Deploy reports

In order for a report to be deployed, there must be a connection to an Analyzer server with a valid license.

Note: When checking the paths, capitalization of letters is not taken into account.

PREPARING MULTILINGUAL REPORTS

To prepare multilingual reports:

1. In the ZAMS menu, go to **Options**
2. click on **Settings**
3. Navigate to the **Language settings** tab
4. Configure (on page 574) multilingual preparation
5. Confirm the configuration by clicking on the OK button
6. Navigate to the Report menu
7. Select the **Deploy** or **Deploy all** command.

PROCEDURE FOR "DEPLOYING A REPORT"

To deploy a report:

1. Select the **Deploy** command in the report menu
2. The report and all attendant SPs and UDFs are validated. Data files are read in the standard language English; paths are validated in all necessary languages.
The deployment is canceled if validation errors occur. During validation, a check is made to ensure that both the save path on the hard drive and the save path on the Analyzer server are valid.
3. The reports that are to be overwritten are established. In doing so, all language versions of the report on the server are always compiled under one entry with the language-neutral path.
4. A check is made to see if the report needs to be saved.

5. A check is made to see if a file on the hard drive, an SP or UDF to be created in the database or the report on the server need to be overwritten. If it is necessary to overwrite, this is handled in accordance with the settings in the options (on page 571). If necessary, a dialog to confirm the overwriting can be activated.
6. The report is saved to the hard drive with the overwriting settings if necessary.
7. All SPs and UDFs that need to be created are created with the overwriting settings. If an error occurs with these settings, the deployment is canceled.
8. The RDL of the report is created and stored on the server.
9. Reports are prepared in all configured languages. Each language version of a report is considered separately in terms of being successful or unsuccessful.
10. If the RDL was successfully stored on the server, the entries for the report are written to the internal management tables **REPORT_HISTORY** and **REPORT_DEPENDENCIES**.
Note: The **TEMPLATE_PARAMETERS** column in the **REPORT_HISTORY** column is designed for 4.000 characters. If longer inputs are entered, these are not saved.
11. Which of the reports in the Report Builder are to be opened in the Report Builder is established. In doing so, all language versions of the report on the server are always compiled under one entry with the language-neutral path.
12. The Report Builder is opened if necessary.
13. A status message displays the success, partial success or lack of success of the deployment.

PROCEDURE FOR "DEPLOYING ALL REPORTS"

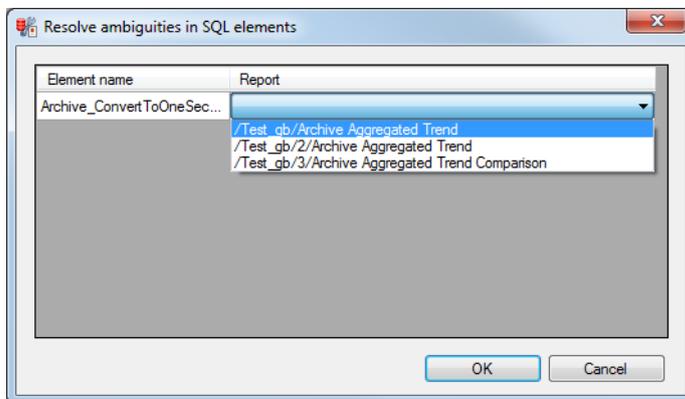
This function provides all reports opened in the report area of ZAMS.

To deploy all reports:

1. Select the **Deploy all** command in the report menu
2. A check is made to see which reports needs to be saved. If the configuration requires user interaction, the user is prompted to confirm this in a similar manner to the overwrite dialog.
3. All reports and all attendant SPs and UDFs are validated. Data files are read in the standard language English; paths are validated in all necessary languages.
If the validation of an individual report is not successful, the deployment of all reports is

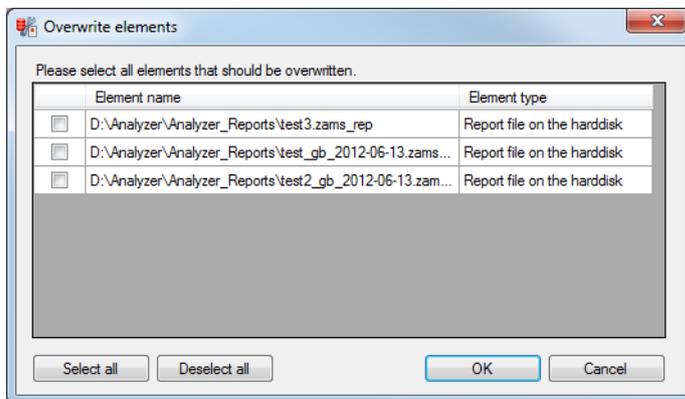
canceled. During validation of each report, a check is made to ensure that both the save path on the hard drive and the save path on the Analyzer server are valid.

4. The reports that are to be overwritten are established. In doing so, all language versions of the report on the server are always compiled under one entry with the language-neutral path.
5. If there are conflicts with the reports to be saved on the save paths on the hard drive or on the Analyzer server, these are reported as an error message in the output window and the deployment of all reports is canceled.
6. In the next step, a check is made to see if one or more SPs or UDFs are to be created and if these are to be used identically to several reports. This happens, for example with SPs to read the metadata tables for the report parameters. If this is the case, all such ambiguities in a dialog are displayed and the user must decide which element from which report is to be created:



- **Element name:** SQL element
 - **Report:** Selection of report that is to be created from drop-down list
7. If the dialog is canceled or an error occurs, the deployment of all reports is canceled. If the dialog is confirmed, all ambiguities are removed according to the settings in the dialog.

8. A check is carried out to see if reports on the hard drive, SQL elements in the database or reports on the Analyzer server need to be overwritten. If this is the case, the configurations for overwriting are evaluated and all objects where a decision from the user is required are listed in a dialog:



- **checkbox**: Highlighting for whether an element is to be overwritten or not
 - **Element name**: Name of the object
 - **Element type**: Object type, can be a file on the database, an SQL element in the database or a report on the Analyzer server
 - **select all**: selects all elements to be overwritten
 - **Deselect all**: removes highlighting to overwrite from all elements
 - **ok**: Applies settings and closes the dialog.
 - **cancel**: Discards inputs, sets checkboxes to empty (no) and closes dialog
9. If the dialog is canceled or if an error occurs, a warning is given in the output window and "no" is accepted as a default.
If the dialog is confirmed, the requirements for overwriting are implemented.
10. The reports envisaged for saving are saved.
11. The SQL elements are created with the defined overwriting settings above the defined reports. If an SQL element cannot be created, this is saved on an interim basis, because the next step is affected by this.
12. For all reports for which all necessary SQL elements were created, the RDL files are created and stored on the server. For each report that was successfully saved on the server, the entries for the report are written to the internal management tables **REPORT_HISTORY** and **REPORT_DEPENDENCIES**.

13. Reports are prepared in all configured languages. Each language version of a report is considered separately in terms of being successful or unsuccessful.
14. Which of the reports in the Report Builder are to be opened in the Report Builder is established. In doing so, all language versions of the report on the server are always compiled under one entry with the language-neutral path.
15. The Report Builder is opened if necessary.
16. After determining which reports are to be opened in the Report Builder, the selected reports are opened in the Report Builder.
17. A status message displays the success, partial success or lack of success of the deployment.

PROGRESS BAR IN THE STATUS LINE

When deploying all reports, the progress bar in the status line (on page 249) is displayed. In doing so, each of the following steps initializes the progress bar and fills it completely during the course of progress:

- ▶ Step 1 of 5: Analysis (validation) of the reports
- ▶ Step 2 of 5: Saving of reports (this is skipped if no reports are to be saved)
- ▶ Step 3 of 5: Creation of SPs and UDFs
- ▶ Step 4 of 5: Creation of the RDL files on the server
- ▶ Step 5 of 5: Opening of the reports in the Report Builder (this is skipped if no reports are to be opened in the Report Builder)

USING REPORTS AND CARRYING OUT ACTIONS IN ZAMS

Recommendation: Do not execute any reports whilst actions are being carried out with ZAMS that relate to these reports. Most of all if ZAMS:

- ▶ is deploying reports
- ▶ is updating the connector functions in the database
- ▶ is creating the SQL connector

11.5.3 Manage RDL templates

RDL templates are used when preparing reports. They always contain the report header with all elements contained in this, such as text, graphics, etc.

RDL templates can be restored and administered in ZAMS. The following is possible:

- ▶ Restoring of an RDL template from an RDL file to the computer.
- ▶ Restoring of an RDL template from a report on the server.
- ▶ Importing of RDL templates from other ZAMS versions.
- ▶ Selection of the RDL template to be used for the provision.
- ▶ Deletion of RDL templates.

PROCEDURE

When ZAMS is started, a check is made to see if the RDL template that is used exists:

1. ZAMS is started.
2. The configuration is loaded.
3. When displaying the main window, a check is made to see whether the RDL template noted in the configuration can be found in the RDL template folder.
4. If this is the case, the process is ended here. Otherwise the user is asked if they want to start the import of RDL templates from other versions.
5. If the user says yes to this question, the import is started.
6. Once the import has been completed or if the user responds with no to the question, another check is made to see if the RDL template noted in the configuration can be found in the RDL template folder.
7. If this is the case, the process is ended here. Otherwise a warning is given and the configuration is reset to the standard template.

Administering templates

ADMINISTERING TEMPLATES

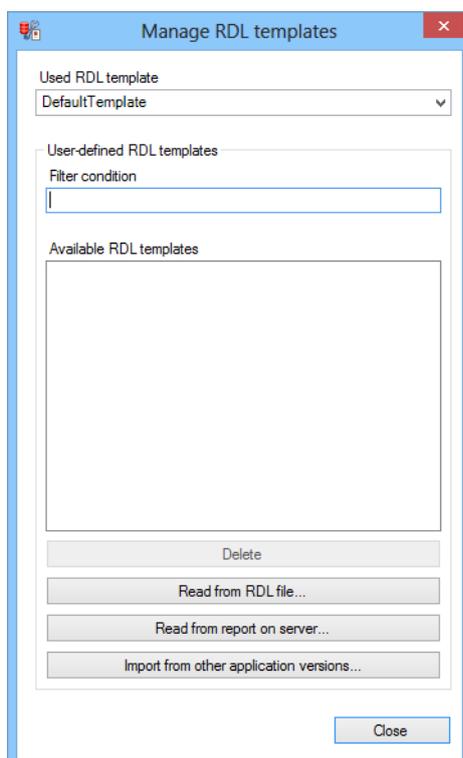
To administer RDL templates:

1. Open the menu **Tools**
2. Select the entry **Manage RDL templates**.
3. The dialog for administering the RDL files is opened
4. Select the desired actions such as:
 - Selection of the template
 - Creating and administering user-defined templates

Each change for user-defined templates is implemented immediately. The selection of a template for the provision of reports is executed by clicking on **close**.

5. Close the dialog by clicking on the **close** button.

ADMINISTER RDL TEMPLATES DIALOG



| Parameters | Description |
|--|---|
| Used RDL template | Selection of the template to be used from a drop-down list. This contains standard templates and user-defined templates. Each change triggers an update to the ZAMS configuration and the saving of the configuration. |
| User-defined RDL templates | List and administration of the user-defined templates. |
| Filter conditions | Input of filter conditions. The character sequence that has been entered is applied to all templates in the list. The evaluation is carried out without taking capitalization into account. |
| Available RDL templates | List of the user-defined RDL templates available. Multiple selection is possible. |
| Delete | Deletes the selected templates from the list after requesting confirmation. |
| Read from RDL file | Opens the dialog to read out (on page 267) a template from an RDL file. |
| Read from report on server | Opens the dialog to read out (on page 268) a template from the Analyzer Server. There must be a valid connection to do this. |
| Import from other application versions | Opens the dialog to import a template (on page 270) from a different version. |
| Close | Closes the dialog and sets the template selected in the RDL template used option as the template for the provision of reports. |

STATUS LINE

The RDL template used is also displayed in the ZAMS status line.

 Connected to "REPORTING" on "TL-W81x64.testenv.local\ZA2" | Used color scheme: Analyzer Initial | Used RDL template: DefaultTemplate | Ready

PROCEDURE

The creation of an RDL template is as follows:

1. The initial report is given the desired header in the Report Builder.

2. The dialog to administer RDL templates is started in ZAMS.
3. Depending on whether the report is on the server or as an RDL file, the corresponding function to create a template is started.
4. The report is selected in the dialog that opens and the dialog is confirmed.
5. The RDL template is created from the selected report and saved.
6. If you want, the new RDL template can be selected as an active template in the dialog to administer the RDL templates.

Naming templates

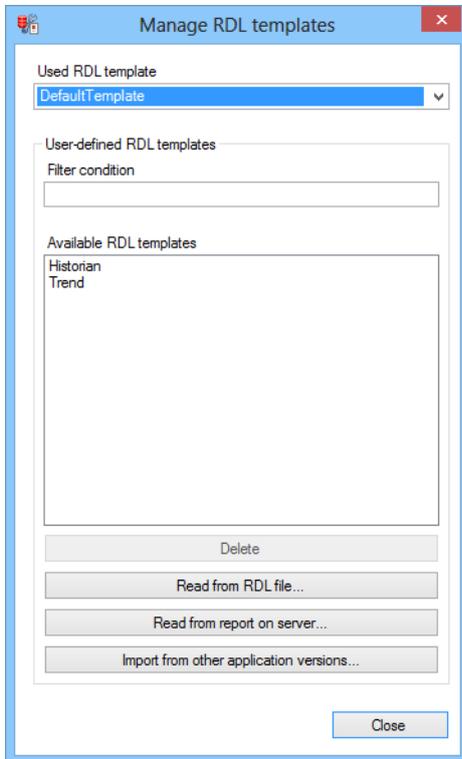
When reading a template from an RDL file (on page 267) and when reading from the server (on page 268), the file must be given a name.



1. Give it a unique name.
Conditions:
 - The name must not be empty.
 - The name must not be used by another template.
2. Click on **OK**.

Filtering templates

The list of user-defined templates can be displayed as filtered:



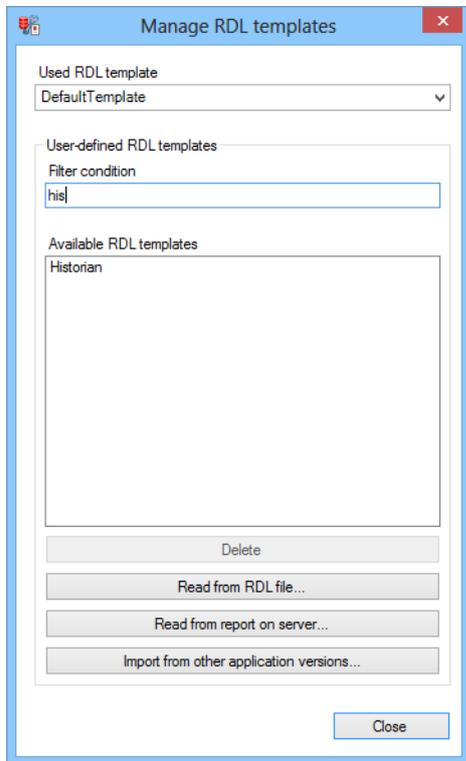
To filter the list of the templates:

- ▶ Enter the desired character sequence in the `Filter conditions` field.
- ▶ The filter is applied immediately on entry of the first character.
- ▶ No wildcards are used.
- ▶ The character sequence that has been entered is applied to all templates in the list. The evaluation is carried out without taking capitalization into account.

For example:

- `a1` only shows templates whose name contains the character sequence `a1` as `Alarm` and `Alarm_imported`

- `h` only shows templates whose name contains the character sequence `h` as **Alarm_imported** and **Historian**



Read from RDL file

RDL templates can be read from RDL files on the computer. To do this:

1. Click in the RDL templates dialog on the **Read from RDL file** button.
2. The file browser is opened.
3. Navigate to the desired RDL file.
The file must contain a header.
4. The dialog to name the new template (on page 265) is opened.
5. Give it a unique name.
6. Click on OK.
7. The new template is entered in the list

PROCEDURE

Procedure when creating an RDL template from an RDL file on the computer:

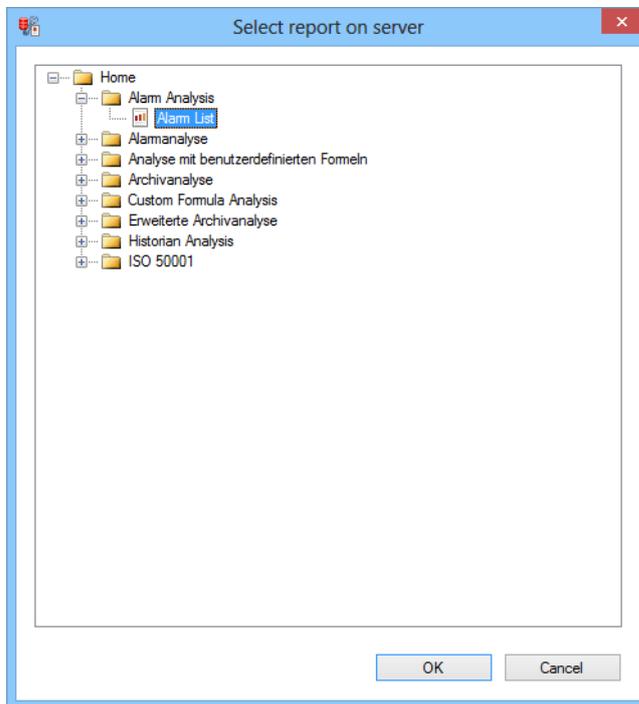
1. The dialog to open an RDL file on the computer is started.
2. The user selects the RDL file and confirms the dialog.
3. The RDL file is loaded.
4. The header, including all elements contained therein, is extracted. If no header is found, the process is canceled with an error message.
5. The embedded graphics are extracted. If necessary embedded graphics are not found, the process is canceled with an error message.
6. The dialog to enter the name of a new RDL template is started.
7. The user enters the name of the new RDL template and confirms the dialog.
8. The extracted elements are saved with the necessary placeholders in the correct RDL structure as a new RDL template with the names given by the user in the RDL template folder.

Read from report on server

RDL templates can be read from reports on the Analyzer Server. To do this:

1. Click, in the Administer RDL templates dialog, on the **Read from report in the server** button.

2. The dialog for selecting a report is opened
All reports that are found are shown in a tree structure according to their save path.



3. Navigate to the desired report.
The report must contain a header.
4. The dialog to name the new template (on page 265) is opened.
5. Give it a unique name.
6. Click on OK.
7. The new template is entered in the list

PROCEDURE

Procedure when creating an RDL template from a report on the server:

1. All reports on the server are listed.
2. The reports are shown as a tree according to their paths.
3. The user selects a report and confirms the dialog.
4. The report is loaded by the server.

5. The header, including all elements contained therein is extracted. If no header is found, the process is canceled with an error message.
6. The embedded graphics are extracted. If necessary embedded graphics are not found, the process is canceled with an error message.
7. The dialog to enter the name of a new RDL template is started.
8. The user enters the name of the new RDL template and confirms the dialog.
9. The extracted element are saved with the necessary placeholders in the correct RDL structure as a new RDL template with the names given by the user in the RDL template folder.

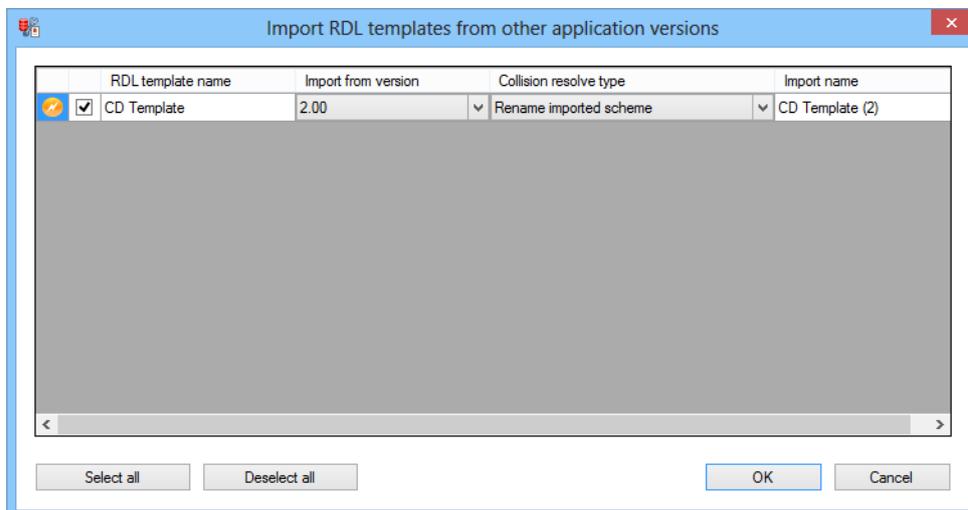
Import from other application versions

RDL templates can be read from RDL files on the computer. The files to be imported must be in the `RDL templates` subfolder of the ZAMS version. For example:

```
%ProgramData%\COPA-DATA\zenonAnalyzer\ZAMS_[Version]\RDL_Templates.
```

To do this:

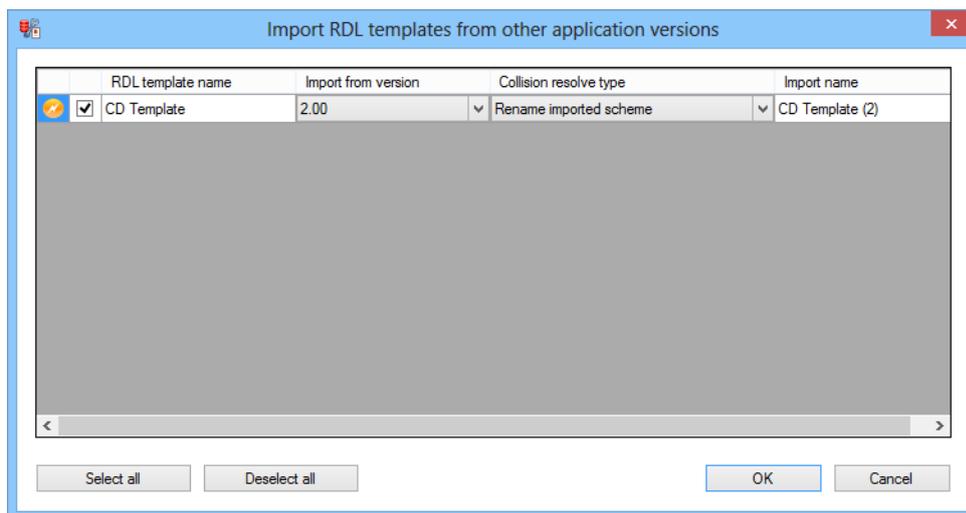
1. Click, in the RDL templates dialog, on the **Import from other application versions** button.
2. The dialog with the list of all RDL files of a different version with a header are opened.



3. Select the desired templates.
4. Select the desired version if required.

5. If there are naming conflicts: Decide whether the template to be imported is to be renamed or the existing template is to be overwritten.
6. Give it a new, unique name if required.
7. Click on OK.
8. The new templates are entered into the list

IMPORT RDL TEMPLATES DIALOG



| Parameters | Description |
|------------------------|--|
| Status symbol | Displays whether a template with this name already exists. |
| Checkbox | Selection of a template for import by ticking the checkbox. |
| RDL template name | Name of the selected RDL template. Display only. |
| Import from version | Selection of the version of the selected RDL template from the drop-down list. Only active if there are templates from different ZAMS versions with the same name. |
| Collision resolve type | Selection of actions for templates whose name is already in use: <ul style="list-style-type: none"> ▶ Rename imported scheme: The schematic is renamed on import. The current name in the Import name field is supplemented with a figure in brackets. The name can be individually amended in this field. ▶ Overwrite existing scheme: The existing RDL file is replaced by the RDL file that is to be imported. <p>Default: Rename imported scheme</p> <p>Only active if there is a naming conflict during import.</p> |
| Import name | Entry of a unique name for the template to be imported: <ul style="list-style-type: none"> ▶ The name must not be empty. ▶ The name must not be used by another template. <p>Only active if there is a naming conflict on import and the conflict is triggered by renaming.</p> |
| Select all | Clicking this selects all displayed templates. |
| Deselect all | Clicking this deselects the current selection. |
| OK | Applies settings and closes the dialog. If a pre-existing template is to be overwritten, confirmation is requested. |
| Cancel | Discards all changes and closes the dialog. |

PROCEDURE

Procedure when importing RDL templates from other versions of ZAMS:

1. A search for RDL template folders from other versions of ZAMS is carried out in the `%ProgramData%\COPA-DATA\zenonAnalyzer` folder.
2. All available RDL templates are listed in the folders found with the exception of the default template (`DefaultTemplate.rdl`).
3. The results are displayed to the user in the dialog to import RDL templates.
4. The user selects which RDL templates are to be imported from which versions and how conflicts that occur in the process are to be solved.
5. The extracted elements are saved with the necessary placeholders in the correct RDL structure as a new RDL template with the names given by the user in the RDL template folder.

11.5.4 Creating color definition for reports

The coloring of reports can be defined using a color scheme. All color schemes for reports are administered in ZAMS.

COLOR SCHEME

zenon Analyzer is supplied with the `Analyzer Initial` color scheme as standard. This color scheme can be supplemented with your own, individual color scheme.

COPA-DATA STANDARD

The `Analyzer Initial` color scheme

- ▶ Is fixed
- ▶ Cannot be changed.
- ▶ Cannot be exported.
- ▶ Cannot be overwritten by imported files.

INDIVIDUAL COLOR SCHEME

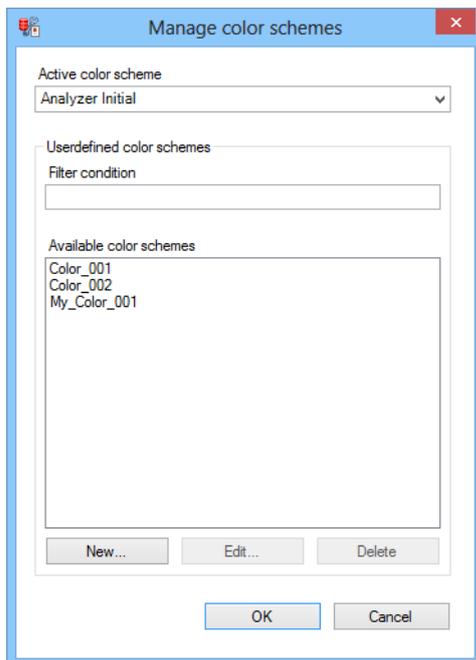
ZAMS users can do the following with individual color schemes:

- ▶ Create and edit (on page 275)
- ▶ export (on page 317)
- ▶ import (on page 318)

SELECTING A COLOR SCHEME

To select a color scheme:

1. open the menu `Options`
2. Click on the `Manage color scheme` entry
3. The dialog for administering the color scheme is opened

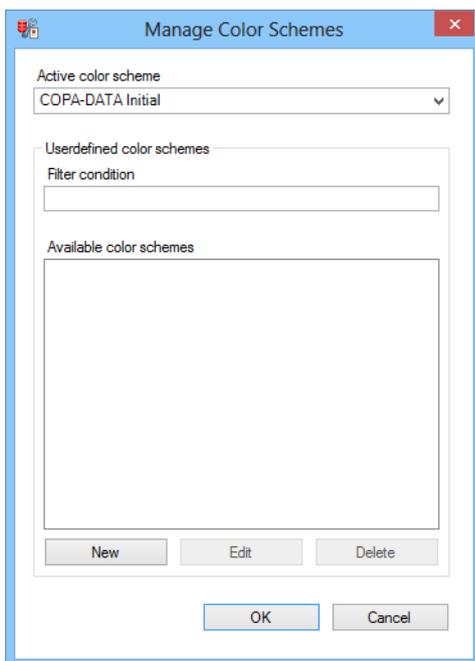


4. Select the desired option from the drop-down list for the `Active color schemes` option
5. Confirm your selection by clicking on the `OK` button

Creating and editing variables

To administer a color scheme:

1. open the menu **Options**
2. Click on the **Manage color scheme** entry
3. The dialog for administering the color scheme is opened



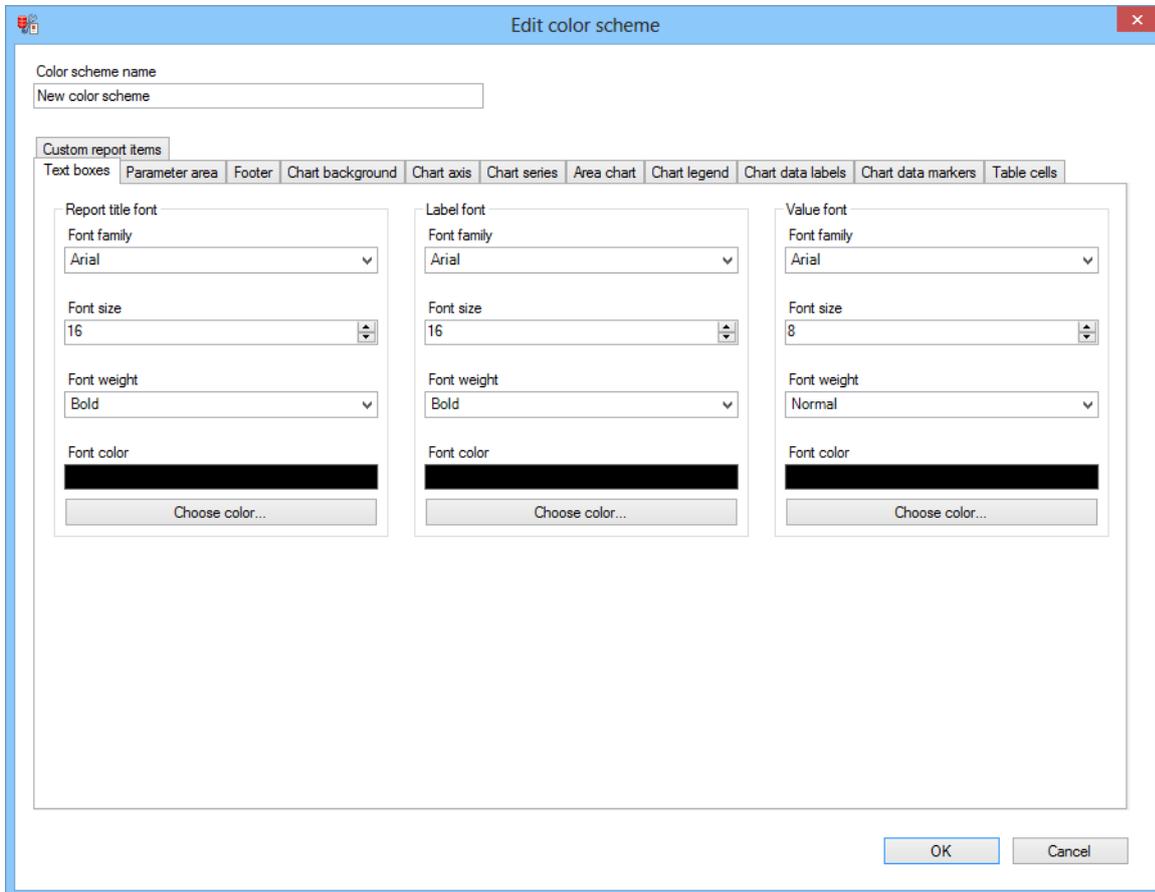
| Parameters | Description |
|---------------------------|---|
| Active color scheme | <p>Selection of a color scheme from the drop-down list.</p> <p>The standard color scheme is always displayed at the top of the list. The individual color scheme is sorted alphabetically.</p> |
| Userdefined color schemes | Properties for the creation and editing of your own color scheme. |
| Filter conditions | <p>Entry of a filter text that filters displayed elements in the list of Available color schemes.</p> <p>The filter criteria is met if the filter text appears at a desired location in the name of a color scheme. Capitalization of letters is ignored (not case sensitive).</p> |
| Available color schemes | List of all available individual color schemes for the selection of a color scheme for editing or deleting. |
| New | <p>Clicking on the button opens the dialog to create a color scheme.</p> <p>The new color scheme is entered at the same time with a standard name in the list of Available color schemes. Any filter text that may be present is removed, so that the color scheme is certain to be displayed in the list. If the standard name is already present in the list, it is supplemented with a counter in brackets.</p> |
| Edit | Clicking on the button opens the dialog to edit the selected color scheme. A color scheme can also be renamed in this dialog. |
| Delete | <p>Deletes selected color scheme without requesting confirmation.</p> <p>If a color scheme that is also entered as an active color scheme is deleted, the active color scheme is taken on as the standard color scheme.</p> |
| OK | Applies settings and closes the dialog. |
| Cancel | Discards all changes and closes the dialog. |

CREATING A COLOR SCHEME

To create a new color scheme:

1. Open the dialog **Manage color schemes**.
2. click on the button **New**

3. The dialog for defining a color scheme is opened



| Parameters | Description |
|-------------------------------|--|
| Color scheme name | <p>Entry of a freely-definable name for the color scheme to be configured.</p> <p>A name is valid if it:</p> <ul style="list-style-type: none"> ▶ Is not blank ▶ No other color scheme has the same name (if the standard name is left and this already exists, it is given a counter and accepted.) |
| Tabs for configuration | <p>A color scheme for reports is configured using the following tabs:</p> <ul style="list-style-type: none"> ▶ Text fields (on page 281) ▶ Parameter area (on page 283) ▶ Footer (on page 287) ▶ Chart background (on page 289) ▶ Chart axis (on page 293) ▶ Chart series (on page 298) ▶ Area chart (on page 300) ▶ Chart legend (on page 302) ▶ Chart data labels (on page 304) ▶ Chart data markers (on page 307) ▶ Table cells (on page 310) ▶ Gantt Chart (on page 315) <p>For details, see the corresponding subchapter.</p> |
| OK | <p>Accepts all changes in all tabs and closes the dialog.</p> <p>Only active if a valid name has been entered.</p> |
| Cancel | <p>Discards all changes on all tabs and closes the dialog.</p> |

EDIT COLOR SCHEME

To edit a color scheme:

1. Open the dialog **Manage color schemes**.
2. Select the desired color scheme in the list of **Available color schemes**
3. click on the button **Edit**
4. The dialog for defining a color scheme is opened

RENAME COLOR SCHEME

To rename a color scheme:

1. Open the dialog **Manage color schemes**.
2. Select the desired color scheme in the list of **Available color schemes**
3. click on the button **Edit**
4. The dialog for defining a color scheme is opened
5. Change the name in the **Name of color scheme option**
6. Confirm the change by clicking on the **OK** button

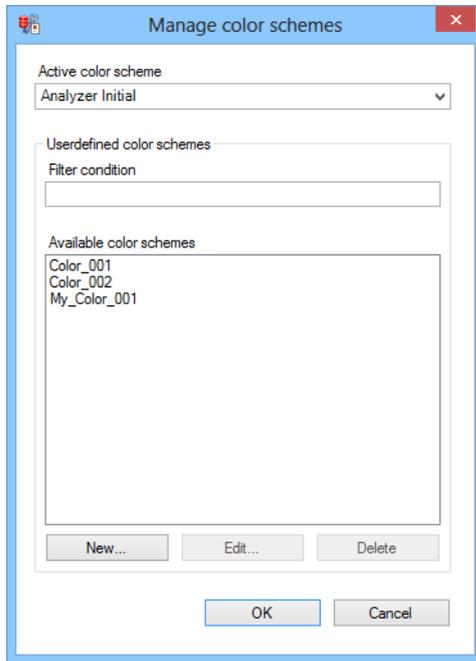
FILTERING THE COLOR SCHEME

The list of individually-created color schemes can also be displayed with filters:

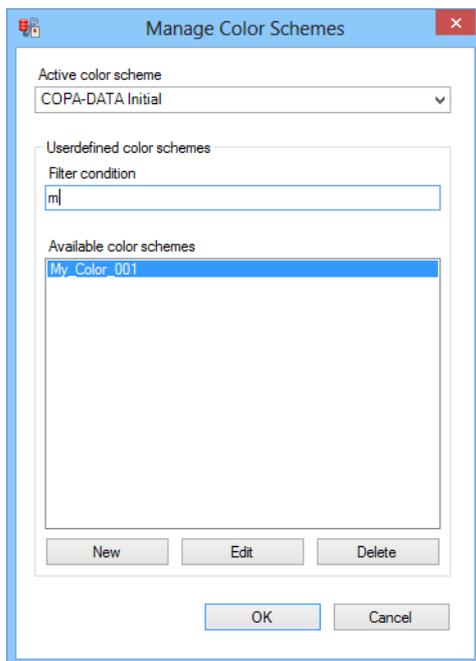
To filter the list:

1. Enter the filter criteria in the Filter condition option

Note: Filters are case sensitive



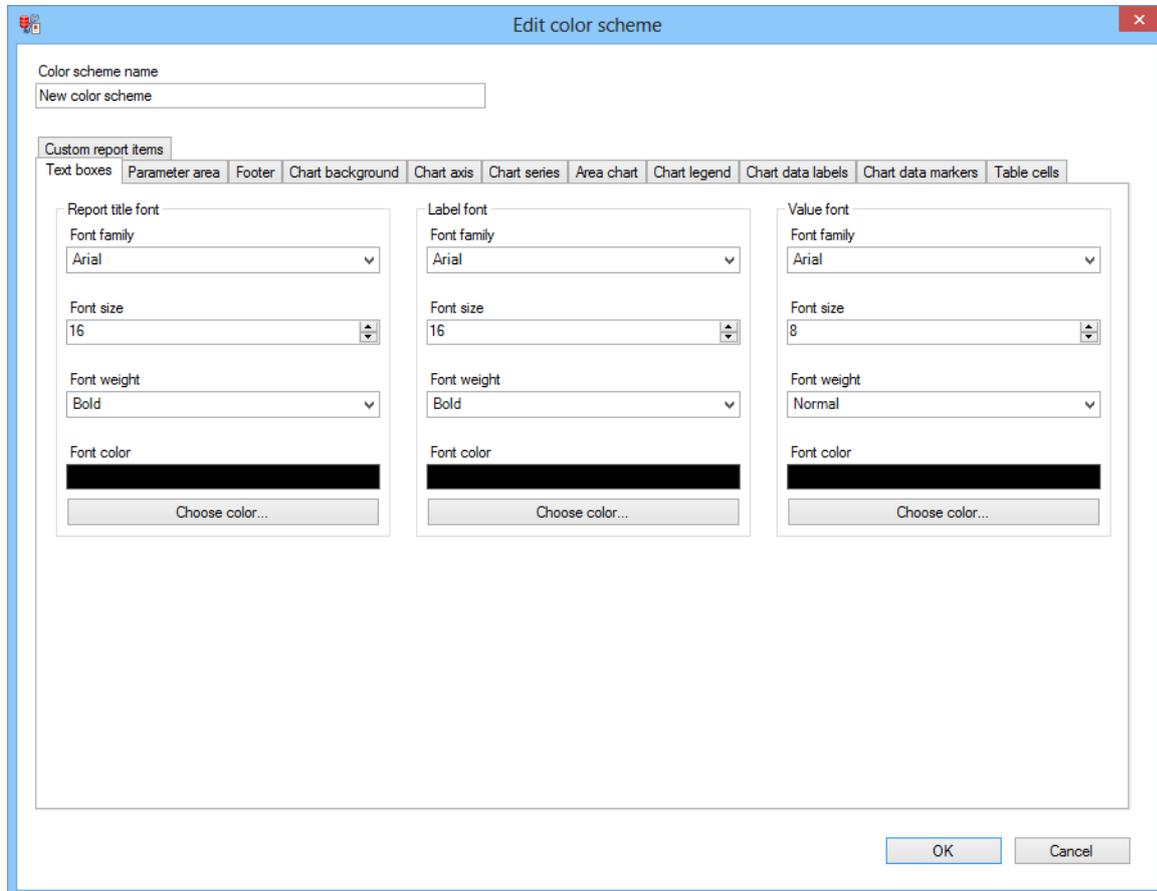
2. The list is shown after filtering



To show the list in full again, delete the filter criteria.

Text fields

Configuration of the properties of text fields:



Properties for text fields are available for the following text elements:

- ▶ **Report title font**
- ▶ **Label font**
- ▶ **Value font**

The following options are available for each of these elements:

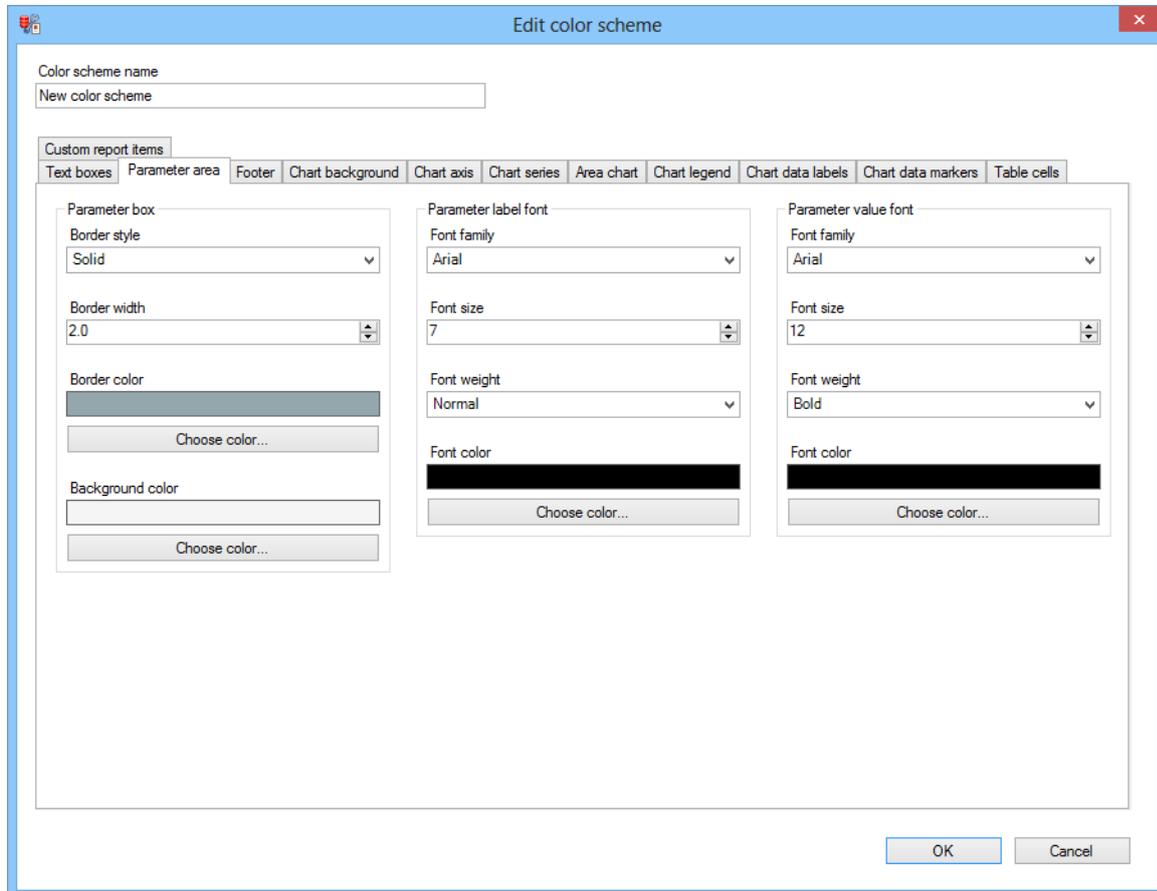
| Parameters | Description |
|--------------|---|
| Font | Selection of font type from drop-down list. 256 fonts are currently offered. |
| Font size | The font size is set using the cursor keys or by entering it in the number field. <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| Font weight | Selection of font thickness from drop-down list. Available are: <ul style="list-style-type: none"> ▶ Thin ▶ ExtraLight ▶ Light ▶ Normal ▶ Medium ▶ SemiBold ▶ Bold ▶ ExtraBold ▶ Heavy |
| Font color | Display of the selected font color. Setting is carried out using the <code>Select color</code> button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |

CLOSE DIALOG

| | |
|---------------|---|
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Parameter area

Configuration of the properties of the parameter area:



| Parameters | Description |
|-----------------------------|--|
| Parameter box | Definition of the properties for borders and background of the parameter output area |
| Border style | Selection of the border style from the drop-down list. The following values are available: <ul style="list-style-type: none"> ▶ None ▶ Solid ▶ Double ▶ Dashed ▶ Dotted |
| Border width | Setting the border width: <p>Input is possible in levels with a precision of 0.5.</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| Border color | Display of the selected border color. The setting is made using the <code>Select color</code> button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Background color | Display of the selected background color. The setting is made using the <code>Select color</code> button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Parameter label font | Definition of the font properties of the text box for parameter names. |
| Font | Selection of font type from drop-down list. 256 fonts are currently offered. |
| Font size | The font size is set using the cursor keys or by entering it in the number field. <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| Font weight | Selection of font thickness from drop-down list. Available are: |

| | |
|--|---|
| | <ul style="list-style-type: none">▶ Thin▶ ExtraLight▶ Light▶ Normal▶ Medium▶ SemiBold▶ Bold▶ ExtraBold▶ Heavy |
|--|---|

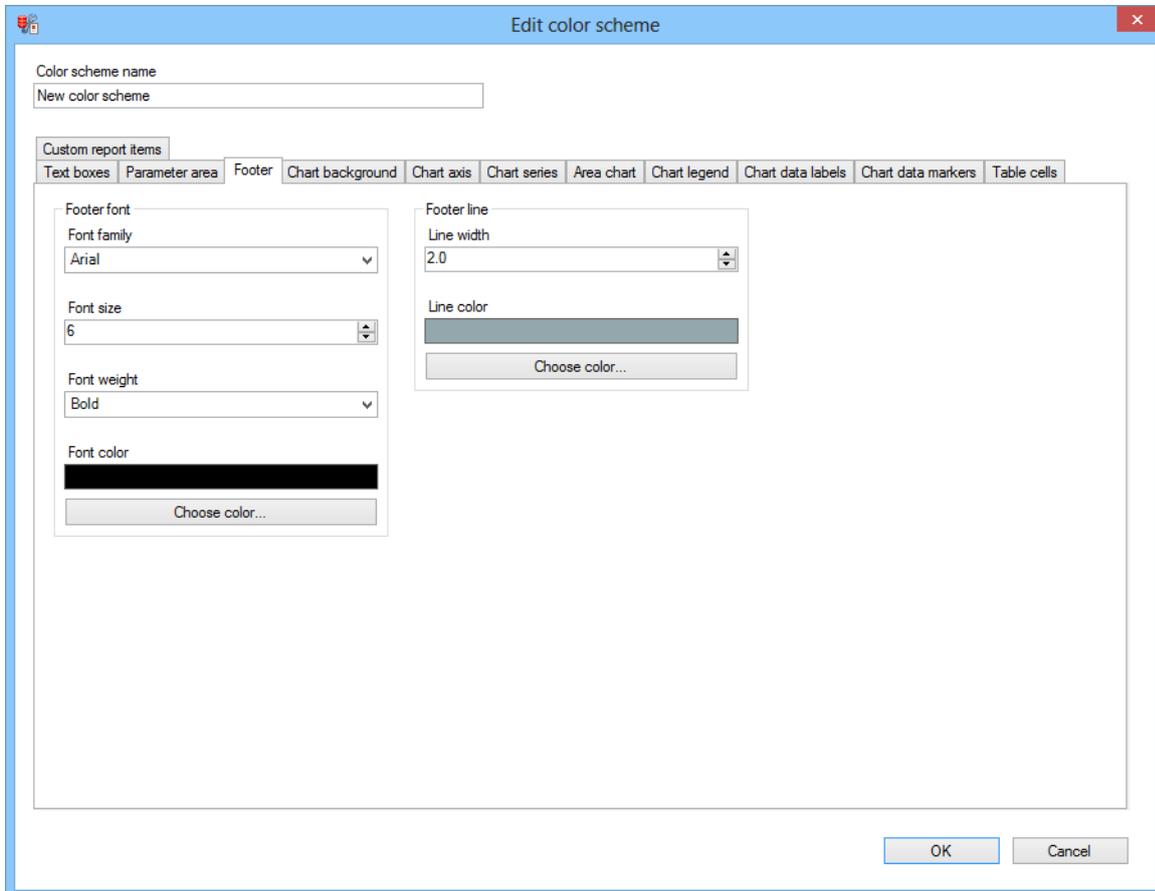
| | |
|-----------------------------|---|
| Font color | Display of the selected font color. Setting is carried out using the Select color button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Parameter value font | Definition of the font properties of the text box for parameter values. |
| Font | Selection of font type from drop-down list. 256 fonts are currently offered. |
| Font size | The font size is set using the cursor keys or by entering it in the number field. <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| Font weight | Selection of font thickness from drop-down list. Available are: <ul style="list-style-type: none"> ▶ Thin ▶ ExtraLight ▶ Light ▶ Normal ▶ Medium ▶ SemiBold ▶ Bold ▶ ExtraBold ▶ Heavy |
| Font color | Display of the selected font color. Setting is carried out using the Select color button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |

CLOSE DIALOG

| | |
|---------------|---|
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Footer

Configuration of the properties of the footer:



| Parameters | Description |
|--------------------|---|
| Footer font | Configuration of the font properties of the text boxes in the footer. |
| Font | Selection of font type from drop-down list. 256 fonts are currently offered. |
| Font size | The font size is set using the cursor keys or by entering it in the number field. <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| Font weight | Selection of font thickness from drop-down list. Available are: <ul style="list-style-type: none"> ▶ Thin ▶ ExtraLight ▶ Light ▶ Normal ▶ Medium ▶ SemiBold ▶ Bold ▶ ExtraBold ▶ Heavy |
| Font color | Display of the selected font color. Setting is carried out using the Select color button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Footer line | Configuration of the properties of the footer line. |
| Line width | Setting for the line width: <p>Input is possible in levels with a precision of 0.5.</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| Line color | Display of the selected line color. The setting is made using the Choose color button below. |

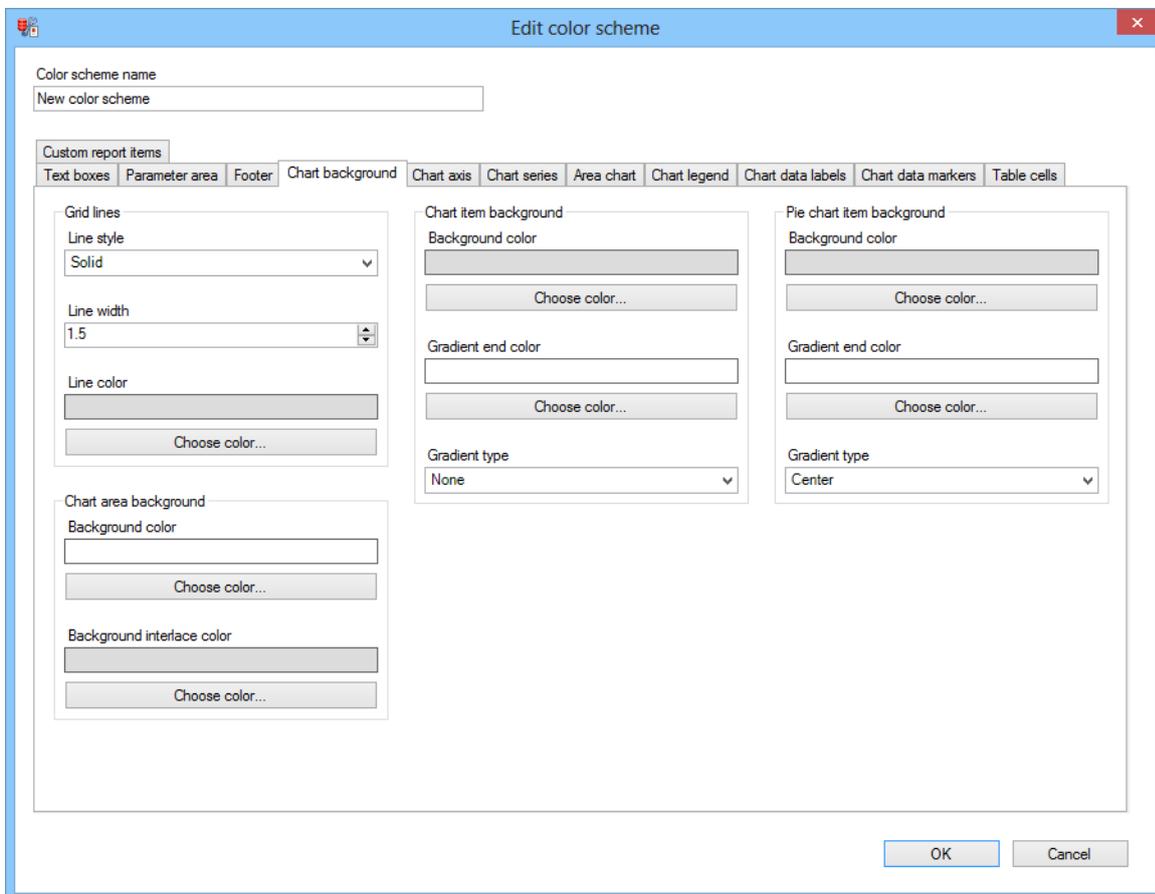
| | |
|--------------|---|
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
|--------------|---|

CLOSE DIALOG

| | |
|---------------|---|
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Chart background

Configuration of the properties of the chart background.



| Parameters | Description |
|------------------------------|--|
| Grid lines | Configuration of the properties for grid lines in the background of the chart area. |
| Line style | Selection of the line style from the drop-down list. The following values are available: <ul style="list-style-type: none"> ▶ None ▶ Solid ▶ Dashed ▶ Dotted ▶ DashDot ▶ DashDotDot |
| Line width | Setting for the line width: <p>Input is possible in levels with a precision of 0.5.</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| Line color | Display of the selected line color. The setting is made using the <code>Select color</code> button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Chart area background | Configuration of the settings for the background for the chart area. The background of the chart area is the area that is in the actual chart. The area is limited by axes. <p>The background of the chart area is colored alternately with the base color and the alternative color.</p> <p>Pie charts always have a transparent background in this area.</p> |
| Background color | Display of the selected background color. The setting is made using the <code>Select color</code> button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Background interlace | Selection of alternative background color. The setting is made using the |

| | |
|--|--|
| color | Select color button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Chart item background color | Configuration of the settings of the object background for charts. The object background is the area that comprises the chart in the report including keys and axes. |
| Background color | Display of the selected background color. The setting is made using the Select color button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Gradient end color | Display of the end color of the color gradient. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Gradient type | <p>Selection of a color gradient type from drop-down list. The background is colored with the selected color gradient type, starting from the basic color through to the gradient end color. The following values are available:</p> <ul style="list-style-type: none"> ▶ None ▶ LeftRight ▶ TopBottom ▶ Center ▶ DiagonalLeft ▶ VerticalCenter <p>Note: The values DiagonalRight and HorizontalCenter are not available. However if these values are nevertheless used, they can be selected in the Microsoft Report Builder in the properties of the graphic object. If these values are set using dynamic expressions, such as a VB.NET code call, then they are shown as TopBottom.</p> |
| Background color of the circular graphic object | <p>Configuration of the settings of the object background for pie charts.</p> <p>The settings for pie charts are different to other diagrams in this area, because the background color of the chart is transparent.</p> |
| Background color | Display of the selected background color. The setting is made using the |

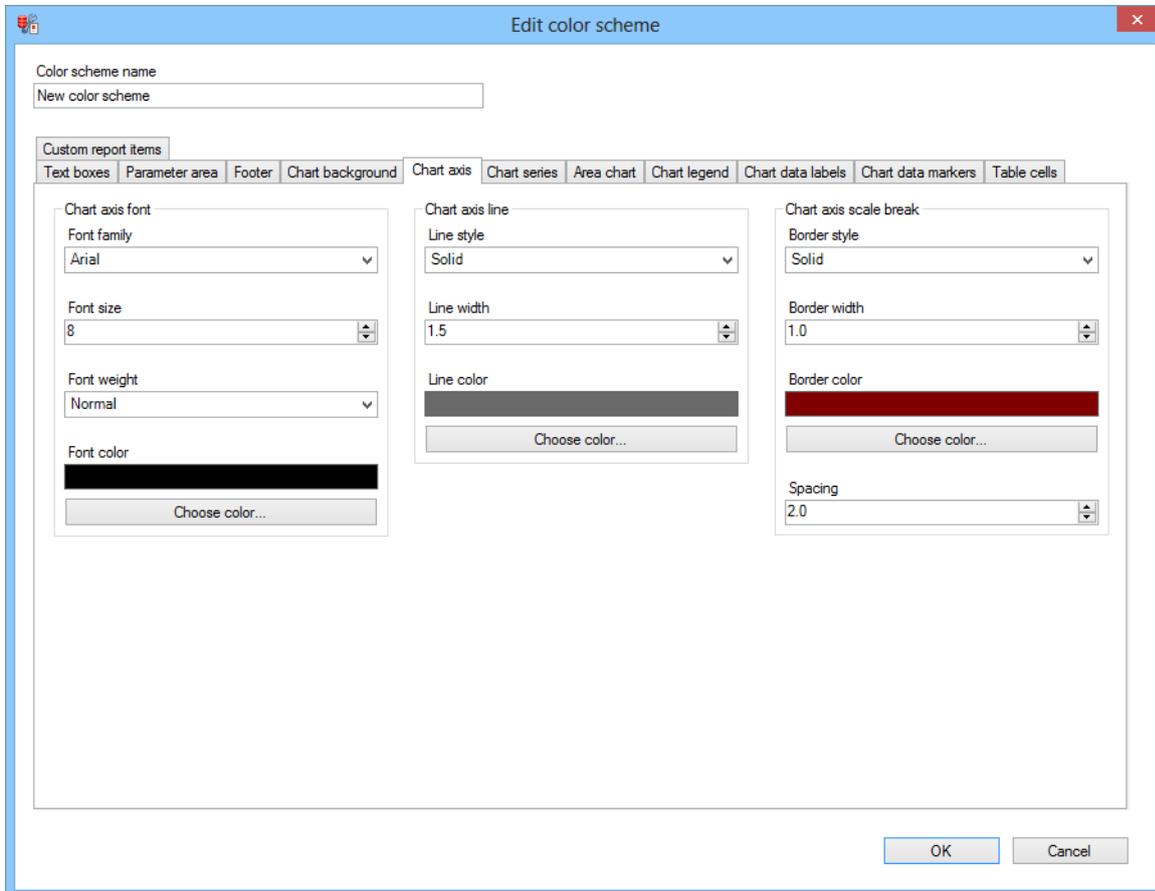
| | |
|---------------------------|---|
| | Select color button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Gradient end color | Display of the end color of the color gradient. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Gradient type | <p>Selection of a color gradient type from drop-down list. The background is colored with the selected color gradient type, starting from the basic color through to the gradient end color. The following values are available:</p> <ul style="list-style-type: none"> ▶ None ▶ LeftRight ▶ TopBottom ▶ Center ▶ DiagonalLeft ▶ VerticalCenter <p>Note: The values <code>DiagonalRight</code> and <code>HorizontalCenter</code> are not available. However if these values are nevertheless used, they can be selected in the Microsoft Report Builder in the properties of the graphic object. If these values are set using dynamic expressions, such as a VB.NET code call, then they are shown as <code>TopBottom</code>.</p> |

CLOSE DIALOG

| | |
|---------------|---|
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Chart axis

Configuration of the properties of the chart axis:



| Parameters | Description |
|------------------------|---|
| Chart axis font | Configuration of the font sizes of the figures on the axis. |
| Font | Selection of font type from drop-down list. 256 fonts are currently offered. |
| Font size | The font size is set using the cursor keys or by entering it in the number field. <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| Font weight | Selection of font thickness from drop-down list. Available are: <ul style="list-style-type: none"> ▶ Thin ▶ ExtraLight ▶ Light ▶ Normal ▶ Medium ▶ SemiBold ▶ Bold ▶ ExtraBold ▶ Heavy |
| Font color | Display of the selected font color. Setting is carried out using the <code>Select color</code> button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Chart axis line | Configuration of the settings for the axis lines |
| Line style | Selection of the line style from the drop-down list. The following values are available: <ul style="list-style-type: none"> ▶ None ▶ Solid ▶ Dashed |

| | |
|--|---|
| | <ul style="list-style-type: none">▶ Dotted▶ DashDot▶ DashDotDot |
|--|---|

| | |
|------------------------|--|
| Line width | <p>Setting for the line width:</p> <p>Input is possible in levels with a precision of 0.5.</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| Line color | Display of the selected line color. The setting is made using the <code>Select color</code> button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Chart axis scale break | Configuration of the settings for the axis breaks |
| Border style | <p>Selection of the line style from the drop-down list. The following values are available:</p> <ul style="list-style-type: none"> ▶ None ▶ Solid ▶ Dashed ▶ Dotted ▶ DashDot ▶ DashDotDot |
| Border width | <p>Setting the border width:</p> <p>Input is possible in levels with a precision of 0.5.</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| Border color | Display of the selected border color. The setting is made using the <code>Select color</code> button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Spacing | <p>Setting of the distance between the two lines that mark a break.</p> <p>Input is possible in levels with a precision of 0.5.</p> <ul style="list-style-type: none"> ▶ Minimum: 1 |

| | |
|--|----------------|
| | ▶ Maximum: 100 |
|--|----------------|

CLOSE DIALOG

| | |
|---------------|---|
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

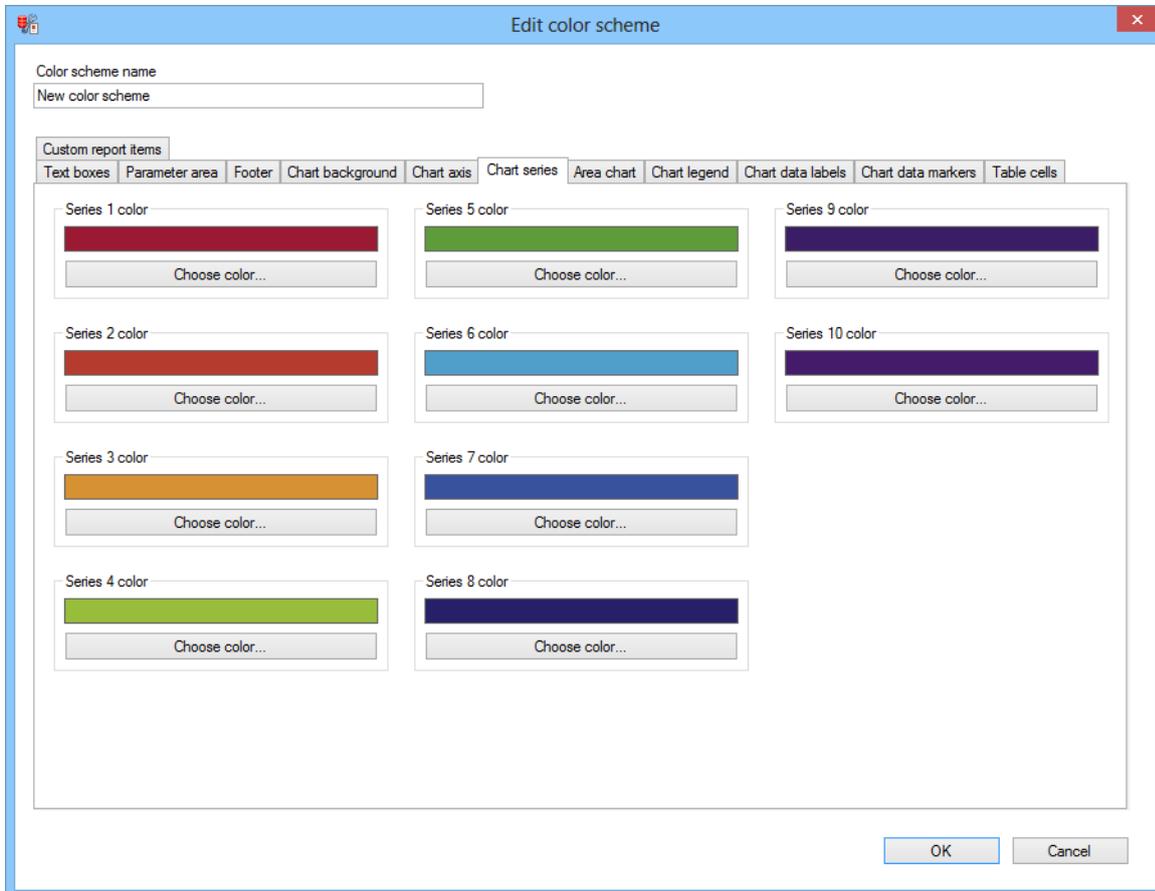
NOTE: DISPLAY OF THE VALUES OF THE AXIS BREAKS IN THE PDF

For the PDF rendering engine of the SQL server 2012 reporting services, problems with the validation of values entered have been reported for certain values. If values different to the standard scheme are to be entered, the following procedure is recommended:

1. Always change only one value at a time.
2. Then confirm the dialog with **OK**.
3. prepare a report with a chart (such as an archive trend (on page 922) with line chart) as a test.
4. Execute the report and export it as a PDF.
5. If the chart is not displayed in the PDF file with the report, the currently-changed value is not correctly recognized. Correct the value and test it again.

Chart series

Configuration of the properties of the chart series:



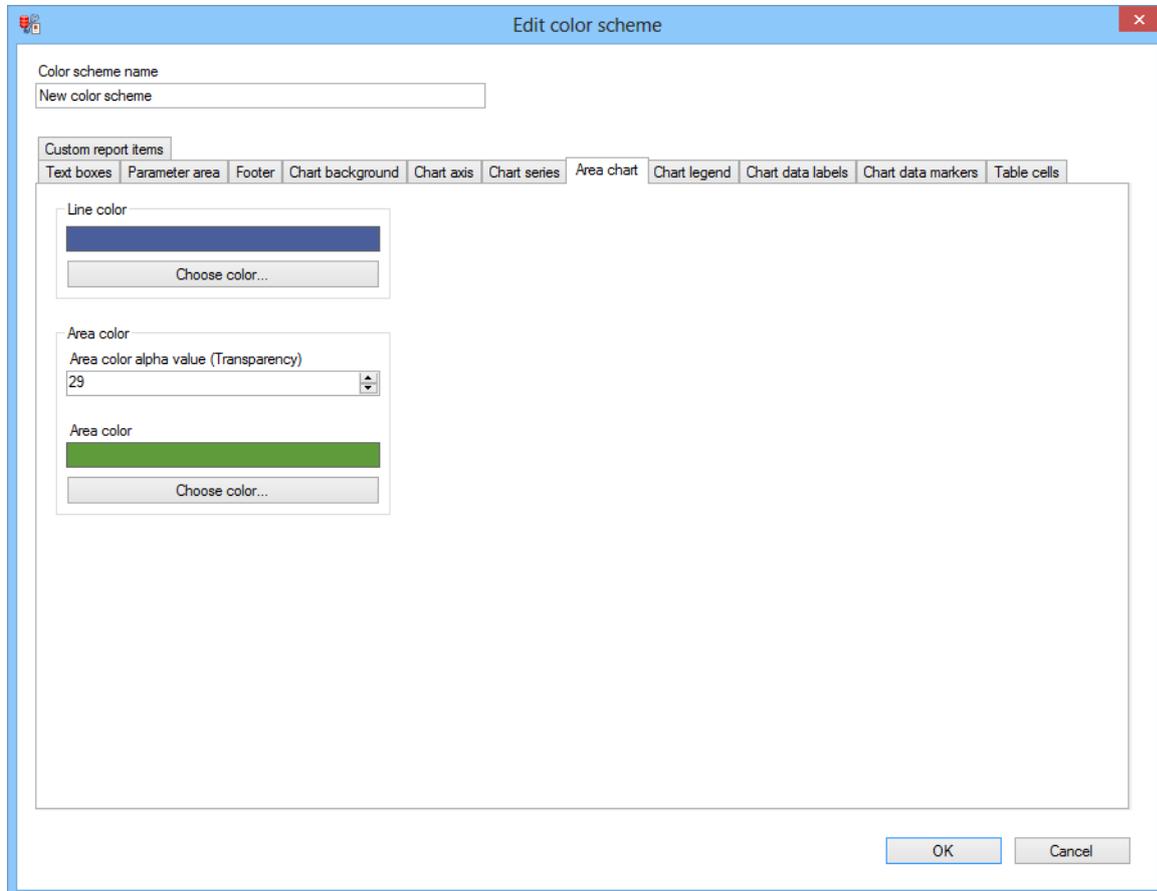
| Parameters | Description |
|-----------------------------------|---|
| Color of chart series x | <p>Display of the selected color of the chart series.</p> <p>x stands for the number of the chart series 1 to 10.</p> <p>The settings for the chart series 1 are also applied to the series 11, 21, 31, 41 etc. This applies in a similar manner to other series 2 (12, 22, ..) to 10 (20, 30, ...).</p> <p>The setting is made using the <code>Choose color</code> button below.</p> |
| <code>Choose color</code> | <p>Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system.</p> |

CLOSE DIALOG

| | |
|---------------|---|
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Area chart

Configuration of the properties of area charts:



| Parameters | Description |
|--|---|
| Line color | Display of the selected color for the line of an area chart. The setting is made using the <code>Choose color</code> button below. |
| <code>Choose color</code> | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Area color | Settings for the color of an area chart. |
| Area color alpha value (Transparency) | Selection of the transparency of the surface color by means of direct import or using the arrow keys of the control element. <ul style="list-style-type: none"> ▶ Minimum: 0 (full transparency) ▶ Maximum: 100 (no transparency) |
| Area color | Display of the selected area color. The setting is made using the <code>Choose color</code> button below. |
| <code>Choose color</code> | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |

CLOSE DIALOG

| | |
|---------------|---|
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Chart legend

Configuration of the properties of the chart legend:

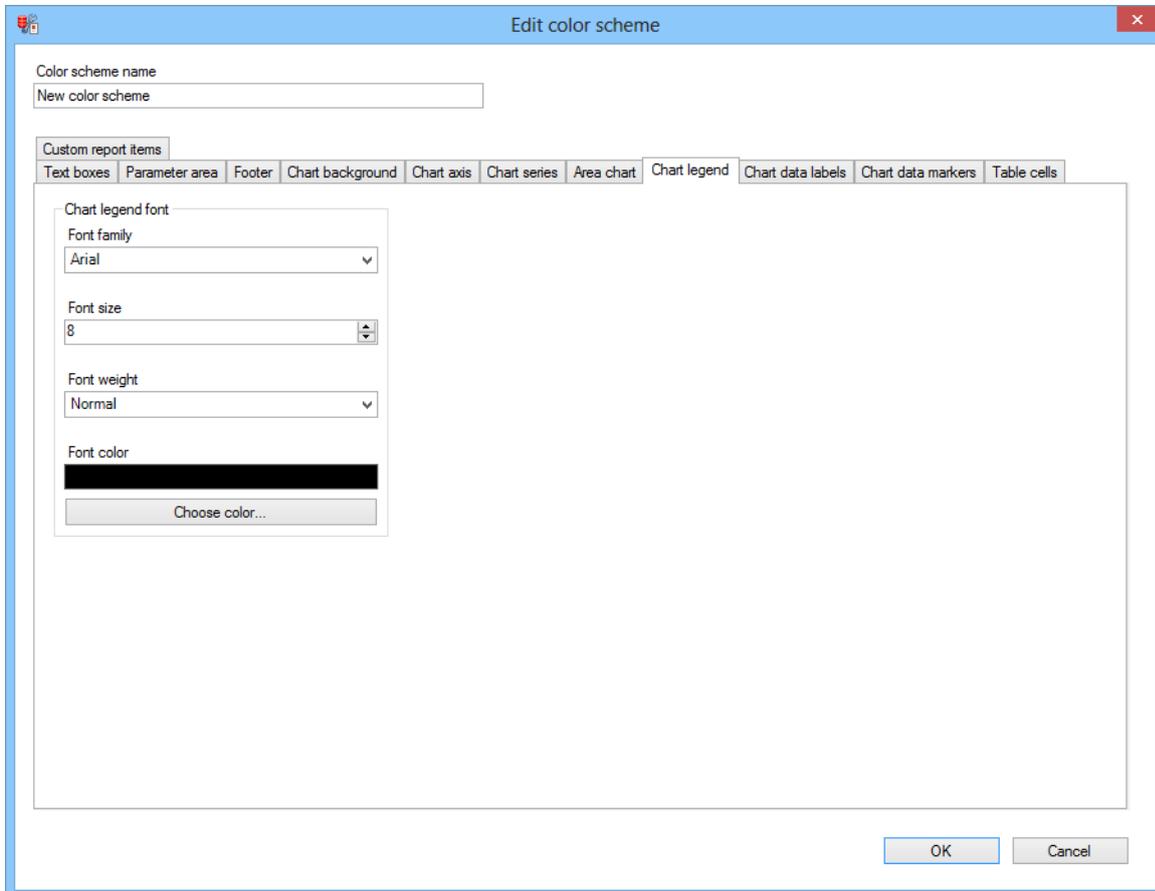


CHART LEGEND FONT

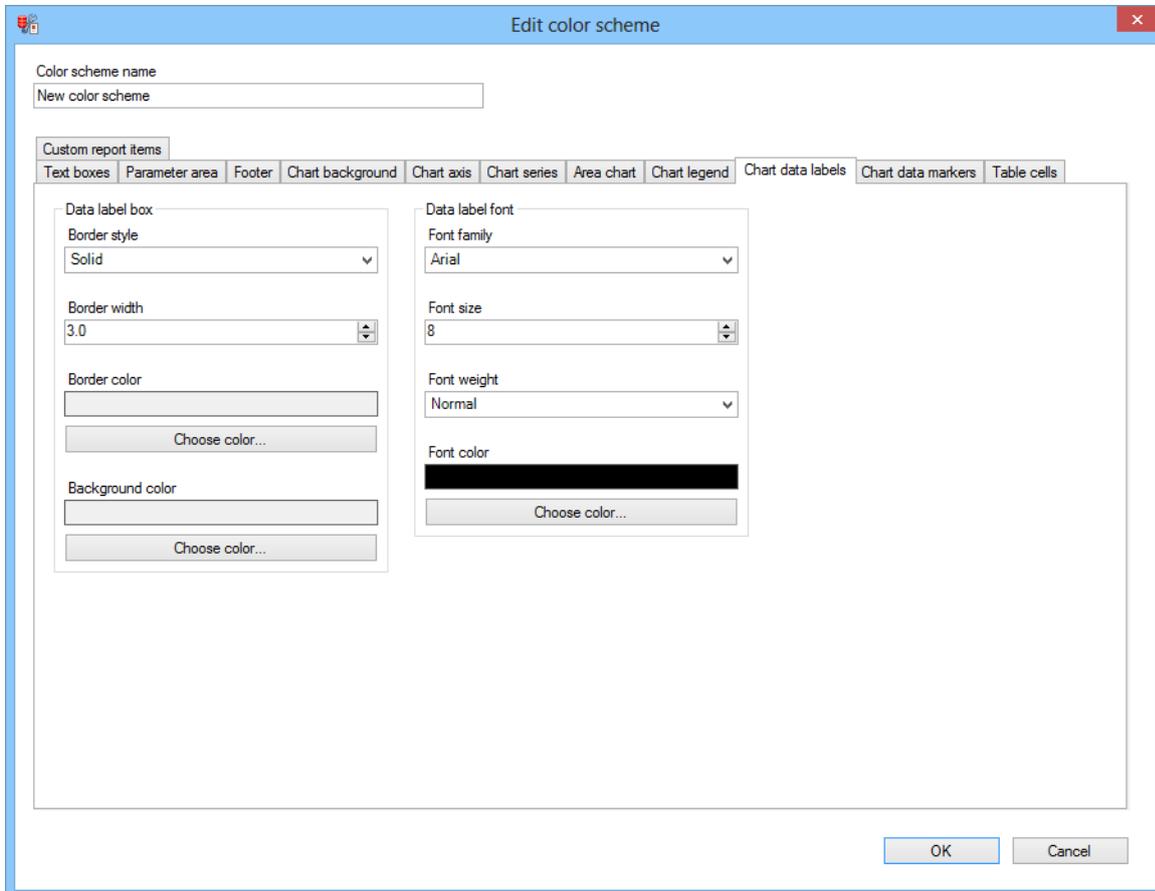
| Parameters | Description |
|--------------------------|---|
| Chart legend font | Configuration of the labeling properties for the legend entries. |
| Font | Selection of font type from drop-down list. 256 fonts are currently offered. |
| Font size | The font size is set using the cursor keys or by entering it in the number field. <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| Font weight | Selection of font thickness from drop-down list. Available are: <ul style="list-style-type: none"> ▶ Thin ▶ ExtraLight ▶ Light ▶ Normal ▶ Medium ▶ SemiBold ▶ Bold ▶ ExtraBold ▶ Heavy |
| Font color | Display of the selected font color. Setting is carried out using the Select color button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |

CLOSE DIALOG

| | |
|---------------|---|
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Chart data labels

Configuration of the properties of the database labeling in graphics:



DATA LABEL BOX

| Parameters | Description |
|-----------------------|--|
| Data label box | Configuration of the properties for borders and background of the data labeling areas |
| Border style | Selection of the border style from the drop-down list. The following values are available: <ul style="list-style-type: none"> ▶ None ▶ Solid ▶ Double ▶ Dashed ▶ Dotted |
| Border width | Setting the border width: Input is possible in levels with a precision of 0 . 5. <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| Border color | Display of the selected border color. The setting is made using the Select color button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Background color | Display of the selected background color. The setting is made using the Select color button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |

DATA LABEL FONT

| Parameters | Description |
|------------------------|--|
| Data label font | Configuration of the labeling properties for the data labeling. |
| Font | Selection of font type from drop-down list. 256 fonts are currently offered. |

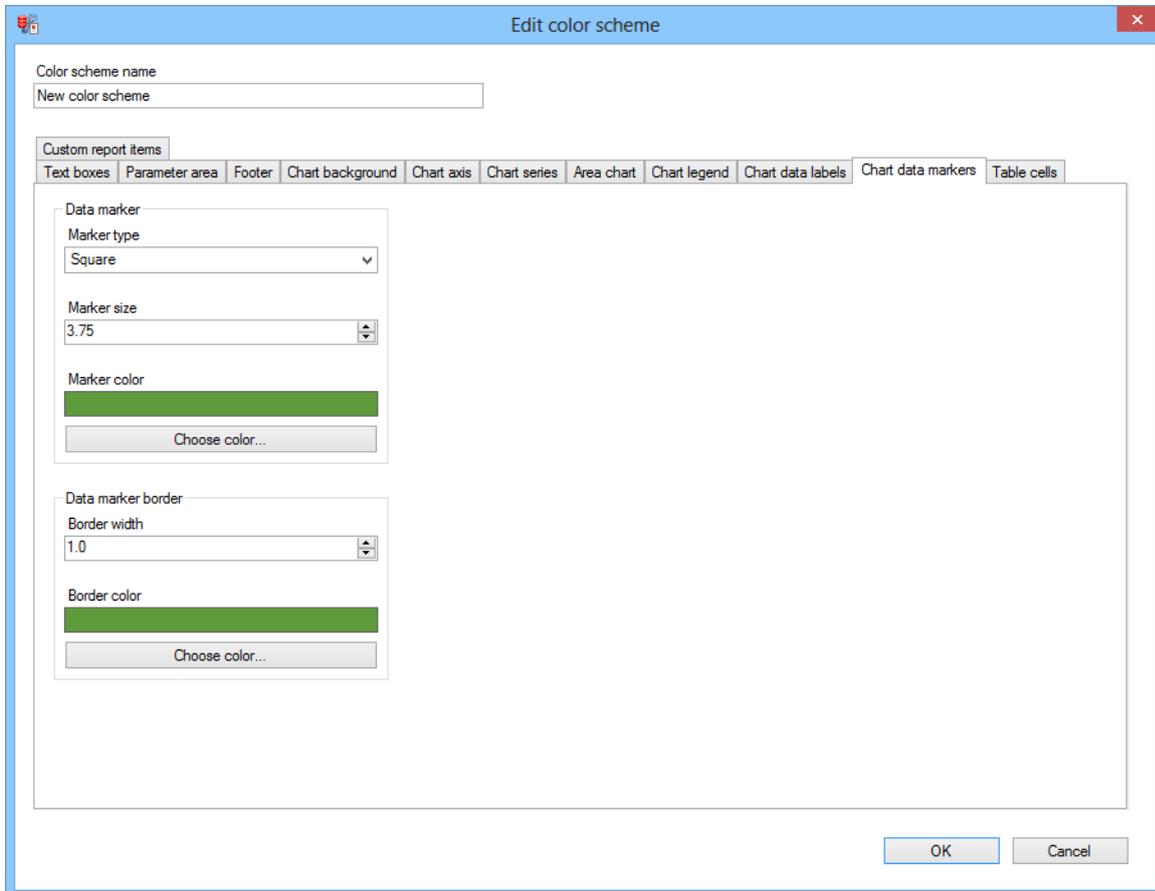
| | |
|--------------|--|
| Font size | <p>The font size is set using the cursor keys or by entering it in the number field.</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| Font weight | <p>Selection of font thickness from drop-down list. Available are:</p> <ul style="list-style-type: none"> ▶ Thin ▶ ExtraLight ▶ Light ▶ Normal ▶ Medium ▶ SemiBold ▶ Bold ▶ ExtraBold ▶ Heavy |
| Font color | <p>Display of the selected font color. Setting is carried out using the <code>Select color</code> button below.</p> |
| Choose color | <p>Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system.</p> |

CLOSE DIALOG

| | |
|---------------|---|
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Chart data markers

Configuration of the properties of the database marking in graphics:



DATA MARKER

| Parameters | Description |
|---------------------|--|
| Data marker | Configuration of the properties of the data marking symbols. |
| Marker type | <p>Selection of the data marking symbol. The following values are available:</p> <ul style="list-style-type: none"> ▶ Square ▶ Circle ▶ Diamond ▶ Triangle ▶ Cross ▶ Star4 ▶ Star5 ▶ Star6 ▶ Star10 <p>Attention: The value <code>None</code> is not available here, because reports where this property is used must have a marking symbol.</p> |
| Marker size | <p>Setting of the size of the marking symbol.</p> <p>Entry is possible in levels with a precision of 0.25.</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| Marker color | Display of the selected marking color. The setting is made using the <code>Choose color</code> button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |

DATA MARKER BORDER

| Parameters | Description |
|--------------------|--|
| Data marker border | Configuration of the properties of the border of the data marking. |

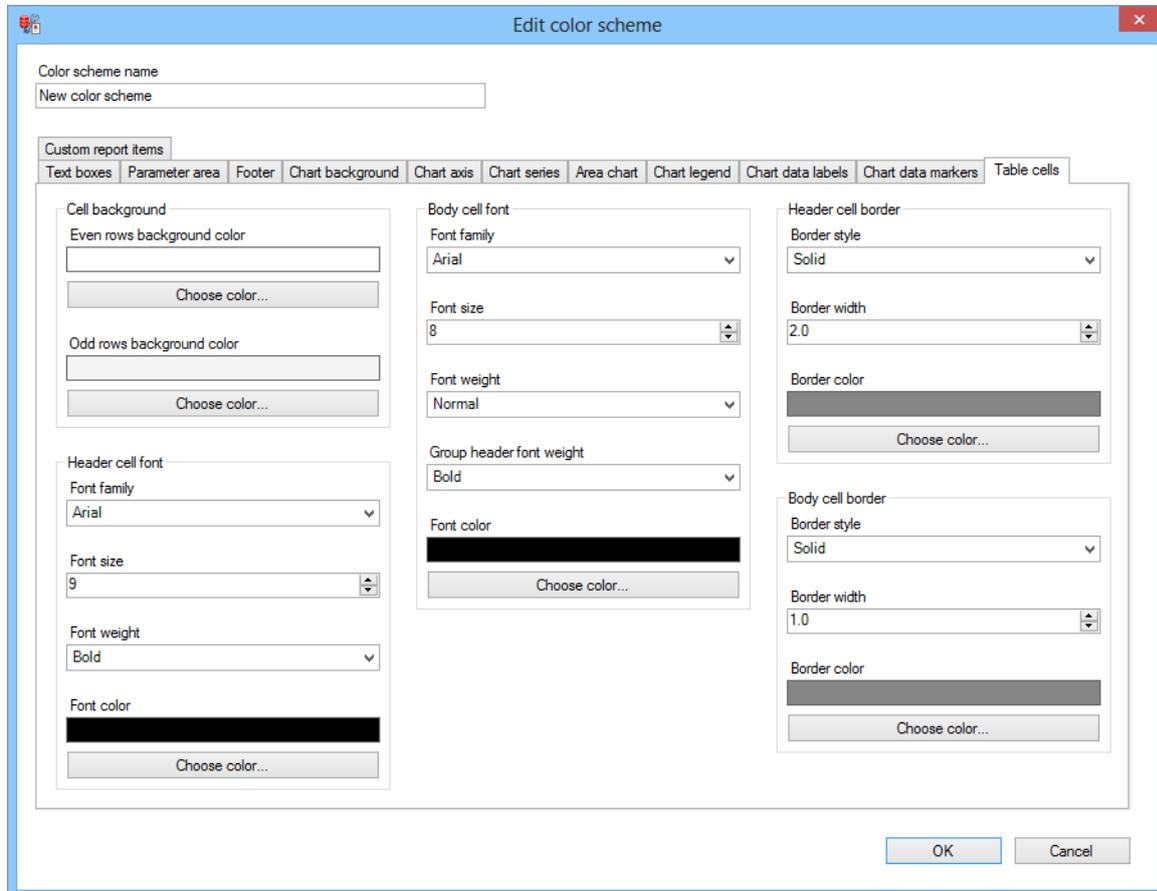
| | |
|---------------------|---|
| Border width | <p>Setting the border width:</p> <p>Input is possible in levels with a precision of 0 . 5.</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| Border color | Display of the selected border color. The setting is made using the <code>Select color</code> button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |

CLOSE DIALOG

| | |
|---------------|---|
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Table cells

Configuration of the properties of the cells in tables:



CELL BACKGROUND

| Parameters | Description |
|---------------------------------|---|
| Cell background | Configuration of the settings for the background for data cells in tables. |
| Background color for even cells | <p>Display of the background color for rows with an even row number (2, 4, 6, ...).</p> <p>The setting is made using the Choose color button below.</p> |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |

BACKGROUND COLOR FOR ODD CELLS

| Parameters | Description |
|--------------------------------|--|
| Background color for odd cells | <p>Display of the background color for rows with an odd row number (1, 3, 5, ...).</p> <p>The setting is made using the Choose color button below.</p> |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Header cell font | Configuration of the labeling properties for the heading entries. |
| Font | Selection of font type from drop-down list. 256 fonts are currently offered. |
| Font size | <p>The font size is set using the cursor keys or by entering it in the number field.</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| Font weight | <p>Selection of font thickness from drop-down list. Available are:</p> <ul style="list-style-type: none"> ▶ Thin ▶ ExtraLight ▶ Light ▶ Normal ▶ Medium ▶ SemiBold |

| | |
|---------------------------|---|
| | <ul style="list-style-type: none"> ▶ Bold ▶ ExtraBold ▶ Heavy |
| Font color | Display of the selected font color. Setting is carried out using the <code>Select color</code> button below. |
| <code>Choose color</code> | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |

BODY CELL FONT

| Parameters | Description |
|--------------------------|---|
| Body cell font | Configuration of the labeling properties for the data cells. |
| <code>Font</code> | Selection of font type from drop-down list. 256 fonts are currently offered. |
| <code>Font size</code> | The font size is set using the cursor keys or by entering it in the number field. <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| <code>Font weight</code> | Selection of font thickness from drop-down list. Available are: <ul style="list-style-type: none"> ▶ Thin ▶ ExtraLight ▶ Light ▶ Normal ▶ Medium ▶ SemiBold ▶ Bold ▶ ExtraBold ▶ Heavy |
| Font color | Display of the selected font color. Setting is carried out using the <code>Select color</code> button below. |

| | |
|--------------|---|
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
|--------------|---|

HEADER CELL BORDER

| Parameters | Description |
|---------------------------|--|
| Header cell border | Configuration of the properties of the borders for heading cells. |
| Border style | Selection of the border style from the drop-down list. The following values are available: <ul style="list-style-type: none"> ▶ None ▶ Solid ▶ Double ▶ Dashed ▶ Dotted |
| Border width | Setting the border width: <p>Input is possible in levels with a precision of 0.5.</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| Border color | Display of the selected border color. The setting is made using the Select color button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |

BODY CELL BORDER

| Parameters | Description |
|-------------------------|--|
| Body cell border | Configuration of the properties of the borders for data cells. |
| Border style | Selection of the border style from the drop-down list. The following values are available: <ul style="list-style-type: none"> ▶ None ▶ Solid |

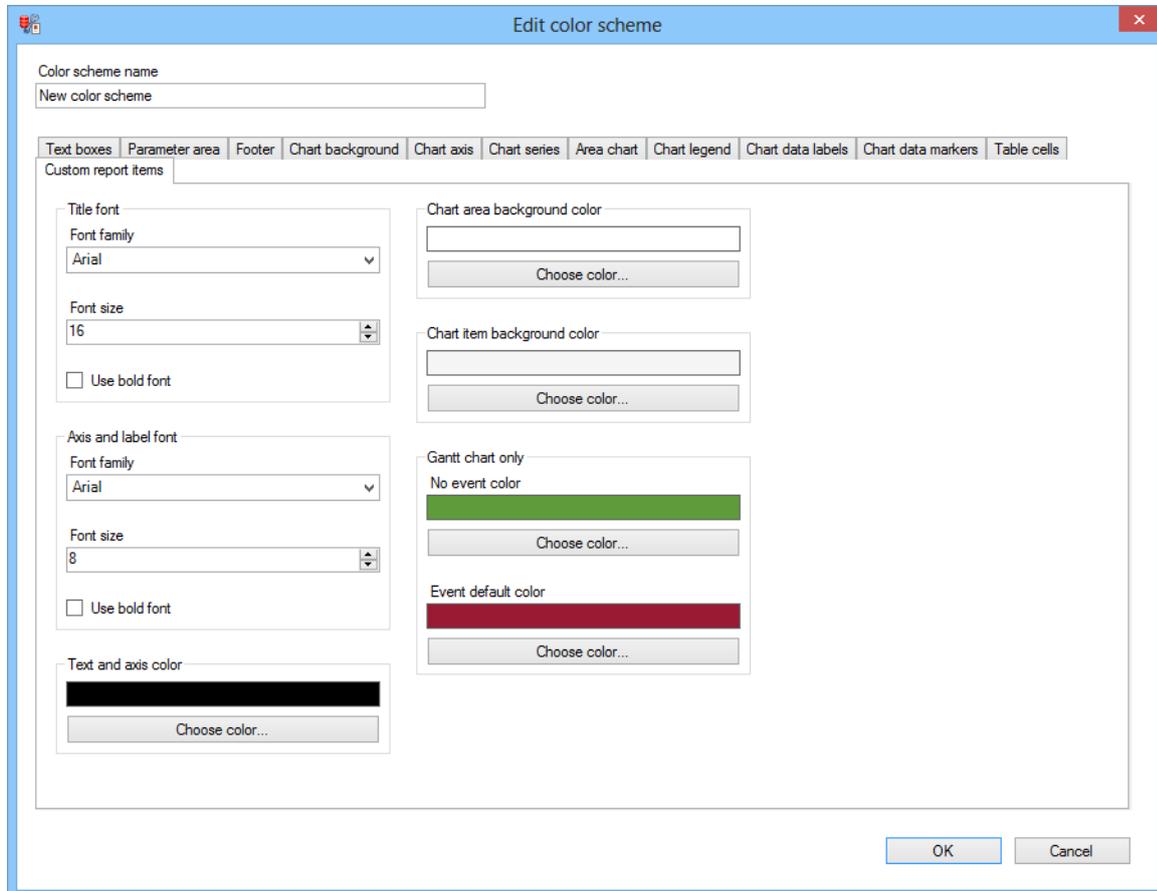
| | |
|---------------------|---|
| | <ul style="list-style-type: none"> ▶ Double ▶ Dashed ▶ Dotted |
| Border width | <p>Setting the border width:</p> <p>Input is possible in levels with a precision of 0.5.</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| Border color | Display of the selected border color. The setting is made using the <code>Select color</code> button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |

CLOSE DIALOG

| | |
|---------------|---|
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

User defined report elements

Configuration of the properties of user-defined report elements such as Gantt charts:



| Parameters | Description |
|------------------------------------|--|
| Title font | Configuration of the font properties of the diagram title. |
| Font | Selection of font type from drop-down list. 256 fonts are currently offered. |
| Font size | The font size is set using the cursor keys or by entering it in the number field. <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| Use bold font | Active: Text is formatted in bold. |
| Axis and label font | Configuration of the font properties for axis fonts. |
| Font | Selection of font type from drop-down list. 256 fonts are currently offered. |
| Font size | The font size is set using the cursor keys or by entering it in the number field. <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 |
| Use bold font | Active: Text is formatted in bold. |
| Text and axis color | Display of the selected font color. Setting is carried out using the <code>Select color</code> button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Chart area background color | Display of the background color selected for the chart area. The setting is made using the <code>Choose color</code> button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Chart item background color | Display of the background color selected for the graphics object. The setting is made using the <code>Choose color</code> button below. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Gantt chart only | Settings only for Gantt charts: |
| No event color | Display of the color selected for times without an event. The setting is |

| | |
|----------------------------|---|
| | made using the <code>Choose color</code> button below. |
| <code>Choose color</code> | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Event default color | Display of the standard color selected for events. The setting is made using the <code>Choose color</code> button below. |
| <code>Choose color</code> | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |

CLOSE DIALOG

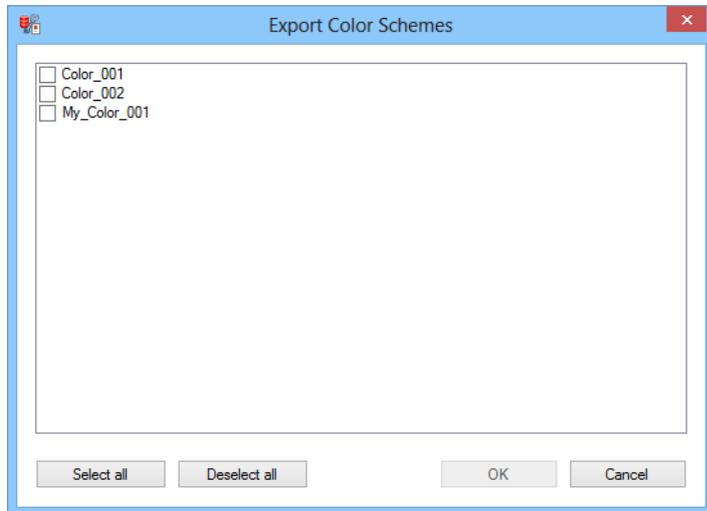
| | |
|---------------|---|
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Exporting a color scheme

Color schemes can be exported. To export a color scheme:

1. open the menu `Options`
2. Click on `Export color scheme`
3. the dialog for selecting a color scheme is opened
4. Select the desired color scheme by clicking on the checkbox
5. click on `OK`
6. The dialog to select a save location is opened
(this dialog is always displayed in the language of the operating system)
7. Select the save location and enter a file name
8. click on `OK`
9. The selected color scheme is saved as an XML file

DIALOG TO SELECT THE COLOR SCHEME



| Parameters | Description |
|------------------------------|--|
| List of color schemes | Lists all existing individually-created color schemes. These can be selected by clicking on the checkbox for export. |
| Select all | Selects all displayed color schemes for export. |
| Deselect all | Deactivates marking for all selected color schemes. No scheme is still selected for export. |
| OK | Accepts selection, closes the dialog and opens the dialog to select a save location for the export file. |
| Cancel | Cancels export and closes dialog. |

The size and position of the dialog can be adjusted. These modifications are saved.

Import color scheme

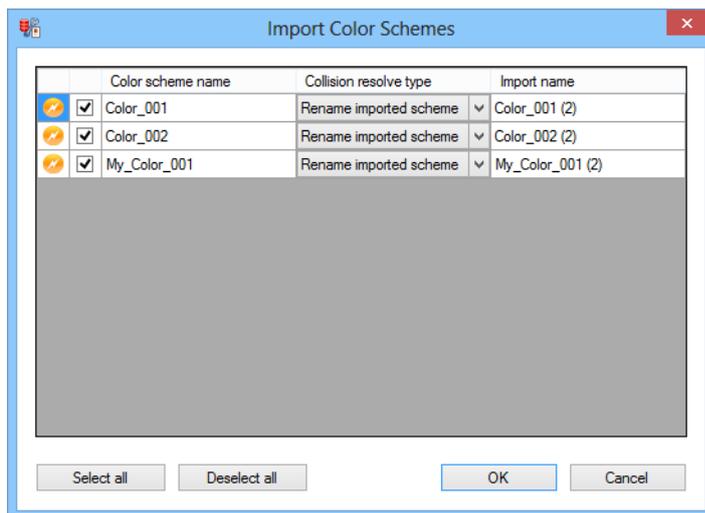
Color schemes can be imported. To import a color scheme:

1. open the menu **Options**
2. Click on **Import color scheme**
3. The dialog to select an export file is opened
(this dialog is always displayed in the language of the operating system)
4. Select the save location and the desired XML file

5. click on 
6. The dialog for the import is opened.
7. Select the color scheme to be imported.
8. Select whether the color scheme to be imported will overwrite the existing color scheme in the event of conflicts or if it is to be saved under a new name
9. click on 
10. The selected color schemes are imported and added to the list of individually-created color schemes

IMPORT COLOR SCHEME DIALOG

When importing an XML file with color scheme, all the color schemes contained therein are displayed in a dialog. Color schemes can be selected for import in the dialog and a decision can be made as to how conflicts are handled.



| Parameters | Description |
|-----------------------------|--|
| List of color schemes | Lists all existing individually-created color schemes. These can be selected by clicking on the checkbox for export. |
| Symbol | Shows whether a color scheme with this name already exists. |
| Color scheme name | Name of the color scheme to be imported. Clicking in the checkbox highlights the color scheme for import. The width of this column can be adjusted. |
| Resolution of the collision | If there is already a color scheme with the same name, two options to resolve the conflict are offered. Selection from drop-down list: <ul style="list-style-type: none"> ▶ Rename imported scheme: The color scheme is imported under a different name Selection in the 'import name' option. Default: [existing name] (serial number). ▶ Overwrite existing scheme: Imports color scheme and overwrites the existing one. The width of this column can be adjusted. |
| Import name | Name of the color scheme to be imported if this is to be renamed on import. Clicking in the field allows editing of the proposed default name. |
| Select all | Selects all displayed color schemes for import. |
| Deselect all | Deactivates marking for all selected color schemes. No scheme is still selected for import. |
| OK | Accepts selection, closes this dialog and imports the selected color scheme. |
| Cancel | Cancels import and closes dialog. |

The size and position of the dialog can be adjusted. These modifications are saved.

11.5.5 Opening reports in Microsoft Report Builder

Reports can be opened and edited in Microsoft Report Builder. In order for the Report Builder to be started and reports edited with it, there must be a connection to an Analyzer server with a valid license.

START REPORT BUILDER

To start the Report Builder:

1. Select the **Start Microsoft Report Builder** command in the report menu
2. An Internet Explorer process with the URL of the Report Builder application is started
3. If necessary, the application is downloaded
4. The Report Builder is opened.
5. The Internet Explorer process is ended

OPEN REPORT IN REPORT BUILDER

To open the report active in the report window in Report Builder:

1. Select the **Open in Microsoft Report Builder** command in the report menu
2. The Report Builder is opened.
3. The report is opened in Report Builder

Note: If the Report Builder is not able to open the report from the path given, this does not cause an error message in ZAMS. The error is reported in Report Builder

OPEN ALL REPORTS IN REPORT BUILDER

To open all reports active in the report window in Report Builder:

1. Select the **Open all in Microsoft Report Builder** command in the report menu
2. Report Builder is opened.
3. The reports are opened in Report Builder
4. The progress display in the status bar informs you of the progress of the opening

Note: If the Report Builder is not able to open a report from the path given, this does not cause an error message in ZAMS. The error is reported in Report Builder

11.5.6 Analyzer Server actions

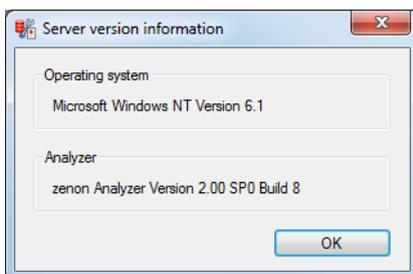
You can do the following via the **Analyzer Server** menu:

- ▶ Connect ZAMS to the Analyzer server
- ▶ Request information on the Analyzer server
- ▶ Request the license status of the Analyzer server
- ▶ Enter new license data

SERVER INFORMATION

To receive information on the version of the Analyzer server:

1. Select, in the **Analyzer server** menu, the **Server version information** command
2. The information window is activated
3. You receive information on:
 - The operating system of the computer with the Analyzer server
 - The version of Analyzer server that is running

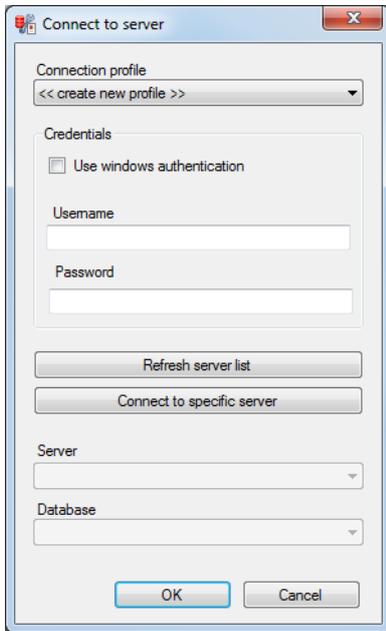


Configure connection

To create a new connection profile, select:

- ▶ When starting ZAMS, **Create new profile as a profile**
or
- ▶ when ZAMS is running, the **Connect to server** command in the **Analyzer server** menu.

The dialog for the configuration is opened:

A screenshot of the "Connect to server" dialog box. The dialog has a title bar with a close button. It contains the following elements:

- Connection profile:** A dropdown menu with the text "<< create new profile >>".
- Credentials:** A section containing a checkbox labeled "Use windows authentication" which is unchecked, and two text input fields labeled "Username" and "Password".
- Buttons:** Two buttons labeled "Refresh server list" and "Connect to specific server".
- Server and Database:** Two dropdown menus labeled "Server" and "Database".
- OK/Cancel:** Two buttons at the bottom labeled "OK" and "Cancel".

| Parameters | Description |
|--------------------------------|--|
| Connection profile | <p>Selection of the connection profile from the drop-down list. The profile consists of a path for server\database.</p> <p>▶ Create new profile: creates a new profile.</p> |
| Credentials | Entry of the access data. |
| Use windows authentication | Active: Windows authentication is used. |
| Username | <p>Entry of the user name.</p> <p>If Use Windows authentication is active, display only.</p> |
| Password | <p>Entry of the password. Is not saved and must be reentered each time the connection is made.</p> <p>If Use windows authentication is active, no input is necessary; input is also not possible.</p> |
| Refresh server list | <p>A click starts a search for existing servers to which ZAMS can connect.</p> <p>To do this, a list of all SQL server instance available in the network is checked to see if the attendant computers of the ReportingService2010 Web Service endpoint and the license server can be reached.</p> <p>Note: If a large amount of SQL servers are present in the system, the check can take a long period of time. The procedure is visualized by means of a progress display.</p> |
| Specify database server | <p>A click opens the dialog to enter a specific server.</p> <p>This is the recommended procedure if the name of the computer and the SQL server instance of the Analyzer server are known.</p> |
| Server | <p>Selection of the server to which ZAMS should connect from a drop-down list.</p> <p>If the desired server is not displayed, it can be added via Connect to specific server or searched for via Refresh server list.</p> |
| Database | Selection of the database that ZAMS is to use from drop-down list. |
| OK | Accepts all inputs, validates them, creates them as a connection profile, closes the dialog and creates the connection. |
| Cancel | Rejects all inputs and closes the dialog without creating a connection. |

CREATE NEW PROFILE

When creating a new profile, the profile that was used last is used as a template. Authentication and server are transferred, the database list is filled again, whereby the database selection is also transferred. To create a new profile:

1. Select, in the authentication
2. Select in the `Connection` profile property, the `Create new profile` option
3. Select the server and database
4. confirm by clicking on the OK button



Attention

If, when creating a new profile, the profile on which it is based uses authentication with user name and password, these must be entered correctly before `Create new profile` is selected. Otherwise the database cannot be filled.

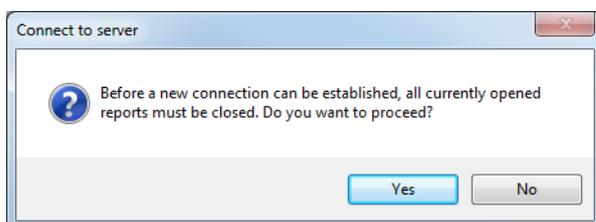
If the database list is empty, it can be refilled if you:

1. Enter the access data correctly
2. Click on the `Specify database server` button
3. Confirm the dialog that opens by clicking on `OK`

CONNECTION PROCEDURE

A connection to an Analyzer server is established in the following steps:

1. The inputs in the connection dialog are validated and, if still present, a connection profile for the configuration is created.
2. If ZAMS is opened, a check is made to see if reports are open in ZAMS. These must be closed. A message window asks if the open reports can be closed.



- **yes**: Reports are closed and the settings in the options are saved beforehand if necessary
 - **no**: Process is canceled
3. An existing connection is closed.
 4. The version of the database that is to be setup for the connection is established.

If the database version, in comparison to the version supported by ZAMS is:

- a) Higher or the database is not an Analyzer 2.0 or higher metadata database, the process is canceled with an error message
 - b) The same as the version supported in the ZAMS installation, the structural check is continued
 - c) Lower, the conversion is continued
5. Conversion:

User query as to whether the database conversion is to be started.

- a) **no**: the establishment of the connection is canceled
 - b) **yes**: the database conversion is carried out for the SQL server to which the connection is to be made
6. Once the data conversion has been concluded, the version of the database to which the connection is to be made is checked again. If this is still lower than the database version supported by the ZAMS installation, it is canceled with an error.

7. Structural check:

The database structure is checked against the structure definition that is supported in the ZAMS installation. If structural errors are established in the process, the process is canceled with an error message.

8. The new connections are created to:

- `SQL Server 2012 Reporting Service Web Service endpoint ReportService2010` of the Analyzer server
- Selected database on the Analyzer server
- `zrsLicSrv` on the Analyzer server

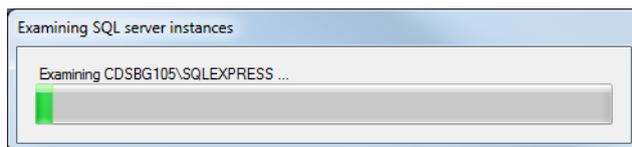
If one of the necessary connections cannot be established, the already-configured connections are closed and ZAMS changes to the status of `not connected`.

9. An attempt is made to assign a ZAMS license for the user of the connection on the computer to which the connection is to be made. If this is rejected, the process is canceled.
10. The database structure is checked.
11. Any license query that may be running is stopped.
12. If all connections can be established, the license of the Analyzer server is checked. If the license is not valid, the dialog to enter a license (on page 329) is opened.
13. Depending on the license status, the possible actions are activated or deactivated.

REFRESH SERVER LIST

To update the list of servers displayed, click on the **Refresh server list** button on the dialog for the connection profile. The search for servers to which ZAMS can connect is started. In doing so, the progress display shows you the following:

- ▶ The computer in the network that is currently being examined
- ▶ The progress of the search (with a green bar)

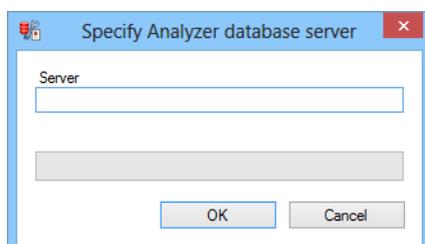


The progress display is closed once the search has been completed. The servers found are shown in the **Server** drop-down list.

Note: If a large amount of SQL servers are present in the system, the check can take a long period of time.

TO CONNECT A SPECIFIC SERVER

To connect to a specific server, click on the **Enter database server** button in the dialog for the connection profile. The dialog to connect to a specific server is opened.

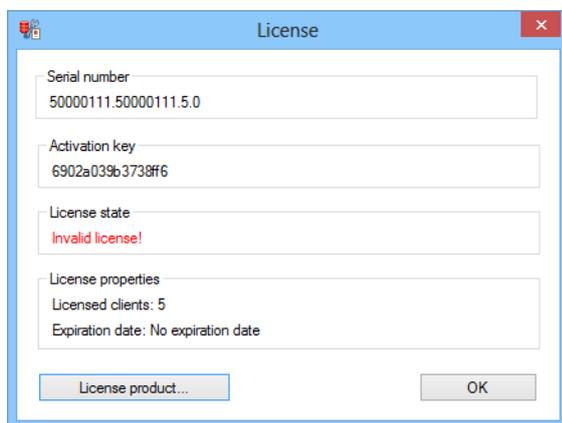


| Parameters | Description |
|--------------|--|
| Server | Entry of the computer name and the folder in which the server is located. Syntax: [computer name or IP address]\[instance name] For example: Server999\Reports_ZA2\ |
| Progress bar | Shows the progress of the connection attempt If the attempt is not successful, a window with an error message is displayed and an error report is issued in the ZAMS output window. |
| OK | Applies changes, validates them and closes the dialog. |
| Cancel | Discards changes and closes the dialog. |

View license

To display the license used by the Analyzer server:

1. Select, in the **Analyzer server** menu, the **Show current license** command
2. the drop-down list with the license information is opened



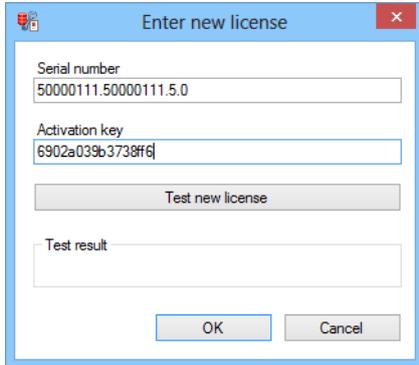
| Parameters | Description |
|--------------------|---|
| Serial Number | The serial number is displayed. |
| Activation key | The activation key is displayed. |
| License status | Status of the license: <ul style="list-style-type: none">▶ This license is valid▶ Invalid license |
| License properties | Display of: <ul style="list-style-type: none">▶ Number of licensed clients▶ License expiration date. |
| License product | Opens the dialog (on page 329) to enter license data. |
| OK | Closes the window. |

Enter License...

To enter new license data:

1. Select, in the **Analyzer Server** menu or in the **Display license** (on page 328) dialog, the **Enter new license** command
2. the drop-down list with the license information is opened
3. enter serial number and activation number
4. Click on **check new license**
5. If the result is positive, click on **OK** to activate the license

ENTER DIALOG LICENSE



| Parameters | Description |
|-------------------------|---|
| Serial number | Entry of the serial number. |
| Activation key | Entry of the activation key. |
| Test new license | <p>Clicking on this button tests inputs before they are written to the license server, to see if:</p> <ul style="list-style-type: none"> ▶ License data entered has the correct syntax ▶ a license can be occupied on a CodeMeter dongle with the data entered ▶ The activation key corresponds with the serial number <p>In order for the test to be started, both <code>serial number</code> and <code>activation key</code> must have been entered.</p> |
| Test result | Displays the test result of Test new license . |
| OK | <p>Writes the license entered to the license service on the Analyzer server and closes the dialog. The result of writing the license is displayed in the output window.</p> <p>In order for the license data to be written, both <code>serial number</code> and <code>activation key</code> must have been entered.</p> |
| Cancel | Closes the dialog without writing data to the license service. |

 **Attention**

*If incorrect license data is entered, the access to the Analyzer server is blocked for all clients. Always check the new license data by clicking on the **Test new license** button before you set the license by clicking on **OK**.*

11.5.7 Automation

You configure the following actions and start them in the **Automation** menu:

- ▶ Emulation of archives (on page 331)
- ▶ Server configuration for the sending of emails (on page 331)
- ▶ Preparation of reports using schedules (on page 335)
- ▶ Report subscriptions (on page 344)

Configure archive emulation

In ZAMS, you can emulate archives that exist from figures from entries in the AML, CEL and archives in zenon.

To configure the archive emulation:

1. Select the **Configure archive emulation** entry in the **Automation** menu.
2. Click on the **New** button to create a new archive
or **Edit** to change an existing archive

You can find details on archive emulation and the configuration of emulated archives in the archive emulation (on page 486) section.

Configure email server...

In order to be able to send reports by email, the SMTP server must be configured. This is carried out in ZAMS via the **Configure email server** menu item.

 **Attention**

This function is only available if ZAMS is connected to an Analyzer database with a valid license on the same computer and there is no other task running in the background.

You configure the email yourself with **Administer report subscriptions** in the **Delivery method** (on page 351) tab.

CONFIGURATION

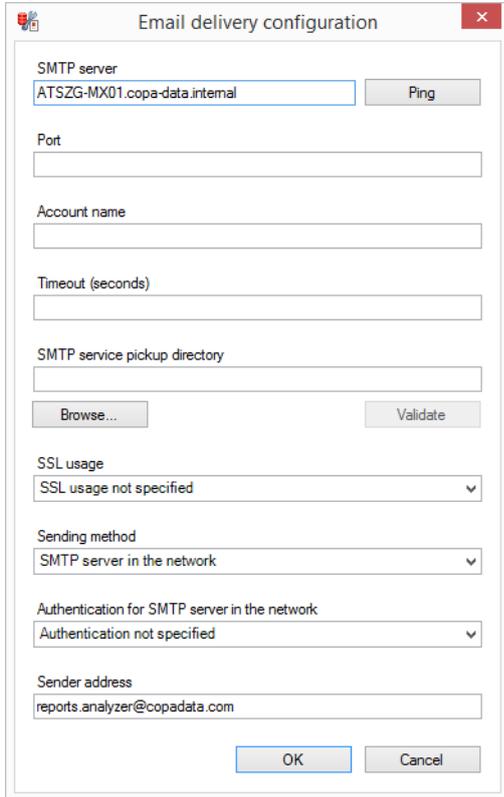
To configure email delivery:

1. Click on the **Configure email server** entry in the **Automation** menu.
2. The dialog for configuration is opened. Entries that already exist are read and displayed. The existing configuration is saved in a separate file.
If an error is detected when reading, a message is written to the output window and the dialog is ended.
3. Configure the required properties in the dialog.
For further details see chapter **configuration dialog**
4. Confirm the changes by clicking on **OK**.
The changes are written to the current configuration. If an error occurs, the previously-saved configuration is used.

Note: A progress bar is shown for actions that last longer.

Recommendation: Reconnect to the Analyzer Server once you have finished configuration.

CONFIGURATION DIALOG



The screenshot shows a dialog box titled "Email delivery configuration" with a close button (X) in the top right corner. The dialog contains the following fields and controls:

- SMTP server:** A text input field containing "ATSZG-MX01.copa-data.internal" and a "Ping" button to its right.
- Port:** An empty text input field.
- Account name:** An empty text input field.
- Timeout (seconds):** An empty text input field.
- SMTP service pickup directory:** An empty text input field with a "Browse..." button to its left and a "Validate" button to its right.
- SSL usage:** A dropdown menu with "SSL usage not specified" selected.
- Sending method:** A dropdown menu with "SMTP server in the network" selected.
- Authentication for SMTP server in the network:** A dropdown menu with "Authentication not specified" selected.
- Sender address:** A text input field containing "reports.analyzer@copadata.com".
- Buttons:** "OK" and "Cancel" buttons at the bottom center.

| Parameters | Description |
|-------------------------------|---|
| SMTP server | <p>Entering the SMTP server information</p> <p>IP address, UNC name or fully-qualified domain name.</p> |
| Ping | <p>Clicking on the button executes a ping to the server entered.</p> <p>Only available if a server has been entered. The result of the ping is output in a message box.</p> |
| Port | <p>Entry of the TCP port for SMTP at the given server.</p> <p>Possible values: 0 to 65535.</p> <p>Invalid inputs are shown in a tooltip and not accepted.</p> |
| Account name | <p>Entry of the account name.</p> <p>If no account name has been configured for the SMTP server, the field can remain empty.</p> <p>Use the <code>Sender address</code> property to stipulate an email account for the sending of reports.</p> |
| Timeout (seconds) | <p>States how many seconds are waited for a valid socket connection with the SMTP service. The process is canceled after that.</p> <p>Possible values: Whole number greater than 0.</p> <p>Default: 30 seconds.</p> <p>Attention: The value is ignored if SMTP server in the network is selected as a sending method.</p> <p>Invalid inputs are shown in a tooltip and not accepted.</p> |
| SMTP service pickup directory | <p>Entry of a local save path from which the SMTP service calls up outgoing emails.</p> <p>It must be a fully-qualified local folder path (for example <code>D:\rs-emails</code>).</p> |
| Browse... | <p>Opens the dialog for selecting a folder.</p> |
| Validate | <p>Clicking on the button checks whether the path entered exists.</p> <p>Only available if a path has been entered.</p> <p>The result of the validation is output in a message box.</p> |

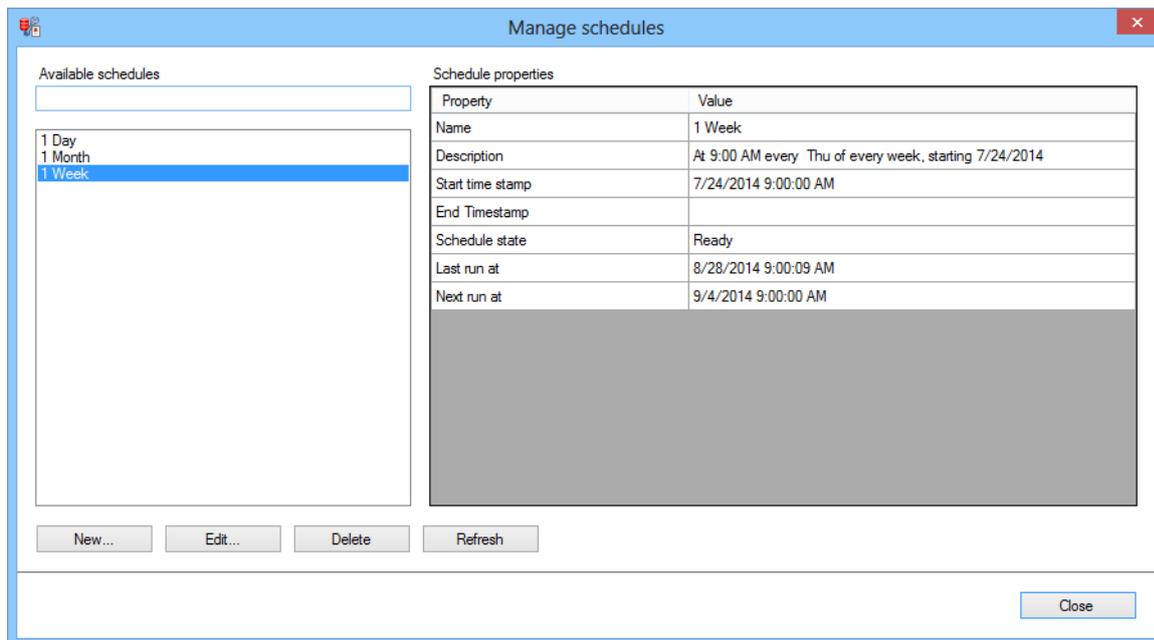
| | |
|---|---|
| SSL usage | <p>Determination of whether SSL can be used. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ SSL usage not specified ▶ Do not use SSL ▶ Use SSL |
| Sending method | <p>Selection of the sending method for emails from drop-down list:</p> <ul style="list-style-type: none"> ▶ Sending method not specified ▶ Local SMTP service pickup folder ▶ SMTP server in the network |
| Authentication for the SMTP server in the network | <p>Selection of authentication method. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Authentication not specified ▶ No authentication ▶ NTLM authentication |
| Sender address | <p>Entry of a sender address for emails. Necessary if you use an SMTP remote server.</p> <p>Format: abc@host.xyz</p> <p>The address should be a valid email account with the authorization to send emails.</p> <p>In the event of incorrect entries, the background color is switched to red and a tooltip is displayed.</p> |
| OK | Applies settings and closes the dialog. |
| Cancel | Discards all changes and closes the dialog. |

Manage Schedules

In order for the provision of reports to be automated using schedules, there must be a connection to an Analyzer server with a valid license.

To create and administer schedules for the deployment of reports:

1. Select the **Manage Schedules** entry in the **Automation** menu.
2. the dialog for administering the schedule is opened
3. Preconfigured schedules are displayed
4. Create a new schedule or edit an existing one



| Parameters | Description |
|---------------------|--|
| Available schedules | Display and filtering of the already-configured schedules. |
| Filter field | <p>Entry of a filter for the List of schedules.</p> <p>Only schedules that correspond to the filter criteria are shown in the list.</p> <p>Wildcards:</p> <ul style="list-style-type: none"> ▶ ? : Wildcard for precisely 1 character ▶ * : Wildcard for 0 or more characters <p>If there is no wildcard in the filter expression, a * is automatically added to the end when filtering. For example:</p> <ul style="list-style-type: none"> ▶ „" (empty field) becomes * ▶ test becomes test* ▶ t?st remains t?st |
| List of schedules | List of all preconfigured and available schedules. |
| Schedule properties | <p>Displays the preconfigured properties of the schedule highlighted in the list.</p> <ul style="list-style-type: none"> ▶ Name of the schedule ▶ Details about the schedule ▶ Start time of the schedule ▶ End time of the schedule ▶ Status of the schedule ▶ Time of the last execution of the schedule ▶ Time of the next execution of the schedule <p>Attention: The texts can be displayed in different languages. They come partly from ZAMS and partly from the web service. These can be configured in different languages.</p> |
| New | Opens the dialog to create a new schedule. |
| Edit | Opens the dialog to edit a schedule. |

| | |
|----------------|--|
| Delete | <p>Deletes the selected schedule from the list and from the Analyzer server.</p> <p>If a schedule to be deleted is used for one or more subscriptions, then a warning is given for each subscription. The user must decide if all relevant subscriptions should be deleted with the schedule.</p> <ul style="list-style-type: none"> ▶ Yes: First the respective subscriptions are deleted, then the schedule. ▶ No: Neither subscriptions nor the schedule are deleted. |
| Refresh | Refreshes List of schedules . |
| Close | Closes the dialog. |

CREATING AND EDITING SCHEDULES

To create a new schedule:

1. click on the button **New**
2. The dialog is opened with the standard values for all input possibilities

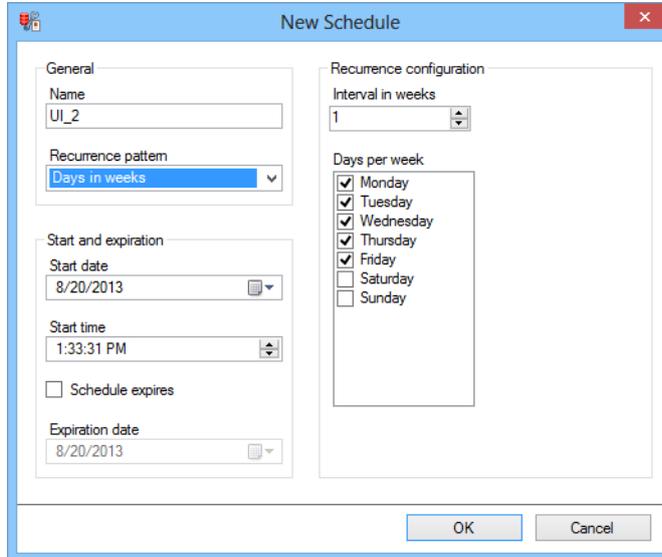
To amend an existing schedule:

1. Highlight the desired schedule in the list
2. click on **Edit**
3. The dialog is opened with the values for the selected schedule

To delete a schedule:

1. Highlight the desired schedule in the list
2. Click on **Delete**
3. The schedule is deleted

DIALOG TO CREATE AND EDIT A SCHEDULE



The screenshot shows the 'New Schedule' dialog box with the following fields and options:

- General**
 - Name: UI_2
 - Recurrence pattern: Days in weeks
- Start and expiration**
 - Start date: 8/20/2013
 - Start time: 1:33:31 PM
 - Schedule expires
 - Expiration date: 8/20/2013
- Recurrence configuration**
 - Interval in weeks: 1
 - Days per week:
 - Monday
 - Tuesday
 - Wednesday
 - Thursday
 - Friday
 - Saturday
 - Sunday

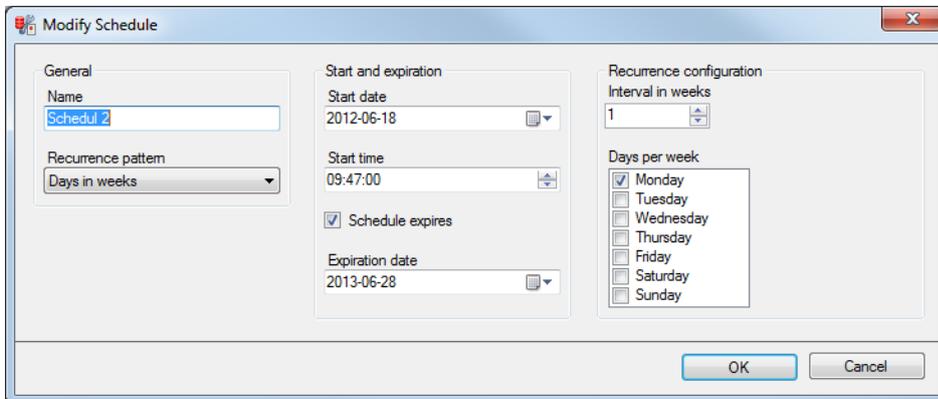
Buttons: OK, Cancel

| Parameters | Description |
|---------------------------------|--|
| General | General settings for the schedule: <ul style="list-style-type: none"> ▶ Name ▶ Recurrence configuration |
| Name | Name of the schedule. |
| Recurrence configuration | Recurrence configuration for the time plan. There are the following patterns: <ul style="list-style-type: none"> ▶ Once ▶ Minutes and hours ▶ Days ▶ Days in weeks ▶ Days in months ▶ Days in weeks of months <p>The patterns are configured in the Recurrence configuration section.</p> |
| Start and expiration | Start and end times for the plan. |
| Start time | Start date. |
| Start time | Start time. |
| Schedule expires | Active: Time plan has a defined date of expiration. Can only be activated if the pattern is not Once. |
| Date of expiration | Date of expiration. |
| Recurrence configuration | Configuration of the recurrences For details, see the " Configure recurrences " section. |
| OK | Applies the selected configuration and closes the dialog. |
| Cancel | Closes the dialog without executing any actions |

Errors during the action prevent the dialog being confirmed with OK and are displayed via messages in the output window.

CONFIGURING RECURRENCES

Recurrences are configured in the right-hand section of the dialog. Only the **Recurrence configuration** area is shown in the manual for the description of the individual pattern.



Attention

If an already-configured schedule is called up for editing again, it can happen that the configuration does not correspond to the pattern entered previously. The execution times of the schedule remain the same, only the display of the configuration is affected.

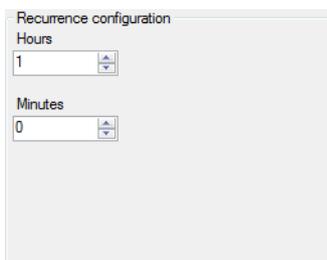
Background: The web service examines the configuration of a schedule and converts it to a simpler pattern, regardless of its configuration.

For example: In `weekdays`, each day was activated and the week interval is set to 1. The web service makes the simpler pattern `Days` days out of this, with an interval of 1.

ONCE

Is only executed once. The settings for **Recurrence configuration** are thus not available.

MINUTES AND HOURS



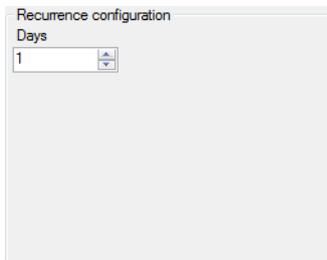
Defines the interval between two executions of the schedule in hours and minutes.

| Parameters | Description |
|------------|---------------------|
| Hours | Hours are stated. |
| Minutes | Minutes are stated. |

Note: If both properties are set to 0, this leads to an error.

DAYS

Defines the distance between two executions of the schedule in days.



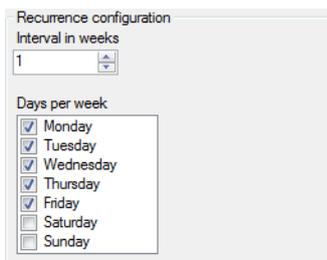
Recurrence configuration
Days
1

| Parameters | Description |
|------------|--|
| Days | number of days between two executions. |

Note: If 0 is set, this leads to an error.

DAYS IN WEEKS

Defines the distance between two executions in weekdays and weeks of execution.



Recurrence configuration
Interval in weeks
1

Days per week

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday
- Sunday

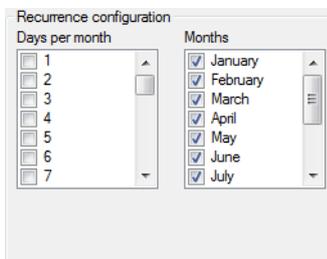
| Parameters | Description |
|-------------------|---|
| Interval in weeks | Interval between the executions in weeks. |
| Days in weeks | Weekdays on which the schedule is to be executed. |

Example: A schedule for "every second Wednesday" would have Wednesday highlighted as the execution day and a weekly interval of 2.

Note: If no days are highlighted or 0 is set for weeks, this leads to an error.

CALENDAR DAYS PER MONTH

Defines the interval between two executions of the schedule over days and weeks of execution.

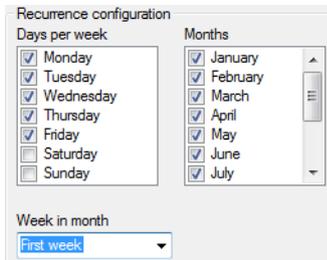


| Parameters | Description |
|----------------|--|
| Days per month | Activation of the active days via the checkboxes. Note: The possible execution dates are orientated to the shortest month, February. They are therefore limited to 28. |
| Month | Activation of the active months. |

Note: If no entry is activated in one of the properties, this leads to an error.

DAYS IN WEEKS OF MONTHS

Defines the interval between two executions of the schedule in active weekdays according to week of execution and month of execution.



| Parameters | Description |
|---------------|--|
| Days in weeks | Selection of the active weekdays. |
| Month | Selection of months in which the selected days are active.. |
| Week in month | Selection of the week of the active month in which the schedule is executed. |

Note: If no entry is activated in one of the properties, this leads to an error.

LIMITATIONS

- ▶ Days per month are limited to 1 – 28 (corresponds to February in non-leap years)
- ▶ The "Month end" event is not available

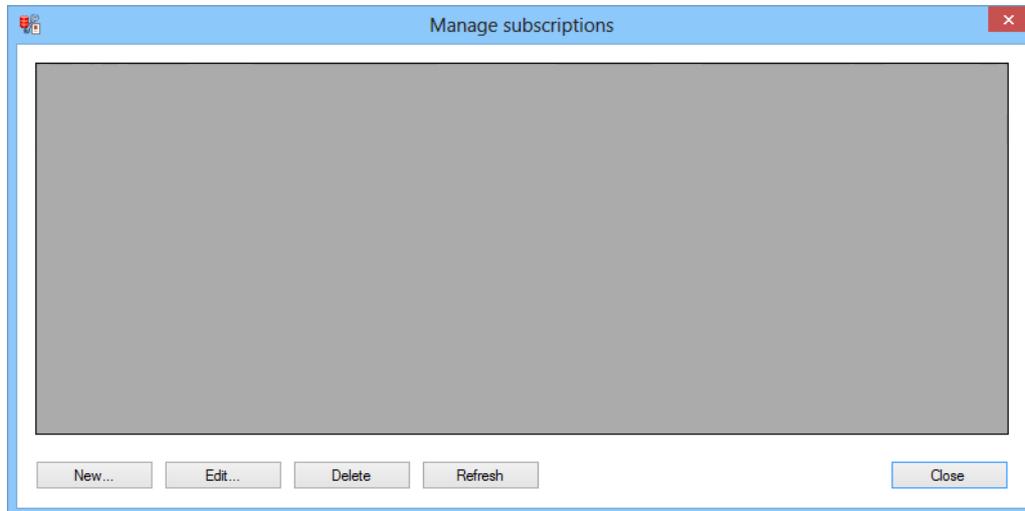
Administer report subscriptions

Requirement: In order for reports to be subscribed to, there must be a connection to an Analyzer server with a valid license.

To subscribe to reports:

1. Select the **Manage subscriptions** entry in the **Automation** menu.

2. the dialog for administering the subscriptions is opened



| Parameters | Description |
|------------------------------|--|
| List of report subscriptions | List of the already-configured subscriptions with detailed information: <ul style="list-style-type: none"> ▶ Description: Description of the subscription. ▶ Report: The report used in the subscription. ▶ Owner: Owner of the subscription. ▶ Subscription status: Status of the subscription. ▶ Last Run: Time of the last execution of the subscription. |
| New | Opens the dialog to create a new subscription with the standard values for all input possibilities. The table with the subscriptions is updated once the opened dialog has been confirmed. |
| Edit | Opens the dialog to edit the selected subscription with the values configured for the selected subscription. The table with the subscriptions is updated once the opened dialog has been closed. |
| Delete | Deletes the highlighted subscription without asking for confirmation. The table with the subscriptions is updated after the action has been carried out. |
| Refresh | Refreshes the List of report subscriptions . |
| Close | Closes the dialog. |



Attention

There can be mixes of different languages in all dialogs of this function.

Background: The texts are created by ZAMS, by the web service and also by Microsoft Extension DLLs (for the dispatch methods of the subscriptions). These sources support different languages depending on installation and configuration.

CREATING AND EDITING SUBSCRIPTIONS

To create a new subscription:

1. click on the button **New**

2. The dialog is opened with the standard values for all input possibilities

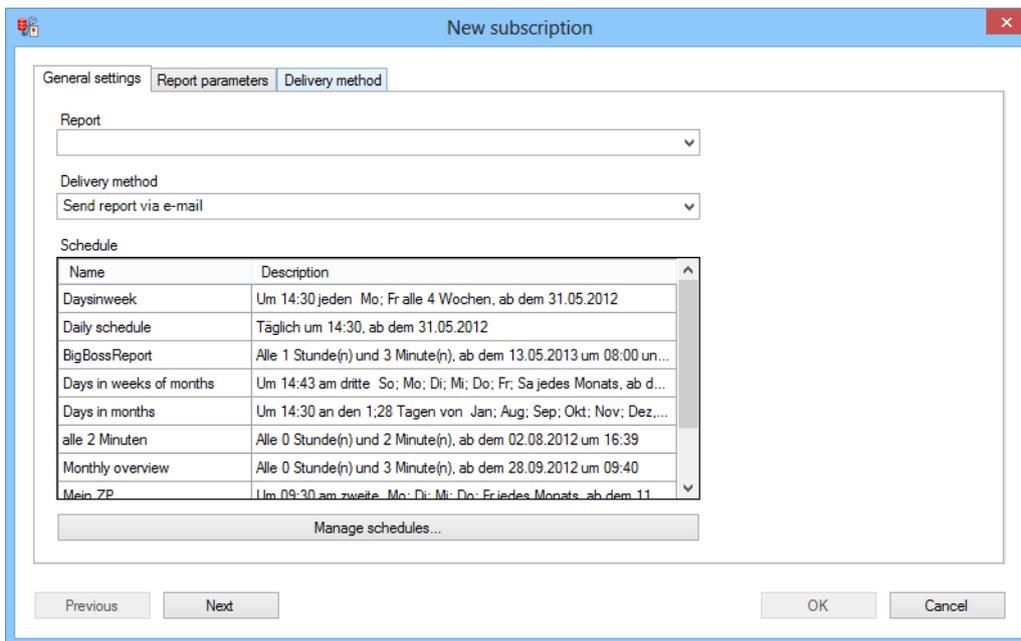
To amend an existing subscription:

1. Highlight the desired subscription in the list
2. click on **E**dit
3. The dialog is opened with the values for the selected schedule

To delete a subscription:

1. Highlight the desired subscription in the list
2. Click on **D**elete
3. The subscription is deleted

DIALOG FOR CREATING OR EDITING A SUBSCRIPTION



New subscription

General settings | Report parameters | Delivery method

Report

Delivery method
Send report via e-mail

Schedule

| Name | Description |
|-------------------------|---|
| Daysinweek | Um 14:30 jeden Mo; Fr alle 4 Wochen, ab dem 31.05.2012 |
| Daily schedule | Täglich um 14:30, ab dem 31.05.2012 |
| BigBossReport | Alle 1 Stunde(n) und 3 Minute(n), ab dem 13.05.2013 um 08:00 un... |
| Days in weeks of months | Um 14:43 am dritte So; Mo; Di; Mi; Do; Fr; Sa jedes Monats, ab d... |
| Days in months | Um 14:30 an den 1;28 Tagen von Jan; Aug; Sep; Okt; Nov; Dez.... |
| alle 2 Minuten | Alle 0 Stunde(n) und 2 Minute(n), ab dem 02.08.2012 um 16:39 |
| Monthly overview | Alle 0 Stunde(n) und 3 Minute(n), ab dem 28.09.2012 um 09:40 |
| Mein ZP | Um 09:30 am zweite Mo; Di; Mi; Do; Fr jedes Monats, ab dem 11 |

Manage schedules...

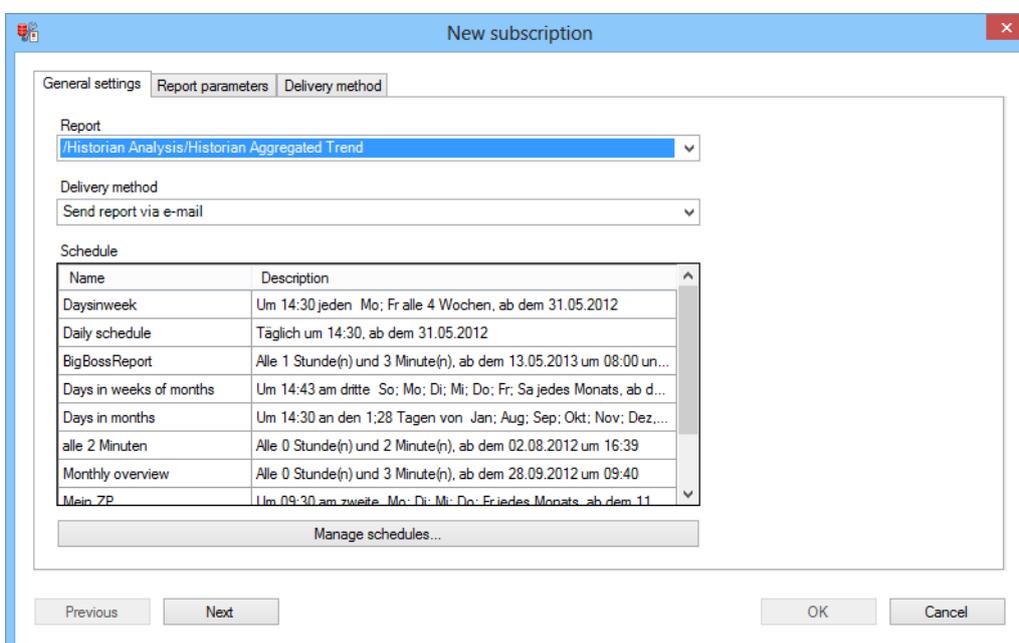
Previous Next OK Cancel

| Parameters | Description |
|--|--|
| General settings (on page 348) | Configuration of the general settings for the subscription. |
| Report parameters (on page 350) | Configuration of the parameters for the selected report. |
| Delivery method (on page 351) | Configuration of the delivery method for the report. |
| Previous | Switches to the previous tab. Not active in this tab. |
| Next | Switches to the next tab. |
| OK | Accepts the configuration, creates the subscription and closes the dialog. Only available if no invalid data is present. Input fields with invalid content are stored in red. |
| Cancel | Discards changes and closes the dialog. |

Note: Errors during configuration prevent the dialog being confirmed with **OK** and are displayed in the output window.

General settings

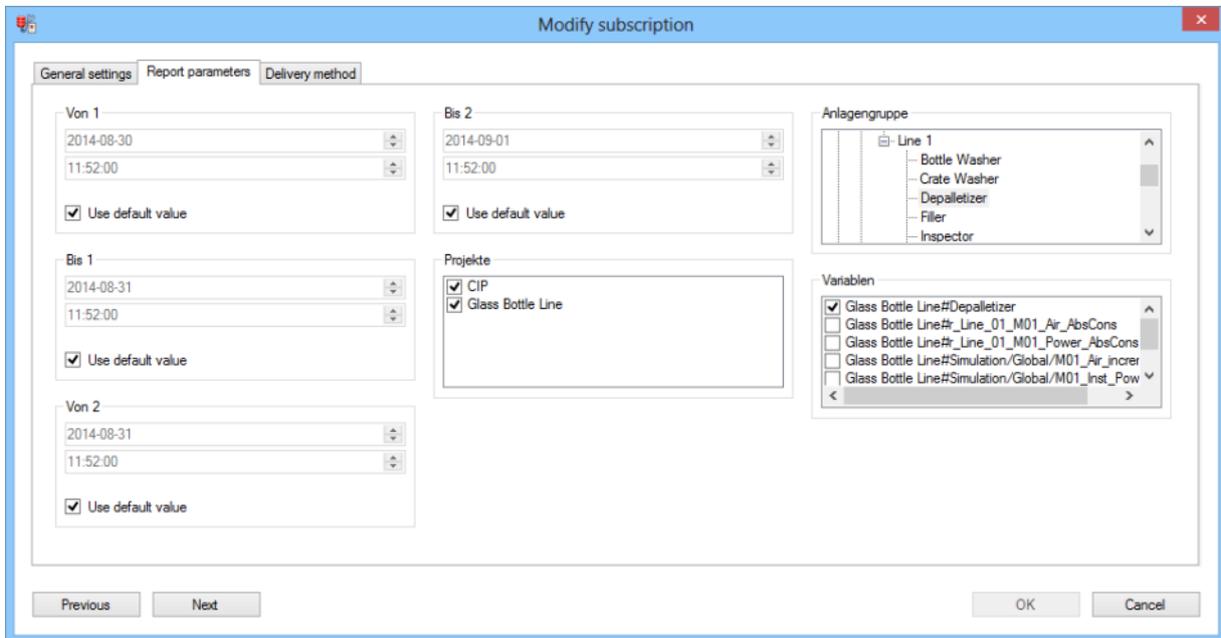
You select the report, delivery method and schedule in this report. You configure report parameters and delivery method in the following tabs.



| Parameters | Description |
|-------------------------|---|
| General settings | General settings for the subscription: |
| Report | Selection of a report for the subscription from a drop-down list. This selection determines which properties are offered in the Report parameters group. |
| Delivery method | <p>Selection of a method with which the report is sent from a drop-down list:</p> <ul style="list-style-type: none"> ▶ Save report as shared file: The report is saved to a network drive in an approved folder. This option is always available. Other options depend on the configuration of the reporting services. ▶ Send report via e-mail: The report is sent by email. Only available if the reporting services are configured accordingly. <p>This selection determines which properties are offered in the delivery method group.</p> |
| Schedule | <p>Selection of a schedule for the subscription.</p> <p>Note: The schedule for the subscription can be created directly on the Analyzer server and saved with this. This is not supported by ZAMS.</p> |
| Manage Schedules | <p>Opens the dialog (on page 335) to create and edit schedules.</p> <p>If this is executed, the table with the schedules is updated in the list of schedules.</p> |
| Previous | <p>Switches to the previous tab.</p> <p>Not active in this tab.</p> |
| Next | <p>Switches to the next tab.</p> |
| OK | <p>Accepts the configuration, creates the subscription and closes the dialog.</p> <p>If the information provided is not valid, the dialog remains open without saving and the erroneous configurations are shown.</p> |
| Cancel | <p>Discards changes and closes the dialog.</p> |

Report parameters

The report parameters are configured in this tab. The control elements are displayed in groups, the groupings are automatically displayed from top to bottom in one or more languages.



| Parameters | Description |
|---------------------|--|
| Display of controls | Depending on the report selected in the General settings (on page 348) tab, the respective controls are offered for configuration. The labels above the controls for the parameters always come from the report. Recommendation: In the Time span control, activate the Use standard value checkbox to use the configured values for the report. |
| Previous | Switches to the previous tab. |
| Next | Switches to the next tab. |
| OK | Accepts the configuration, creates the subscription and closes the dialog. If the information provided is not valid, the dialog remains open without saving and the erroneous configurations are shown. |
| Cancel | Discards changes and closes the dialog. |



Information

Note for parameters with multiple selection:

- ▶ If the checkbox for use of the standard values of the parameters is deselected
- ▶ and then all values activated in the selectable list of parameters are deselected,
- ▶ Then the standard values are set for these parameters again.

Technical background: The report server sets all parameters that have standard values and are transferred without values back to standard values.

Delivery method

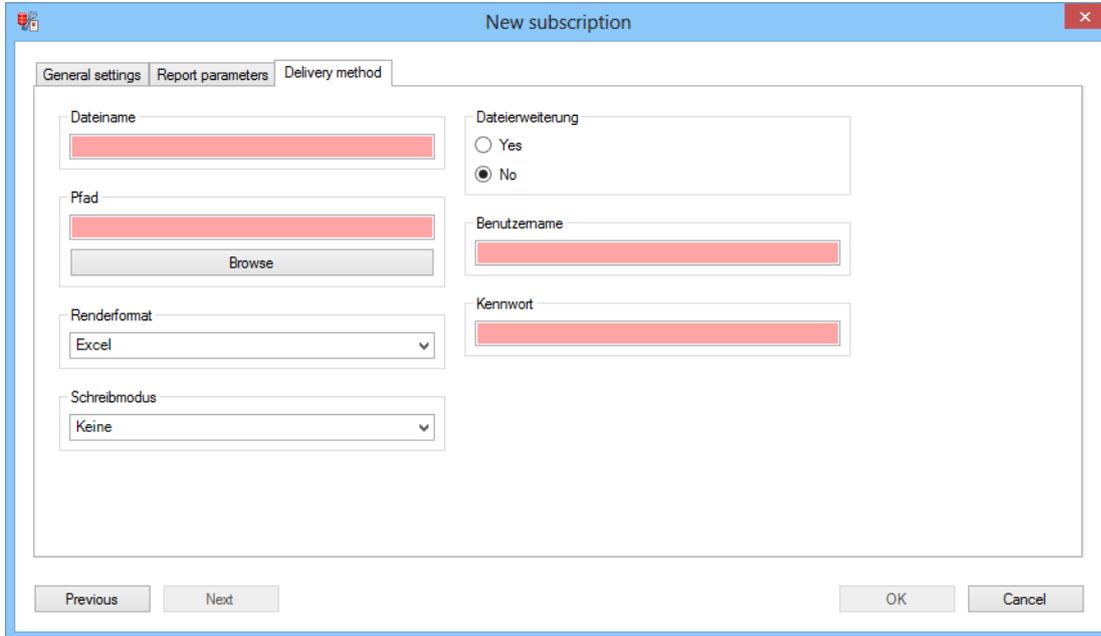
You define the delivery method for the report in this tab. **Save report as an approved file** is always available as a standard method. Other methods depend on the configuration of the reporting services. In this documentation, the **Send report by email** method is also presented in addition to the standard method. The method is selected in the General settings (on page 348) tab.

Entries in this tab are validated each time a parameter value is validated.



Attention

The language of the parameters for the delivery method corresponds to the language of SQL Server.

SAVE REPORT AS SHARED FILE:

The screenshot shows a dialog box titled "New subscription" with three tabs: "General settings", "Report parameters", and "Delivery method". The "Delivery method" tab is active. It contains several input fields and controls:

- Dateiname:** A text input field with a red background.
- Pfad:** A text input field with a red background and a "Browse" button below it.
- Renderformat:** A dropdown menu with "Excel" selected.
- Schreibmodus:** A dropdown menu with "Keine" selected.
- Dateierweiterung:** Radio buttons for "Yes" (unselected) and "No" (selected).
- Benutzername:** A text input field with a red background.
- Kennwort:** A text input field with a red background.

At the bottom of the dialog, there are buttons for "Previous", "Next", "OK", and "Cancel".

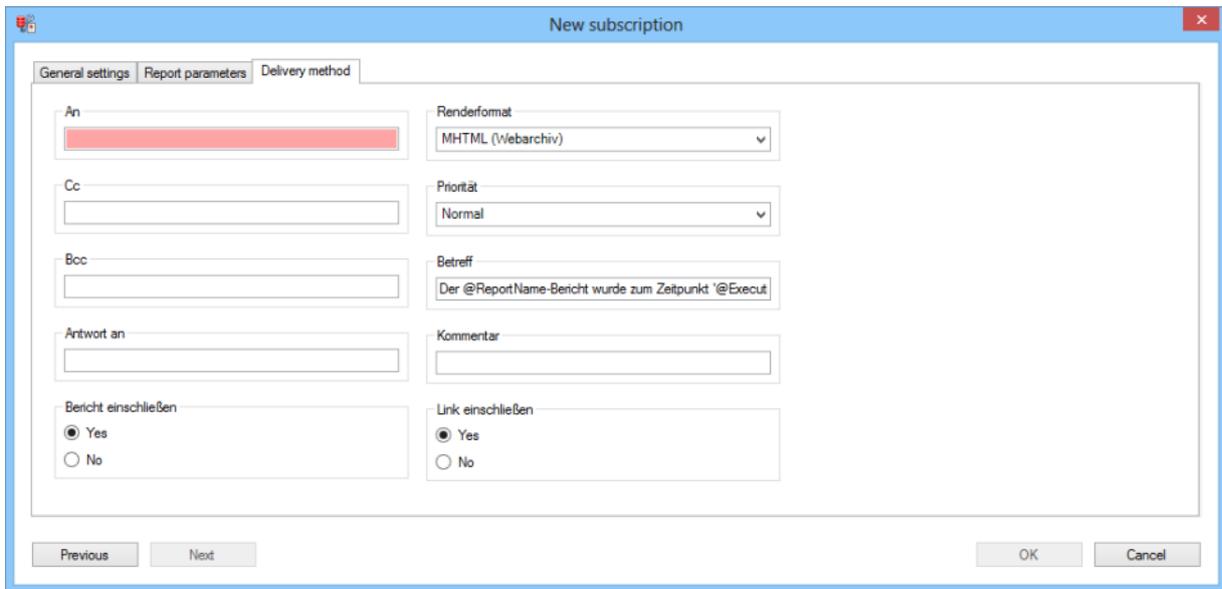
| Parameters | Description |
|--------------------|--|
| File name | Name of the file in which the report is saved. Must not be empty and must contain a valid name. The following characters are not permitted: / \ ? < > : * " |
| Path | UNC path of the authorized folder in which the file is saved. Must not be empty and must contain a valid UNC file path. Clicking on the Browse button opens the dialog (on page 485) to select an approved folder on the network drive. Attention: For technical reasons, it may be necessary to enter a user name and password in the UNC browser dialog. This entry relates to access for approved drives and is not the same as parameter fields for user name and password. |
| Render format | Selection of the data format from drop-down list for saving the report. |
| Write mode | Selection of what is to happen for a pre-existing file from a drop-down list: <ul style="list-style-type: none"> ▶ None: The file is created, but rejected again. Nothing is written. ▶ Automatic incrementation: Additional information is written. ▶ Overwrite: The file is overwritten. |
| Filename extension | Configuration of whether an extension is added to the report file: <ul style="list-style-type: none"> ▶ Yes: The file is supplemented with a file extension appropriate to the <code>render format</code> property. ▶ No: The file is saved without a filename extension |
| Username | User name for access to the authorized folder. Must be entered in order for the validation to be successful. Only the presence of the input is checked. |
| Password | Password for access to the authorized folder. This is not displayed in plain text and is not supplied by the web service when the subscription is called up again. Must be entered in order for the validation to be successful. Only the presence of the input is checked. |
| Previous | Switches to the previous tab. |
| Next | Switches to the next tab. Not active in this tab. |
| OK | Accepts the configuration, creates the subscription and closes the dialog. If the information provided is not valid, the dialog remains open without saving and |

| | |
|--------|---|
| | the erroneous configurations are shown. |
| Cancel | Discards changes and closes the dialog. |

SEND REPORT VIA E-MAIL:

In order for reports to be able to be sent by email, the SQL Server must be configured accordingly. Configuration is carried out in ZAMS via the **AutomationConfigure email server...** (on page 331) menu item.

CONFIGURATION OF THE DISPATCH METHOD



The screenshot shows the 'New subscription' dialog box with the 'Delivery method' tab selected. The dialog contains the following fields and options:

- An:** Text input field (highlighted in red).
- Renderformat:** Dropdown menu set to 'MHTML (Webarchiv)'.
- Cc:** Text input field.
- Priorität:** Dropdown menu set to 'Normal'.
- Bcc:** Text input field.
- Betreff:** Text input field containing the text 'Der @ReportName-Bericht wurde zum Zeitpunkt '@Execut'.
- Antwort an:** Text input field.
- Kommentar:** Text input field.
- Bericht einschließen:** Radio buttons for 'Yes' (selected) and 'No'.
- Link einschließen:** Radio buttons for 'Yes' (selected) and 'No'.

At the bottom of the dialog, there are buttons for 'Previous', 'Next', 'OK', and 'Cancel'.

| Parameters | Description |
|----------------|---|
| To | <p>Address of the recipient.</p> <p>Must not be empty and must contain a valid list of email addresses. Requirements for addresses:</p> <ul style="list-style-type: none"> ▶ The following characters are permitted: a-z, A-Z, 0-9, !#\$%&' *+ - / = ? ^ _ ` { } ~ . ▶ Syntax: [local part]@[domain part] ▶ Several addresses are separated by a semi colon (;) ▶ Exactly one @ character in the whole address ▶ Two periods (..) must not appear consecutively ▶ Rules for local part and domain: <ul style="list-style-type: none"> - must not start with period (.) - must not end with period (.) - must contain at least 1 valid character - must not contain any invalid character |
| Cc | <p>Address of recipients of copies.</p> <p>Can be empty. The content must contain a list of valid email addresses.</p> |
| Bcc | <p>Address of hidden recipients of copies.</p> <p>Can be empty. The content must contain a list of valid email addresses.</p> |
| Respond to | <p>Address to whom a response is to be sent.</p> <p>Can be empty. The content must contain a list of valid email addresses.</p> |
| Include report | <p>Selection of whether the report is sent.</p> <ul style="list-style-type: none"> ▶ Yes: Report is attached to the email as a file. ▶ No: Only one email is sent, stating that that a report is available. The report itself is not sent. <p>Hint: However a link to the report can be added using the <code>Include link</code> option.</p> |
| Render format | <p>Selection of the data format from drop-down list for saving the report.</p> |
| Priority | <p>Selection of the priority of the email from the drop-down list:</p> <ul style="list-style-type: none"> ▶ Higher |

| | |
|-----------------|---|
| | <ul style="list-style-type: none"> ▶ Normal ▶ low |
| Subject | <p>Subject of the email The following text blocks can be replaced automatically:</p> <ul style="list-style-type: none"> ▶ @ReportName: Name of the report ▶ @ExecutionTime: Date and time of report creation. |
| Comment | Additional text for the email. |
| Include link | <p>Selection of whether a link to a report is included in the message.</p> <p>Yes: A hyperlink to the report is included in the email.</p> <p>No: No hyperlink is included.</p> |
| Previous | Switches to the previous tab. |
| Next | <p>Switches to the next tab.</p> <p>Not active in this tab.</p> |
| OK | <p>Accepts the configuration, creates the subscription and closes the dialog.</p> <p>Only available if no invalid data is present. Input fields with invalid content are stored in red.</p> |
| Cancel | Discards changes and closes the dialog. |

11.5.8 Clear cache

If metadata has been changed or the data from the report templates has been updated, the cache must be deleted.

The cache is deleted as standard:

- ▶ If ZAMS is connected to a different database, the data of which is required, and the data is called up
- ▶ ZAMS is restarted

In addition, the deletion of the cache can be triggered manually by: *Menu options-> Delete cache*. This action emulates objects of a ZAMS restart for the cache manager.

PROCEDURE

Procedure when the `Delete cache` option is called up:

1. It is ensured that nothing accesses the cache whilst the action is being carried out.

Instructions on opening reports are buffered in a queue until the action has been completed.

2. Open reports must be saved, closed and restarted once the action has been completed. Unsaved changes are saved.

If reports that have not yet been saved are found, then the user is notified of this in a dialog and asked if the reports are to be saved and closed.

- If closing is declined, the action is canceled and the cache is not deleted.
- If the closing is confirmed, the dialog to save the report is opened in order to save and close the reports.

Note: If changes to a report that have not yet been saved are to be discarded, close the report and decline the question asking you if you want to save it.

3. The caches for report template data and metadata are cleared.
4. The list of all users found is emptied and the configuration of the user search is reset.
5. Corresponding messages are written in the output window.
6. The previously-written access is permitted again.
7. The closed reports are opened again.

Note: This action is available regardless of the connection to the Analyzer server and regardless of whether there is a valid license.

This action is not available if one of the actions `Open`, `Prepare`, `Prepare all`, `Open in report builder` Or `Open all in report builder` are executed.



Information

This action `Delete cache` only relates to ZAMS and is not identical to the `cache updating` (on page 224) function in the Analyzer Manager.

11.6 Managing SQL Server

You can get to the tools to manage the SQL connections and the databases via the SQL server menu item:

| Parameters | Description |
|--|---|
| Update connector functions | Renews the Connector functions (on page 359). The result is displayed in the output window. |
| Create SCADA SQL connector | Opens the dialog (on page 359) to create an SQL connector. |
| Create 3rd party database connector | Starts the configuration (on page 379) of the connector for third-party databases. |
| New Analyzer database | Opens dialog (on page 422) to create a new Analyzer database. |
| Convert databases | Starts the conversion (on page 425) of databases, the version number of which is lower than the current version number. |
| Create database backups | Opens the dialog (on page 432) for creating a project backup. |
| Restore database backup | Opens the dialog (on page 435) for renaming a profile. |
| Restore database backup file as new database | Opens the dialog (on page 439) for restoring a database backup as a new database. |
| Restore Reporting Services database backup | Opens the dialog (on page 444) for restoring the reporting services database. |
| Administrate automated database backups | Opens the dialog (on page 446) to administer the automatically-created database backups. |
| Manage database backup files | Opens the dialog (on page 470) to administer the backup files of the database. |
| Manage linked server | Opens dialog (on page 474) to manage the linked servers. |
| Manage metadata indices | Opens the dialog (on page 479) to manage the metadata indices. |

11.6.1 Update connector functions

This function is available if there is a connection to an Analyzer server with a valid license.

By selecting the Update connector functions action, you update the database assembly **zrsUserFunctions** or create this if it is not present and update the attendant SQL UDFs in the database. The assembly establishes the connection between the database and the connector stub. The following tasks are carried out in the process:

1. All existing UDFs for the assembly are rejected.
2. The assembly is rejected if it exists already.
3. The assembly is created.
4. All UDFs are created.
5. The database is set so that the functions of the assembly can be executed.

Errors and confirmations are stated in the output window.

Existing SCADA SQL connectors are retained and are not discarded.

11.6.2 Create SCADA SQL connector

In order to be able to create an SQL connector, there must be a connection to an Analyzer server with a valid license.

To create an SQL connector:

1. Select, in the **SQL server** menu, the **Create SQL connector** command
2. The dialog to create an SQL connector with both tabs **Databases** and **Projects** is opened

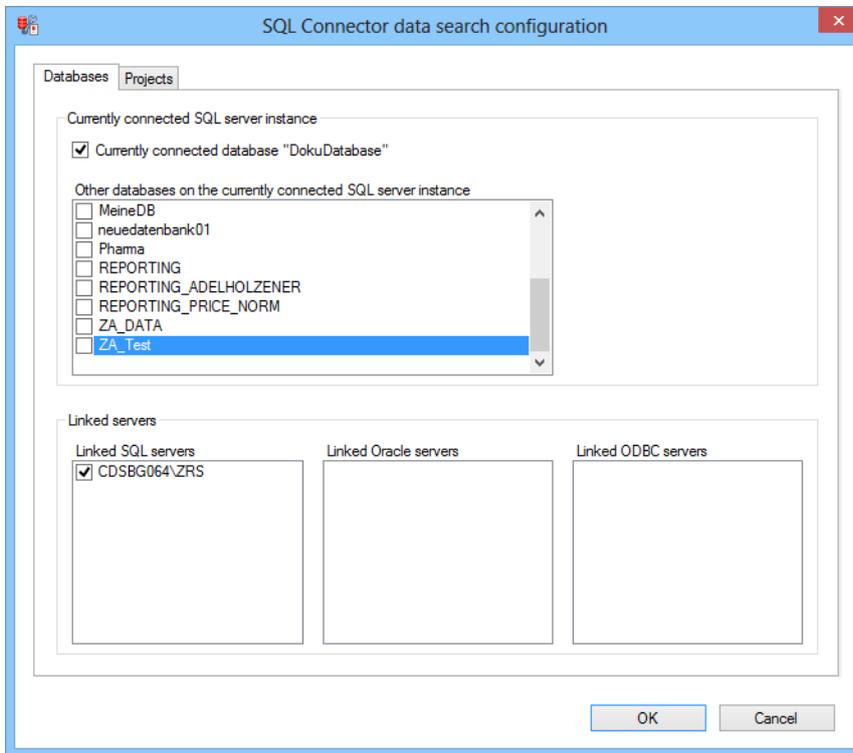


Information

In order to be able to create an SQL connector, there must be at least one project in the database that is currently connected.

DATABASES

Selection of databases and linked server where the search for tables is to be made.

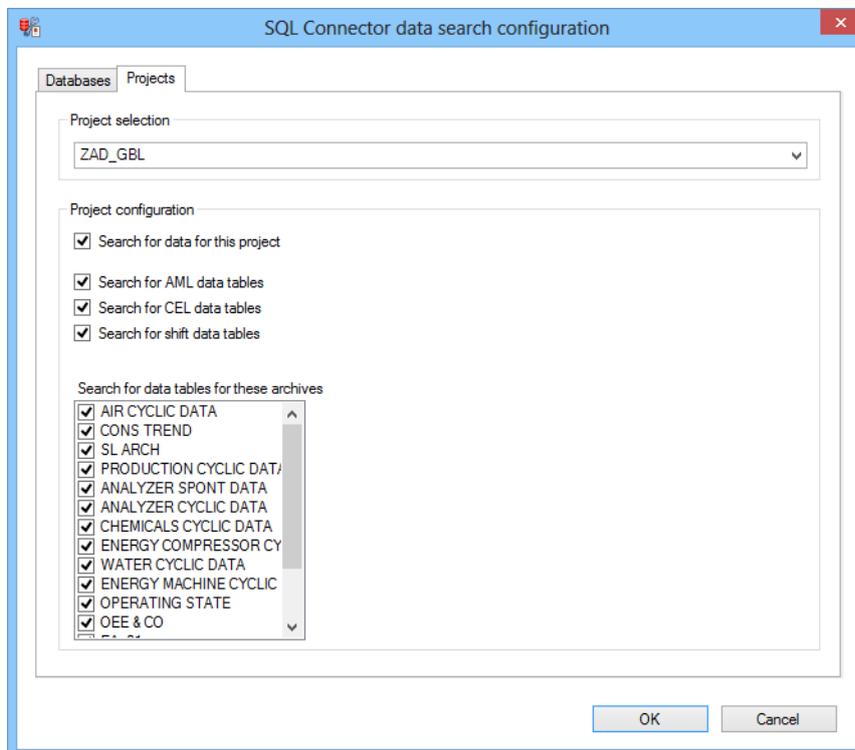


| Parameters | Description |
|---|--|
| Currently-connected SQL server instance | Properties of the SQL server instance to which ZAMS is currently connected. |
| Currently-connected database "REPORTING2" | Active: A search for tables is to be made in the currently-connected database. |
| Other databases on the currently connected SQL server instance | Selection of databases on the SQL server instance that is currently connected where a search for tables is to be carried out. The selection is made by activating checkboxes. |
| Linked Server | Linked Server on the SQL server instance to which ZAMS is currently connected. |
| Linked SQL servers | Only contains linked SQL server (provider "SQLNCLI"). The selection is made by activating checkboxes. |
| Linked Oracle servers | Only contains linked Oracle servers (provider "OraOLEDB.Oracle"). The selection is made by activating checkboxes. |
| Linked ODBC servers | Only contains linked ODBC servers (provider "MSDASQL"). The selection is made by activating checkboxes. |
| OK | <p>Closes the dialog, saves the configuration of both tabs and opens the dialog to configure the SQL connector (on page 364).</p> <p>The parameters are set up via three tabs:</p> <ul style="list-style-type: none"> ▶ AML and CEL ▶ Archive tables ▶ Shift tables <p>For details, see the corresponding sections.</p> |
| Cancel | Cancels the process of creating the SQL connectors and closes the dialog. |

Note: All data sources are activated by default.

PROJECTS

In this tab, you define the data from the projects in the data sources defined in the prior tab are to be searched for according to tables.



| Parameters | Description |
|---|--|
| Project selection | <p>Selection of a project.</p> <p>If a project is selected, the project configuration group is filled with the project configuration.</p> |
| Project configuration | Configuration of the selected project. |
| Search for data for this project | <p>Active: A search for tables is made in this project. Further options are shown.</p> <p>Inactive: No search for tables is made in this project.</p> |
| Search for AML data tables | Active: A search for AML tables is made (table name ends with _ALARM). |
| Search for CEL data tables | Active: A search for CEL tables is made (table name ends with _CEL). |
| Search for shift tables | Active: A search for shift data tables is made. The shift tables to be searched for are taken from the EQUIPMENTSHIFT metadata table. |
| Search for data tables for these archives | <p>Selection of the projects for which searches for tables are to be made. Three tables are used in the process:</p> <ul style="list-style-type: none"> ▶ [project name]_[short archive description] -> archive data ▶ [project name]_VARIABLES -> variables in the archive ▶ [project name]_[short archive description]_LOT -> lot data. According to this table, a search is only made if the archive in the metadata is defined as a lot archive (LOTARCHIV column in the ARCHIVE metadata table). |
| OK | <p>Closes the dialog, saves the configuration of both tabs and opens the dialog to configure the SQL connector (on page 364).</p> <p>The parameters are set up via three tabs:</p> <ul style="list-style-type: none"> ▶ AML and CEL ▶ Archive tables ▶ Shift tables <p>For details, see the corresponding sections.</p> |
| Cancel | <p>Cancels the process of creating the SQL connectors and closes the</p> |

| | |
|--|---------|
| | dialog. |
|--|---------|

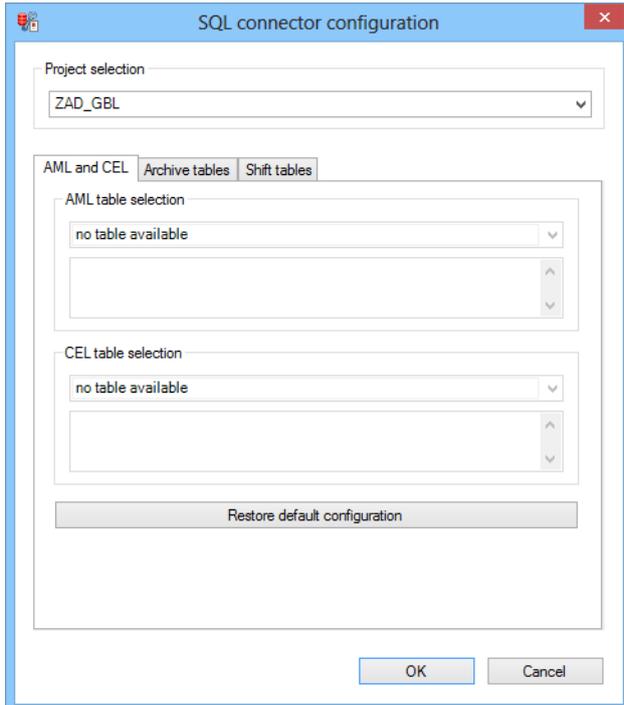
Configuration of the SQL Connector

Click on the  button in the dialog for creating an SQL connector to open the dialog to configure the SQL connector. A standard configuration is created for each project before the dialog is opened. For details of this, see the **standard project configuration** section in the Process (on page 374) chapter.

The dialog consists of three tabs:

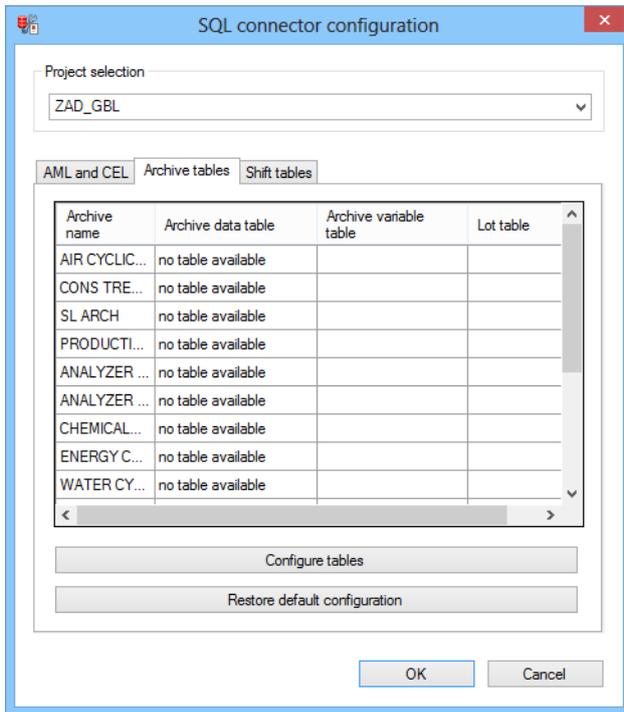
- ▶ AML and CEL
- ▶ Archive tables
- ▶ Shift tables

AML TABLE AND CEL TABLE DIALOG



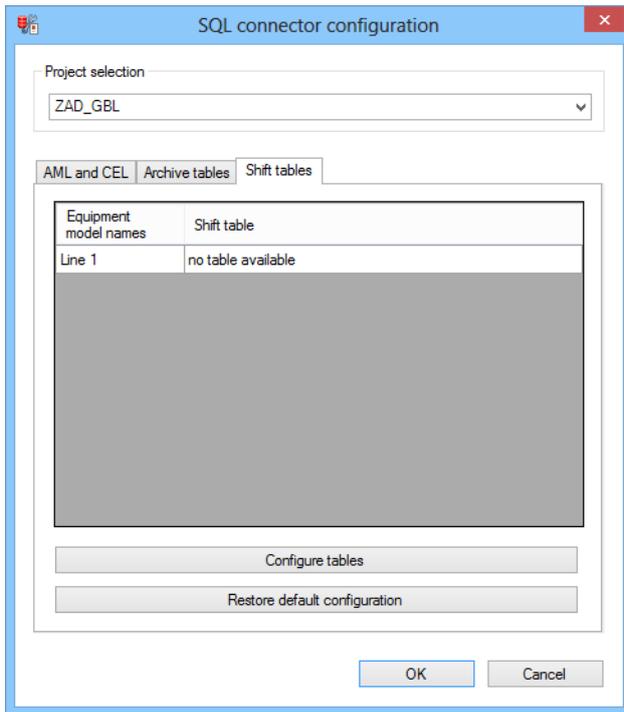
| Parameters | Description |
|-------------------------------|---|
| Project selection | Selection of the project from the drop-down list makes requirements for the properties to be configured. The selection applies for all three tabs. |
| Select AML tables | <p>Configuration of the AML table to be used.</p> <p>Selection of the desired AML table from the drop-down list. This contains all AML tables found and an entry for <code>Do not create</code>.</p> <p>The description of the selected table is displayed below the drop-down list.</p> |
| CEL table selection | <p>Configuration of the CEL table to be used.</p> <p>Selection of the desired CEL table from the drop-down list. This contains all CEL tables found and an entry for <code>Do not create</code>.</p> <p>If no tables are found, the drop-down list displays a corresponding entry and is deactivated.</p> |
| Restore default configuration | Resets the AML and CEL tables for the project currently being displayed back to the standard configuration (on page 374). |
| OK | Saves settings of all three tabs, closes the dialog and creates the SQL connector. |
| Cancel | Cancel the process of creating the SQL connectors and closes the dialog. |

DIALOG ARCHIVE TABLES



| Parameters | Description |
|-------------------------------|---|
| Project selection | Selection of the project from the drop-down list makes requirements for the properties to be configured. The selection applies for all three tabs. |
| List of tables | <p>Displays all archives that are switched to active when configuring the table search and the respective tables found. The following are displayed:</p> <ul style="list-style-type: none"> ▶ Archive name ▶ Archive data table ▶ Archive variable table ▶ Lot table <p>If no archive data table is found for an archive or this is not to be integrated into the SQL connector, the columns for the variable table and lot table remain empty.</p> |
| Configure tables | Opens the dialog to Configure the archive tables (on page 369) for the selected project. The table is updated after this dialog is closed. |
| Restore default configuration | Resets the archive tables for all archives of the project currently being displayed back to the standard configuration (on page 374). |
| OK | Saves settings of all three tabs, closes the dialog and creates the SQL connector. |
| Cancel | Cancel the process of creating the SQL connectors and closes the dialog. |

SHIFT TABLES DIALOG



| Parameters | Description |
|-------------------------------|--|
| Project selection | Selection of the project from the drop-down list makes requirements for the properties to be configured. The selection applies for all three tabs. |
| List of shifts | <p>Displays the shift tables for all equipment groups selected in the configuration. The following are displayed:</p> <ul style="list-style-type: none"> ▶ Equipment group names ▶ Shift table <p>If no shift tables were found for an equipment group or these were configured in such a way that they are not incorporated into the SQL connector, this is displayed in the table accordingly.</p> |
| Configure tables | Opens the dialog to Configure the shift tables (on page 372) for the selected project. The table is updated after this dialog is closed. |
| Restore default configuration | Resets the shift tables for all equipment models of the project currently being displayed back to the standard configuration (on page 374). |
| OK | Saves settings of all three tabs, closes the dialog and creates the SQL connector. |
| Cancel | Cancels the process of creating the SQL connectors and closes the dialog. |

Configuration of the archive tables

Archive table configuration ✕

Project selection

ZAD_GBL
▼

Overview

| Archive name | Archive data table | Archive variable table | Lot table |
|------------------------|--------------------|------------------------|-----------|
| AIR CYCLIC DATA | no table available | | |
| CONS TREND | no table available | | |
| SL ARCH | no table available | | |
| PRODUCTION CYCLIC D... | no table available | | |
| ANALYZER SPONT DATA | no table available | | |
| ANALYZER CYCLIC DATA | no table available | | |
| CHEMICALS CYCLIC DATA | no table available | | |
| ENERGY COMPRESSOR ... | no table available | | |
| WATER CYCLIC DATA | no table available | | |
| ENERGY MACHINE CYCL... | no table available | | |
| OPERATING STATE | no table available | | |
| OEE & CO | no table available | | |

Configuration

CHEMICALS CYCLIC DATA
 ENERGY COMPRESSOR CYCLIC DATA
 WATER CYCLIC DATA
 ENERGY MACHINE CYCLIC DATA
 OPERATING STATE
OEE & CO
 EA_01
 EA-01
 EA7_001

Archive data table
Archive variable table
Lot table

no table available
▼

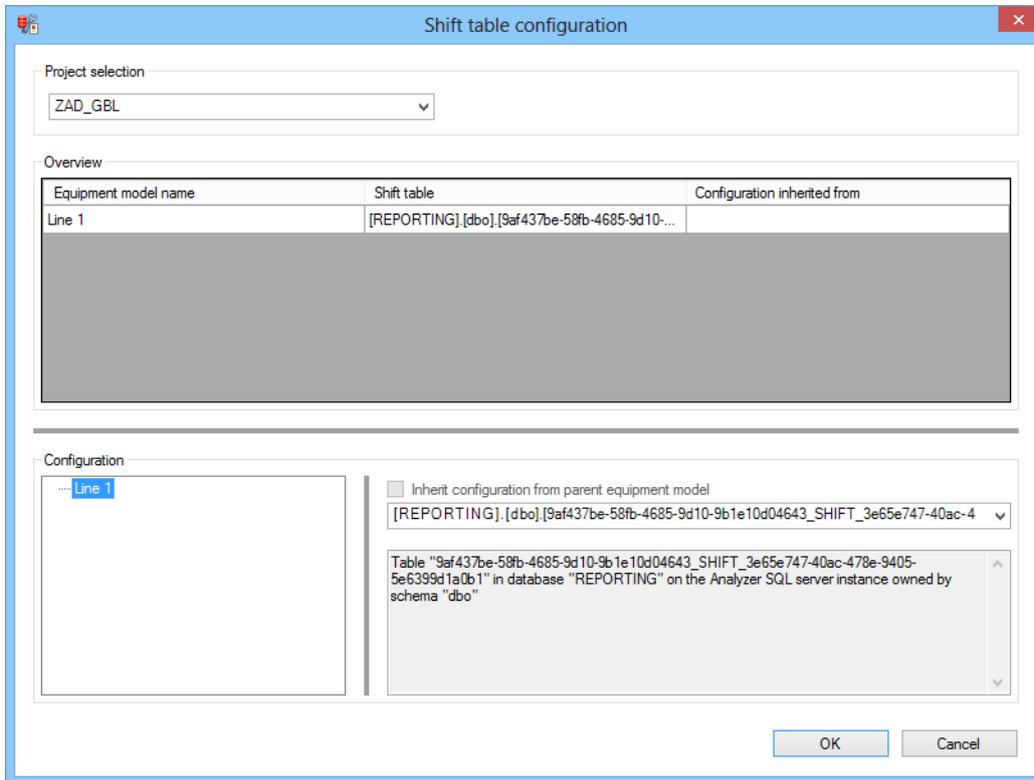
Warnings

OK
Cancel

| Parameters | Description |
|-------------------|---|
| Project selection | Selection of the project from the drop-down list. The project selected in Configuration of the SQL connector (on page 364) is already selected. |
| Overview | <p>Displays the configuration of all archives in the project. The following are displayed:</p> <ul style="list-style-type: none"> ▶ Archive name ▶ Data table ▶ Variable table ▶ Lot table <p>If no data tables are present for an archive, the columns for the variable table and the lot table for for this archive remain empty.</p> |
| Configuration | <p>Configuration of the tables.</p> <ul style="list-style-type: none"> ▶ List on the left-hand side: Selection of an archive to be configured. ▶ Tab on the right-hand side: Three tabs to configure the data table, the variable table and the lot table for the archive selected in the list. <p><u>Configuration of the tabs:</u></p> <p>Each tab consists of a drop-down list and a text field.</p> <p>If there are no tables, this is noted in the drop-down list and it is inactive.</p> <p>If tables are present, the drop-down list contains all available tables and an entry to exclude the SQL connector (do not build).</p> <p>If a table is selected in the drop-down list, the text field displays the description of the table.</p> <p>If the selection in the drop-down list is changed, this has the following effect, depending on the tab:</p> <ul style="list-style-type: none"> ▶ Archive data table: If the entry for closing the SQL connector is selected, then this is also changed in the drop-down list for the variable table and the lot table. If a table is selected, then tables are set in the same database for the variable table and the lot table, if these are present. After this, the overview table and the warning list is updated. ▶ Archive variable table: |

| | |
|-----------------|---|
| | <p>The overview table and the warning list are updated.</p> <ul style="list-style-type: none"> ▶ Lot table: The overview table and the warning list are updated. |
| Warnings | <p>List of warnings in relation to the configuration Possible causes:</p> <ul style="list-style-type: none"> ▶ A data table is set and no variable table is set. ▶ The variable table is in a database as the data table. ▶ A data table is set and it is a lot archive, a lot table is set and the lot table is in a different database to the data table. ▶ A variable table is set, although no data table is set. ▶ A lot table is set, although no data table is set. |
| OK | <p>Checks to see if the maintenance list is empty.</p> <ul style="list-style-type: none"> ▶ Empty: The dialog is closed and the changes are saved. ▶ Not empty: User Query, to find out if the configuration is to be saved despite the warnings: Nein: The dialog remains open and the changes to the configuration are not saved yet. Yes: The dialog is closed and the changes to the configuration are saved. |
| Cancel | <p>Closes the dialog and discards the changes to the configuration.</p> |

Configuration of the shift tables



Shift table configuration

Project selection
ZAD_GBL

Overview

| Equipment model name | Shift table | Configuration inherited from |
|----------------------|--|------------------------------|
| Line 1 | [REPORTING].[dbo].[9af437be-58fb-4685-9d10-... | |

Configuration

Line 1

Inherit configuration from parent equipment model

[REPORTING].[dbo].[9af437be-58fb-4685-9d10-9b1e10d04643_SHIFT_3e65e747-40ac-4

Table "9af437be-58fb-4685-9d10-9b1e10d04643_SHIFT_3e65e747-40ac-478e-9405-5e6399d1a0b1" in database "REPORTING" on the Analyzer SQL server instance owned by schema "dbo"

OK Cancel

| Parameters | Description |
|---|---|
| Project selection | Selection of the project from the drop-down list. The project selected in Configuration of the SQL connector (on page 364) is already selected. |
| Overview | <p>Displays the configuration of all equipment models and all equipment groups for which a shift table is defined in the metadata for this project. The following are displayed:</p> <ul style="list-style-type: none"> ▶ Equipment model name ▶ Shift table ▶ Configuration of inheritance: Contains, with equipment models and equipment groups with active inheritance of the shift table, the name of the superordinate element. The construction of the inheritance hierarchy is explained in the warning box under this table. <p>If no tables are found for an equipment model or this is excluded by the SQL connector, this is noted in the corresponding line in the 'Shift table' column.</p> |
| Configuration | <p>Consists of:</p> <ul style="list-style-type: none"> ▶ List with equipment models: Complete connection hierarchy of the equipment models for the project set ▶ Inherit configuration from parent equipment model checkbox ▶ Drop-down list ▶ Text field |
| List of equipment models | Selection of an equipment model by clicking on the desired model. |
| Inherit configuration from parent equipment model | <p>Active: Configuration is taken on by superordinate element.</p> <p>Can only be activated if it is not a root element in the inheritance hierarchy of the equipment model for the selected project.</p> |
| Drop-down list for shift table | <p>Configuration of the shift table for the selected equipment model.</p> <ul style="list-style-type: none"> ▶ If there are no shift tables for the equipment model, this is displayed in the drop-down list and the list is set to inactive. ▶ If the shift table is inherited by a superordinate entry, then the inherited shift table is entered into the drop-down list and the list is set to inactive. ▶ In all other cases, the shift table can be configured and the drop-down list shows |

| | |
|-------------------|--|
| | <p>all shift tables available for the selected equipment model and an entry to exclude the equipment model from the SQL connector.</p> <p>If a change is made in the drop-down list, this is forwarded to all equipment models that inherit from the selected equipment model.</p> |
| Text field | Contains the description of the shift table selected in the drop-down list. |
| OK | Saves all changes to the configuration and closes the dialog. |
| Cancel | Discards all changes to the configuration and closes the dialog. |

When the dialog is opened, the inheritance hierarchy of the equipment model for each project is created and a decision is made on which inheritances are active.

Attention

This hierarchy does not need to correspond to the hierarchy in the equipment model in the zenon Editor, because the shift tables entered in the metadata are also taken into account here. The following decision-making guidelines were used in the process:

- ▶ An equipment model can only inherit the shift table configuration from another equipment model Y if the equipment model X in the zenon is a direct child of equipment model Y and the collection of the available shift tables is identical for each equipment model.
- ▶ If an element cannot inherit from any other, it becomes a root element for the Equipment model list.
- ▶ A possible inheritance is then active if an element and its superordinate element are configured for use of the same shift table.

Procedure

The sequence of configuring an SQL connector is as follows:

1. The database to which the ZAMS is connected is checked to see if all UDFs of the **zrsUserFunctions** assembly and all UDFs of the open data interface are present. If this is not the case, the user is asked if these are to be created.
 - No: Aborts the creation.
 - Yes: Assembly and the UDFs are created.

2. The metadata of the database is evaluated. As a result of this, it can be established which projects, which archives and which equipment models are available.
3. Data sources are searched for in the SQL Server instance. These could be the following objects:
 - Analyzer database
 - Other databases on the Analyzer instance
 - Linked SQL server
 - Linked Oracle server
 - Linked ODBC server.

4. The data sources and projects found are presented to the user in a dialog.

In this dialog, the user has the possibility to determine the projects for which tables are to be searched and the data and respective data sources from which the data for tables comes. All available objects are activated as standard in order to make as much data as possible accessible via the SQL connector.

5. The data sources are checked for the selected data for the selected project. The data tables found are assigned to the appropriate project in the process.
6. The data tables found for each project are displayed in a dialog. Here, the user can configure the data tables to be used for each project.
7. The SQL connector is created using the configuration.

STANDARD PROJECT CONFIGURATION

When creating the standard configuration, the following is determined for each project in four stages:

1. Best AML table
2. Best CEL table
3. Best tables for each archive
4. Best shift tables for each equipment model

1. BEST AML TABLE

The collection of tables found for a project contains a list of AML tables. The following happens on the basis of this list:

1. If no tables are in the list, no AML tables are set in the start configuration for this project.
2. If no tables are there, a sequence of priority is created according to the principle of the shortest route:
 - a) Table is in the database just connected.
Table name: `[scheme].[table]`
 - b) Table is in a database on the SQL Server instance just connected.
Table name: `[database].[scheme].[table]`
 - c) Table is in a database on a linked SQL server: different database server, but the same product.
Table name: `[linked server].[database].[scheme].[table]`
 - d) Table is in a database on a linked Oracle server: different database server, different product, 1 provider in between.
Table name: `[linked server]..[scheme].[table]`
 - e) Table is in a database on a linked ODBC server: different database server, different product, 1 or more providers in between.
Table name: `[linked server]...[table]`
3. If there are several tables in a hierarchy, the one that is found first is set.

Attention: Because the `_ALARM` table name suffix set by zenon does not provide any indications of the project, all projects with the same AML table are given the standard configuration. The user must intervene if there are different AML tables.

2. BEST CEL TABLE

Procedure is the same as the search for the best AML table.

3. BEST TABLES FOR EACH ARCHIVE

The collection of the tables found for a project contains a list with the following that have been found:

- ▶ Data tables
- ▶ Variable tables
- ▶ Lot tables

The data tables are used as a starting point for each archive. The best data table in the hierarchy is searched for and validated (like the procedure for AML).

- ▶ If there is a variable table and - if it is a lot archive - a lot table for the data table in the same database, then a suitable standard configuration for all necessary tables of this archive was found.
- ▶ If one of the above conditions is not met, the database is not set as a standard configuration and the next-best data table is checked.

If an archive does not have a database or no database table meets the conditions, no tables are entered for this archive in the standard configuration.

4. BEST SHIFT TABLES FOR EACH EQUIPMENT MODEL

The collection of the tables found for a project contains, for each equipment model that has a shift table name for this project entered in the metadata for this project, a list with the shift tables found. For each equipment model that has shift logging, the best shift table found according to the hierarchy (like L tables) is selected and entered in the standard configuration. If no shift tables were found for an equipment model, no shift table is entered for this equipment model in the standard configuration.

Configuration of the provider

A provider is a driver for SQL Server, which allows it access to other database systems. Similar to the drivers in an HMI/SCADA system such as zenon, the driver must be configured in order for communication to work. The linked servers of the following drivers can be addressed by the SQL connector:

- ▶ `SQLNCLI` for linked SQL server
- ▶ `OraOLEDB.Oracle` for linked Oracle server
- ▶ `MSDASQL` for linked ODBC server

You can find the providers in the SQL Server Management Studio in the **Object Explorer**; the path is: *[linked instance] -> Server Objects -> Linked Servers -> Providers*

Settings that are made in the properties of the provider are only applicable for the instance under which the provider is entered in the **Object Explorer**.

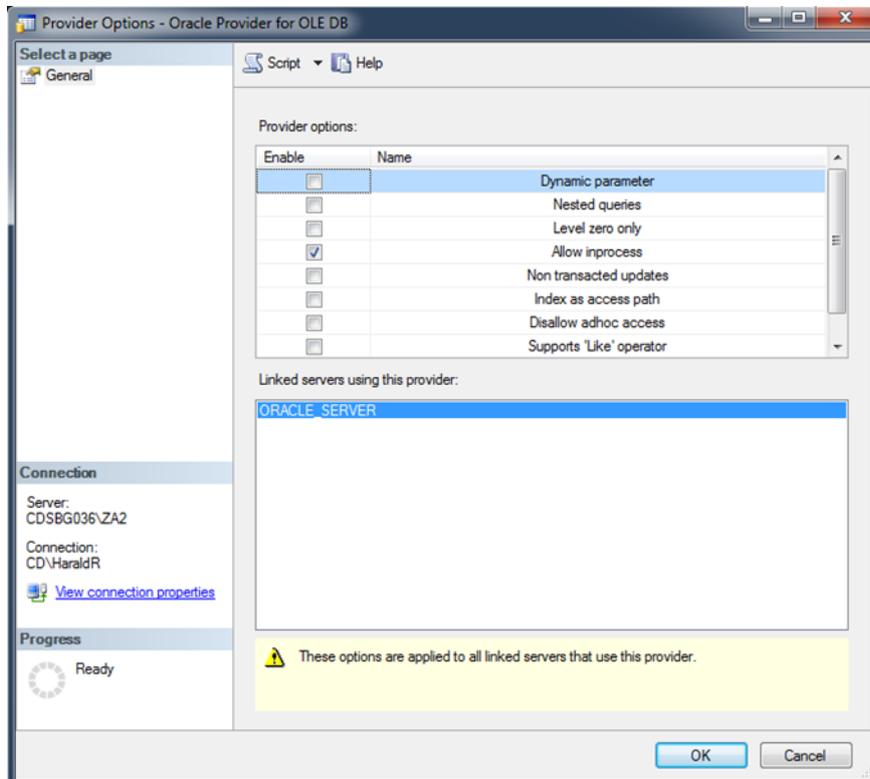
"SQLNCLI" FOR LINKED SQL SERVER

This provider can be left with the default settings.

Addressing the tables: `[linked server name].[database name].[scheme name].[table name]`

"ORAOLEDB.ORACLE" FOR LINKED ORACLE SERVER

The checkboxes in the properties of this provider must be as in the screenshot below:



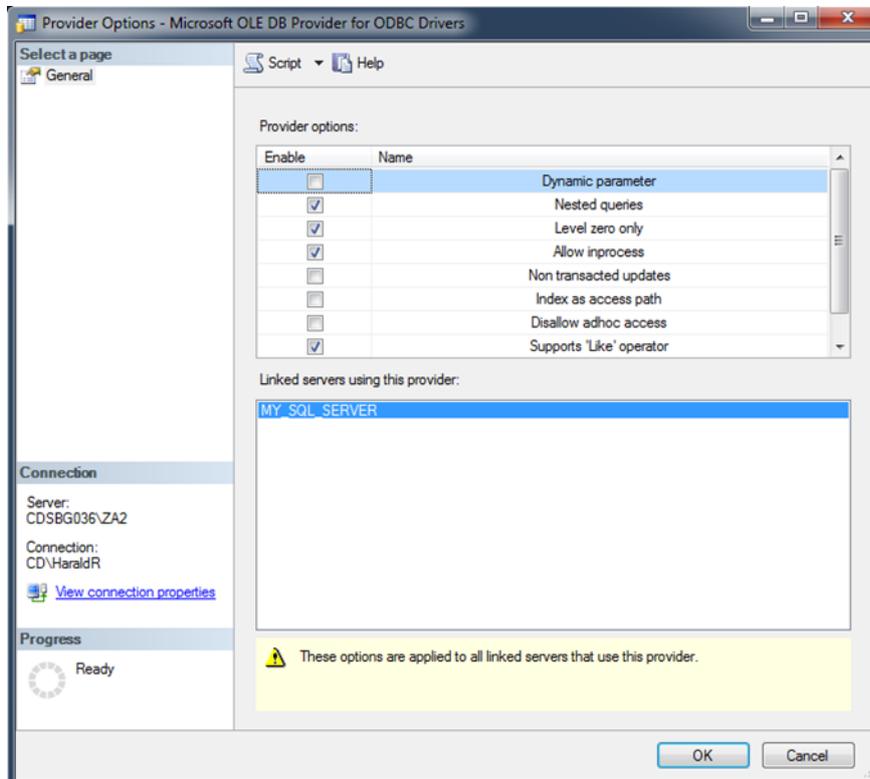
Addressing the tables: `[linked server name].[scheme name].[table name]`

Note: To be able to configure an Oracle provider, the oracle database client software must already be installed.

In addition to the provider, there must also be an entry for the database server in the configuration of the Oracle client. The configuration of this depends on the version of the Oracle client used. You can find information on this in the documentation of the Oracle client used.

"MSDASQL" FOR LINKED ODBC SERVER

The checkboxes in the properties of this provider must be as in the screenshot below:



Addressing the tables: `[linked server name]...[table name]`

If one of these settings is changed, all linked servers that use this provider must be recreated in order for the changes to be accepted.

Note: The data source (DSN or ODBC connection string) must be configured so that only one database is used on the target database system. You can read how a database client for ODBC can be configured as a system DSN in the documentation of the database client used.

11.6.3 Create 3rd party database connector

Third-party database connectors can also be configured in ZAMS. To do this, tables from third-party databases are imported as an archive and incorporated into reports as archives, along the same lines as zenon archives and emulated archives.

ZAMS amends the metadata and user-defined functions (UDFs) in the database accordingly when configuring the metadata. Only the metadata necessary for the creation of the UDF is saved in the

database. No usage data at all is stored in the Analyzer database. The usage data is read directly from the source table each time there is a read request for an import archive.

In order to be able to create a **3rd party database connector**, there must be a connection to an Analyzer server with a valid license.

CREATE CONNECTOR

To create a **3rd party database connector**:

1. Select, in the **SQL server** menu, the **3rd party database connector** command
2. Confirm the selection by clicking **OK**. The dialog for the **selection of available databases** (on page 381) is opened.
3. Select the desired databases.
4. The dialog for configuration of the **archives for the 3rd party database connector** is opened.
5. Configure the archives with the wizard (on page 387) or manually (on page 401).
6. The archives are displayed in the **archives for the 3rd party database connector** and can be edited.
7. Confirm the dialog by clicking **OK**. The archives are created and can be used in reports.



Information

ZAMS can search for importable tables in:

- ▶ Databases on the currently-connected SQL Server instance.
- ▶ Databases on linked SQL Server instances.
- ▶ Via ODBC-linked databases. These are subject to limitations.

Note: The configuration of the ODBC driver for SQL Server is described in the **Configuration of the provider** (on page 377) chapter.

*The metadata for import archives is stored in new metadata databases. **Attention:** With linked SQL Servers, read access to the "**master**" database is required in order to list the databases on the linked SQL Server. With all databases on SQL Server instances, read access to the system views is required in order to be able to recognize the columns and their data types.*

LIMITATIONS FOR DATA FROM ODBC SOURCES

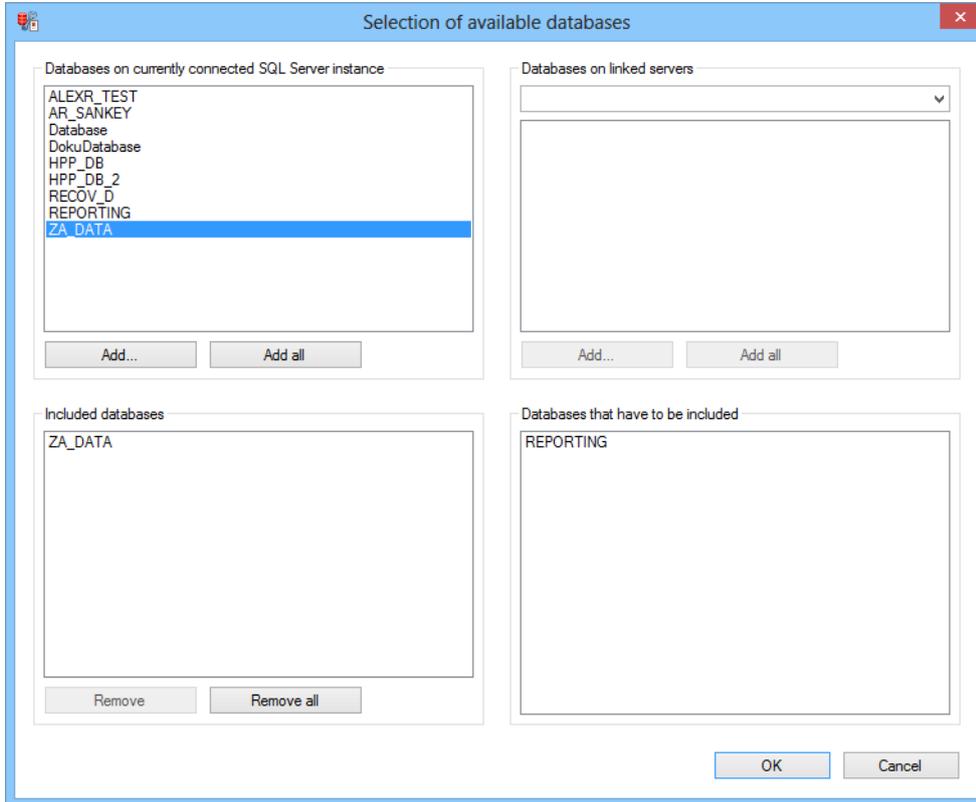
The following limitations apply to data that is incorporated via ODBC:

- ▶ The data type of the variables is always defined by the data type of the value column. This concerns the value column of the table for `Variable identification column` and `value column` and the value column of the variables for `One value column` for each variable. These cannot be selected in the dialog.
- ▶ An error is reported if the following conditions are applicable:
 - Data for an archive whose source table is connected via ODBC is queried.
 - The table is a `variable identification column` and `value column` table.
 - The variables in the archive have different data types.
- ▶ The value range is limited for numeric values:
 - All values that are greater than 10^{10} are processed as 10^{10} .
 - All values that are in the range of $-(10^{10})$ to 10^{10} are processed as 0.
 - All values that are less than $-(10^{10})$ are processed as $-(10^{10})$.

Selection of available databases

In the dialog for the `Selection of available databases`, the databases that are to be searched for importable tables are selected. These can then be configured in the `Archives for the 3rd party database connector` dialog.

SELECTION OF AVAILABLE DATABASES



| Parameters | Description |
|---|--|
| Databases on currently connected SQL Server instance | Display of databases on the currently-connected SQL server instance. Multiple selection is possible. Selected databases are added to the Included databases list by clicking on the Add button. |
| Add | Adds all databases selected in the list to the Included databases list. Only databases that are not already in the Included databases list or in the Databases that have to be included are added. |
| Add all | Adds all databases present in the list to the Included databases list. Only databases that are not already in the Included databases list or in the Databases that have to be included are added. |
| Databases on linked servers | <p>Selection of a linked server from a drop-down list and display of its databases in the list. Multiple selection is possible.</p> <p>Selected databases are added to the Included databases list by clicking on the Add button</p> <p>If the linked server is an ODBC server, no database can be selected. A database identification text is inserted into the list instead. This constitutes the database for this linked server.</p> <p>If there are problems with the connection to the linked ODBC servers:</p> <ul style="list-style-type: none"> ▶ Check whether the linked server has the correct system DSN and whether the correct login data has been entered. Also check the content of the system DSN. ▶ Check whether the ODBC driver for SQL servers (name: MSDASQL) has the correct settings. For the settings, see the Configuration of the provider (on page 377) chapter. |
| Add | Adds all databases selected in the list to the Included databases list. Only databases that are not already in the Included databases list or in the Databases that have to be included are added. |
| Add all | Adds all databases present in the list to the Included |

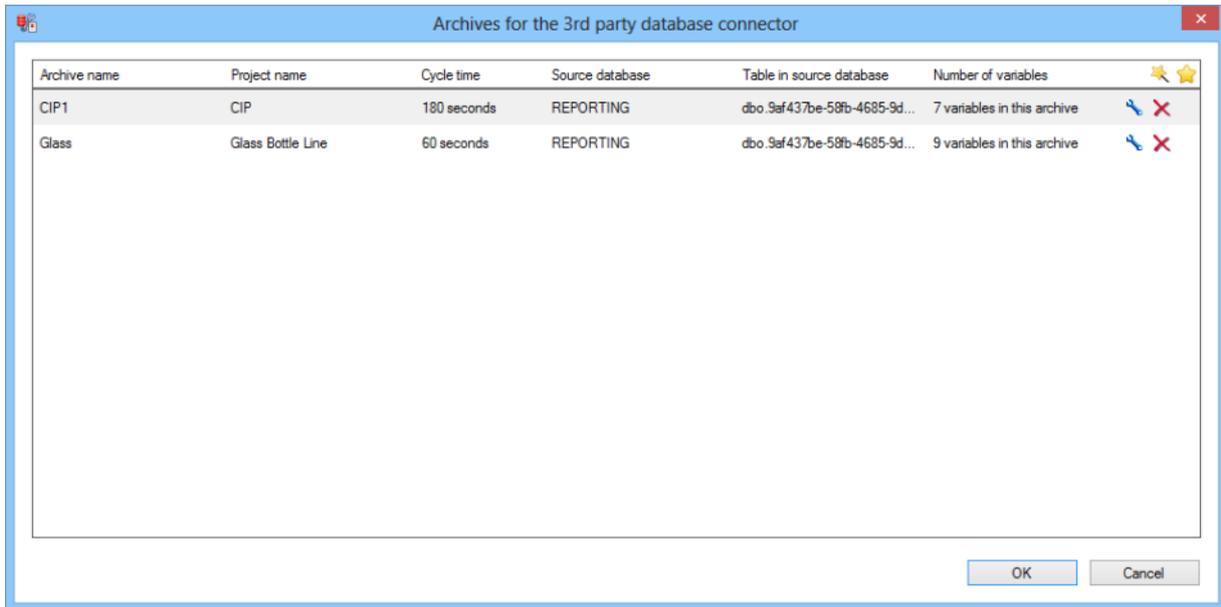
| | |
|---|--|
| | databases list. Only databases that are not already in the Included databases list or in the Databases that have to be included are added. |
| Included databases | <p>Display of all databases added. These are searched for importable tables by clicking on OK. Multiple selection is possible.</p> <p>Databases can be removed from the list by clicking on the Remove button.</p> <p>Databases that come from linked servers are shown in the syntax [Linked Server Name] [database name].</p> |
| Remove | Removes all selected databases from the list. |
| Remove all | Removes all existing databases from the list. |
| Databases that have to be included | <p>Display of all databases that are to be searched for importable tables because an existing import archive refers to them. The list is only displayed and cannot be edited.</p> <p>Databases that come from linked servers are shown in the syntax [Linked Server Name] [database name].</p> |
| OK | <p>Accepts all settings, closes the dialog, searches all selected databases for importable tables and opens the Archives for the 3rd party database connector dialog.</p> <p>An error message is shown if the Included databases and Databases that have to be included lists are empty.</p> |
| Cancel | Discards all configurations and closes the dialog. |

ARCHIVES FOR THE 3RD PARTY DATABASE CONNECTOR DIALOG

Configuration of the archives for the imported databases. Create new archives with the wizard or manually and edit existing archives.

The following symbols are used in the dialog:

- ▶ Wizard: ✨
- ▶ New: ★
- ▶ Edit: 🔑
- ▶ Delete: ✖

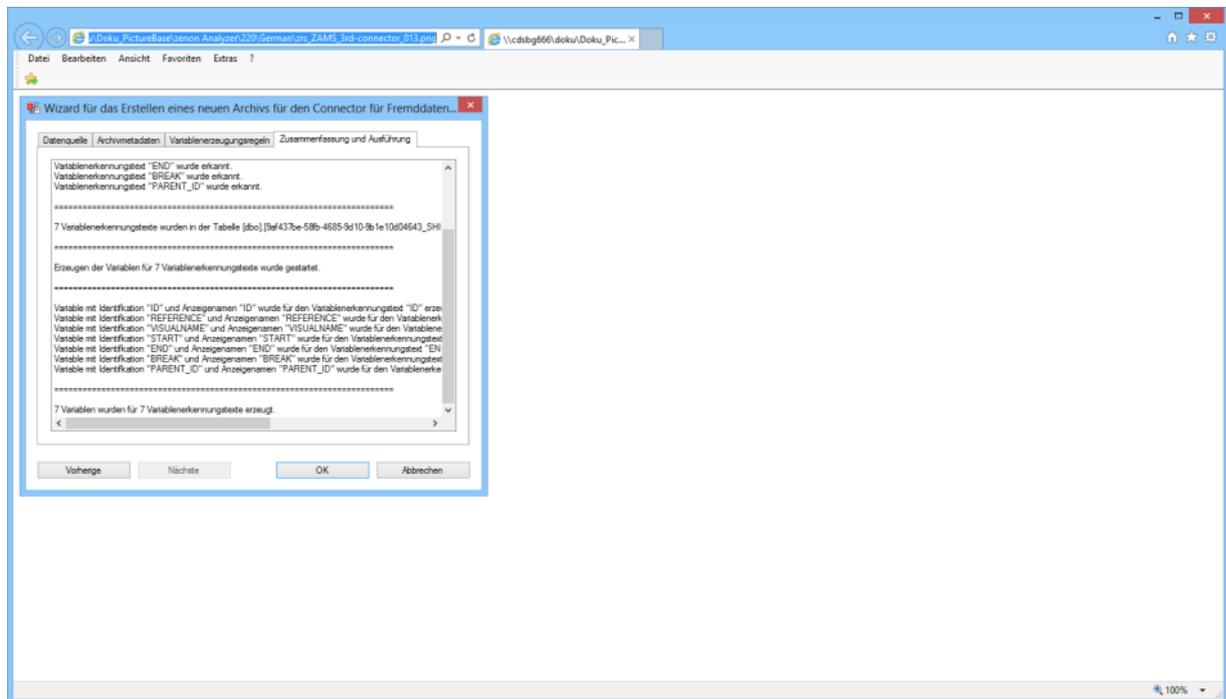


| Archive name | Project name | Cycle time | Source database | Table in source database | Number of variables | | |
|--------------|-------------------|-------------|-----------------|------------------------------|-----------------------------|---|---|
| CIP1 | CIP | 180 seconds | REPORTING | dbo.9af437be-58fb-4685-9d... | 7 variables in this archive | 🔑 | ✖ |
| Glass | Glass Bottle Line | 60 seconds | REPORTING | dbo.9af437be-58fb-4685-9d... | 9 variables in this archive | 🔑 | ✖ |

| Parameters | Description |
|--|---|
| <p>List of archives</p> | <p>Display of the configured archives with the following detailed information:</p> <ul style="list-style-type: none"> ▶ Archive name ▶ Project name ▶ Cycle time ▶ Source database ▶ Table in source database ▶ Number of variables <p>The archives are displayed in the order of their creation:</p> |
| <p>Buttons to edit the list and the archives</p> | <p>The following symbols are available for editing:</p> <p><u>Bar:</u></p> <ul style="list-style-type: none"> ▶ Wizard: Opens the wizard (on page 387) for creating an archive. Once an archive has been created, the dialog to edit an archive is automatically opened. Amend the created archive here ▶ New: Opens the dialog (on page 401) for creating an archive. <p><u>Archives:</u></p> <ul style="list-style-type: none"> ▶ Edit: Opens the dialog to edit an archive. This corresponds to the dialog (on page 401) to create an archive. However no new variables can be created. ▶ Delete: Deletes the archive without requesting confirmation. |
| <p>OK</p> | <p>Applies all settings and closes the dialog.</p> |
| <p>Cancel</p> | <p>Discards all settings and closes the dialog.</p> |

New archive with wizard

Archives, data sources and rules are established with the archive and the variables are then created automatically. These can then be amended individually.



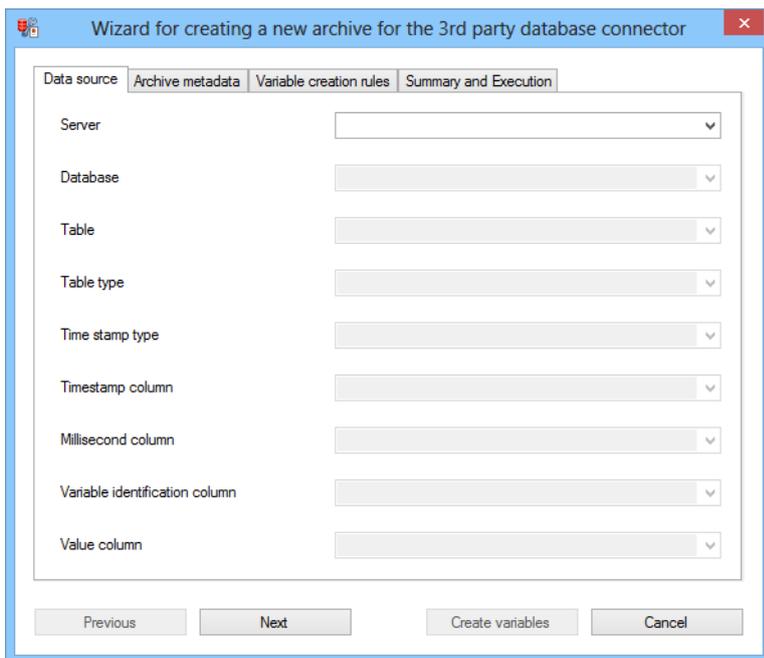
To create a new archive with the wizard:

1. Click on the symbol for the wizard in the **Archives for the 3rd party database connector** dialog.
2. Configure the tabs:
 - Data source (on page 388)
 - Archive metadata (on page 392)
 - Variable creation rules (on page 394)
3. Check the configuration in the Summary and Execution (on page 397) tab.
4. Click on Create variables.
5. The configured variables are created.
6. The dialog to create/edit an archive (on page 401) is opened.
7. Amend the automatically-created configuration as required.

8. Close the dialog.
9. The archive is displayed in the list and can be opened using the  symbol for further amendments at any time.

Data source

Configuration of the data source:



Wizard for creating a new archive for the 3rd party database connector

Archived metadata | Variable creation rules | Summary and Execution

Data source

Server

Database

Table

Table type

Time stamp type

Timestamp column

Millisecond column

Variable identification column

Value column

Previous Next Create variables Cancel

| Parameters | Description |
|-----------------|--|
| Server | <p>Selection of the database server from a drop-down list. The currently-connected server instance is identified by the suffixed note (currently connected).</p> <p>If the selection is changed during the configuration of the tab, the settings of this tab that depend on this are reset.</p> <p>The field must not be empty during validation.</p> |
| Database | <p>Selection of the database on the selected <code>server</code> from a drop-down list. All databases of the selected server are available.</p> <p>Only available if a <code>Server</code> has been selected.</p> <p>If the selection is changed during the configuration of the tab, the settings of this tab that depend on this are reset.</p> <p>The field must not be empty during validation.</p> |
| Table | <p>Selection of the source table from a drop-down list. All tables present in the selected database are available.</p> <p>Only available if a <code>Database</code> was selected.</p> <p>If the selection is changed during the configuration of the tab, the settings of this tab that depend on this are reset.</p> <p>The field must not be empty during validation.</p> |
| Table type | <p>Selection of the table type from a drop-down list. Available are:</p> <ul style="list-style-type: none"> ▶ Variable identification column and value column: flat list ▶ One value column for each variable: pivoted <p>Only available if a <code>table</code> was selected.</p> <p>If the selection is changed during the configuration of the tab, the settings of this tab that depend on this are reset.</p> <p>The field must not be empty during validation.</p> |
| Time stamp type | <p>Selection of the time stamp from the drop-down list. Available</p> |

are:

- ▶ UTC timestamp object
- ▶ Timestamp object in server local time
- ▶ Unixtime
- ▶ Unixtime and milliseconds in two columns
- ▶ Unixtime and milliseconds in one column

Only available if a `table` was selected.

If the selection is changed during the configuration of the tab, the settings of this tab that depend on this are reset.

The field must not be empty during validation.

| | |
|--------------------------------|--|
| Timestamp column | <p>Selection of the time stamp column from a drop-down list. All columns of the selected table whose data type is permitted for the current time stamp setting are available.</p> <p>Only available if a table was selected.</p> <p>The field must not be empty during validation.</p> |
| Millisecond column | <p>Selection of the millisecond column from a drop-down list. All columns of the selected table whose data type is permitted for a millisecond column are available.</p> <p>Only available if a table has been selected and Unix time with milliseconds has been selected as a time stamp type.</p> <p>The field must not be empty during validation if it is active.</p> |
| Variable identification column | <p>Selection of Variable identification column from drop-down list. All columns of the selected table whose data type is permitted for a variable identification column are available.</p> <p>Only available if a table has been selected and Variable identification column and value column has been selected as a table type.</p> <p>The field must not be empty during validation if it is active.</p> |
| Value column | <p>Selection of value column from drop-down list. All columns of the selected table whose data type is permitted for a value column are available.</p> <p>Only available if a table has been selected and Variable identification column and value column has been selected as a table type.</p> <p>The field must not be empty during validation if it is active.</p> |

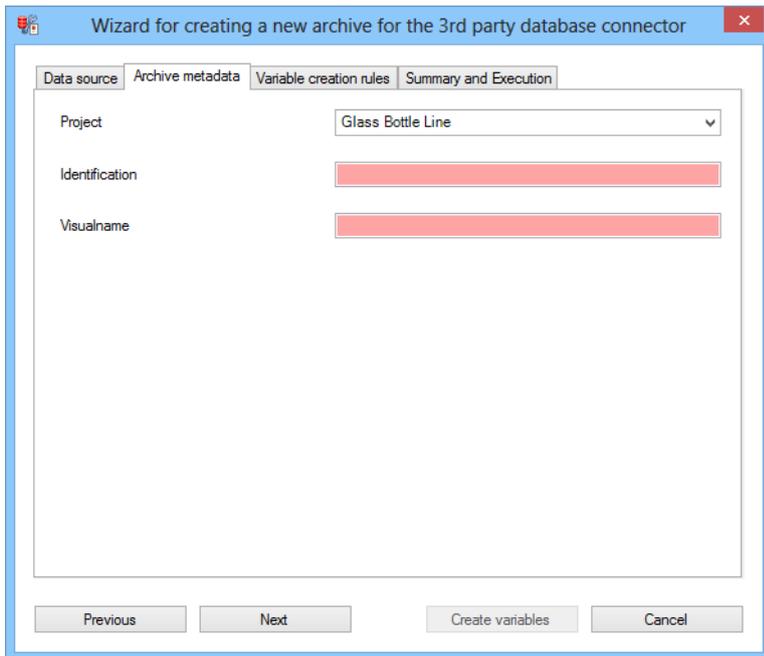
NAVIGATION

| Button | Description |
|----------|--|
| Previous | <p>Switches to the previous tab.</p> <p>Inactive in the first tab.</p> |

| | |
|-------------------------|---|
| Next | Switches to the next tab. Inactive in the last tab. |
| Create variables | Starts variable creation. Only active in the last tab and only if no validation error has been established. If validation errors are found, these are displayed and the button remains inactive. Once the variable has been created, the button changes to OK . The creation of the archive can thus be started. |
| Cancel | Discards all inputs and closes the dialog. |

Archive metadata

Configuration of the archive metadata:



The screenshot shows a dialog box titled "Wizard for creating a new archive for the 3rd party database connector". The dialog has four tabs: "Data source", "Archive metadata", "Variable creation rules", and "Summary and Execution". The "Archive metadata" tab is active. It contains three input fields: "Project" (a dropdown menu with "Glass Bottle Line" selected), "Identification" (a red text box), and "Visualname" (a red text box). At the bottom of the dialog, there are four buttons: "Previous", "Next", "Create variables", and "Cancel".

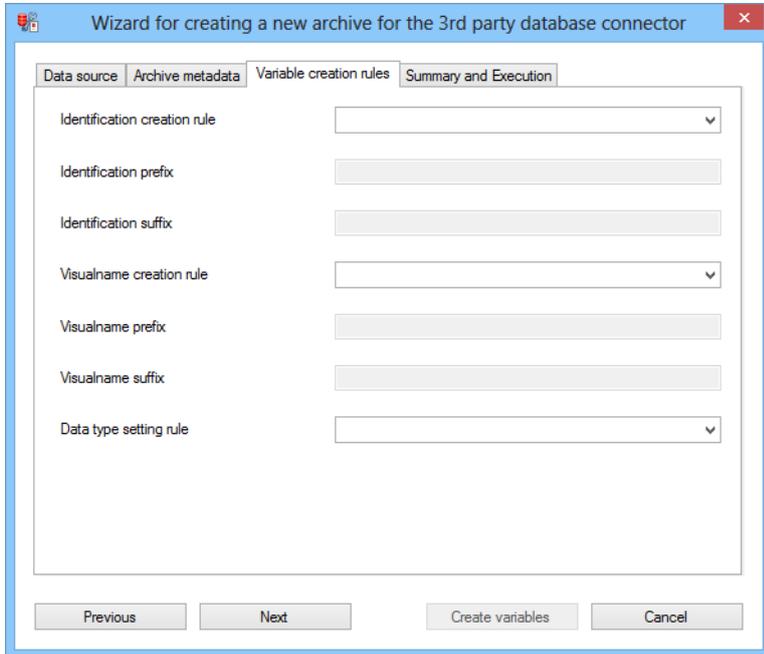
| Parameters | Description |
|------------|---|
| Project | Project that is assigned to the archive. Selection from drop-down list. |
| Reference | Archive reference. This must be unique for all archives within the project. The field must not be empty during validation. |
| Visualname | Visual name for the archive. This must be unique for all archives within the project. The field must not be empty during validation. |

NAVIGATION

| Button | Description |
|-------------------------|---|
| Previous | Switches to the previous tab. Inactive in the first tab. |
| Next | Switches to the next tab. Inactive in the last tab. |
| Create variables | Starts variable creation. Only active in the last tab and only if no validation error has been established. If validation errors are found, these are displayed and the button remains inactive. Once the variable has been created, the button changes to OK . The creation of the archive can thus be started. |
| Cancel | Discards all inputs and closes the dialog. |

Variable creation rules

Configuration of the rules for the creation of variables:



The screenshot shows a wizard window titled "Wizard for creating a new archive for the 3rd party database connector". The window has four tabs: "Data source", "Archive metadata", "Variable creation rules" (which is selected), and "Summary and Execution". The "Variable creation rules" tab contains the following configuration options:

| | |
|------------------------------|----------------------|
| Identification creation rule | <input type="text"/> |
| Identification prefix | <input type="text"/> |
| Identification suffix | <input type="text"/> |
| Visualname creation rule | <input type="text"/> |
| Visualname prefix | <input type="text"/> |
| Visualname suffix | <input type="text"/> |
| Data type setting rule | <input type="text"/> |

At the bottom of the wizard, there are four buttons: "Previous", "Next", "Create variables", and "Cancel".

| Parameters | Description |
|--|--|
| Identification creation rules | <p>Configuration of how the variable reference is created.</p> <p>Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Variable identification text ▶ Variable identification text with prefix ▶ Variable identification text with suffix ▶ Variable identification text with prefix and suffix <p>The field must not be empty during validation.</p> |
| Identification prefix | <p>Entry of a prefix for the variable reference.</p> <p>Only available if one of the reference creation variants with a prefix was selected.</p> <p>The field must not be empty during validation if it is active.</p> |
| Identification suffix | <p>Entry of a suffix for the variable reference.</p> <p>Only available if one of the reference creation variants with a suffix was selected.</p> <p>The field must not be empty during validation if it is active.</p> |
| Rules for the creation of visual names | <p>Configuration of how the visual name of the variables is generated.</p> <p>Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Variable identification text ▶ Variable identification text with prefix ▶ Variable identification text with suffix ▶ Variable identification text with prefix and suffix <p>The field must not be empty during validation.</p> |
| Visualname prefix | <p>Entry of a prefix for the visual names.</p> <p>Only available if one of the visual name creation variants with a</p> |

| | |
|------------------------|---|
| | <p>prefix was selected.</p> <p>The field must not be empty during validation if it is active.</p> |
| Visualname suffix | <p>Entry of a prefix for the visual names.</p> <p>Only available if one of the visual name creation variants with a prefix was selected.</p> <p>The field must not be empty during validation if it is active.</p> |
| Data type setting rule | <p>Configuration of the rule to set the data type. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Always set data type to numeric ▶ Always set data type to text ▶ Recognize data type based on column data type <p>The field must not be empty during validation if it is active.</p> <p>Recommendation: In the event of doubt, select Recognize data type based on column data type for this option. You thus ensure that there is no conversion error when creating or executing the UDF.</p> |

NAVIGATION

| Button | Description |
|------------------|--|
| Previous | <p>Switches to the previous tab.</p> <p>Inactive in the first tab.</p> |
| Next | <p>Switches to the next tab.</p> <p>Inactive in the last tab.</p> |
| Create variables | <p>Starts variable creation.</p> <p>Only active in the last tab and only if no validation error has been established. If validation errors are found, these are displayed and the button remains inactive.</p> <p>Once the variable has been created, the button changes to ok. The creation of the archive can thus be started.</p> |

| | |
|--------|--|
| Cancel | Discards all inputs and closes the dialog. |
|--------|--|

Summary and Execution

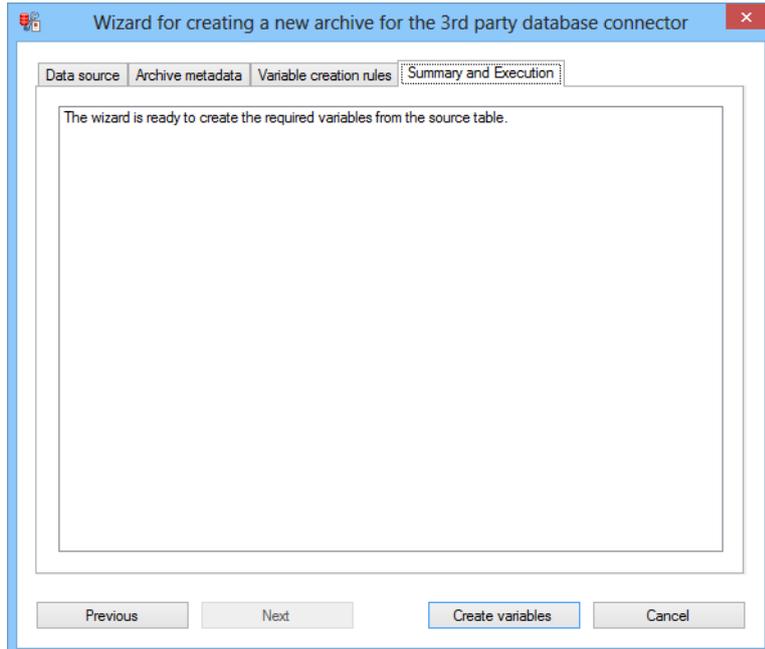
Display of the configuration and creation of an archive. When switching to this tab, the inputs in the other tabs are validated.

If the configuration is free of errors, then:

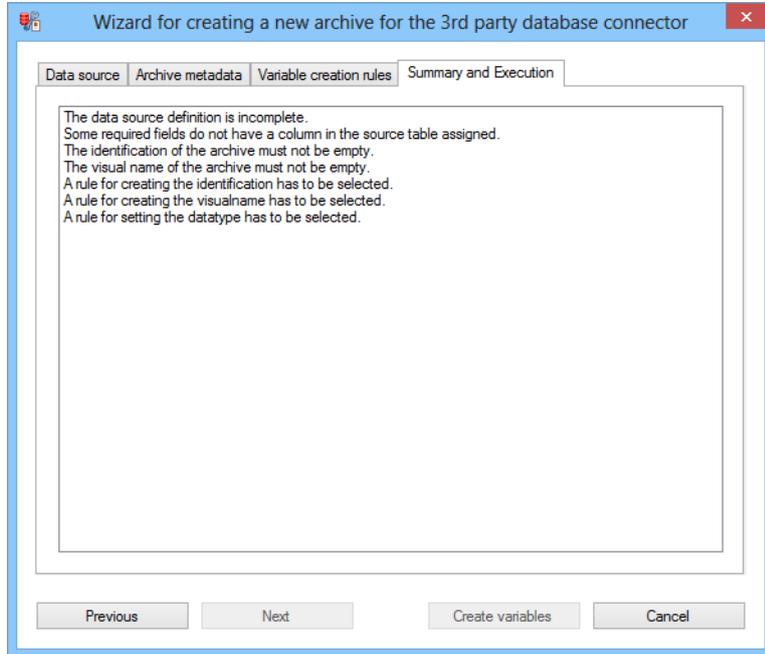
- ▶ The **Create variables** button is active
- ▶ Variables can be generated and an archive can be created

If errors are found, then:

- ▶ The **Create variables** button is inactive
- ▶ Configuration errors are displayed in the window



CONFIGURATION ERROR FOUND

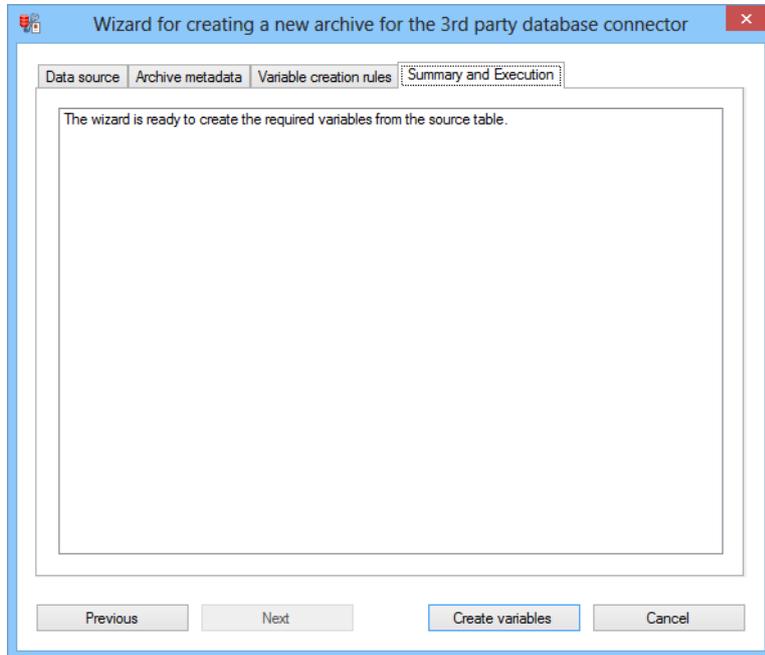


| Parameters | Description |
|------------------------------|---|
| Display of the configuration | Shows the result of the validation. Errors that have been found are listed. |
| Previous | Switches to the previous tab. |
| Next | Inactive. |
| Create variables | Inactive as long as there are configuration errors. |
| Cancel | Discards all inputs and closes the dialog. |

CREATE VARIABLES AND ARCHIVE

If configuration has been carried out without errors, then the variables and then the archive can be created.

CREATE VARIABLES



| Parameters | Description |
|-------------------------------------|--|
| Display of the configuration | Shows the result of the validation. |
| Previous | Switches to the previous tab. |
| Next | Inactive. |
| Create variables | Starts variable creation. Only active if no validation errors have been established. Once the variable has been created, the button changes to OK. |
| Cancel | Discards all inputs and closes the dialog. |

Error when creating the variables:

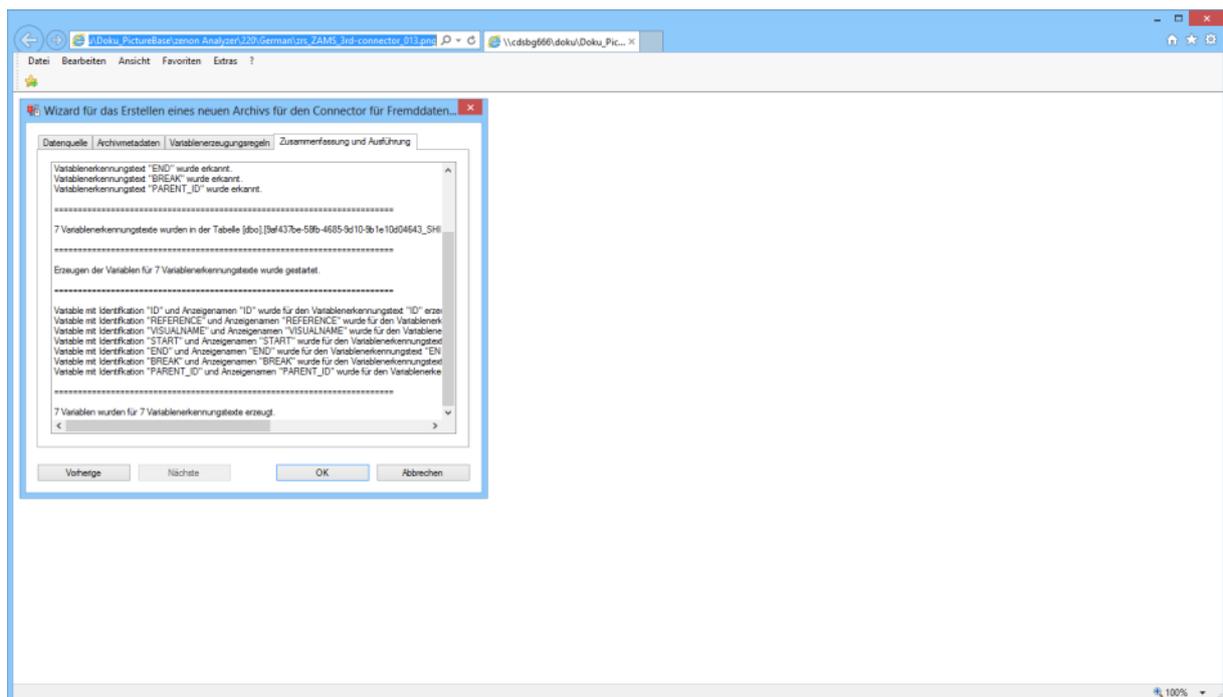
1. If `Variable identification column` and `value column (flat list)` has been selected as a `Table type`, a scan of the complete table is necessary in order to receive all identification texts. This can take some time. There is thus a question before the scan, asking whether the scan should be carried out. If the user says no, the creation of the variables is canceled.
2. All available variable identification texts are obtained. With a flat list (`Variable identification column` and `value column`), this is all different content of the variable

identification column. With a pivoted table (One value column for each variable), this is all column names after the time stamp columns. In doing so, the data type for each variable identification type is established on the basis of the column data type. If the rule is defined as Always set data type to numeric and a column data type does not allow conversion to numerical, the identification text is skipped.

3. The procedure is canceled if no usable identification text is found.
4. Depending on the identification text found, a variable is created in accordance with the rules defined in the **Variable creation rules** (on page 394) tab. In doing so, it is ensured that the **Identification** and the **Visualname** are unique.
5. If the procedure has been completed successfully, the **create variables** button changes to **OK**. All options in all tabs are deactivated and can no longer be modified.
6. Any error leads to the procedure being canceled.

CREATE ARCHIVE

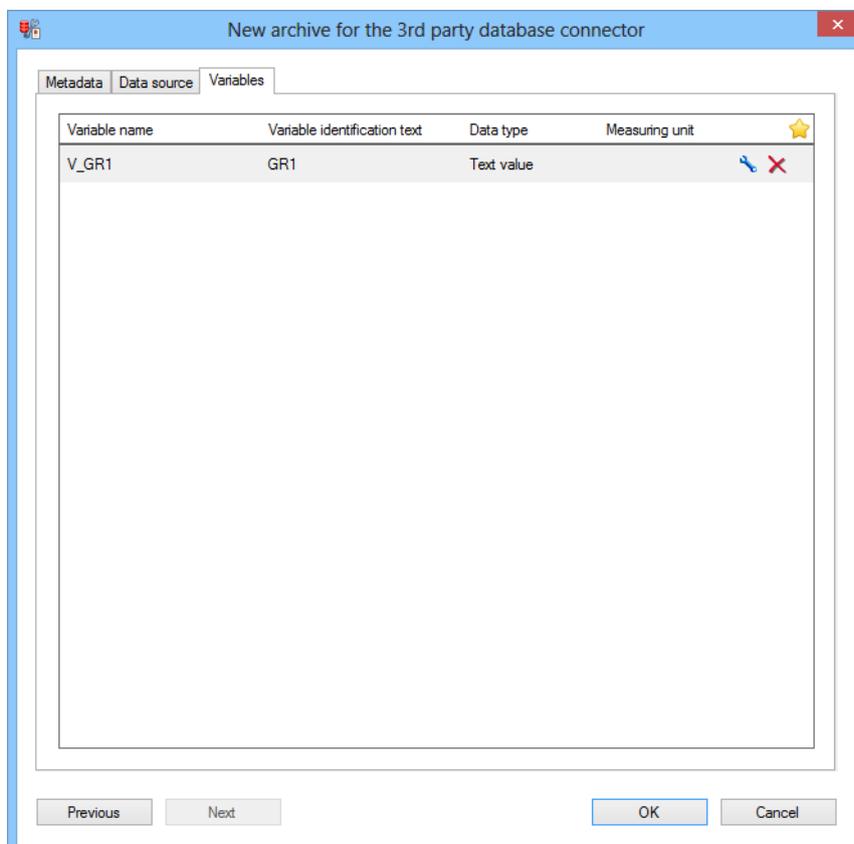
The archive can be created once the variables have been created.



| Parameters | Description |
|------------------------------|---|
| Display of variable creation | Lists all created variables. |
| Previous | Switches to the previous tab. |
| Next | Inactive. |
| OK | Creates the configured archive and closes the dialog. |
| Cancel | Discards all inputs and closes the dialog. |

Create or edit archive manually

With this dialog, metadata, data sources and variables are configured manually



This dialog is offered when:

- ▶ Creating a new archive

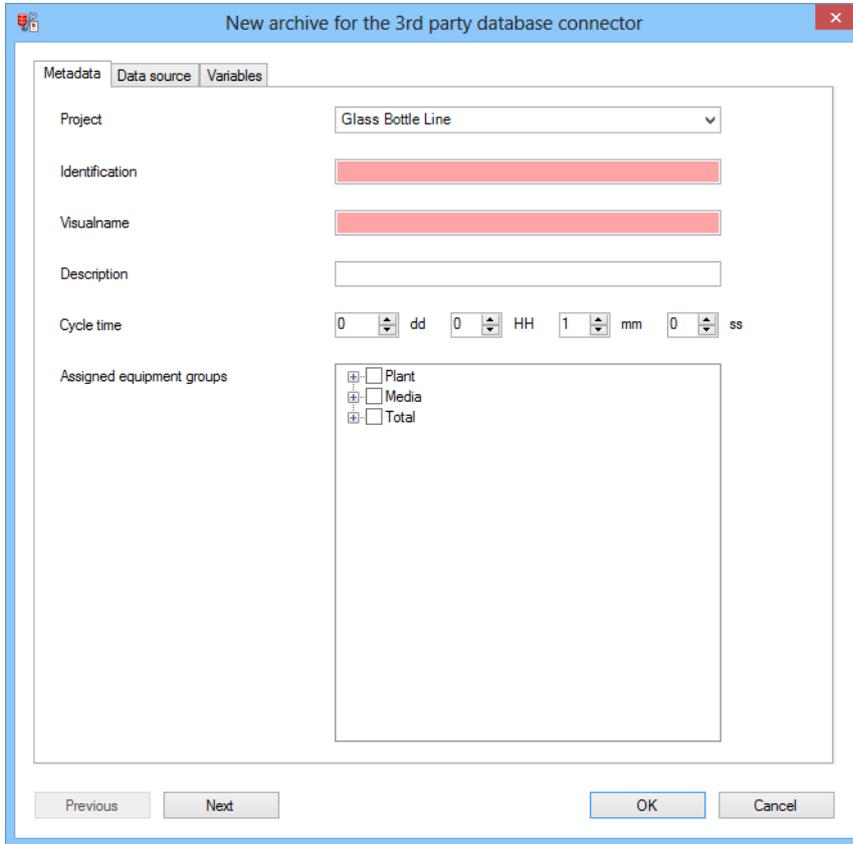
- ▶ Editing an existing archive
- ▶ Amending an archive that has been created with the wizard

To create or edit an archive manually:

1. In the **Archives for the 3rd party database connector**, click on the symbol for **New archive**.
2. Configure the tabs:
 - **Metadata** (on page 403)
 - **Data source** (on page 405)
 - **Variables** (on page 409)
3. Close the dialog.
4. The archive is displayed in the list and can be opened using the **Edit** symbol for further amendments at any time.

Metadata

Configuration of the metadata:



The screenshot shows a dialog box titled "New archive for the 3rd party database connector" with a close button (X) in the top right corner. The dialog has three tabs: "Metadata" (selected), "Data source", and "Variables".

Under the "Metadata" tab, the following fields are visible:

- Project:** A dropdown menu with "Glass Bottle Line" selected.
- Identification:** A red rectangular input field.
- Visualname:** A red rectangular input field.
- Description:** An empty text input field.
- Cycle time:** A time selection control with four spinners: "0" dd, "0" HH, "1" mm, and "0" ss.
- Assigned equipment groups:** A list box containing three items: "Plant", "Media", and "Total", each with a plus sign icon to its left.

At the bottom of the dialog, there are four buttons: "Previous", "Next", "OK", and "Cancel".

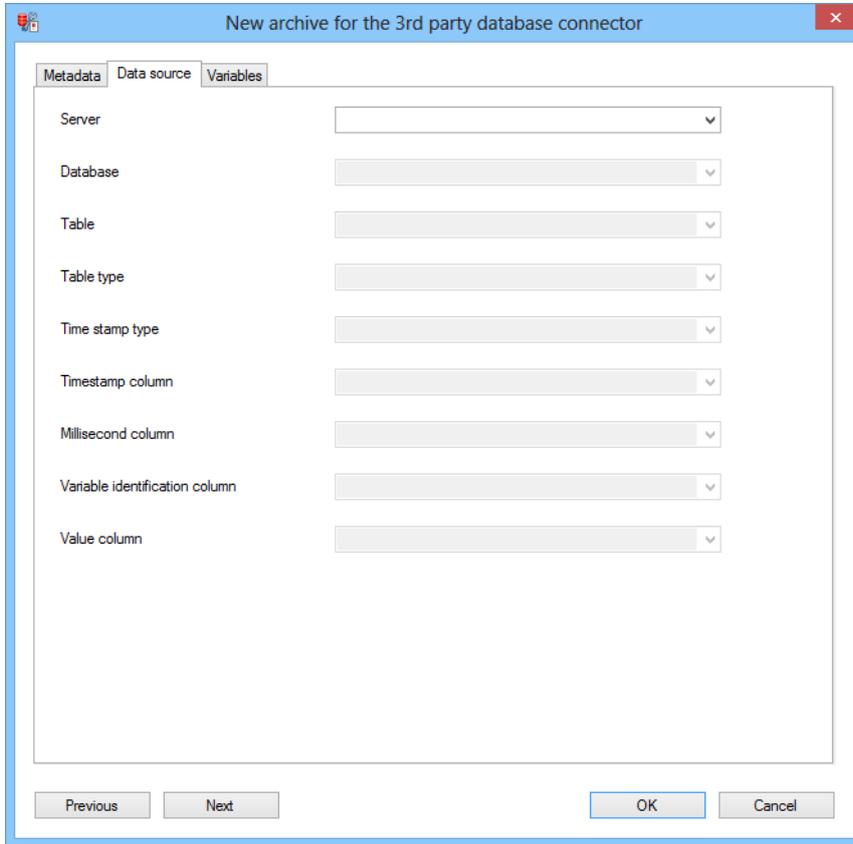
| Parameters | Description |
|--------------------------|--|
| Project | <p>Project that is assigned to the archive. Selection from drop-down list.</p> <p>Only available if a new archive is created.</p> <p>If the selection is changed, all variables that have already been created in the archive are deleted.</p> |
| Reference | <p>Archive reference. This must be unique for all archives within the project.</p> <p>Only available if a new archive is created.</p> <p>The field must not be empty during validation.</p> |
| Visualname | <p>Visual name for the archive. This must be unique for all archives within the project.</p> <p>The field must not be empty during validation.</p> |
| Description | Descriptive text for the archive. |
| Cycle time | Configuration of the cycle time of the archive. |
| Assigned equipment group | Display of all available equipment models as a tree with checkboxes. Selection by activating the checkboxes in front of the desired equipment groups. |

NAVIGATION

| Button | Description |
|----------|---|
| Previous | <p>Switches to the previous tab.</p> <p>Inactive in the first tab.</p> |
| Next | <p>Switches to the next tab.</p> <p>Inactive in the last tab.</p> |
| OK | <p>Closes the dialog and creates the archive.</p> <p>If validation errors are established, the process is canceled and a message with the errors that have been established is shown.</p> |
| Cancel | Discards all inputs and closes the dialog. |

Data source

Configuration of the data source:



The screenshot shows a dialog box titled "New archive for the 3rd party database connector" with a close button (X) in the top right corner. The dialog has three tabs: "Metadata", "Data source", and "Variables". The "Data source" tab is currently selected. It contains a list of configuration fields, each with a dropdown arrow:

- Server
- Database
- Table
- Table type
- Time stamp type
- Timestamp column
- Millisecond column
- Variable identification column
- Value column

At the bottom of the dialog, there are four buttons: "Previous", "Next", "OK", and "Cancel".

| Parameters | Description |
|------------|--|
| Server | <p>Selection of the database server from a drop-down list. The currently-connected server instance is identified by the suffixed note (currently connected).</p> <p>If the selection is changed during the configuration of the tab, the settings of this tab that depend on this are reset. And all created variables are deleted.</p> <p>The field must not be empty during validation.</p> |
| Database | <p>Selection of the database on the selected server from a drop-down list. All databases of the selected server are available.</p> <p>Only available if a Server has been selected.</p> <p>If the selection is changed during the configuration of the tab, the settings of this tab that depend on this are reset. And all created variables are deleted.</p> <p>The field must not be empty during validation.</p> |
| Table | <p>Selection of the source table from a drop-down list. All tables present in the selected database are available.</p> <p>Only available if a Database was selected.</p> <p>If the selection is changed during the configuration of the tab, the settings of this tab that depend on this are reset. And all created variables are deleted.</p> <p>The field must not be empty during validation.</p> |
| Table type | <p>Selection of the table type from a drop-down list. Available are:</p> <ul style="list-style-type: none"> ▶ Variable identification column and value column: flat list ▶ One value column for each variable: pivoting <p>Only available if a Table was selected.</p> <p>If the selection is changed during the configuration of the tab, the settings of this tab that depend on this are reset. And all</p> |

| | |
|--|---|
| | <p>created variables are deleted.</p> <p>The field must not be empty during validation.</p> |
|--|---|

| | |
|--------------------------------|---|
| Time stamp type | <p>Selection of the time stamp from the drop-down list. Available are:</p> <ul style="list-style-type: none"> ▶ UTC timestamp object ▶ Timestamp object in server local time ▶ Unixtime ▶ Unixtime and milliseconds in two columns ▶ Unixtime and milliseconds in one column <p>Only available if a <code>Table</code> was selected.</p> <p>If the selection is changed during the configuration of the tab, the settings of this tab that depend on this are reset.</p> <p>The field must not be empty during validation.</p> |
| Timestamp column | <p>Selection of the time stamp column from a drop-down list. All columns of the selected table whose data type is permitted for the current time stamp setting are available.</p> <p>Only available if a <code>Table</code> was selected.</p> <p>The field must not be empty during validation.</p> |
| Millisecond column | <p>Selection of the millisecond column from a drop-down list. All columns of the selected table whose data type is permitted for a millisecond column are available.</p> <p>Only available if a <code>table</code> has been selected and <code>Unix time with milliseconds</code> has been selected as a <code>time stamp type</code>.</p> <p>The field must not be empty during validation if it is active.</p> |
| Variable identification column | <p>Selection of <code>Variable identification</code> column from drop-down list. All columns of the selected table whose data type is permitted for a variable identification column are available.</p> <p>Only available if a <code>table</code> has been selected and <code>Variable identification column</code> and <code>value column</code> has been selected as a <code>table type</code>.</p> |

| | |
|--------------|--|
| | The field must not be empty during validation if it is active. |
| Value column | <p>Selection of value column from drop-down list. All columns of the selected table whose data type is permitted for a value column are available.</p> <p>Only available if a table has been selected and Variable identification column and value column has been selected as a table type.</p> <p>The field must not be empty during validation if it is active.</p> |

NAVIGATION

| Button | Description |
|----------|---|
| Previous | Switches to the previous tab. Inactive in the first tab. |
| Next | Switches to the next tab. Inactive in the last tab. |
| OK | <p>Closes the dialog and creates the archive.</p> <p>If validation errors are established, the process is canceled and a message with the errors that have been established is shown.</p> |
| Cancel | Discards all inputs and closes the dialog. |

Variables

Configuration of the variables.

The following symbols are used in the dialog:

- ▶ New: 
- ▶ Edit: 

► Delete: ✕

New archive for the 3rd party database connector

Metadata Data source Variables

| Variable name | Variable identification text | Data type | Measuring unit | |
|---------------|------------------------------|------------|----------------|---|
| V_GR1 | GR1 | Text value | |   |

Previous Next OK Cancel

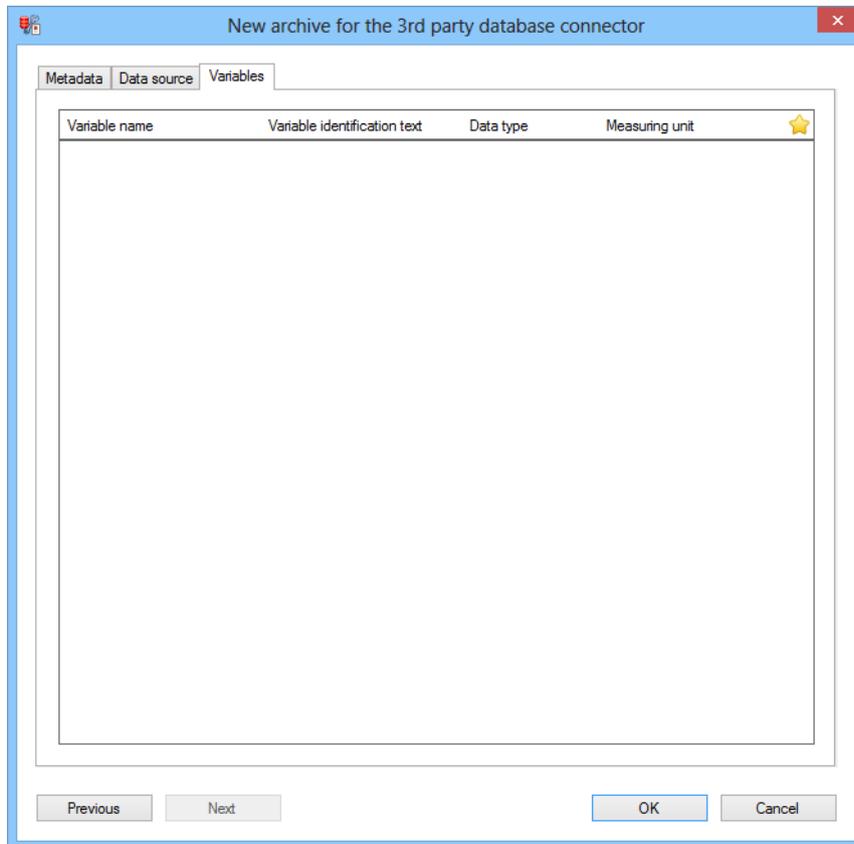
| Parameters | Description |
|--|---|
| List of variables | <p>Display of the configured variables with the following detailed information:</p> <ul style="list-style-type: none"> ▶ Variable name ▶ Variable identification text ▶ Data type ▶ Measuring unit <p>The variables are displayed in the order in which they were created:</p> |
| Buttons to edit the list and the variables | <p>The following symbols are available for editing:</p> <p><u>Bar:</u></p> <ul style="list-style-type: none"> ▶ New: Opens the dialog (on page 401) to create a variable. Only active if variables could have been created due to the configuration. To do this: <ul style="list-style-type: none"> - A project must have been selected - The data source definition must be complete - With the <code>pivoted</code> table type, at least one variable identification text must be available <p><u>Variables:</u></p> <ul style="list-style-type: none"> ▶ Edit: Opens the dialog to edit a variable. This corresponds to the dialog to create a variable. However no new variables can be created. ▶ Delete: Deletes the variable from the list without confirmation. |

NAVIGATION

| Button | Description |
|----------|--|
| Previous | Switches to the previous tab. Inactive in the first tab. |
| Next | Switches to the next tab. Inactive in the last tab. |
| OK | <p>Closes the dialog and creates the archive.</p> <p>If validation errors are established, the process is canceled and a message with the errors that have been established is</p> |

| | |
|---------------|--|
| | shown. |
| Cancel | Discards all inputs and closes the dialog. |

CREATE VARIABLES



To create a new variable:

1. Click on the **New** button (star).
2. The dialog to create/edit variables is opened.
3. Configure the tabs for:
 - Metadata (on page 413)
 - Assigned equipment groups (on page 415)
 - Assigned meanings (on page 417)
 - Status texts (on page 419)
4. Close the dialog by clicking on **OK**.

5. The variable is displayed in the list and can be edited or deleted at any time by means of the buttons.

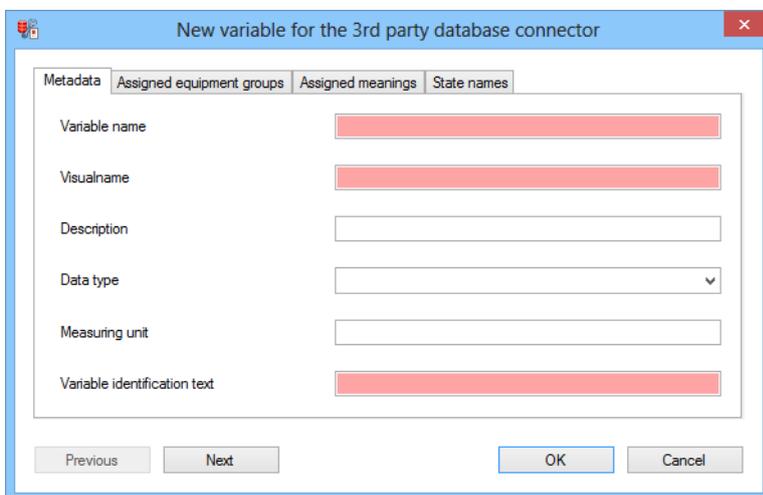
Metadata

The metadata of the variables are configured in this tab. Depending on the setting for `table type` in the configuration of the `data source` (on page 405) in the archive configuration, this tab is available in two versions:

Flat list table type: Variable identification text is entered into the field

Pivoted table type: Variable identification text is selected from the drop-down list

"FLAT LIST" TABLE TYPE



The screenshot shows a dialog box titled "New variable for the 3rd party database connector" with a close button (X) in the top right corner. The dialog has four tabs: "Metadata", "Assigned equipment groups", "Assigned meanings", and "State names". The "Metadata" tab is active. It contains the following fields:

- Variable name: A text input field with a red background.
- Visualname: A text input field with a red background.
- Description: A text input field.
- Data type: A dropdown menu.
- Measuring unit: A text input field.
- Variable identification text: A text input field with a red background.

At the bottom of the dialog, there are four buttons: "Previous", "Next", "OK", and "Cancel".

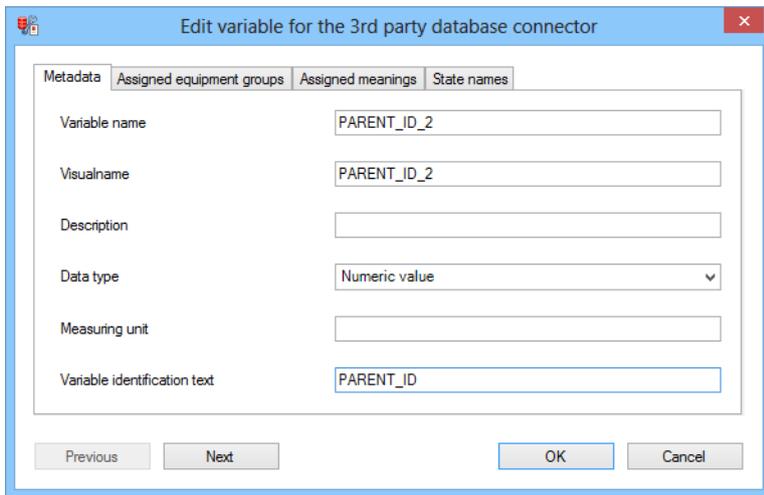
| Parameters | Description |
|------------------------------|--|
| Variable name | Name of the variable. This must be unique within the project. The field must not be empty during validation. |
| Visualname | Visual name of the variables stated. This must be unique within the project. The field must not be empty during validation. |
| Description | Descriptive text for the variables |
| Data type | Data type of the variable. Selection from drop-down list: <ul style="list-style-type: none"> ▶ Numerical value ▶ Text <p>Note: If the column data type does not allow conversion to a numerical value, then Text is preselected here and the drop-down list is deactivated.</p> The field must not be empty during validation. |
| Measuring unit | Input of the measuring unit of the variables. |
| Variable identification text | Entry of the variable identification text. The possibility depends on the table type in the configuration of the data source (on page 405) in the archive configuration: <ul style="list-style-type: none"> ▶ Flat list: Input field to enter the identification text of the variables. ▶ Pivoted: Drop-down list for the selection of the identification text. All column names of the table are available. Exceptions: Column names that have already been used for the time stamp column, millisecond column or another variable in the archive. The field must not be empty during validation. |

NAVIGATION

| Button | Description |
|----------|---|
| Previous | Switches to the previous tab. Inactive in the first tab. |
| Next | Switches to the next tab. |

| | |
|---------------|---|
| | Inactive in the last tab. |
| OK | Closes the dialog and creates the variable. If validation errors are established, the process is canceled and a message with the errors that have been established is shown. |
| Cancel | Discards all inputs and closes the dialog. |

"PIVOTED" TABLE TYPE:



Metadata | Assigned equipment groups | Assigned meanings | State names

Variable name: PARENT_ID_2

Visualname: PARENT_ID_2

Description:

Data type: Numeric value

Measuring unit:

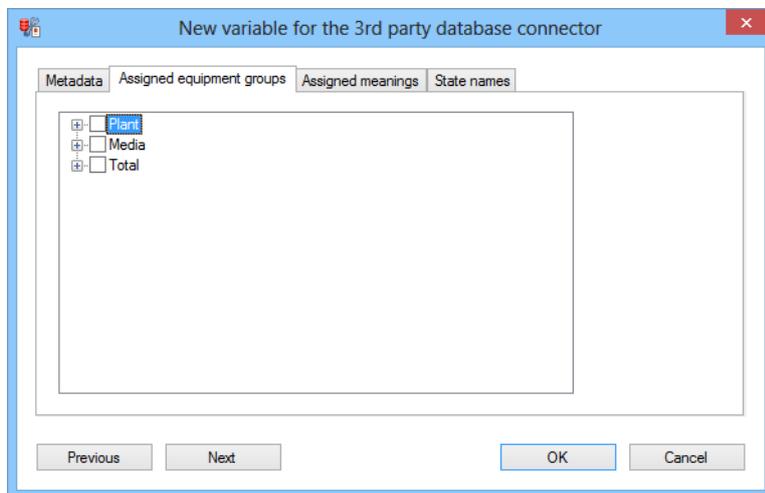
Variable identification text: PARENT_ID

Previous Next OK Cancel

Configuration as for the `flat list` table type.

Assigned equipment groups

Configuration of the equipment groups:



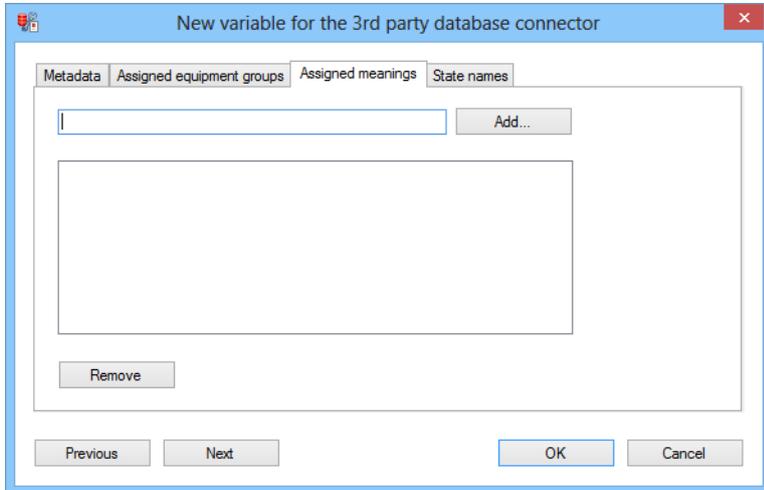
| Parameters | Description |
|--------------------------|---|
| Assigned equipment group | Display of all available equipment models as a tree with checkboxes. Selection by activating the checkboxes in front of the desired equipemnt groups. |

NAVIGATION

| Button | Description |
|-----------------|---|
| Previous | Switches to the previous tab. Inactive in the first tab. |
| Next | Switches to the next tab. Inactive in the last tab. |
| OK | Closes the dialog and creates the variable. If validation errors are established, the process is canceled and a message with the errors that have been established is shown. |
| Cancel | Discards all inputs and closes the dialog. |

Assigned meanings

Configuration of the meanings:



The screenshot shows a dialog box titled "New variable for the 3rd party database connector" with a close button (X) in the top right corner. The dialog has four tabs: "Metadata", "Assigned equipment groups", "Assigned meanings" (which is selected), and "State names".

Inside the "Assigned meanings" tab, there is a text input field at the top left. To its right is an "Add..." button. Below the input field is a large empty rectangular area, likely a list or table for assigned meanings. Below this area is a "Remove" button.

At the bottom of the dialog, there are four buttons: "Previous", "Next", "OK", and "Cancel".

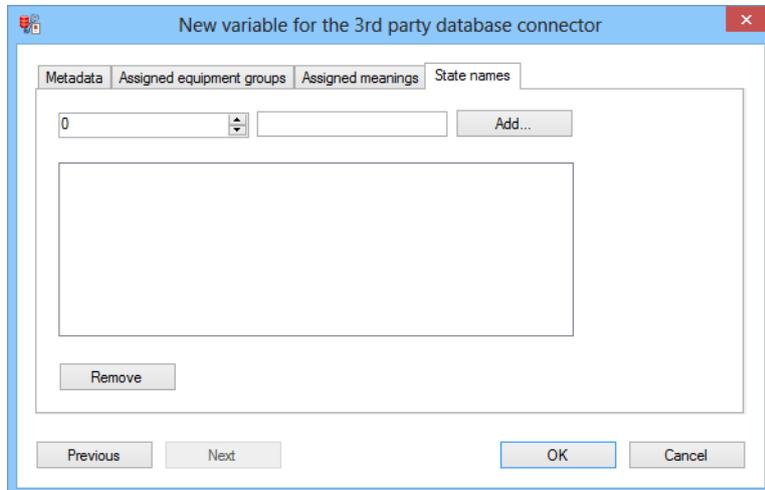
| Parameters | Description |
|---------------------------|--|
| Assigned meaning | Entry of the meaning into the field |
| Add | A click adds the entry in the Assigned meaning field to the List of assigned meanings . |
| List of assigned meanings | Displays all currently-configured meanings. Multiple selection is possible. |
| Remove | Clicking removes all selected meanings from the List of assigned meanings . |

NAVIGATION

| Button | Description |
|----------|---|
| Previous | Switches to the previous tab. Inactive in the first tab. |
| Next | Switches to the next tab. Inactive in the last tab. |
| OK | Closes the dialog and creates the variable. If validation errors are established, the process is canceled and a message with the errors that have been established is shown. |
| Cancel | Discards all inputs and closes the dialog. |

Status texts

Configuration of the status text:



| Parameters | Description |
|----------------------|---|
| Numeric entry | Entry of the value for the status. |
| Text field | Entry of status text. |
| Add | Clicking adds the entry to the List of status texts . |
| List of status texts | Displays all currently-configured status texts. Display format: [Value] : [Text] Multiple selection is possible. |
| Remove | Clicking removes all selected status texts. |

NAVIGATION

| Button | Description |
|----------|---|
| Previous | Switches to the previous tab. Inactive in the first tab. |
| Next | Switches to the next tab. Inactive in the last tab. |
| OK | Closes the dialog and creates the variable. If validation errors are established, the process is canceled and a message with the errors that have been established is shown. |
| Cancel | Discards all inputs and closes the dialog. |

Rules for issuing names

The following are not permitted for the `variable name` and `visual name`:

- ▶ Comma
- ▶ Vertical spacing
- ▶ Paragraph spacing
- ▶ Tabulators
- ▶ Space

These properties are checked on transfer and amended to the rules.

That means:

1. Commas, vertical spacing, paragraph spacing and tabulators are removed.
2. Spaces at the start and end are removed.
3. Several consecutive spaces in the text are combined into one space.
4. Spaces in the text are replaced with underscores.

Procedure

Procedure for the configuration of the third-party database connector.

1. A check is made to see if reports are currently open.
 - Open reports presents: A request for confirmation is made, asking to confirm whether the reports are to be closed. This is canceled if the user responds with no. If the user confirms this, all reports that are currently open are saved and closed. If a report remains unsaved or open, the procedure is canceled.
2. The necessary metadata is read. In the event of an error, a direct jump to item 10 is made.
3. The data sources available are listed. In the event of an error, a direct jump to item 10 is made.
4. The data source is displayed In the event that there is an error in the dialog or a cancellation, a direct jump to Item 10 is made.
5. The data source selected by the user is examined for importable tables. Metadata tables are excluded in the process. The comparison is carried out for table name, column number and column name. In the event of an error, a direct jump to item 10 is made.
6. The dialog to configure an import archive is displayed In the event that there is an error in the dialog or a cancellation, a direct jump to Item 10 is made.
7. A transaction is started.
8. The metadata and UDF are updated. In the event of an error, the transaction is reversed and a direct jump to item 10 is made.
9. The transaction is committed.
10. The caches of ZAMS are emptied.

11. All opened reports are opened again by the buffered paths.
12. The process is ended.

NOTE FOR DEVELOPER

The following metadata and UDF is used:

- ▶ Metadata
 - Imported_archive: This table contains the configuration for the third-party databases to be connected as archives.
 - Imported_variable: This table contains the configuration for variables of the third-party databases to be connected.
- ▶ UDF
 - zrsQueryArchiveImported: This UDF carries out the actual import and is called up by the archive connector wrapper function `zrsQueryArchiveFunction` if necessary.

ZAMS amends the metadata and user-defined functions (UDFs) in the database accordingly when configuring the metadata. Only the metadata necessary for the creation of the UDF is saved in the database. No usage data at all is stored in the Analyzer database. The usage data is read directly from the source table each time there is a read request for an import archive.

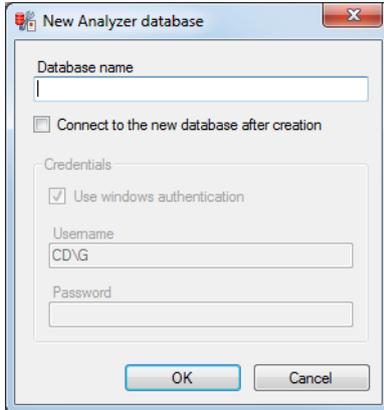
11.6.4 New Analyzer database

In order for a new Analyzer database to be created, there must be a connection to an Analyzer server with a valid license.

To create a new Analyzer database:

1. Click, in the SQL server menu, on the **New Analyzer database** entry

2. The dialog to create a new database is opened



| Parameters | Description |
|--|---|
| Database name | Name of the database to be created. If this field remains empty or the name of a database that already exists on the SQL server is entered, an error message is given. |
| Connect to the new database after creation | <ul style="list-style-type: none"> ▶ Active: Once the database has been created successfully, the current connection is closed and a connection to the database that has just been created is established. The authentication is determined via the properties in the Credentials area. ▶ Inactive: Once the database has been created successfully, the connection to the current database remains intact |
| Credentials | Connection settings. Only available if the <code>Connect to the new database after creation</code> option has been activated. |
| Use windows authentication | Active: Windows authentication is used. |
| Username | Entry of the user name. If <code>Use windows authentication</code> is active, it is displayed only. |
| Password | Entry of the password. Is not saved and must be reentered each time the connection is made. If <code>Use windows authentication</code> is active, no input is necessary; input is also not possible. |
| OK | Accepts all inputs, creates the database, establishes connections if necessary and closes the dialog. |
| Cancel | Rejects all inputs and closes the dialog without creating a database. |

DATABASE CREATION PROCESS

By clicking on OK in the `New Analyzer database` dialog, the following process is started:

1. The inputs are validated.
If an errors leads to the database not being created, or if an input is missing, the process is canceled and the dialog remains open.
2. If necessary, the connection profile for the new database is created.

3. The database is created.
If the creation of the database is unsuccessful, the process is canceled and the dialog remains open.
4. The new database is prepared for operation with the Analyzer.
If this is unsuccessful, the user is asked if the database is to be retained. If the database is not to be retained, it is deleted, the process is canceled and the dialog remains open.
5. A DataSource object is created on the Analyzer server.
6. If necessary, the connection profile for the new database is validated.
7. The dialog is closed
8. If the option `Connect to the new database after creation` option is activated, the connection to the new database is established.

11.6.5 Convert databases

Databases that were created with zenon Analyzer from version 2.0 can be converted to the respective later version being used. If a database with a lower version number than that of the ZAMS being executed is opened, this is converted into the newer version. Databases with a version less than zenon Analyzer 2.0 are not converted by ZAMS. The database structure and the license are checked during the conversion.

From version 2.10, ZAMS recognizes the version of the metadata structure definition of a database and can check its structure. All databases created with versions from 2.10 feature versioning of the database structure.

The checking of the version of the database is started if:

- ▶ A connection to a database is established
- ▶ Manual conversion of the databases is started

CONVERT DATABASE MANUALLY

To convert databases:

1. Open the menu `SQL-Server`.

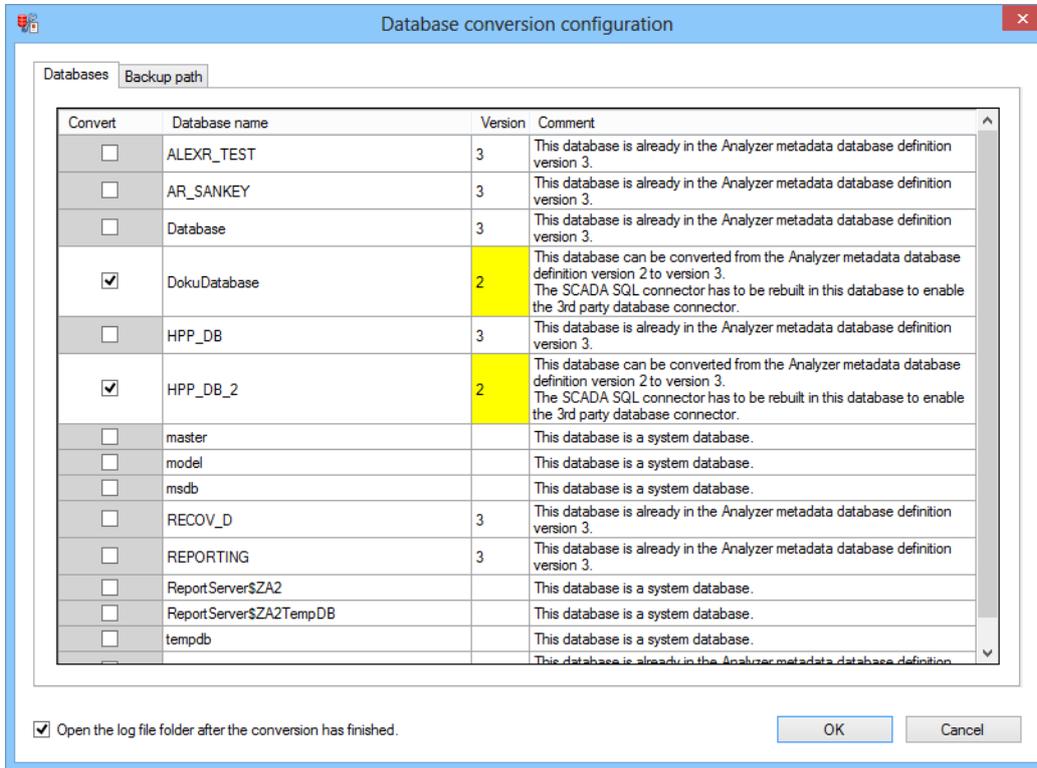
2. Select the entry **Convert databases**.
3. ZAMS checks the version and structure of all existing databases.
The search and its results are documented in the output window.
4. If convertible databases are found, these are offered for conversion:
 - a) The dialog to configure the database conversion with two tabs is opened.
 - b) Select the databases that are to be converted and the backup path.
Note: Note the information in the comments. There may be other actions necessary after conversion, such as creating a new SCADA SQL connector.
 - c) Start the conversion by clicking **OK**
5. If no databases that can be converted are found, the search is ended and corresponding messages are displayed in the output window.

DIALOG FOR CONFIGURATION OF THE DATABASE CONVERSION

This dialog allows the selection of the databases to be converted and configuration of the save path.

DATABASES

Selection of the databases to be converted.

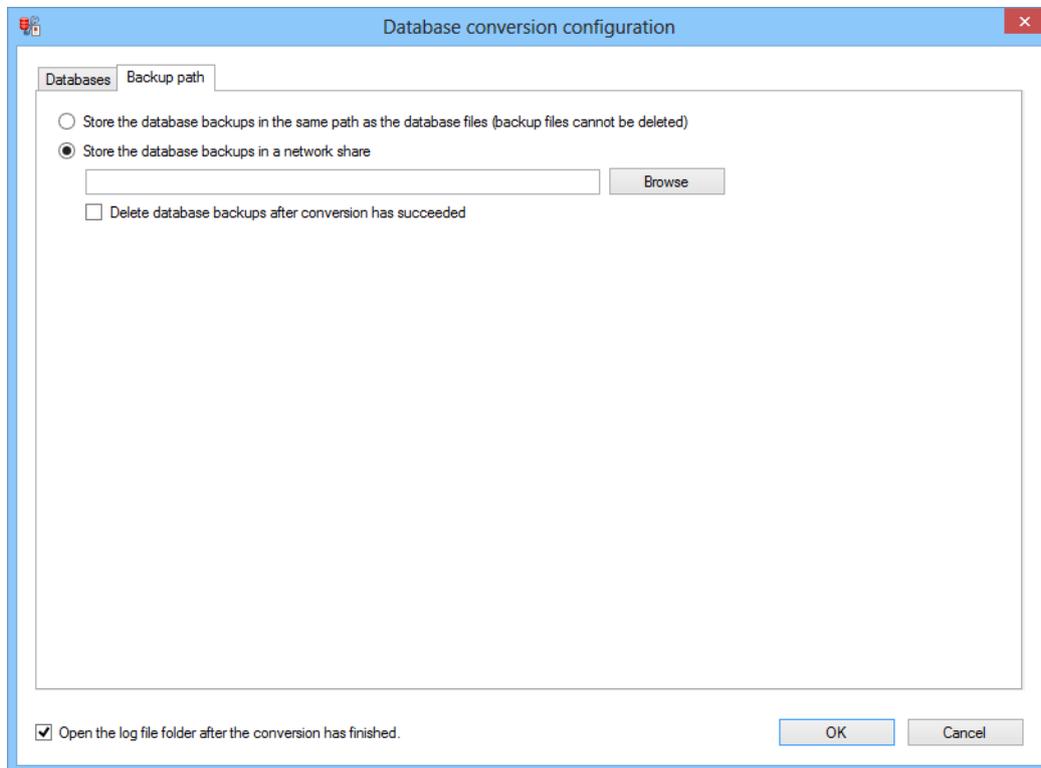


| Parameters | Description |
|---|--|
| List of databases | <p>Lists all existing databases. If a line has a gray background, the database named therein cannot be converted. Details are in the Comments column.</p> <p>The following are displayed:</p> <ul style="list-style-type: none"> ▶ Checkbox: Selection of database. Active: Database for conversion selected. Only databases that can be technically converted are selected. Default for convertible databases: <i>active</i> ▶ Database name: Name of the database. ▶ Version: Database version. ▶ Comment: Reason why a database cannot be converted or from which to which version a database can be converted. Note the references to actions that must be carried out after conversion. |
| Open the LOG file folder after the conversion has finished. | Active: After conversion, the folder with the LOG files for conversion is opened. |
| OK | Accepts settings in all tabs and starts conversion. |
| Cancel | Discards settings in all tabs and cancels the conversion. |

The size and position of the dialog can be changed. These settings are saved as user-dependent.

BACKUP PATH

Configuration of the path for backup files and selection of whether these are to be deleted after successful conversion.



| Parameters | Description |
|---|--|
| Store the database backups in the same path as the database files | <p>Active: The database backup files are stored locally in the same folder as the database files in the Analyzer server.</p> <p>Because this can be a different computer to the ZAMS computer, access to its file system cannot be guaranteed. The backup files stored there thus cannot automatically be deleted by ZAMS after successful conversion.</p> |
| Store the database backups in a network share | <p>Active: The database backup files are stored in a network share.</p> <p>Input of the folder in the text field or selection from a dialog after clicking on the Browse button.</p> <p>Attention: It must be ensured that the user in which context the SQL server instance is running has access to this network share with the following rights:</p> <ul style="list-style-type: none"> ▶ read ▶ write: ▶ overwrite |
| Browse | <p>Opens the dialog for selecting a network share (on page 485).</p> |
| Delete database backups once they have been converted | <p>Active: The database backup files are deleted after successful conversion of the database.</p> <p>Requirement: The backup files are in a network share.</p> <p>The option is executed for each database. If, for example, databases are converted and a conversion is unsuccessful, then:</p> <ul style="list-style-type: none"> ▶ Four backup files are deleted ▶ If the backup file for the unsuccessful conversion is retained |
| Open the LOG file folder after the conversion has finished. | <p>Active: After conversion, the folder with the LOG files for conversion is opened.</p> |

| | |
|--------|---|
| OK | Accepts settings in all tabs and starts conversion. |
| Cancel | Discards settings in all tabs and cancels the conversion. |

CONVERSION NOTES

Note most of all when converting databases:

- ▶ If a database that is a version less than 2 is converted, then the following applies for the conversion to:
 - Version 2 or higher: The SCADA SQL connector has to be created again in order to have emulated archives available in reports.
 - Version 3: The SCADA SQL connector has to be created again in order to have archives available for import from third-party databases.
- ▶ If a database that is a version less than 3 is converted, then the following applies for the conversion to:
 - Version 3: The SCADA SQL connector be be newly created in order to have archives available for import from third-party databases.

11.6.6 Manual database backups

Databases can be saved (on page 432) manually. Backup files can be restored (on page 435) and administered (on page 470). Whether a database can be saved or restored depends on its type (on page 431).

Automated backups are described in the Automated data backups (on page 446) chapter.

Database types

A distinction is made between the following types of databases:

| Type | Description | Saving | Restore |
|-----------------------------|--|--------|---------|
| System databases | Name is <ul style="list-style-type: none"> ▶ master ▶ model ▶ msdb ▶ tempdb | - | - |
| Report server databases | Name starts with <ul style="list-style-type: none"> ▶ ReportServer\$ | + | - * |
| Analyzer metadata databases | <ul style="list-style-type: none"> ▶ No system database ▶ No report server database. ▶ Analyzer metadata definition version can be established. | + | + |
| Other databases | None of the conditions for other types were met. | + | + |

* **Background:** To restore **Report server databases**, the **Report Server** service must be stopped and restarted after the restore, for which administrator rights on the Analyzer server are needed.

Create database backups

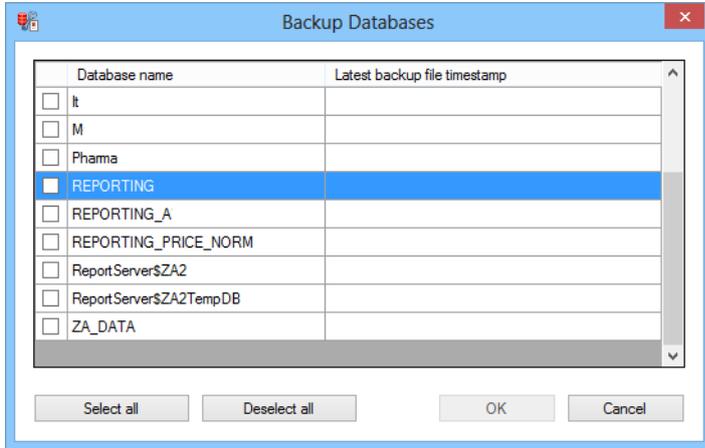
Backups of databases can be created provided their type allows this. You can find details on the restorable types in the Database types. (on page 431) chapter (on page 431)

BACKUP DATABASES

To back up databases:

1. open the menu **SQL-Server**
2. Select the **Create database backup** entry
3. the dialog for selecting a database is opened
4. Activate the checkboxes in front of all databases to be backed up

5. click on **OK**



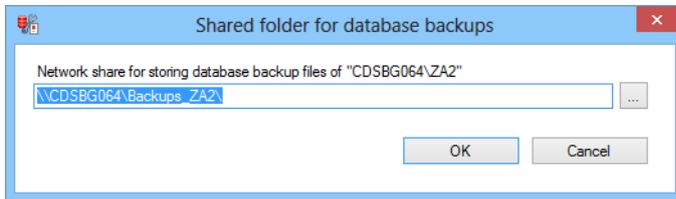
| Parameters | Description |
|--------------------------|---|
| List of databases | <p>Displays all databases available</p> <ul style="list-style-type: none"> ▶ Checkbox: The checkbox must be activated to back up a database. ▶ Database name: Displays database name. ▶ Date and time of the latest backup: Shows date and time of the backup currently available. <p>The path and number of backups are defined in the Options (on page 242) menu, in the Database backups (on page 577) tab of the Settings (on page 566).</p> |
| Select all | Selects all displayed databases for backup. |
| Deselect all | Deselects database selection. |
| OK | Accepts selection, closes dialog and creates backups. |
| Cancel | Discards changes and closes the dialog. |

The size and position of the dialog can be changed. These settings are saved as user-dependent.

STORAGE PATH FOR DATABASE BACKUP FILES:

The first time a backup request is made and a path has not yet been established, you are requested to define a save path. This path is then used for all backups and restorations. This path is administered in the options in the Database backups (on page 577) tab of the Settings (on page 566).

Note: It is recommended that a path on the Analyzer computer is used for backup.



| TAGs | Description |
|---|--|
| <p>Network share path for storing database backup files of [database]</p> | <p>A valid UNC path must be entered.</p> <p>Clicking on the . . . button opens the dialog (on page 485) to select a network share.</p> <p>A check is made if:</p> <ul style="list-style-type: none"> ▶ The syntax of the path is valid if: Only valid paths unlock the OK button. ▶ The path exists: When clicking on OK, the path is only accepted if it can also be accessed. ▶ The path is different to that already used: If a path is defined that is different to a path that has already been used, a corresponding message is given. The path can be created. The pre-existing database backup job can then be activated, deactivated and deleted, but can no longer be edited. <p>The configured path is saved individually for each user.</p> <p>Attention: The access rights to network shares must be set correctly. For details, see the Set access rights to network share correctly.</p> |
| <p>OK</p> | <p>Accepts the path and closes the dialog.</p> |
| <p>Cancel</p> | <p>Discards changes and closes the dialog.</p> |

SET ACCESS RIGHTS TO NETWORK SHARE CORRECTLY

In order for all database backup action to run correctly, the access rights to the network share must correspond to the database backup folder. For this, the following applies:

- ▶ The folder must be on the Analyzer Server, because defined users must access it locally on the Analyzer Server.

- ▶ Because the folder must be accessible by both the Analyzer Server and the ZAMS computer with the same path, it must be authorized in the network. The folder is then accessible with the same path via a UNC path everywhere in the network.
- ▶ The following users must have full access to the network share:
 - `NT SERVICE\MSSQL$ZA2`: For the creation and restoration of backups.
Defined locally on the Analyzer server. Virtual user, derived from the `SYSTEM`, in whose context the SQL server instance is running.
 - `NT SERVICE\SQLAgent$ZA2`: For automatic creation of backups.
Defined locally on the Analyzer server. Virtual user, derived from the `SYSTEM`, in whose context the SQL server instance is running.
 - Every ZAMS user: To create and restore backups, administer backup files and administer automated backup jobs.

BACKUP FILE NAME

The file name of a database backup file follows this scheme: `[database name]_yyyy_MM_dd_HH_mm_ss.bak`

e.g.: `ZA_DATA_2013_02_12_14_11_35.bak` = backup of `ZA_DATA` on 12.2.2013 at 14:11:35

Restore database backups

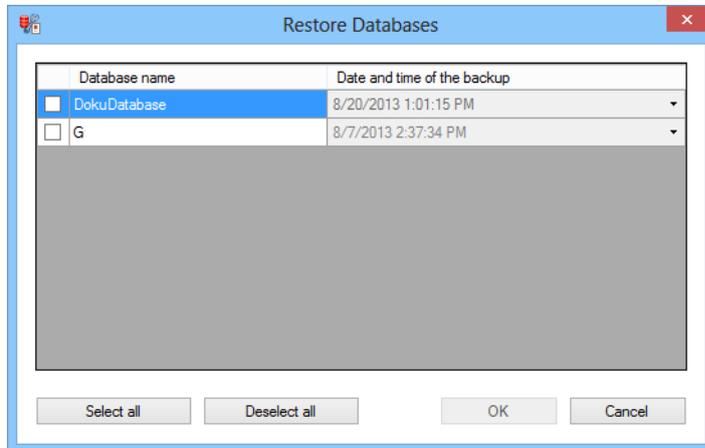
Databases that have been backed up can be restored. You can find details on the restorable types in the Database types. (on page 431) chapter (on page 431)

RESTORING DATABASE BACKUPS

To restore database backups:

1. open the menu `SQL-Server`
2. Select the entry `Restore database backups...`
3. the dialog for selecting a database is opened
4. Activate the checkboxes in front of all databases to be restored

5. Select, in the **Time stamp of most recent backup** column, the desired version from the drop-down list
6. click on **OK**



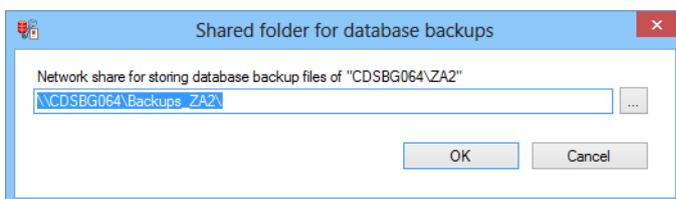
| Parameters | Description |
|-------------------|--|
| List of databases | Displays all databases available <ul style="list-style-type: none"> ▶ Checkbox: The checkbox must be activated to restore a database. ▶ Database name: Shows the database name. ▶ Latest backup file timestamp: Shows drop-down list with data and time of all backups available. |
| Select all | Selects all displayed databases for backup. |
| Deselect all | Deselects database selection. |
| OK | Accepts selection, closes dialog and restores selected saved database backups. In doing so, note: <ul style="list-style-type: none"> ▶ If the currently-active metadata database is to be restored by a backup, the connection must be reestablished after the restore. The user must confirm this before starting the restore. ▶ For each metadata database, after successful restoration, the version of the metadata structure in the database is established and a structure test is carried out. If an obsolete structure is established in at least one database, the user has the possibility to start the database conversion directly. This option is inactive if the connection must be reestablished after the restore. |
| Cancel | Discards changes and closes the dialog. |

The size and position of the dialog can be changed. These settings are saved as user-dependent.

STORAGE PATH FOR DATABASE BACKUP FILES:

The first time a backup request is made and a path has not yet been established, you are requested to define a save path. This path is then used for all backups and restorations. This path is administered in the options in the Database backups (on page 577) tab of the Settings (on page 566).

Note: It is recommended that a path on the Analyzer computer is used for backup.



| TAGs | Description |
|---|--|
| <p>Network share path for storing database backup files of [database]</p> | <p>A valid UNC path must be entered.</p> <p>Clicking on the . . . button opens the dialog (on page 485) to select a network share.</p> <p>A check is made if:</p> <ul style="list-style-type: none"> ▶ The syntax of the path is valid if: Only valid paths unlock the OK button. ▶ The path exists: When clicking on OK, the path is only accepted if it can also be accessed. ▶ The path is different to that already used: If a path is defined that is different to a path that has already been used, a corresponding message is given. The path can be created. The pre-existing database backup job can then be activated, deactivated and deleted, but can no longer be edited. <p>The configured path is saved individually for each user.</p> <p>Attention: The access rights to network shares must be set correctly. For details, see the Set access rights to network share correctly.</p> |
| OK | Accepts the path and closes the dialog. |
| Cancel | Discards changes and closes the dialog. |

SET ACCESS RIGHTS TO NETWORK SHARE CORRECTLY

In order for all database backup action to run correctly, the access rights to the network share must correspond to the database backup folder. For this, the following applies:

- ▶ The folder must be on the Analyzer Server, because defined users must access it locally on the Analyzer Server.
- ▶ Because the folder must be accessible by both the Analyzer Server and the ZAMS computer with the same path, it must be authorized in the network. The folder is then accessible with the same path via a UNC path everywhere in the network.
- ▶ The following users must have full access to the network share:

- **NT SERVICE\MSSQL\$ZA2:** For the creation and restoration of backups.
Defined locally on the Analyzer server. Virtual user, derived from the **SYSTEM**, in whose context the SQL server instance is running.
- **NT SERVICE\SQLAgent\$ZA2:** For automatic creation of backups.
Defined locally on the Analyzer server. Virtual user, derived from the **SYSTEM**, in whose context the SQL server instance is running.
- **Every ZAMS user:** To create and restore backups, administer backup files and administer automated backup jobs.

BACKUP FILE NAME

The file name of a database backup file follows this scheme: `[database name]_yyyy_MM_dd_HH_mm_ss.bak`

e.g.: `ZA_DATA_2013_02_12_14_11_35.bak` = backup of `ZA_DATA` on 12.2.2013 at 14:11:35

11.6.7 Restore database backup file as new database

A database backup file can be restored as a new database. In doing so, the backup file can also come from a database that is not yet on the SQL server instance.

The database backup file must meet the following requirements:

- ▶ The name of the database backup file must correspond to the following syntax: `[database name]_[yyyy]_[MM]_[dd]_[HH]_[mm]_[ss].bak`.
- ▶ There is only one database backup in the database backup file.
- ▶ The database saved in the backup file has the exact name that appears in the filename of the backup file.
- ▶ The database backup file can be checked for corruption/manipulation by means of a checksum.

All backup files created with ZAMS meet these requirements.

The target database name can be identical to the source database name, provided there is not yet a database with this name. An existing database can thus be transferred from one Analyzer server to the other by:

- ▶ Saving it on the original server

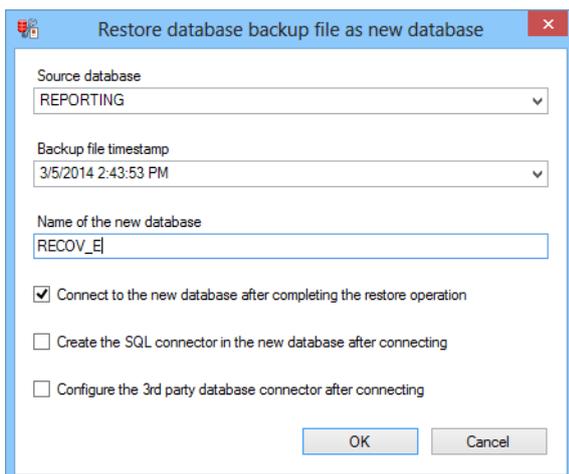
- ▶ Copying the backup file
- ▶ Restoring to the target server with new names that correspond to the old names

RESTORE DATABASE BACKUP AS NEW DATABASE

To restore a backup as a new database:

1. Open the SQL Server menu.
2. Select the **Restore database backup as new database** command.
3. The dialog for selecting a backup file is opened
4. Select the desired database
5. Enter a name for the new database
6. Close the dialog by clicking on **OK**.

RESTORING A DATABASE BACKUP FILE AS A NEW DATABASE



| Parameters | Description |
|--|--|
| Source database | <p>Selection of the source database from a drop-down list.</p> <p>The source database is the database that is contained in the backup file. All database files found are listed.</p> |
| Backup file timestamp | <p>Selection of the time stamp that is to be restored. All backup files of the selected database available are listed according to the time stamp of their backup.</p> |
| Name of the new database | <p>Entry of the name for the new database.</p> <p>The name must meet the following criteria:</p> <ul style="list-style-type: none"> ▶ Must not remain empty. ▶ Must not be used by a database that is already present on the target server. <p>This check is not case sensitive. For example: The name DATA cannot be used if there is already a database called data.</p> <p>The OK button can only be used if the validation of the name is successful.</p> |
| Connect to the new database after completing the restore operation | <p>Active: A connection to the new database is also established when restoring.</p> <p>Activated and cannot be operated if the Create the SQL connector in the new database after connecting option is active.</p> |
| Create the SQL connector in the new database after connecting | <ul style="list-style-type: none"> ▶ Active: When restoring, SQL connector creation (on page 359) is started after the connection to the new database has been established. <p>Can only be activated if the Connect to the new database after completing the restore operation option is active.</p> |
| Configure the 3rd party database connector after connecting | <ul style="list-style-type: none"> ▶ Active: When restoring after establishing a connection to the new database, the configuration (on page 381) of the import from third-party databases is started. <p>Note: If Create the SQL connector in the new database after connecting and Configure the 3rd party database connector after connecting have been activated, the configuration is carried out in this sequence:</p> <ul style="list-style-type: none"> ▶ SQL-Connector |

| | |
|---------------|--|
| | <p>► Import of third-party databases</p> <p>Can only be activated if the <code>Connect to the new database after completing the restore operation option</code> is active.</p> |
| OK | Applies settings and closes the dialog. |
| Cancel | Discards all changes and closes the dialog. |

PROCEDURE FOR RESTORING A DATABASE BACKUP FILE AS A NEW DATABASE:

1. The user opens the dialog for restoring by clicking on **Restore database backup file as new database**.
2. It is ensured that there is a valid UNC path for database backup files for the SQL Server instance that is currently connected.
3. The names of all the SQL Server instances that are currently present are read. A note of whether it is an Analyzer database is made for each database name.
4. All database backup files (*.bak) in the UNC path are examined. In doing so, the following happens:
 - a) The file name is checked to see that it corresponds to the defined syntax. If the file name does not correspond to the syntax, the backup file is filtered out.
 - b) The database name is extracted from the filenames.
 - c) A check is made to see whether a database with this name is available. If this is the cases, the existing database must be an Analyzer database, otherwise this backup file is filtered out.
 - d) If a backup file has not been filtered out, it is saved in the list of available database backup files. The list is grouped according to database name.
5. If the list of available database backup files is empty, the procedure is canceled.
6. The dialog for restoring a database backup file as a new database is called up and filled with the list of available database backup files.
7. The user enters their entries in the dialog and closes it:
 - a) If the dialog is closed with `cancel`, the procedure is canceled.
 - b) If the dialog is closed with `ok`, the procedure is continued.

8. The name of the source database, the backup file to be used and the name of the new database is read from the dialog object.
9. The script for restoring a database backup file is executed as as a new database:
 - a) If an error occurs during execution, a check is made to see whether there is a database with the name of the new database. If so, this is deleted. After this check/deletion of the database, the procedure is canceled regardless of whether the deletion was necessary or not, and whether it worked or did not work.
 - b) If the script was carried out without error, the procedure is continued.
10. The post-restore script is executed on the new database.
 - a) If an error occurs during execution, the new database is deleted. The procedure is canceled after the database is deleted, regardless of whether the deletion worked or not.
 - b) If the script was carried out without error, the procedure is continued.
11. The new database is subjected to a structure check for the database structure version that is currently being used.
 - a) If the structure check was not successful, the new database is deleted. The procedure is canceled after the database is deleted, regardless of whether the deletion worked or not.
 - b) The procedure is continued if the structure check was successful.
12. The database source object for the new database is created on the report server. Any object that may exist with the same path is overwritten.
 - a) If the creation was not successful, a check is carried out to see if a data source object has been created. If so, it is deleted. After this, the new database is deleted, regardless of whether the deletion of the data source object was necessary or not and whether it worked or not. The procedure is canceled after the database is deleted, regardless of whether the deletion worked or not.
 - b) The procedure is continued if creation was successful.
13. After this, a deactivated SQL Server agent job is created for each emulated archive in the new database for calculating the emulated data. This is necessary in order for the emulated archives to be displayed in the administration dialog for emulated archives. In this administration dialog, each of the emulated archives can be opened in the new database, given the appropriate schedule for the data calculation and data calculation can be activated.

- a) If an error occurs with such a job, all jobs that have already been created for the new database are deleted. After this, the data source object for the new archive is deleted. After this, the new database is deleted, regardless of whether the deletion of the data source object worked or not. The procedure is canceled after the database is deleted, regardless of whether the deletion worked or not.
 - b) If all jobs have been created successfully, the final message is issued.
14. If the connection to the new database is activated by the user, the connection dialog is now called up. A new connection profile with the SQL Server instance that is currently connected, the new database and the login data of the existing database is displayed. If the user confirms the dialog with OK, the connection is established in accordance with the dialog settings.
 15. If the SQL connector creation is activated by the user, a check is now made to see whether ZAMS is currently connected to the new database and has a valid license. If these checks are positive, the creation of the SQL connector is instigated.
 16. If the configuration of the connector for third-party databases is activated, a check is carried out to see whether ZAMS is currently connected to the new database and has a valid license. If these checks are positive, the configuration of the connector is instigated.
 17. The process is ended.

11.6.8 Restore Reporting Services database backup

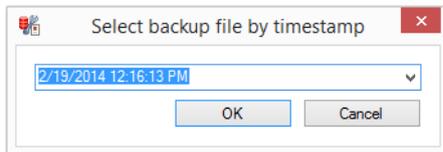
Backups of the reporting services database can be restored in ZAMS if the Analyzer server is on the same server as ZAMS.

To restore a backup:

1. Select, in the **SQL Server** (on page 241) menu, the **Restore Reporting Services database backup** command.
This is only available if ZAMS is connected to an Analyzer server that is on the same computer as ZAMS. The comparison is carried out via the NetBIOS names of the local computers supplied by the .NET framework and the NetBIOS names of the SQL Server computer supplied by the SQL Server connection object.
2. The dialog for selecting a backup is opened
3. Select the desired backup.

4. Confirm the restore by clicking **OK**.

RESTORE BACKUP FILE DIALOG



| Parameters | Description |
|----------------|---|
| Drop-down list | Selection of the file to be restored. Identification is via the time stamp of the backup. |
| OK | Applies settings and closes the dialog. |
| Cancel | Discards all changes and closes the dialog. |

RESTORE PROCEDURE

Procedure when restoring a Reporting Services database:

1. The user selects, in the **SQL Server** menu, the **Restore Reporting Services database backup** entry.
2. A check is made to see if reports are open in ZAMS. These must be closed. A message window asks if the open reports can be closed.
 - **Yes**: Reports are closed and the settings in the options are saved beforehand if necessary. If there are then reports that have not been saved or that are still open, the procedure is ended with an error message.
 - **No**: Process is canceled.
3. The UNC path is obtained for database backup files that are saved in the configuration for the SQL Server that is currently connected. If none have been saved yet, the user can enter one. If the user cancels input, the previously-closed reports are opened again and the process is ended.
4. In the UNC path, a search for backup files for the Reporting Services database "ReportServer\$ZA2" is carried out. In order for a file to be recognized as a backup file, it must correspond to the following model:
ReportServer\$ZA2_[yyyy]_[MM]_[dd]_[HH]_[mm]_[ss].bak.

If no backup files are found, the reports that were closed before are opened again and the process is ended.

5. The dialog to select the backup file to be restored is displayed. If the user cancels this dialog, the reports that were previously closed are opened again and the process is ended.
6. ZAMS sends the `zenAdminSrv` a request to end the `ReportServer$ZA2` service. Errors with this request lead to the process being canceled. In doing so, the reports remain closed and the connection is closed.
7. ZAMS waits until the service changes to the status of `stopped`. An error leads to the procedure being canceled. In doing so, the reports remain closed and the connection is closed.
8. ZAMS executes the SQL script to restore the database backup. This script also empties all tables in the `ReportServer$ZA2TempDB` database. An error here leads to the procedure being canceled. In doing so, the reports remain closed and the connection is closed.
9. ZAMS sends the `zenAdminSrv` a request to start the `ReportServer$ZA2` service. An error here leads to the procedure being canceled. In doing so, the reports remain closed and the connection is closed.
10. ZAMS waits until the service switches to the status if `running`. An error here leads to the procedure being canceled. In doing so, the reports remain closed and the connection is closed.
11. The ZAMS `start Analyzer Manager` function is executed. This is ended from the perspective of ZAMS, as soon as Internet Explorer has been started.
12. As soon as Internet Explorer is running, ZAMS reestablishes the connection to the `Reporting Services Web Service`. A maximum of 10 attempts to establish the connection are undertaken.
13. If the connection to the Web Service cannot be reestablished, the process is ended with an error message. In doing so, the reports remain closed and the connection is closed.
14. The previously-closed reports are opened again.

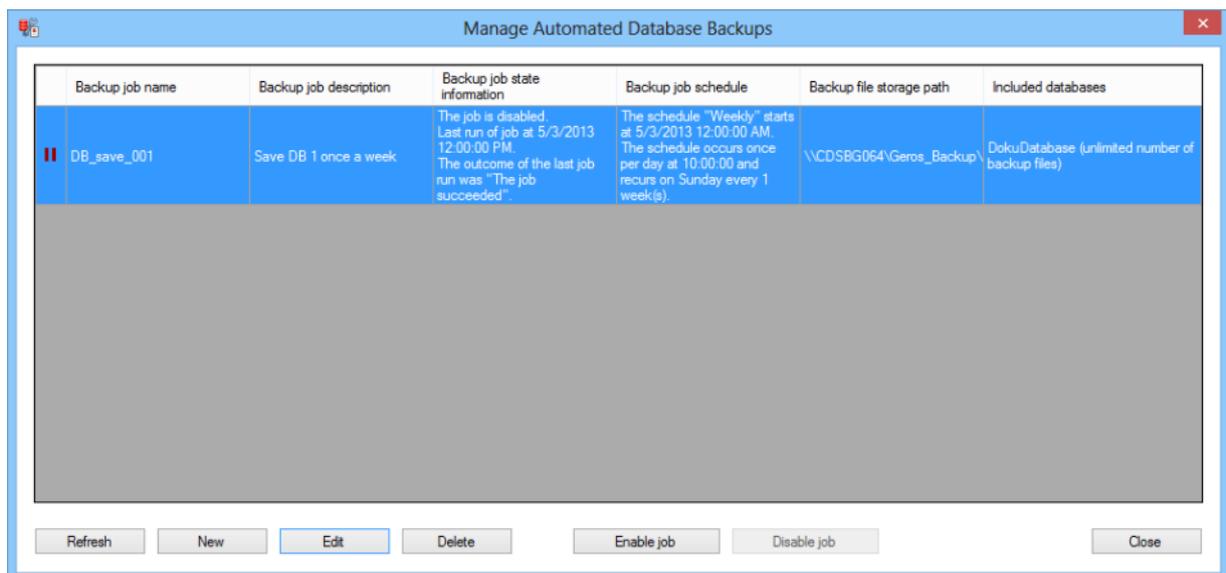
11.6.9 Administrate automated database backups

Database backups can be made automatically. These backups can be administered in their own dialog (on page 470).

Note: Automated backups should be configured so that they run when the Analyzer server has nothing to do. In doing so, report subscriptions must be taken into account. If, for example, subscriptions are processed every Sunday at 02:00:00, this is not a suitable time to make a database backup.

To set up or edit an automated backup:

1. open the menu **SQL-Server**
2. Select the **Manage Automated Database Backup Files** entry.
3. The dialog for administering the automated backups is opened

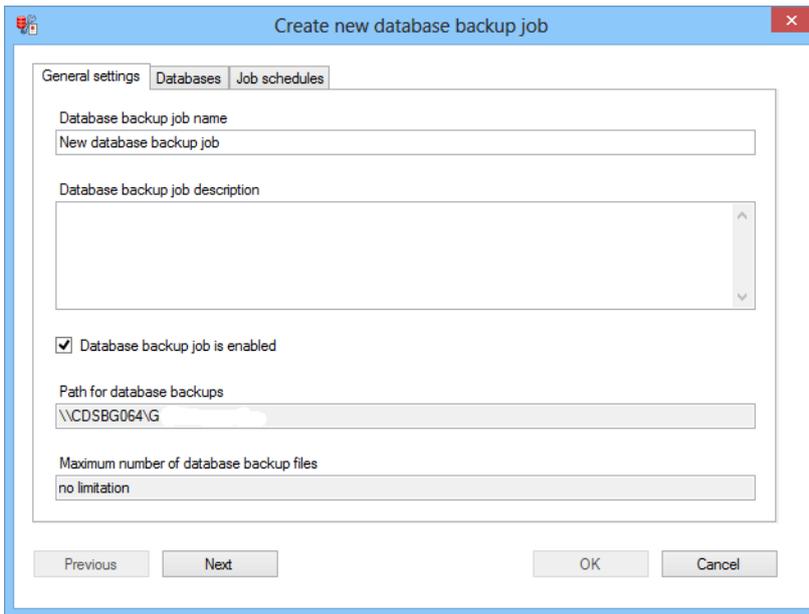


| Parameters | Description |
|----------------------------|---|
| Symbol | Displays whether the backup job is active or inactive. |
| List of backup jobs | <p>Table of all recognized backup jobs. The following are displayed:</p> <ul style="list-style-type: none"> ▶ Name: Distinct name of the backup job. Capitalization/use of small letters is not checked. ▶ Description: Individual description of the job. ▶ Status information: Note regarding whether the backup job is active, when it was carried out for the last time and what the result of th last execution was. ▶ Schedule: Description of the assigned schedule ▶ Storage path: Path for database backups. ▶ Included databases: List of the databases to be backed up and a note stating whether there is a limit to the number of files for the backup files and if so, how many. <p>Only one job can be selected at a time.</p> |
| Refresh | Updates the content of the list. |
| New | <p>Creates a new backup job.</p> <p>To do this, a dialog is opened with the configuration for:</p> <ul style="list-style-type: none"> ▶ General settings (on page 452) ▶ Databases (on page 454) ▶ Job schedules (on page 456) |
| Edit | <p>Opens the selected backup job for editing with the dialog for:</p> <ul style="list-style-type: none"> ▶ General settings (on page 452) ▶ Databases (on page 454) ▶ Job schedules (on page 456) |
| Delete | Deletes the selected backup after requesting confirmation. |
| Enable Job | Activates the selected backup job. |
| Disable job | Activates the selected backup job. |
| Close | Closes the dialog. |

The size and position of the dialog can be changed. These settings are saved as user-dependent.

CREATING AND EDITING BACKUP JOBS

Backup jobs are configured in a dialog with three tabs. The dialog is opened by clicking on the **New** or **Edit** button.



Dialog box: Create new database backup job

General settings | Databases | Job schedules

Database backup job name
New database backup job

Database backup job description

Database backup job is enabled

Path for database backups
\\CDSBG064\G

Maximum number of database backup files
no limitation

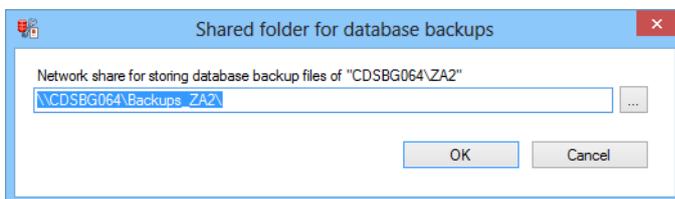
Previous Next OK Cancel

| Parameters | Description |
|--------------------------------|---|
| General settings (on page 452) | Configuration of the general settings for a database backup. |
| Databases (on page 454) | Selection of the databases to be backed up. |
| Job schedules (on page 456) | Schedules for the backup with details of: <ul style="list-style-type: none"> ▶ General settings (on page 457) ▶ Recurrence (on page 459) ▶ In day recurrence (on page 465) ▶ Duration (on page 468) |
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

STORAGE PATH FOR DATABASE BACKUP FILES:

The first time a backup request is made and a path has not yet been established, you are requested to define a save path. This path is then used for all backups and restorations. This path is administered in the options in the Database backups (on page 577) tab of the Settings (on page 566).

Note: It is recommended that a path on the Analyzer computer is used for backup.



| TAGs | Description |
|---|--|
| <p>Network share path for storing database backup files of [database]</p> | <p>A valid UNC path must be entered.</p> <p>Clicking on the . . . button opens the dialog (on page 485) to select a network share.</p> <p>A check is made if:</p> <ul style="list-style-type: none"> ▶ The syntax of the path is valid if: Only valid paths unlock the OK button. ▶ The path exists: When clicking on OK, the path is only accepted if it can also be accessed. ▶ The path is different to that already used: If a path is defined that is different to a path that has already been used, a corresponding message is given. The path can be created. The pre-existing database backup job can then be activated, deactivated and deleted, but can no longer be edited. <p>The configured path is saved individually for each user.</p> <p>Attention: The access rights to network shares must be set correctly. For details, see the Set access rights to network share correctly.</p> |
| OK | Accepts the path and closes the dialog. |
| Cancel | Discards changes and closes the dialog. |

SET ACCESS RIGHTS TO NETWORK SHARE CORRECTLY

In order for all database backup action to run correctly, the access rights to the network share must correspond to the database backup folder. For this, the following applies:

- ▶ The folder must be on the Analyzer Server, because defined users must access it locally on the Analyzer Server.
- ▶ Because the folder must be accessible by both the Analyzer Server and the ZAMS computer with the same path, it must be authorized in the network. The folder is then accessible with the same path via a UNC path everywhere in the network.
- ▶ The following users must have full access to the network share:

- **NT SERVICE\MSSQL\$ZA2:** For the creation and restoration of backups.
Defined locally on the Analyzer server. Virtual user, derived from the **SYSTEM**, in whose context the SQL server instance is running.
- **NT SERVICE\SQLAgent\$ZA2:** For automatic creation of backups.
Defined locally on the Analyzer server. Virtual user, derived from the **SYSTEM**, in whose context the SQL server instance is running.
- Every ZAMS user: To create and restore backups, administer backup files and administer automated backup jobs.

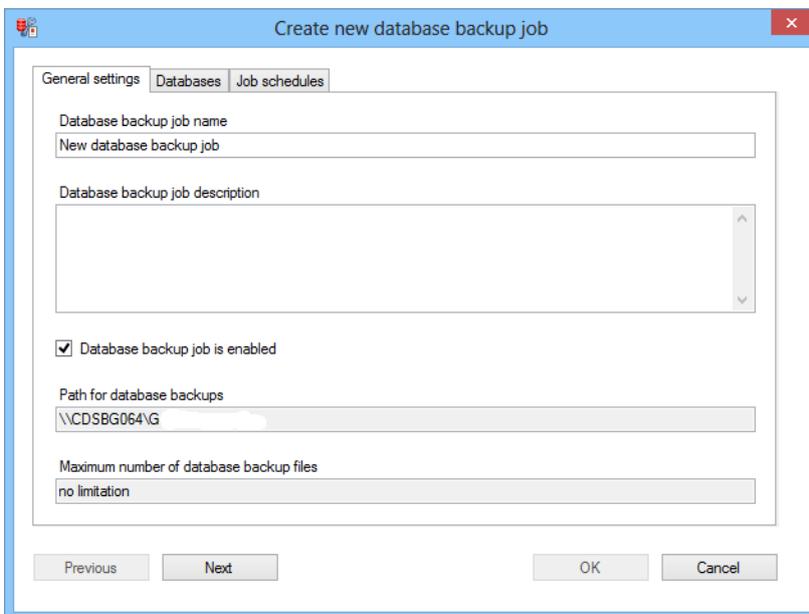
BACKUP FILE NAME

The file name of a database backup file follows this scheme: `[database name]_yyyy_MM_dd_HH_mm_ss.bak`

e.g.: `ZA_DATA_2013_02_12_14_11_35.bak` = backup of `ZA_DATA` on 12.2.2013 at 14:11:35

General settings

General settings for automated backups are configured in this tab.



The screenshot shows a dialog box titled "Create new database backup job" with three tabs: "General settings", "Databases", and "Job schedules". The "General settings" tab is active and contains the following fields and options:

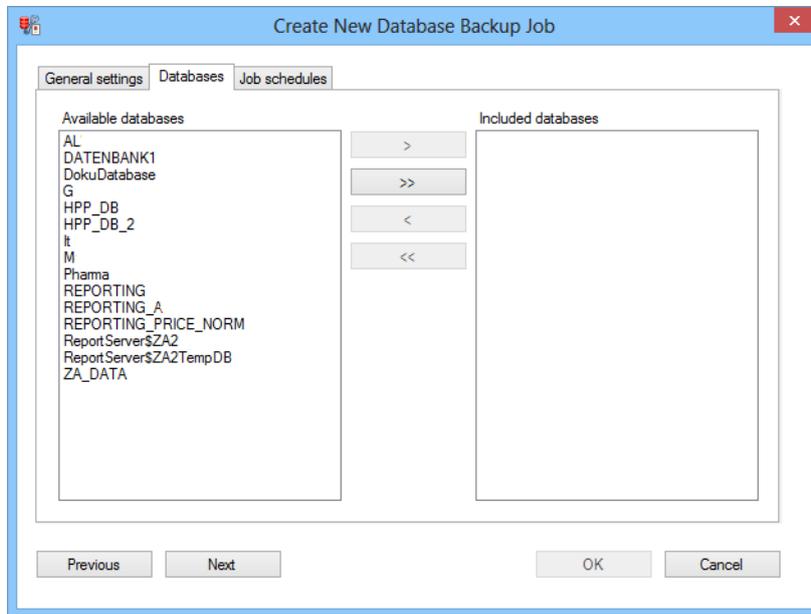
- Database backup job name: `New database backup job`
- Database backup job description: (empty text area)
- Database backup job is enabled
- Path for database backups: `\\CDSBG064G`
- Maximum number of database backup files: `no limitation`

At the bottom of the dialog, there are buttons for "Previous", "Next", "OK", and "Cancel".

| Parameters | Description |
|--|--|
| Database backup job name | Entry of a unique name for the database backup. |
| Database backup job description | Entry of a description for the database backup job. |
| Database backup job is enabled | Active: The job is carried out according to its configuration and your schedule (on page 456). |
| Backup file folders | Folder in which backup files are saved. Display only. The path and number of backups are defined in the Options (on page 242) menu, in the Database backups (on page 577) tab of the Settings (on page 566). |
| Maximum number of database backup files | Maximum number of backup files that are saved. Display only. The path and number of backups are defined in the Options (on page 242) menu, in the Database backups (on page 577) tab of the Settings (on page 566). |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Databases

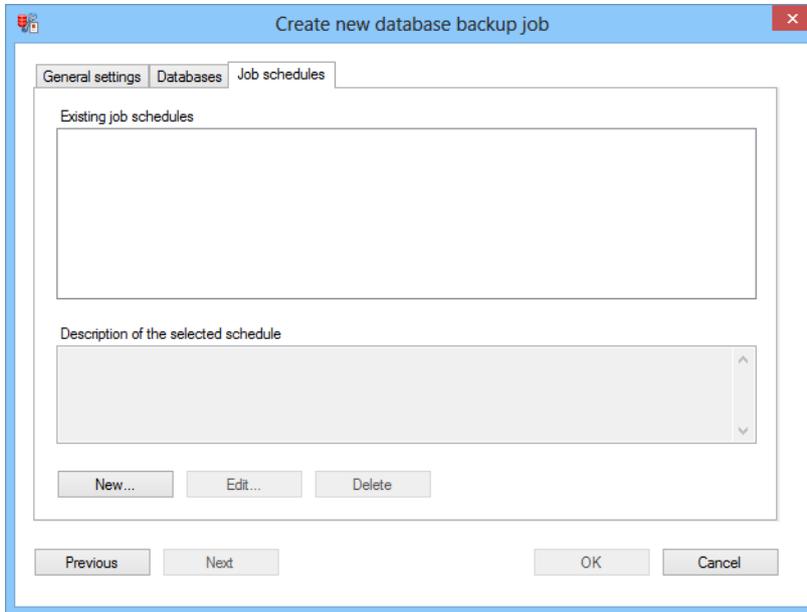
The databases to be backed up are selected in this tab.



| Parameters | Description |
|-------------------------------|---|
| Available databases | List of databases that can be selected for the backup job. Already-selected databases are no longer shown in this list. |
| Buttons for assignment | Buttons to drag databases between lists: <ul style="list-style-type: none"> ▶ >: Moves highlighted databases to the Included databases list. ▶ >>: Moves all databases to the Included databases list. ▶ <: Moves highlighted databases to the Available databases list. ▶ <<: Moves all databases to the Available databases list. |
| Included databases | List of databases that are backed up with this job. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Job schedules

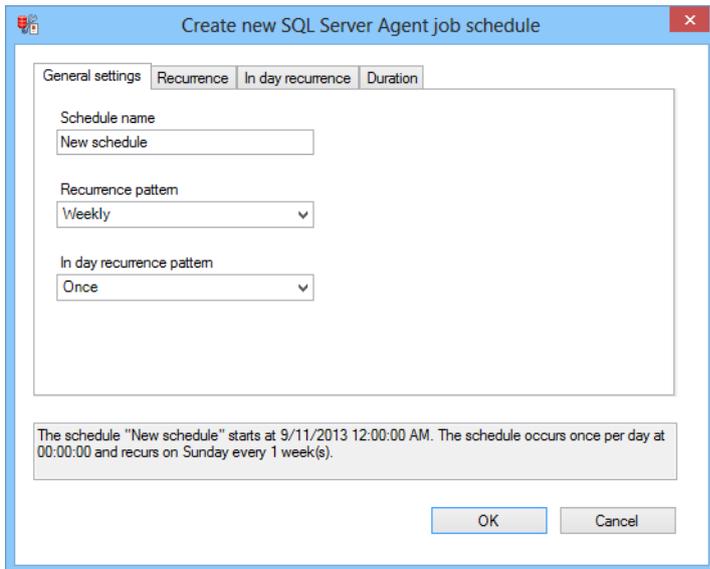
The rules for the schedules for the backup jobs are configured in this tab.



| Parameters | Description |
|---|---|
| Existing job schedules | Lists all schedules created for this job. |
| Description of the selected schedule | Shows details of the schedule selected in the Existing job schedules list. |
| New | Opens dialog to create a new schedule. |
| Edit | Opens dialog to edit the selected schedule. |
| Delete | Deletes the selected schedule. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

CREATE NEW SCHEDULE OR EDIT SCHEDULE

Clicking on the 'New or edit' button opens the dialog to configure a schedule:



| Tabs | Description |
|--|--|
| General settings (on page 457) | General settings for the schedule. |
| Recurrence (on page 459) | Configuration of the recurrence for days. The controls available depend on the selection of the recurrence configuration in the General settings tab. |
| In day recurrence (on page 465) | Configuration of the recurrence within a day. The controls available depend on the selection of the recurrence pattern in the General settings tab. |
| Duration (on page 468) | Configuration of the time range in which the schedule is active |
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Note: In ZAMS, only recurring schedules can be configured, because schedule types such as `Execute once`, `Always when the CPU is idle` or `Always when SQL server agent services are started` are not suitable for the execution of regular automated database backups.

General settings

The sample for the recurrence of the backup job is saved in this tab.

Create new SQL Server Agent job schedule

General settings | Recurrence | In day recurrence | Duration

Schedule name
New schedule

Recurrence pattern
Weekly

In day recurrence pattern
Once

The schedule "New schedule" starts at 9/11/2013 12:00:00 AM. The schedule occurs once per day at 00:00:00 and recurs on Sunday every 1 week(s).

OK Cancel

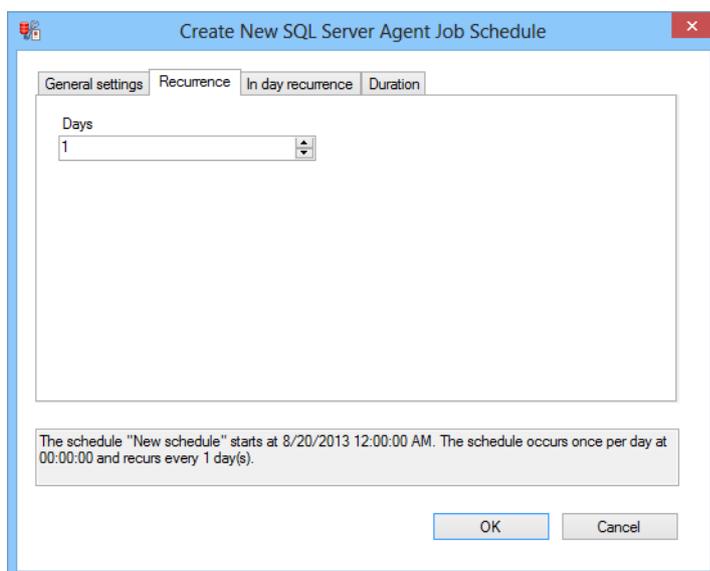
| Parameters | Description |
|------------------------------|--|
| Schedule name | Entry of the name for the schedule. |
| Recurrence configuration | <p>Selection of the recurrence configuration from drop-down list:</p> <ul style="list-style-type: none"> ▶ Daily: The job is carried out at certain daily intervals. ▶ Weekly: The job is carried out on certain weekdays at certain weekly intervals. ▶ Monthly, day of month: The job is carried out on a certain day at certain monthly intervals. ▶ Monthly, day of week of month: The job is carried out once a month with a certain monthly interval active, on a weekday in a certain week, for example every third month and then on Monday in the third week of this month. <p>Note: Details are configured in the respective Recurrence (on page 459) tab.</p> |
| In day recurrence pattern | <p>Selection of a recurring scheme for the day. This scheme determines how often and when the schedule triggers an event on active days. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Once: The schedule triggers an event at a precise point in time on active days, for example at 02:00:00. Details are configured in the In day recurrence (on page 465) tab. ▶ Recurring: On active days, the schedule triggers an event periodically with a certain interval, for example every 10 minutes from 02:00:00 to 05:00:00. Details are configured in the In day recurrence (on page 465) tab. |
| Display of the configuration | Displays the current configuration of the schedule. |
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Recurrence

The recurrence configuration is configured in this tab. The options available depend on the configuration in the General settings (on page 457) tab. Available are:

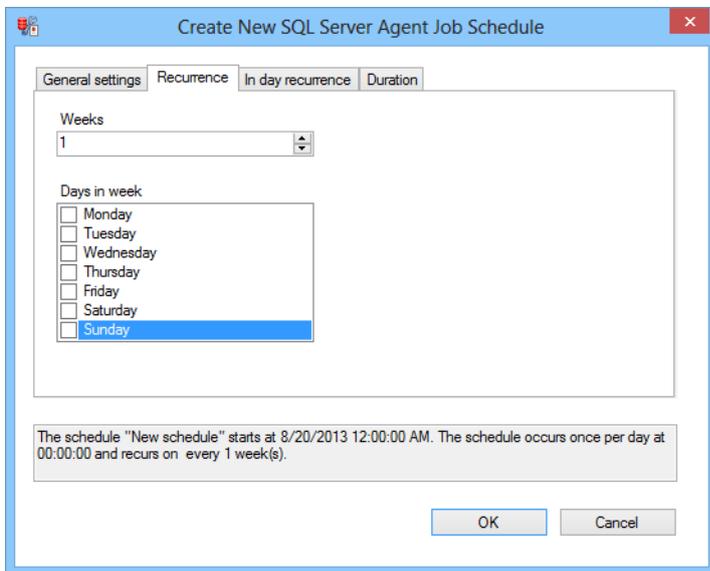
- ▶ **Daily:** The task is carried out at certain daily intervals.
- ▶ **Weekly:** The task is carried out on certain weekdays at certain weekly intervals.
- ▶ **Monthly, day of month:** The task is carried out on a certain day at certain monthly intervals.
- ▶ **Monthly, day of week of month:** The task is active once a month with a certain monthly interval, on a weekday in a certain week.

"DAILY" CONFIGURATION



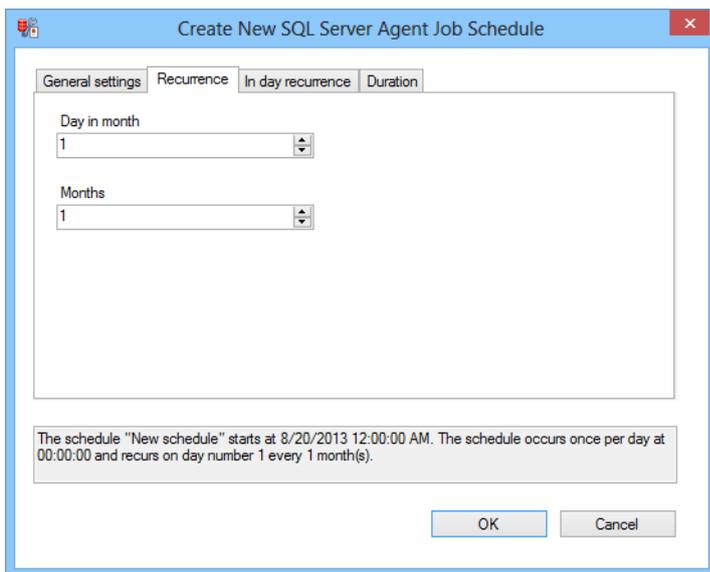
| Parameters | Description |
|------------------------------|--|
| Days | Configuration of the number of days that pass for a day with an active schedule. Manual entry or configuration using the cursor keys. <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 99 |
| Display of the configuration | Displays the current configuration of the schedule. |
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

"WEEKLY" CONFIGURATION



| Parameters | Description |
|-------------------------------------|--|
| Weeks | Configuration of the number of weeks of the selected weekdays that are active in the Days in the week option. Manual entry or configuration using the cursor keys: <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 99 |
| Days in week | Selection of the weekdays on which the job is carried out. Selection by activating the checkbox. |
| Display of the configuration | Displays the current configuration of the schedule. |
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

CONFIGURATION OF "MONTHLY, DAY OF MONTH"



Create New SQL Server Agent Job Schedule

General settings | Recurrence | **In day recurrence** | Duration

Day in month
 1

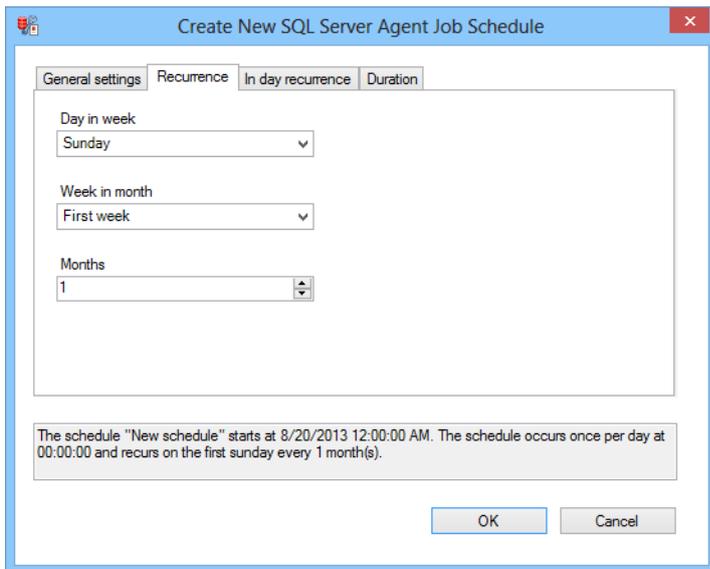
Months
 1

The schedule "New schedule" starts at 8/20/2013 12:00:00 AM. The schedule occurs once per day at 00:00:00 and recurs on day number 1 every 1 month(s).

OK Cancel

| Parameters | Description |
|-------------------------------------|---|
| Day in month | Selection of the active days in the month. Manual entry or selection using the cursor keys: <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 31 |
| Months | Selection of the monthly interval between active days. Manual entry or selection using the cursor keys: <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 99 |
| Display of the configuration | Displays the current configuration of the schedule. |
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

CONFIGURATION OF "MONTHLY, DAY OF WEEK IN THE MONTH"



| Parameters | Description |
|-------------------------------------|---|
| Day in week | <p>Selection of the weekday on which the schedule is active, from a drop-down list:</p> <ul style="list-style-type: none"> ▶ Monday ▶ Tuesday ▶ Wednesday ▶ Thursday ▶ Friday ▶ Saturday ▶ Sunday ▶ Daily ▶ Weekday ▶ Weekend day |
| Week in month | <p>Selection of a week in the month in which the previously-selected day is active, from a drop-down list:</p> <ul style="list-style-type: none"> ▶ First week ▶ Second week ▶ Third week ▶ Fourth week ▶ Last week |
| Months | <p>Selection of the monthly interval between active days. Manual entry or selection using the cursor keys:</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 99 |
| Display of the configuration | Displays the current configuration of the schedule. |
| OK | Applies all changes in all tabs and closes the dialog. |

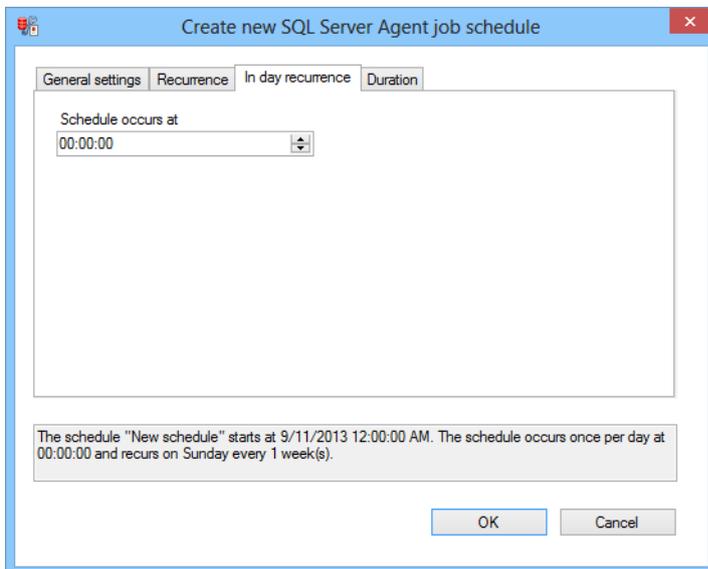
| | |
|---------------|---|
| Cancel | Discards all changes in all tabs and closes the dialog. |
|---------------|---|

In day recurrence

The recurrence for the day is configured in this tab. This scheme determines how often and when the schedule triggers an event on active days. The options available depend on the configuration in the General settings (on page 457) tab. Available are:

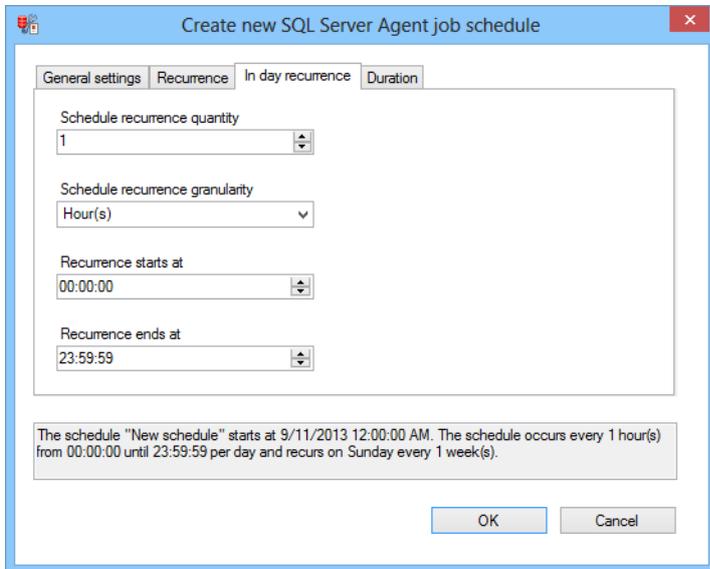
- ▶ **Once:** The schedule triggers an event at a precise point in time on active days.
- ▶ **Recurring:** The schedule triggers an event periodically in a certain time range with a certain interval on active days.

"ONCE" CONFIGURATION



| Parameters | Description |
|------------------------------|--|
| Schedule occurs at | Selection of the point in time when the schedule triggers an event on active days, in hours, minutes and seconds. Manual entry or selection using the cursor keys. |
| Display of the configuration | Displays the current configuration of the schedule. |
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

"RECURRING" CONFIGURATION



The screenshot shows the 'Create new SQL Server Agent job schedule' dialog box with the 'Recurrence' tab selected. The dialog has four tabs: 'General settings', 'Recurrence', 'In day recurrence', and 'Duration'. The 'Recurrence' tab contains the following settings:

- Schedule recurrence quantity: 1
- Schedule recurrence granularity: Hour(s)
- Recurrence starts at: 00:00:00
- Recurrence ends at: 23:59:59

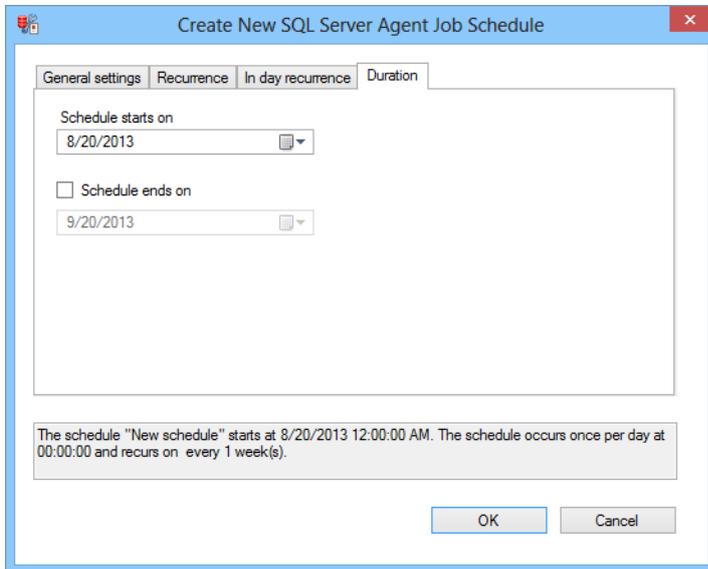
Below the settings, a preview text reads: "The schedule 'New schedule' starts at 9/11/2013 12:00:00 AM. The schedule occurs every 1 hour(s) from 00:00:00 until 23:59:59 per day and recurs on Sunday every 1 week(s)."

At the bottom of the dialog are 'OK' and 'Cancel' buttons.

| Parameters | Description |
|-------------------------------------|--|
| Schedule recurrence quantity | <p>Number of recurrences Manual entry or configuration using the cursor controls:</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 99 |
| Schedule recurrence granularity | <p>Schedule recurrence period granularity. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Second (s) ▶ Minute (s) ▶ Hour (s) |
| Recurrence starts at | <p>Defines the start time of the activity period of the schedule on active days. Manual entry or configuration using the cursor controls.</p> |
| Recurrence ends at | <p>Defines the end time of the activity period of the schedule on active days. Manual entry or configuration using the cursor controls.</p> |
| Display of the configuration | <p>Displays the current configuration of the schedule.</p> |
| OK | <p>Applies all changes in all tabs and closes the dialog.</p> |
| Cancel | <p>Discards all changes in all tabs and closes the dialog.</p> |

Duration

The period of validity of the schedule is configured in this tab.



| Parameters | Description |
|-------------------------------------|--|
| Schedule starts on | <p>Configuration of the start of the validity for this schedule. Manual input or selection from a drop-down calendar.</p> <p>Only days from this date can be active days. For example: Start date April 1, 2014. The first backup job can be started on April 1 at 00:00:00.</p> |
| Schedule ends on | <p>Active: An expiration date is stipulated for this schedule. Manual input or selection from a drop-down calendar.</p> <p>Only days that are before this date can become active days. For example: End date May 1, 2014. The first backup job can be started on April 30 at 23:59:59.</p> <p>The end date must be later than the start date.</p> |
| Display of the configuration | Displays the current configuration of the schedule. |
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Example of automated database backup

For an example of automated database backup, it is assumed that:

- ▶ An Analyzer server is put into operation on 1/1/2013.
 - The databases on the server are to be saved every Sunday at 20:00:00.
 - In doing so, there are no conflicts with subscriptions, because these are only started on Monday at 02:00:00.
 - The last 10 backup files should be retained for each database.
- ▶ On March 11, 2013, it is established that the server suffered hardware damage to the hard drive on 10 March, 2013, before the backups were made.
 - Once the drive has been replaced, the last backups before the hardware damage should be restored.
 - The backups made by the faulty hard drives are to be deleted.

The example consists of 3 stages:

1. Configuring automated backup
2. Deleting unusable backup files
3. Restoring correct backups

CONFIGURING AUTOMATIC BACKUP

1. The administration of automated database backups is started in ZAMS.
2. In this, the procedure to create a new automated database backup job is started.
3. All databases are included in the new job.
4. The schedule of the job is set so that the job is always carried out on Sunday at 02:00:00:
 - Weekly, with a weekly interval
 - Only **sunday** active day
 - Execute once a day, at 02:00:00
5. The new database backup job is carried out.

DELETING UNUSABLE FILES

1. The administration of database backup files is started in ZAMS.
2. The file list is sorted according to time stamps.
3. As a result, the backups created on March 10, 2013 are grouped together.
4. The backup files of March 10, 2013 are deleted.

RESTORING BACKUPS

1. The procedure to restore database backups is started in ZAMS.
2. All databases are highlighted.
3. Because the most recent backup file is automatically selected, (from March 3, 2013, because the files from March 10, 2013 have been deleted), the restore can now be instigated by clicking on **OK**.

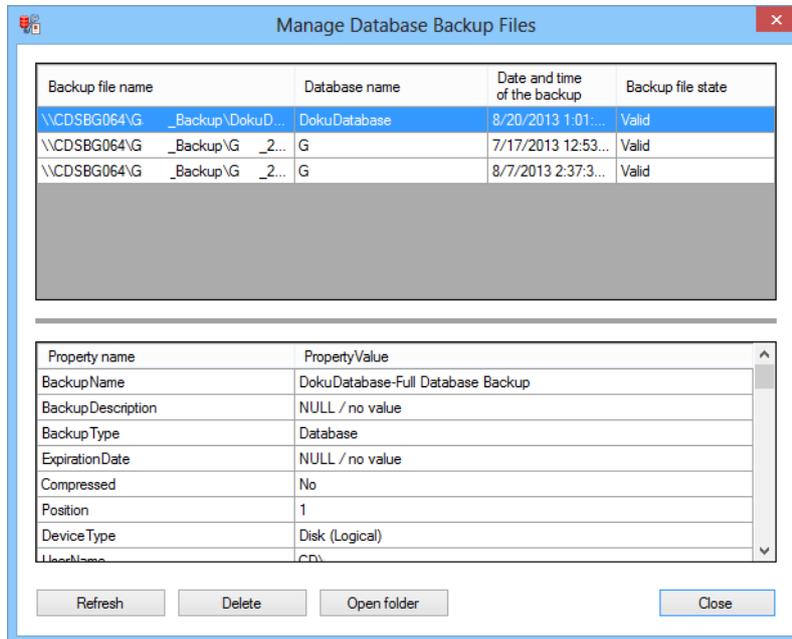
11.6.10 Manage database backup files

Automated and manually-created backups can be administered in their own dialog.

To administer database backups:

1. open the menu **SQL-Server**
2. Select the entry **Manage Database Backup Files**.

3. The dialog for administering the backup files is opened



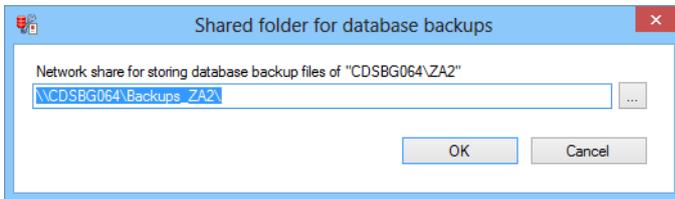
| Parameters | Description |
|------------------------------|---|
| Table of backup files | <p>Displays all backup files created with the following information:</p> <ul style="list-style-type: none"> ▶ Name of the backup file: Filename in complete UNC format ▶ Database name: Name of the database to which the file belongs ▶ Date and time of the backup: Time stamp of the database backup that is in the file ▶ Backup file state: Status text of whether the checksum of the backup is valid. <code>Invalid</code> means a corrupted backup file. <p>One file can be selected.</p> |
| Separator | Separates both tables and can be moved with the mouse in order to enlarge the display area of a table. |
| Table of properties | <p>Shows details on the file that was selected in the upper table. The table contains names and values of the properties.</p> <p>You can read details of these properties at:</p> <p>http://msdn.microsoft.com/en-us/library/ms178536.aspx (http://msdn.microsoft.com/en-us/library/ms178536.aspx).</p> |
| Refresh | Refreshes the display. |
| Delete | Deletes the selected file and updates the view. |
| Open folder | Opens the folder with the backup files in Windows Explorer. |
| Close | Closes the dialog. |

The size and position of the dialog can be changed. These settings are saved as user-dependent.

STORAGE PATH FOR DATABASE BACKUP FILES:

The first time a backup request is made and a path has not yet been established, you are requested to define a save path. This path is then used for all backups and restorations. This path is administered in the options in the Database backups (on page 577) tab of the Settings (on page 566).

Note: It is recommended that a path on the Analyzer computer is used for backup.



| TAGs | Description |
|---|--|
| <p>Network share path for storing database backup files of [database]</p> | <p>A valid UNC path must be entered.</p> <p>Clicking on the . . . button opens the dialog (on page 485) to select a network share.</p> <p>A check is made if:</p> <ul style="list-style-type: none"> ▶ The syntax of the path is valid if: Only valid paths unlock the OK button. ▶ The path exists: When clicking on OK, the path is only accepted if it can also be accessed. ▶ The path is different to that already used: If a path is defined that is different to a path that has already been used, a corresponding message is given. The path can be created. The pre-existing database backup job can then be activated, deactivated and deleted, but can no longer be edited. <p>The configured path is saved individually for each user.</p> <p>Attention: The access rights to network shares must be set correctly. For details, see the Set access rights to network share correctly.</p> |
| <p>OK</p> | <p>Accepts the path and closes the dialog.</p> |
| <p>Cancel</p> | <p>Discards changes and closes the dialog.</p> |

SET ACCESS RIGHTS TO NETWORK SHARE CORRECTLY

In order for all database backup action to run correctly, the access rights to the network share must correspond to the database backup folder. For this, the following applies:

- ▶ The folder must be on the Analyzer Server, because defined users must access it locally on the Analyzer Server.

- ▶ Because the folder must be accessible by both the Analyzer Server and the ZAMS computer with the same path, it must be authorized in the network. The folder is then accessible with the same path via a UNC path everywhere in the network.
- ▶ The following users must have full access to the network share:
 - `NT SERVICE\MSSQL$ZA2`: For the creation and restoration of backups.
Defined locally on the Analyzer server. Virtual user, derived from the `SYSTEM`, in whose context the SQL server instance is running.
 - `NT SERVICE\SQLAgent$ZA2`: For automatic creation of backups.
Defined locally on the Analyzer server. Virtual user, derived from the `SYSTEM`, in whose context the SQL server instance is running.
 - Every ZAMS user: To create and restore backups, administer backup files and administer automated backup jobs.

BACKUP FILE NAME

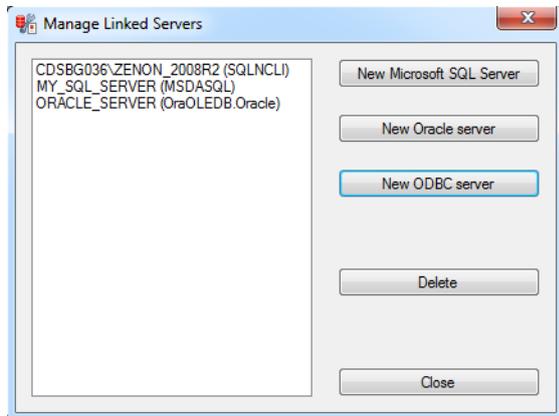
The file name of a database backup file follows this scheme: `[database name]_yyyy_MM_dd_HH_mm_ss.bak`

e.g.: `ZA_DATA_2013_02_12_14_11_35.bak` = backup of `ZA_DATA` on 12.2.2013 at 14:11:35

11.6.11 Manage linked server

This function is available if there is a connection to an Analyzer server with a valid license.

When this function is started, a list of the linked servers is obtained from the SQL Server instance. This list comes from the database to which ZAMS is connected,



| Parameters | Description |
|---------------------------------|--|
| List of linked servers | Contains all linked servers. The expression in brackets contains the provider for the connection. |
| New Microsoft SQL Server | Gets all SQL Server instances available in the network and opens the dialog to configure a linked SQL server. |
| New Oracle server | Opens the dialog to configure a linked Oracle server. Note: This button is only active if (OraOLEDB.Oracle) is found on the SQL server instance of the Oracle OLEDB provider. |
| New ODBC server | Opens the dialog to configure a linked ODBC server. |
| Delete | Deletes the server highlighted in the list. |
| Close | Closes the dialog |

Further providers of linked servers are available with SQL Server 2012. Providers from third-party manufacturers are also available; the Oracle OLE DB provider is an example of this. If a different provider is to be used as one of the three pre-configured ones here, the linked server can be set up manually via the SQL Server Management Studio.

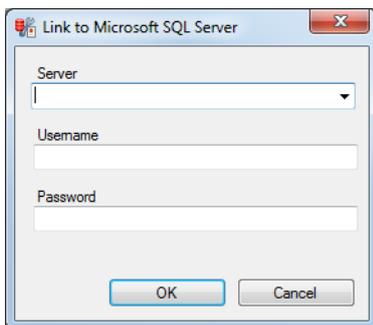
PROCESS OF CREATING A LINKED SERVER

1. Depending on the data contained in the dialog, the appropriate script for the creation of a linked server is executed.
2. If this is successful, the connection to the linked server is tested.

3. If this is also successful, the process is ended.
4. If the connection test is not successful, the user is notified of this via a message window and asked if they would nevertheless like to leave the linked server on the instance.
5. Depending on the user reaction, the linked server is left on the instance or deleted again.

All errors and success messages in this process are displayed as a message in the output window. The list of the linked servers is updated after the end of the process.

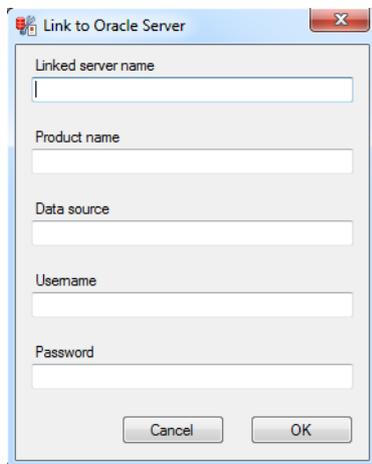
CONFIGURATION OF A LINKED SQL SERVER



The image shows a dialog box titled "Link to Microsoft SQL Server". It contains three input fields: "Server" (a dropdown menu), "Username" (a text box), and "Password" (a text box). At the bottom, there are "OK" and "Cancel" buttons.

| Parameters | Description |
|------------|--|
| Server | Entry for SQL server instance. Either a selection from a drop-down list or details of its own instance. The entry is the name for the linked server at the same time, as described by the provider. |
| Username | User name. |
| Password | Password. Is not displayed in plain text. |
| Cancel | Discards entries and closes the dialog. |
| OK | Applies settings and closes the dialog. |

CONFIGURATION OF A LINKED ORACLE SERVER



Link to Oracle Server

Linked server name

Product name

Data source

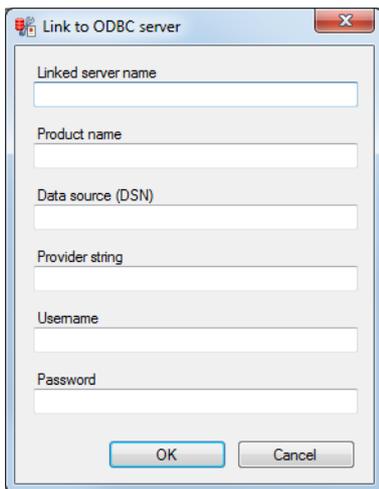
Username

Password

Cancel OK

| Parameters | Description |
|--------------------|---|
| Linked server name | Name of the linked Oracle server. The name must not have been issued to an existing linked server already. |
| Product name | Any desired product name. |
| Data source | Connection name for the Oracle OLEDB provider. You can find details on installation and setting up the parameters of the Oracle providers in the Oracle documentation. |
| Username | Username |
| Password | Password. Is not displayed in plain text. |
| Cancel | Discards entries and closes the dialog. |
| OK | Applies settings and closes the dialog. |

CONFIGURATION OF A LINKED ODBC SERVER



The screenshot shows a Windows-style dialog box titled "Link to ODBC server". It contains the following fields and controls:

- Linked server name:
- Product name:
- Data source (DSN):
- Provider string:
- Username:
- Password:
- Buttons: OK, Cancel

| Parameters | Description |
|---------------------------|---|
| Name of connection server | Name of the new linked ODBC server. The name must not have been issued to an existing linked server already. |
| Product name | Any desired product name. |
| Data source (DSN) | Name of the DSN entry to be used. If nothing is entered here, the provider string must be specified in the Provider string field. |
| Provider-String | The provider string to be used is given here. If nothing is entered here, the DSN entry must be specified in the Data source (DSN) field. |
| Username | User name. |
| Password | Password. Is not displayed in plain text. |
| Cancel | Discards entries and closes the dialog. |
| OK | Applies settings and closes the dialog. One the two fields, Data source (DSN) or Provider string can be empty. |

11.6.12 Manage metadata indices

In order for metadata indices to be administered, there must be a connection to an Analyzer server with a valid license.

To administer the metadata indices:

1. Select, in the **SQL server** menu, the **Metadata indices** command
2. The dialog with the display of the fragmentation of the metadata indices is opened

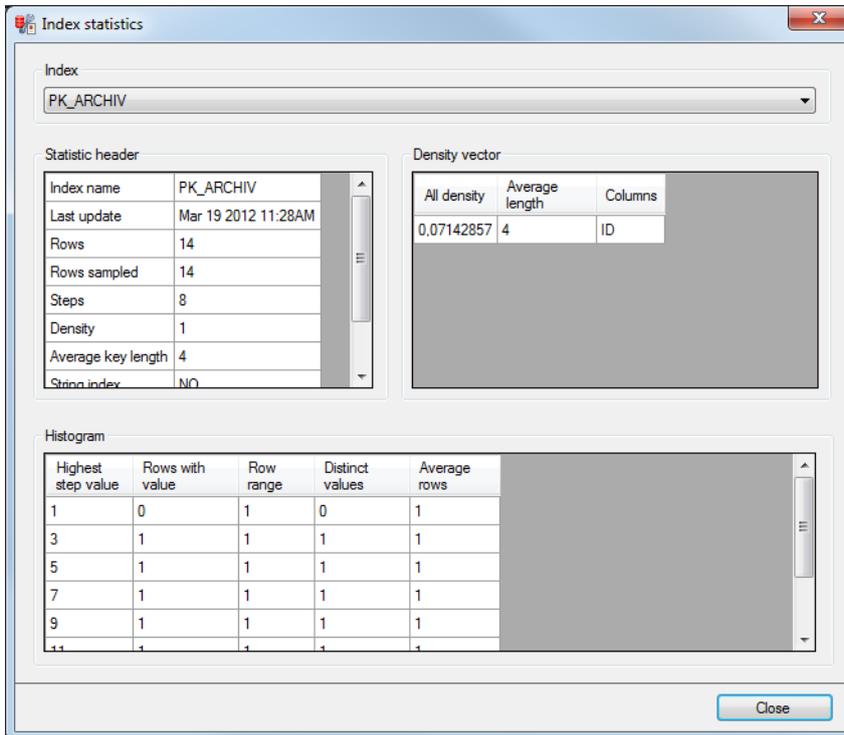
The size of the window can be adjusted by dragging with the mouse. The position and size are saved depending on the user and the ZAMS version.

| Table | Index | Records | Pages | Internal fragmentation | External fragmentation |
|-----------------|----------------------------|---------|-------|------------------------|------------------------|
| EMULATED_DA... | PK_EMULATED_DATA | 4376995 | 23289 | 32.69 % | 99.32 % |
| VARIABLE | PK_VARIABLE | 2105 | 95 | 2.75 % | 98.95 % |
| VARIABLE | IX_VARIABLE_PROJECT_ID_... | 2105 | 41 | 17.04 % | 97.56 % |
| VARIABLE | IX_VARIABLE_MEANING | 2105 | 21 | 5.27 % | 95.24 % |
| VARIABLEEQUI... | PK_VARIABLEEQUIPMENT | 2040 | 7 | 38.67 % | 85.71 % |
| VARIABLE | UN_VARIABLE_VISUALNAME | 2105 | 33 | 42.62 % | 81.82 % |
| VARIABLEARCHIV | PK_VARIABLEARCHIV | 307 | 5 | 17.37 % | 80.00 % |
| VARIABLEEQUI... | IX_VARIABLEEQUIPMENT_V... | 2040 | 4 | 11.81 % | 75.00 % |
| REPORT_DEPE... | PK_REPORT_DEPENDENCIES | 118 | 3 | 30.07 % | 66.67 % |
| EQUIPMENT | PK_EQUIPMENT | 57 | 2 | 45.66 % | 50.00 % |
| REPORT_HIST... | PK_REPORT_HISTORY | 45 | 22 | 23.29 % | 18.18 % |
| STATENAME | PK_STATENAME | 1422 | 24 | 1.33 % | 12.50 % |
| EMULATED_VA... | PK_EMULATED_VARIABLE | 5 | 1 | 97.24 % | 0.00 % |
| EMULATED_VA... | PK_EMULATED_VARIABLE_... | 5 | 1 | 97.80 % | 0.00 % |
| EMULATED_VA... | PK_EMULATED_VARIABLE_... | 0 | 1 | 99.74 % | 0.00 % |
| EMULATED_VA... | PK_EMULATED_VARIABLE_... | 0 | 1 | 99.59 % | 0.00 % |
| EVENTCLASS | PK_EVENTCLASS | 3 | 1 | 98.23 % | 0.00 % |
| EVENTCLASS | UN_EVENTCLASS_VISUALN... | 3 | 1 | 99.18 % | 0.00 % |
| EMULATED_AR... | PK_EMULATED_ARCHIV | 2 | 1 | 98.47 % | 0.00 % |
| ARCHIVEQUIPM... | PK_ARCHIVEEQUIPMENT | 10 | 1 | 96.89 % | 0.00 % |
| ARCHIVEQUIPM... | IX_ARCHIVEEQUIPMENT_AR... | 10 | 1 | 98.30 % | 0.00 % |
| EQUIPMENTSHI... | PK_EQUIPMENTSHIFT | 1 | 1 | 97.81 % | 0.00 % |
| EQUIPMENTINFO | PK_EQUIPMENTINFO | 0 | 0 | 100.00 % | 0.00 % |

Index statistics... Index maintenance... Close

| Parameters | Description |
|-------------------------------|--|
| Table | Table name. |
| Index | Index name. |
| Records | Number of entries in the index. |
| Pages | Number of pages on which the index is saved. |
| Internal fragmentation | <p>Value displays how much (in percent of pages on which the index is saved) is unused. A high degree of internal fragmentation increases the memory that the index occupies. This can reduce the index performance, because more pages have to be read. Critical values are highlighted in color:</p> <ul style="list-style-type: none"> ▶ Yellow: Value greater than 5% ▶ Red: Value greater than 30% <p>Indices without entries always have internal fragmentation of 100%. Indices that occupy 1 or 0 pages are excluded from highlighting.</p> |
| External fragmentation | <p>The value states how many of the pages of the index are not saved consecutively.</p> <p>A page cannot be saved consecutively if its logical position between other index pages in the index is not equal to its physical position between other index pages on the memory medium.</p> <p>A high degree of external fragmentation reduces the index performance, because it is often necessary to jump between save locations on the memory medium when reading the index.</p> <p>Critical values are accented in color:</p> <ul style="list-style-type: none"> ▶ Yellow: Value greater than 5% ▶ Red: Value greater than 30% <p>Indices that occupy 1 or 0 pages always have an external fragmentation of 0%.</p> <p>The table is in descending order according to this column as standard.</p> |
| Index statistics | Opens the dialog for displaying the index statistics. |
| Index administration | Opens the dialog for index maintenance. |
| Close | Closes the dialog. |

INDEX STATISTICS



| Parameters | Description |
|-------------------------|---|
| Index | Selection of the index from the drop-down list. The following tables are filled with data depending on this selection. |
| Statistic header | Header with metadata. |
| Density vector | Density vector to measure the correlations between columns. |
| Histogram | Histogram for distribution of the values. |
| Close | Closes the dialog. |

You can find more information on interpretation of the values at, for example:

- ▶ MSDN: [http://msdn.microsoft.com/en-us/library/ms174384\(v=sql.90\).aspx](http://msdn.microsoft.com/en-us/library/ms174384(v=sql.90).aspx)
([http://msdn.microsoft.com/en-us/library/ms174384\(v=sql.90\).aspx](http://msdn.microsoft.com/en-us/library/ms174384(v=sql.90).aspx))
- ▶ SQL ServerCentral: <http://www.sqlservercentral.com/articles/Stairway+Series/72446/>
(<http://www.sqlservercentral.com/articles/Stairway+Series/72446/>) (registration required)

INDEX ADMINISTRATION

Index maintenance

The maintenance action is automatically preselected according to a best-practice guide. If necessary, these settings can be changed.

| Index name | Maintenance action |
|--------------------------------|--------------------|
| PK_ARCHIV | No maintenance |
| UN_ARCHIV_VISUALNAME | No maintenance |
| IX_ARCHIV_PROJECT_ID_REFERENCE | No maintenance |
| PK_ARCHIVEQUIPMENT | No maintenance |
| IX_ARCHIVEQUIPMENT_ARCHIV | No maintenance |
| PK_EQUIPMENT | Rebuild index |
| UN_EQUIPMENT_VISUALNAME | No maintenance |
| UN_EQUIPMENT_REFERENCE | No maintenance |
| PK_EQUIPMENTSHIFT | No maintenance |
| PK_EMULATED_ARCHIV | No maintenance |

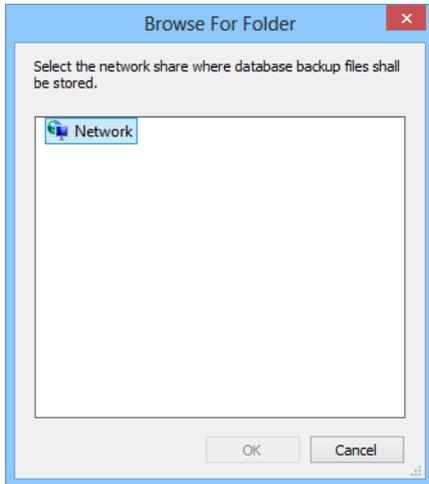
OK Cancel

| Parameters | Description |
|--------------------|---|
| Index name | Name of the index. |
| Maintenance action | <p>Possible maintenance actions. When switching, the appropriate maintenance action is pre-selected for each index. The dialog can usually be confirmed without changes by clicking on OK.</p> <p>Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ No maintenance: Do not carry out any action. Always available. ▶ Recompute index statistics: Updates the statistics. Only available if the index occupies more than 0 pages. The action hardly needs to be carried out, because the SQL server has good automated mechanisms for carrying this out. ▶ Reorganize index: Reorganize index (includes Recompute index statistics.) Only available if the index occupies more than 0 pages. ▶ Rebuild index: Rebuilds the index. (includes Recompute index statistics.) Only available if the index occupies more than 0 pages. |
| OK | Executes the selected action and ends the dialog. |
| Cancel | Exits the dialog without carrying out any actions |

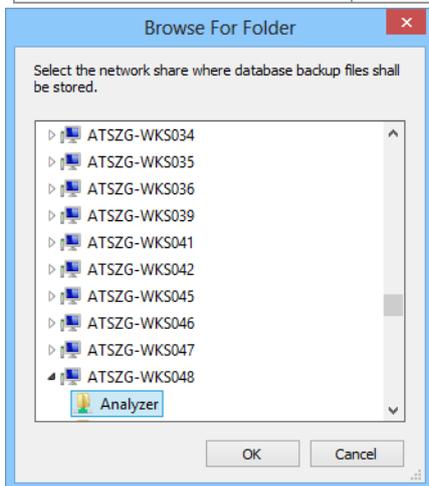
If an action is not successful, a message window with the indices where maintenance was unsuccessful is displayed.

11.7 Selection of folder in the network

The dialog to select a network approval is displayed if a folder in the network is selected as a save location for files from ZAMS. The display of the dialog and its content is controlled by the operating system.



| Parameters | Description |
|------------------------|---|
| Network display | Displays the network. Clicking on the folder starts a search for computers in the network and shows these. Because it takes some time to list all computers available in the Windows network, the Network node can only be opened after some seconds. |
| OK | Accepts selection and closes dialog. |
| Cancel | Discards selection and closes dialog. |



| Parameters | Description |
|------------------------|--|
| Network display | Displays computers present in the network. Clicking on the computer shows approved folders. Clicking on the folder highlights this for acceptance as the save location. |
| OK | Accepts selection and closes dialog. |
| Cancel | Discards selection and closes dialog. |

The size and position of the dialog can be changed. These settings are saved as user-dependent.

11.8 Archive emulation

In ZAMS, you can emulate archives that are derived from figures from entries in the AML, CEL and archives in zenon. An emulated archive consists of metadata for archives and variables. These are calculated periodically according to the configuration.

Data from the emulated archives can be read directly from the Analyzer database regardless of the selected connector. For reports, the origin of the data - zenon archive or emulated archive - is transparent. Emulated archives are configured in ZAMS.



Attention

Emulated archives can only be created with variables from zenon. Variables from third-party databases lead to an error message.

CONFIGURE ARCHIVE EMULATION

To configure the archive emulation:

1. Select the **Configure archive emulation** entry in the **Automation** menu.
2. The current configuration of the emulated archive is loaded.
3. The dialog to administer the emulated archive is displayed.
4. Clicking on the 'OK' button accepts all changes made.



Information

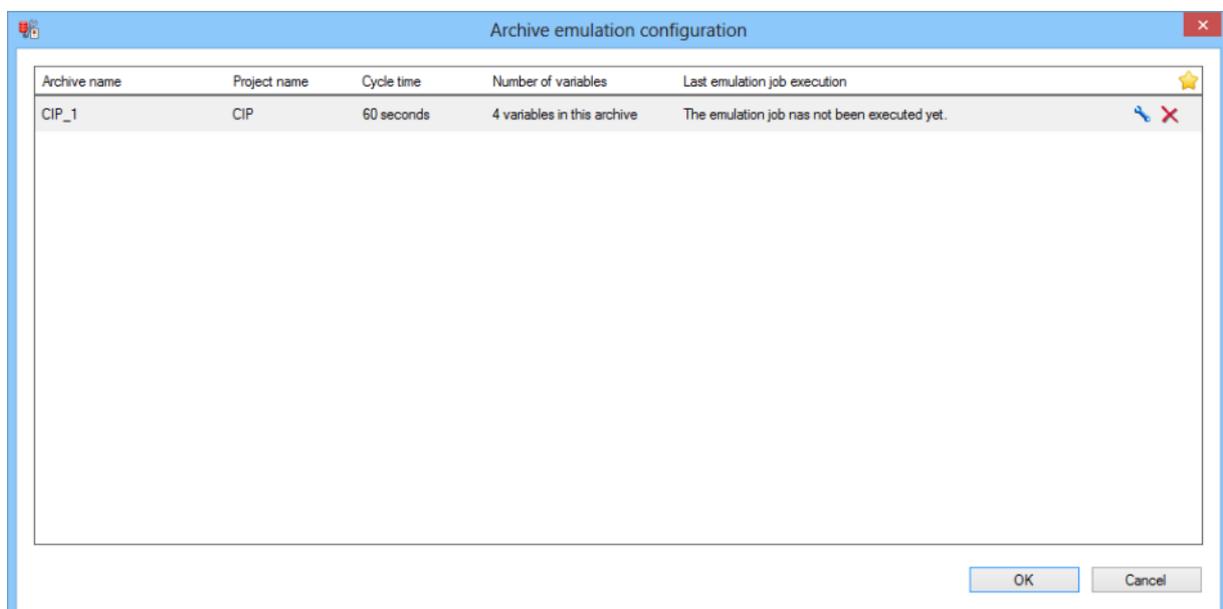
For the configuration of an emulated archive, the metadata must contain at least:

- ▶ A project
- ▶ A variable

For the configuration of an emulated archive variable, the data source `Archive` is only available if there is at least one archive present in the metadata.

CONFIGURATION DIALOG

The configuration dialog shows all existing emulated archives when it is started.



| Parameters | Description |
|------------------|---|
| List of archives | <p>Displays all configured archives. The list contains:</p> <ul style="list-style-type: none"> ▶ Archive name: Name of the archive ▶ Project name: Name of the project that is assigned to the archive ▶ Cycle time: configured cycle time of the archive ▶ Number of variables: Number of variables in the archive ▶ Execution of emulation tasks: Information on the last execution of the SQL Server agent jobs that are assigned to the archive ▶ Buttons to create, edit and delete emulated archives |
| New | Opens the dialog for creating a new archive (on page 489). |
| Edit | Opens the dialog for editing the selected archive (on page 523). |
| X | <p>Deletes the archive after a request for confirmation.</p> <p>Attention: All data is deleted from the archive with the archive configuration.</p> |
| OK | <p>Applies settings and closes the dialog.</p> <p>ZAMS writes the changes to the database and to the SQL Server agent. If errors occur when writing the configuration, these are displayed in the output window of ZAMS.</p> |
| Cancel | Discards all changes and closes the dialog. |

USE OF TIME STAMPS

Archive emulation only uses a time stamp if a variable has changed a value. It must be ensured that all value changes are available.

The following applies for the AML: There is also a time stamp available for `Alarm cleared`. This is not used, but replaced by the time stamp for `Alarm received` of the next alarm.

Background: A constant flow of data from the base variables is used for emulation. There must be no point in time when the variable does not have a value. With alarms, the time for `Alarm cleared` is less than the time for `Alarm received` of the next alarm. If an entry for a value change of the base variables is missing, the old value is still set for emulation, because this value change does not appear in the basis data for emulation. As a result of this, it is possible that a calculation error (negative values) may occur.

11.8.1 Editing modes

The **New** and **Edit** buttons open the respective configuration dialog, depending on the status of the archive:

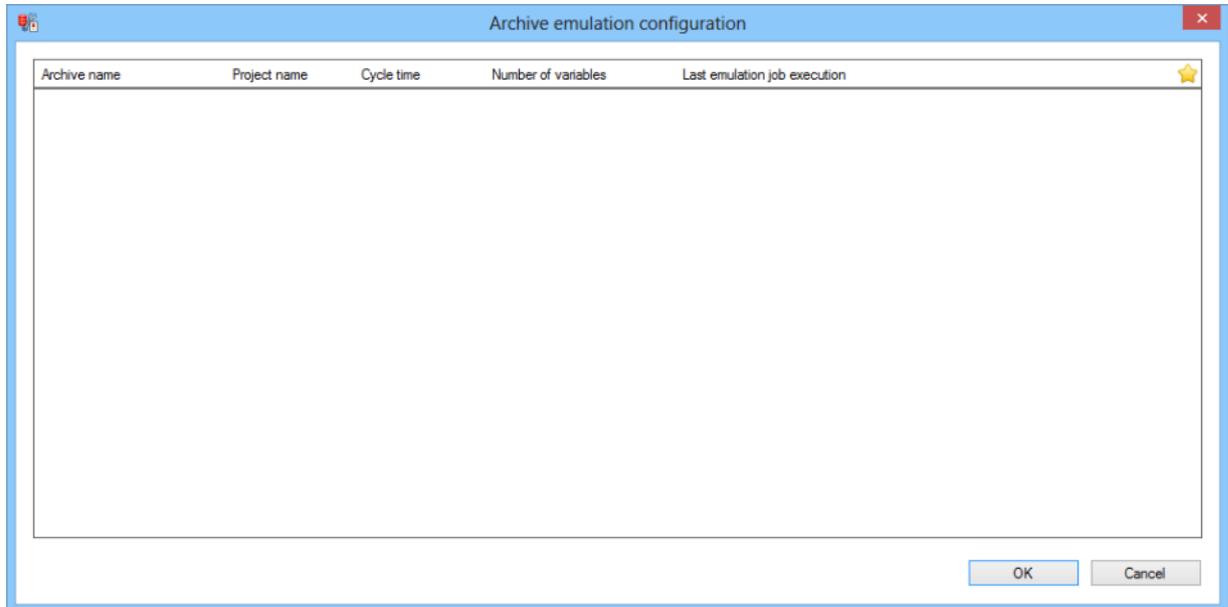
- ▶ **Creating a new archive:** A completely new archive is created. All settings for archive variables can be modified.
- ▶ **Edit newly-created archive:** A newly-created archive that has not yet been written to the database is edited. Or an archive that has already been saved and has been made editable again.
 - **Archive:** All settings can be edited, with the exception of **Assigned project** and **Reference**.
 - **Variables:** All settings can be edited.
- ▶ **Edit existing Archive:** An archive that was created and saved in a previous configuration is edited. This was already written to the database and thus has entries in the metadata tables.
 - **Standard:**
Archive: Only the **Data calculation** can be changed.
Variables: Only displayed as read-only.
 - **Make editable (on page 523):** The editing of an archive can be enabled, with the exception of **assigned project** and **Reference**. Existing data is deleted in the process.

11.8.2 Creating an emulated archive

To create a new emulated archive:

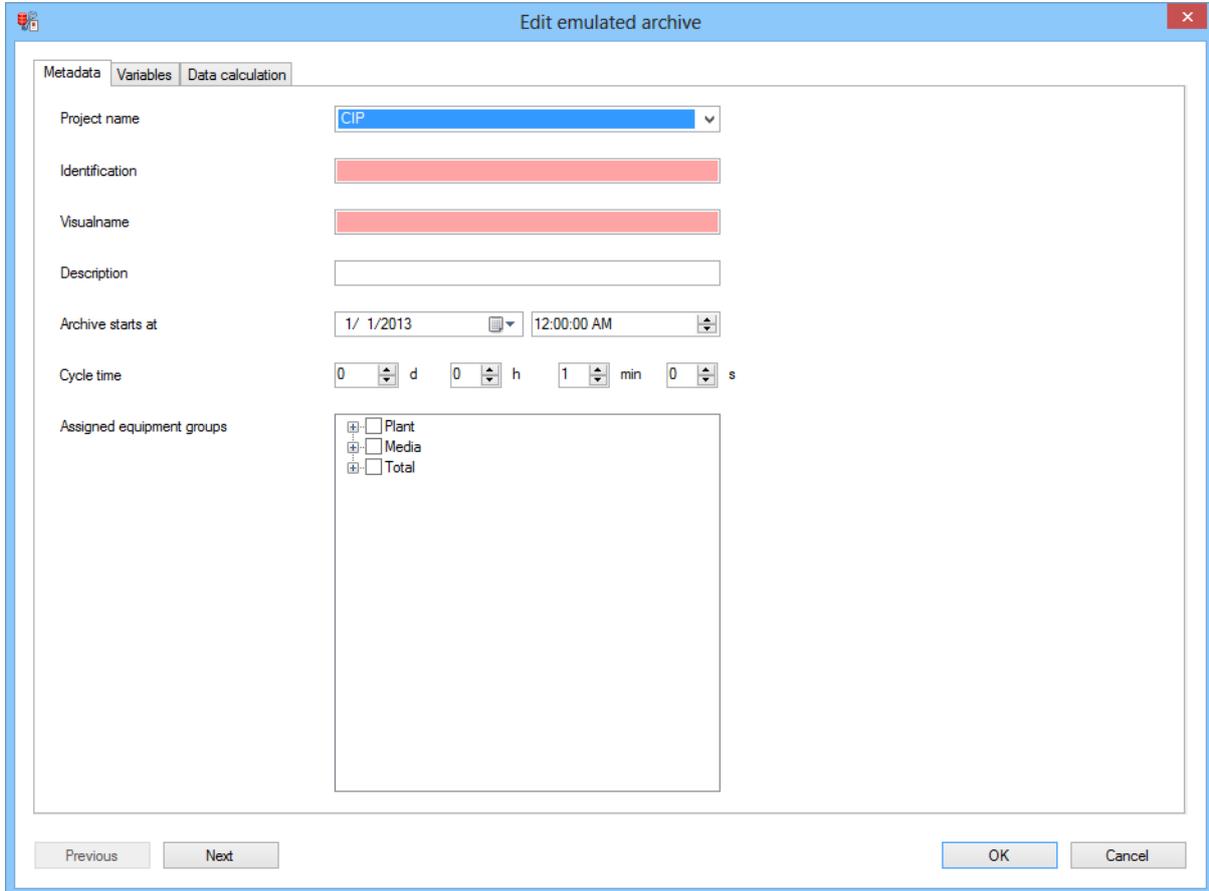
1. Select the **Configure archive emulation** entry in the **Automation** menu.

2. The dialog for configuring emulated archives is opened



3. Click on the **new** symbol to create a new archive.

4. The dialog for configuring an emulated archive is opened



The screenshot shows the 'Edit emulated archive' dialog box with the following fields and options:

- Project name:** CIP
- Identification:** (Redacted)
- Visualname:** (Redacted)
- Description:** (Empty text box)
- Archive starts at:** 1/ 1/2013, 12:00:00 AM
- Cycle time:** 0 d, 0 h, 1 min, 0 s
- Assigned equipment groups:**
 - Plant
 - Media
 - Total

Navigation buttons: Previous, Next, OK, Cancel.

| Parameters | Description |
|------------------|--|
| Metadata | Configuration of the metadata (on page 495). |
| Variables | Configuration of the variables (on page 497). |
| Data calculation | Configuration of the data calculation (on page 519). |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. Only available if all necessary configuration has been carried out. |
| Cancel | Discards all changes in all tabs and closes the dialog. If data has already been entered, a request for confirmation is made before the changes are discarded. |

THE PROCEDURE FOR CREATING AN EMULATED ARCHIVE

1. A check is made to ensure that no more reports can be opened.
2. Open reports are closed after receiving confirmation from the user. If the closing is declined by the user, the process is canceled.
3. Unsaved reports are saved.
4. If there is at least one report with changes that have not been saved or opened, the process is canceled.
5. The necessary metadata is read from the database. The process is canceled if an error occurs.
6. The required SQL Server Agent is loaded. The process is canceled if an error occurs.
7. The SQL script Template for the command text of an SQL Server Agent archive emulation job is loaded. The process is canceled if an error occurs.
8. The SQL Server Agent jobs are analyzed. Archive emulation tasks are cached per archive: precisely one task per archive. If a second job comes for the same archive, this is ignored. An SQL server agent job is an archive emulation job if the following conditions are met:
 - It is assigned to the "Data Collector" category
 - It contains precisely one step.
 - Its name follows the model "Calculate [ArchivID]".

- The step uses the "Transact SQL" subsystem.
 - The archive ID can be derived from the name.
 - The command text of the step corresponds to that of the SQL script template set up with the archive ID.
 - It has precisely one schedule.
9. The configuration of all emulated archives is read from the metadata tables. The SQL server agent archive emulation job is then assigned to each emulated archive on the basis of the archive ID. If no such task can be found for an archive, this is skipped with an error message. Any other error leads to the procedure being canceled.
10. The dialog to manage emulated archives is displayed with the loaded data. The dialog is configured by the user. The process is canceled if an error occurs.
11. The user ends the dialog with:
- **cancel**: The process is terminated.
 - **ok**: The process is continued.
12. The list of archives to be deleted is read off by the dialog. Procedure for each archive to be deleted:
- The SQL server agent job of the archive to be deleted is deleted. If an error occurs, this is reported, however the procedure continues for this archive.
 - All table entries of all variables in the emulated archive to be deleted are deleted. If an error occurs, this is reported, however the procedure continues for this archive.
 - All table entries of the archive to be deleted are deleted. If an error occurs, this is reported, however the procedure continues for this archive.
13. The list of existing archives is read off by the the dialog object. Procedure for each emulated archive:
- A check is made to see if data for getting the base variables has changed. If this is the case, the changes are written to the database. If an error occurs, this is reported, however the procedure continues for this archive.
 - A check is made to see if the calculation schedule of the archive has changed. If this is the case, the previous schedule of the SQL server agent job is rejected and a new schedule that corresponds to that set in the dialog is created for the SQL server agent job. If an error occurs, this is reported, however the procedure continues for this archive.

- A check is made to see if the active flag of the SQL server agent job has changed. If this is the case, the change is implemented in the SQL server agent job. If an error occurs, this is reported, however the procedure continues for this archive.
14. The list of archives to be created is read off by the dialog. Procedure for each emulated archive:
- The metadata and emulation data of the archive is written to the database. If an error occurs, this is reported and a jump to the next archive in the list is made.
 - The equipment group assignments of the emulated archive are written to the database. If an error occurs, this is reported, however the procedure continues for this archive.
 - The variables of the emulated archive are gone through. The following happens for each variable:

The metadata, the emulation data and the archive assignment for the variable are written. If an error occurs, this is reported and a jump to the next variable in the archive in the list is made.

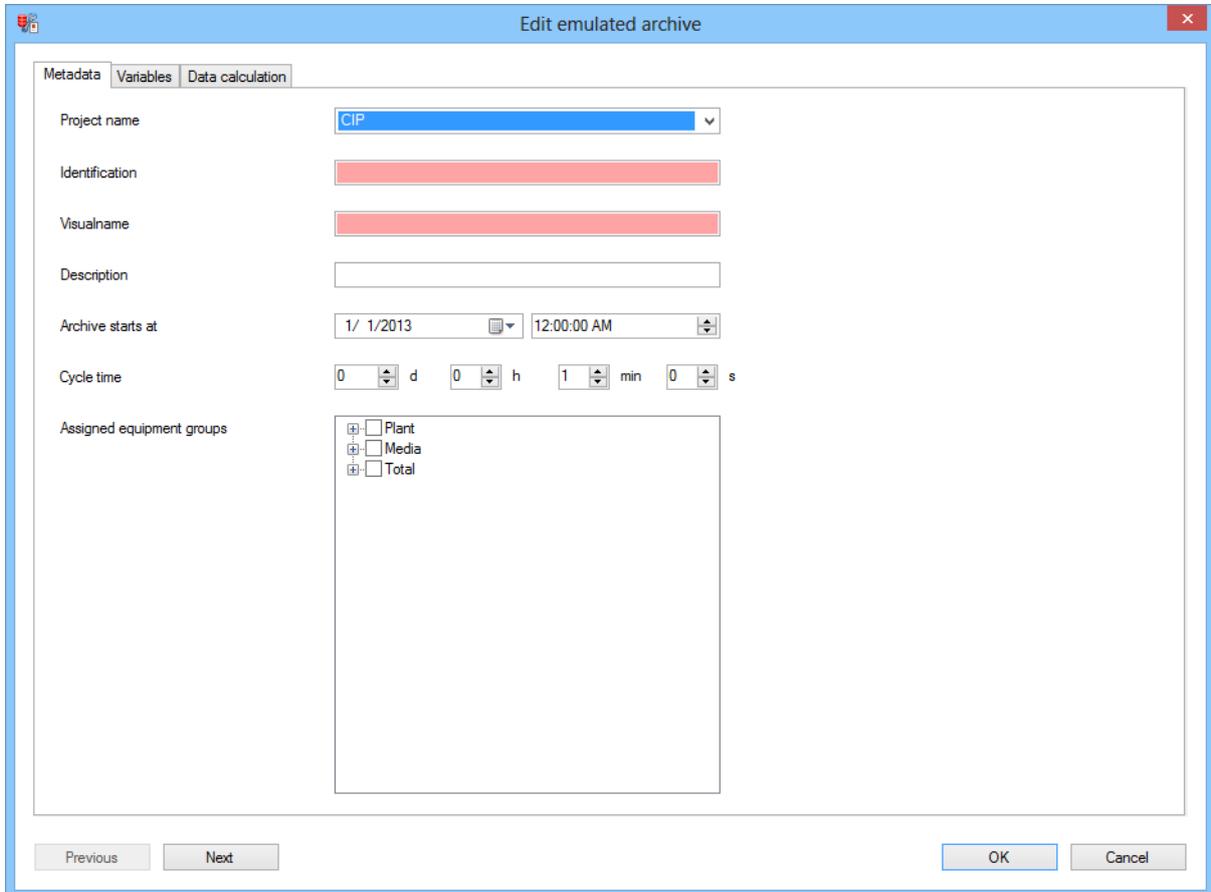
The base variable rules of the emulated variable and the rules for additional reset events are written to the database. If an error occurs, this is reported, however the procedure continues for this variable.

The equipment group assignments of the emulated variables are written to the database. If an error occurs, this is reported, however the procedure continues for this variable.

The assigned meanings of the emulated variables are written to the database. If an error occurs, this is reported, however the procedure continues for this variable.
 - The necessary SQL elements are created in the database. If this step has already been executed for a previous archive in the current process, (regardless of whether it was successful or not), it is skipped.
 - The SQL server agent job for the calculation of the data of the emulated archive is created with the set schedule.
15. Caches will empty.
16. Reports of all paths noted will be opened.
17. A conclusion message is given.

Metadata

The metadata is configured in this tab.



The screenshot shows the 'Edit emulated archive' dialog box with the 'Metadata' tab selected. The dialog has three tabs: 'Metadata', 'Variables', and 'Data calculation'. The 'Metadata' tab contains the following fields:

- Project name:** A dropdown menu with 'CIP' selected.
- Identification:** A red rectangular input field.
- Visualname:** A red rectangular input field.
- Description:** An empty text input field.
- Archive starts at:** A date and time selector showing '1/ 1/2013' and '12:00:00 AM'.
- Cycle time:** A time selector with fields for days (0), hours (0), minutes (1), and seconds (0).
- Assigned equipment groups:** A list box containing three items: 'Plant', 'Media', and 'Total', each with a plus icon and an unchecked checkbox.

At the bottom of the dialog, there are four buttons: 'Previous', 'Next', 'OK', and 'Cancel'.

| Parameters | Description |
|---------------------------|---|
| Project name | <p>Selection from the drop-down list with all existing project names.</p> <p>The first project entered is selected by default for new projects.</p> <p>Attention: If this selection is changed and there are already variables in the variable list, it is emptied!</p> |
| Reference | <p>Input of the identification for the archive.</p> <ul style="list-style-type: none"> ▶ Maximum length: 128 characters ▶ Must not be empty. ▶ Must not be used by another archive that is assigned to the same project. Capitalization is not taken into account. |
| Visualname | <p>Entry of the visual name of the archive.</p> <ul style="list-style-type: none"> ▶ Maximum length: 128 characters ▶ Must not be empty. ▶ Must not be used by another archive that is assigned to the same project. Capitalization is not taken into account. |
| Detailed information | <p>Entry of the description of the archive.</p> <ul style="list-style-type: none"> ▶ Maximum length: 256 characters |
| Archive starts at | <p>Stipulation of data and time for the start of the archive.</p> <ul style="list-style-type: none"> ▶ Date: Entry of the date or selection from a calendar. ▶ Time: Entry of the time or setting by means of cursor keys. <p>Entry in UTC.</p> <p>Earliest time point: 1/1/2013 00:00:00</p> |
| Cycle time | <p>Stipulation of the cycle time for the archive. Entry of the interval or setting by means of cursor keys.</p> <p>The value must be greater than 0</p> <p>Default: 1 minute</p> |
| Assigned equipment groups | <p>Assignment of equipment group to the archive. Selection by activating the checkbox in front of the respective equipment group.</p> <p>Clicking on the + sign expands the group.</p> |

| | |
|-----------------|--|
| | Default: No Allocation. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. Only available if all necessary configuration has been carried out. |
| Cancel | Discards all changes in all tabs and closes the dialog. If data has already been entered, a request for confirmation is made before the changes are discarded. |

Note: Mandatory fields and fields that are empty that have a negative validation are displayed with a red background.

DIFFERENCES WHEN EDITING NEW ARCHIVES

If already-created, but not-yet saved archives are edited, the dialog exhibits the following differences:

- ▶ All fields: The values that have already been set are displayed instead of the standard values.
- ▶ `Project name`: The drop-down list to select a project is deactivated.
- ▶ `Identification`: The entry for the reference is deactivated.
- ▶ `Assigned equipment groups`: If the equipment model or one of its elements has a active assignment, then the complete branch of the group is displayed.

DIFFERENCES WHEN EDITING SAVED ARCHIVES

If already-saved archives are edited, the dialog exhibits the following differences as standard:

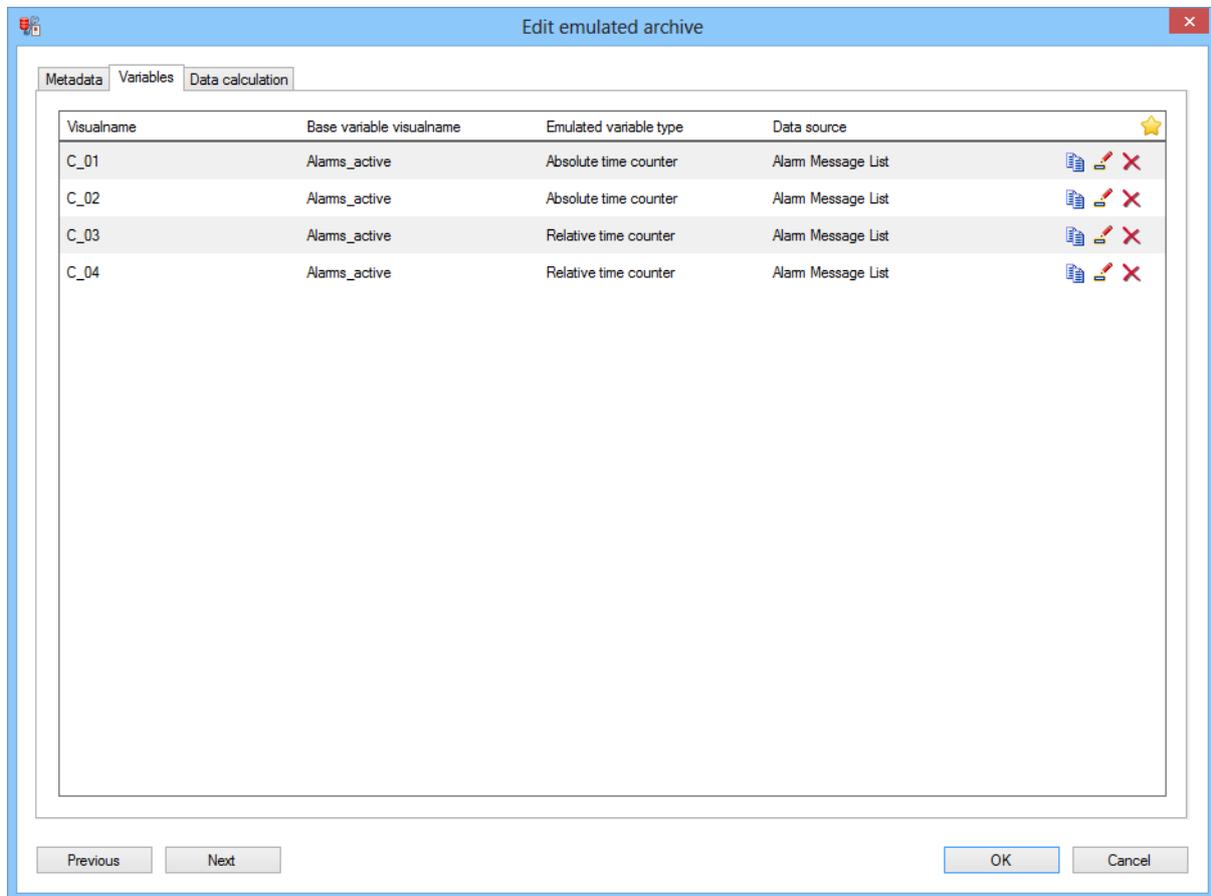
- ▶ All fields: The values that have already been set are displayed instead of the standard values.
- ▶ All input possibilities are deactivated.

The editing of archives that have already been saved can be activated (on page 523) again.

Variables

Emulated variables are created and edited in this tab.

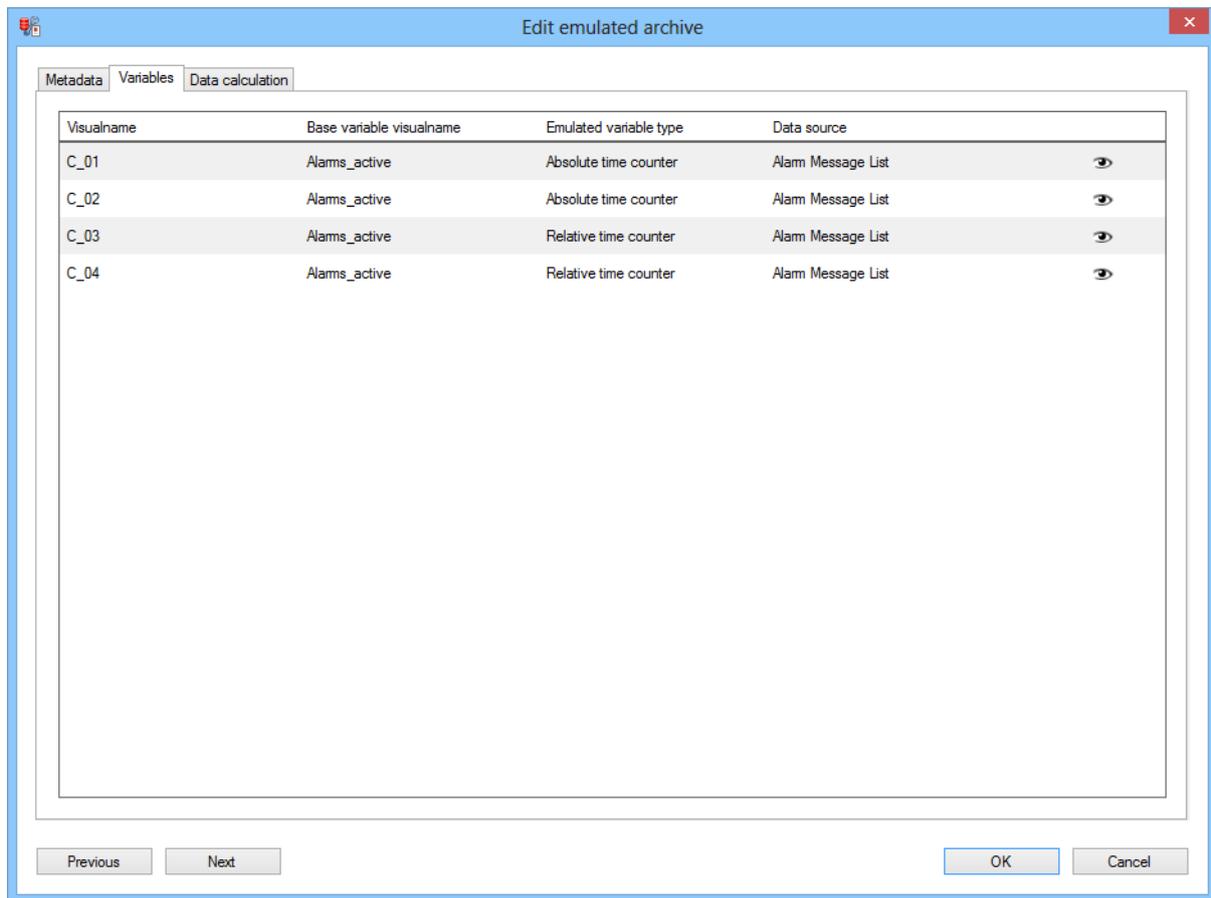
When validating the dialog to create a new emulated archive, at least one emulated variable must be present. Emulated variables that have the same base variable must also have the same data origin. This also includes variables that supply additional reset event (on page 515) for absolute counters. Variables can also be duplicated.



| Parameters | Description |
|--------------------------|---|
| Variable list | <p>Displays all configured variables. The list contains:</p> <ul style="list-style-type: none"> ▶ Visualname: Name with which the variable is displayed ▶ Base variable visualname: Name of the variables for the value calculation ▶ Emulated variable type: ▶ Data source: Origin of base variables <p>This list is empty by default when a new archive is created.</p> |
| Symbol: New | Opens the dialog for Creating new variables (on page 501). |
| Symbol: Duplicate | Creates, on the basis of the selected variables, a new variable and opens the dialog to configure the variables. This dialog is filled with the values of the base variables. The name and display name of the variables must be unique. These are always made clear with numbers in brackets in the duplicated variables. |
| Symbol: Edit | Opens the dialog for editing the selected variables (on page 501). |
| Symbol: Delete | Deletes the selected variable. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | <p>Applies all changes in all tabs and closes the dialog.</p> <p>Only available if all necessary configuration has been carried out.</p> |
| Cancel | Discards all changes in all tabs and closes the dialog. If data has already been entered, a request for confirmation is made before the changes are discarded. |

DIFFERENCES WHEN EDITING SAVED ARCHIVES

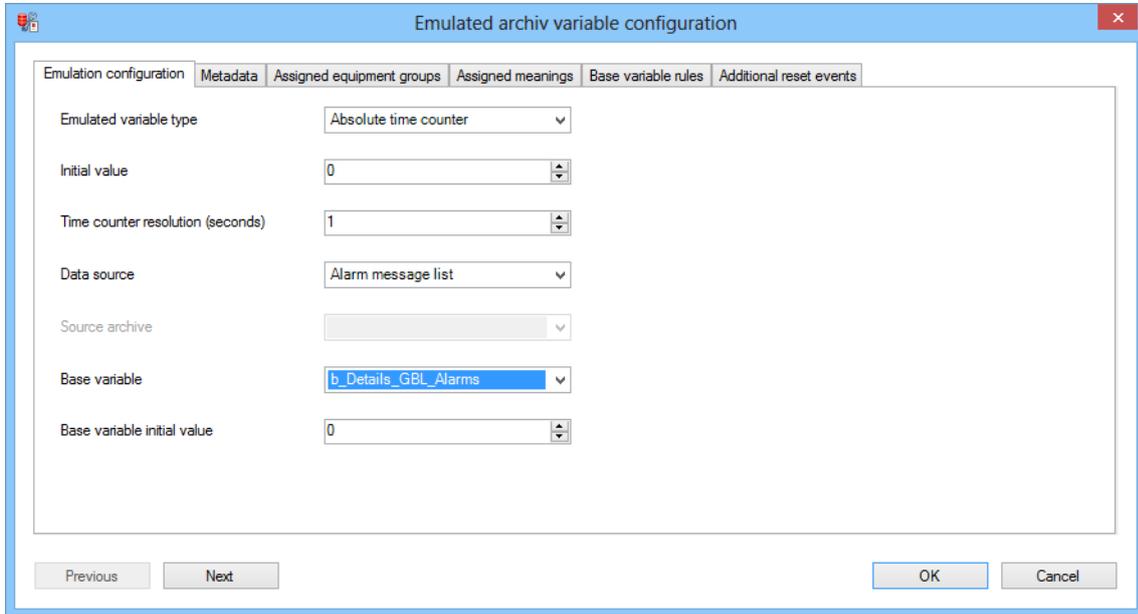
If already-saved archives are edited, the dialog exhibits the following differences:



- ▶ No new variables can be created.
- ▶ No variables can be deleted.
- ▶ No variables can be edited.
- ▶ The `display` symbol allows the configuration of variables to be displayed.

Emulation configuration

The emulated variables are created in this tab.



Emulated archiv variable configuration

Emulation configuration | Metadata | Assigned equipment groups | Assigned meanings | Base variable rules | Additional reset events

Emulated variable type: Absolute time counter

Initial value: 0

Time counter resolution (seconds): 1

Data source: Alarm message list

Source archive:

Base variable: b_Details_GBL_Alarms

Base variable initial value: 0

Previous Next OK Cancel

| Parameters | Description |
|------------------------|--|
| Emulated variable type | <p>Selection of the type of emulated variable from a drop-down list. Depending on the type selected, either all or only selected tabs are displayed and options may be deactivated.</p> <p>Emulation types:</p> <ul style="list-style-type: none"> ▶ Absolute time counter All tabs are displayed. Default on initial configuration. ▶ Relative time counter Settings from Additional reset events (on page 515) are not relevant and are not shown. ▶ Absolute event counter All tabs are displayed. ▶ Relative event counter Settings from Additional reset events (on page 515) are not relevant and are not shown. ▶ Sum Settings from Base variable rules (on page 511) and Additional reset events (on page 515) are not relevant and are not shown. ▶ Time-corrected average Settings from Base variable rules (on page 511) and Additional reset events (on page 515) are not relevant and are not shown. ▶ Minimum Settings from Base variable rules (on page 511) and Additional reset events (on page 515) are not relevant and are not shown. ▶ Maximum Settings from Base variable rules (on page 511) and Additional reset events (on page 515) are not relevant and are not shown. ▶ Difference counter Settings from Base variable rules (on page 511) and Additional reset events (on page 515) are not relevant and are not shown. <p>For further information on the emulation types, see the Details of emulation types section.</p> |
| Initial value | Entry of the initial value of the variable at the time the archive is started. |

| | |
|-----------------------------------|---|
| | <p>Only available if the type of the emulated variables is an absolute counter (absolute time counter, absolute event counter).</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 1000000 |
| Time counter resolution (seconds) | <p>Resolution of the time counter in seconds.</p> <p>Only available if the type of the emulated variables is a time counter (absolute time counter, relative time counter).</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 86400 (1 day) <p>Examples:</p> <ul style="list-style-type: none"> ▶ 60: Minute counter ▶ 3600: Hour counter ▶ 86400: Day counter |
| Data source | <p>Selection of a data source for the base variable from drop-down list:</p> <ul style="list-style-type: none"> ▶ Alarm Message List ▶ Chronological Event List ▶ Archive |
| Source archive | <p>Selection of a source archive from a drop-down list. The list contains all archives of the project that was selected in the metadata (on page 495) dialog. This also includes emulated archives that were already saved in the metadata.</p> <p>Only available if archive was selected as a data source.</p> |
| Base variable | <p>Selection of a base variable from a drop-down list, the value of which is derived from the values of the emulated variables.</p> <p>Depending on the data source, available for:</p> <ul style="list-style-type: none"> ▶ Data source alarm message list or chronological event list: All available variables of the project that was selected in the metadata (on page 495) dialog. This also includes emulated variables that were already saved in the metadata. |

| | |
|-----------------------------|--|
| | <ul style="list-style-type: none"> ▶ Data source Archive: All variables that are assigned in the metadata to the archive with an aggregation of Raw value (0). This also includes emulated archives that were already saved in the metadata. |
| Base variable initial value | <p>Entry of the initial value of the base variables at the time the archive is started.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 1000000 |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | <p>Applies all changes in all tabs and closes the dialog.</p> <p>Only available if all necessary configuration has been carried out.</p> |
| Cancel | Discards all changes in all tabs and closes the dialog. If data has already been entered, a request for confirmation is made before the changes are discarded. |

DETAILS OF EMULATION TYPES

In the **Emulation configuration** tab, there are eight emulation types available for selection in the **Emulated variable type** drop-down list.

The following applies to all emulation types: If there is no value at the start of the archive capsule (value change was carried out exactly with the start time of the archive capsule), then as a maximum at the start time of the emulated archive, an attempt is made to find a valid value before the start of the archive capsule for the base variable. If a corresponding value is found, this is used at the start time of the archive capsule. Otherwise the configured initial value is used.

Possible values for emulation types:

- ▶ Absolute time counter

In each archive capsule of the emulated archive, the set time filter setting is used to count how long the base variable was in one of the states set out in the Base variable rules (on page 511). The counter can be set to 0 by means of the defined resetting rules (Base variable rules (on page 511) and Additional reset events (on page 515) tabs). At the end of the archive capsule, the value of the counter is written to the emulated variable in the emulated archive.

Start value of the current archive capsule: End value of the last archive capsule.

All tabs are displayed.

► Relative time counter

In each archive capsule of the emulated archive, the set time filter setting is used to count how long the base variable was in one of the states set out in the Base variable rules (on page 511). A relative counter cannot be reset to 0. At the end of the archive capsule, the value of the counter is written to the emulated variable in the emulated archive.

Start value of the current archive capsule: always 0.

Settings from **Additional reset events** (on page 515) are not relevant and are not shown.

► Absolute event counter

In each archive capsule of the emulated archive, how often the base variable has changed to one of the states set out by the Base variable rules (on page 511) is counted. The counter can be set to 0 by means of the defined resetting rules (Base variable rules (on page 511) and **Additional reset events** (on page 515) tabs). At the end of the archive capsule, the value of the counter is written to the emulated variable in the emulated archive.

Start value of the current archive capsule: End value of the last archive capsule.

All tabs are displayed.

► Relative event counter

In each archive capsule of the emulated archive, how often the base variable has changed to one of the states set out by the Base variable rules (on page 511) is counted. A relative counter cannot be reset to 0. At the end of the archive capsule, the value of the counter is written to the emulated variable in the emulated archive.

Start value of the current archive capsule: always 0.

Settings from **Additional reset events** (on page 515) are not relevant and are not shown.

► Sum

All values of the base variables are added up in each archive capsule. The sum is written to the emulated variable in the emulated archive at the end of the archive capsule.

Settings from Base variable rules (on page 511) and **Additional reset events** (on page 515) are not relevant and are not shown.

► Time corrected average

In each archive capsule, the time-corrected average value of all values of the base variables is calculated in the archive capsule. The time-corrected average value is written to the emulated variable in the emulated archive at the end of the archive capsule.

Settings from Base variable rules (on page 511) and **Additional reset events** (on page 515) are not relevant and are not shown.

▶ **Minimum**

In each archive capsule, the minimum of all values of the base variables is calculated in the archive capsule. The minimum is written to the emulated variable in the emulated archive at the end of the archive capsule.

Settings from Base variable rules (on page 511) and **Additional reset events** (on page 515) are not relevant and are not shown.

▶ **Maximum**

In each archive capsule, the maximum of all values of the base variables is calculated in the archive capsule. The maximum is written to the emulated variable in the emulated archive at the end of the archive capsule.

Settings from Base variable rules (on page 511) and **Additional reset events** (on page 515) are not relevant and are not shown.

▶ **Difference counter**

Converts an **absolute time counter** in zenon or recorded in the archive emulation into a **relative time counter**.

Settings from base variable rules (on page 511) and **additional reset events** (on page 515) are not relevant and are not displayed.

You can find details on the calculation for developers in the **Difference counter procedure** chapter and in the **zenon Analyzer for developers** manual.



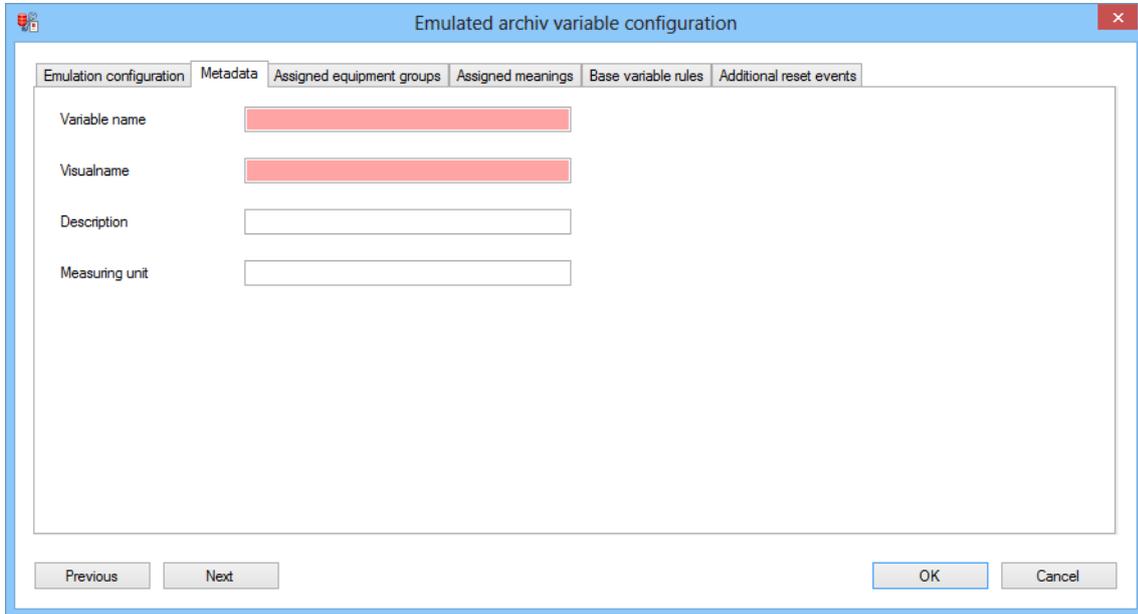
Information

Milliseconds are not used for cyclical archives in zenon. They are calculated but not reset to >0. Exception: Alternate values.

This must be taken into account when the data is obtained. Because the minimum read time of a cyclical archive is 1 second, a maximum of 1 value per second can come.

Metadata

The metadata is configured in this tab.



The screenshot shows a dialog box titled "Emulated archiv variable configuration" with a close button (X) in the top right corner. The dialog has five tabs: "Emulation configuration", "Metadata", "Assigned equipment groups", "Assigned meanings", "Base variable rules", and "Additional reset events". The "Metadata" tab is selected and active. It contains four input fields:

- Variable name: A red-bordered text input field.
- Visualname: A red-bordered text input field.
- Description: A white-bordered text input field.
- Measuring unit: A white-bordered text input field.

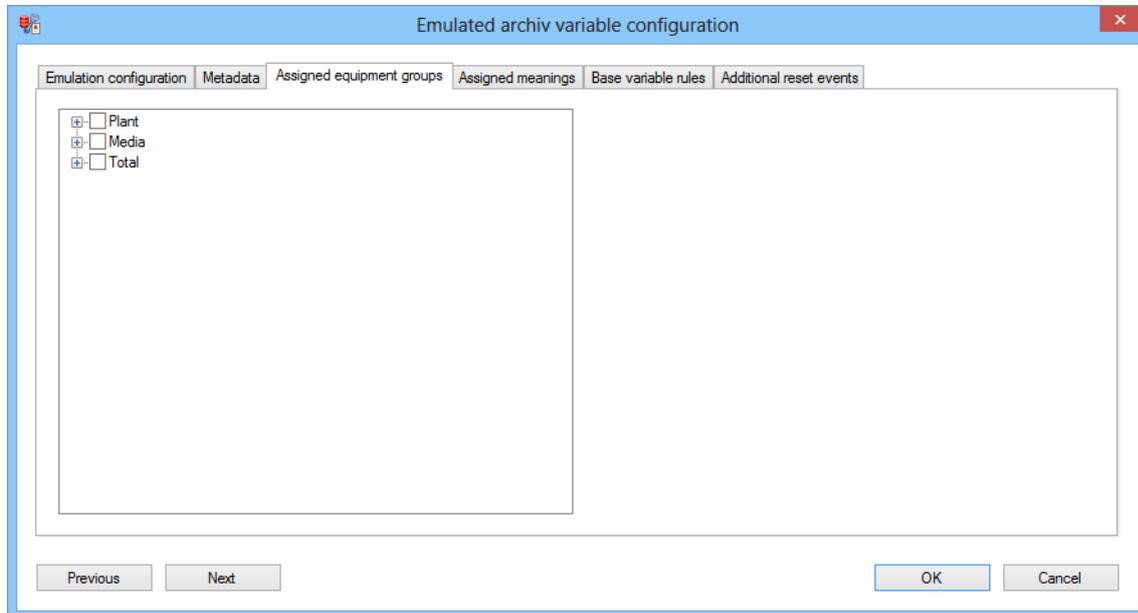
At the bottom of the dialog, there are four buttons: "Previous", "Next", "OK", and "Cancel".

| Parameters | Description |
|-----------------|--|
| Variable name | <p>Entry of the variable name.</p> <ul style="list-style-type: none"> ▶ Maximum length: 128 characters. ▶ Must not be empty. ▶ Must not contain a comma ▶ Must not be used by another variable that is assigned to the same project. Capitalization is not taken into account. |
| Visualname | <p>Entry of the visual name of the variables.</p> <ul style="list-style-type: none"> ▶ Maximum length: 128 characters ▶ Must not be empty. ▶ Must not contain a comma ▶ Must not be used by another variable that is assigned to the same project. Capitalization is not taken into account. |
| Description | <p>Description of the variables.</p> <p>Maximum length: 256 characters</p> |
| Measuring unit | <p>Unit of measurement the variables.</p> <p>Maximum length: 50 characters</p> |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | <p>Applies all changes in all tabs and closes the dialog.</p> <p>Only available if all necessary configuration has been carried out.</p> |
| Cancel | Discards all changes in all tabs and closes the dialog. If data has already been entered, a request for confirmation is made before the changes are discarded. |

Note: Mandatory fields and fields that are empty that have a negative validation are displayed with a red background.

Assigned equipment groups

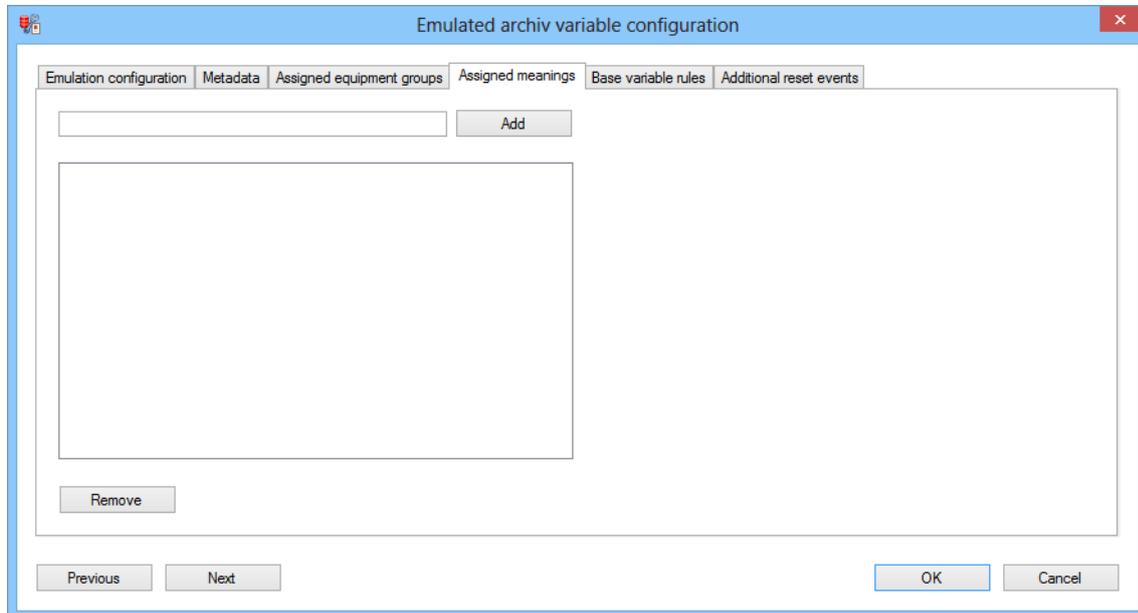
The equipment groups are configured in this tab.



| Parameters | Description |
|-----------------------------------|---|
| Tree with equipment groups | <p>Selection of the desired equipment group from the tree structure. They are selected by activating the checkboxes in front of the desired groups.</p> <ul style="list-style-type: none"> ▶ Display on new creation: closed tree ▶ Display when editing: all activated groups are displayed and their trees are expanded |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | <p>Applies all changes in all tabs and closes the dialog.</p> <p>Only available if all necessary configuration has been carried out.</p> |
| Cancel | Discards all changes in all tabs and closes the dialog. If data has already been entered, a request for confirmation is made before the changes are discarded. |

Assigned meanings

The meanings are configured in this tab.



| Parameters | Description |
|-------------------------|--|
| Input field | Entry of a meaning Maximum length: 50 characters |
| Add | Clicking on the button adds a meaning from the input field to the list of meanings . |
| List of meanings | Contains all assigned meanings. Multiple selection is possible with the Ctrl key + left mouse click or the Shift key + left mouse click. |
| Remove | Removes all highlighted entries from the list of meanings . |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. Only available if all necessary configuration has been carried out. |
| Cancel | Discards all changes in all tabs and closes the dialog. If data has already been entered, a request for confirmation is made before the changes are discarded. |

Base variable rules

The rules for the basic variables are configured in this tab.

Only available for the following types of emulated variables:

- ▶ Absolute time counter
- ▶ Relative time counter
- ▶ Absolute event counter

► Relative event counter

Emulated archiv variable configuration

Emulation configuration Metadata Assigned equipment groups Assigned meanings Base variable rules Additional reset events

| Comparison type | Comparison value | | Triggers counter reset |
|-----------------|------------------|-------|--|
| Equal (=) | 1.000 | | <input checked="" type="checkbox"/> Reset counter ✘ |
| Range | 1.000 | < X < | 2.000 <input type="checkbox"/> Reset counter ✘ |
| | 0.000 | | <input type="checkbox"/> Reset counter |

Previous Next OK Cancel

| Parameters | Description |
|-----------------------|--|
| List of rules | <p>Display of the configured rules.</p> <p>The list is empty for newly-created variables. The following are displayed for pre-existing variables:</p> <ul style="list-style-type: none"> ▶ Comparison type ▶ Comparison value ▶ Triggers counter reset <p>In addition to configured rules, an empty rule is always offered if the dialog was opened in an editable mode and the rules (reset) allow it.</p> <p>In an empty rule, all control elements, with the exception of the comparison type, are deactivated.</p> |
| Comparison type | <p>Selection of the comparison type from a drop-down list. Available are:</p> <ul style="list-style-type: none"> ▶ Equal (=) ▶ Less (<) ▶ Less or equal (<=) ▶ Greater (>) ▶ Greater or equal (>=) ▶ Not equal (!=) ▶ Range Compares two values to one another and shows further input fields for Comparison type and Comparison value. |
| Comparison value | Entry of the comparison value. |
| Reset counter | <ul style="list-style-type: none"> ▶ Active: The counter is reset if the rule is met. <p>Only available if the type of the emulated variables is an absolute counter (absolute time counter, absolute event counter).</p> |
| Symbol: Delete | Clicking on the button deletes the rule. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |

| | |
|---------------|--|
| OK | Applies all changes in all tabs and closes the dialog. Only available if all necessary configuration has been carried out. |
| Cancel | Discards all changes in all tabs and closes the dialog. If data has already been entered, a request for confirmation is made before the changes are discarded. |

AREAS

The 'areas' comparison type defines a range between two values. The following rules are available:

- ▶ `[number] < X < [number]`
- ▶ `[number] < X <= [number]`
- ▶ `[number] <= X < [number]`
- ▶ `[number] <= X <= [number]`

NOTE ON VALIDATION:

When validating the entries before creating the variables, the legal regulations must not be exceeded.

Examples of overlapping:

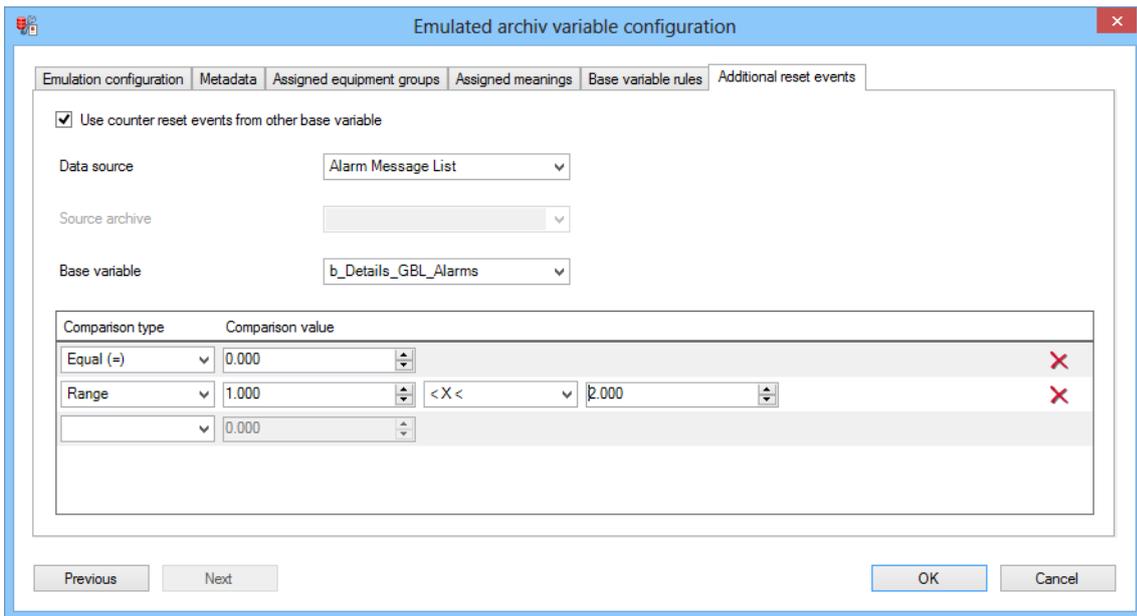
- ▶ 2 or more rules are set to `Equal (=)` and have the same value.
- ▶ 1 or more rules are set to `Equal (=)` and have a value that is `Greater than (>)/Less or equal to (<=)` the comparison value of an existing `Greater than (>)/Less than or equal to (<=)` rule.
- ▶ 2 rules both use a greater comparison (regardless of whether `Greater than (>)` or `Greater than or equal to (>=)`).
- ▶ 2 rules both use a smaller comparison (regardless of whether `Less than (<)` or `Less than or equal to (<=)`).
- ▶ The value ranges of a `Greater than or equal to (>=)` and a `Less than or equal to (<=)` rule overlap. At least one figure is present in both ranges.

Additional reset events

In this tab, events for absolute counters are configured, which lead to defined results, in addition to the events defined in the **Base variable rules** (on page 511), to reset the base variables.

Only available for the following types of emulated variables:

- ▶ Absolute time counter
- ▶ Absolute event counter



The screenshot shows the 'Emulated archiv variable configuration' dialog box with the 'Additional reset events' tab selected. The 'Use counter reset events from other base variable' checkbox is checked. The 'Data source' is set to 'Alarm Message List', 'Source archive' is empty, and 'Base variable' is 'b_Details_GBL_Alarms'. A table below lists comparison rules:

| Comparison type | Comparison value | |
|-----------------|-------------------|---|
| Equal (=) | 0.000 | X |
| Range | 1.000 < X < 2.000 | X |
| | 0.000 | |

Buttons at the bottom: Previous, Next, OK, Cancel.

| Parameters | Description |
|---|---|
| Use additional reset events for the counter of base variables | <ul style="list-style-type: none"> ▶ Active: Events to reset the absolute counter are, in addition to configuration in the Base variable rules (on page 511) tab, set by another base variable. This resets the base variable (on page 501) selected in the Emulation configuration (on page 501) tab for the counter. |
| Data source | <p>Selection of a data source list for the variables from which the reset event comes, from a drop-down list:</p> <ul style="list-style-type: none"> ▶ Alarm Message List ▶ Chronological Event List ▶ Archive |
| Source archive | <p>Selection of source archive for the variables from which the reset events come, from a drop-down list: The list contains all archives of the project that was selected in the metadata (on page 495) dialog. This also includes emulated archives that were already saved in the metadata.</p> <p>Only available if archive was selected as a data source.</p> |
| Base variable | <p>Selection of base variables from which the additional reset events come, from a drop-down list.</p> <p>Depending on the data source, available for:</p> <ul style="list-style-type: none"> ▶ Data source alarm message list or chronological event list: All available variables of the project that was selected in the metadata (on page 495) dialog. This also includes emulated variables that were already saved in the metadata. ▶ Data source Archive: All variables that are assigned in the metadata to the archive with an aggregation of Raw value (0). This also includes emulated archives that were already saved in the metadata. |

Parameters

List of rules

Description

Display of the configured rules.

The list is empty for newly-created variables. The following are displayed for pre-existing variables:

- ▶ **Comparison type**
- ▶ **Comparison value**

In addition to configured rules, an empty rule is always offered if the dialog was opened in an editable mode and the rules (reset) allow it.

In an empty rule, all control elements, with the exception of the comparison type, are deactivated.

Comparison type

Selection of the comparison type from a drop-down list. Available are:

- ▶ Equal (=)
- ▶ Less (<)
- ▶ Less or equal (<=)
- ▶ Greater (>)
- ▶ Greater or equal (>=)
- ▶ Not equal (!=)
- ▶ Range Compares two values to one another and shows further input fields for Comparison type and Comparison value.

Comparison value

Entry of the comparison value.

Symbol: Delete

Clicking on the button deletes the rule.

Previous

Switches to the previous tab. (deactivated in the first tab)

Next

Switches to the next tab. (deactivated in the last tab)

OK

Applies all changes in all tabs and closes the dialog.

Only available if all necessary configuration has been carried out.

Cancel

Discards all changes in all tabs and closes the dialog. If data has already been entered, a request for confirmation is made before the changes are discarded.

| Parameters | Description |
|------------|-------------|
|------------|-------------|

 **Attention**

The list of rules for valid reset events must contain at least one rule during validation if the option Use additional reset events for the counter of base variables has been activated.

AREAS

The 'areas' comparison type defines a range between two values. The following rules are available:

- ▶ `[number] < X < [number]`
- ▶ `[number] < X <= [number]`
- ▶ `[number] <= X < [number]`
- ▶ `[number] <= X <= [number]`

NOTE ON VALIDATION:

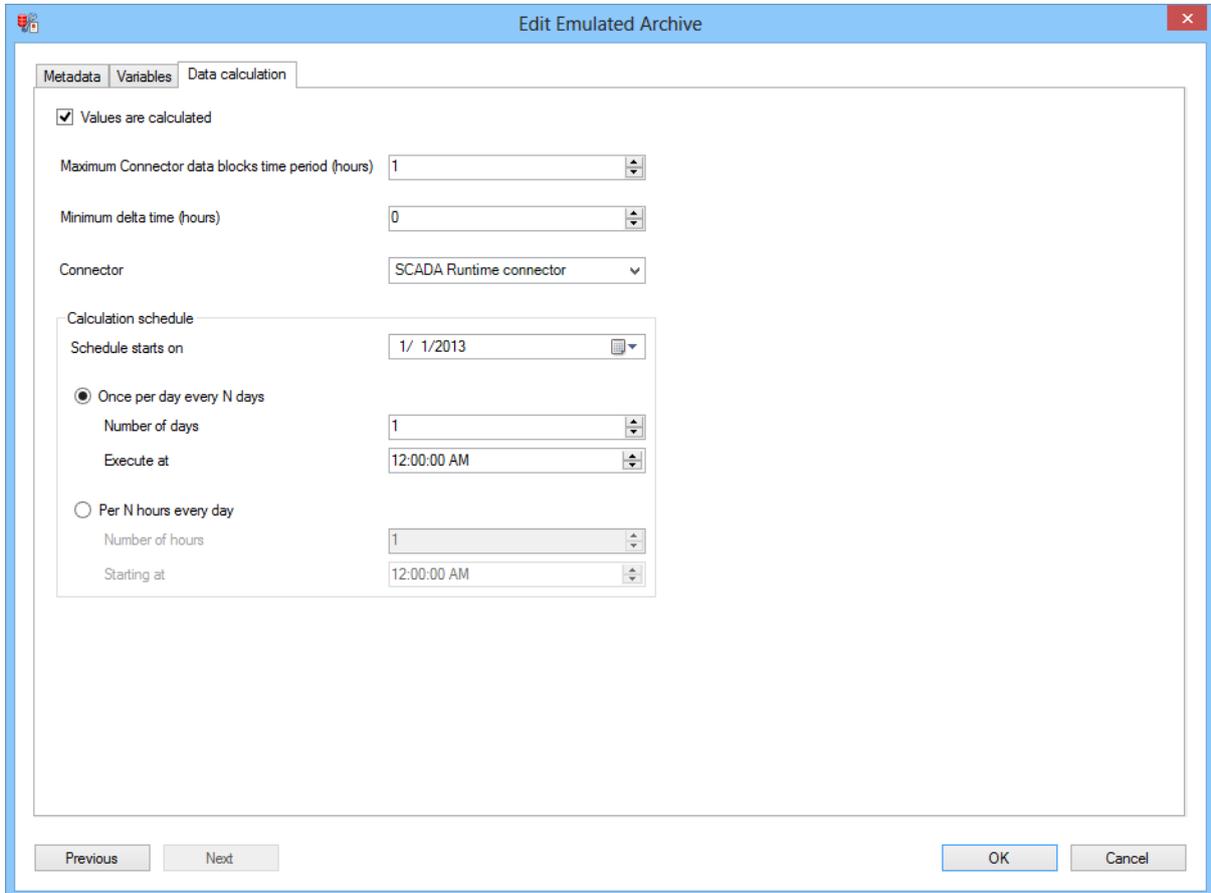
When validating the entries before creating the variables, the legal regulations must not be exceeded.

Examples of overlapping:

- ▶ 2 or more rules are set to Equal (=) and have the same value.
- ▶ 1 or more rules are set to Equal (=) and have a value that is Greater than (>)/Less or equal to (<=) the comparison value of an existing Greater than (>)/Less than or equal to (<=) rule.
- ▶ 2 rules both use a greater comparison (regardless of whether Greater than (>) or Greater than or equal to (>=)).
- ▶ 2 rules both use a smaller comparison (regardless of whether Less than (<) or Less than or equal to (<=)).
- ▶ The value ranges of a Greater than or equal to (>=) and a Less than or equal to (<=) rule overlap. At least one figure is present in both ranges.

Data calculation

The data calculation is configured in this tab. The options can be configured without limitations in all three editing modes (on page 489).



The screenshot shows the 'Edit Emulated Archive' dialog box with the 'Data calculation' tab selected. The dialog has three tabs: 'Metadata', 'Variables', and 'Data calculation'. The 'Data calculation' tab contains the following settings:

- Values are calculated
- Maximum Connector data blocks time period (hours): 1
- Minimum delta time (hours): 0
- Connector: SCADA Runtime connector
- Calculation schedule:
 - Schedule starts on: 1/ 1/2013
 - Once per day every N days
 - Number of days: 1
 - Execute at: 12:00:00 AM
 - Per N hours every day
 - Number of hours: 1
 - Starting at: 12:00:00 AM

At the bottom of the dialog, there are buttons for 'Previous', 'Next', 'OK', and 'Cancel'.

| Parameters | Description |
|--|--|
| Values are calculated | Active: Values for the emulated archive are calculated in the SQL server agent. |
| Maximum connector-Data block time period (hours) | <p>Stipulates the maximum time period in hours for which connectors can be obtained in a query. Entry in the field or configuration using the cursor keys.</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum 10000 ▶ Default: 1 <p>If a larger time range is needed in total, several connector calls are carried out after one another.</p> <p>Example:</p> <ul style="list-style-type: none"> ▶ Connector data from three days is to be obtained. ▶ The query is to be made in three parts. ▶ Entry in the field: 24 <p>Background information: If very large amounts of data are obtained in a query, the working memory may be too small for the Runtime server. For archive data, for example, this leads to an "Out-Of-Memory" error. The corresponding message window then blocks the Runtime server until the message is confirmed on the server itself. This situation can be avoided with the appropriate configuration.</p> |
| Minimum delta time (hours) | <p>Stipulates how old, in hours, an archive capsule of the emulated archive must be before values for it are calculated. Entry in the field or configuration using the cursor keys.</p> <p>Minimum: 0</p> <p>Maximum: 10000</p> <p>Default: 0</p> <p>Example:</p> <ul style="list-style-type: none"> ▶ Entry: 10 ▶ Current time: 2013-06-06; 4:00 PM ▶ Goal: From 00:00:00 on June 6, 2013, one archive capsule per hour is to be |

| | |
|--|--|
| | <p>written.</p> <ul style="list-style-type: none">▶ Only values for the archive capsules from 00:00:00 to 05:00:00 on 2013/06/06 are calculated and written.▶ Reason: The archive capsules from 06:00:00 to 16:00:00 on 2013/06/06 are not older than 10 hours. <p>Background: If data can only be forwarded up to a certain time, for example up to the last SQL export, this can be configured here.</p> |
|--|--|

| | |
|-----------------------------|---|
| Connector | Selection from drop-down list that is to be used to obtain the data for the base variables. |
| Calculation schedule | Configuration of the time plan for the calculation of values. |
| Schedule starts on | Stipulation of the time from which the schedule is to run. Entry in the field or configuration using the cursor keys. |
| Once per day every N days | Active: The calculation is carried out every N days at a certain time. <ul style="list-style-type: none"> ▶ N days: Configuration with the Number of days option ▶ Time: Configuration with Execute at option |
| Number of days | Stipulation of the interval between two calculations in days. Entry in the field or configuration using the cursor keys. <p>Minimum: 1</p> <p>Maximum: 100</p> |
| Execute at | Stipulation of the time at which the calculation is carried out on day N. Entry in the field or configuration using the cursor keys. |
| Per N hours every day | Active: The calculation is carried out daily every N hours at a certain interval. <ul style="list-style-type: none"> ▶ Distance: Configuration with the Number of hours option ▶ Start time: Configuration with Start at option |
| Number of hours | Stipulation of the interval between two calculations in hours. Entry in the field or configuration using the cursor keys. <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 23 |
| Starting at | Stipulation of the time at which the first daily calculation is carried out. Entry in the field or configuration using the cursor keys. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. |

| | |
|---------------|--|
| | Only available if all necessary configuration has been carried out. |
| Cancel | Discards all changes in all tabs and closes the dialog. If data has already been entered, a request for confirmation is made before the changes are discarded. |

EXAMPLES

ONCE A WEEK

The calculation should be carried out every Sunday at 00:05:00 from now.

Configuration:

1. Activate the `Once a day every N days` option
2. `Number of days:7`
3. `Execute at: 12:00:05 AM`
4. `Schedule starts at: desired Sunday in the past`

12 TIMES A DAY

The calculation should be carried out from 1/1/2014 every 2 hours and 15 minutes after the hour.

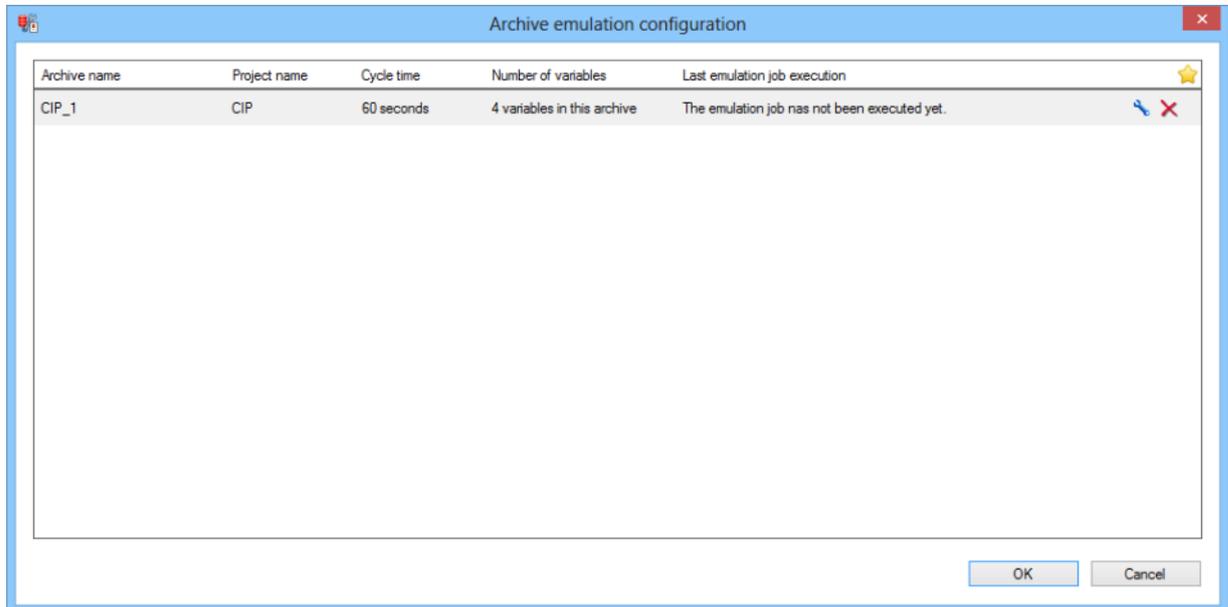
Configuration:

1. Activate the `Every N hours daily` option
2. `Per N hours every day:2`
3. `Starting at 12:15:00 AM`
4. `Schedule starts on: 01.01.2014`

11.8.3 Edit emulated archive

To edit an emulated archive:

1. If the dialog has not yet been opened, select the **Configure archive emulation** entry in the **Automation** menu
2. The dialog for configuring emulated archives is opened

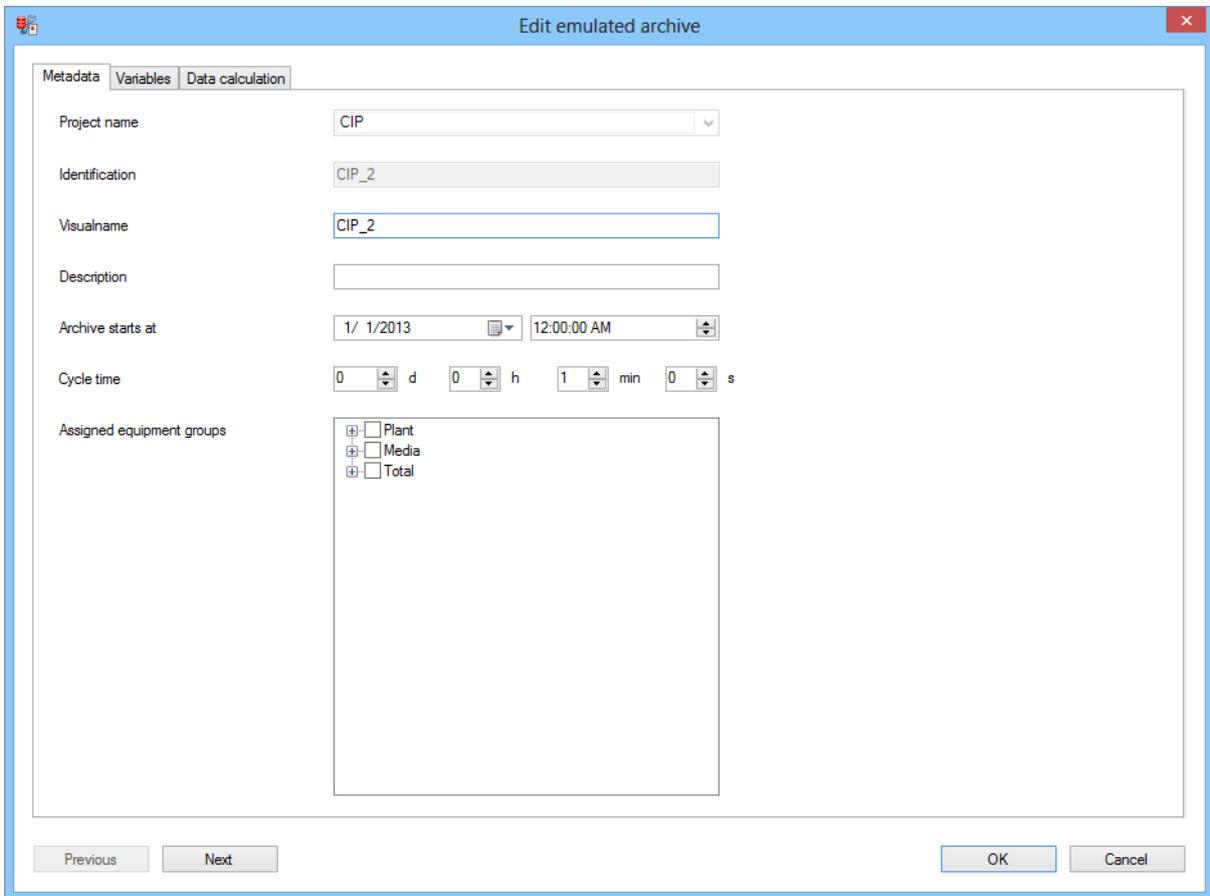


3. Highlight the desired archive
4. Click on the **Edit** button to change the configuration
5. The dialog for configuring an emulated archive is opened

Note: The settings that can be changed depend on the status of the archive (on page 489).

EDITING A NEW ARCHIVE

A new archive has already been created and contains data, but was not yet written to the SQL server agent. This means: This dialog has not yet been closed since the first configuration.



The screenshot shows the 'Edit emulated archive' dialog box with the following settings:

- Project name: CIP
- Identification: CIP_2
- Visualname: CIP_2
- Description: (empty)
- Archive starts at: 1/ 1/2013, 12:00:00 AM
- Cycle time: 0 d, 0 h, 1 min, 0 s
- Assigned equipment groups: Plant, Media, Total

- ▶ Archive: All settings (on page 495) can be edited, with the exception of **Project** and **Identification**.
- ▶ Variables: All settings (on page 497) can be edited.

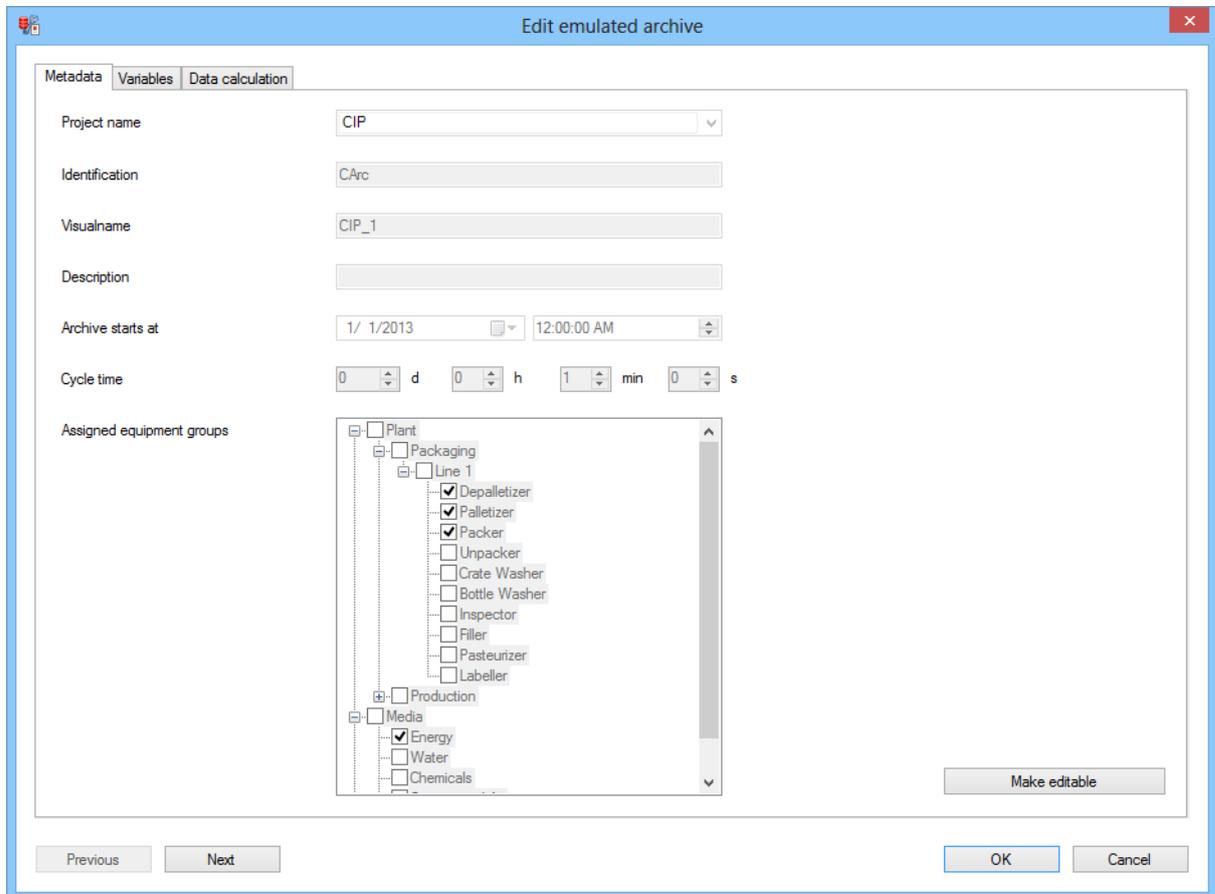
EDITING A SAVED ARCHIVE

A saved archive is already created, contains data and was already written to the SQL server agent. This means: This dialog was closed after the initial configuration by clicking on **OK** and is now opened again.

- ▶ Archive: In the basic setting, only the **Data calculation** (on page 519) can be changed. The **Make editable** button can be used to edit the archive again, with the exception of the project allocation and name. This button is only available if the emulated archive has already

been saved and has not been unlocked for editing again.

For details, see the **Allow editing** section.



Edit emulated archive

Metadata Variables Data calculation

Project name: CIP

Identification: CArc

Visualname: CIP_1

Description:

Archive starts at: 1/ 1/2013 12:00:00 AM

Cycle time: 0 d 0 h 1 min 0 s

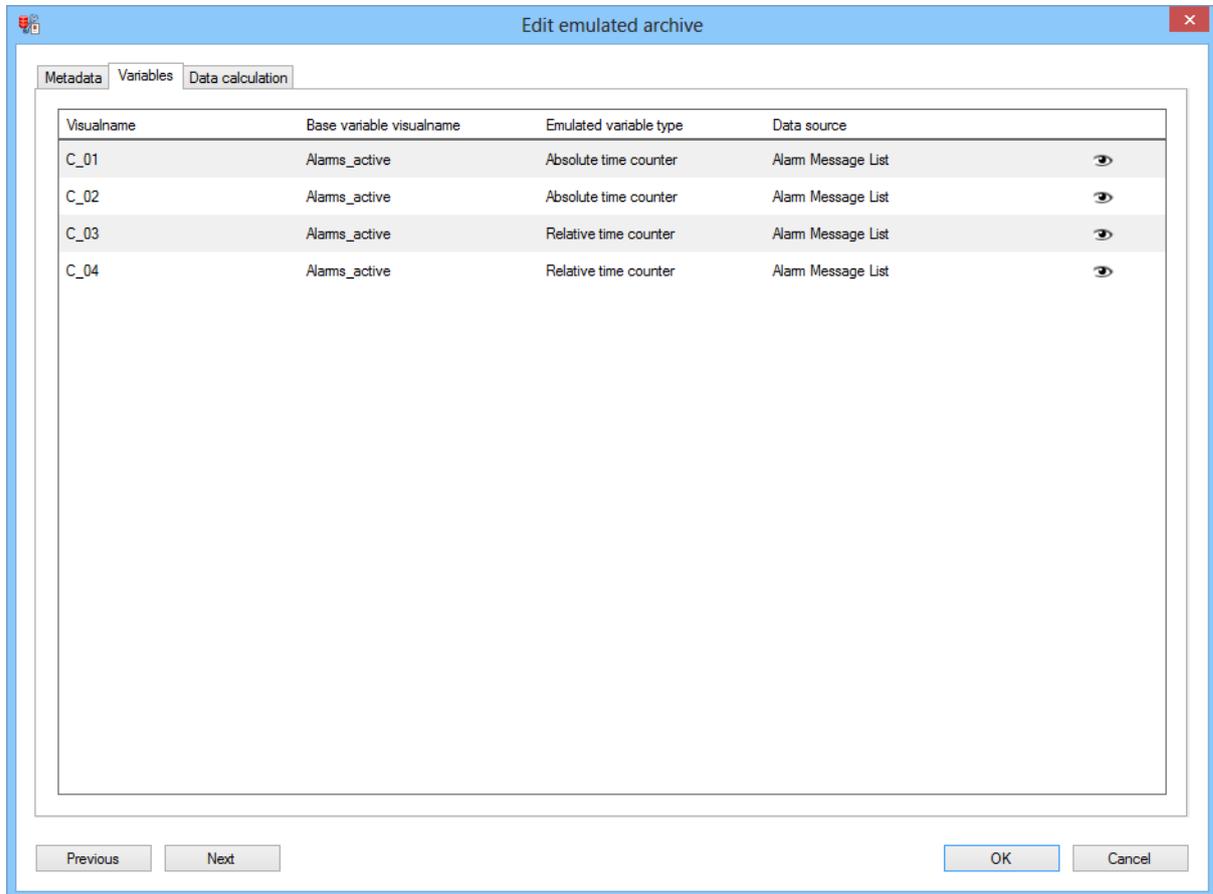
Assigned equipment groups:

- Plant
 - Packaging
 - Line 1
 - Depalletizer
 - Palletizer
 - Packer
 - Unpacker
 - Crate Washer
 - Bottle Washer
 - Inspector
 - Filler
 - Pasteurizer
 - Labeller
 - Production
 - Media
 - Energy
 - Water
 - Chemicals

Make editable

Previous Next OK Cancel

- Variables: Only displayed as read-only.



MAKE EDITABLE

To edit an emulated archive that has already been saved again:

1. Click on the button **Make editable**
2. Confirm this when requested to do so.
3. The data in the **EMULATED_DATA** table is deleted.
4. Edit the archive and save it again.

PROCEDURE

Procedure if an emulated archive that has already been saved is unlocked for editing again:

1. All data of the emulated archive is deleted from the **EMULATED_DATA** table.

2. The metadata of the emulated archive is amended accordingly.
3. The allocation to equipment groups of the emulated archive is amended accordingly.
4. Variables that are deleted from the emulated archive are deleted in the metadata tables.
5. Variables that are changed in the emulated archive are changed in the metadata tables.
6. Variables that are added to the emulated archive are added to the metadata tables.
7. If necessary, the SQL elements for emulated archives are created.
8. The emulation job in the SQL server agent is amended for the emulated archive accordingly.

11.8.4 Notes for report developers:

An emulated archive consists of metadata for archives and variables. They are calculated periodically according to the configuration via an SQL server agent job.

The following metadata, SPs and UDFs are used for emulated archives:

METADATA

- ▶ Emulated_Archive
- ▶ Emulated_Variable
- ▶ Emulated_Variable_Configuration
- ▶ Emulated_Data
- ▶ Stored procedures

STORED PROCEDURES

- ▶ CalculateEmulatedArchiveValues

USER DEFINED FUNCTION BLOCKS

- ▶ GetTotalSeconds

11.9 User administration and access rights

The user administration for zenon Analyzer is organized in ZAMS. It consists of the administration of the:

- ▶ Users with dedicated license (on page 543)
- ▶ Access rights in the Analyzer Manager (on page 552)
- ▶ Access rights to Analyzer applications (on page 546)

Set rights for users and objects in ZAMS and the Analyzer Manager are each set and applied after being confirmed in the dialog by clicking on **OK**.

Users can be administered throughout domains and in user groups. For **Users with dedicated license** and the administration of access rights for **Analyzer Tools**, each user must be individually administered in the selection dialog (on page 538). Administration according to groups is possible via the configuration of the filter for user groups. To do this, the user group is entered as a filter condition and then the user is selected.

For the administration of access rights in the **Analyzer Manager**, user groups can be selected directly in the selection dialog (on page 540).

CHECKING THE USER LICENSES

ZAMS

ZAMS checks, every 10 seconds, if a ZAMS license on the license server can be confirmed for the connected user on the connected Analyzer server. If a background thread is running at the time of verification, such as the preparation of a report, then the verification is postponed until the completion of this background thread.

ANALYZER MANAGER

The Analyzer Manager confirms an Analyzer Manager license on the license server every 10 seconds for each user whose last access took place less than 15 minutes ago. On the license server, the client lifetime is 30 seconds since the last activity.

ERROR HANDLING

If problems occur with the licensing or the connection, please note the checklist in the event of license problems (on page 234).

11.9.1 Basic principles of user access rights

There are four user authorization levels internally. Each level includes access to the permitted applications of the lower levels, however it defines its own data access rights. In the dialogs, the applications that are linked to the authorization levels are named instead of the authorization levels. As a result of the fact that access rights on the Analyzer Manager are handled separately from the access rights to the Analyzer applications - and thus to the database - it is also possible that, for example, a user can enter prices and norm values, but does not have access to the objects on the Analyzer server.

The four authorization levels:

- ▶ 0. Users can only have a license for the Analyzer Manager.

They do not have any database access.

- ▶ 1. User can, in addition to the authorization level 0 applications, also use the Editor tool for price and norm values.

These users each receive a login at user level in the SQL server instance. In each Analyzer metadata database on the SQL server instance, these users are each a user with read rights for all tables and write rights for the tables **PRICE** and **NORM**.

- ▶ 2. Users can also use, in addition to authorization level 1 applications, the **Metadata Editor** and the **Analyzer Export Wizard**.

The Wizard does not have a license for the user running it, but it must however have the corresponding database access rights that are usually granted with this authorization level. These users each receive a login at user level in the SQL server instance. In each Analyzer metadata database on the SQL server instance, these users are each a user with read rights for all tables and write rights for all tables.

- ▶ 3. Users can also use ZAMS in addition to authorization level 2 applications.

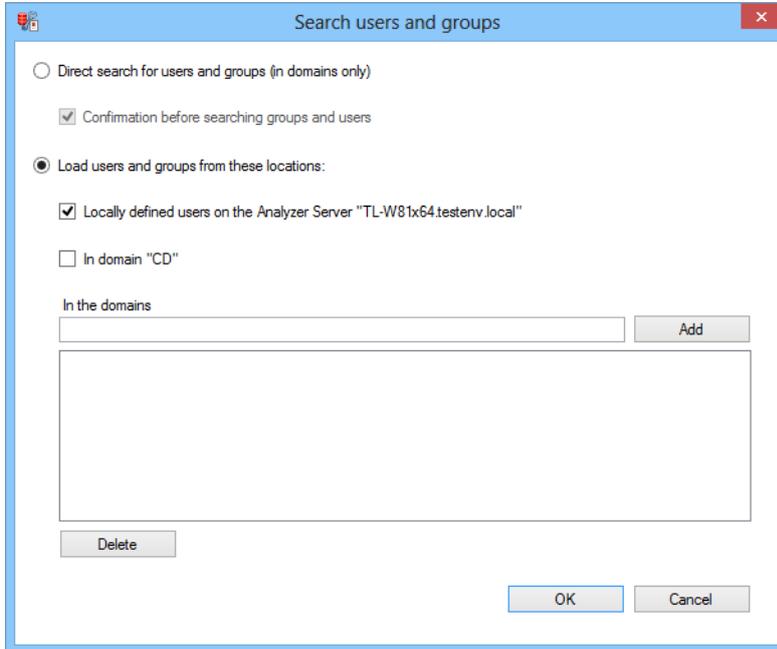
These users each receive a login at administration level in the SQL server instance. With the administrator login, these users are automatically given administrator access rights to all databases in the SQL server instance by the SQL server, including to non-Analyzer metadata databases. These users are therefore administrators on the SQL server instance, because they must create new databases, create, change and delete stored procedures and user-defined functions, administer indices, back up and restore databases, enter internal code into databases and administer user rights.

11.9.2 Configuration of user search

When calling up dialogs to assign a user profile, a user search is opened if no users have yet been stored in ZAMS. Here, you define how and in which locations users are to be searched for the population of the user list.

- ▶ Direct query:
Targeted query of the domains and the caches only once users have been added. For this, the following applies:
 - Groups are only available in the filters if they are present in the cache. They must therefore have already been called up - regardless of whether they have been added.
 - Users and groups that have been found are cached.
 - Users defined locally on the Analyzer server cannot be added.
 - Groups defined locally on the Analyzer server cannot be added or filtered.
- ▶ Cache users and groups
When first querying users, all users and groups of the defined domains are searched for locally and cached. With domains with many users and groups, this can take a long time.

DIALOG FOR SEARCHING FOR USERS AND GROUPS



The dialog box, titled "Search users and groups", contains the following elements:

- Direct search for users and groups (in domains only)
 - Confirmation before searching groups and users
- Load users and groups from these locations:
 - Locally defined users on the Analyzer Server "TL-W81x64.testenv.local"
 - In domain "CD"
- In the domains**
 - Input field:
 - Button:
 - List box:
 - Button:
- Buttons: and

| Parameters | Description |
|--|---|
| Direct search for users and groups (in domains only) | Active: Users and groups are only searched for as required. |
| Confirmation before searching groups and users | <p>Active: If no user is found when an object is searched for, a request for confirmation is made for a further search.</p> <p>Background: If no user is found in the domain, a search for a group is carried out. If a group is found, all users contained in the group are searched for. This can take a long time.</p> <p>Only available if Direct search for users and groups has been activated.</p> |
| Load users and groups from these locations: | Active: Users and groups are searched for and updated immediately. This can take a long time with large domains. |
| Users defined locally on the Analyzer Server "[computer name]" | <p>Active: A search for defined users and user groups is carried out locally on the Analyzer server.</p> <p>Only available if Load users and groups from these locations: has been activated.</p> |
| In the domain "[domain name]" | <p>Active: A search for domain users and user groups is carried out in the domain of the currently-connected user.</p> <p>Detection takes place in three steps:</p> <ul style="list-style-type: none"> ▶ Firstly, an attempt is made to return the names of the domains in which the user is defined. ▶ If this is unsuccessful, an attempt is made to return the names of the domains in which the computer is integrated. ▶ If this is unsuccessful, the computer name is returned. <p>Only available if Load users and groups from these locations: has been activated.</p> |
| In the domains | <p>Entry of a domain in which a search for users and user groups is to be carried out. Accepted by clicking on the Add button.</p> <p>Only available if Load users and groups from</p> |

| | |
|------------------------|--|
| | these locations: has been activated. |
| Add | <p>Adds the domains stated in the In the domains input field to the list of domains.</p> <p>The entry is only accepted if it:</p> <ul style="list-style-type: none"> ▶ Is not yet in the list ▶ Is not identical to the domain of the user who is currently connected ▶ Is not identical to the Analyzer Server computer name <p>Capitalization of letters is not taken into account during the check.</p> |
| List of domains | Contains the domains that have been individually added. Multiple selection is possible. |
| Delete | Deletes all highlighted domains from the list of domains . |
| OK | Accepts and validates the configuration, closes the dialog and starts the search. |
| Cancel | Discards the configuration and closes the dialog. |

Note: The selected setting is saved in the ZAMS configuration and selected as a presetting the next time the dialog is displayed. The selected setting applies for the complete ZAMS session.

DELETE THE CACHE OF THE USER SEARCH

To change the type of search, either ZAMS must be restarted or the cache must be deleted.

To delete the cache of the user search:

1. open the menu Tools (on page 242)
2. Select the Delete cache (on page 356) command
3. Cached users and groups are removed from the cache.
4. The next time a dialog to call up user administration is called up, the dialog to configure the user search is called up again

11.9.3 Selection of users and user groups

Users and user groups are added differently depending on the configuration of the search (on page 531):

- ▶ Direct query: The **Search for users and user groups dialog** (on page 535) is opened. If a user is found, they are added. If a group is found, all members of this group are added.
- ▶ Users and groups cached: The **Select users and user groups** (on page 540) dialog is opened. Cached users and groups are offered for selection.

When configuring the access rights for the Analyzer Manager (on page 552), user groups and users can be selected from groups. For all other dialogs for user rights, users can be selected from groups, but not user groups.

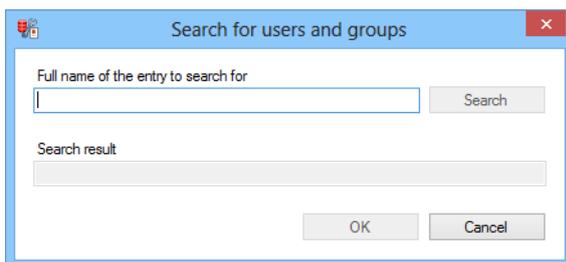
PROCESSES

The following applies when obtaining user data:

- ▶ If two users have the same visual name, the reading of the user data source that is currently being read is canceled.
- ▶ If two user groups have the same visual name, the reading of the user data source that is currently being read is canceled.
- ▶ If a group has the same visual name as a user, the user group concerned is ignored. However the reading is continued.

Search for users and user groups dialog

If, when configuring the user rights with a direct query, a search for a user or a user group is carried out, the search dialog is opened:



| Parameters | Description |
|--------------------------------------|---|
| Full name of the entry to search for | <p>Entry of the complete name of the object to be searched for. This consists of:</p> <ul style="list-style-type: none"> ▶ Domain ▶ Backslash ▶ Username <p>Example: MAIN\J.Doe</p> |
| Search | <p>Clicking on this starts the search for the search term entered.</p> <p>Only active if:</p> <ul style="list-style-type: none"> ▶ The input field is not empty ▶ The content has been changed since the last user <p>If the user is not found in the domain, there is a query to see if all user names of the domain are to be searched for.</p> |
| Search result | Displays the search result. |
| OK | <p>Accepts the user who has been found or all who have been found to the dialog.</p> <p>Only available if the input field for the complete name has not been changed since the last successful search.</p> |
| Cancel | Closes the dialog without accepting any users. |

PROCEDURE TO SEARCH FOR A USER OR A GROUP:

1. The entry is validated:
 - It must consist of two parts, separated by a backslash.
 - Neither of the two parts can be empty.
 - Neither of the two parts can contain one of the non-permitted characters.

In the event of a validation error, this is shown in the `search result` and the procedure is ended as unsuccessful.

Characters that are not permitted:

- Backslash \
- Slash /

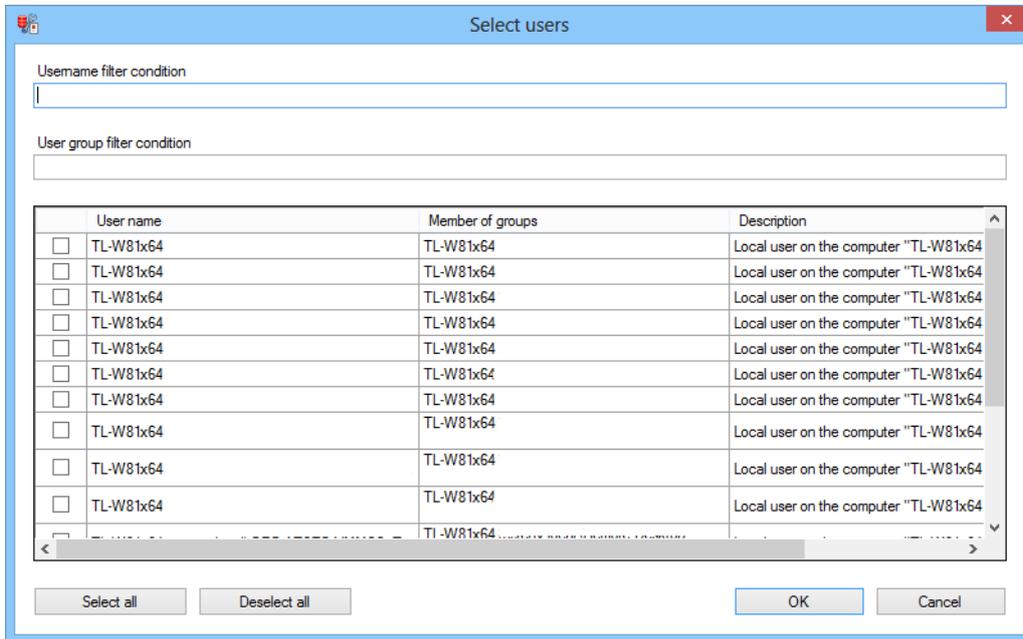
- colon :
 - Star *
 - Question mark ?
 - Quotation marks "
 - Angle brackets < >
 - Pipe |
2. A search for a user with the given name is carried out in the cache. If one is found, its complete name is shown in the `Search result` and the process is then ended as successful.
 3. A search for a group with the given name is carried out in the cache. If one is found, their complete name is displayed in the `Search result` and the procedure is ended as successful.
 4. A search for a user with the given name is carried out in the domain of the given name. If one is found, it is incorporated into the cache, its complete name is displayed in the `Search result` and the process is ended as successful.
 5. If configured, there is a request for confirmation before a search is carried out for a group and the users contained therein.
 - If the user responds with no, the process is ended as failed.
 6. A search for a group with the given name is carried out in the domain of the given name. If one is found, it is incorporated into the cache and its complete name is written into the input text box. After this, the following sub-process is carried out for each user in the group. A progress bar is displayed during the sub-process. The process is then ended as successful.

Sub-process:

- a) A search for a user with the name of the group member is carried out in the cache. If one is found, the sub-process is ended as successful.
 - b) A search for a user with the name of the group member is carried out in the domain of the given name. If one is found, is is incorporated into the cache and the sub-process is ended as successful.
7. If the process has not previously been ended as successful, it is now ended as unsuccessful.

Select user dialog

If new user users are added in a configuration dialog for user rights, the following dialog is called up. (Exception: When configuring the access rights for the Analyzer Manager, the **select users and user groups dialog** (on page 540) is called up.)



| Parameters | Description |
|-----------------------------|---|
| Username filter condition | <p>Input of filter conditions for user names.</p> <p>The list of the users displayed is updated each time a change is made in the input field. Only users who meet the filter criteria in the text with one of their name properties are displayed. Filtering is carried out:</p> <ul style="list-style-type: none"> ▶ partially: it is sufficient if the character sequence appears in the name ▶ Without taking capitalization into account <p>Already-selected users are not hidden.</p> |
| User group filter condition | <p>Input of filter conditions for user groups.</p> <p>The list of the users displayed is updated each time a change is made in the input field. Only users that belong to one of the user groups that meet the condition are shown. Filtering is carried out:</p> <ul style="list-style-type: none"> ▶ partially: it is sufficient if the character sequence appears in the name ▶ Without taking capitalisation into account <p>Already-selected users are not hidden.</p> |
| Checkboxes | Active: User is selected for adding. |
| User list | <p>Display of the users available for selection. This list is compiled according to the settings in the configuration of user search (on page 531).</p> <p>It contains:</p> <ul style="list-style-type: none"> ▶ Username: Display of the user name. ▶ Member of groups: Display of the user groups that a user belongs to. ▶ Description: Displays information on the user name and its origin. |
| Select all | Clicking on the button selects all displayed users according to the filter conditions. |
| Deselect all | Clicking on the button deselects the selection. |
| OK | Accepts selection, closes the dialog and adds selected users. |
| Cancel | Discards all changes and closes the dialog. |

The size and position of the dialog can be changed. These settings are saved as user-dependent.

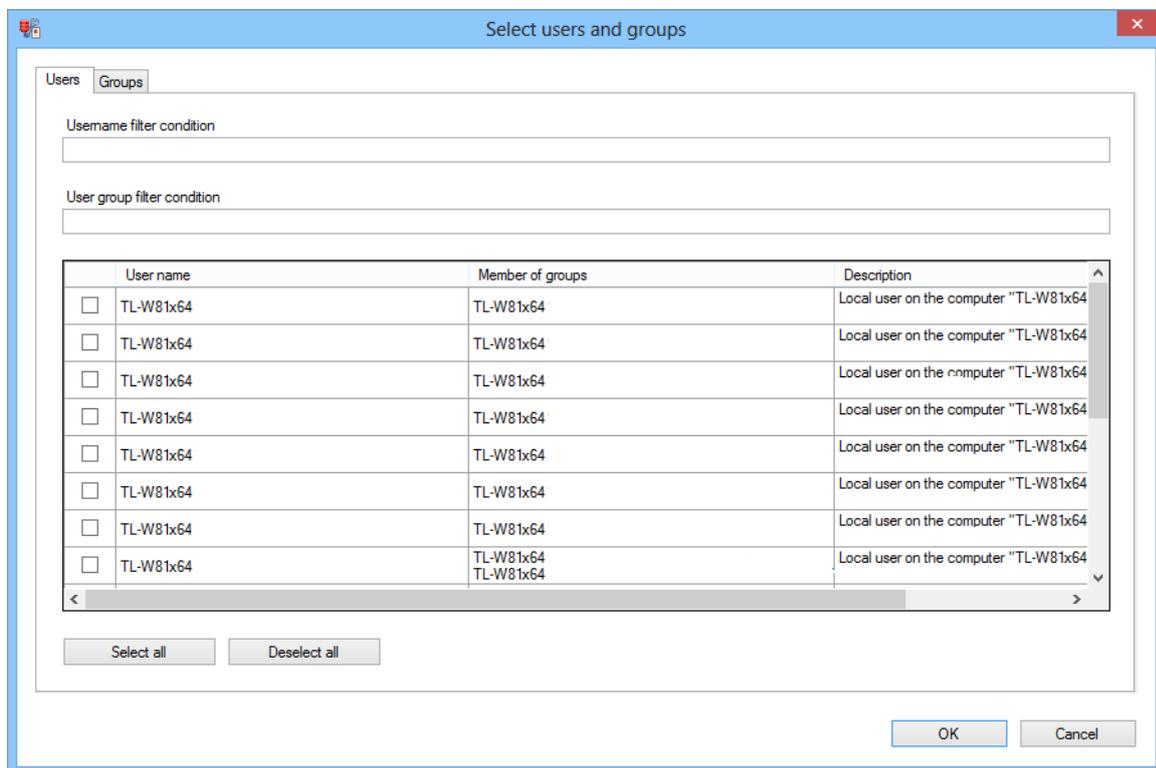
Dialog for selecting users and user groups

If new users or user groups are added in the configuration dialog for the access rights for the Analyzer Manager, a selection dialog is called up. It is possible to add using two tabs:

- ▶ User
- ▶ Groups

USER

Selection of users who are to be added.

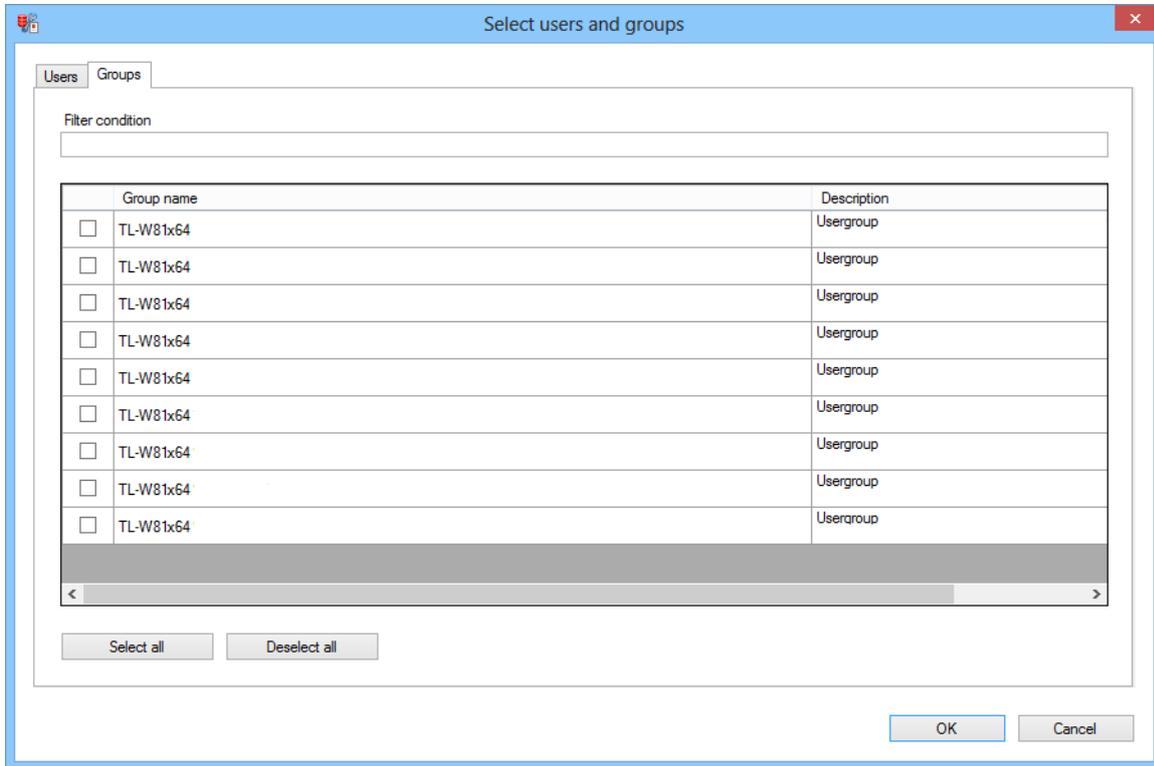


| Parameters | Description |
|-----------------------------|---|
| Username filter condition | <p>Input of filter conditions for user names.</p> <p>The list of the users displayed is updated each time a change is made in the input field. Only users who meet the filter criteria in the text with one of their name properties are displayed. Filtering is carried out:</p> <ul style="list-style-type: none"> ▶ partially: it is sufficient if the character sequence appears in the name ▶ Without taking capitalization into account <p>Already-selected users are not hidden.</p> |
| User group filter condition | <p>Input of filter conditions for user groups.</p> <p>The list of the users displayed is updated each time a change is made in the input field. Only users that belong to one of the user groups that meet the condition are shown. Filtering is carried out:</p> <ul style="list-style-type: none"> ▶ partially: it is sufficient if the character sequence appears in the name ▶ Without taking capitalisation into account <p>Already-selected users are not hidden.</p> |
| Checkboxes | Active: User is selected for adding. |
| User list | <p>Display of the users available for selection. This list is compiled according to the settings in the configuration of user search (on page 531).</p> <p>It contains:</p> <ul style="list-style-type: none"> ▶ Username: Display of the user name. ▶ Member of groups: Display of the user groups that a user belongs to. ▶ Description: Displays information on the user name and its origin. |
| Select all | Clicking on the button selects all displayed users according to the filter conditions. |
| Deselect all | Clicking on the button deselects the selection. |
| OK | Accepts selection, closes the dialog and adds selected users. |
| Cancel | Discards all changes and closes the dialog. |

The size and position of the dialog can be changed. These settings are saved as user-dependent.

GROUPS

Selection of user groups that are to be added.



| Parameters | Description |
|---------------------|--|
| Filter condition | <p>Input of filter conditions for user groups.</p> <p>The list of the user groups displayed is updated each time a change is made in the input field. Only the respective user groups that meet the condition are still shown. Filtering is carried out:</p> <ul style="list-style-type: none"> ▶ partially: it is sufficient if the character sequence appears in the name ▶ Without taking capitalization into account <p>Already-selected user groups are not hidden.</p> |
| Checkboxes | Active: User group is selected for adding. |
| List of user groups | <p>Display of the user groups available for selection. This list is compiled according to the settings in the configuration of user search (on page 531).</p> <p>It contains:</p> <ul style="list-style-type: none"> ▶ Group name: Display of the user groups that a user belongs to. ▶ Description: Displays information on the user name and its origin. |
| Select all | Clicking on the button selects all displayed user groups according to the filter conditions. |
| Deselect all | Clicking on the button deselects the selection. |
| OK | Accepts selection, closes the dialog and adds selected user groups. |
| Cancel | Discards all changes and closes the dialog. |

The size and position of the dialog can be changed. These settings are saved as user-dependent.

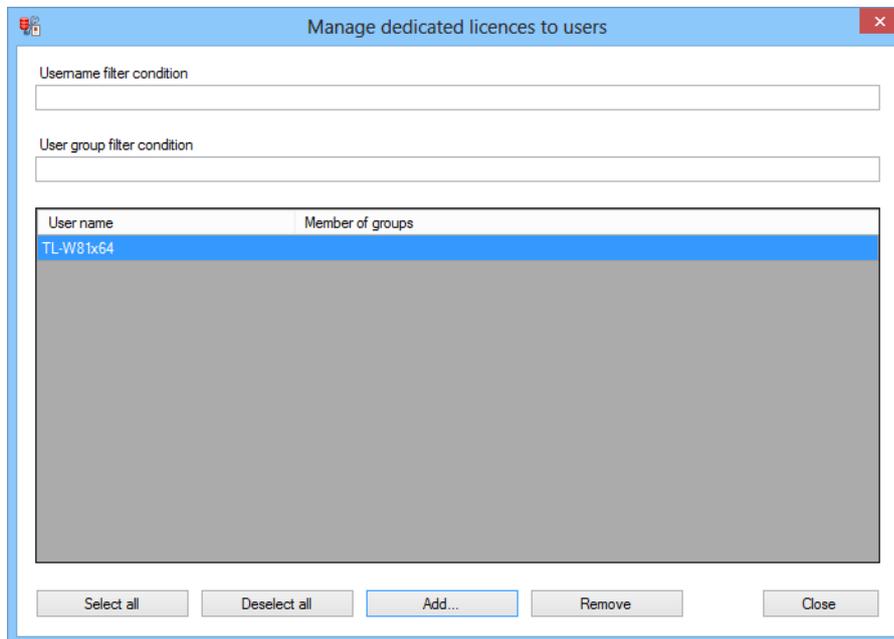
11.9.4 Users with dedicated license

Users can have dedicated licenses in ZAMS. A license is always kept free for these. A user with a dedicated license thus also has a client license on the license server if they are not connected. The maximum number of users who can be created with a fixed license is the amount of client licenses present. When entering a new zenon Analyzer license (on page 38), it is only accepted if you have enough client licenses for all users with a dedicated license.

ASSIGNING DEDICATED LICENSES TO USERS

To assign or remove a user's dedicated license:

1. Open the **Analyzer Server** menu item
2. Select **Assign users a dedicated license**
3. The dialog to administer the users with a fixed license is opened



| Parameters | Description |
|------------------------------|---|
| Username filter conditions | <p>Input of filter conditions for user names.</p> <p>The list of the users displayed is updated each time a change is made in the input field. Only users who meet the filter criteria in the text with one of their name properties are displayed. Filtering is carried out:</p> <ul style="list-style-type: none"> ▶ partially: it is sufficient if the character sequence appears in the name ▶ Without taking capitalization into account <p>Already-selected users are not hidden.</p> |
| User group filter conditions | <p>Input of filter conditions for user groups.</p> <p>The list of the users displayed is updated each time a change is made in the input field. Only users that belong to one of the user groups that meet the condition are shown. Filtering is carried out:</p> <ul style="list-style-type: none"> ▶ partially: it is sufficient if the character sequence appears in the name ▶ Without taking capitalisation into account <p>Already-selected users are not hidden.</p> |
| User List | <p>Displays all configured users with a dedicated license. Belonging to a user group is also shown.</p> <p>Multiple selection is possible:</p> <ul style="list-style-type: none"> ▶ Ctrl key + mouse click: selects an additional user with each click ▶ Ctrl key + mouse click: selects all users who are between two clicks, from ▶ Clicking on the Select all button selects all users in the list |
| Select all | Selects all users who are displayed in the List of users . |
| Deselect all | Deselects the users who are displayed in the List of users . |
| Add | <p>Opens, depending on the configuration of the user search (on page 531), a dialog to select users:</p> <ul style="list-style-type: none"> ▶ Direct query: The Search for users and user groups (on page 535) dialog is opened. If a user is found, they are added. If a group is found, all members of this group are added. |

| | |
|---------------|---|
| | <ul style="list-style-type: none"> ▶ Users and groups cached: The Select for users and user groups (on page 540) dialog is opened. Cached users and groups are offered for selection. <p>Users can only be added if there are sufficient licenses available. In the dialog to add users, all users who already have a corresponding license are filtered out. The dialog is only opened if at least one further user can be added. Note the corresponding message in the output window.</p> |
| Remove | <p>Deletes selected users from the list without requesting confirmation.</p> <p>The successful removal of a user is documented in the output window, as is unsuccessful removal.</p> |
| Close | <p>Closes the dialog.</p> |

The size and position of the dialog can be changed. These settings are saved as user-dependent.

11.9.5 Access rights to Analyzer applications

The Analyzer applications include:

- ▶ Analyzer Manager
- ▶ Manual Data Editor
- ▶ Metadata Editor
- ▶ ZAMS

The access rights to these applications are managed for all users in a dialog. In doing so, the appropriate access rights to all Analyzer metadata databases on the currently-active SQL server instance are regulated.



Information

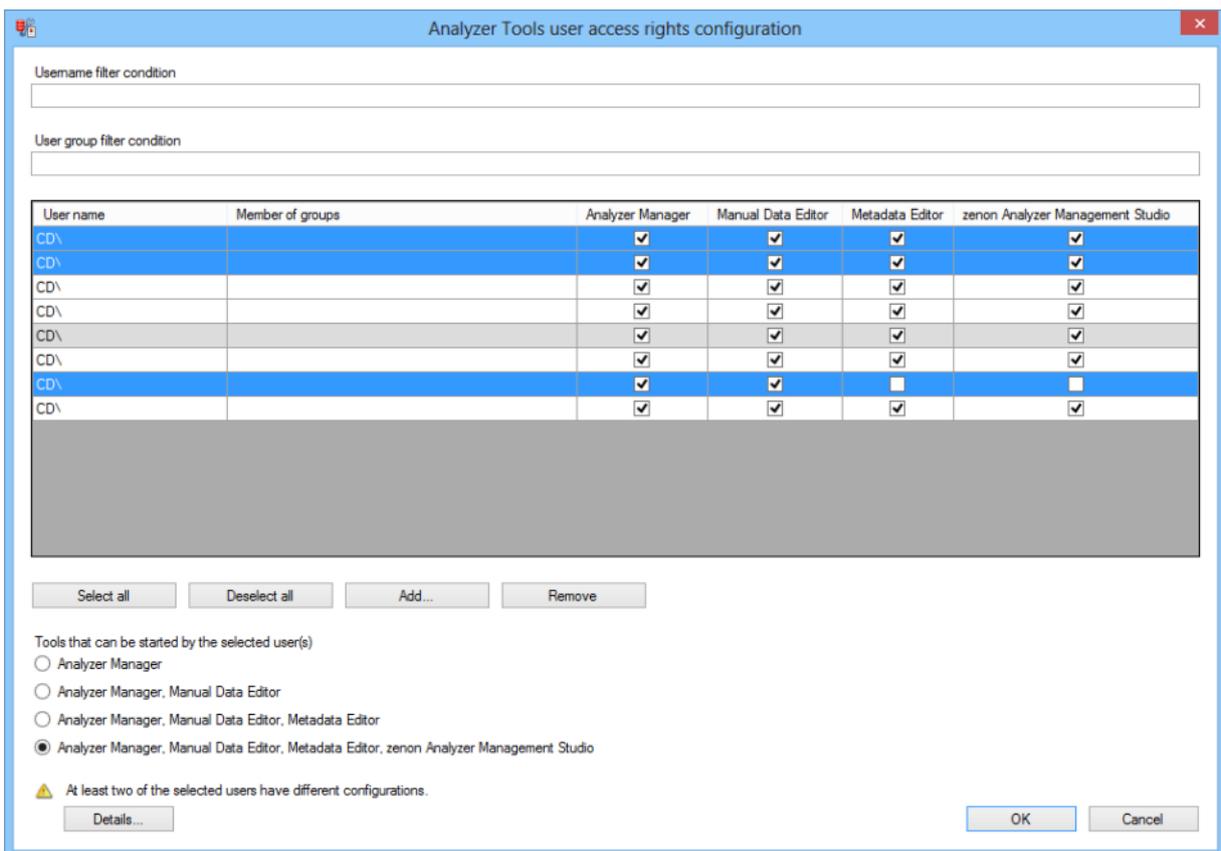
Access right, in the context of Analyzer applications, means that a user can connect to the Analyzer server with the tool.

This means: A user can be a user with authorization level 3 on Analyzer Server A and at the same time be a user with authorization level 1 on Analyzer server B.

Configuration of the access rights

To configure the access rights to the Analyzer applications:

1. Open the **Analyzer Server** menu item
2. Select the **Manage access rights for Analyzer applications** command
3. The dialog for configuring access rights is opened



Analyzer Tools user access rights configuration

Username filter condition

User group filter condition

| User name | Member of groups | Analyzer Manager | Manual Data Editor | Metadata Editor | zenon Analyzer Management Studio |
|-----------|------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| CD\ | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| CD\ | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| CD\ | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| CD\ | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| CD\ | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| CD\ | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| CD\ | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| CD\ | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Select all Deselect all Add... Remove

Tools that can be started by the selected user(s)

Analyzer Manager

Analyzer Manager, Manual Data Editor

Analyzer Manager, Manual Data Editor, Metadata Editor

Analyzer Manager, Manual Data Editor, Metadata Editor, zenon Analyzer Management Studio

 At least two of the selected users have different configurations.

Details... OK Cancel

| Parameters | Description |
|---------------------------|---|
| Username filter condition | <p>Input of filter conditions for user names.</p> <p>The list of the users displayed is updated each time a change is made in the input field. Only users who meet the filter criteria in the text with one of their name properties are displayed. Filtering is carried out:</p> <ul style="list-style-type: none"> ▶ partially: it is sufficient if the character sequence appears in the name ▶ Without taking capitalization into account <p>Already-selected users are not hidden.</p> |
| Filter condition | <p>Input of filter conditions for user groups.</p> <p>The list of the users displayed is updated each time a change is made in the input field. Only users that belong to one of the user groups that meet the condition are shown. Filtering is carried out:</p> <ul style="list-style-type: none"> ▶ partially: it is sufficient if the character sequence appears in the name ▶ Without taking capitalisation into account <p>Already-selected users are not hidden.</p> |
| List of users | <p>Display of all configured users.</p> <p>The following is displayed for each user:</p> <ul style="list-style-type: none"> ▶ The user groups they belong to. ▶ Authorizations for Analyzer applications. For details, see also the Basics of user access rights (on page 530) section. Authorizations can be changed by selecting the option fields in the Applications that can be used by the currently-highlighted users area. <p>Users with authorization levels 0 (Analyzer Manager) are not displayed, because the license server grants this to all level 0 users anyway.</p> <p>Note: The user currently connected is shown with a gray background. Their rights cannot be changed. This prevents all users of the SQL server being locked out due to incorrect configuration.</p> |
| Select all | Clicking on the button selects all displayed users according to the filter conditions. |
| Deselect all | Clicking on the button deselects the selection. |
| Add | Opens, depending on the configuration of the user search (on page 531), a dialog to select users: |

▶ **Direct query:**

The **Search for users and user groups** (on page 535) dialog is opened. If a user is found, they are added. If a group is found, all members of this group are added.

▶ **Users and groups cached:**

The **Select for users and user groups** (on page 540) dialog is opened. Cached users and groups are offered for selection.

Users who have already been added are filtered out in the dialog. The dialog is only opened if at least one user can be added.

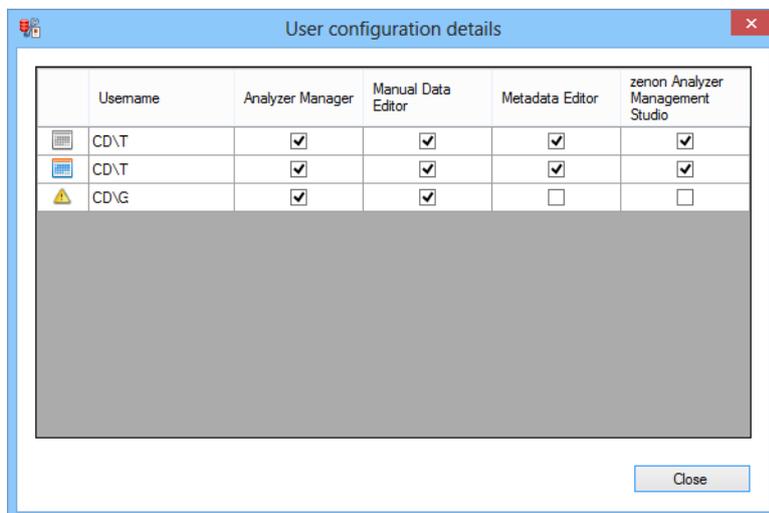
| | |
|--|--|
| <p>Remove</p> | <p>Deletes the selected users from the list without requesting confirmation.</p> <p>The removal of a user is the same as setting the user to authorization level 0 (Analyzer Manager) because the license server grants level 0 to all users and the database access rights of the user can be deleted in both cases.</p> |
| <p>Tools that can be started by the selected user(s)</p> | <p>Selection of the authorization levels for the users selected in the list. The levels are arranged in a hierarchy. Level 0 elements are also included in level 1:</p> <ul style="list-style-type: none"> ▶ Analyzer Manager: Level 0. Users can only have a license for the Analyzer Manager. If a user is set to this authorization level, they are removed from the list of displayed users, because the license server grants all users level 0 anyway. ▶ Manual Data Editor: Level 1: Users can also use the editor tool for price and norm values. ▶ Metadata Editor: Level 2. Users can also use the Metadata Editor and the Analyzer Export Wizard. ▶ zenon Analyzer Management Studio. Level 3. Users can also use ZAMS. <p>If several users are highlighted in the table, the authorization levels of the last-selected user are displayed. If no user is selected or the user who is currently connected is selected, the authorization level cannot be set.</p> <p>For details on the access levels, see also the Basics of user access rights (on page 530) section.</p> <p>Attention: If several users are highlighted, the amended configuration is set for all highlighted users in the event of a configuration change, regardless of whether it currently has different configurations.</p> |
| <p>Warnings</p> | <p>Only visible if errors are present. Consists of: Warning symbol, text with warning notice and button to display the details.</p> <p>Condition for display of warnings:</p> <ul style="list-style-type: none"> ▶ The currently-connected user was selected for a configuration change. A warning notice is displayed. The button is not visible. ▶ Two or more of the selected users have different configurations. The warning notice is displayed. Clicking on the Details button opens a window with details |

| | |
|---------------|---|
| | (on page 551) on the warning. Attention: The display of a warning means that changes to the configuration and the confirmation of these also makes changes for objects with an original configuration that is different to the configuration displayed here. The original configuration for these objects is then lost. |
| OK | Applies configuration and closes the dialog. |
| Cancel | Discards all changes and closes the dialog. |

The size and position of the dialog can be changed. These settings are saved as user-dependent.

Warning details for different user access rights

If users with different settings are selected for joint configuration, a warning notice is shown in the dialog to configure the access rights (on page 547). The details are shown in a separate window. No inputs can be made in this dialog:



| Parameters | Description |
|---------------|--|
| List of users | <p>Display of all configured users.</p> <p>The first column shows the type of warning:</p> <ul style="list-style-type: none"> ▶ Gray table: Basis for comparison. The configuration is selected on the basis of the last selected user. ▶ Yellow triangle: Differs from the comparison basis. ▶ Colored table: Corresponds to comparison basis. ▶ The other columns contain the user names and the display of the respective authorization levels (on page 530). |
| Close | Closes the window. |

The size and position of the dialog can be changed. These settings are saved as user-dependent.

11.9.6 Analyzer Manager access rights

With the access rights for the user, a distinction is made between two types of rights:

1. User profile

These define whether a user can access objects on the Analyzer Manager and the underlying SQL server reporting services and whether they can change the configuration of the Analyzer Manager and the underlying SQL server reporting services. A distinction is made between users (object access only) and administrators (object access and configuration changes).

2. Access rights to objects

These define which user can access which objects and with which rights.

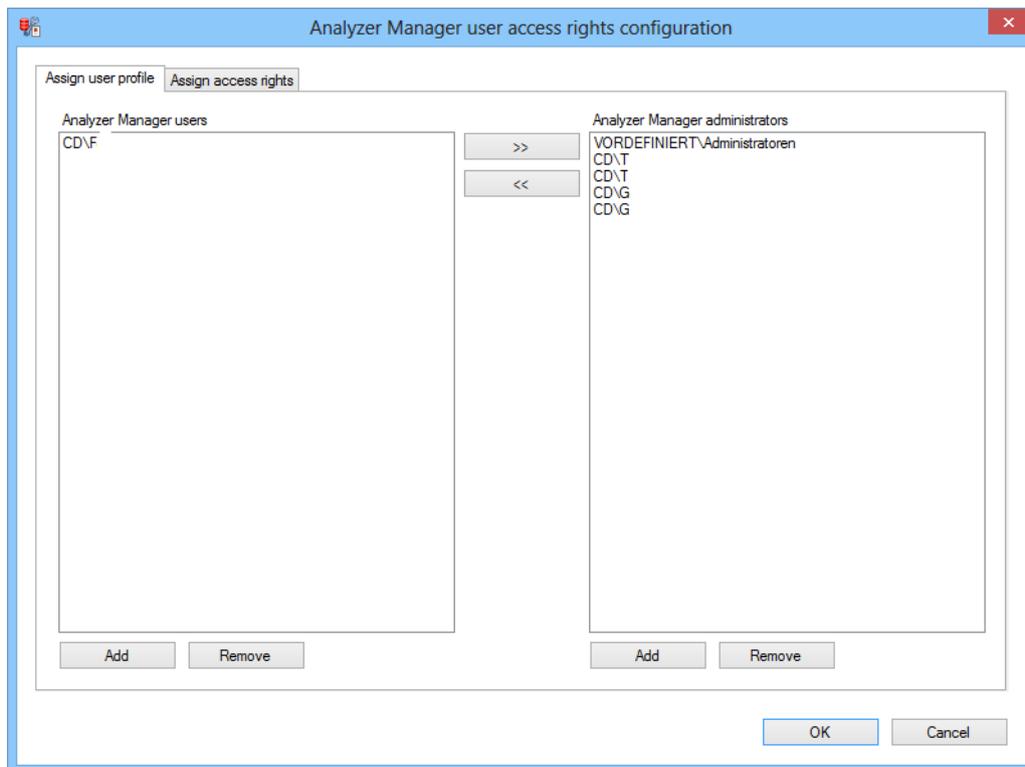
Attention: The object access rights are only then applicable if the accessing user has system access rights as a user or administrator.

To configure the access rights:

1. Open the **Analyzer Server** menu item
2. Select the **Manage Analyzer Manager access rights** command

3. The dialog to configure the access rights is opened; this has two tabs to be configured
 - Assign user profile (on page 553)
 - Define access rights (on page 556)

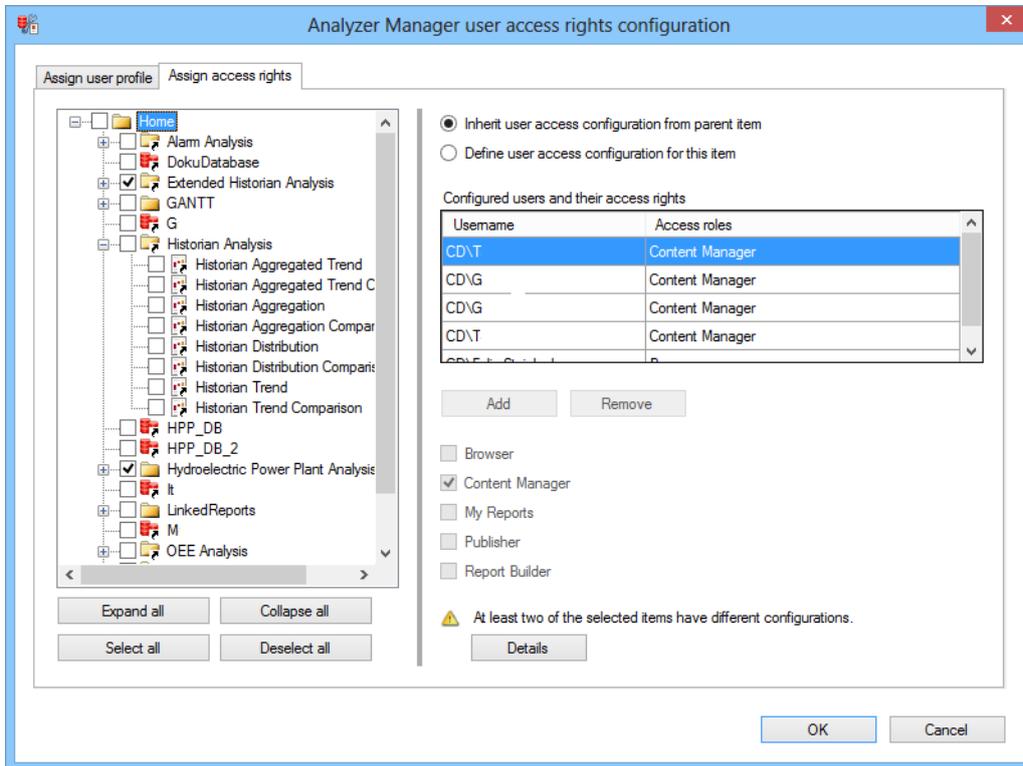
Assign user profile



| Parameters | Description |
|--|--|
| List of Analyzer Manager users | <p>Contains the currently-defined users of the SQL server reporting services on the Analyzer server.</p> <p>Users can be added or removed using the Add and Remove button. The >> and << buttons are used to drag users to the list Analyzer Manager administrators or to add them from there.</p> <p>Multiple selection is possible.</p> <p>The rights of the currently logged-on user cannot be changed.</p> |
| Add | <p>Adding a user as an Analyzer Manager user.</p> <p>Opens, depending on the configuration of the user search (on page 531), a dialog to select users:</p> <ul style="list-style-type: none"> ▶ Direct query: The Search for users and user groups (on page 535) dialog is opened. If a user is found, they are added. If a group is found, the group is added. ▶ Users and groups cached: The Select for users and user groups (on page 540) dialog is opened. Cached users and groups are offered for selection. <p>Users who are already entered as Analyzer Manager administrators cannot be added using this dialog. These can be dragged using the << button.</p> <p>Users who have already been added are filtered out in the dialog. The dialog is only opened if at least one user can be added.</p> |
| Remove | <p>Deletes the selected users from the list without requesting confirmation.</p> |
| List of Analyzer Manager administrators | <p>Contains the currently-defined administrators of the SQL server reporting services on the Analyzer server.</p> <p>Users can be added or removed using the Add and Remove button. The >> and << buttons are used to drag users to the List of Analyzer Manager users or to add them from there.</p> <p>Multiple selection is possible.</p> |
| Add | <p>Adding a user as an Analyzer Manager administrator.</p> <p>Opens, depending on the configuration of the user search (on</p> |

| | |
|------------------------|--|
| | <p>page 531), a dialog to select users:</p> <ul style="list-style-type: none"> ▶ Direct query: The Search for users and user groups (on page 535) dialog is opened. If a user is found, they are added. If a group is found, the group is added. ▶ Users and groups cached: The Select for users and user groups (on page 540) dialog is opened. Cached users and groups are offered for selection. <p>Users who are already entered as Analyzer Manager users cannot be added using this dialog. These can be dragged using the >> button.</p> <p>Users who have already been added are filtered out in the dialog. The dialog is only opened if at least one user can be added.</p> |
| Remove | Deletes the selected users from the list without requesting confirmation. |
| Button >> | Moves all highlighted users to the group of administrators. |
| Button << | Moves all highlighted users to the group of users. |
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Assign access rights



| Parameters | Description |
|---------------------|--|
| Object list | <p>Display of all objects in the Analyzer Manager in an expandable tree structure. Each object is assigned an icon in the tree structure, which reflects its data type. The following data types are displayed:</p> <ul style="list-style-type: none"> ▶ Folder ▶ Data source ▶ Report or linked report ▶ Different type <p>There is also a symbol for each object, which shows that the object inherits its configuration.</p> <p>Editing:</p> <p>If an object is marked, it is unlocked for editing in the right part of the dialog.</p> <p>Several projects can also be edited at the same time. To do this, they are selected by activating the check box in front of them. If several objects are selected for editing, the configuration of the object with the first path in alphabetical order (the furthest up in the tree) is displayed.</p> <p>If objects with different configurations are selected together, a warning is shown.</p> |
| Expand all | Clicking on this expands all nodes. |
| Collapse all | Clicking on this collapses all nodes. Only the root folder is displayed. |
| Select all | Activates the checkboxes of all visible elements. |
| Deselect all | Deactivates the checkboxes of all elements. |

| | |
|--|--|
| Separator | Left area (tree with objects) and right area (configuration) are divided by a separator. To change the ratio between the two, drag the separator with the mouse into the desired direction. |
| Define user access configuration for this item | <p>Active: The rights of the user are defined for the selected objects with the following configuration elements.</p> <p>The properties for the Home object, the uppermost object, must always be defined.</p> |
| Inherit user access configuration from parent item | <p>Active: The selected elements inherit their properties from the superordinate object.</p> <p>If the configuration is inherited, the user rights can be displayed, but not changed.</p> <p>Attention: If an Inherit access rights from superordinate object object is set, the configuration set before this is lost. The loss of the configuration can be prevented by closing the dialog. However all the changes that have been made before that are also lost.</p> |
| Configured users and their access rights | <p>List of all users assigned to the selected objects and their access rights. Each user is displayed in their own line. Several users can be selected at the same time.</p> <p>The following are displayed:</p> <ul style="list-style-type: none"> ▶ User names ▶ Roles assigned to the user; several roles are displayed separately by means of a comma <p>Scroll</p> <p>The roles of the users are stipulated using the checkboxes below the list. Each user can have several roles at the same time.</p> <p>If several users are highlighted in the table, the configuration of the last-selected user is displayed. Each change then has an effect on all highlighted users.</p> <p>If a user does not have a role for an object, they are considered deleted when setting the configuration for this object. There are the following roles:</p> <ul style="list-style-type: none"> ▶ Browser |

| | |
|--|---|
| | <ul style="list-style-type: none">▶ Content manager▶ My reports▶ Publisher▶ Report Builder <p>Only available if Define access rights for this object has been activated.</p> |
|--|---|

| | |
|-----------------|--|
| Add | <p>Opens the dialog (on page 538) for adding users.</p> <p>Only available if Define access rights for this object has been activated. Only users or user groups that have been configured in the Assign user profile (on page 553) tab can be selected. Users who have already been added are filtered out in the dialog. The dialog is only opened if at least one user can be added.</p> |
| Remove | <p>Deletes all selected users from the list.</p> <p>Only available if Define access rights for this object has been activated.</p> |
| Browser | <p>Active: The role is assigned to selected users.</p> <p>The user can see the folder and reports and subscribe to reports.</p> |
| Content manager | <p>Active: The role is assigned to selected users.</p> <p>The user can manage content on the report server. This includes folder, reports and sources.</p> |
| My reports | <p>Active: The role is assigned to selected users.</p> <p>The user can:</p> <ul style="list-style-type: none"> ▶ Publish reports and linked reports ▶ Manage folders, reports and sources in a user's My reports folder |
| Publisher | <p>Active: The role is assigned to selected users.</p> <p>The user can publish reports and linked reports on the report server.</p> |
| Report Builder | <p>Active: The role is assigned to selected users.</p> <p>The user can see report definitions and start the Report Builder.</p> |
| Warnings | <p>Only visible if errors are present. Consists of: Warning symbol, text with warning notice and button to display the details.</p> <p>Condition for display of warnings:</p> <ul style="list-style-type: none"> ▶ Two or more objects are highlighted in the tree structure, the configurations of which are different. The warning notice is displayed. Clicking on the Details button opens a window with details (on page 561) on the warning. ▶ All objects highlighted in the tree structure have the same configuration, but |

| | |
|--------|--|
| | <p>two or more highlighted users have different configurations. The warning notice is displayed. Clicking on the Details button opens a window with details (on page 561) on the warning.</p> <p>Attention: The display of a warning means that changes to the configuration and the confirmation of these also makes changes for objects with an original configuration that is different to the configuration displayed here. The original configuration for these objects is then lost.</p> |
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

The size and position of the dialog can be changed. These settings are saved as user-dependent.



Attention

In this tab, the rights of the user currently connected are not protected from changes. Erroneous configuration when assigning roles can thus lead to no users having sufficient administration rights on the report server.

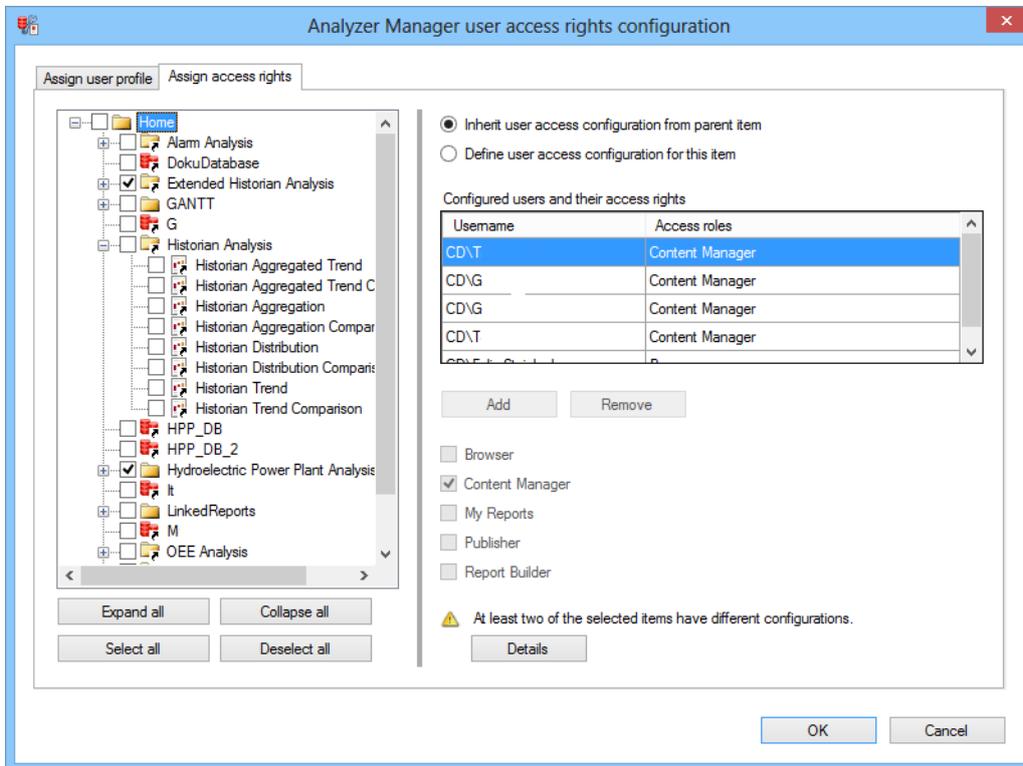
Warning details for different authorization levels

If configurations are selected that are in conflict and could lead to the loss of previously-established configurations, a warning is shown in the configuration dialog. Warnings are shown if:

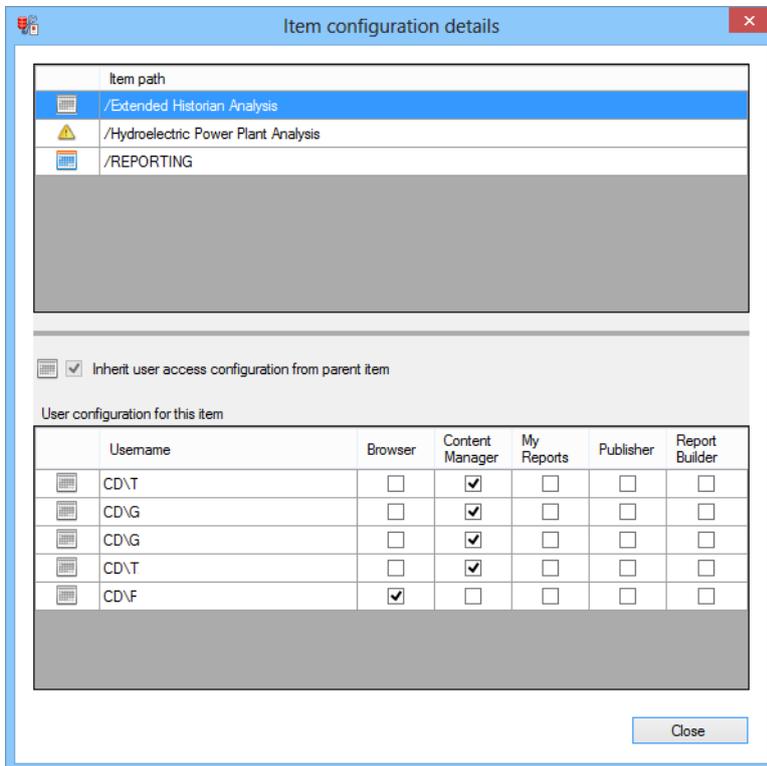
- ▶ Two or more objects were highlighted in the tree structure, the configurations of which are different
- ▶ Two or more highlighted users have different configurations

THERE ARE DIFFERENT ACCESS RIGHTS TO OBJECTS ON THE REPORT SERVER

If several objects that have different settings are selected for configuration at the same time, a warning is displayed in the configuration dialog:



Clicking on the **Details** button opens a window with details on the warning. No inputs can be made in this dialog:



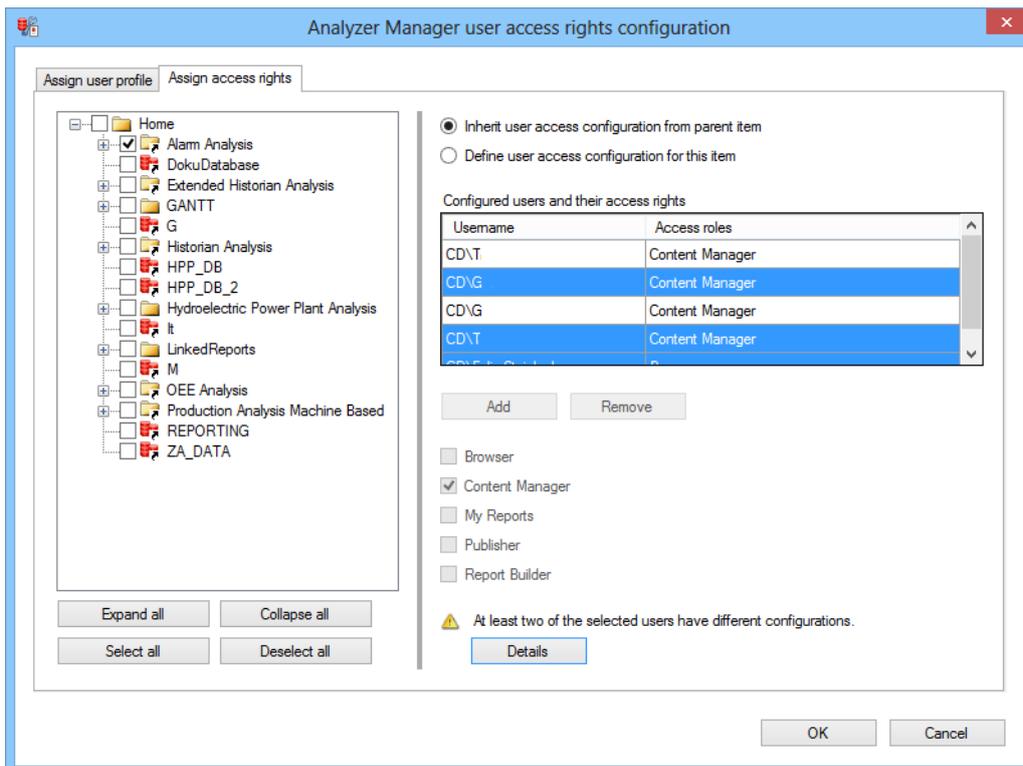
| Parameters | Description |
|---|--|
| List of objects | <p>Display of all selected objects.</p> <p>The first column shows the type of warning:</p> <ul style="list-style-type: none"> ▶ Hash: Basis for comparison. The configuration of the object with the first path in alphabetical order (the furthest up in the tree) is selected as a basis. ▶ Blue circle: Corresponds to comparison basis. ▶ Yellow triangle: Differs from the comparison basis. <p>The second column shows the object path.</p> <p>One line each can be selected in this list. The configuration details for the selected object are displayed in the lower area.</p> |
| Separator | <p>Upper area (objects) and lower area (user) are divided by a separator. To change the ratio between the two, drag the separator with the mouse into the desired direction.</p> |
| Inherit user access configuration from parent item | <p>The symbol shows whether the assignment of the configuration mode:</p> <ul style="list-style-type: none"> ▶ Is a basis for comparison (hash symbol) : Basis for comparison. The configuration of the object with the first path in alphabetical order (the furthest up in the tree) is selected as a basis. ▶ Corresponds to comparison basis (blue circle) ▶ Differs from comparison basis (yellow triangle) <p>The checkbox shows the configuration mode:</p> <ul style="list-style-type: none"> ▶ <code>active</code>: Object inherits configuration from superordinate object ▶ <code>inactive</code>: Object is configured individually |
| List of users and their roles | <p>Each row of this table constitutes a user and has one of the three following background colors:</p> <ul style="list-style-type: none"> ▶ White: The user is defined in both the comparison basis and the object currently being looked at. ▶ Grey: The user is defined in the object currently being looked at, however they do not appear in the comparison basis. |

| | |
|--------------|--|
| | <ul style="list-style-type: none"> ▶ Red: The user is defined in the comparison basis, however does not appear in the object being looked at. <p>The table consists of the following columns:</p> <ul style="list-style-type: none"> ▶ Symbol for the type of row. The symbols correspond to those in the List of objects area. ▶ User names ▶ Columns with the possible roles. Activated checkbox: The user has this role. |
| Close | Closes the window. |

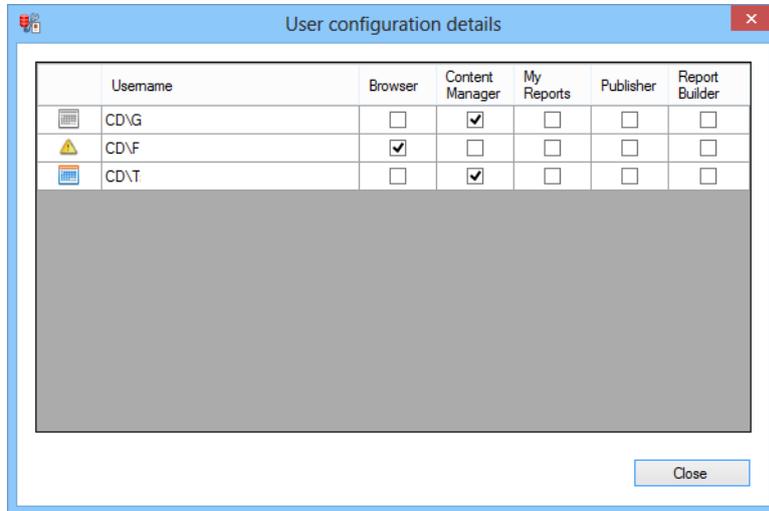
The size and position of the dialog can be changed. These settings are saved as user-dependent.

ROLES FOR USERS

If users with different settings are selected for joint configuration, a warning notice is shown in the dialog to configure the access rights (on page 547):



Clicking on the **Details** button opens a window with details on the warning. No inputs can be made in this dialog:



| Parameters | Description |
|----------------------|--|
| List of users | <p>Display of all configured users.</p> <p>The first column shows the type of warning:</p> <ul style="list-style-type: none"> ▶ Hash: Basis for comparison. The configuration is selected on the basis of the last selected user. ▶ Blue circle: Corresponds to comparison basis. ▶ Yellow triangle: Differs from the comparison basis. <p>The other columns contain the user names and the display of the respective roles.</p> <p>Activated checkbox: The user has this role.</p> |
| Close | Closes the window. |

The size and position of the dialog can be changed. These settings are saved as user-dependent.

11.10 Options

You can get to the settings for ZAMS via the **options** menu item. They are available regardless of whether there is a connection to the Analyzer server and regardless of whether there is a valid license.

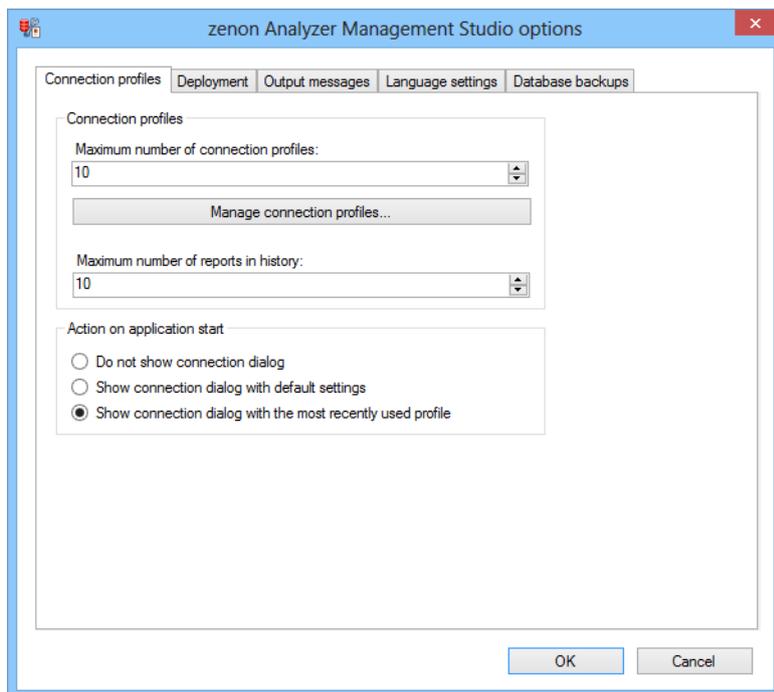
The options are deactivated if one of the following actions is executed: Open, Deploy, Deploy all, Open in Microsoft Report Builder or Open all in Microsoft Report Builder.

The following are configured in the options:

- ▶ Connection profiles (on page 567)
- ▶ Deployment of reports (on page 571)
- ▶ Messages in the output window (on page 573)
- ▶ Language settings (on page 574)
- ▶ Database backups (on page 577)

11.10.1 Connection profiles

In this tab, you define the starting behavior of the ZAMS.



| Parameters | Description |
|--|---|
| Connection profiles | Settings for connection profiles. |
| Maximum number of connection profiles | <p>Number of connection profiles that are saved. If the set number is exceeded by the creation of a new connection profile, then the profile that has not been used the longest is deleted.</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 255 |
| Manage connection profiles | Opens the dialog (on page 569) to manage the connection profiles. |
| Maximum number of files in the history of a connection profile | <p>Number of reports that are displayed in the Report menu in the Most recently edited reports (on page 250) list.</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 255 <p>If the permitted maximum is exceeded by a new report, the oldest entry is deleted.</p> <p>This value applies for all connection profiles. The new maximum is written to the configuration by clicking on OK. All connection profiles are immediately checked for adherence to the maximum. The oldest entries are deleted if necessary.</p> |
| Action on application start | Defines the action carried out when the ZAMS is started. |
| Do not show connection dialog | Active: Only the main window is shown. |
| Show connection dialog with default settings | Active: The dialog for establishing the connection is opened with the values for a new connection profile. |
| Show connection dialog with the most recently used profile | Active: The dialog for establishing the connection is opened with the values for the most recently used connection profile. |
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Manage connection profiles

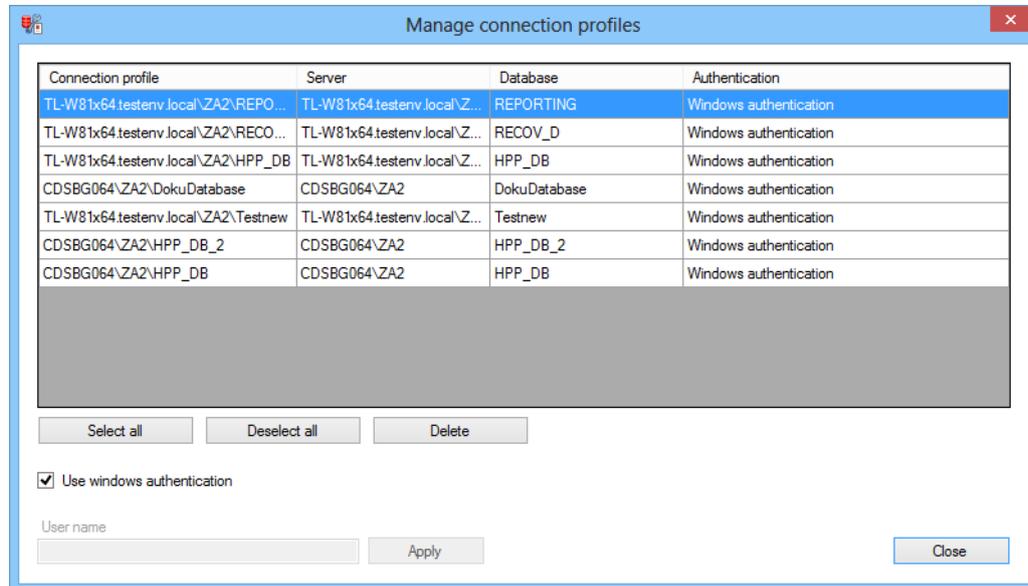
This dialog administers the connection profiles for:

- ▶ ZAMS (on page 322)
- ▶ Metadata Editor (on page 619)
- ▶ Manual Data Editor (on page 643)

(on page 621) Profiles can be deleted and the authentication method can be changed.

Attention

Changes in this dialog are only executed if the superordinate dialog from which the administration of the profile was opened has also been confirmed, by clicking on .



| Connection profile | Server | Database | Authentication |
|-------------------------------------|------------------------------|--------------|------------------------|
| TL-W81x64.testenv.local\ZA2\REPO... | TL-W81x64.testenv.local\Z... | REPORTING | Windows authentication |
| TL-W81x64.testenv.local\ZA2\RECO... | TL-W81x64.testenv.local\Z... | RECOV_D | Windows authentication |
| TL-W81x64.testenv.local\ZA2\HPP_DB | TL-W81x64.testenv.local\Z... | HPP_DB | Windows authentication |
| CDSBG064\ZA2\DokuDatabase | CDSBG064\ZA2 | DokuDatabase | Windows authentication |
| TL-W81x64.testenv.local\ZA2\Testnew | TL-W81x64.testenv.local\Z... | Testnew | Windows authentication |
| CDSBG064\ZA2\HPP_DB_2 | CDSBG064\ZA2 | HPP_DB_2 | Windows authentication |
| CDSBG064\ZA2\HPP_DB | CDSBG064\ZA2 | HPP_DB | Windows authentication |

Use windows authentication

User name

| Parameters | Description |
|-----------------------------|--|
| List of connection profiles | <p>The table displays all editable connection profiles.</p> <p>Note: Metadata Editor and Manual Data Editor cannot edit the ZAMS connection profiles.</p> <p>The following columns are shown:</p> <ul style="list-style-type: none"> ▶ Connection profile: Profile name ▶ Server: SQL Server Instance ▶ Database: linked database ▶ Authentication: Type of authentication <p>Multiple selection is possible.</p> |
| Select all | Highlights all entries |
| Deselect all | Deselects the highlighting of entries. |
| Delete | Deletes the highlighted connection profiles without requesting confirmation. Only available if at least one profile has been selected. |
| Use windows authentication | <ul style="list-style-type: none"> ▶ Active: Windows authentication is used. <p>If several profiles have been selected, then:</p> <ul style="list-style-type: none"> ▶ The setting of the first selected profile is displayed ▶ Changes are applied to all selected profiles |
| Username | <p>Entry of the user name with authentication by means of user name and password.</p> <p>Only active if at least one profile has been highlighted and the first highlighted profile uses authentication with user name and password. When selecting several profiles, the user name of the first of the selected profiles is automatically set.</p> |
| Apply | <p>Setting the user name entered.</p> <p>Only active if at least one profile has been highlighted and the first highlighted profile uses authentication with user name and password.</p> |

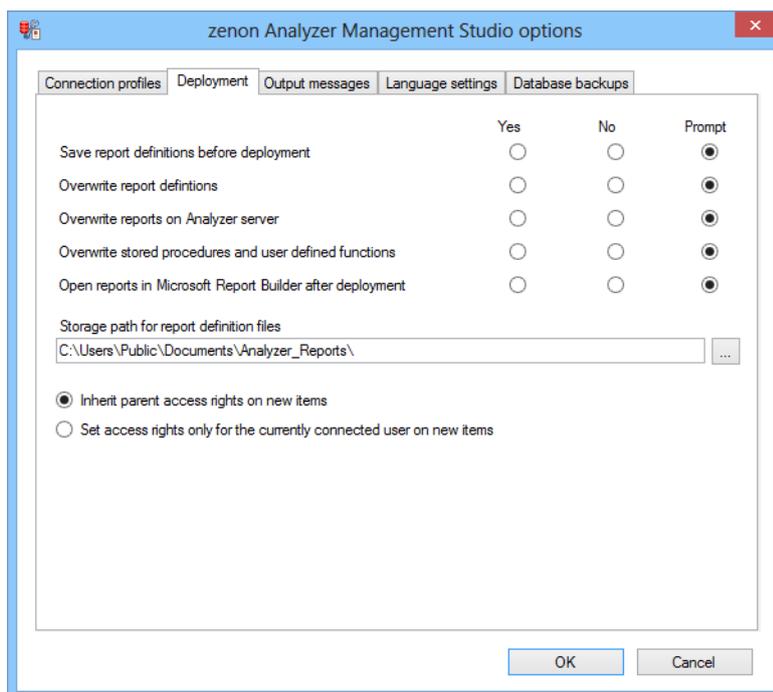
| | |
|--------------|---|
| | Changes are applied to all selected profiles. |
| Close | Closes the dialog. The saving or rejection of changes is undertaken by the superordinate option dialog (see also the three option dialogs above). |

11.10.2 Deployment

In this tab, you define which actions happen automatically when a report is prepared or saved.

Three methods are available for all actions:

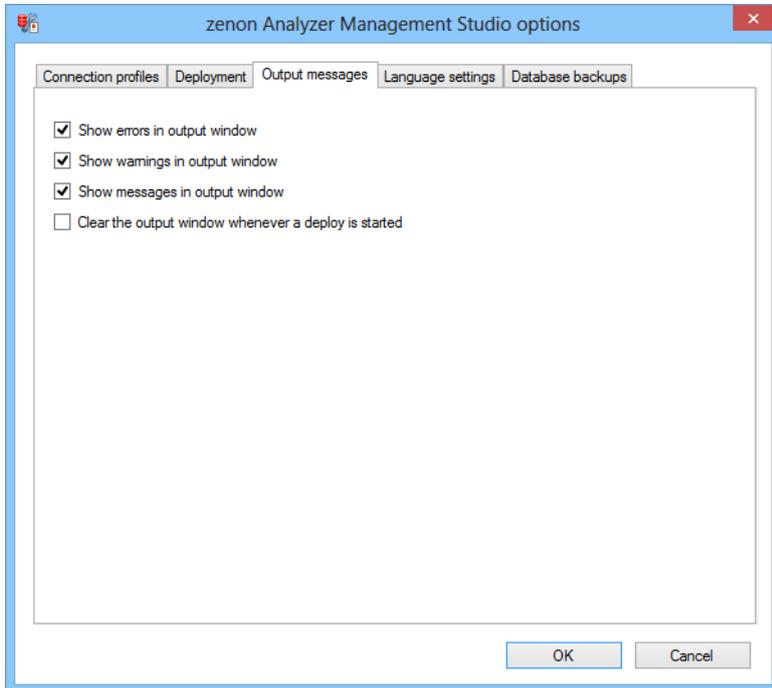
- ▶ **Yes:** carries out action automatically
- ▶ **No:** does not carry action out
- ▶ **Prompt:** open dialog with prompt for the user to decide



| Parameters | Description |
|--|---|
| Save report definitions before deployment | Decision on whether reports are saved on the hard drive before being deployed. Default: Prompt |
| Overwrite report definitions | Decision on whether reports are to be overwritten on the hard drive when saving. Default: Prompt |
| Overwrite reports on Analyzer server | Decision on whether reports on the Analyzer server are to be overwritten. Default: Prompt |
| Overwrite stored procedures and user-defined functions | Decision on whether SPs and UDFs are to be written to the database. Default: Prompt |
| Open reports in Microsoft Report Builder after deployment | Decision on whether reports can be opened in Microsoft Report Builder after they have been deployed. Default: Prompt |
| Storage path for report definition files | Folder in which reports are saved. Click on the . . . button to open the browser to select a folder. Report files have the file name suffix <code>.zams_rep</code> . The path is saved for each user. Default: C:\Users\Public\Documents\Analyzer_Reports |
| Inherit parent access rights on new items | Active: Newly-created objects have the same access rights (on page 552) as the object that is superordinate to them. |
| Set access rights only for the currently connected user on new items | Active: Only the user connected at the time of creation of the new objects has access to these new objects. To do this, they are assigned the role of Content Manager (on page 552). |
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

11.10.3 Output messages

In this tab, you define the display of messages in the output window.



| Parameters | Description |
|--|--|
| Show errors in output window | Active: Errors are displayed in the output window. |
| Show warnings in output window | Active: Warnings are displayed in the output window. |
| Show messages in output window | Active: Messages are displayed in the output window. |
| Clear the output window whenever a deploy is started | Active: The output window is cleared as soon as a function to deploy a report is executed. |
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

All messages and warnings from the output window are saved in LOG files (on page 248), regardless of whether they are displayed or not.

11.10.4 Language settings

The language of the ZAMS user interface and the language for reports can be pre-defined in ZAMS, regardless of the language of the operating system.

ZAMS LANGUAGE WHEN ZAMS IS STARTED

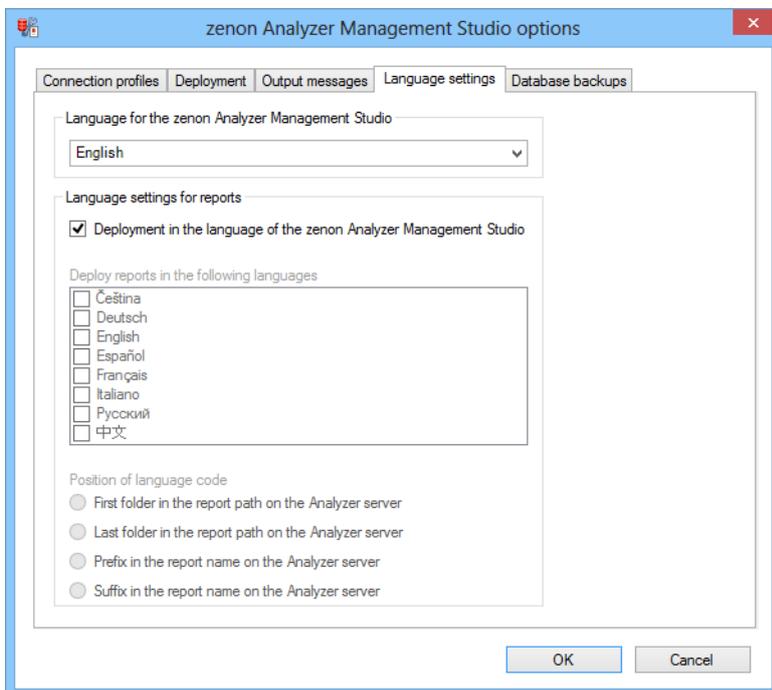
The language of the operating system is detected and set when ZAMS is started. If another language has been defined for the ZAMS user interface in the options, this is used. If it is not possible to switch to a pre-defined language, the language of the operating system remains active.

The switching of the ZAMS user interface language affects all areas of ZAMS, including report templates and data files.

CONFIGURING THE LANGUAGE

To configure the language settings:

1. Navigate to the **Options** menu
2. Select the command **Options**.
3. open tab **Language settings**

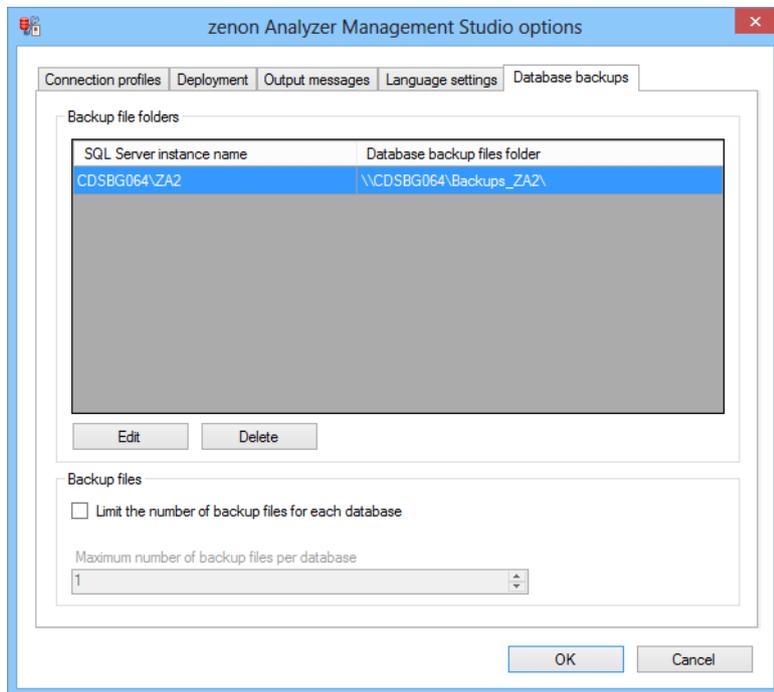


| Parameters | Description |
|--|---|
| Language for the zenon Analyzer Management Studio | <p>Selection of the language for the ZAMS user interface from a drop-down list. The languages available are displayed in the writing convention of the respective language.</p> <p>The language is immediately switched after the change is set and OK is clicked on.</p> |
| Language settings for reports | Configuration of the languages for the preparation of reports. |
| Deployment in the language of the zenon Analyzer Management Studio | <p>Active: Reports are always created in the language that was selected in the Language for the zenon Analyzer Management Studio option.</p> <p>Inactive: Reports are prepared in languages for which the checkboxes have been activated in the Deploy reports in the following languages.</p> <p>Default: active</p> |
| Deploy reports in the following languages | The languages of reports can be defined individually. To select a language, the checkbox in front of the language must be activated. |
| Position of language code | <p>Setting for the procedures of how reports are stored according to the assigned language and displayed in the All report deployment paths of the report configuration (on page 748).</p> <p>The following options are available:</p> <ul style="list-style-type: none"> ▶ First folder in the report path on the Analyzer Server ▶ Last folder in the report path on the Analyzer Server ▶ Prefix in the report name on the Analyzer Server ▶ Suffix in the report name on the Analyzer Server <p>(for further information, see the following options.)</p> |

| | |
|---|--|
| <p>▶ First folder in the report path on the Analyzer Server</p> | <p>Active: An independent folder system is created for each language. To do this, in the path for the report, a folder with the respective language designation is created, and below this there are the folders for the themes. The reports are stored in the folders assigned to them.</p> <p>For example: /DE/Alarm analysis/Alarm list /EN/Alarm analysis/Alarm list</p> |
| <p>▶ Last folder in the report path on the Analyzer Server</p> | <p>Active: All languages have a common folder structure for the theme. To do this, a folder with the respective language designation is created for the report below the folder of the theme. The reports are stored in the folders assigned to them.</p> <p>For example: /Alarm analysis/DE/Alarm list /Alarm analysis/EN/Alarm list</p> |
| <p>▶ Prefix in the report name on the Analyzer Server</p> | <p>Active: Language designators are placed before the report names. To do this, reports are stored in the respective folder for the theme. Each report contains a prefix with the language designation and an underscore..</p> <p>For example: /Alarm analysis/DE_Alarm list /Alarm analysis/EN_Alarm list</p> |
| <p>▶ Suffix in the report name on the Analyzer Server</p> | <p>Active: Language designators are added to the report names. To do this, reports are stored for the respective theme in the folder. Each report contains a suffix with an underscore and the language designation.</p> <p>For example: /Alarm analysis/Alarm list_DE /Alarm analysis/Alarm list_DE</p> |
| <p>OK</p> | <p>Applies all changes in all tabs and closes the dialog.</p> |
| <p>Cancel</p> | <p>Discards all changes in all tabs and closes the dialog.</p> |

11.10.5 Database backups

The path for the database backup and the number of the backup files to be created is configured in this tab.

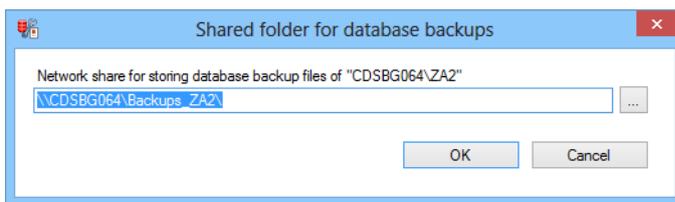


| Parameters | Description |
|--|--|
| List of the existing database backup paths | <p>Lists all configured database backup paths:</p> <ul style="list-style-type: none"> ▶ Name of the SQL server instance: Instance that is to be backed up. ▶ Backup file folders: Folder in which the backup is to be created <p>Precisely one row can be highlighted in the table. The highlighted row can be edited or deleted.</p> <p>Note: At this point it should be added that the database backup always only works for the currently-connected SQL server instance. The dialog must also work without an existing connection.</p> |
| Edit | Opens the dialog for editing the backup path. |
| Delete | Deletes the selected entry. |
| Backup files | Configuration of the options for the backup files. |
| Limit the number of backup files for each database | <ul style="list-style-type: none"> ▶ Active: The number of backup files created is limited. The limit is defined in the Number of backup files per database option. As soon as the maximum has been reached, the oldest backup file is deleted each time a new backup file is created. ▶ Inactive: Unlimited backup files are created. <p>Attention: Note the amount of memory available. If the limit of the storage medium is exceeded, no more backup files are created.</p> |
| Number of backup files per database | <p>Setting for the maximum number of backup files to be created.</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 ▶ Default: 1 |
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

STORAGE PATH FOR DATABASE BACKUP FILES:

The first time a backup request is made and a path has not yet been established, you are requested to define a save path. This path is then used for all backups and restorations. This path is administered in the options in the Database backups (on page 577) tab of the Settings (on page 566).

Note: It is recommended that a path on the Analyzer computer is used for backup.



| TAGs | Description |
|--|--|
| Network share path for storing database backup files of [database] | <p>A valid UNC path must be entered.</p> <p>Clicking on the . . . button opens the dialog (on page 485) to select a network share.</p> <p>A check is made if:</p> <ul style="list-style-type: none"> ▶ The syntax of the path is valid if: Only valid paths unlock the OK button. ▶ The path exists: When clicking on OK, the path is only accepted if it can also be accessed. ▶ The path is different to that already used: If a path is defined that is different to a path that has already been used, a corresponding message is given. The path can be created. The pre-existing database backup job can then be activated, deactivated and deleted, but can no longer be edited. <p>The configured path is saved individually for each user.</p> <p>Attention: The access rights to network shares must be set correctly. For details, see the Set access rights to network share correctly.</p> |
| OK | Accepts the path and closes the dialog. |
| Cancel | Discards changes and closes the dialog. |

SET ACCESS RIGHTS TO NETWORK SHARE CORRECTLY

In order for all database backup action to run correctly, the access rights to the network share must correspond to the database backup folder. For this, the following applies:

- ▶ The folder must be on the Analyzer Server, because defined users must access it locally on the Analyzer Server.
- ▶ Because the folder must be accessible by both the Analyzer Server and the ZAMS computer with the same path, it must be authorized in the network. The folder is then accessible with the same path via a UNC path everywhere in the network.
- ▶ The following users must have full access to the network share:

- **NT SERVICE\MSSQL\$ZA2**: For the creation and restoration of backups.
Defined locally on the Analyzer server. Virtual user, derived from the **SYSTEM**, in whose context the SQL server instance is running.
- **NT SERVICE\SQLAgent\$ZA2**: For automatic creation of backups.
Defined locally on the Analyzer server. Virtual user, derived from the **SYSTEM**, in whose context the SQL server instance is running.
- Every ZAMS user: To create and restore backups, administer backup files and administer automated backup jobs.

BACKUP FILE NAME

The file name of a database backup file follows this scheme: `[database name]_yyyy_MM_dd_HH_mm_ss.bak`

e.g.: `ZA_DATA_2013_02_12_14_11_35.bak` = backup of `ZA_DATA` on 12.2.2013 at 14:11:35

11.11 Connecting the report definition files to the database

The report definition files (`zams_rep`) are connected to their database. The connection is made when saving and checked on opening.

When loading a report from a `zams_rep` file, the necessary connection information is read and interpreted:

- ▶ If the SQL server instance name is not available, the error message **w00128** (see **Messages in the output window** section) is given. The SQL server instance name of the current SQL server connection is then entered, so that the connection information indicates the current connection the next time it is saved.
- ▶ If the SQL server instance name in the connection information is different to the SQL server instance names of the current SQL server connection, the error message **w00129** is given. The SQL server instance name of the current SQL server connection is then entered, so that the connection information indicates the current connection the next time it is saved.
- ▶ If the database name is not available, the error message **w00130** is given. The database name of the current SQL server connection is then entered, so that the connection information indicates the current connection the next time it is saved.

- ▶ If the database name in the connection information is different to that of the current SQL server connection, the error message `w00131` is given. The database name of the current SQL server connection is then entered, so that the connection information indicates the current connection the next time it is saved.

EXAMPLES

EXAMPLE 1

A `zams_rep` file saved with ZAMS 2.00 is then loaded. Because the file does not have any SQL server information, the error message `w00128` (see list of error messages) is given. The database information is extracted and interpreted from an RTP parameter. If the database is different, the message `w00131` is given.

EXAMPLE 2

A database with the same name is read into a different SQL server instance. When the `zams_rep` file is opened, `w00129` is given, because that of the new Analyzer server has a different name. The database is however identical.

MESSAGES IN THE OUTPUT WINDOW

Errors in the connection of the `zams_rep` file to its database are displayed by messages in the output window (on page 245).

SQL server instance information comprises the address of the server and the instance together, for example `CDSBG036\ZA2`.

| Message in the output window | ID | Description |
|--|--------|--|
| The storage file does not contain any information about the Analyzer SQL Server instance it was created for. The report might have been created for a different Analyzer SQL Server instance which can cause a corrupted report. | w00128 | No SQL server instance information is present in the zams_rep file. It may possibly have been created for a different SQL server instance. |
| The report in the storage file was created for the Analyzer SQL Server instance , [Original SQL Server Instance Name] ' but now it is loaded for the Analyzer SQL Server instance , [Neuer SQL Server Instanz Name]'. This can cause a corrupted report. | w00129 | The zams_rep file was created for a different SQL server instance. |
| The storage file does not contain any information about the Analyzer metadata database it was created for. The report might have been created for a different Analyzer metadata database which can cause a corrupted report. | w00130 | No database information present in the zams_rep file. It may possibly have been created for a different SQL server instance. |
| The report in the storage file was created for the Analyzer metadata database , [Original Database Name] ' but now it is loaded for the Analyzer metadata database , [Neuer Datenbank Name]'. This can cause a corrupted report. | w00131 | The zams_rep file was created for a different SQL server instance. |

NOTES ON DEALING WITH WARNINGS

- ▶ Warnings **w00128** and **w00129**: Less critical. The name of the SQL server instance has changed in each case.

Recommendation: Check the report configuration if these warnings appear. This is because there is the possibility that there are databases on two different SQL server instances with different content that have the same name, such as standard database **ZA_DATA**.

- ▶ Warnings **w00130** and **w00131**: Must be checked.
They can only be ignored if it is certain that the new database is a perfect clone of the old database.

The cloning of Analyzer metadata databases (same content, new name) is only without risk if neither the SQL connector has been created nor are there stored procedures in the initial database.

Background information: In the stored procedures, the database name is sent to the connector stub, so that this knows where the metadata can be found. The SQL connector

checks these database names, because it is only aware of the metadata of the current database.

12. Metadata database editors

There are editors available to edit metadata in zenon Analyzer:

- ▶ Manual Data Editor (on page 620): Used for the editing of the tables for price and standard values in a zenon Analyzer metadata database.
- ▶ Metadata Editor (on page 585): Allows the editing of die labels and descriptions of various objects.

The applications can be started from ZAMS, from the Start menu and from Windows Explorer as independent programs.

INTEGRATE AS CONTROL IN ZENON

The applications can also be integrated as ActiveX controls in zenon. The following limitations are applicable for use with ActiveX:

- ▶ A maximum of 1 instance per application
- ▶ Minimum size: 1000 x 700 pixels

You can read details on the configuration of an ActiveX controls in the **Configuring control in zenon** (on page 623) chapter.

START ZENON IN RUNTIME

To open one of the Editors in zenon Runtime:

1. Integrate the .NET control (on page 623) in the respective zenon project
2. Open the control when Runtime is running
3. The Editor is opened

Note: There is no menu line available in the control in zenon Runtime.

12.1 Metadata Editor

The metadata editor makes it possible to amend display names and descriptions and to enter equipment information.

It is typically used between the export of metadata with the Analyzer Export Wizard (on page 76) and the start of report creation with ZAMS.

The **Metadata Editor** is available as:

- ▶ .NET control in zenon Runtime: Available from zenon version 7.11. The control can access the control profile list of ZAMS.
- ▶ EXE file: Allows database editing even without zenon Runtime. This file includes .NET Control and can be started from ZAMS.

The interface settings can only be accessed from the EXE file and can be saved there



Information

If visual names of objects are changed, it may be necessary to re-prepare or re-configure reports from ZAMS. It is generally sufficient to open the editing dialog once and to close it again.

REQUIREMENTS

To be able to use the Metadata Editor on a database, the following requirements must be met:

- ▶ The database must be a version 2.0 Analyzer database with a valid structure.
- ▶ The user must have the rights to edit the metadata.
These rights can be configured in ZAMS.

ZAMS

To open the **Metadata Editor** in ZAMS:

1. Navigate to the **Options** menu item in ZAMS
2. Select the **Metadata Editor** entry
3. The dialog to connect (on page 586) the **Metadata Editor** is opened

KEYBOARD SHORTCUTS

The following key combinations are available to operate the Editor:

| Key combination | Description |
|-----------------|--|
| F1 | Opens help |
| Ctrl+Shift+C | Opens the dialog for creating a database backup. |
| Ctrl+S | Saves changes. |
| Alt+F4 | Closes the CD_PRODUCTNAME Editor |
| Ctrl+Z | Undo input |
| Ctrl+Y | Repeat input. |

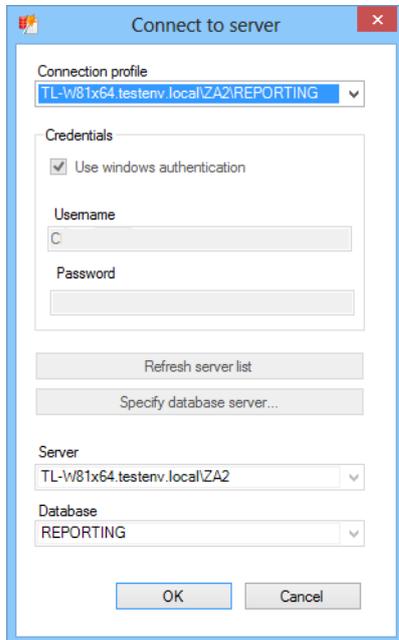
12.1.1 Connect

The Metadata Data Editor administers its own connection profile. The ZAMS connection profiles are also read on startup. If there are profiles in the Metadata Editor and in ZAMS with the same name, this dominates the connection profile of the Manual Data Editor.

To link the Manual Data Editor to a database:

1. Navigate to the **Options** menu item in ZAMS
2. Select the **Metadata Editor** entry
3. The dialog to connect to a server is opened.

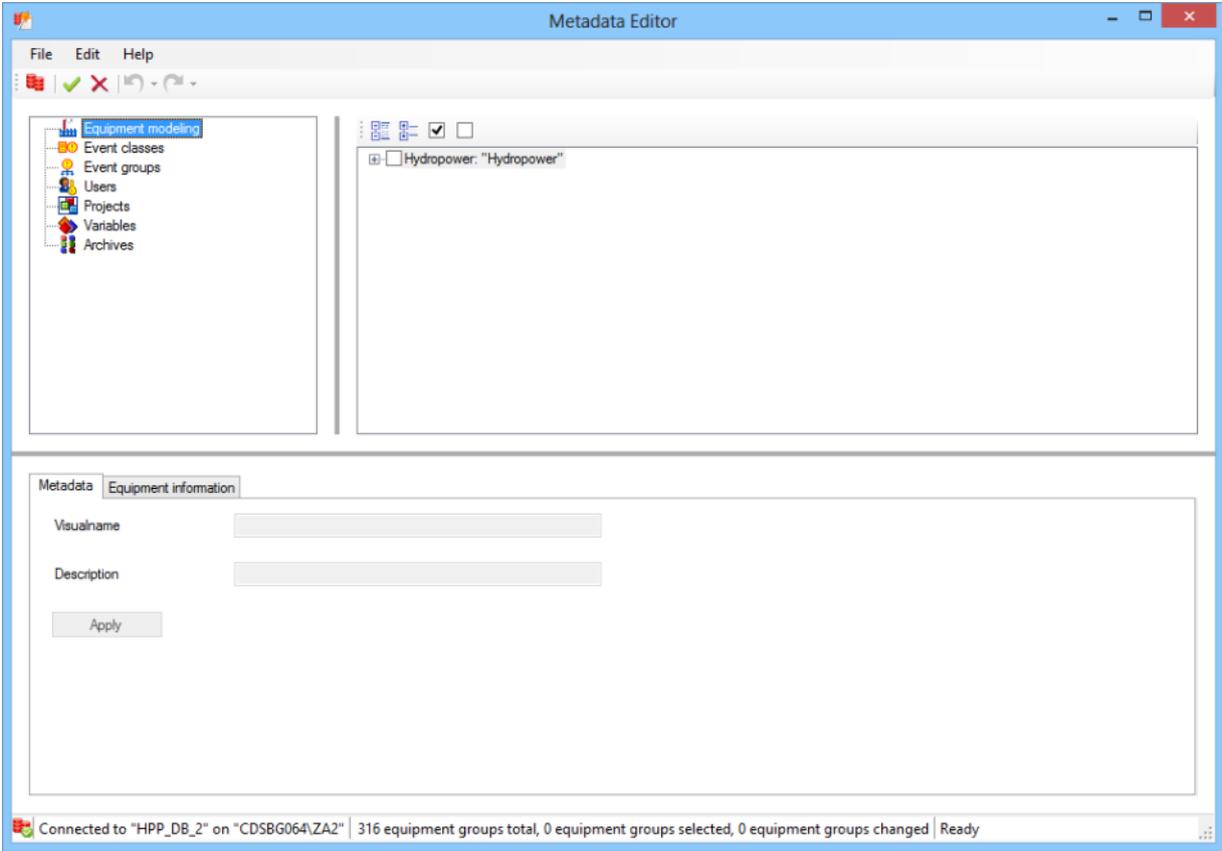
- select the desired connection by clicking on `Connection profile` or create a new connection (on page 322) in a similar manner to that of ZAMS.



- click on OK
- the connection will be created
- The user authorization is queried by the license server
- The database is checked to see that it is correct
Note: No connection is established if there are incorrect structures or versions. Conversion (on page 425) is only possible with ZAMS.
- Data is loaded
- The license is obtained
- The Editor is opened

Note: Unsaved changes are lost without warning when the connection is established.

12.1.2 Main window



| Range | Description |
|-------------------------|---|
| Menu bar | Menus (on page 589) to edit and save the objects. |
| Tool Bar | Symbols (on page 589) to edit and save the objects. |
| Object type window | <p>Selection of the object type to be edited. Available are:</p> <ul style="list-style-type: none"> ▶ Equipment modeling: Clicking this shows the configured equipment models in the object selection window. ▶ Event classes: Clicking this shows event classes in a filtered list with a project reference in the Object selection window. ▶ Event groups: Clicking this shows event groups in a filtered list without reference to a project in the object selection window. ▶ User: Clicking this shows users in a filtered list without reference to a project in the object selection window. ▶ Projects: Clicking this shows projects in a filtered list without reference to a project in the object selection window. ▶ Variables: Clicking this shows variables in a filtered list without reference to a project in the object selection window. ▶ Archives: Clicking this shows archives in a filtered list without reference to a project in the object selection window. |
| Object selection window | Selection of the objects according to the type of list by marking of checkboxes and marking the respective line. |
| Editing area | Entry and acceptance of changes. |
| Status bar | Display of status information (on page 589) on connection and actions. |

Menu, tool bar and status line

The menu and tool bar offer a range of commands to administer the Metadata Editor.

Note: The menu is only not available if the **Metadata Editor** is started from ZAMS as an EXE file, but not the control in zenon Runtime.

MENU

| Entry | Description |
|------------------------|--|
| File | Commands for general operations. |
| Connect | Opens the dialog (on page 621) to create a connection. Note: If the dialog to create a connection is confirmed by clicking on OK , then a new attempt to establish a connection is made. Unsaved changes are then discarded without confirmation being requested. |
| Save changes | Saves all changes made in the database. |
| Discard changes | Discards all changes made since the last save after requesting confirmation. |
| Options | Opens the dialog (on page 619) to configure the settings. |
| Exit | Closes the Manual Data Editor. |
| Edit | Commands for repeating and undoing actions. |
| Undo | Undoes the last action. |
| Redo | Restores the last undone action |
| Help | Link to help and version information. |
| Info about | Opens a window with information on the current version. |
| Help | Opens online help. |

TOOL BAR



| Symbol | Description |
|------------------------|--|
| Connect | <p>Opens the dialog (on page 621) to create a connection.</p> <p>Note: If the dialog to create a connection is confirmed by clicking on OK, then a new attempt to establish a connection is made. Unsaved changes are then discarded without confirmation being requested.</p> |
| Save changes | Saves all changes made. |
| Discard changes | Discards all changes made since the last save after requesting confirmation. |
| Undo | <p>Clicking on the symbol undoes the last action.</p> <p>Clicking on the arrow of the drop-down list opens a window to select actions that are to be undone. Only the last chronological action or other subsequent actions can be undone as a block.</p> |
| Redo | <p>Clicking on the symbol restores the last undone action.</p> <p>Clicking on the arrow of the drop-down list opens a window to select actions that have been undone that are to be restored. Only the last chronological action or other subsequent actions can be restored as a block.</p> |

STATUS LINE

 Connected to "DokuDatabase" on "CDSBG064\ZA2" | 20 archives total, 20 archives filtered, 1 archives selected, 0 archives changed | Ready 

| Item | Description |
|--|---|
| Symbol | Shows the connection status. |
| Connection information | Information on the active connection. |
| Information [Objects], total | Information on the number of objects of the currently-selected object type. |
| Information [Objects], selected | Information on the number of selected objects of the currently-selected object type. |
| Information [Objects], amended | Information on the number of amended objects of the currently-selected object type. Note: If changes are undone, then the counter for the number of changed objects is not decremented but keeps its value. |
| Action | Information on current action |

12.1.3 Actions

Visual names and descriptions can be amended in the Metadata Editor and equipment information can be entered. Changes can be made to the following object types:

- ▶ Equipment modeling (on page 594)
- ▶ Event classes (on page 601)
- ▶ Event groups (on page 604)
- ▶ User (on page 607)
- ▶ Projects (on page 610)
- ▶ Variables (on page 613)
- ▶ Archives (on page 616)

SAVE CHANGES

Changes are transferred to the database by means of the command or the **save changes** symbol and saved there. The transfer of changes is checked and confirmed once this has been carried out (**commit**). If a change to a variable is not successful, the transaction is reversed (**rollback**).

Attention

*If an error occurs when completing one of the transactions (**Rollback** or **Commit**), the database can become corrupted and thus unusable.*

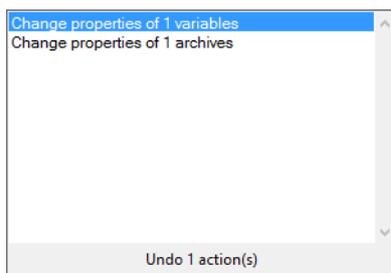
UNDO - RESTORE

Actions in the Manual Data Editor can be undone or restored.

UNDO

To undo actions:

1. Select the **undo** command in the toolbar.
2. Clicking directly on the symbol undoes the last action.
3. Clicking on the button opens a window with the available actions:



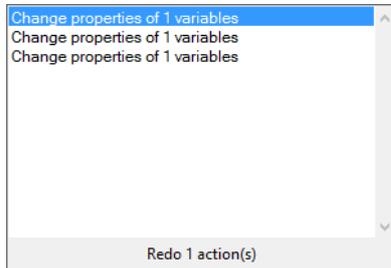
4. Highlight the desired actions.
Several interrelated actions from the top (last to be have been carried out) to the bottom.
5. The status line shows how many actions are being undone.
6. Clicking on the selected action undoes it.

RESTORE

To restore actions:

1. Select the **Restore** command in the tool bar.
2. Clicking on the symbol directly restores the last action that has been undone.

- Clicking on the button opens a window with the available actions that were undone:



- Highlight the desired actions.

Several interrelated actions from the top (last to be have been undone) to the bottom can be selected.

- The status line shows how many actions have been restored.
- Clicking on the selected action restores it.

Equipment modeling

Metadata and equipment information can be changed for equipment models. Two tabs are available for the configuration:

- ▶ Metadata (on page 595)
- ▶ Equipment information (on page 597)

EQUIPMENT MODELING TOOL BAR AND CONTEXT MENU

Nodes can be expanded or collapsed and checkboxes can be activated or deactivated using the tool bar and a context menu. The functionality of tool bars and the context menu has a different effect:

- ▶ Symbols: Have an effect on all entries in the complete tree. Only the visible elements are taken into account during selection/deselection.
- ▶ Commands in the context menu: Has an effect on the selected nodes and all its subnodes, regardless of their visibility.

TOOL BAR



The symbols' meaning from left to right:

| Parameters | Description |
|---------------------------------|---|
| Expand all nodes | Clicking expands all nodes of an equipment model. |
| Collapse all nodes | Clicking collapses all nodes of an equipment model. Only root folders are displayed. |
| Select all visible nodes | Clicking activates all checkboxes of all displayed equipment models and equipment groups. Collapsed branches are not activated. |
| Deselect all entries | Clicking deactivates all checkboxes of all equipment models and equipment groups. |

CONTEXT MENU

Right clicking on an equipment model or an equipment group opens a context menu:

| Parameters | Description |
|---|--|
| Expand node and all child nodes | Expands this node and all subordinate elements. |
| Collapse node and all child nodes | Clicking closes this node and all subordinate elements. |
| Select node and all visible child nodes | Activates the checkboxes for the selected entry and all subordinate entries. |
| Deselect entry and all subordinate entries | Deactivates the checkboxes for the selected entry and all subordinate entries. |

Metadata

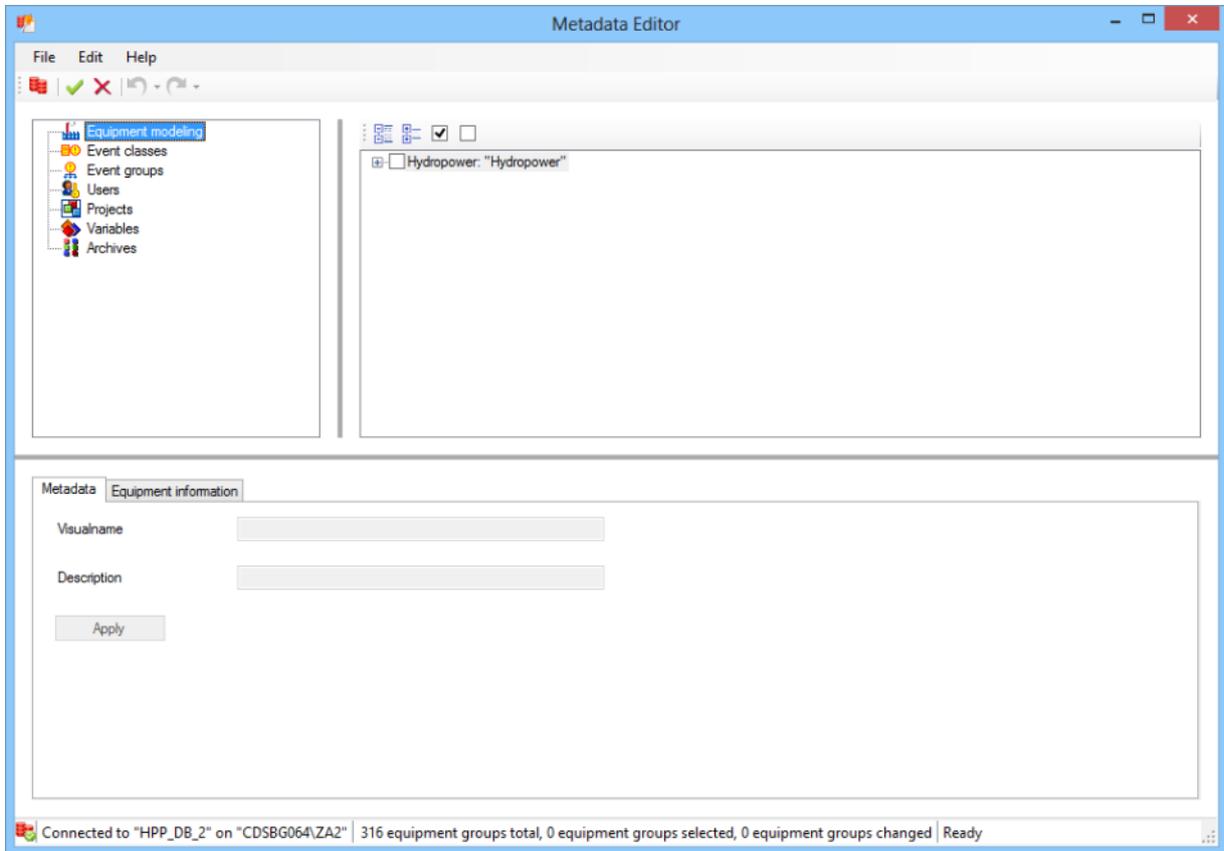
To edit the metadata:

1. In the **Object type** window, select the **Equipment modeling** area.
2. In the **Object selection** window, select the desired object from the tree of the equipment groups.

Note: You can also change the description for several objects at the same time.

3. In the **Editing area**, enter the desired changes for the **Visualname** and/or the **description**.

4. Click on the button **Apply**.
5. Click on the **save changes** symbol to write the changes to the database.



| Parameters | Description |
|-------------------------|--|
| Object type window | Selection of the object type, for which objects are to be changed. |
| Object selection window | <p>Selection of the equipment groups to be changed.</p> <p>The objects:</p> <ul style="list-style-type: none"> ▶ Are selected using checkboxes ▶ Cannot be filtered ▶ Are displayed in accordance with the following schematic: Visualname: "Description Text" ▶ Receive an asterisk (*) as a suffix if a text has been changed |
| Editing area | Entry and acceptance of changes. |
| Visualname | <p>Entry to change the visual name of an equipment group.</p> <p>Only available if precisely 1 element has been selected. The following rules apply to the display names:</p> <ul style="list-style-type: none"> ▶ must not be empty ▶ Must be unique for equipment groups with the same superordinate equipment group |
| Description | <p>Entry to change the description of equipment groups.</p> <p>Note: If several objects with different descriptions are selected for change, the original description of the first element in the list is displayed in red. Changes have an effect on all highlighted objects.</p> |
| Apply | <p>Clicking on the button accepts the changes. These are only written by clicking on the command or the Save changes symbol in the database.</p> <p>Only available if a change has been made and no rules have been broken.</p> |

Equipment information

To amend equipment information:

1. In the **object type** window, select the **Equipment modeling** area.
2. In the **object selection** window, select the desired object from the tree of the equipment groups.

Note: You can also change equipment information for several objects at the same time.

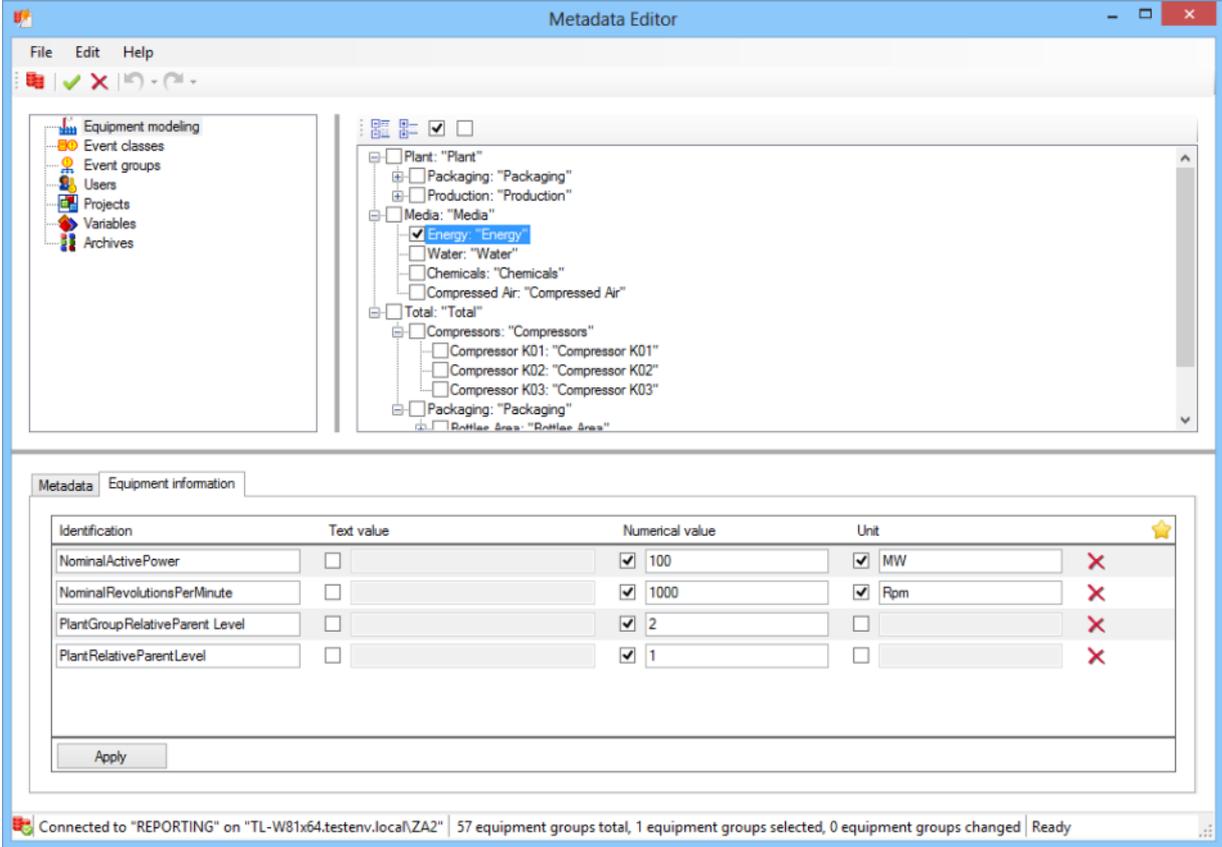
3. If equipment information is already present, these are displayed in the **Editing area**.
4. If you want to create equipment information from scratch, click on the **New** button.
5. Enter the desired information in the **Editing area**.

In doing so, note:

- The identification must not be empty.
 - Each entry within an equipment group must have a unique identification.
6. Add further lines if required.
 7. Delete lines that are not needed by clicking on the **x** button.
 8. Click on the button **Apply**.



9. Click on the **save changes** symbol to write the changes to the database.



| Parameters | Description |
|-------------------------|---|
| Object type window | Selection of the object type, for which objects are to be changed. |
| Object selection window | <p>Selection of the equipment groups to be changed.</p> <p>The objects:</p> <ul style="list-style-type: none"> ▶ Are selected using checkboxes ▶ Cannot be filtered ▶ Are displayed in accordance with the following schematic: Visualname: "Description Text" ▶ Receive an asterisk (*) as a suffix if a text has been changed |
| Editing area | <p>Each line in the editing area corresponds to an entry in the EQUIPMENTINFO table, which is assigned to the currently-selected equipment group. Several equipment groups can also be selected.</p> <p>If several equipment groups with different entries are selected, then a warning is shown at the lower border of the Editing area. The entries of the equipment group are then displayed with the lowest ID that has fewer than 0 entries.</p> |
| Symbol: New | <p>Clicking on the button adds a new line.</p> <p>A line consists of the following elements:</p> <ul style="list-style-type: none"> ▶ Identification (mandatory) ▶ Text value (optional) ▶ Numeric value (optional) ▶ Measuring unit (optional) |
| Reference | <p>Input of the identification for the entry. In doing so, the following rules apply:</p> <ul style="list-style-type: none"> ▶ Identification must not be empty. ▶ Each entry within an equipment group must have a unique identification. |
| Text value | <p>Input of a text value for the entry.</p> <p>Can be activated/deactivated by means of a checkbox.</p> |

| | |
|-----------------|--|
| Numerical value | <p>Input of a numeric value for the entry. In doing so, the following rules apply:</p> <ul style="list-style-type: none"> ▶ If this option value is activated, there must be a valid floating point number. <p>Can be activated/deactivated by means of a checkbox.</p> |
| Measuring unit | <p>Input of a measuring unit for the entry.</p> <p>Can be activated/deactivated by means of a checkbox.</p> |
| X | <p>Clicking on the symbol deletes the line from the list.</p> |
| Apply | <p>Clicking on the button accepts the changes. These are only written by clicking on the command or the Save changes symbol in the database.</p> <p>Only available if a change has been made and no rules have been broken. A breach of the rules is displayed by the background color of the input field changing and a tooltip being displayed.</p> |

Event classes

To make changes for event classes:

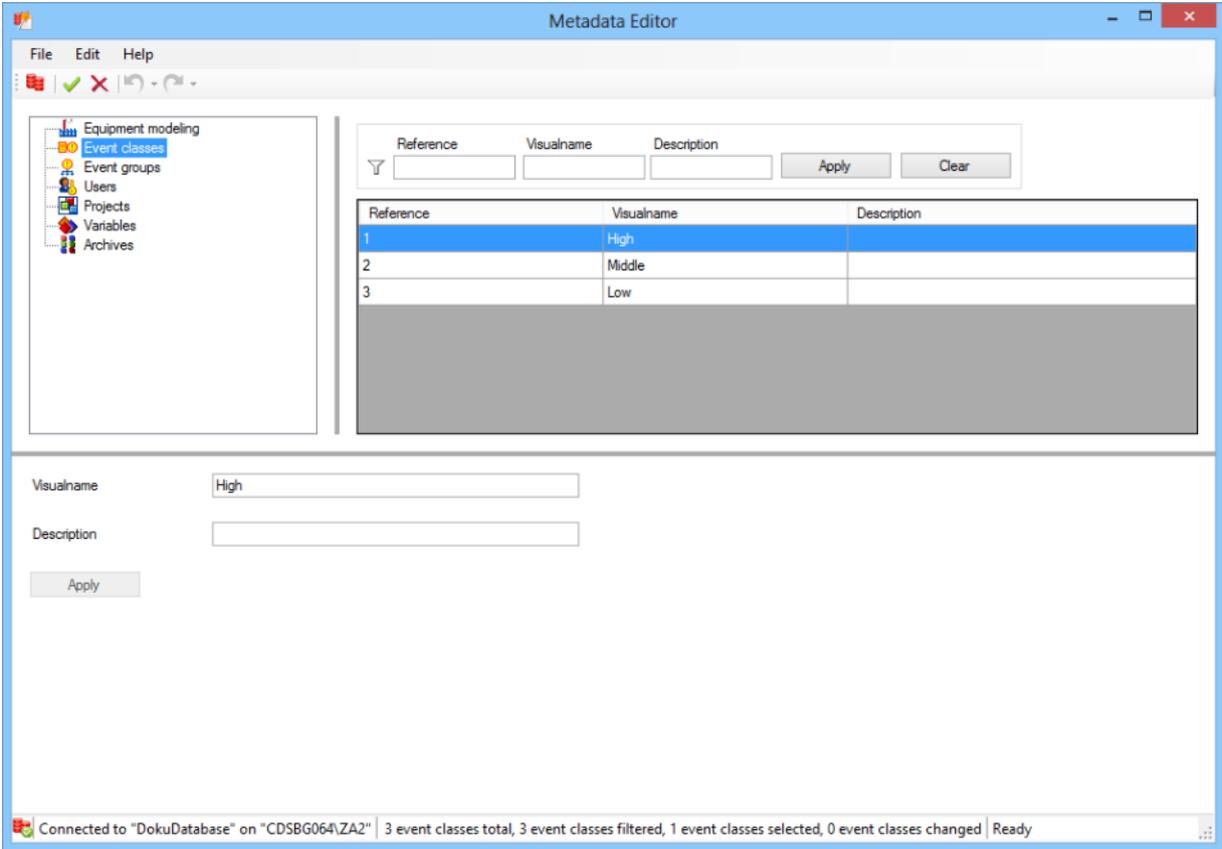
1. In the **Object type window**, select the **Event classes** area.
2. If necessary, filter the list in the **Window Object Selection**.

Highlight the desired entry.

Note: You can also change the description for several objects at the same time.

3. In the **Editing area**, enter the desired changes for the **Visualname** and/or the **description**.
4. Click on the button **Apply**.

5. Click on the **save changes** symbol to write the changes to the database.



| Parameters | Description |
|-------------------------|---|
| Object type window | Selection of the object type, for which objects are to be changed. |
| Object selection window | <p>Selection of the event classes to be changed.</p> <p>The objects:</p> <ul style="list-style-type: none"> ▶ Can be filtered ▶ Are selected by clicking on the line (multiple selection is possible) ▶ Are highlighted in red if they have been changed (the highlighting is also retained if the change is undone.) <p>Each line is an entry.</p> |
| Filter | <p>Entry of filter criteria for the list of the event classes.</p> <p>It is possible to filter according to:</p> <ul style="list-style-type: none"> ▶ Identification ▶ Visualname ▶ Description <p>Wildcards can be used:</p> <ul style="list-style-type: none"> ▶ *: any desired number of any desired characters ▶ ?: precisely 1 desired character. <p>If a filter text does not contain a wild card, a * is automatically added.</p> |
| Apply | Applies filter to list. |
| Delete | Resets filter |
| Editing area | Entry and acceptance of changes. |
| Visualname | <p>Entry to change the visual name of an event class.</p> <p>Only available if precisely 1 element has been selected. The following rules apply to the display names:</p> <ul style="list-style-type: none"> ▶ must not be empty ▶ Must be unique to the whole database |

| | |
|-------------|--|
| Description | <p>Entry to change the description of event classes.</p> <p>Note: If several objects with different descriptions are selected for change, the original description of the last element selected is displayed in red. Changes have an effect on all highlighted objects.</p> |
| Apply | <p>Clicking on the button accepts the changes. These are only written by clicking on the command or the Save changes symbol in the database.</p> <p>Only available if a change has been made and no rules have been broken.</p> |

Event groups

To make changes for event groups:

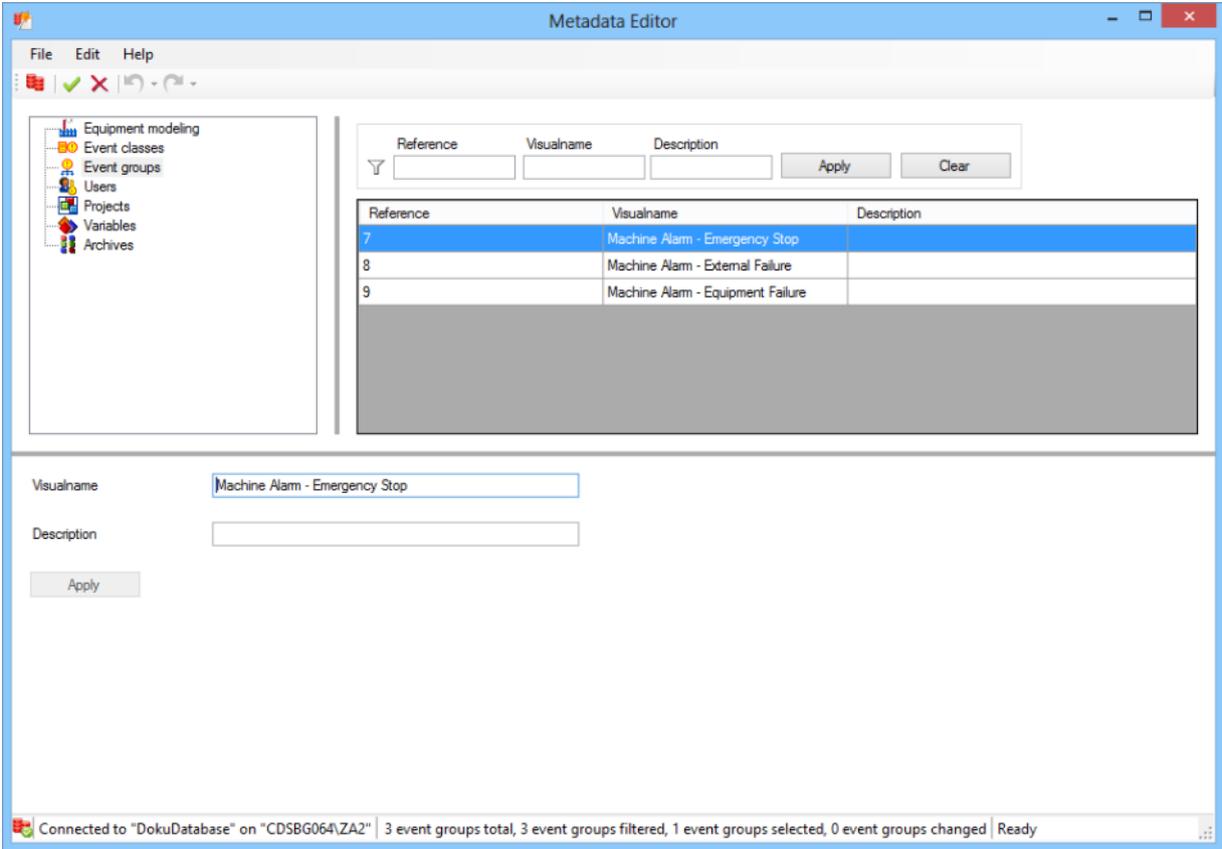
1. In the **Object type window**, select the **Event groups** area.
2. If necessary, filter the list in the **Window Object Selection**.

Highlight the desired entry.

Note: You can also change the description for several objects at the same time.

3. In the **Editing area**, enter the desired changes for the **Visualname** and/or the **description**.
4. Click on the button **Apply**.

5. Click on the **save changes** symbol to write the changes to the database.



| Parameters | Description |
|-------------------------|---|
| Object type window | Selection of the object type, for which objects are to be changed. |
| Object selection window | <p>Selection of the event groups to be changed.</p> <p>The objects:</p> <ul style="list-style-type: none"> ▶ Can be filtered ▶ Are selected by clicking on the line (multiple selection is possible) ▶ Are highlighted in red if they have been changed (the highlighting is also retained if the change is undone.) <p>Each line is an entry.</p> |
| Filter | <p>Entry of filter criteria for the list of the event classes.</p> <p>It is possible to filter according to:</p> <ul style="list-style-type: none"> ▶ Identification ▶ Visualname ▶ Description <p>Wildcards can be used:</p> <ul style="list-style-type: none"> ▶ *: any desired number of any desired characters ▶ ?: precisely 1 desired character. <p>If a filter text does not contain a wild card, a * is automatically added.</p> |
| Apply | Applies filter to list. |
| Delete | Resets filter |
| Editing area | Entry and acceptance of changes. |
| Visualname | <p>Entry to change the visual name of an event group.</p> <p>Only available if precisely 1 element has been selected. The following rules apply to the display names:</p> <ul style="list-style-type: none"> ▶ must not be empty ▶ Must be unique to the whole database |

| | |
|-------------|---|
| Description | <p>Entry to change the description of event groups.</p> <p>Note: If several objects with different descriptions are selected for change, the original description of the last element selected is displayed in red. Changes have an effect on all highlighted objects.</p> |
| Apply | <p>Clicking on the button accepts the changes. These are only written by clicking on the command or the Save changes symbol in the database.</p> <p>Only available if a change has been made and no rules have been broken.</p> |

User

To make changes for users:

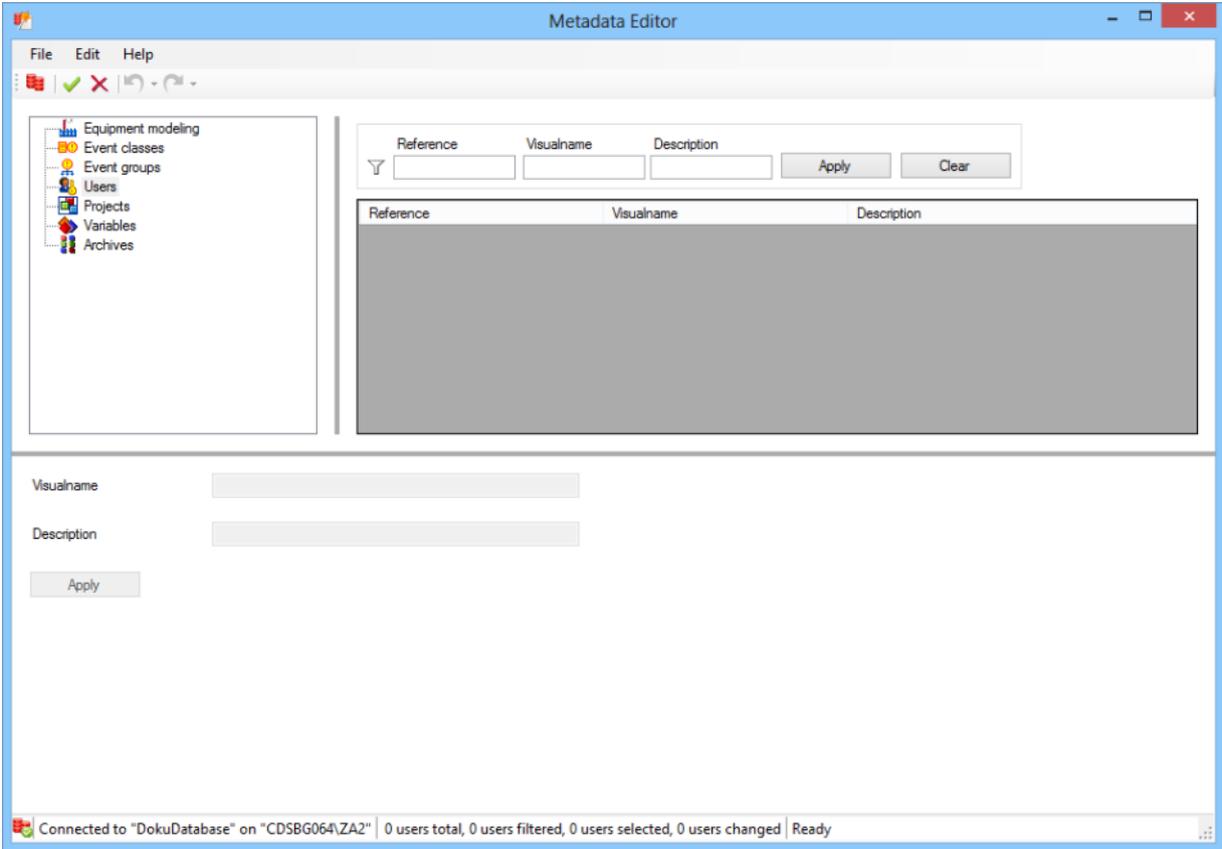
1. In the **Object type window**, select the **User** area.
2. If necessary, filter the list in the **Window Object Selection**.

Highlight the desired entry.

Note: You can also change the description for several objects at the same time.

3. In the **Editing area**, enter the desired changes for the **Visualname** and/or the **description**.
4. Click on the button **Apply**.

5. Click on the **save changes** symbol to write the changes to the database.



| Parameters | Description |
|-------------------------|---|
| Object type window | Selection of the object type, for which objects are to be changed. |
| Object selection window | <p>Selection of the users to be changed.</p> <p>The objects:</p> <ul style="list-style-type: none"> ▶ Can be filtered ▶ Are selected by clicking on the line (multiple selection is possible) ▶ Are highlighted in red if they have been changed (the highlighting is also retained if the change is undone.) <p>Each line is an entry.</p> |
| Filter | <p>Entry of filter criteria for the list of users.</p> <p>It is possible to filter according to:</p> <ul style="list-style-type: none"> ▶ Identification ▶ Visualname ▶ Description <p>Wildcards can be used:</p> <ul style="list-style-type: none"> ▶ *: any desired number of any desired characters ▶ ?: precisely 1 desired character. <p>If a filter text does not contain a wild card, a * is automatically added.</p> |
| Apply | Applies filter to list. |
| Delete | Resets filter |
| Editing area | Entry and acceptance of changes. |
| Visualname | <p>Entry to change the visual name of a user.</p> <p>Only available if precisely 1 element has been selected. The following rules apply to the display names:</p> <ul style="list-style-type: none"> ▶ must not be empty ▶ Must be unique to the whole database |

| | |
|-------------|--|
| Description | <p>Entry to change the description of users.</p> <p>Note: If several objects with different descriptions are selected for change, the original description of the last element selected is displayed in red. Changes have an effect on all highlighted objects.</p> |
| Apply | <p>Clicking on the button accepts the changes. These are only written by clicking on the command or the Save changes symbol in the database.</p> <p>Only available if a change has been made and no rules have been broken.</p> |

Projects

To make changes for projects:

1. In the **Object type window**, select the **Projects** area.
2. If necessary, filter the list in the **Window Object Selection**.

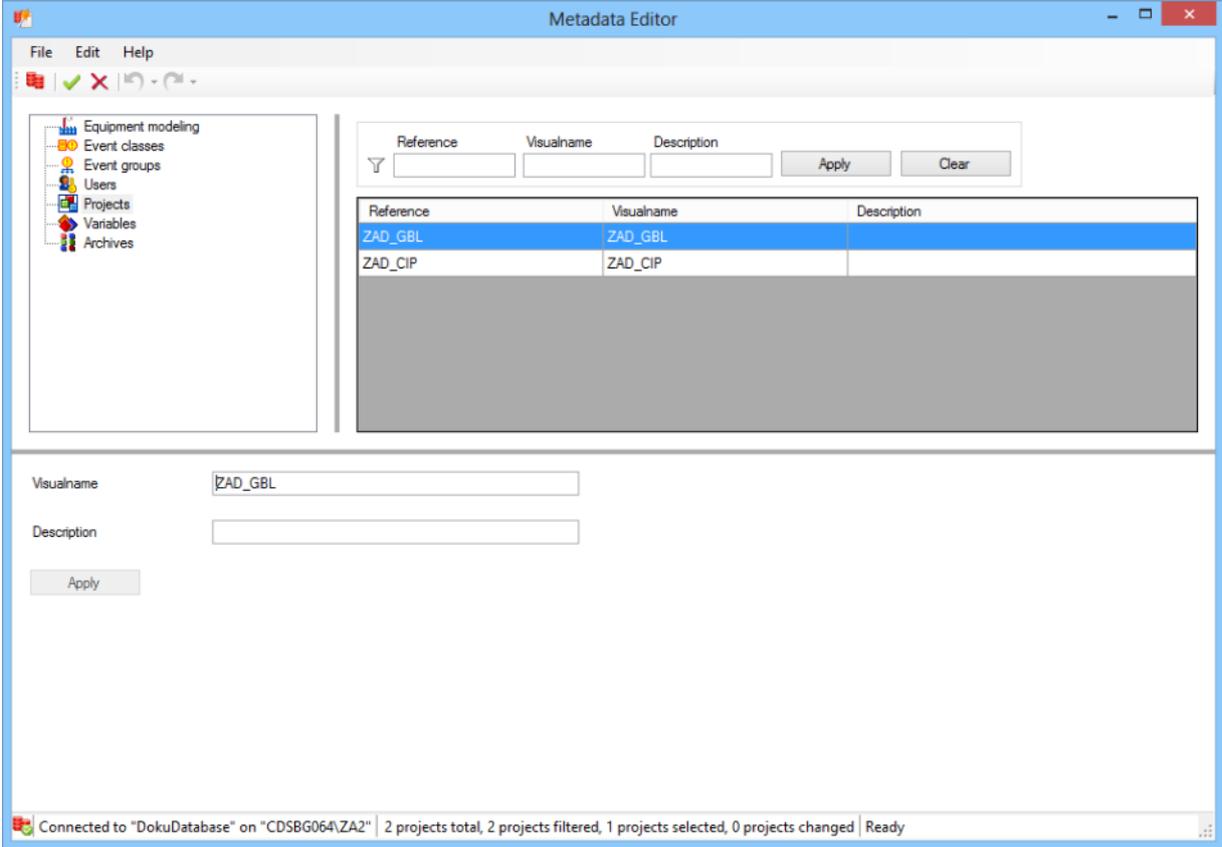
Highlight the desired entry.

Note: You can also change the description for several objects at the same time.

3. In the **Editing area**, enter the desired changes for the **Visualname** and/or the **description**.
4. Click on the button **Apply**.



5. Click on the **save changes** symbol to write the changes to the database.



| Parameters | Description |
|-------------------------|--|
| Object type window | Selection of the object type, for which objects are to be changed. |
| Object selection window | <p>Selection of the projects to be changed.</p> <p>The objects:</p> <ul style="list-style-type: none"> ▶ Can be filtered ▶ Are selected by clicking on the line (multiple selection is possible) ▶ Are highlighted in red if they have been changed (the highlighting is also retained if the change is undone.) <p>Each line is an entry.</p> |
| Filter | <p>Entry of filter criteria for the list of projects.</p> <p>It is possible to filter according to:</p> <ul style="list-style-type: none"> ▶ Identification ▶ Visualname ▶ Description <p>Wildcards can be used:</p> <ul style="list-style-type: none"> ▶ *: any desired number of any desired characters ▶ ?: precisely 1 desired character. <p>If a filter text does not contain a wild card, a * is automatically added.</p> |
| Apply | Applies filter to list. |
| Delete | Resets filter |
| Editing area | Entry and acceptance of changes. |
| Visualname | <p>Entry to change the visual name of a project.</p> <p>Only available if precisely 1 element has been selected. The following rules apply to the display names:</p> <ul style="list-style-type: none"> ▶ must not be empty ▶ Must be unique to the whole database |

| | |
|-------------|---|
| Description | <p>Entry to change the description of projects.</p> <p>Note: If several objects with different descriptions are selected for change, the original description of the last element selected is displayed in red. Changes have an effect on all highlighted objects.</p> |
| Apply | <p>Clicking on the button accepts the changes. These are only written by clicking on the command or the Save changes symbol in the database.</p> <p>Only available if a change has been made and no rules have been broken.</p> |

Variables

To make changes for variables:

1. In the **Object type window**, select the **Variables** area.
2. If necessary, filter the list in the **Window Object Selection**.

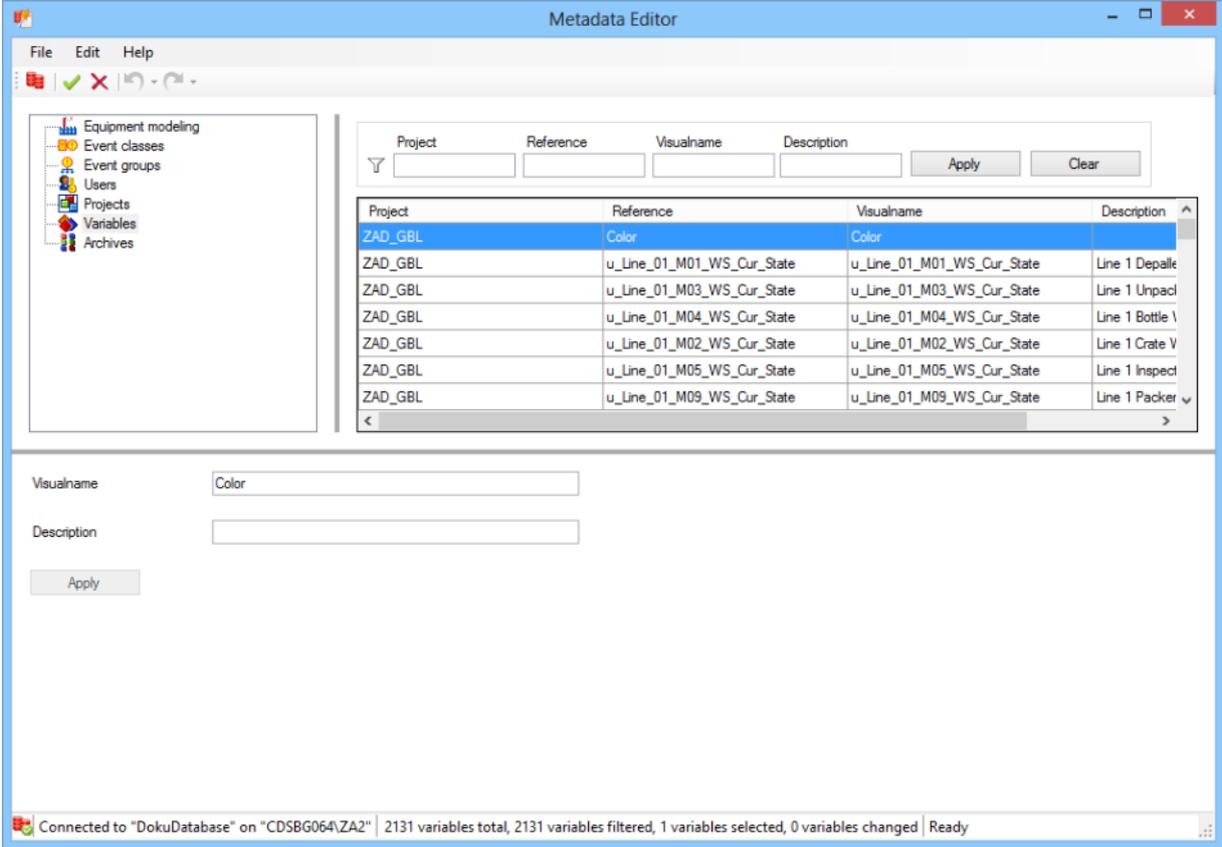
Highlight the desired entry.

Note: You can also change the description for several objects at the same time.

3. In the **Editing area**, enter the desired changes for the **Visualname** and/or the **description**.
4. Click on the button **Apply**.



5. Click on the **save changes** symbol to write the changes to the database.



| Parameters | Description |
|-------------------------|--|
| Object type window | Selection of the object type, for which objects are to be changed. |
| Object selection window | <p>Selection of the variables to be changed.</p> <p>The objects:</p> <ul style="list-style-type: none"> ▶ Can be filtered ▶ Are selected by clicking on the line (multiple selection is possible) ▶ Are highlighted in red if they have been changed (the highlighting is also retained if the change is undone.) ▶ Each line is an entry. |
| Filter | <p>Entry of filter criteria for the list of variables.</p> <p>It is possible to filter according to:</p> <ul style="list-style-type: none"> ▶ Project ▶ Identification ▶ Visualname ▶ Description <p>Wildcards can be used:</p> <ul style="list-style-type: none"> ▶ *: any desired number of any desired characters ▶ ?: precisely 1 desired character. <p>If a filter text does not contain a wild card, a * is automatically added.</p> |
| Apply | Applies filter to list. |
| Delete | Resets filter |
| Editing area | Entry and acceptance of changes. |
| Visualname | <p>Entry to change the visual name of a variable.</p> <p>Only available if precisely 1 element has been selected. The following rules apply to the display names:</p> <ul style="list-style-type: none"> ▶ must not be empty |

| | |
|-------------|--|
| | ▶ Must be unique within a project |
| Description | <p>Entry to change the description of variables.</p> <p>Note: If several objects with different descriptions are selected for change, the original description of the last element selected is displayed in red. Changes have an effect on all highlighted objects.</p> |
| Apply | <p>Clicking on the button accepts the changes. These are only written by clicking on the command or the Save changes symbol in the database.</p> <p>Only available if a change has been made and no rules have been broken.</p> |

Archives

To make changes for archives:

1. Select, in the **Object type Window**, the **Archive** area.
2. If necessary, filter the list in the **Window Object Selection**.

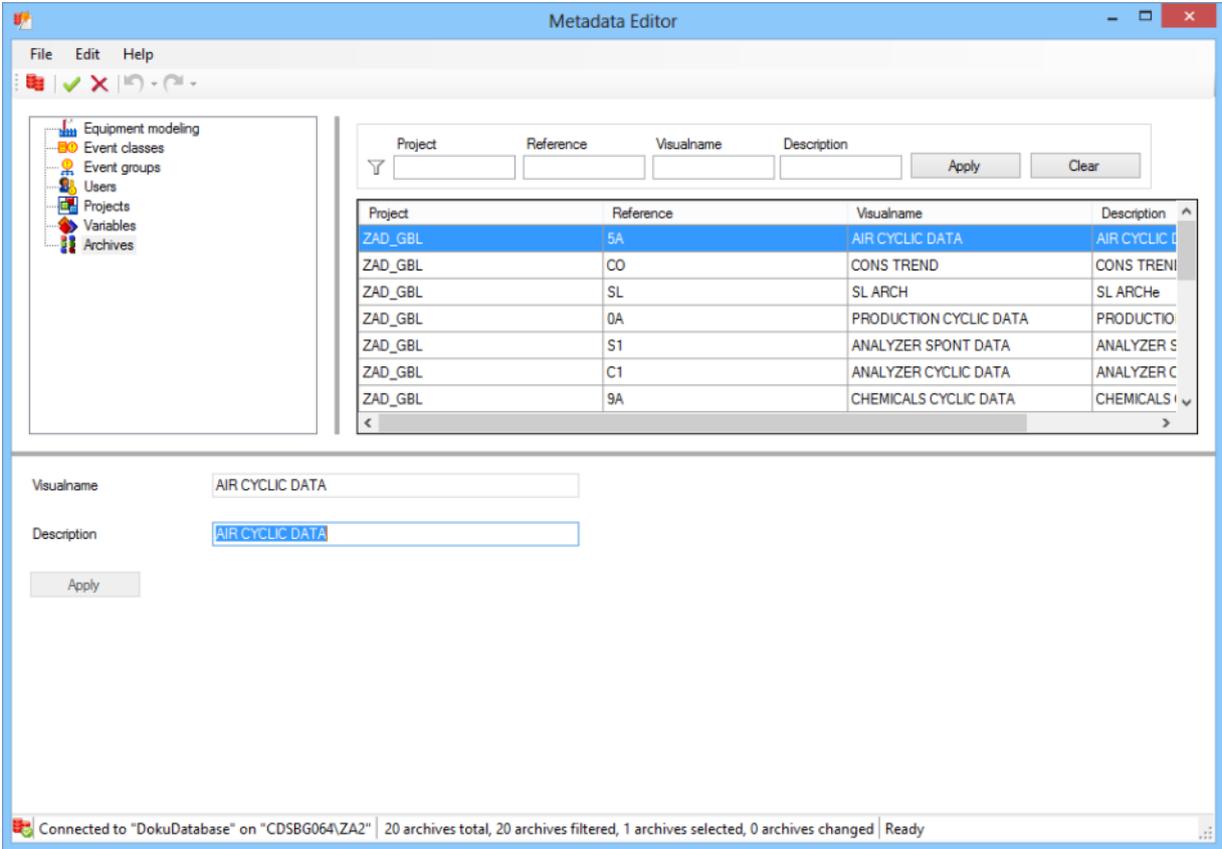
Highlight the desired entry.

Note: You can also change the description for several objects at the same time.

3. In the **Editing area**, enter the desired changes for the **Visualname** and/or the **description**.
4. Click on the button **Apply**.



5. Click on the **save changes** symbol to write the changes to the database.



| Parameters | Description |
|-------------------------|--|
| Object type window | Selection of the object type, for which objects are to be changed. |
| Object selection window | <p>Selection of the archives to be changed.</p> <p>The objects:</p> <ul style="list-style-type: none"> ▶ Can be filtered ▶ Are selected by clicking on the line (multiple selection is possible) ▶ Are highlighted in red if they have been changed (the highlighting is also retained if the change is undone.) ▶ Each line is an entry. |
| Filter | <p>Entry of filter criteria for the list of the event classes.</p> <p>It is possible to filter according to:</p> <ul style="list-style-type: none"> ▶ Project ▶ Identification ▶ Visualname ▶ Description <p>Wildcards can be used:</p> <ul style="list-style-type: none"> ▶ *: any desired number of any desired characters ▶ ?: precisely 1 desired character. <p>If a filter text does not contain a wild card, a * is automatically added.</p> |
| Apply | Applies filter to list. |
| Delete | Resets filter |
| Editing area | Entry and acceptance of changes. |
| Visualname | <p>Entry to change the visual name of an archive.</p> <p>Only available if precisely 1 element has been selected. The following rules apply to the display names:</p> <ul style="list-style-type: none"> ▶ must not be empty |

| | |
|-------------|---|
| | ▶ Must be unique within a project |
| Description | <p>Entry to change the description of archives.</p> <p>Note: If several objects with different descriptions are selected for change, the original description of the last element selected is displayed in red. Changes have an effect on all highlighted objects.</p> |
| Apply | <p>Clicking on the button accepts the changes. These are only written by clicking on the command or the Save changes symbol in the database.</p> <p>Only available if a change has been made and no rules have been broken.</p> |

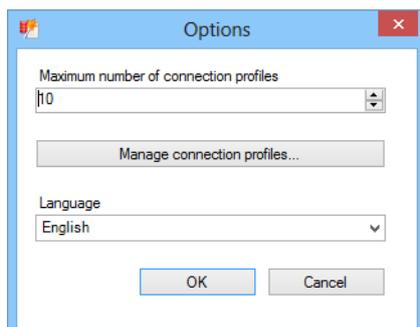
12.1.4 Options

In this dialog, you configure:

- ▶ The number of permitted connection profiles
- ▶ Administration of the connection profiles
- ▶ The language of the user interface of the Editor

To configure the settings:

1. open the menu **File**
2. Select the command **Settings**.
3. The dialog for configuring settings is opened



| Parameters | Description |
|---------------------------------------|--|
| Maximum number of connection profiles | <p>Defines how many connection profiles can be created as a maximum for the Editor:</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 255 ▶ Default: 1 <p>Configuration by manual entry or by clicking on arrows.</p> <p>Note: Because the ZAMS connection profile can also be displayed in the dialog for establishing a connection (on page 621), more than the permitted amount of connection profiles can be displayed in the drop-down list to select a profile.</p> |
| Manage connection profiles | Opens the dialog (on page 569) to manage the connection profiles. |
| Language | Selection of the desired language for the user interface of the Editor from a drop-down list. |
| OK | Applies settings and closes the dialog. |
| Cancel | Discards all changes and closes the dialog. |

12.2 Manual Data Editor

The **Manual Data Editor** makes it possible to edit the tables for price and norm values in a zenon Analyzer metadata database.

The **Manual Data Editor** is available as:

- ▶ .NET control in zenon Runtime: Available from zenon version 7.11. The control can access the control profile list of ZAMS.
- ▶ EXE file: Allows database editing even without zenon Runtime. This file includes .NET Control and can be started from ZAMS.

The interface settings can only be accessed from the EXE file and can be saved there.

ZAMS

To open the **Manual Data Editor** in ZAMS:

1. Navigate to the **Options** menu item in ZAMS
2. Select the **Manual Data Editor** entry
3. The dialog to connect (on page 621) the **Manual Data Editor** is opened

KEYBOARD SHORTCUTS

The following key combinations are available to operate the Editor:

| Key combination | Description |
|-----------------|--|
| F1 | Opens help |
| Ctrl+Shift+C | Opens the dialog for creating a database backup. |
| Ctrl+S | Saves changes. |
| Alt+F4 | Closes the CD_PRODUCTNAME Editor |
| Ctrl+Z | Undo input |
| Ctrl+Y | Repeat input. |

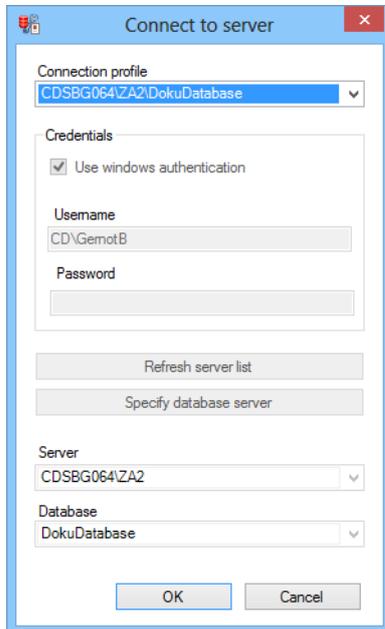
12.2.1 Connect

The Manual Data Editor manages its own connection profile. The ZAMS connection profiles are also read on startup. If there are profiles in the Manual Data Editor and in ZAMS with the same name, this dominates the connection profile of the Manual Data Editor.

To link the Manual Data Editor to a database:

1. Navigate to the **Options** menu item in ZAMS
2. Select the **Manual Data Editor** entry
3. The dialog to connect to a server is opened.

- select the desired connection by clicking on `Connection profile` or create a new connection (on page 322) in a similar manner to that of ZAMS.



- click on OK
- the connection will be created
- The user authorization is queried by the license server
- The database is checked to see that it is correct
Note: No connection is established if there are incorrect structures or versions. Conversion (on page 425) is only possible with ZAMS.
- Data is loaded
- The license is obtained
- The Manual Data Editor is opened

Note: Unsaved changes are lost without warning when the connection is established.

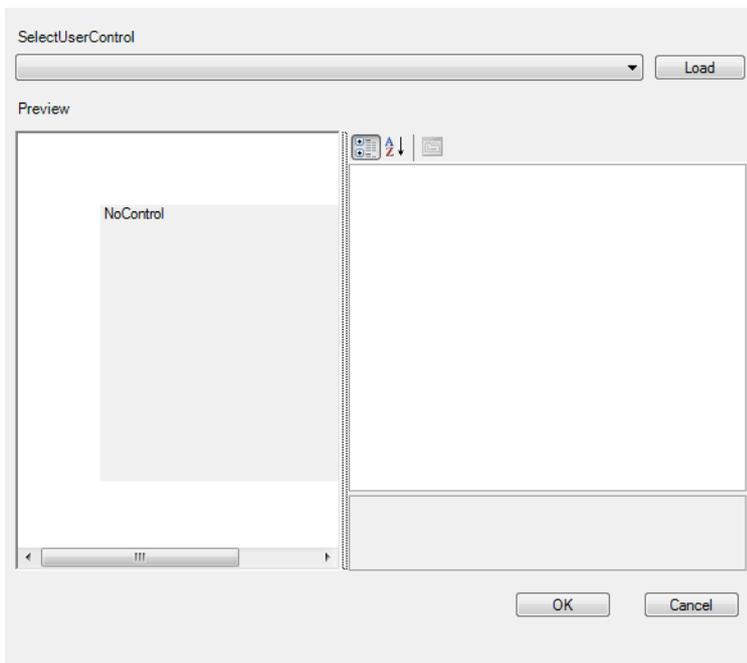
12.2.2 Configuring the control in zenon

The ActiveX control `CD_DotNetControlContainer.Container` makes it possible to use any .NET Windows Forms Controls as dynamic elements in zenon. In doing so, all functions implemented in the .NET control are supported. It can be used with all zenon versions from 5.50 on which support ActiveX.

Note: .NET Framework 4.5 must be available.

To use the ActiveX control `CD_DotNetControlContainer.Container`:

1. create a dynamic element of the type `ActiveX`
2. select `CD_DotNetControlContainer.Container` from the list of available controls
3. click on button **Properties**
4. the dialog for configuring the control opens



| Parameters | Description |
|-------------------------------|---|
| Load | Opens the file manager for selecting a .NET Control Assembly . Note: The .NET Control Assembly must be in the same folder as Runtime. It is always the absolute path to the .NET Control Assembly that is saved, e.g.: C:\Controls\Assembly.dll. |
| SelectUserControl | Selection of the .NET Controls from the ones available in the selected .NET Control Assembly . |
| Preview | Displays the absolute path to the .NET Control Assembly . Field left below: Preview of the control. Field right below: List of properties for the selected .NET Control . |
| Symbol: By categories | Displays properties sorted by categories. |
| Symbol: Alphabetical | Display properties in alphabetic order. |
| Symbol: Property pages | Displays property pages. |
| OK | Confirms configuration. This is then saved in the zenon ActiveX element as XML stream. |
| Cancel | Discards configuration. |

You can find details on the project configuration of .NET Control in zenon in the zenon manual in the following chapters:

- ▶ Screens/Screen element/.NET controls
- ▶ Controls



12.2.3 Main window

The main window shows the variables present in the database that is currently connected and their price history and norm history. All existing data is displayed as unfiltered when started.

The screenshot shows the 'Manual Data Editor' window with a menu bar (File, Edit, Filter, Help) and a toolbar. The interface is divided into several sections:

- Metadata:** Fields for Project name, Variable name, and Measuring unit.
- Price:** Filter by price (checkbox), Currency, and Timestamp of last price change (from/to).
- Norm value:** Filter by norm value (checkbox), and Timestamp of last norm value change (from/to).
- Filter profile:** Filter profile dropdown, Store/Delete buttons, and Filter/Apply/Discard buttons.
- Data Table:** A table with columns: Project name, Variable name, Measuring unit, Meanings, Reference, Description, Data type, Price, Timestamp of last price change, Currency, Norm value, and Timestamp of last norm value change. The second row is highlighted.
- Price history:** A panel for 'ZAD_GBLu_Line_01_M01_WS_Cur_State' with a 'New...' button and a table of historical data.
- Norm value history:** A panel for 'ZAD_GBLu_Line_01_M01_WS_Cur_State' with a line graph showing values over time.

At the bottom, a status bar indicates: 'Connected to "DokuDatabase" on "CD58G06A.ZA2" | 2126 total entries, 2126 entries filtered, 1 entries selected | Refreshing variable table'

| Range | Description |
|-------------------------------------|--|
| Menu line (on page 627) | Menu items for: <ul style="list-style-type: none"> ▶ File: Creating, amending and administering entries for the connection, settings and closing the Manual Data Editor. ▶ Edit: Entries for Undoing entries for entries and repeating entries. ▶ Filters: Entries for the administration of filters. ▶ Help: Versions and link to online help. Menus are only available in the EXE file, not in .NET Control. |
| Tool Bar (on page 627) | Allows the following actions: <ul style="list-style-type: none"> ▶ Connect Opens the dialog (on page 621) for creating a connection. ▶ Save changes: Saves changes made. ▶ Discard changes: Rejects changes made. ▶ Undo: Undoes the last action. ▶ Redo: Repeats the last action. |
| Filter area (on page 631) | Elements for the filtering of the variable table. This area can be minimized or expanded using the symbol on the right of the outside. If the filter is minimized, a summary of the filters applied is displayed. |
| Variable table (on page 635) | Tables that can be filtered with the variables of the database that is currently linked. |
| Horizontal separator | Allows the size ratios to be moved between the variable table and the history area using the mouse. |
| Price history (on page 636) | Overview of the price history of the selected variables and configuration of the modification of the selected variables. |
| Vertical separator | Allows the size ratios to be moved between Price history (on page 636) and Norm history (on page 640). |
| Norm history (on page 640) | Overview of the norm history of the selected variables and configuration of the modification of the selected variables. |
| Status Line. | Notice of linking and the current action. <ul style="list-style-type: none"> ▶ Symbol: Shows the connection status. ▶ Text: Provides connection status including linked server and linked database. |

| | |
|--|--|
| | <ul style="list-style-type: none">▶ Text: Current process.▶ Progress bar: Is shown when populating the table, saving or discarding the changes, for as long as the action is being completed. |
|--|--|

Menu and tool bar

The menu and tool bar offer a range of commands to administer the Manual Data Editor and the filter rules.

Note: The menu is only not available if the **Manual Data Editor** is started from ZAMS as an EXE file, but not the control in zenon Runtime.

MENU

| Entry | Description |
|------------------------------|--|
| File | Commands for general operations. |
| Connect | Opens the dialog (on page 621) to create a connection. Note: If the dialog to create a connection is confirmed by clicking on OK , then a new attempt to establish a connection is made. Unsaved changes are then discarded without confirmation being requested. |
| Save changes | Saves all changes made to variables in the database. |
| Discard changes | Discards all changes made to variables since the last save after requesting confirmation. |
| Options | Opens the dialog (on page 643) to configure the settings. |
| Exit | Closes the Manual Data Editor. |
| Edit | Commands for repeating and undoing actions. |
| Undo | Undoes the last action. |
| Redo | Restores the last undone action |
| Filter | Commands for using filters. |
| Apply filter | Applies the currently-configured filter (on page 631) to the variable table. |
| Discard filter | Deletes all filter conditions and displays the variable table without filters. |
| Save filter profile | Saves the current filter configuration as a separate profile. |
| Delete filter profile | Deletes the displayed filter profile. |
| Help | Link to help and version information. |
| Info about | Opens a window with information on the current version. |
| Help | Opens online help. |

TOOL BAR



| Symbol | Description |
|------------------------|--|
| Connect | <p>Opens the dialog (on page 621) to create a connection.</p> <p>Note: If the dialog to create a connection is confirmed by clicking on OK, then a new attempt to establish a connection is made. Unsaved changes are then discarded without confirmation being requested.</p> |
| Save changes | Saves all changes made to the price history and norm history. |
| Discard changes | Discards all changes made to the price history and norm history since the last save after requesting confirmation. |
| Undo | <p>Clicking on the symbol undoes the last action.</p> <p>Clicking on the arrow of the drop-down list opens a window to select actions that are to be undone. Only the last chronological action or other subsequent actions can be undone as a block.</p> |
| Redo | <p>Clicking on the symbol restores the last undone action.</p> <p>Clicking on the arrow of the drop-down list opens a window to select actions that have been undone that are to be restored. Only the last chronological action or other subsequent actions can be restored as a block.</p> |

12.2.4 Actions

Price and norm data can be entered for each variable in the Manual Data Editor and several variables can be displayed in a joint historical diagram. The variables can be displayed as filtered.

ACTIONS

Available actions:

- ▶ Filtering (on page 631) the variable table (on page 635)
- ▶ Displaying data entry for price history (on page 636) and trend diagram
- ▶ Displaying data entry for norm history (on page 640) and trend diagram

SAVE CHANGES

Changes are transferred to the database by means of the command or the **save changes** symbol and saved there. The transfer of changes is checked and confirmed once this has been carried out (**commit**). If a change to a variable is not successful, the transaction is reversed (**rollback**).



Attention

*If an error occurs when completing one of the transactions (**Rollback** or **Commit**), the database can become corrupted and thus unusable.*

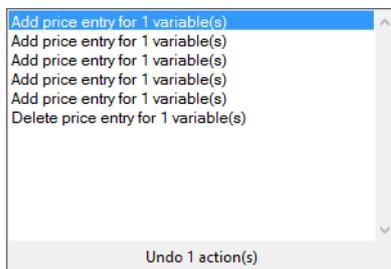
UNDO - RESTORE

Actions in the Manual Data Editor can be undone or restored.

UNDO

To undo actions:

1. Select the **undo** command in the toolbar.
2. Clicking directly on the symbol undoes the last action.
3. Clicking on the button opens a window with the available actions:



4. Highlight the desired actions.

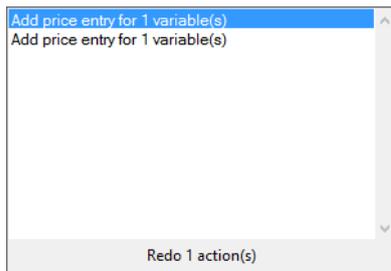
Several interrelated actions from the top (last to be have been carried out) to the bottom.

5. The status line shows how many actions are being undone.
6. Clicking on the selected action undoes it.

RESTORE

To restore actions:

1. Select the **Restore** command in the tool bar.
2. Clicking on the symbol directly restores the last action that has been undone.
3. Clicking on the button opens a window with the available actions that were undone:



4. Highlight the desired actions.

Several interrelated actions from the top (last to be have been undone) to the bottom can be selected.

5. The status line shows how many actions have been restored.
6. Clicking on the selected action restores it.



Information

*If changes are undone using the **Discard changes** command, the lists for **Undo** and **Restore** are not reset. Immediate use of the **Undo** and **Restore** functions can thus lead to error messages.*

Filter

In the upper area of the main window of the Manual Data Editor, there is the filter area, which can be hidden. To show or hide the filter area, click on the single on the upper right edge.

The filter makes it possible to filter the variables shown in the variable table (on page 635) according to:

- ▶ Project name
- ▶ Variable names

- ▶ Units
- ▶ Meaning
- ▶ Price
- ▶ Norm

CONFIGURING THE FILTER

| | | | |
|--|---|--|--|
| Metadata Project name <input type="text"/> Variable name Measuring unit <input type="text"/> <input type="text"/> Meaning <input type="text"/> | Price <input type="checkbox"/> Filter by price Currency 0.0000 to 0.0000 <input type="text"/> Timestamp of last price change Dienstag , 10. September 2013 <input type="text"/> to Dienstag , 10. September 2013 <input type="text"/> | Norm value <input type="checkbox"/> Filter by norm value 0.0000 to 0.0000 <input type="text"/> Timestamp of last norm value change Dienstag , 10. September 2013 <input type="text"/> to Dienstag , 10. September 2013 <input type="text"/> | Filter profile Filter profile <input type="text"/> <input type="button" value="Store"/> <input type="button" value="Delete"/> Filter <input type="button" value="Apply"/> <input type="button" value="Discard"/> |
|--|---|--|--|

| Parameters | Description |
|--------------------------------|---|
| Metadata | Filter criteria for metadata. |
| Project name | Filters according to the project from which the variable comes. |
| Variable name | Filters according to the names of variables. |
| Measuring unit | Filters according to the unit of measurement of variables. |
| Meaning | Filters according to the meaning of variables. If several meanings were defined for a variable, then it is sufficient if one of those corresponds to the value entered here. |
| Price | Filter criteria for prices. |
| Filter by price | Active: Variables can be filtered by prices. <ul style="list-style-type: none"> ▶ Entry of the area in both number fields. This includes the minimum and the maximum of the most up-to-date prices of all variables present in the database. ▶ Entry of the currency in the text field. |
| Timestamp of last price change | Entry of a time range in which prices were changed. Both date elements define the time period from which the current price is applicable. Entry of the area in both date fields. <ul style="list-style-type: none"> ▶ Start: Midnight - start of day ▶ End: Midnight - end of day ▶ Default: The minimum and maximum of the time stamp of the most recent prices of all variables present in the database. |
| Norm | Filter criteria for norms. These are always applied to the most recent norm value. This is the largest time stamp, even if it is in the future. |
| Filter by norm | Active: Errors can be filtered according to norm values. Norms are defined in the norm table and defined using variables. For example, norm curves for the output of wind power plants. Both numeric elements are for the entry of the minimums and the maximums for the |

| | |
|-------------------------------|---|
| | <ul style="list-style-type: none"> ▶ entry of the area in both number fields. This includes the minimum and the maximum of the norm values for the filter. ▶ Default: The minimum and maximum of the most recent norm values of all variables present in the database. |
| Timestamp of last norm change | <p>Entry of a time range in which norms were changed.</p> <p>Entry of the area in both date fields.</p> <ul style="list-style-type: none"> ▶ Start: Midnight - start of day ▶ End: Midnight - end of day ▶ Default: The minimum and maximum of the time stamp of the most recent norm values of all variables present in the database. |
| Filter profile | Administration of filter profiles. |
| Filter profile | <p>Combobox for:</p> <ul style="list-style-type: none"> ▶ Entry of a name in a text field for a new filter profile ▶ Selection of an already-created filter profile from a drop-down list |
| Save | Saves the configured filter and the name displayed in the text field. |
| Delete | Deletes the filter profile displayed in the text field. |
| Filter | Administration of the filter settings. |
| Apply | |
| Discard | Deletes all configured filter settings. |
| Symbol | Shows or hides the filter area in the main window. |

FILTER RULES

The following is applicable for filter settings:

- ▶ All active filters are always linked with a logical **AND**.
- ▶ Wildcards can be used for text filters:
 - *: a desired number of any desired characters
 - ?: precisely 1 desired character.
- ▶ If a text field for a text filter is empty, then the attendant text filter is inactive.

- ▶ Numerical filters always consist of minimum and maximum, whereby both limits are in range: Minimum <= [value] <= Maximum
- ▶ The time stamp filters always consist of minimum and maximum, whereby both limits are in range:

Variable table

The variables to be edited are listed in the variable table. These can be filtered (on page 631).

Several variables can be selected at the same time. In doing so, the usual Windows keyboard shortcuts can be used. If the table is repopulated by a change to the filter criteria, then an attempt is made to restore the previous selection of variables.

| Project name | Variable name | Measuring unit | Meanings | Reference | Description | Data type | Price | Timestamp of last price change | Currency | Norm | Timestamp of last norm value change |
|--------------|-------------------------|----------------|----------|-----------------|--------------------------------------|-----------|-------|--------------------------------|----------|------|-------------------------------------|
| ZAD_GBL | Color | | | Color | | Numerisch | 14 | 8/21/2013 10:25:10 AM | EUR | | |
| ZAD_GBL | u_Line_01_M01_WS_Cur_Sl | | | u_Line_01_M01_W | Line 1 Depalletizer_Operation State | Numerisch | | | | | |
| ZAD_GBL | u_Line_01_M03_WS_Cur_Sl | | | u_Line_01_M03_W | Line 1 Unpacker_Operation State | Numerisch | 12 | 8/5/2013 9:47:41 AM | EUR | | |
| ZAD_GBL | u_Line_01_M04_WS_Cur_Sl | | | u_Line_01_M04_W | Line 1 Bottle Washer_Operation State | Numerisch | | | | | |
| ZAD_GBL | u_Line_01_M02_WS_Cur_Sl | | | u_Line_01_M02_W | Line 1 Crate Washer_Operation State | Numerisch | 17 | 8/21/2013 10:07:03 AM | EUR | | |
| ZAD_GBL | u_Line_01_M05_WS_Cur_Sl | | | u_Line_01_M05_W | Line 1 Inspector_Operation State | Numerisch | | | | | |
| ZAD_GBL | u_Line_01_M09_WS_Cur_Sl | | | u_Line_01_M09_W | Line 1 Packer_Operation State | Numerisch | | | | | |
| ZAD_GBL | u_Line_01_M10_WS_Cur_Sl | | | u_Line_01_M10_W | Line 1 Palletizer_Operation State | Numerisch | | | | | |
| ZAD_GBL | u_Line_01_M07_WS_Cur_Sl | | | u_Line_01_M07_W | Line 1 Filler_Operation State | Numerisch | | | | | |
| ZAD_GBL | u_Line_01_M06_WS_Cur_Sl | | | u_Line_01_M06_W | Line 1 Pasteurizer_Operation State | Numerisch | | | | | |
| ZAD_GBL | u_Line_01_M08_WS_Cur_Sl | | | u_Line_01_M08_W | Line 1 Labeller_Operation State | Numerisch | | | | | |

The list contains the following columns:

- ▶ **Project name:** Name of the project from which the variable comes.
- ▶ **Variable name :** Name of the variable.
- ▶ **Measuring unit:** Unit of measurement for variable values.
- ▶ **Meaning:** Several meanings of a variable are separated by line switchings
- ▶ **Identification:** Name of the variables in zenon Editor and Runtime
- ▶ **Description:** Description of the variables
- ▶ **Data type:** Data type of the variable

Attention: Prices and norm values for binary and string variables can also be entered technically. However this is generally not ideal, because there are generally neither costs nor target consumptions for these variables.

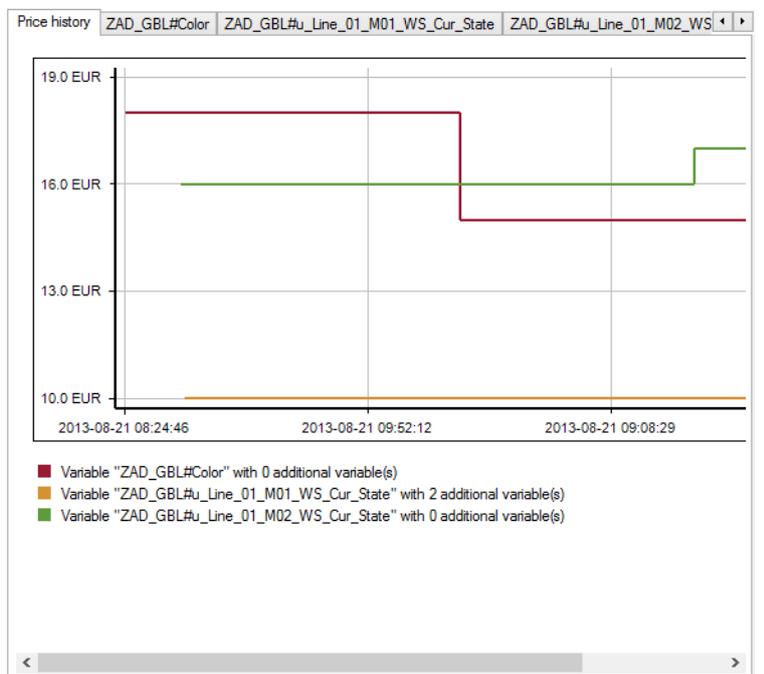
- ▶ **Price:** Most recent price.
- ▶ **Timestamp of last price change:** Date from which the most recent price is applicable.

- ▶ **Currency:** Currency of the current price.
- ▶ **Norm:** Most recent norm value.
- ▶ **Time stamp of last norm change:** Date from which the most recent norm value is applicable.

The table can be sorted according to individual columns. Clicking on the column heading sorts the table according to the corresponding column from A - Z or from Z - A if it is clicked again.

Price history

The price history is displayed in several tabs. The first tab displays the value of all selected variables grouped as a trend. Each group has its own tab for configuration.



For the creation of trends, all selected variables are divided into groups with the same price history. For each group, a separate trend is drawn and a key entry is created. The key entry below the trend window shows the name of the first variables in a group and the number of other variables in the group. The lookback time of the trend can be defined in the Settings (on page 643).



EDITING PRICES

A separate tab to edit the price history is created for each group.

Price history | ZAD_GBL#Color | ZAD_GBL#u_Line_01_M01_WS_Cur_State | ZAD_GBL#u_Line_01_M03_WS

ZAD_GBL#Color

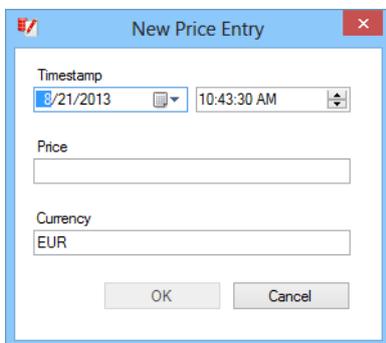
New

| Timestamp | | Value | Currency | |
|-----------|-------------|-------|----------|---|
| 8/21/2013 | 8:24:46 AM | 18 | EUR | X |
| 8/21/2013 | 9:24:54 AM | 15 | EUR | X |
| 8/21/2013 | 10:25:02 AM | 10 | EUR | X |
| 8/21/2013 | 10:35:10 AM | 14 | EUR | X |

| Parameters | Description |
|------------------------|--|
| List of variables | Contains the names of all variables of this price group. |
| New | Opens the dialog for adding a new price. |
| Table of price history | <p>Shows the complete price history, including the entries that are not displayed in the trend due to the settings for <code>Trend lookback time</code>.</p> <p>The values can be edited directly:</p> <ul style="list-style-type: none"> ▶ Timestamp: Entry of the date and the time of the validity of this price. If the modification of a value leads to a clash of time stamps within the group, the change is not approved. ▶ Value: Entry of the price. Input errors are not approved and displayed by means of a tooltip. ▶ Currency: Entry of the currency for this price. Input errors are not approved and displayed by means of a tooltip. ▶ Delete button: Clicking on the button deletes the entry from the list. <p>The lines are sorted according to time stamp. Changes to the input fields are saved according to the focus loss. The view and sorting is updated when saving.</p> |

DIALOG TO ADD A PRICE

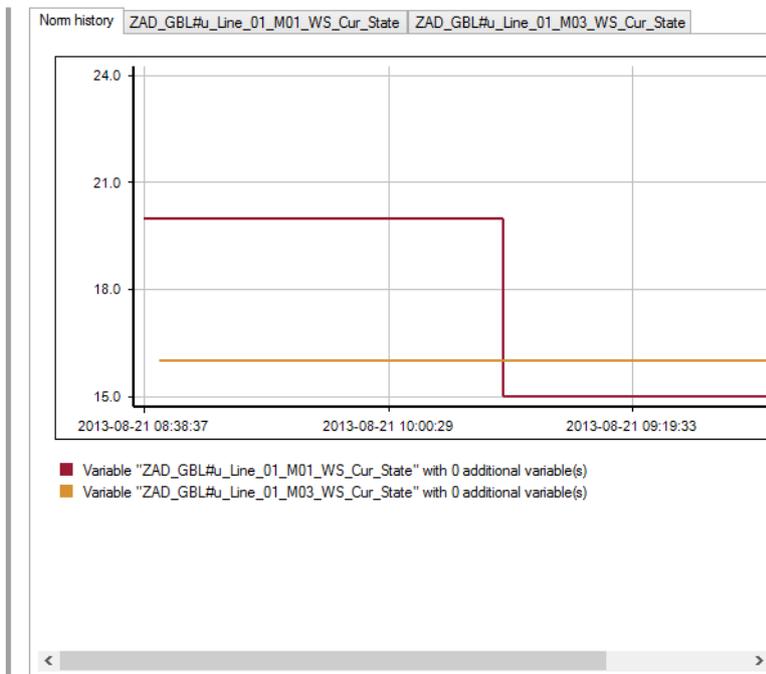
Clicking on the **new** in the tab of a price group opens the dialog to add a new price:



| Parameters | Description |
|---------------|--|
| Timestamp | <p>Entry of the time point from when the new price entry is valid. This time can also be in the past.</p> <p>Input is in:</p> <ul style="list-style-type: none"> ▶ <code>Date field</code>: Direct input without selection from a calendar. Clicking on the button opens the calendar. ▶ <code>Time field</code>: Direct entry or configuration using the cursor keys. <p>A time point is only valid if it does not trigger a time stamp clash within the group.</p> |
| Price | <p>Entry of the price. Input errors are not approved and displayed by means of a tooltip. The decimal separator - point (.) or comma (,) - corresponds to the language settings.</p> |
| Currency | <p>Entry of the currency for this price. Input errors are not approved and displayed by means of a tooltip.</p> |
| OK | <p>Only active if all inputs are valid. Clicking closes the dialog and adds the new price entry.</p> |
| Cancel | <p>Closes the dialog without generating a new price entry.</p> |

Norm history

The norm history is displayed in several tabs. The first tab displays the value of all selected variables grouped as a trend. Each group has its own tab for configuration.



For the creation of trends, all selected variables are divided into groups with the same norm history. For each group, a separate trend is drawn and a key entry is created. The key entry below the trend window shows the name of the first variables in a group and the number of other variables in the group. The lookback time of the trend can be defined in the Settings (on page 643).



EDITING NORM VALUES

A separate tab to edit the norm history is created for each group.

Norm history | ZAD_GBL#Color | ZAD_GBL#u_Line_01_M01_WS_Cur_State | ZAD_GBL#u_Line_01_M03_WS

ZAD_GBL#Color

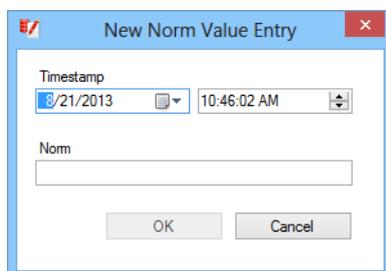
New

| Timestamp | | Value | |
|-----------|-------------|-------|---|
| 8/20/2013 | 10:39:16 AM | 20 | X |
| 8/21/2013 | 8:39:30 AM | 25 | X |
| 8/21/2013 | 9:39:41 AM | 15 | X |
| 8/21/2013 | 10:45:03 AM | 18 | X |

| Parameters | Description |
|------------------------|--|
| List of variables | Contains the names of all variables of this norm group. |
| New | Opens the dialog for adding a new norm value. |
| Table of price history | <p>Shows the complete norm history, including the entries that are not displayed in the trend due to the settings for <code>Trend lookback time</code>.</p> <p>The values can be edited directly:</p> <ul style="list-style-type: none"> ▶ Timestamp: Entry of the date and the time of the validity of this norm value. If the modification of a value leads to a clash of time stamps within the group, the change is not approved. ▶ Value: Entry of the norm value. Input errors are not approved and displayed by means of a tooltip. ▶ Delete button: Clicking on the button deletes the entry from the list. <p>The lines are sorted according to time stamp. Changes to the input fields are saved according to the focus loss. The view and sorting is updated when saving.</p> |

DIALOG TO ADD A NORM VALUE

Clicking on the **New** button in the tab of a price group opens the dialog to add a new norm value:



| Parameters | Description |
|------------|--|
| Timestamp | <p>Entry of the time point from when the new price entry is valid. This time can also be in the past.</p> <p>Input is in:</p> <ul style="list-style-type: none"> ▶ <code>Date field</code>: Direct input without selection from a calendar. Clicking on the button opens the calendar. ▶ <code>Time field</code>: Direct entry or configuration using the cursor keys. <p>A time point is only valid if it does not trigger a time stamp clash within the group.</p> |
| Norm | Entry of the norm value. Input errors are not approved and displayed by means of a tooltip. The decimal separator - point (.) or comma (,) - corresponds to the language settings. |
| OK | Only active if all inputs are valid. Clicking closes the dialog and adds the new norm entry. |
| Cancel | Closes the dialog without generating a new norm entry. |

12.2.5 Options

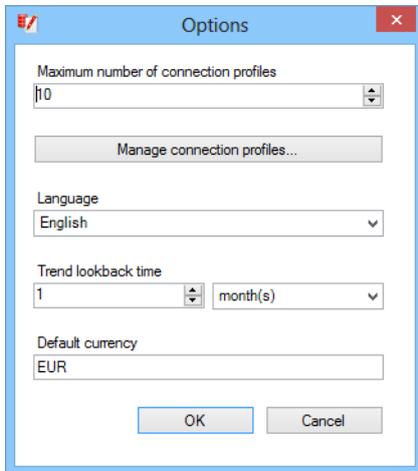
You configure the following in the settings:

- ▶ Number of permitted connections
- ▶ Connection profiles
- ▶ User interface language,
- ▶ Lookback time for trend curves

To configure the settings:

1. open the menu **File**
2. Select the command **Settings**.

3. The dialog for configuring settings is opened



| Parameters | Description |
|---------------------------------------|---|
| Maximum number of connection profiles | <p>Defines how many connection profiles can be created as a maximum for the Editor:</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 255 ▶ Default: 1 <p>Configuration by manual entry or by clicking on arrows.</p> <p>Note: Because the ZAMS connection profile can also be displayed in the dialog for establishing a connection (on page 621), more than the permitted amount of connection profiles can be displayed in the drop-down list to select a profile.</p> |
| Manage connection profiles | Opens the dialog (on page 569) to manage the connection profiles. |
| Language | Selection of the desired language for the user interface of the Editor from a drop-down list. |
| Trend lookback time | <p>Stipulates how far back in time the trend display of price history and norm history goes. Entry is made by means of an input field and a drop-down list that define the time period.</p> <p><u>Entry of the numeric value:</u></p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 ▶ Default: 1 <p>Configuration by manual entry or by clicking on arrows.</p> <p><u>Selection of the unit from the drop-down list:</u></p> <ul style="list-style-type: none"> ▶ Hours ▶ Days ▶ Months ▶ Years <p>Default: 1 year</p> <p>If non-permitted values are entered manually, the standard value of 1</p> |

| | |
|------------------|--|
| | year is configured when the dialog is closed. |
| Default currency | Input of a character sequence for the standard currency. |
| OK | Applies settings and closes the dialog. |
| Cancel | Discards all changes and closes the dialog. |

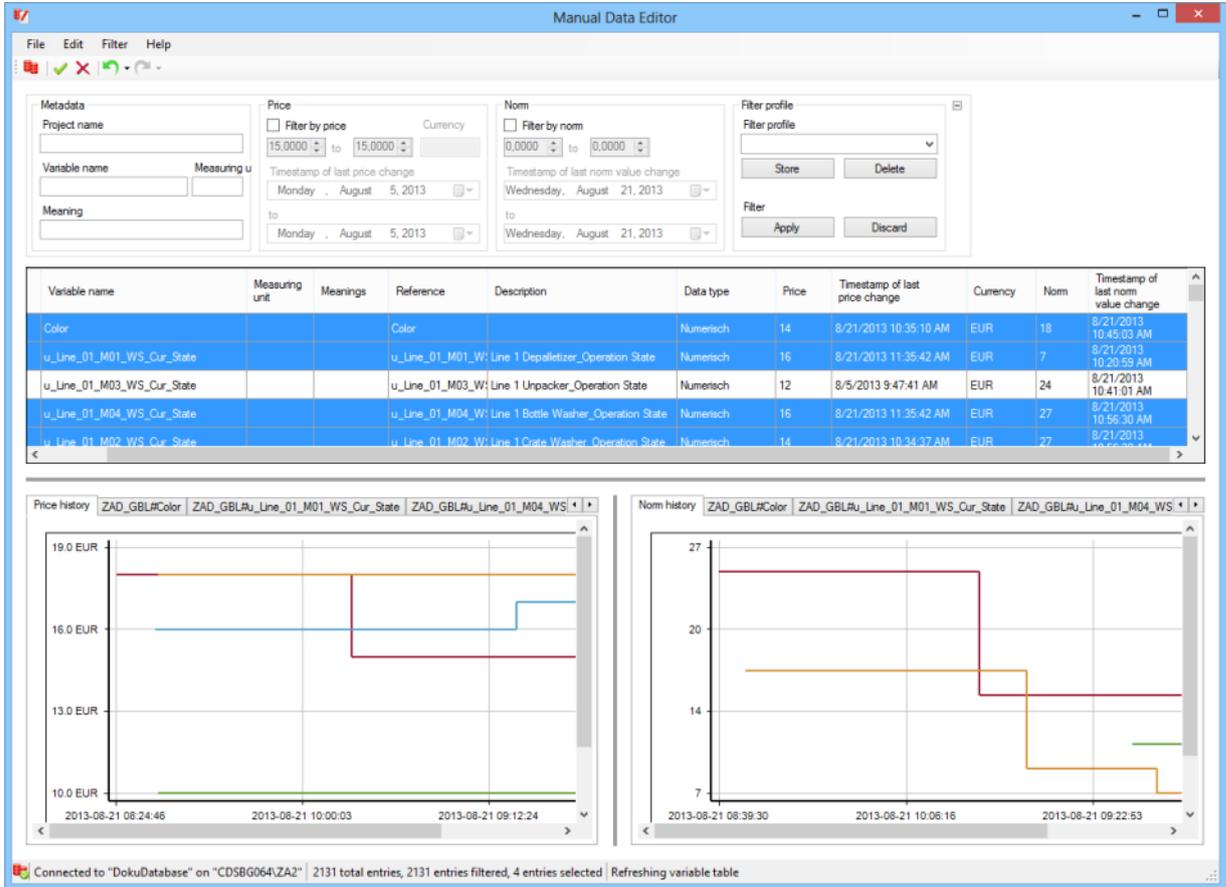
12.2.6 Example

In an Analyzer metadata database, there are variables that are kilowatt hour meters for electricity consumption. These, and only these, are measured in kWh. These variables should be assigned a price of 1.50 EUR per kWh from January 1, 2013 and a norm value of 0.6 kWh.

To carry out this command:

1. Start the Manual Data Editor and connect it to the database.

- All existing variables are displayed unfiltered in the Manual Data Editor.



The screenshot shows the 'Manual Data Editor' window. At the top, there are filter settings for 'Price' and 'Norm'. The 'Price' filter is set to 'Filter by price' with a range from 15,000 to 15,000 and a currency of EUR. The 'Norm' filter is set to 'Filter by norm' with a range from 0,0000 to 0,0000. Below these are 'Filter profile' and 'Filter' sections with 'Apply' and 'Discard' buttons.

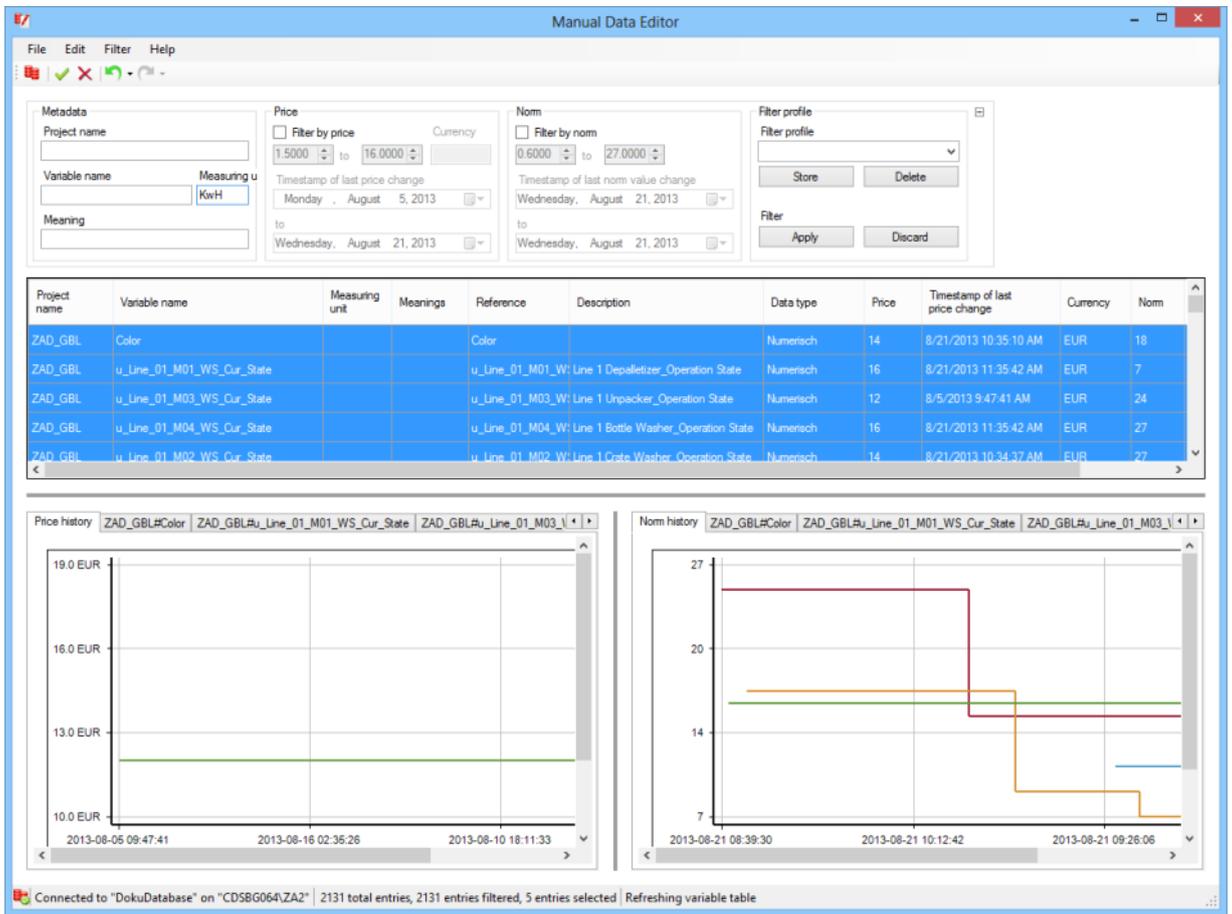
| Variable name | Measuring unit | Meanings | Reference | Description | Data type | Price | Timestamp of last price change | Currency | Norm | Timestamp of last norm value change |
|----------------------------|----------------|----------|-----------------|--------------------------------------|-----------|-------|--------------------------------|----------|------|-------------------------------------|
| Color | | | Color | | Numerisch | 14 | 8/21/2013 10:35:10 AM | EUR | 18 | 8/21/2013 10:45:03 AM |
| u_Line_01_M01_WS_Cur_State | | | u_Line_01_M01_W | Line 1 Depalletizer_Operation State | Numerisch | 16 | 8/21/2013 11:35:42 AM | EUR | 7 | 8/21/2013 10:20:59 AM |
| u_Line_01_M03_WS_Cur_State | | | u_Line_01_M03_W | Line 1 Unpacker_Operation State | Numerisch | 12 | 8/5/2013 9:47:41 AM | EUR | 24 | 8/21/2013 10:41:01 AM |
| u_Line_01_M04_WS_Cur_State | | | u_Line_01_M04_W | Line 1 Bottle Washer_Operation State | Numerisch | 16 | 8/21/2013 11:35:42 AM | EUR | 27 | 8/21/2013 10:56:30 AM |
| u_Line_01_M02_WS_Cur_State | | | u_Line_01_M02_W | Line 1 Crate Washer_Operation State | Numerisch | 14 | 8/21/2013 10:34:37 AM | EUR | 27 | 8/21/2013 10:41:01 AM |

Below the table are two history graphs: 'Price history' and 'Norm history'. The 'Price history' graph shows price changes for 'Color', 'u_Line_01_M01_WS_Cur_State', and 'u_Line_01_M04_WS_Cur_State' over time. The 'Norm history' graph shows norm value changes for the same variables.

At the bottom, the status bar indicates: 'Connected to "DokuDatabase" on "CDSBG064.ZA2" | 2131 total entries, 2131 entries filtered, 4 entries selected | Refreshing variable table'.

- Set the filter for the unit of measurement to kWh.
- click on **Apply**.
- The variables are shown as filtered.

6. Mark all variables.



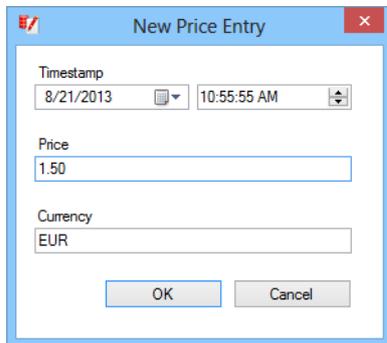
| Project name | Variable name | Measuring unit | Meanings | Reference | Description | Data type | Price | Timestamp of last price change | Currency | Nom |
|--------------|----------------------------|----------------|----------|---|-------------|-----------|-------|--------------------------------|----------|-----|
| ZAD_GBL | Color | | | Color | | Numerisch | 14 | 8/21/2013 10:35:10 AM | EUR | 18 |
| ZAD_GBL | u_Line_01_M01_WS_Cur_State | | | u_Line_01_M01_W: Line 1 Depalletizer_Operation State | | Numerisch | 16 | 8/21/2013 11:35:42 AM | EUR | 7 |
| ZAD_GBL | u_Line_01_M03_WS_Cur_State | | | u_Line_01_M03_W: Line 1 Unpacker_Operation State | | Numerisch | 12 | 8/5/2013 9:47:41 AM | EUR | 24 |
| ZAD_GBL | u_Line_01_M04_WS_Cur_State | | | u_Line_01_M04_W: Line 1 Bottle Washer_Operation State | | Numerisch | 16 | 8/21/2013 11:35:42 AM | EUR | 27 |
| ZAD_GBL | u_Line_01_M02_WS_Cur_State | | | u_Line_01_M02_W: Line 1 Crate Washer_Operation State | | Numerisch | 14 | 8/21/2013 10:34:37 AM | EUR | 27 |

- 7.
8. Open the dialog to enter a new price for each tab.

Set the following values:

- Date: 01.01.2013
- Time: 00:00:00
- Price: 1,50 or 1.50, depending on the language of the user interface

- Currency: EUR



New Price Entry

Timestamp
8/21/2013 10:55:55 AM

Price
1.50

Currency
EUR

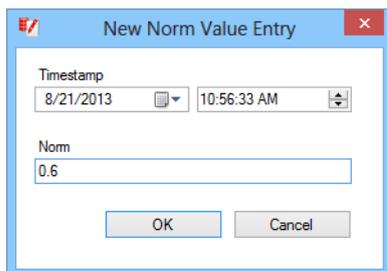
OK Cancel

9. Click on **OK**.

10. Open the dialog to enter a new norm value for each tab.

Set the following values:

- Date: 01.01.2013
- Time: 00:00:00
- Norm: 0,6 or 0.6, depending on the language of the user interface



New Norm Value Entry

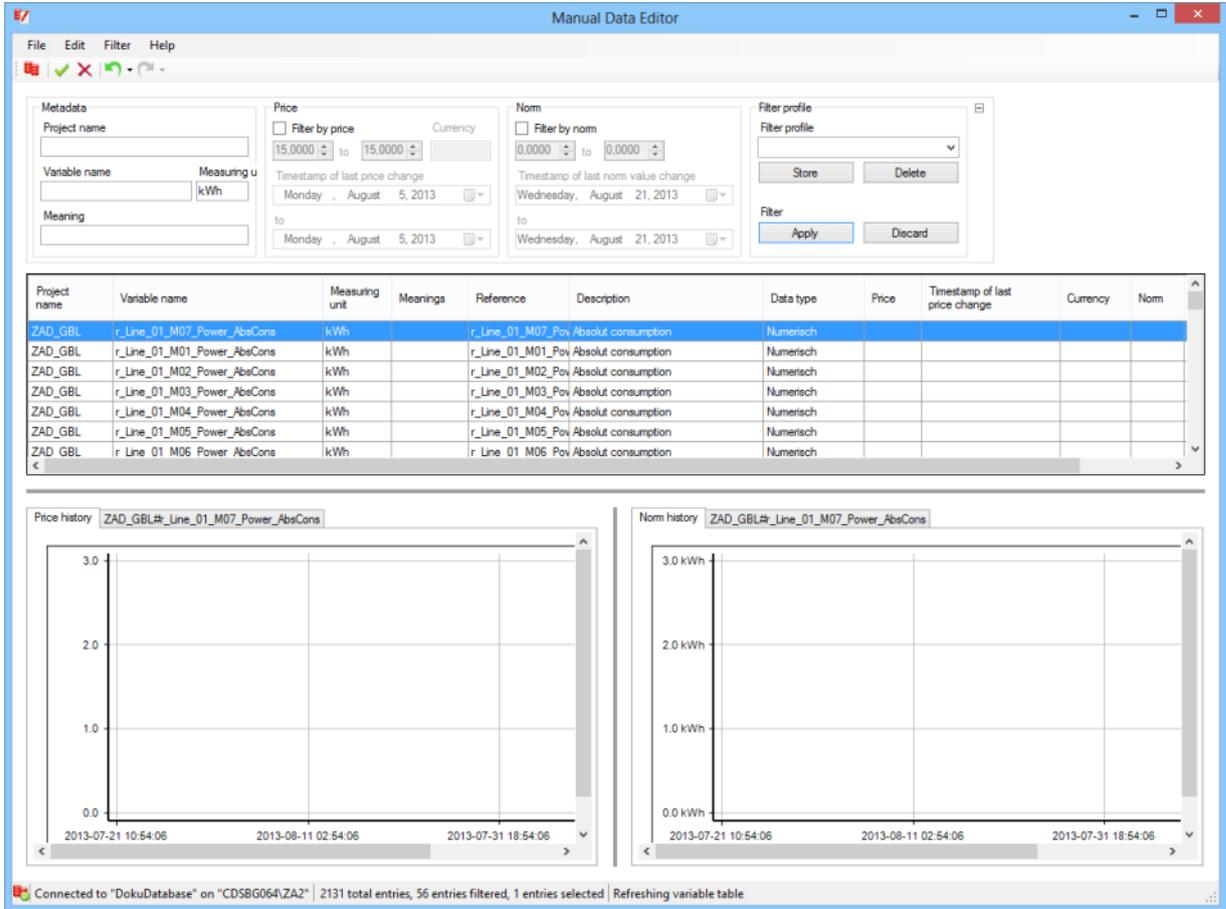
Timestamp
8/21/2013 10:56:33 AM

Norm
0.6

OK Cancel

11. Click on **OK**.

12. The changes are saved to the database.



The screenshot shows the 'Manual Data Editor' window. It includes a menu bar (File, Edit, Filter, Help) and a toolbar. The main area is divided into several sections:

- Metadata:** Fields for Project name, Variable name, Measuring unit (kWh), and Meaning.
- Price:** Filter by price (15,0000 to 15,0000), Currency, and Timestamp of last price change (Monday, August 5, 2013).
- Nom:** Filter by nom (0,0000 to 0,0000), Timestamp of last nom value change (Wednesday, August 21, 2013).
- Filter profile:** Filter profile dropdown, Store, Delete, Filter, Apply, and Discard buttons.
- Data Table:** A table with columns: Project name, Variable name, Measuring unit, Meanings, Reference, Description, Data type, Price, Timestamp of last price change, Currency, and Nom. The table contains several rows of data for 'r_Line_01_M07_Power_AbsCons'.
- Price history:** A line graph showing price changes over time for the selected variable.
- Nom history:** A line graph showing nominal value changes over time for the selected variable.

At the bottom, a status bar indicates: 'Connected to "DokuDatabase" on "CDS8G064ZA2" | 2131 total entries, 56 entries filtered, 1 entries selected | Refreshing variable table'.

13. Close the Manual Data Editor.

13. Supplied report templates

With zenon Analyzer - depending on the licensing - pre-configured report templates (on page 823) are supplied for the creation of reports with ZAMS. Report templates are configured in ZAMS. You can find details on the input elements at the respective report template and in the Elements in the report area (on page 658) chapter.

Note for developers of reports: These reports use stored procedures and user-defined function blocks, that are described in the documentation for developers.

LICENSING REPORT TEMPLATES AND REPORTS

Report templates and reports must be licensed in order to be able to use them. Different license packages are available:

| Theme | Report templates contained |
|------------------------------------|--|
| zenon Analyzer | None. |
| Alarm Analysis | Report templates for Alarm Analysis (on page 826). |
| Custom Formula Analysis | Report templates for Custom formula analysis (on page 860): |
| Historian Analysis | Report templates for Historian Analysis (on page 920). |
| Extended Historian Analysis | Report templates for Historian Analysis (on page 920) and Extended Historian Analysis (on page 1001). |
| ISO 50001 | Report templates for ISO 50001 (on page 1115) plus Extended Historian Analysis (on page 1001) and Custom formula analysis (on page 860). |
| Production Analysis Line Based | Report templates for Production Analysis Line Based (on page 1172). |
| Production Analysis Machine Based | Report templates for Production Analysis Machine Based (on page 1182). |
| OEE Analysis | Report templates for OEE Analysis (on page 1238). |
| Target Actual Analysis | Report templates for Target Actual Analysis (on page 1263). |
| Hydroelectric Power Plant Analysis | Report templates for Hydroelectric Power Plant Analysis (on page 1280). |

SUPPLIED REPORT TEMPLATES

The following report templates are available:

ALARM ANALYSIS

Report templates for the evaluation of alarms.

- ▶ Alarm message list (on page 828): Creates a list of alarms in table form for a time range.

- ▶ Top N Alarms (on page 837): Gets a defined number (N) of alarms that occur most frequently in a time range or have been active for the longest.
- ▶ Alarm Aggregation (on page 849): Gets the sum of all alarms triggered in a time range and adds up the duration of the different alarms

CUSTOM FORMULA ANALYSIS

Report templates for custom formulas.

- ▶ Custom Formula Trend: (on page 862) Trend display of user-defined formulas for a time range.
- ▶ Custom Formula Trend Comparison (on page 870): Trend display of user-defined formulas for two time ranges.
- ▶ Custom Formula Aggregated Trend (on page 878): Trend display of aggregated user-defined formulas for a time range.
- ▶ Custom Formula Aggregated Trend Comparison (on page 887): Trend display of aggregated user-defined formulas for two time ranges.
- ▶ Custom Formula Aggregation (on page 895): Trend display of aggregated, user-defined formulas for a time range.
- ▶ Custom Formula Aggregation Comparison (on page 902): Trend display of aggregated, user-defined formulas for two time ranges.

HISTORIAN ANALYSIS

Report templates for the evaluation and direct or aggregated display of archive data.

- ▶ Historian Trend (on page 922): Gets archive data for a time range and displays this without aggregation in a trend
- ▶ Historian Trend Comparison (on page 930): Gets archive data for two time ranges and provides this without aggregation of each trend for comparison.
- ▶ Historian Aggregated Trend (on page 938): Gets archive data for a time range, aggregates this in intervals in the time range and displays it as a trend.
- ▶ Historian Aggregated Trend Comparison (on page 946): Gets archive data for two time ranges, aggregates this in intervals in the time range and displays it as a trend for comparison.

- ▶ Historian Aggregated Trend with online variable selection (on page 953): Gets archive data for a time range, aggregates this in intervals in the time range and displays these aggregations as a trend.
- ▶ Historian Aggregated Trend Comparison with online variable selection (on page 961): Gets archive data for two time ranges, aggregates these in intervals in the time range and provides these aggregations each in a separate trend per time range.
- ▶ Historian Aggregation (on page 969): Gets archive data for a time range, aggregates this and displays each of the aggregation results separately
- ▶ Historian Aggregation Comparison (on page 977): Gets archive data for two time ranges, aggregates this and displays each of the aggregation results for both time ranges separately
- ▶ Historian Distribution (on page 985): Gets archive data for a variable, rounds this up to a configurable rounding factor and displays the distribution of the values. In addition, the types of aggregation are calculated and displayed with markers.
- ▶ Historian Distribution Comparison (on page 993): Gets archive data for a variable from two time ranges, rounds this up to a configurable rounding factor and displays the distribution of the values. In addition, the types of aggregation are calculated and displayed with markers.

EXTENDED HISTORIAN ANALYSIS

Report templates for archive aggregation or archive distribution, taking into account prices, norm values and production counters.

- ▶ Trend per Variable (on page 1003): Creates an aggregated trend analysis for a time period with a trend for each variable.
- ▶ Trend per Variable Comparison (on page 1011): Creates an aggregated trend analysis for two time periods with a trend for each variable.
- ▶ Trend per Equipment Model (on page 1019): Creates an aggregated trend analysis for a time period with a trend for each equipment model.
- ▶ Trend per Equipment Model Comparison (on page 1027): Creates an aggregated trend analysis for two time periods with a trend for each equipment model.
- ▶ Relative Trend per Variable (on page 1035): Creates a relative aggregated trend analysis for a time period with a trend for each variable.

- ▶ Relative Trend per Variable Comparison (on page 1043): Creates a relative aggregated trend analysis for two time periods with a trend for each variable.
- ▶ Relative Trend to Standard (on page 1051): Creates a relative aggregated trend analysis for a time period for a variable with a comparison with standard values.
- ▶ Relative Trend to Standard Comparison (on page 1059): Creates a relative aggregated trend analysis for two time periods for a variable with a comparison with standard values.
- ▶ Distribution per Variable (on page 1067): Calculates the aggregated cost distributions for a time period that is based on variables.
- ▶ Distribution per Variable Comparison (on page 1075): Calculates the aggregated cost distributions for two time periods that are based on variables.
- ▶ Cost Distribution per Variable: (on page 1083)Calculates the aggregated cost distributions for a time period that is based on variables.
- ▶ Cost Distribution per Variable Comparison (on page 1091): Calculates the aggregated cost distributions for two time periods that are based on variables.
- ▶ Cost Distribution per Equipment Model: (on page 1099)Calculates the aggregated cost distributions for a time period that is based on equipment models.
- ▶ Cost Distribution per Equipment Model Comparison (on page 1107): Calculates the aggregated cost distributions for two time periods that are based on equipment models.

ISO 50001

Report templates for ISO 50001 (on page 1115):

- ▶ Load Duration Curve with variable selection (on page 1118): Creates a load duration curve that is based on variable selection.
- ▶ Load Duration Curve Comparison with variable selection (on page 1126): Creates a comparison between two load duration curves that is based on variable selection.
- ▶ Load Duration Curve for Equipment Groups (on page 1134): Creates a load duration curve that is based on variable selection per equipment group.
- ▶ Load Duration Curve Comparison for Equipment Groups (on page 1142): Creates a comparison between two load duration curves that is based on variable selection for each equipment group.
- ▶ Carpet Plot (on page 1150): Gets and aggregates data for a carpet plot.

- ▶ Sankey Diagram (on page 1158): Reads the Sankey definitions, gets data and aggregates it, integrates dynamic loss detection if required and displays the result as a diagram or table.
- ▶ Sankey Diagram (double width) (on page 1165): Displays the Sankey diagram in double width or places tables next to one another.

Plus all report templates from the **Extended Historian Analysis** (on page 1001) and **Custom Formula Analysis** (on page 860) themes.

PRODUCTION ANALYSIS LINE BASED

Report templates for Production Analysis Line Based.

- ▶ Gantt chart (on page 1173): Analyzes lots, shifts and variables - specified through meanings, from AML, CEL or archive - and displays the results as a Gantt chart and as a table.

PRODUCTION ANALYSIS MACHINE BASED

Report templates for the analysis of loss times and productivity, based on standards.

- ▶ Losses Analysis (on page 1184): Analyze archive data and calculate aggregated loss times for a time period, based on an equipment group and a waterfall model.
- ▶ Productivity Indicators Analysis (on page 1192): Analyze archive data and calculate aggregated productivity indicators for a time period, based on an equipment group.
- ▶ Comprehensive Productivity Analysis (on page 1200): Combines the **Losses Analysis** (on page 1184) and **Productivity indicators Analysis** (on page 1192) report templates.
- ▶ Losses Lot History (on page 1210): Analyze archive data and calculate aggregated loss times for each lot, based on an equipment group.
- ▶ Productivity Indicators Lot History (on page 1219): Analyze archive data and calculate aggregated production indicators for each lot in a time period, based on an equipment group.
- ▶ Comprehensive Productivity Lot History (on page 1226): Combines the **Losses Lot History** (on page 1210) and **Productivity Indicators Lot History** (on page 1219) templates.

OEE ANALYSIS

Report templates available that calculate and display OEE indicators.

- ▶ OEE Indicator (on page 1240): Calculates the OEE performance figures for a selected equipment model in a time period and displays the performance figures in graphic form
- ▶ OEE Indicator Lot History (on page 1249): Calculates the OEE indicators for a selected equipment model for each lot in a period of time and displays the performance figures in graphic form and table form

TARGET ACTUAL ANALYSIS

Reports for the comparison of any desired machine-related measured sizes.

- ▶ Target Actual Aggregated Trend (absolute) (on page 1264): Gets the target and actual values for the set meanings and the selected equipment group and calculates absolute counters from this.
- ▶ Target Actual Aggregated Trend (relative) (on page 1272): Gets the target and actual values for the set meanings and the selected equipment group and calculates relative counters from this.

HYDROELECTRIC POWER PLANT ANALYSIS

Report templates that determine and display various counters for hydroelectric power plants.

- ▶ Operating Time per Operation Mode and Machine Component (on page 1281): Calculates operating times for the individual operating modes of a machine and machine components.
- ▶ Operating Time per Power Range (on page 1291): Calculates operating times for a machine per power range.
- ▶ Circuit Breaker Switching Cycles (on page 1300): Calculates switching cycles for circuit breakers.
- ▶ Active and Reactive Power Counters (on page 1310): Calculates counter values for active and reactive power.
- ▶ Power Line Frequency (on page 1320): Calculates time counters for different frequency bands of the network frequency of a machine.
- ▶ Machine Event Counters (on page 1329): Calculates counters for different events that may occur for a machine.

NOTE ON REPORTS AND ACTIONS WITH SP/UDF

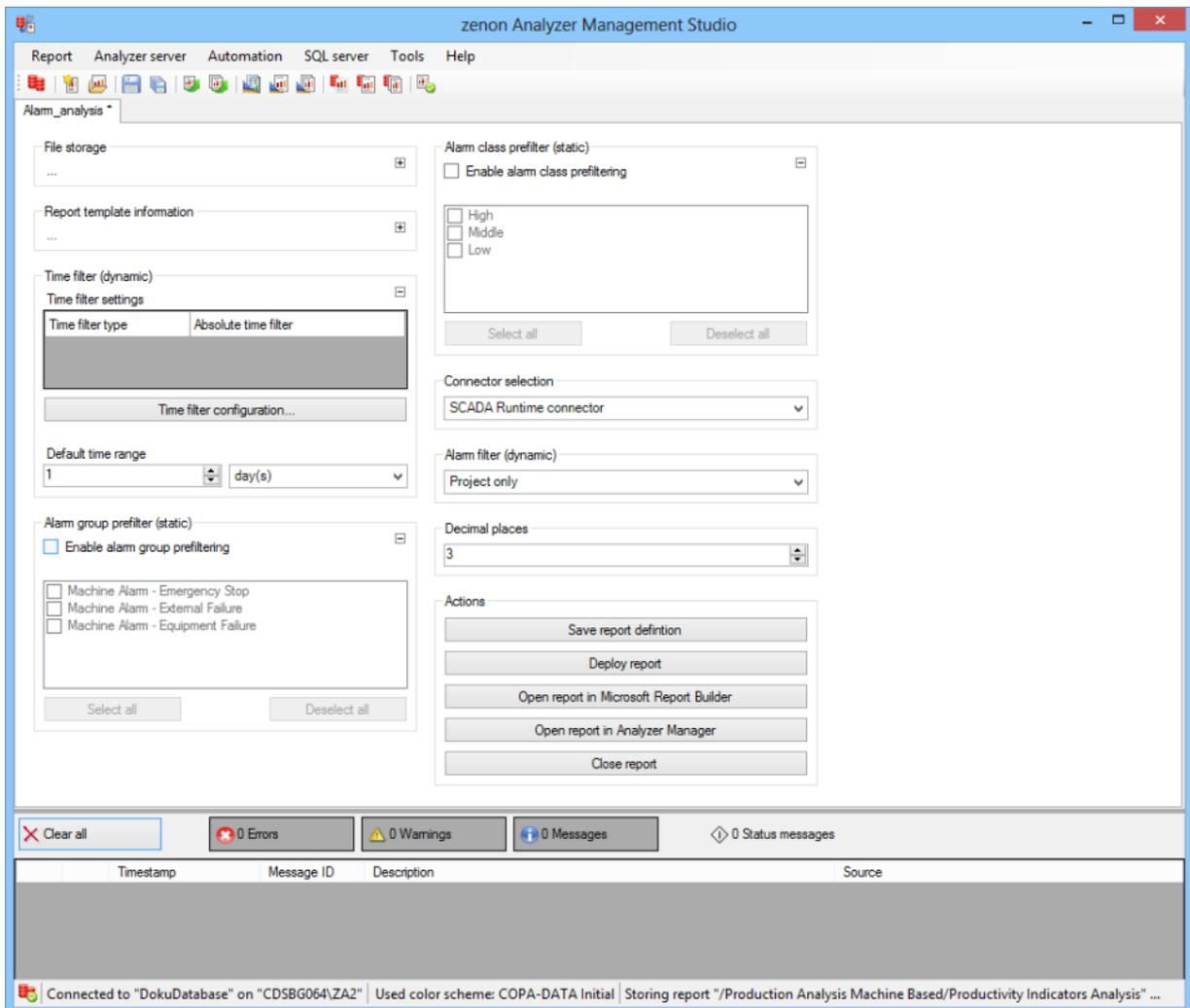
When an SP or UDF of ZAMS is overwritten in the database, it is not present for the duration of this process. This can lead to errors when executing existing reports, if these access the SP or UDF at precisely the moment between deletion and recreation.

Recommendation: Do not execute any reports whilst actions are being carried out with ZAMS that relate to these reports. Most of all if ZAMS:

- ▶ is deploying reports
- ▶ is updating the connector functions in the database
- ▶ is creating the SQL connector

13.1 Elements in the report area

Reports are configured using different inputs. The possibilities for input depend on the RDL file and are automatically arranged. If the size of the window is exceeded, scroll bars are automatically displayed.



Note: Not all documented input possibilities are shown in the screenshot.

Depending on the report template loaded, different elements are displayed for the configuration of the report. Elements that are related to each other are arranged in input groups.

Entries in dialogs can generally also be confirmed and completed by pressing the `Enter` key.

INPUT GROUPS

Input groups that consist of more than one element can be minimized.

- ▶ To minimize a group, click on the - button in the top right corner of the group.
- ▶ To maximize a group, click on the + button in the top right corner of the group.

ELEMENTS

The following inputs are possible for a report in ZAMS:

ARCHIVES

| | |
|-------------------------------|---|
| Archives | Aggregation and configuration of the archive. For details, see the Configure archives (on page 666) section. |
| Lot archive selection | Select a lot archive (on page 715). |
| Archive compression selection | <p>The following types of archive aggregation are available. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Raw data (Basis archive) ▶ added up data (aggregated archive) ▶ average data (aggregated archive) ▶ minimum data (aggregated archive) <p>maximum data (aggregated archive)</p> |

FILE STORAGE

| Parameters | Description |
|-------------------------|--|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | <p>Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created.</p> <p>For details, see the Path to RDL file (on page 748) section.</p> |

INFORMATION ON REPORT TEMPLATES

| | |
|--|---|
| Information on Report templates | <p>Information on the report template, consisting of:</p> <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
|--|---|

MISCELLANEOUS

| | |
|----------------------------------|---|
| Action | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. <p>Select by clicking on the respective button.</p> |
| Selection equipment model | Selection of an Equipment model (on page 665). |
| Input fields and drop-down lists | <p>Various input fields and drop-down lists for the input of data and selection of parameters:</p> <ul style="list-style-type: none"> ▶ Single selection: Selection of a value from drop-down list: ▶ Text input: Input of free text ▶ Numerical input: Input of numerical values <p>For details, see Inputs and selection from drop-down list (on page 716).</p> |
| Chart data selection | <p>Selection of the value type to be displayed from drop-down list:</p> <ul style="list-style-type: none"> ▶ Absolute values ▶ Relative values |

PROCEDURE FOR THE DISPLAY OF CONTROL ELEMENTS

Procedure for the display of the control elements when subscribing to reports, for report configuration in the Analyzer Manager and when issuing default values:

1. If the parameter is a `Boolean` data type, the control element for the selection of a Boolean value is displayed. Pre-defined values overwrite the standard labels for the radio buttons for `True` and `False`. It is only possible to select one value.
2. If several values can be selected from pre-defined values, a decision on which control element is displayed is made on the basis of the data type and an additional hidden parameter:
 - a) The parameter is a `text` data type and a hidden parameter with the name `[Parametername]_Type` is present and the standard value 1 is set: The control element to select several values from the equipment model is displayed.
 - b) In all other cases, the control element to select several values from pre-defined values is displayed.
3. If several values can be entered, the control element to enter several values is displayed.
4. If a value can be selected from several pre-defined values, a decision on which control element is displayed is made on the basis of the data type and an additional hidden parameter:
 - a) The parameter is a `text` data type and a hidden parameter with the name `[Parametername]_Type` is present and the standard value 1 is set: The control element to select a value from the equipment model is displayed.
 - b) The parameter is a `text` data type and a hidden parameter with the name `[Parametername]_Type` is present and the standard value 2 is set: The control element to select a lot is displayed.
 - c) In all other cases, the control element to select a value from pre-defined values is displayed.
5. If the parameter is a `text` data type and a hidden parameter with the name `[Parametername]_Type` is present and the standard value 3 is set, a control element to enter a time range is displayed.

To select granularity, the default value of a hidden parameter with the name `[parametername]_Granularity` is used. If this is not present or has an invalid value, 0 is assumed. The following values lead to the following granularities:

 - 0: Minutes
 - 1: Hours
 - 2: Days
 - 3: Months
 - 4: Years

6. If the parameter is a `date and time` data type, the control element to enter a date and time is displayed. To select granularity, the default value of a hidden parameter with the name `[Parametername]_Granularity` is used. If this is not present or has an invalid value, 0 is assumed. The following values lead to the following granularities:
- 0: Minutes
 - 1: Hours
 - 2: Days
 - 3: Months
 - 4: Years
7. In all other cases, the control element for the standard input is displayed.

13.1.1 Alarm lookback time

Selection of a lookback time for alarms.

This allows alarms that have occurred before the start of the time filter but that still have an effect in the range of the time filter to be taken into account.

Alarm lookback time

| Parameters | Description |
|---------------------|---|
| Alarm lookback time | <p>Time range, which should be taken into account from the start of the time filter retrospectively.</p> <p>For details, see the Alarm Lookback time (on page 663) chapter.</p> |

| | |
|----------------------------------|--|
| Time input | Numerical input for the quantity. It is also possible to make changes using the spin control. |
| Selecting the granularity | Selection from drop-down list: <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |

13.1.2 Alarm prefiltering

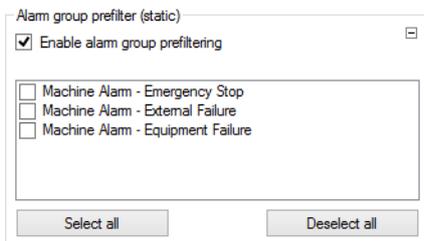
Alarms can be prefiltered. The filtering includes:

- ▶ Alarm groups
- ▶ Alarm Classes

Both filters are connected to one another.

PREFILTERING ALARM GROUPS

Activation via option: Alarm groups prefiltering

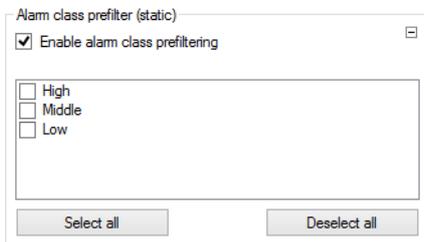


| Parameters | Description |
|---------------------------|--|
| Alarm groups prefiltering | Filtering of the alarm groups by means of activation/deactivation of checkboxes. |

| | |
|-----------------------------|--|
| List of alarm groups | <p>This list is for prefiltering alarm groups. It contains a checkbox for each EVENTGROUP metadata table entry, with the entries being displayed in the VISUALNAME column.</p> <p>Alarm group prefiltering is inactive if nothing is selected. If something is selected, only alarms of the active alarm groups are allowed through.</p> |
| Select all | Activates all checkboxes, selection of alarm groups. |
| Deselect all | Deactivates all checkboxes, deselection of all alarm groups. |

PREFILTERING OF ALARM CLASSES

Activation via option: Alarm classes prefiltering



| Parameters | Description |
|------------------------------|---|
| Alarm classes prefiltering | Filtering of the alarm classes by means of activation/deactivation of checkboxes. |
| List of alarm classes | <p>The list serves to prefilter alarm classes. It contains a checkbox for each EVENTCLASS metadata table entry, with the entries being displayed in the VISUALNAME column.</p> <p>Alarm class prefiltering is inactive if nothing is selected. If something is selected, only alarms of the active alarm classes are allowed through.</p> |
| Select all | Activates all checkboxes, selection of alarm classes. |
| Deselect all | Deactivates all checkboxes, deselection of all alarm classes. |

13.1.3 Equipment model selection



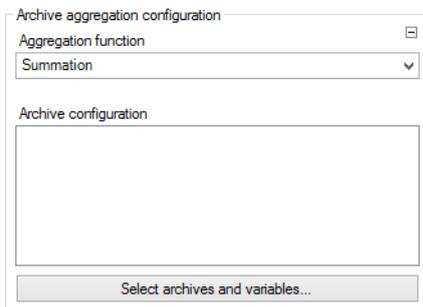
Selection of a root element of the equipment model from drop-down list. The equipment model is read from the metadata. An independent entry in the drop-down list allows the use of all models present in the list.

13.1.4 Archives

The archives to be aggregated and pivoted are configured using the following elements:

▶ **Aggregation function**

▶ **Archive configuration**



Archive aggregation configuration

Aggregation function

Summation

Archive configuration

Select archives and variables...

| Parameters | Description |
|--|---|
| Archive aggregation configuration | Archive aggregation configuration |
| Aggregation function | <p>The following are available for aggregation:</p> <ul style="list-style-type: none"> ▶ Summation ▶ Calculate average values ▶ Determine minimum values ▶ Determine maximum values <p>Select from drop-down list.</p> |
| Configuration of the archive | <p>Display of the archive variables in a tree structure. This structure is constructed as follows:</p> <ul style="list-style-type: none"> ▶ Project name ▶ Archive name ▶ Variable name ▶ Aggregation type of the variables in the archive <p>Selection by clicking on the desired object.</p> <p>If the report is linked to a project via the parameters of the time filter, a check is made to ensure that only archives and variables from the project to which the report is linked are used.</p> |
| Configure archives | <p>Clicking on the button opens the dialog to select the archives and variables. For details, see the Configure archives (on page 666) section.</p> |

CONFIGURE ARCHIVES

Clicking on the `Configure archives` button opens the dialog for configuring the archives. The size of the dialog can be changed by dragging it with the mouse. The division of the left and right (variable) space can be changed by dragging the dividing bar.

Archive aggregation variable configuration

Projects

- ZAD_GBL
- ZAD_CIP

Archives

- ZAD_GBL#AIR CYCLIC DATA (60 seconds)
- ZAD_GBL#CONS TREND (5 seconds)
- ZAD_GBL#SL ARCH (non-cyclic)
- ZAD_GBL#PRODUCTION CYCLIC DATA (60 seconds)
- ZAD_GBL#ANALYZER SPONT DATA (non-cyclic)
- ZAD_GBL#ANALYZER CYCLIC DATA (60 seconds)
- ZAD_GBL#CHEMICALS CYCLIC DATA (60 seconds)
- ZAD_GBL#ENERGY COMPRESSOR CYCLIC DATA (60 seconds)

Normalize to 1 second cycle time

- ZAD_GBL#AIR CYCLIC DATA (60 seconds)
- ZAD_GBL#CONS TREND (5 seconds)
- ZAD_GBL#SL ARCH (non-cyclic)

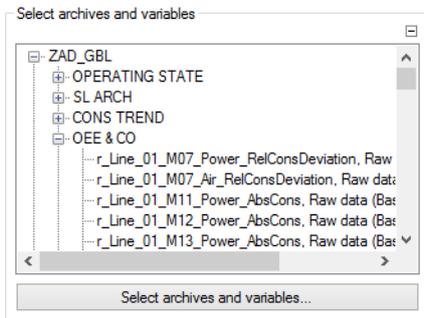
Variables

- ZAD_GBL#SL ARCH -r_Line_01_M07_WS_Set_Mach_Spd (Raw data (Basis archive))
- ZAD_GBL#SL ARCH -r_Line_01_M07_WS_Mach_Design_Spd (Raw data (Basis archive))
- ZAD_GBL#SL ARCH -u_Line_01_M07_WS_Tot_Bottles (Raw data (Basis archive))
- ZAD_GBL#SL ARCH -u_Line_01_M07_WS_Good_Bottles (Raw data (Basis archive))
- ZAD_GBL#SL ARCH - Simulation/Global/u_Shift_No (Raw data (Basis archive))
- ZAD_GBL#SL ARCH - Simulation/Global/s_Batch_Name (Raw data (Basis archive))
- ZAD_GBL#SL ARCH - Simulation/Global/Planned_Bottles (Raw data (Basis archive))
- ZAD_GBL#CONS TREND -r_Line_01_M07_Power_AbsCons (Raw data (Basis archive))
- ZAD_GBL#SL ARCH - Simulation/FB_L01M07/r_min_Operating_Time (Raw data (Basis archive))
- ZAD_GBL#SL ARCH - Simulation/FB_L01M07/r_min_Net_Operating_Time (Raw data (Basis archive))
- ZAD_GBL#SL ARCH - Simulation/FB_L01M07/r_min_Planned_Production_Time (Raw data (Basis archive))
- ZAD_GBL#SL ARCH - Simulation/FB_L01M07/r_min_Cleaning_Time (Raw data (Basis archive))
- ZAD_GBL#SL ARCH - Simulation/FB_L01M07/r_min_Changeover_Time (Raw data (Basis archive))
- ZAD_GBL#SL ARCH - Simulation/FB_L01M07/r_min_Maintenance_Time (Raw data (Basis archive))
- ZAD_GBL#SL ARCH - Simulation/FB_L01M07/r_min_Break_Time (Raw data (Basis archive))
- ZAD_GBL#SL ARCH - Simulation/FB_L01M07/r_min_Breakdown_Time (Raw data (Basis archive))
- ZAD_GBL#SL ARCH - Simulation/FB_L01M07/r_min_Minor_Stops_Time (Raw data (Basis archive))
- ZAD_GBL#SL ARCH - Simulation/FB_L01M07/r_min_Speed_Losses_Time (Raw data (Basis archive))
- ZAD_GBL#SL ARCH - Simulation/FB_L01M07/r_min_Val_Operating_Time (Raw data (Basis archive))
- ZAD_GBL#SL ARCH - Simulation/FB_L01M07/r_min_Quality_Losses_Time (Raw data (Basis archive))
- ZAD_GBL#CONS TREND -r_Line_01_M01_Power_AbsCons (Raw data (Basis archive))
- ZAD_GBL#CONS TREND -r_Line_01_M02_Power_AbsCons (Raw data (Basis archive))
- ZAD_GBL#CONS TREND -r_Line_01_M03_Power_AbsCons (Raw data (Basis archive))
- ZAD_GBL#CONS TREND -r_Line_01_M04_Power_AbsCons (Raw data (Basis archive))
- ZAD_GBL#CONS TREND -r_Line_01_M05_Power_AbsCons (Raw data (Basis archive))
- ZAD_GBL#CONS TREND -r_Line_01_M06_Power_AbsCons (Raw data (Basis archive))
- ZAD_GBL#CONS TREND -r_Line_01_M08_Power_AbsCons (Raw data (Basis archive))
- ZAD_GBL#CONS TREND -r_Line_01_M09_Power_AbsCons (Raw data (Basis archive))
- ZAD_GBL#CONS TREND -r_Line_01_M10_Power_AbsCons (Raw data (Basis archive))
- ZAD_GBL#AIR CYCLIC DATA - Simulation/Global/M10_Air_incremental (Raw data (Basis archive))

| Parameters | Description |
|----------------------------------|---|
| Projects | <p>Selection from the list of available projects. These are taken from the metadata.</p> <p>If the report is tied to a project (see Configuring time filter (on page 760) section) only the tied project can be seen.</p> <p>Activation or deactivation of checkboxes influences the display of objects in other lists.</p> |
| Archives | <p>Display of all archives that are available in the projects selected in Projects.</p> <p>Syntax: <code>[project name]#[archive name] ([cycle time])</code></p> <p>If an entry is activated or deactivated via the checkbox, the objects available in the Normalize to 1 second cycle time and Variables lists are updated.</p> |
| Normalize to 1 second cycle time | <p>Lists all archives activated in the previous list with the same display syntax.</p> <p>Checkbox activated: The archive is accepted into the list, which is to be converted to a 1-second cycle.</p> <p>Note: Activation only makes sense if time-corrected average values for variables from a spontaneous archive are to be displayed!</p> |
| Variables | <p>Lists all variables that are present in variables that have been activated in the Archives list.</p> <p>Syntax: <code>[project name]#[archive name] - [variable name] ([compression of the variables in the archive])</code></p> <p>Checkbox activated: The archive variables are accepted into the Archive configuration (on page 658) list in the report area.</p> |
| OK | Applies changes and closes the dialog. |
| Cancel | Discards changes and closes the dialog. |

13.1.5 Archive variable input

The archive variables for **Extended Historian Analysis** reports are entered using a display and a configuration dialog.



| Parameters | Description |
|--|--|
| Select archives and variables. | ▶ Display and configuration of the archive variables. |
| List field | Shows the current configuration. Display schematic: <ul style="list-style-type: none"> ▶ Project ▶ Archive ▶ Variable and data aggregation |
| Archive aggregation variable configuration | Clicking on the button opens the dialog (on page 675) to configure the archive variables for Extended Historian Reports. |

If the report is tied to a project using the time filter settings, then the entries are filtered. Only archives and variables of the tied project can be displayed and configured.

13.1.6 Archive variables and production counter

The archive variables for **Extended Historian Analysis** reports are entered using a display and a configuration dialog. Some of this type of report use the production counter to calculate relative consumers.

Production counter configuration

| | |
|-------------------------------|--------------------------|
| Project | ZAD_GBL |
| Equipment group | (no input) |
| Assignment for total units... | TotalUnits |
| Archive for counter varia... | ANALYZER CYCLIC DATA |
| Aggregation function | Raw data (Basis archive) |

Configure production counter...

Select archives and variables

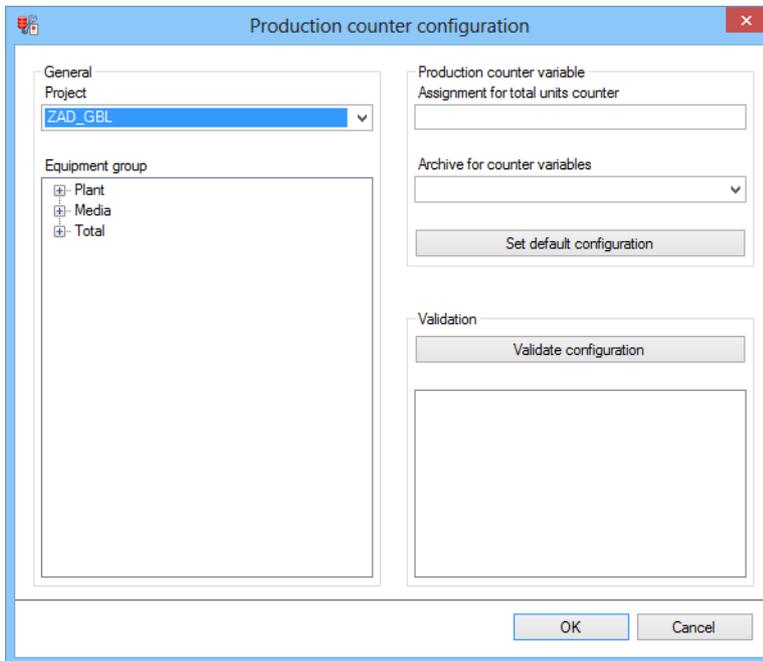
- [-] ZAD_GBL
 - [+] OPERATING STATE
 - [+] SL ARCH
 - [+] CONS TREND
 - [-] OEE & CO
 - [-] r_Line_01_M07_Power_RelConsDeviation, Raw
 - [-] r_Line_01_M07_Air_RelConsDeviation, Raw dat:
 - [-] r_Line_01_M11_Power_AbsCons, Raw data (Ba:
 - [-] r_Line_01_M12_Power_AbsCons, Raw data (Ba:
 - [-] r_Line_01_M13_Power_AbsCons, Raw data (Ba:

Select archives and variables...

| Parameters | Description |
|--|---|
| Production counter configuration | Settings for production counter. |
| List field | <p>Overview table with information on:</p> <ul style="list-style-type: none"> ▶ Selected project ▶ Selected equipment model ▶ Assignment for the total production counter ▶ Archive for counter variables ▶ Compression function of the counter variables in the archive |
| Configure production counter | <p>Clicking on the button opens the dialog for configuration (on page 673) of the product counter for Extended Historian reports.</p> <p>If the report is tied to a project using the time filter settings, the project is accepted here.</p> |
| Archive variables configuration | Settings for archive variables. |
| List field | <p>Displays current configuration</p> <p>Display schematic:</p> <ul style="list-style-type: none"> ▶ Project ▶ Archive ▶ Variable and data aggregation |
| Archive aggregation variable configuration | <p>Clicking on the button opens the dialog (on page 675) to configure the archive variables for Extended Historian Reports.</p> <p>The button is only active if the report was tied to a project via the upper grouping or the time filter settings.</p> |

Configuration of production counter

The total production counter for **Extended Historian Analysis** report templates is configured using a dialog. This dialog is configured by clicking on the `Configure production counter` button in the ZAMS report window:



The image shows a dialog box titled "Production counter configuration" with a close button (X) in the top right corner. The dialog is divided into several sections:

- General**
 - Project**: A dropdown menu with "ZAD_GBL" selected.
 - Equipment group**: A tree view with three items: "Plant", "Media", and "Total".
- Production counter variable**
 - Assignment for total units counter**: An empty text input field.
 - Archive for counter variables**: A dropdown menu.
 - Set default configuration**: A button.
- Validation**
 - Validate configuration**: A button.
 - An empty text area below the button.

At the bottom of the dialog are two buttons: "OK" and "Cancel".

GENERAL

| Parameters | Description |
|----------------|--|
| General | Selection of project and equipment model for the overall production counter. |
| Project | Selection of the project from the drop-down list. Deactivated if the report is tied to a project. |

EQUIPMENT GROUP

| Parameters | Description |
|-----------------|-----------------------------------|
| Equipment group | Selection of the equipment model. |

PRODUCTION COUNTER VARIABLE

| Parameters | Description |
|------------------------------------|---|
| Production counter variable | Settings for meaning, archives and aggregation function. |
| Assignment for total units counter | Input of the meaning for the counter variable for the total figure. Default: TotalUnits |
| Archive for counter variables | Selection of the archive for counter variable from drop-down list. |
| Set default configuration | Sets the values automatically: <ul style="list-style-type: none"> ▶ Meaning: TotalUnits ▶ Archive: Short description C1, if present in project ▶ Aggregation function: Raw value |

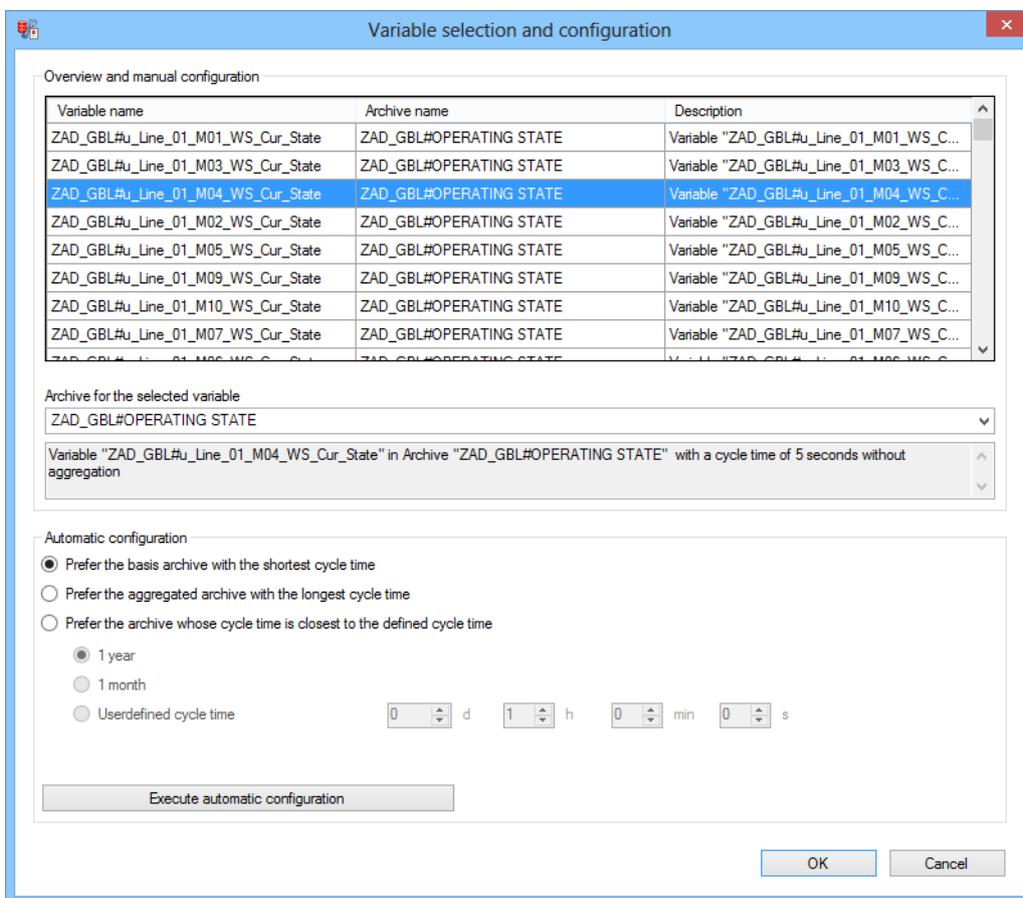
VALIDATION

| Parameters | Description |
|-------------------|--|
| Validation | Starts validation of the configuration. Results are displayed in the list field. |
| List field | Displays results of the validation. |

| | |
|---------------|---|
| OK | Applies all changes and closes the dialog. |
| Cancel | Discards all changes and closes the dialog. |

Archive variable configuration

Archive variables for extended Extended Historian reports are configured using a dialog. The dialog is opened by clicking on the `Configure archive` button in the ZAMS report window.



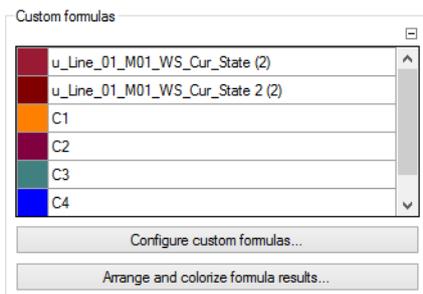
| Parameters | Description |
|--|---|
| Overview and manual configuration | <p>Overview table of the current configuration with a display of:</p> <ul style="list-style-type: none"> ▶ Variable name ▶ Archive name ▶ Description <p>If a variable is selected in the overview table, the drop-down list with all archives in which the variable is kept are filled.</p> |
| Archive for the selected variable | <p>Selection of the archive configuration for the variables selected in the list.</p> <p>The field below the drop-down list shows the description of the variables and the selected archive.</p> |
| Automatic configuration | <p>Settings for the automated configuration of all variables. There are different algorithms available for this:</p> <ul style="list-style-type: none"> ▶ Prefer the basis archive with the shortest cycle time ▶ Prefer the aggregated archive with the longest cycle time ▶ Prefer the archive whose cycle time is closest to the defined cycle time |
| Prefer the basis archive with the shortest cycle time | <p>For maximum resolution.</p> <p>Base archive with the lowest cycle time</p> |
| Prefer the aggregated archive with the longest cycle time | <p>For a minimum amount of data.</p> <p>Aggregated archive with the longest cycle time.</p> <p>Attention: Only the SUM compression type is used for the configuration in aggregated archives.</p> |
| Prefer the archive whose cycle time is closest to the defined cycle time | <p>User defined.</p> <p>The archive with the cycle time that has the lowest difference to the target cycle time is used. In doing so, an archive with a lower cycle time than the target cycle time is considered better than an archive with a cycle time that is too long.</p> |
| User-defined cycle time | Only available if the Prefer the archive whose cycle |

| | |
|---------------------------------|--|
| | <p>time is closest to the defined cycle time option has been activated.</p> <p>Definition of cycle time.</p> <p>There are three possibilities available to determine this:</p> <ul style="list-style-type: none"> ▶ 1 year ▶ 1 month ▶ User defined: <ul style="list-style-type: none"> days hours minutes seconds maximum: 1000 days |
| Execute automatic configuration | Clicking on the button starts the automated configuration. |
| OK | Clicking on the button accepts changes and closes the dialog. |
| Cancel | Clicking on the button discards the changes and closes the dialog. |

13.1.7 Custom formulas

Display and configuration of custom formulas. Custom formulas can be configured for:

- ▶ Reports without aggregation over the time range
- ▶ Reports with aggregation over the time range



| Parameters | Description |
|---|---|
| Custom formulas | List and buttons to display and configure user-defined formulas. |
| List of custom formulas | <p>Display all configured user-defined formulas.</p> <p>If individual colors are configured, these are displayed. Standard colors from the ZAMS color scheme are represented.</p> <p>Attention: If the configuration of a formula is changed, the individual sorting is lost.</p> |
| Configure custom formulas | <p>Opens the dialog to configure user-defined formulas (on page 678).</p> <p>The dialog is different for:</p> <ul style="list-style-type: none"> ▶ Reports without aggregation over the time range <ul style="list-style-type: none"> ▶ Reports with aggregation over the time range |
| Arrange and colorize formula results | Opens the dialog to sort and color (on page 712) user-defined formulas. |

13.1.8 Configure custom formulas

Custom formulas can be configured for:

- ▶ Reports without aggregation over the time range
- ▶ Reports with aggregation over the time range

CONFIGURATION OF CUSTOM FORMULAS WITHOUT AGGREGATION

Custom formulas configuration ✕

Variables selection Costs calculation Constant Fields Calculated fields

| | | | | | | |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---|
| Project name | Archive name | Variable name | Measuring unit | Meanings | Equipment groups | |
| <input type="text"/> | <input type="button" value="Apply"/> <input type="button" value="Clear"/> |

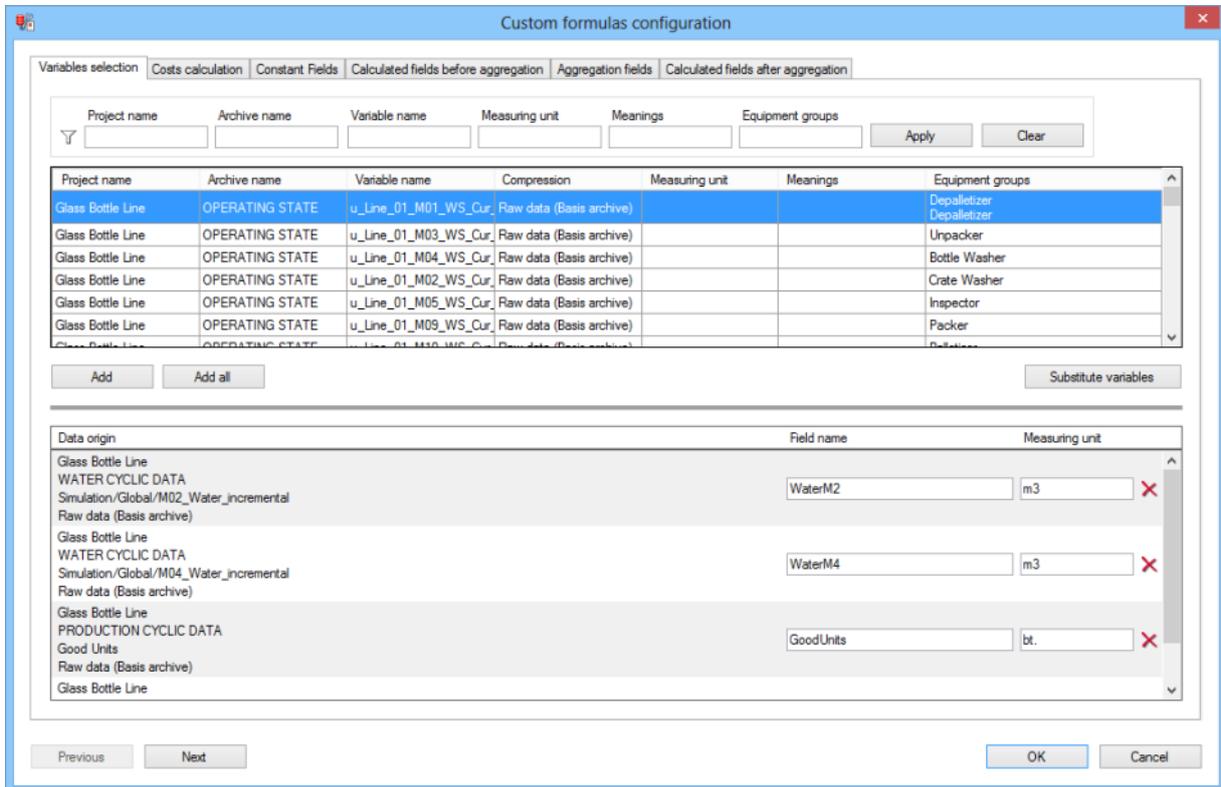
| Project name | Archive name | Variable name | Compression | Measuring unit | Meanings | Equipment groups |
|-------------------|-----------------|----------------------|--------------------------|----------------|----------|------------------------------|
| Glass Bottle Line | OPERATING STATE | u_Line_01_M01_WS_Cur | Raw data (Basis archive) | | | Depalletizer Depalletizer |
| Glass Bottle Line | OPERATING STATE | u_Line_01_M03_WS_Cur | Raw data (Basis archive) | | | Unpacker |
| Glass Bottle Line | OPERATING STATE | u_Line_01_M04_WS_Cur | Raw data (Basis archive) | | | Bottle Washer |
| Glass Bottle Line | OPERATING STATE | u_Line_01_M02_WS_Cur | Raw data (Basis archive) | | | Crate Washer |
| Glass Bottle Line | OPERATING STATE | u_Line_01_M05_WS_Cur | Raw data (Basis archive) | | | Inspector |
| Glass Bottle Line | OPERATING STATE | u_Line_01_M09_WS_Cur | Raw data (Basis archive) | | | Packer |
| Glass Bottle Line | OPERATING STATE | u_Line_01_M10_WS_Cur | Raw data (Basis archive) | | | Palletizer |
| Glass Bottle Line | OPERATING STATE | u_Line_01_M07_WS_Cur | Raw data (Basis archive) | | | Filler Filler |
| Glass Bottle Line | OPERATING STATE | u_Line_01_M06_WS_Cur | Raw data (Basis archive) | | | Pasteurizer |

| Variable visibility | Data origin | Field name | Measuring unit |
|---|---|---|---|
| <input checked="" type="checkbox"/> Visible in report | CIP COUNTERS temp.process Raw data (Basis archive) | <input type="text" value="temp.process"/> | <input type="text" value="°C"/> ✕ |
| <input checked="" type="checkbox"/> Visible in report | CIP COUNTERS conc.concprocess Raw data (Basis archive) | <input type="text" value="conc.concprocess"/> | <input type="text" value="mS/cm"/> ✕ |
| | CIP COUNTERS | | |

| Parameters | Description |
|--|--|
| Variables selection (on page 682) | Selection of which fields are to be read with which variable values from which archives. |
| Cost calculation (on page 690) | Selection of which variable raw data fields should have cost fields. |
| Constant Fields (on page 692) | Definition of constant values. |
| Calculated Field | Configuration of formulas with fields from the other tabs. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. Only available if all necessary configuration has been carried out. |
| Cancel | Discards all changes in all tabs and closes the dialog. If data has already been entered, a request for confirmation is made before the changes are discarded. |

The size and position of the dialog can be changed. These settings are saved as user-dependent.

CONFIGURATION OF CUSTOM FORMULAS WITH AGGREGATION



| Parameters | Description |
|---|--|
| Variables selection (on page 682) | Selection of which fields are to be read with which variable values from which archives. |
| Cost calculation (on page 690) | Selection of which variable raw data fields should have cost fields. |
| Constant Fields (on page 692) | Definition of constant values. |
| Calculated fields before aggregation (on page 696) | Configuration of formulas with fields from the other tabs. |
| Aggregation fields (on page 699) | Configuration of aggregation from all fields of the previous tabs. |
| Calculated fields after aggregation (on page 702) | Configuration of formulas with fields from the Configuration fields (on page 699) tab. |

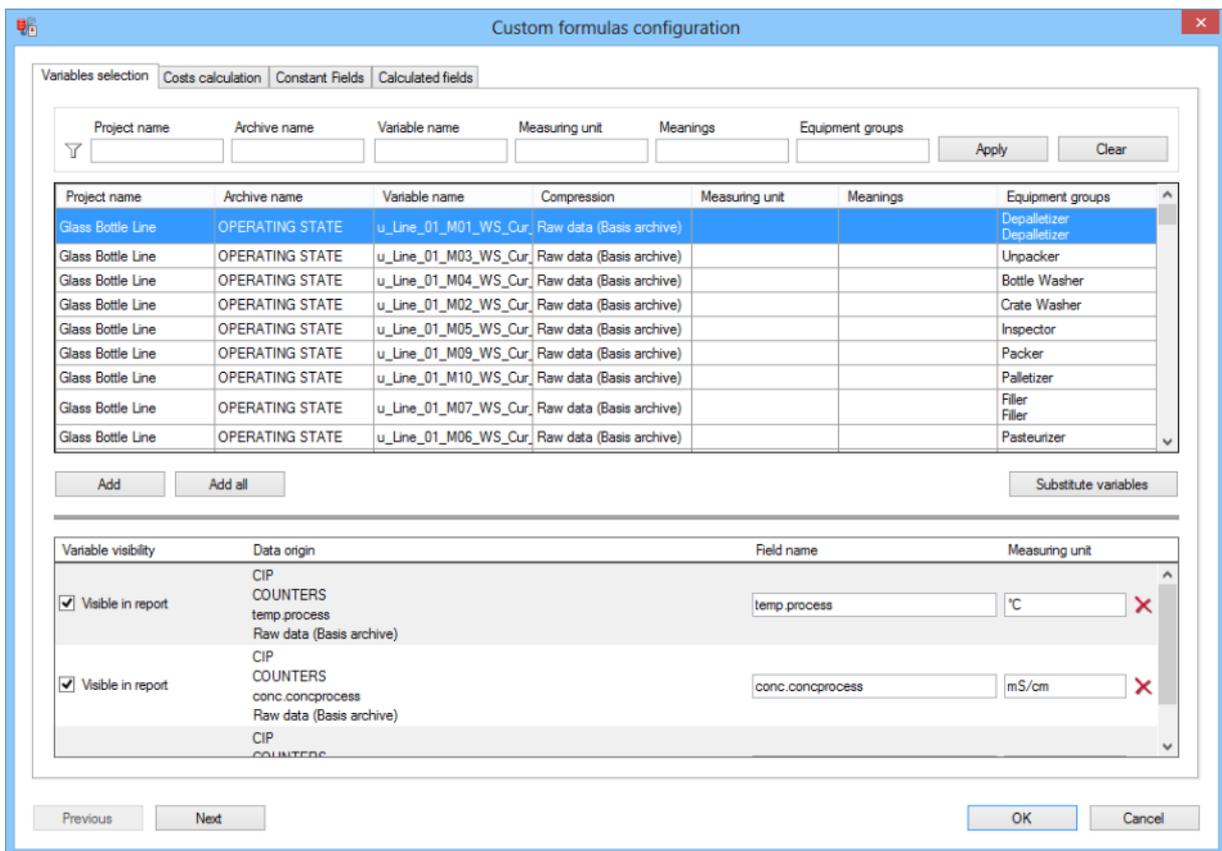
| | |
|-----------------|--|
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. Only available if all necessary configuration has been carried out. |
| Cancel | Discards all changes in all tabs and closes the dialog. If data has already been entered, a request for confirmation is made before the changes are discarded. |

The size and position of the dialog can be changed. These settings are saved as user-dependent.

Variables selection

In this tab, which fields are to be read, and with which variable values, and from which archives is configured.

In the upper area of the tab, metadata is displayed; fields are displayed in the lower area.



Custom formulas configuration

Variables selection | Costs calculation | Constant Fields | Calculated fields

Project name: Archive name: Variable name: Measuring unit: Meanings: Equipment groups:

| Project name | Archive name | Variable name | Compression | Measuring unit | Meanings | Equipment groups |
|-------------------|-----------------|-----------------------|--------------------------|----------------|----------|------------------------------|
| Glass Bottle Line | OPERATING STATE | u_Line_01_M01_WS_Cur_ | Raw data (Basis archive) | | | Depalletizer Depalletizer |
| Glass Bottle Line | OPERATING STATE | u_Line_01_M03_WS_Cur_ | Raw data (Basis archive) | | | Unpacker |
| Glass Bottle Line | OPERATING STATE | u_Line_01_M04_WS_Cur_ | Raw data (Basis archive) | | | Bottle Washer |
| Glass Bottle Line | OPERATING STATE | u_Line_01_M02_WS_Cur_ | Raw data (Basis archive) | | | Crate Washer |
| Glass Bottle Line | OPERATING STATE | u_Line_01_M05_WS_Cur_ | Raw data (Basis archive) | | | Inspector |
| Glass Bottle Line | OPERATING STATE | u_Line_01_M09_WS_Cur_ | Raw data (Basis archive) | | | Packer |
| Glass Bottle Line | OPERATING STATE | u_Line_01_M10_WS_Cur_ | Raw data (Basis archive) | | | Palletizer |
| Glass Bottle Line | OPERATING STATE | u_Line_01_M07_WS_Cur_ | Raw data (Basis archive) | | | Filler Filler |
| Glass Bottle Line | OPERATING STATE | u_Line_01_M06_WS_Cur_ | Raw data (Basis archive) | | | Pasteurizer |

| Variable visibility | Data origin | Field name | Measuring unit |
|---|---|------------------|----------------|
| <input checked="" type="checkbox"/> Visible in report | CIP COUNTERS temp.process Raw data (Basis archive) | temp.process | °C |
| <input checked="" type="checkbox"/> Visible in report | CIP COUNTERS conc.concprocess Raw data (Basis archive) | conc.concprocess | mS/cm |

| Parameters | Description |
|-----------------------|--|
| Metadata area | Filtering and selecting the metadata. |
| Filter | <p>Selection of the filters to be applied on the Metadata table. The following is available:</p> <ul style="list-style-type: none"> ▶ Project name ▶ Archive name ▶ Variable name ▶ Measuring unit ▶ Meanings ▶ Equipment Groups <p>The filtering is carried out by entering a sequence of characters in the desired input fields. Clicking on the Apply button updates the list.</p> <p>You can use wild cards here:</p> <ul style="list-style-type: none"> ▶ ?: precisely 1 desired character. ▶ *: any desired number of any desired characters ▶ If no wildcard is used, a * is automatically attached to the filter text. <p>The filters are linked with a logical AND. This means that a row must meet all filter criteria in order for it to be displayed.</p> |
| Apply | Applies filter criteria to the Metadata table . |
| Delete | Deletes the content of all filter fields, resets the filter and displays all rows in the Metadata table . |
| Metadata table | <p>Lists all existing metadata. These can be shown with filtering and added to the Field area.</p> <p>Rows of the table can be highlighted for selection. Multiple-selection is possible using the key combination Ctrl+mouse click or shift+mouse click.</p> |
| Add | <p>Clicking adds a field in the field area for each row highlighted in the table. Variables can also be added by double clicking.</p> <p>in doing so, a combination of variables, archive and aggregation of variables in the archive can always only occur once as a field.</p> |

| | |
|--|--|
| | Attempts to add an existing combination again are ignored. |
|--|--|

| | |
|--------------------------|--|
| Add all | <p>Clicking adds a field in the field area for each row visible in the table.</p> <p>in doing so, a combination of variables, archive and aggregation of variables in the archive can always only occur once as a field. Attempts to add an existing combination again are ignored.</p> <p>Invisible rows, which are suppressed by the filter, are ignored.</p> |
| Replace variables | <p>Opens the dialog to replace variables (on page 686) in calculated fields. Only available if there is at least one variable in the field area.</p> <p>If invalid variable assignments are detected when the Configure custom formulas dialog is opened, the dialog to replace these is opened automatically.</p> |
| Field area | <p>Contains a row for each field.</p> <p>The following parameters are displayed:</p> <ul style="list-style-type: none"> ▶ Variable visibility: Stipulates if this field is visible in the report. Is not available for Formulas with aggregation. ▶ Data origin: Project name, archive name, variable name and aggregation of the variables in the archive are displayed. ▶ Field name: Is used for the display of the field in other areas of this dialog and in the report. Standard: Variable name from the metadata. ▶ Measuring unit: Unit of the field. |
| Visible in report | <p>Active: This field is visible in the report.</p> <p>Default: <i>inactive</i></p> <p>Is not available for Formulas with aggregation, because variable raw data fields cannot be visible with aggregation in the report.</p> |
| Field name | <p>Is used for the display of the field in other areas of this dialog and in the report.</p> <ul style="list-style-type: none"> ▶ Must be unique. ▶ Must not be empty. <p>Maximum: 256 characters</p> <p>Default: Variable name from the metadata.</p> |

| | |
|----------------|---|
| | However if this would lead to a clash, a counter is added to the name. |
| Measuring unit | Unit of the field. Maximum: 256 characters Default: Variable unit from the metadata. |
| X | Clicking on the button deletes the field. If a different field relates to the field to be deleted, you are asked to confirm deletion beforehand. If this is confirmed, this field and all (including indirect) fields thereof are deleted. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. Only available if all necessary configuration has been carried out. |
| Cancel | Discards all changes in all tabs and closes the dialog. If data has already been entered, a request for confirmation is made before the changes are discarded. |

Replacing variables in calculated fields

The dialog makes it possible to replace variables that have been assigned to fields with other variables.

The dialog is opened

- ▶ Manually, by clicking on the **Replace variables** button in the **Variable Selection** tab.
This button is only available if there is at least one field with assigned variables.

- ▶ Automatically if, when opening the **Configure custom formulas** (on page 678) dialog, invalid assignments of variables to fields are detected.

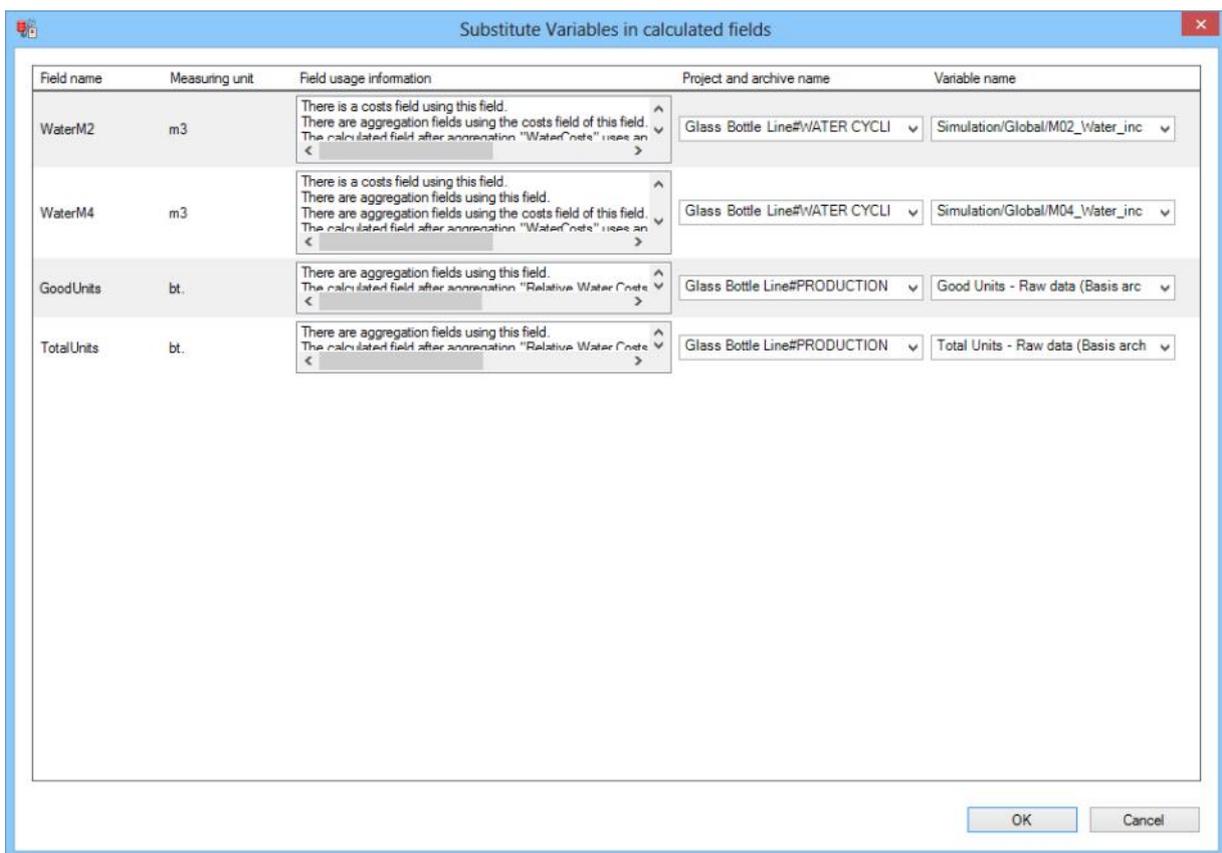
A variable reference is invalid if the combination of archive, variable and aggregation used does

not exist in the connected metadata database.

The possible causes could be, among other things: Variables have been deleted from the database or the report is opened for another metadata database. If the automatically-opened dialog is closed, configuration is also ended. Invalid assignments must be removed from further configuration.

Attention: Variables are identified by means of their ID, not their name.

DIALOG TO REPLACE VARIABLES IN CALCULATED FIELDS



| Parameters | Description |
|--------------------------------|--|
| Field name | <p>Displays the field name for each element of the list.</p> <p>Very long field names are shown in shortened form (suffix: . . .). The complete text is shown in the tool tip.</p> |
| Measuring unit | <p>Displays the measuring unit of the field.</p> <p>Very long measuring units are shown in shortened form (suffix: . . .). The complete text is shown in the tool tip.</p> |
| Field usage information | <p>Shows which fields depend on this field.</p> |
| Project and archive name | <p>Selection of the archive from a drop-down list, from which the variable for this field is to be read. All available archives including project relationship are offered for selection.</p> <p>Archive name syntax: [Projectname]#[Archivename]</p> <p>Initial value when calling up, if the variable reference of the field:</p> <ul style="list-style-type: none"> ▶ invalid: empty ▶ valid: The archive stated in the variable reference. |
| Variable name | <p>Selection of the variables from a drop-down list, from which the value for this field is to be read.</p> <p>Only available if an archive has been selected in the <code>Project and archive name</code> column. All variables recorded in the selected archive, including aggregation, are offered.</p> <p>Variable name syntax: [Variablename] – [Aggregation type in the archive]</p> <p>Each time a change is made to the <code>Project and archive name</code> column, the drop-down list is filled again and reset to "no selection". Initial value when calling up, if the variable reference of the field:</p> <ul style="list-style-type: none"> ▶ invalid: empty ▶ valid: The variable stated in the variable reference and aggregation type. |

| | |
|---------------|---|
| OK | <p>Validates and closes the dialog.</p> <p>In the event of a validation error, the dialog remains open and a message is shown accordingly.</p> |
| Cancel | <p>Cancels the replacement of variables.</p> <p>If the dialog was opened automatically, the configuration of the user-defined errors is canceled after confirmation is requested.</p> |

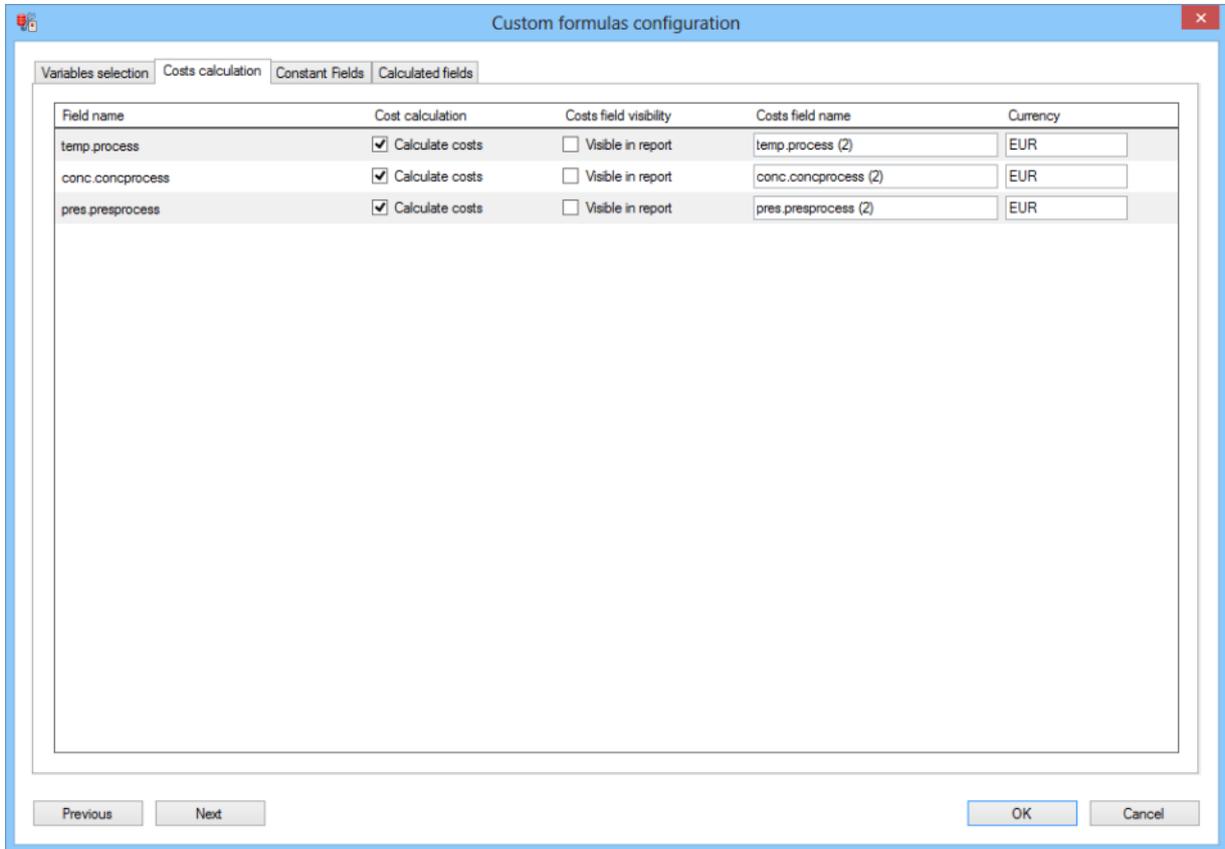
PROCEDURE

Procedure when replacing variables in calculated fields:

1. All variable fields are obtained.
2. The dependencies of the variable fields are obtained and assigned to the respective variable field:
 - a) Cost fields that depend on variable fields.
 - b) Calculated fields before aggregation that use variable fields or cost fields. For reports without aggregation, there are only calculated fields before aggregation.
 - c) Aggregation fields that use variable fields or cost fields (only for reports with aggregation).
 - d) Calculated fields after aggregation that use aggregation fields (only for reports with aggregation).
3. The variable references of all variable fields are resolved. No selection is assumed in the event of an invalid variable reference.
4. The dialog to replace variables in calculated fields is called up with the previously-determined data. The dialog is transferred if there were invalid variable references before being called up and the procedure was thus started automatically.
 - a) If the user closes the dialog with **OK**, the process continues.
 - b) If the user closes the dialog by canceling or the dialog is canceled due to an error, the process is ended.
5. The new variable references for each variable field are read from the dialog.
6. The variable fields are each updated with their new variable reference.
7. The variable field list is created again

Cost calculation

In this tab, the variable raw data fields for which there are to be cost fields are defined.



| Field name | Cost calculation | Costs field visibility | Costs field name | Currency |
|------------------|---|--|----------------------|----------|
| temp.process | <input checked="" type="checkbox"/> Calculate costs | <input type="checkbox"/> Visible in report | temp.process (2) | EUR |
| conc.concprocess | <input checked="" type="checkbox"/> Calculate costs | <input type="checkbox"/> Visible in report | conc.concprocess (2) | EUR |
| pres.presprocess | <input checked="" type="checkbox"/> Calculate costs | <input type="checkbox"/> Visible in report | pres.presprocess (2) | EUR |

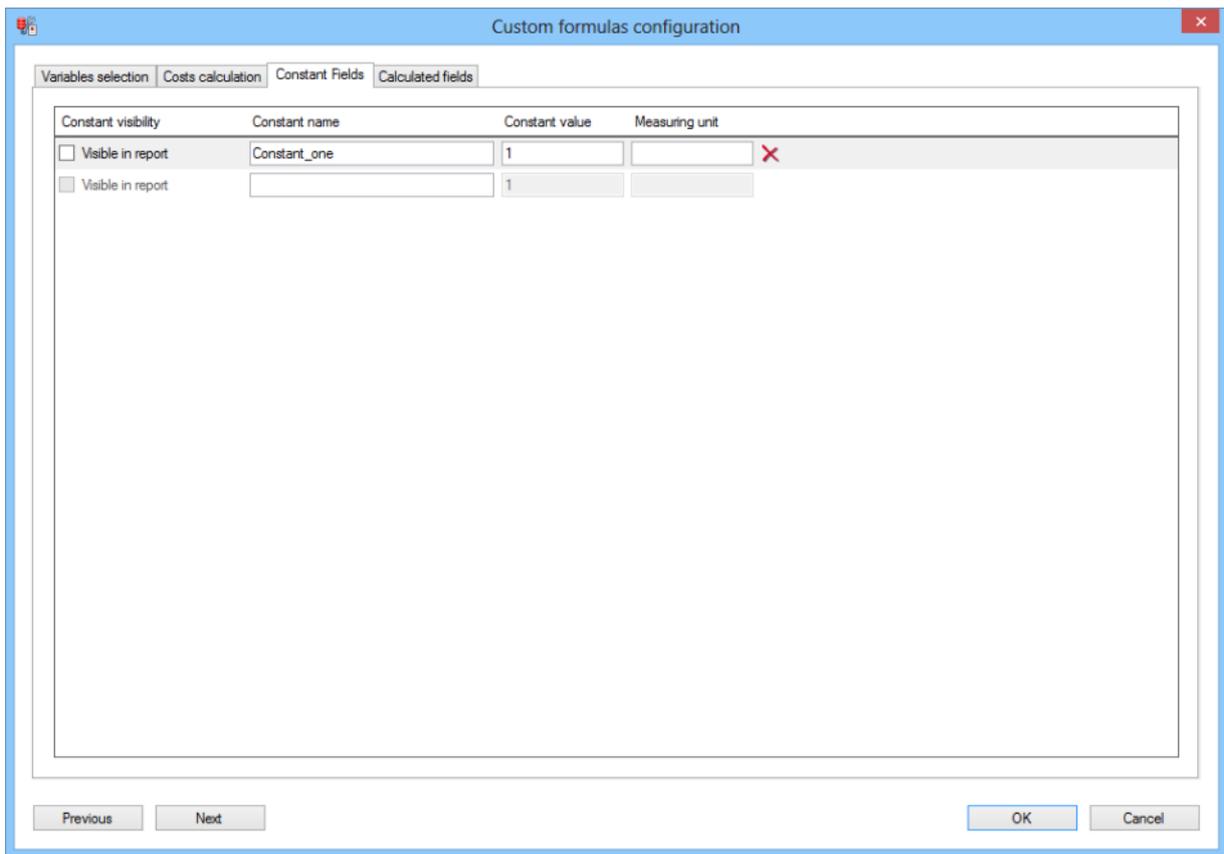
Previous Next OK Cancel

| Parameters | Description |
|------------------------|---|
| Table of fields | Table with fields to calculate costs. |
| Field name | Display of the field name from the variable selection (on page 682). |
| Cost calculation | <p>Active: There is a cost field for this variable raw data field.</p> <p>If another field relates to this cost field and an attempt is made to set the checkbox to inactive, you are asked to confirm this. If the user confirms this, this cost field and all (including indirect) dependent fields are deleted.</p> <p>Default: <i>inactive</i></p> <p>The availability of the other fields depends on the status of the checkbox.</p> |
| Costs field visibility | <p>Active: Cost field is visible in the report.</p> <p>Default: <i>inactive</i></p> <p>Is not available for Formulas with aggregation, because cost fields cannot be visible in the report.</p> |
| Costs field name | <p>Is used for the display of the field in other areas of this dialog and in the report.</p> <ul style="list-style-type: none"> ▶ Must be unique. ▶ Must not be empty. <p>Maximum: 256 characters</p> <p>Default: Variable name from the metadata to which this cost field is assigned. However if this would lead to a clash, a counter is added to the name.</p> |
| Currency | <p>Stipulation of the unit (currency) of the cost field.</p> <p>Maximum: 256 characters</p> <p>Default: The first currency in the alphabet that is assigned to the variables in the metadata, from which the variable raw data field is fed in.</p> |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | <p>Applies all changes in all tabs and closes the dialog.</p> <p>Only available if all necessary configuration has been carried out.</p> |
| Cancel | Discards all changes in all tabs and closes the dialog. If data has already been entered, a request for confirmation is made before the changes are |

| | |
|--|------------|
| | discarded. |
|--|------------|

Constant Fields

Constant values are defined in this tab.



| Constant visibility | Constant name | Constant value | Measuring unit |
|--|---------------|----------------|----------------|
| <input type="checkbox"/> Visible in report | Constant_one | 1 | X |
| <input type="checkbox"/> Visible in report | | 1 | |

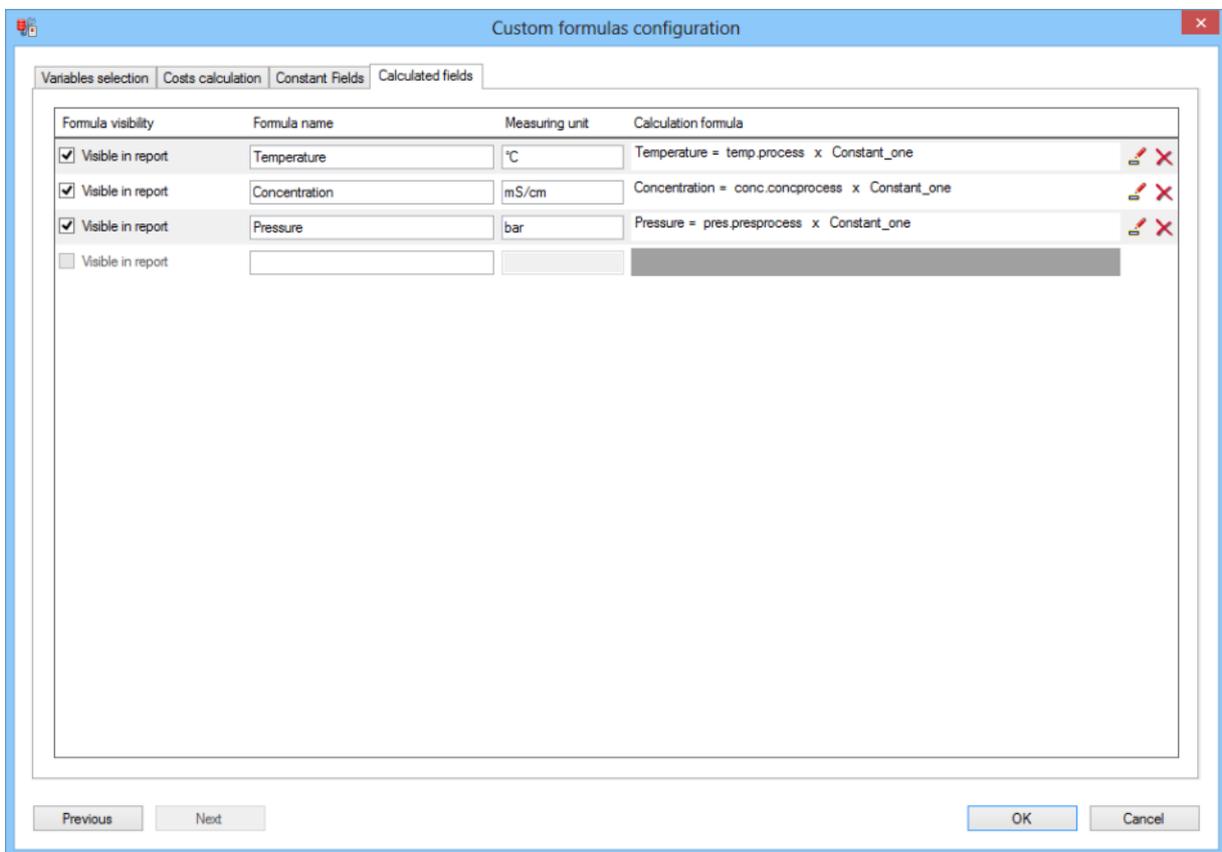
| Parameters | Description |
|---------------------|--|
| List of fields | Lists all configured fields with constant values. |
| New | Clicking on the button adds a new line with a new constant. |
| Constant visibility | <p>Active: This field is visible in the report.</p> <p>Default: inactive</p> <p>Is not available for Formulas with aggregation, because constant fields cannot be visible in the report.</p> |
| Constant name | <p>Is used for the display of the field in other areas of this dialog and in the report.</p> <ul style="list-style-type: none"> ▶ Must be unique. ▶ Must not be empty. <p>Maximum: 256 characters</p> <p>Default: Variable name from the metadata.</p> <p>However if this would lead to a clash, a counter is added to the name.</p> |
| Constant value | <p>Input of the constant value.</p> <ul style="list-style-type: none"> ▶ Must not be empty. ▶ Must contain a valid floating point number (whole numbers are valid floating point numbers). <p>Default: 1</p> |
| Measuring unit | <p>Determining the unit of the field.</p> <p>Maximum: 256 characters</p> <p>Default: empty</p> |
| X | <p>Clicking on the button deletes the field.</p> <p>If a different field relates to the field to be deleted, you are asked to confirm deletion beforehand. If this is confirmed, this field and all (including indirect) fields thereof are deleted.</p> |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. |

| | |
|---------------|--|
| | Only available if all necessary configuration has been carried out. |
| Cancel | Discards all changes in all tabs and closes the dialog. If data has already been entered, a request for confirmation is made before the changes are discarded. |

Calculated Field

Only available for reports without aggregation.

Formulas for reports without aggregation over the time range are configured in this tab. These can use all the fields defined in the previous tabs. Each formula corresponds to a line in the list of formulas. In doing so, each formula can address all fields defined before it (lines above the line in question).



| Parameters | Description |
|---------------------|--|
| List of formulas | Lists all configured formulas. |
| Formula visibility | Displays visibility in the report. |
| Visible in report | <p>Active: Formula is visible in the report.</p> <p>Default. inactive</p> <p>Not available for Formulas with aggregation, because base data formula fields cannot be visible with aggregation in the report.</p> |
| Formula name | <p>Is used for the display of the field in other areas of this dialog and in the report.</p> <ul style="list-style-type: none"> ▶ Must be unique. ▶ Must not be empty. <p>Maximum: 256 characters</p> <p>Only once a valid name has been issued are all other elements unlocked for editing. There is always an empty line displayed, for entering a new formula.</p> <p>In addition, a valid formula must be entered.</p> |
| Measuring unit | <p>Determining the unit of the field.</p> <p>Maximum: 256 characters</p> |
| Calculation formula | <p>Preview screen of the formula. Displays the calculation formula set in the formula editor for this field. If the name of one of the fields referenced in the formula is changed, the preview screen is removed.</p> <p>A formula must be configured for each formula name.</p> |
| Symbol: Edit | Clicking on the button opens the formula editor to edit the formula. |
| Symbol: Delete | <p>Clicking on the button deletes the field.</p> <p>If a different field relates to the field to be deleted, you are asked to confirm deletion beforehand. If this is confirmed, this field and all (including indirect) fields thereof are deleted.</p> |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | <p>Applies all changes in all tabs and closes the dialog.</p> <p>Only available if all necessary configuration has been carried out.</p> |

| | |
|---------------|--|
| Cancel | Discards all changes in all tabs and closes the dialog. If data has already been entered, a request for confirmation is made before the changes are discarded. |
|---------------|--|

SORTING

When closing this dialog by clicking on **OK**, the element sorting is adjusted to the original element sorting. In doing so, the sorting numbers are recreated in accordance with the following criteria:

- ▶ All elements that were already visible before the dialog was started and have not been deleted are retained in the sorting.
- ▶ New visible elements are inserted behind these elements, with a consecutive number after their ID.

Example:

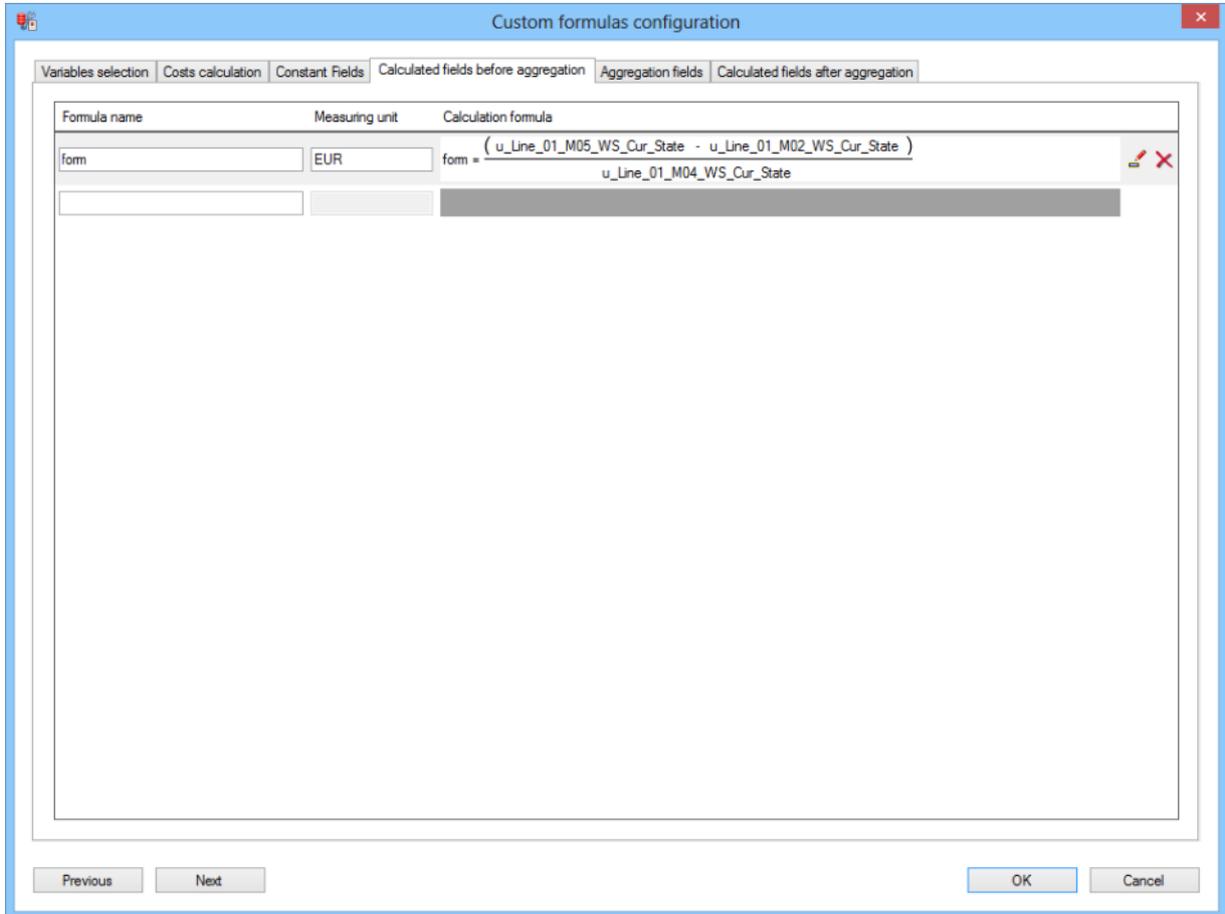
- ▶ Basis:
 - Indicator1: ID = 3
 - Indicator2: ID = 2
 - Indicator3: ID = 1
- ▶ Changes in the dialog:
 - Indicator2: is deleted.
 - Indicator0: is added and gets ID 1
 - Indicator4: is added and gets ID 4
- ▶ Result:
 - Indicator1: ID = 3, but previous sorting = 1
 - Indicator3: ID = 2, but previous sorting = 3
 - Indicator0: ID = 1, no previous sorting

Indicator4: ID = 4, no previous sorting

Calculated fields before aggregation

Only available for reports with aggregation.

Formulas for reports with aggregation over the time range are configured in this tab. These can use all the fields defined in the previous tabs. Each formula corresponds to a line in the list of formulas. In doing so, each formula can address all fields defined before it (lines above the line in question).



| Formula name | Measuring unit | Calculation formula |
|--------------|----------------|--|
| form | EUR | $\frac{(u_Line_01_M05_WS_Cur_State - u_Line_01_M02_WS_Cur_State)}{u_Line_01_M04_WS_Cur_State}$ |
| | | |

| Parameters | Description |
|----------------------------|--|
| List of formulas | Lists all configured formulas. |
| Formula name | <p>Is used for the display of the field in other areas of this dialog and in the report.</p> <ul style="list-style-type: none"> ▶ Must be unique. ▶ Must not be empty. <p>Maximum: 256 characters</p> <p>Only once a valid name has been issued are all other elements unlocked for editing. There is always an empty line displayed, for entering a new formula.</p> <p>In addition, a valid formula must be entered.</p> |
| Measuring unit | <p>Determining the unit of the field.</p> <p>Maximum: 256 characters</p> |
| Calculation formula | <p>Preview screen of the formula. Displays the calculation formula set in the formula editor for this field. If the name of one of the fields referenced in the formula is changed, the preview screen is removed.</p> <p>A formula must be configured for each <code>formula name</code>.</p> |
| Symbol: Edit | Clicking on the button opens the formula editor to edit the formula. |
| Symbol: Delete | <p>Clicking on the button deletes the field.</p> <p>If a different field relates to the field to be deleted, you are asked to confirm deletion beforehand. If this is confirmed, this field and all (including indirect) fields thereof are deleted.</p> |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | <p>Applies all changes in all tabs and closes the dialog.</p> <p>Only available if all necessary configuration has been carried out.</p> |
| Cancel | Discards all changes in all tabs and closes the dialog. If data has already been entered, a request for confirmation is made before the changes are discarded. |

SORTING

When closing this dialog by clicking on α , the element sorting is adjusted to the original element sorting. In doing so, the sorting numbers are recreated in accordance with the following criteria:

- ▶ All elements that were already visible before the dialog was started and have not been deleted are retained in the sorting.
- ▶ New visible elements are inserted behind these elements, with a consecutive number after their ID.

Example:

- ▶ Basis:
 - Indicator1: ID = 3
 - Indicator2: ID = 2
 - Indicator3: ID = 1
- ▶ Changes in the dialog:
 - Indicator2: is deleted.
 - Indicator0: is added and gets ID 1
 - Indicator4: is added and gets ID 4
- ▶ Result:
 - Indicator1: ID = 3, but previous sorting = 1
 - Indicator3: ID = 2, but previous sorting = 3
 - Indicator0: ID = 1, no previous sorting
 - Indicator4: ID = 4, no previous sorting

Aggregation fields

Only available for reports without aggregation.

Aggregations for fields from the previous tabs are configured in this tab. Each one is entered in its own row.

There are two types of row:

- ▶ Constant Fields: Only have one subline for the constant aggregation.
- ▶ All other fields: Have a subline each for the aggregation functions that are independent from one another:

- Sum
- Average
- Minimum
- Maximum

Custom formulas Configuration

Variables selection | Costs calculation | Constant Fields | Calculated fields before aggregation | **Aggregation fields** | Calculated fields after aggregation

| Field name | Active aggregation types | Aggregation field visibility | Aggregation field name | Aggregation field unit |
|------------------------------|---|---|----------------------------------|------------------------|
| u_Line_01_M01_WS_Cur_State | <input type="checkbox"/> Sum | <input type="checkbox"/> Visible in report | u_Line_01_M01_WS_Cur_State (2) | EUR |
| | <input type="checkbox"/> Average | <input type="checkbox"/> Visible in report | u_Line_01_M01_WS_Cur_State (3) | EUR |
| | <input type="checkbox"/> Minimum | <input type="checkbox"/> Visible in report | u_Line_01_M01_WS_Cur_State (4) | EUR |
| | <input type="checkbox"/> Maximum | <input type="checkbox"/> Visible in report | u_Line_01_M01_WS_Cur_State (5) | EUR |
| u_Line_01_M01_WS_Cur_State 2 | <input type="checkbox"/> Sum | <input checked="" type="checkbox"/> Visible in report | u_Line_01_M01_WS_Cur_State 2 (2) | |
| | <input type="checkbox"/> Average | <input checked="" type="checkbox"/> Visible in report | u_Line_01_M01_WS_Cur_State 2 (3) | |
| | <input type="checkbox"/> Minimum | <input checked="" type="checkbox"/> Visible in report | u_Line_01_M01_WS_Cur_State 2 (4) | |
| | <input type="checkbox"/> Maximum | <input checked="" type="checkbox"/> Visible in report | u_Line_01_M01_WS_Cur_State 2 (5) | |
| New constant | <input type="checkbox"/> Constant value | <input type="checkbox"/> Visible in report | New constant | |
| New Field | <input type="checkbox"/> Sum | <input checked="" type="checkbox"/> Visible in report | New Field (2) | |
| | <input type="checkbox"/> Average | <input checked="" type="checkbox"/> Visible in report | New Field (3) | |
| | <input type="checkbox"/> Minimum | <input checked="" type="checkbox"/> Visible in report | New Field (4) | |
| | <input type="checkbox"/> Maximum | <input checked="" type="checkbox"/> Visible in report | New Field (5) | |

Previous Next OK Cancel

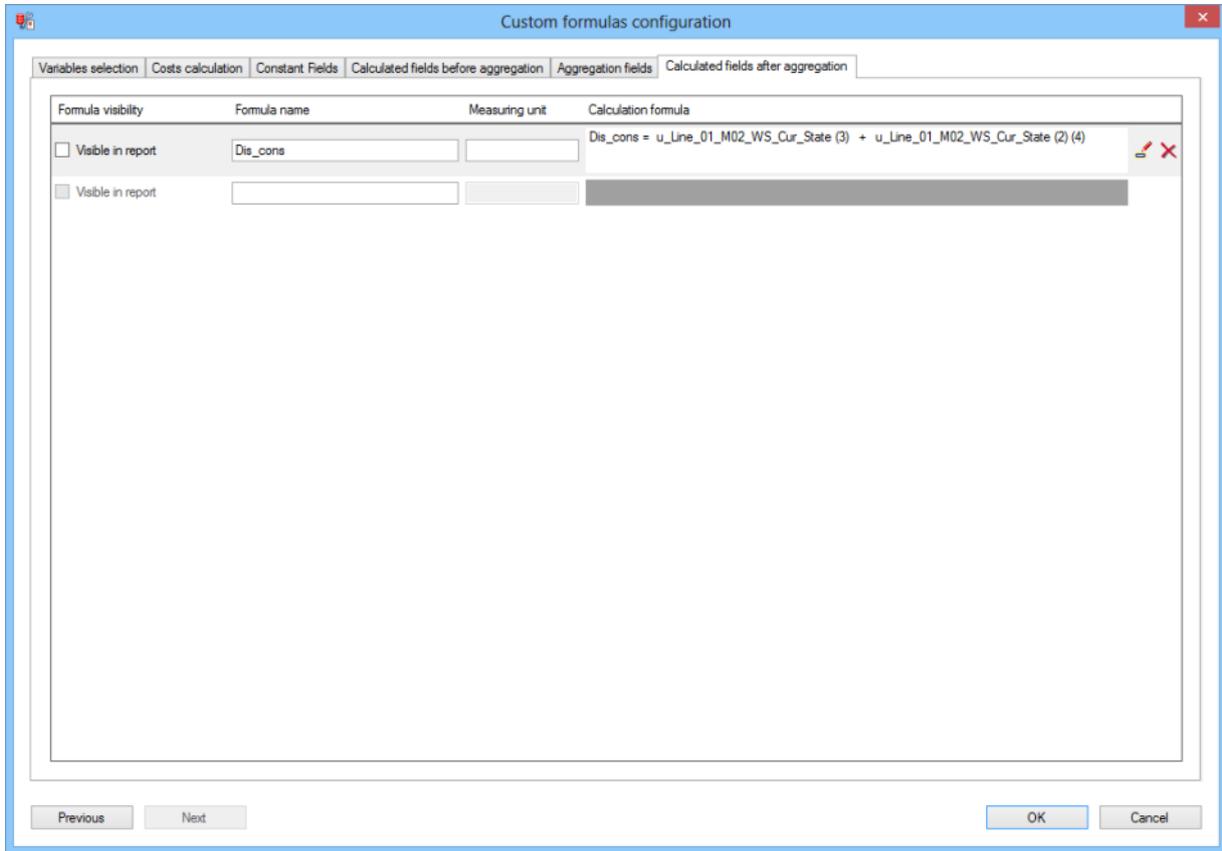
| Parameters | Description |
|------------------------------|--|
| List of aggregations | Lists all configured aggregations. |
| Field name | Display of the field name of the aggregated field. |
| Active aggregation types | <p>Display of the status of the aggregation types.</p> <p>Checkbox in front of the <code>active</code> aggregation type: There is an aggregation field with this type of compression for this base data field</p> <p>If another field relates to this aggregation field and an attempt is made to deactivate the checkbox, you are asked to confirm this. If the user confirms this, this aggregation field and all (including indirect) dependent fields are deleted.</p> <p>Default: <code>Checkbox inactive</code></p> <p>The status of the checkbox determines whether the other input fields are active or not.</p> |
| Aggregation field visibility | Shows if this aggregation field is visible in the report. |
| | <p>Active: Aggregation field is visible in the report.</p> <p>Default: <code>inactive</code></p> |

| | |
|------------------------|---|
| Aggregation field name | <p>Is used for the display of the field in other areas of this dialog and in the report.</p> <ul style="list-style-type: none"> ▶ Must be unique. ▶ Must not be empty. <p>Maximum: 256 characters</p> <p>Default: Name of the base data field that is assigned to the archive. If this would lead to a clash, a counter is added.</p> |
| Aggregation field unit | <p>Stipulation of the unit of the aggregation field.</p> <p>Maximum: 256 characters</p> <p>Default: Unit of the base data field.</p> |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | <p>Applies all changes in all tabs and closes the dialog.</p> <p>Only available if all necessary configuration has been carried out.</p> |
| Cancel | Discards all changes in all tabs and closes the dialog. If data has already been entered, a request for confirmation is made before the changes are discarded. |

Calculated fields after aggregation

Only available for reports with aggregation.

In this tab, formulas with fields from the Aggregation fields (on page 699) tab are configured. In doing so, each formula can address all fields defined before it (lines above the line in question).



The screenshot shows a dialog box titled "Custom formulas configuration" with a tabbed interface. The "Aggregation fields" tab is selected. The dialog contains a table with the following columns: "Formula visibility", "Formula name", "Measuring unit", and "Calculation formula".

| Formula visibility | Formula name | Measuring unit | Calculation formula |
|--|--------------|----------------|--|
| <input type="checkbox"/> Visible in report | Dis_cons | | Dis_cons = u_Line_01_M02_WS_Cur_State (3) + u_Line_01_M02_WS_Cur_State (2) (4) |
| <input type="checkbox"/> Visible in report | | | |

At the bottom of the dialog, there are buttons for "Previous", "Next", "OK", and "Cancel".

| Parameters | Description |
|---------------------|--|
| List of formulas | Lists all configured formulas. |
| Formula visibility | Displays visibility in the report. |
| Visible in report | <p>Active: Formula is visible in the report.</p> <p>Default. inactive</p> <p>Not available for Formulas with aggregation, because base data formula fields cannot be visible with aggregation in the report.</p> |
| Formula name | <p>Is used for the display of the field in other areas of this dialog and in the report.</p> <ul style="list-style-type: none"> ▶ Must be unique. ▶ Must not be empty. <p>Maximum: 256 characters</p> <p>Only once a valid name has been issued are all other elements unlocked for editing. There is always an empty line displayed, for entering a new formula.</p> <p>In addition, a valid formula must be entered.</p> |
| Measuring unit | <p>Determining the unit of the field.</p> <p>Maximum: 256 characters</p> |
| Calculation formula | <p>Preview screen of the formula. Displays the calculation formula set in the formula editor for this field. If the name of one of the fields referenced in the formula is changed, the preview screen is removed.</p> <p>A formula must be configured for each formula name.</p> |
| Symbol: Edit | Clicking on the button opens the formula editor to edit the formula. |
| Symbol: Delete | <p>Clicking on the button deletes the field.</p> <p>If a different field relates to the field to be deleted, you are asked to confirm deletion beforehand. If this is confirmed, this field and all (including indirect) fields thereof are deleted.</p> |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | <p>Applies all changes in all tabs and closes the dialog.</p> <p>Only available if all necessary configuration has been carried out.</p> |

| | |
|---------------|--|
| Cancel | Discards all changes in all tabs and closes the dialog. If data has already been entered, a request for confirmation is made before the changes are discarded. |
|---------------|--|

SORTING

When closing this dialog by clicking on \otimes , the element sorting is adjusted to the original element sorting. In doing so, the sorting numbers are recreated in accordance with the following criteria:

- ▶ All elements that were already visible before the dialog was started and have not been deleted are retained in the sorting.
- ▶ New visible elements are inserted behind these elements, with a consecutive number after their ID.

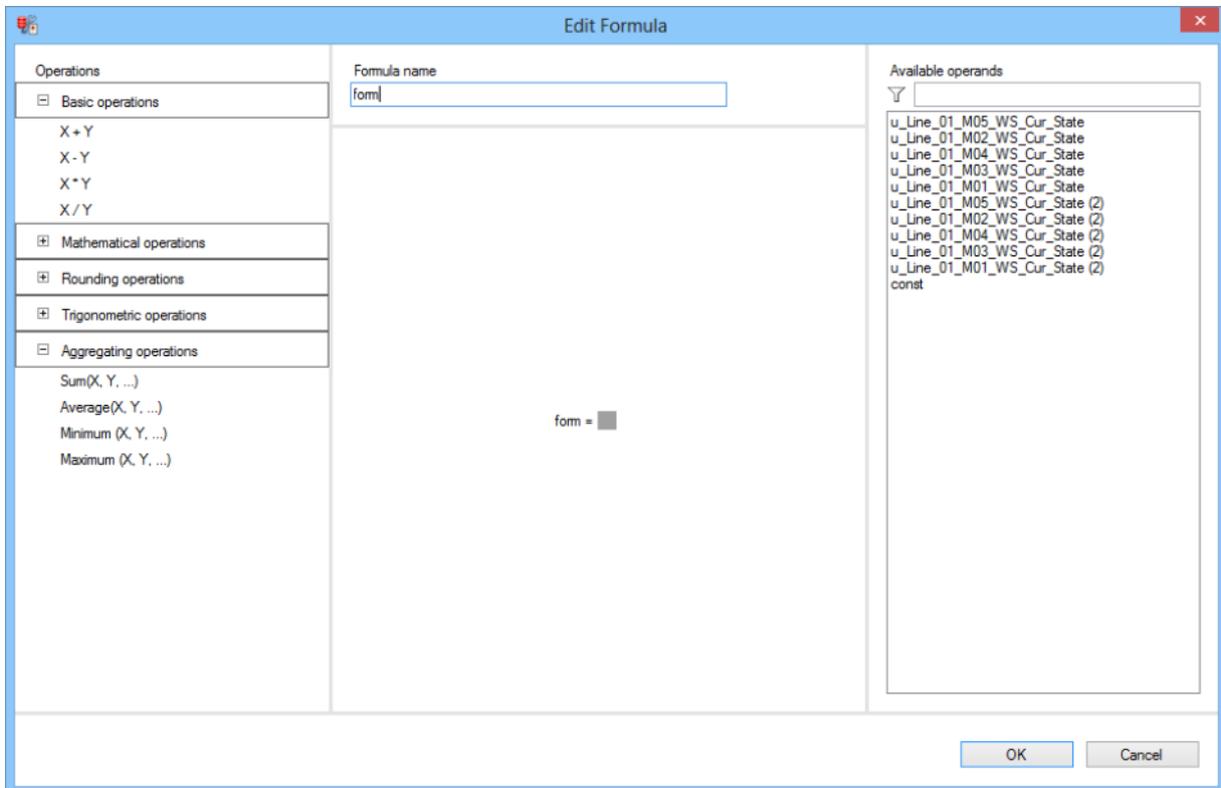
Example:

- ▶ Basis:
 - Indicator1: ID = 3
 - Indicator2: ID = 2
 - Indicator3: ID = 1
- ▶ Changes in the dialog:
 - Indicator2: is deleted.
 - Indicator0: is added and gets ID 1
 - Indicator4: is added and gets ID 4
- ▶ Result:
 - Indicator1: ID = 3, but previous sorting = 1
 - Indicator3: ID = 2, but previous sorting = 3
 - Indicator0: ID = 1, no previous sorting

Indicator4: ID = 4, no previous sorting

Formula editor

The formula editor allows the creation of a formula.



| Parameters | Description |
|---------------------|---|
| Operations | <p>Available operations. These can be moved by dragging & dropping into the Formula area.</p> <p>Five groups of operations are available.</p> <ul style="list-style-type: none"> ▶ Basic operations ▶ Mathematical operations ▶ Rounding operations ▶ Trigonometric operations ▶ Aggregating operations <p>Details on the operations are shown hereafter.</p> |
| Formula name | <p>Name of the formula that is currently being created.</p> <ul style="list-style-type: none"> ▶ Must not be empty. ▶ Must not be used by another formula. <p>Name is displayed in the Formula area.</p> |
| Available operands | <p>Fields that are available as operands. These can be moved to the respective input fields for operands by dragging & dropping them into the Formula area.</p> <p>The list of operations can be filtered. Filtering is carried out by entering a sequence of characters in the input field. Each change of the filter text triggers a direct update.</p> <p>You can use wild cards here:</p> <ul style="list-style-type: none"> ▶ ?: precisely 1 desired character. ▶ *: any desired number of any desired characters ▶ If no wildcard is used, a * is automatically attached to the filter text. |
| Formula area | <p>Contains the Formula name and input fields for operations and operands. These input fields are populated by dragging & dropping.</p> <p>Creation of a formula:</p> <ul style="list-style-type: none"> ▶ If an operation is placed by a drag & drop on the input field in the Formula area, this is replaced by the operation identifier and the input fields of the operation. |

| | |
|---------------|--|
| | <ul style="list-style-type: none"> ▶ If an operand is placed on an input field in the Formula area, the field name replaces the input field. <p>A formula is valid if at least one operation is present and each operation has a sufficient number of assigned fields.</p> |
| OK | <p>Applies settings and closes the dialog.</p> <p>To do this, the following criteria must be met:</p> <ul style="list-style-type: none"> ▶ valid name ▶ valid formula |
| Cancel | Discards all changes and closes the dialog. |

The size and position of the dialog can be changed. These settings are saved as user-dependent.

CREATING FORMULAS

To create formulas:

1. Drag & drop an operation to the input field in the **Formula area**.

New Field =

2. The field shows the corresponding operation. New input fields are created.
3. Move them by dragging & dropping them into the input fields:
 - New operations (this is how you create more complex formulas)

New Field = $\left(\text{[]} + \frac{\text{[]}}{\text{[]}} \right) \times \text{Root [2] } (\text{[]})$

- Desired operands
4. Add further operations and/or operands until your formula is completed.

EXAMPLE:

New Field = $\left(\frac{u_Line_01_M05_WS_Cur_State}{u_Line_01_M08_WS_Cur_State} + \frac{u_Line_01_M09_WS_Cur_State}{u_Line_01_M08_WS_Cur_State} \right) \times \text{Root [2] } (r_Line_01_M07_Air_AbsCons (2))$

RULES FOR THE FORMULA EDITOR

- ▶ Brackets are automatically placed in the formula editor to clarify the method of calculation.

- ▶ All brackets and slashes automatically scale their size, based on the fields and operations that are subordinate to them.
- ▶ Fields that are still empty are automatically put in focus.

RESETTING INPUTS

An input field can be reset to remove operations or operands.

Two working methods are available for this:

1. Replacement of operations or operands by drag&drop:
 - a) Drag a new operation or an operand to the existing field. If fields are already populated with data, the field that is to be replaced is shown with a border.
 - b) By carrying out the drag&drop process, the fields with a border are emptied and replaced by the new operations or operands.
2. Deletion of operands by means of keyboard commands
 - a) Highlight a field with a left mouse click. The field is highlighted with a frame. Individual sections of a formula or the complete formula can be highlighted.
 - b) Press the `Del` or `Backspace` key.
 - c) The field is emptied or deleted.
If the field is part of an aggregation operation, it is completely removed from an aggregation operation. Aggregation operations always offer an empty field at the right edge.

EXAMPLES FOR THE HIGHLIGHTING OF FORMULA ELEMENTS

- ▶ Highlighting of an operand:

form =
$$\frac{(\underline{u_Line_01_M01_WS_Cur_State} - u_Line_01_M04_WS_Cur_State)}{u_Line_01_M03_WS_Cur_State}$$

- ▶ Highlighting of an operation:

form =
$$\frac{\underline{(u_Line_01_M01_WS_Cur_State - u_Line_01_M04_WS_Cur_State)}}{u_Line_01_M03_WS_Cur_State}$$

- ▶ Highlighting of the complete formula:

form =
$$\frac{\underline{(u_Line_01_M01_WS_Cur_State - u_Line_01_M04_WS_Cur_State)}}{\underline{u_Line_01_M03_WS_Cur_State}}$$

OPERATIONS

The following operations are possible in the formula editor:

- ▶ Basic operations
- ▶ Mathematical operations
- ▶ Rounding operations
- ▶ Trigonometric operations
- ▶ Aggregating operations

BASIC OPERATIONS

- ▶ **Addition:** Input field is replaced by two new input fields, separated by a plus sign (+).
- ▶ **Subtraction:** Input field is replaced by two new input fields, separated by a minus sign (-).
- ▶ **Multiplication:** Input field is replaced by two new input fields, separated by a multiplication sign (\times).
- ▶ **Division/Fraction:** Input field is replaced by two new input fields, separated by a fraction bar ($\frac{\quad}{\quad}$).

MATHEMATICAL OPERATIONS

- ▶ **Absolute value:** Input field is replaced by a function identifier, brackets and a new input field.
- ▶ **Power (of relation):** Input field is replaced by a function identifier, a numerical field for the constant exponents, brackets and a new input field.
- ▶ **Root:** Input field is replaced by a function identifier, a numerical field for the constant root order, brackets and a new input field.
- ▶ **Exponential function with Euler's number as a basis:** Input field is replaced by a function identifier, brackets and a new input field.
- ▶ **exponential function:** Input field is replaced by a function identifier, a numerical field for the constant base, brackets and a new input field.
- ▶ **Logarithm for the base of Euler's number:** Input field is replaced by a function identifier, brackets and a new input field.

- ▶ **Base 10 logarithms:** Input field is replaced by a function identifier, brackets and a new input field.
- ▶ **Logarithm:** Input field is replaced by a function identifier, a numerical field for the constant base, brackets and a new input field.

ROUNDING OPERATIONS

- ▶ **Rounding up to the next whole figure:** Input field is replaced by a function identifier, brackets and a new input field.
- ▶ **Rounding down to the next whole figure:** Input field is replaced by a function identifier, brackets and a new input field.
- ▶ **Round:** Input field is replaced by a function identifier, a drop-down selection field for the precision, brackets and a new input field.

TRIGONOMETRIC OPERATIONS

- ▶ **Sine:** Input field is replaced by a function identifier, brackets and a new input field.
- ▶ **Cosine:** Input field is replaced by a function identifier, brackets and a new input field.
- ▶ **Tangent:** Input field is replaced by a function identifier, brackets and a new input field.
- ▶ **Cotangent:** Input field is replaced by a function identifier, brackets and a new input field.
- ▶ **Arcsine:** Input field is replaced by a function identifier, brackets and a new input field.
- ▶ **Arcosine:** Input field is replaced by a function identifier, brackets and a new input field.
- ▶ **Arctangent:** Input field is replaced by a function identifier, brackets and a new input field.
- ▶ **Radians to Degrees:** Input field is replaced by a function identifier, brackets and a new input field.
- ▶ **Degrees to Radians:** Input field is replaced by a function identifier, brackets and a new input field.

AGGREGATING OPERATIONS

- ▶ **Sum:** Input field is replaced by a function identifier, brackets and a new input field. This is an operation with any desired number of operands. If something is moved to the new input field, an additional new input is provided.
- ▶ **Average:** Input field is replaced by a function identifier, brackets and a new input field. This is an operation with any desired number of operands. If something is moved to the new input field, an additional new input is provided.
- ▶ **Minimum:** Input field is replaced by a function identifier, brackets and a new input field. This is an operation with any desired number of operands. If something is moved to the new input field, an additional new input is provided.
- ▶ **Maximum:** Input field is replaced by a function identifier, brackets and a new input field. This is an operation with any desired number of operands. If something is moved to the new input field, an additional new input is provided.

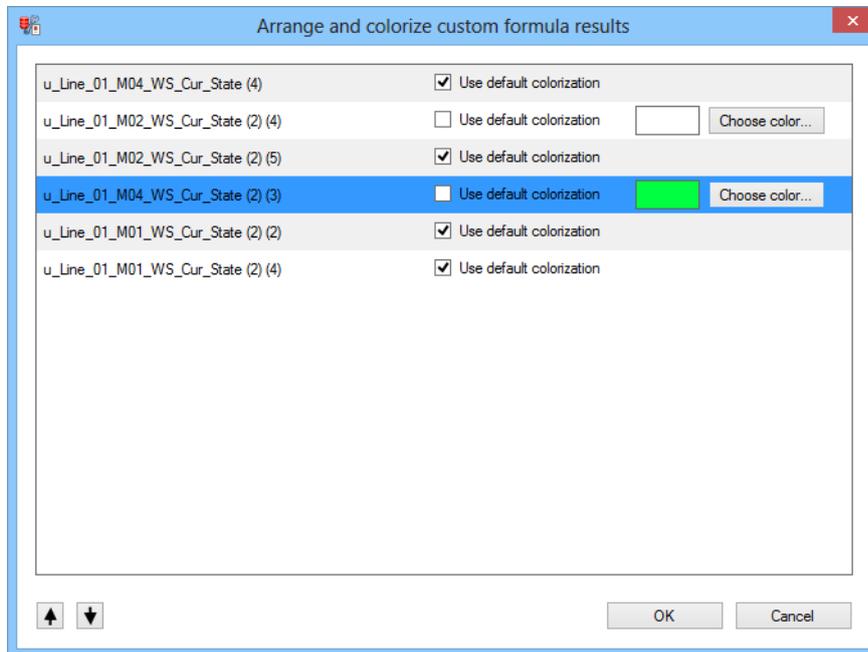
Arrange and colorize formula results

In this dialog, you can color custom formulas (on page 677) and sort their sequence.

To open the dialog:

1. In the **Custom formulas** (on page 677) group, click on the **Arrange and colorize formula results** group
2. The dialog is opened

Each visible formula is represented by a line in the list. The sequence of the formulas in this dialog also defines their sequence for display in ZAMS and in actual charts and tables in the report.



| Parameters | Description |
|--------------------------|---|
| Formula names | Name of the formula. |
| Standard coloring | <p>The status of the checkbox defines whether the formula is assigned its color from the respective graphics object from the colors of the ZAMS color scheme or if it receives individual coloring.</p> <ul style="list-style-type: none"> ▶ Active: Standard colors from the ZAMS color scheme are used. ▶ Inactive: Individual colors are used. <p>The Color and Color preview buttons are shown for configuration purposes.</p> |
| Color preview | <p>Display of the color defined individually for this formula.</p> <p>Initial value: <i>White</i></p> |
| Color | <p>Click on the color to open the standard color palette for selecting a color.</p> <p>In the dialog, the 10 standard colors from the active ZAMS color scheme are offered as Userdefined color schemes.</p> |
| Cursor keys | <p>Clicking on a button changes the sequence of the highlighted formula. A formula is highlighted if the complete line is highlighted or an element in the line is selected.</p> <p>Action:</p> <ul style="list-style-type: none"> ▶ Clicking on the first arrow key moves the formula up one position. If the formula is already in the top line, the arrow key remains inactive. ▶ Clicking on the second arrow key moves the formula down one position. If the formula is already in the bottom line, the arrow key remains inactive. <p>Attention: If the configuration of a formula is changed, the individual sorting is lost.</p> |
| OK | Applies settings and closes the dialog. |
| Cancel | Discards all changes and closes the dialog. |

13.1.9 Labels for operating modes

This grouping is for the selection of the labeling for operating modes.

Origin mode labels

Variable visual name

| Parameters | Description |
|---------------------------------|--|
| Origin of operation mode labels | Selection of the marking for operating modes from drop-down list: <ul style="list-style-type: none"> ▶ Variable visual name ▶ Descriptive text for the variables |

13.1.10 Lot archive selection

Selection of the lot archive from the drop-down list for the comparison of OEE indicators.

Lot archive selection

Project

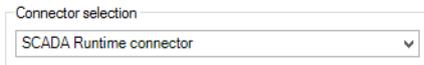
ZAD_GBL

Lot archive

| Parameters | Description |
|-----------------------|---|
| Lot archive selection | Configuration of the lot archive. |
| Project | Selection of the project that is to be linked to a project from a drop-down list. <p>If a project is selected, this project is forwarded to all other groupings in the report that offer project selection.</p> <p>If this grouping receives a message about a linked project from another grouping, this project is set in the drop-down list and the drop-down list is deactivated.</p> |
| Lot archive | Selection of a lot archive for the selected project from the drop-down list. |

13.1.11 Connector selection

Selection of a connector from the drop-down list.



| | |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |
|---------------------|---|

13.1.12 Drop-down lists, inputs and selection

Input fields and drop-down lists allow input of text, numerical values and given elements:

- ▶ Single selection: Selection of a value from drop-down list:
- ▶ Text input: Input of free text
- ▶ Numerical input: Entering numeric values

SELECTION OF AN INDIVIDUAL ENTRY



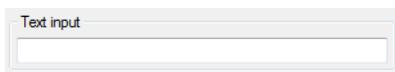
Selection of an entry from a list of given values.

Examples:

- ▶ Data representation:
 - Selection of the display of data from the drop-down list.
 - Line chart and pivot table
 - Column chart and pivot table
 - Line chart

- Column chart
 - Pivot table
- Archive compression selection:
- Selection of the type of aggregation for the variables stored in the archive:
- Raw value
 - Sum
 - Average
 - Minimum
 - Maximum

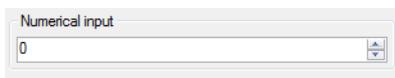
TEXT INPUT

A screenshot of a text input field. The field is rectangular with a light grey border and a thin inner border. The text "Text input" is displayed in a small font at the top left of the field. The field is currently empty.

Free input of text in the text field.

NUMERIC INPUT

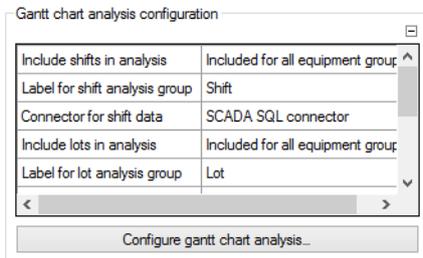
Input of numeric values.

A screenshot of a numerical input field. The field is rectangular with a light grey border and a thin inner border. The text "Numerical input" is displayed in a small font at the top left of the field. The field contains the number "0". To the right of the field is a spin control consisting of two small triangles (up and down) and a vertical line.

The values can also be increased or reduced with the spin control. Minimum and maximum values and an increase or reduction using the spin control and display of decimal points is defined by the report developer.

13.1.13 Gantt chart

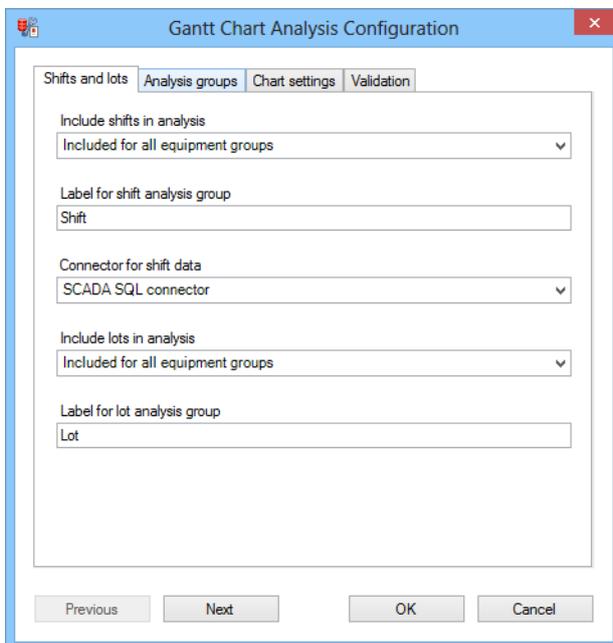
The control element consists of a display of the current settings and a button to configure these settings.



| Parameters | Description |
|---------------------------------------|---|
| Display settings | Display of the current settings for the Gantt diagram. |
| Configure gantt chart analysis | The dialog to configure the Gantt analysis is started by clicking on the button. For details, see Gantt-Diagram (on page 718). |

CONFIGURING GANTT CHART ANALYSIS

The Gantt chart analysis is configured with the following dialog:



To configure the analysis:

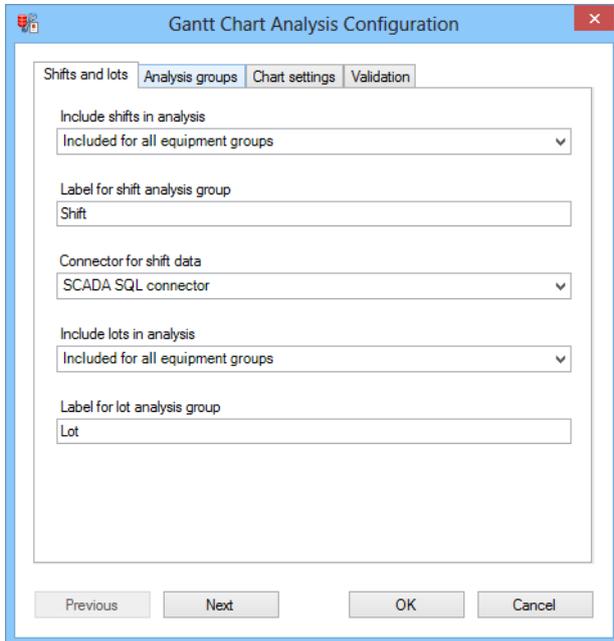
1. Click, in the control element in the report template, on the **Configure gantt chart analysis** button.
2. Configure the tabs:
 - Shifts and lots (on page 720)
 - Analysis groups (on page 722)
 - Chart settings (on page 724)
 - Validation (on page 726)
3. Close the dialog by clicking on **OK**.

NAVIGATION

| Button | Description |
|-----------------|---|
| Previous | Switches to the previous tab. Inactive in the first tab. |
| Next | Switches to the next tab. Inactive in the last tab. |
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Shifts and lots

The inclusion of shifts and lots into the Gantt analysis is configured in this tab.



The screenshot shows the 'Gantt Chart Analysis Configuration' dialog box with the 'Shifts and lots' tab selected. The dialog has four tabs: 'Shifts and lots', 'Analysis groups', 'Chart settings', and 'Validation'. The 'Shifts and lots' tab contains the following configuration options:

- Include shifts in analysis:** A dropdown menu set to 'Included for all equipment groups'.
- Label for shift analysis group:** A text input field containing 'Shift'.
- Connector for shift data:** A dropdown menu set to 'SCADA SQL connector'.
- Include lots in analysis:** A dropdown menu set to 'Included for all equipment groups'.
- Label for lot analysis group:** A text input field containing 'Lot'.

At the bottom of the dialog, there are four buttons: 'Previous', 'Next', 'OK', and 'Cancel'.

| Parameters | Description |
|--------------------------------|---|
| Include shifts in analysis | <p>Selection from a drop-down list of how shifts are included in the Gantt analysis:</p> <ul style="list-style-type: none"> ▶ Not included: A search for shifts is carried out. ▶ Included for the selected equipment group: A search is only carried out for shifts in the equipment group selected in the report. ▶ Included for all equipment groups: A search is carried out for shifts for all active equipment groups in the analysis. |
| Label for shift analysis group | <p>Defines visual name for the analysis group for shifts of a plant. Free entry in the text field.</p> <p>Only available if not included has not been selected for Include shifts in analysis</p> |
| Connector for shift data | Selection of the connector to get shift data from a drop-down list. |
| Include lots in analysis | <p>Selection from a drop-down list of how lots are included in the Gantt analysis:</p> <ul style="list-style-type: none"> ▶ Not included: Lots can also be searched for. ▶ Included for the selected equipment group: A search is only carried out for lots in the equipment group selected in the report. ▶ Included for all equipment groups: A search is carried out for lots for all active equipment groups in the analysis. |
| Label for lot analysis group | <p>Defines visual name for the analysis group for lots of a plant. Free entry in the text field.</p> <p>Only available if not included has not been selected for Include lots in analysis</p> |

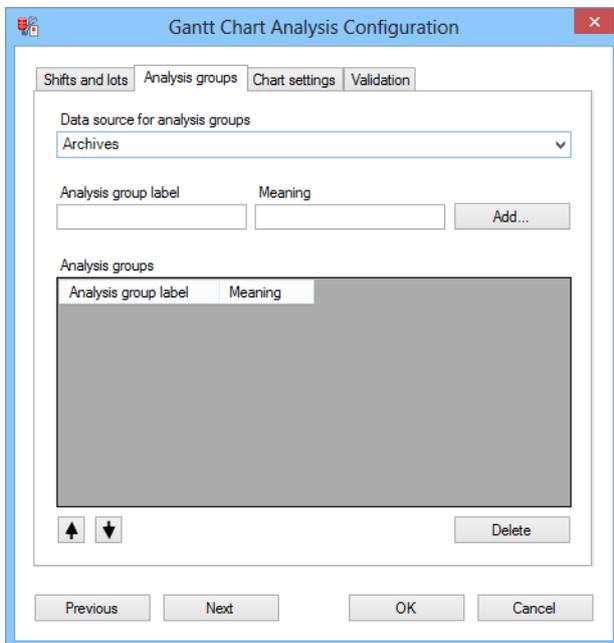
NAVIGATION

| Button | Description |
|----------|---|
| Previous | Switches to the previous tab. Inactive in the first tab. |
| Next | Switches to the next tab. |

| | |
|---------------|---|
| | Inactive in the last tab. |
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Analysis groups

The analysis groups are configured in this tab. Each analysis group means a line in the Gantt diagram or a grouping at the lower grouping level of a table. The complete name of an analysis group always follows the syntax **[equipment group name]: [analysis group name]**.



| Parameters | Description |
|--------------------------------|--|
| Data source for analysis group | <p>Selection of the data source for the analysis groups from a drop-down list:</p> <ul style="list-style-type: none"> ▶ Alarm Message List ▶ Chronological Event List ▶ Archives |
| Analysis group label | Entry of the visual name of an analysis group. |
| Meaning | Entry of the meaning (<code>Resources label</code>) for the variable whose events are to be analyzed in the analysis group. |
| Add | <p>Clicking this adds the analysis group defined with the fields <code>Analysis group label</code> and <code>meaning</code> to the List of analysis groups if the following conditions are met:</p> <ul style="list-style-type: none"> ▶ Both fields have content ▶ There are still not any analysis groups with the <code>visual names entered</code> ▶ There are still not any analysis groups with the <code>meaning entered</code> |
| List of analysis groups | <p>All defined analysis groups are listed here. The display sequence in this table corresponds to the sequence in the Gantt diagram or in the tables in the report.</p> <p>Multiple selection is possible.</p> |
| Cursor keys | <p>Sequence of analysis groups in the list. Click on:</p> <ul style="list-style-type: none"> ▶ Arrow upwards: all highlighted analysis groups are moved up one place ▶ Arrow downwards: all highlighted analysis groups are moved down one place |
| Delete | Clicking on the button deletes all analysis groups highlighted in the list without requesting confirmation. |

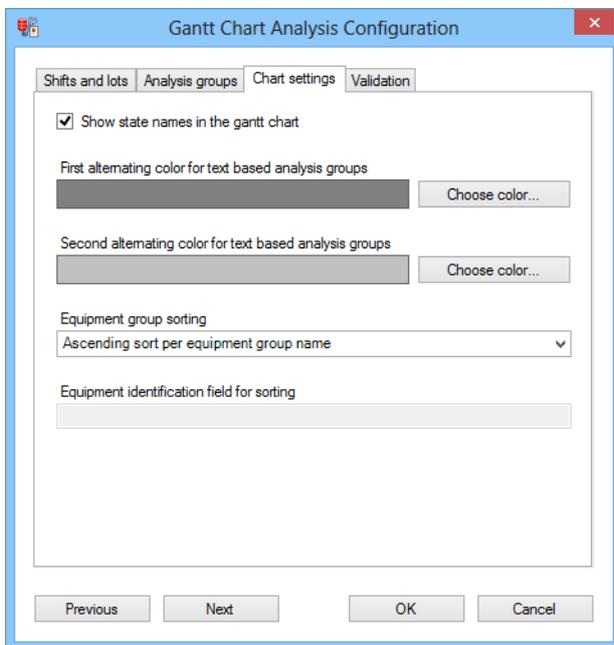
NAVIGATION

| Button | Description |
|--------|-------------|
|--------|-------------|

| | |
|-----------------|---|
| Previous | Switches to the previous tab. Inactive in the first tab. |
| Next | Switches to the next tab. Inactive in the last tab. |
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Diagram settings

The diagram settings are configured in this tab.



| Parameters | Description |
|---|---|
| Show state name in the gantt chart | Stipulation of the display; whether for variables with numeric values that are to be converted to states via a reaction matrix, the limit value text from the REMA is to be displayed in the Gantt chart. |
| First alternating color for text based analysis groups | Display of the selected first alternating color for events of analysis groups for shifts, lots and variables with string values. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Second alternating color for text based analysis groups | Display of the selected second alternating color for events of analysis groups for shifts, lots and variables with string values. |
| Choose color | Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system. |
| Equipment group sorting | <p>Selection from a drop-down list of how the equipment groups of a level (same superordinate equipment group) are to be sorted:</p> <ul style="list-style-type: none"> ▶ Same order as in database: Each [ID] column in the [EQUIPMENT] table is sorted in ascending order. ▶ Inverse database order: Each [ID] column in the [EQUIPMENT] table is sorted in descending order. ▶ Ascending sort per equipment group name: Sorting is carried out in according to the visual names in ascending order. ▶ Descending sort per equipment group name: Sorting is carried out in according to the visual names in descending order. ▶ Ascending sort per equipment information: Sorting is carried out in ascending order according to the numerical value of one of the fields assigned to the equipment group in the EQUIPMENTINFO table. Equipment groups that are not |

| | |
|--|---|
| | <p>assigned to such a field are filtered out.</p> <ul style="list-style-type: none"> ▶ Descending sort per equipment information: Sorting is carried out in descending order according to the numerical value of one of the fields assigned to the equipment group in the EQUIPMENTINFO table. Equipment groups that are not assigned to such a field are filtered out. |
| Equipment identification field for sorting | <p>Entry of the character sequence for equipment identification, which the element for the sorting value is to be searched for in the EQUIPMENTINFO table.</p> <p>Only available if, in equipment group sorting, either Ascending sort per equipment information or Descending sort per equipment information has been selected.</p> |

NAVIGATION

| Button | Description |
|----------|---|
| Previous | Switches to the previous tab. Inactive in the first tab. |
| Next | Switches to the next tab. Inactive in the last tab. |
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Validation

The entries are validated in this tab.

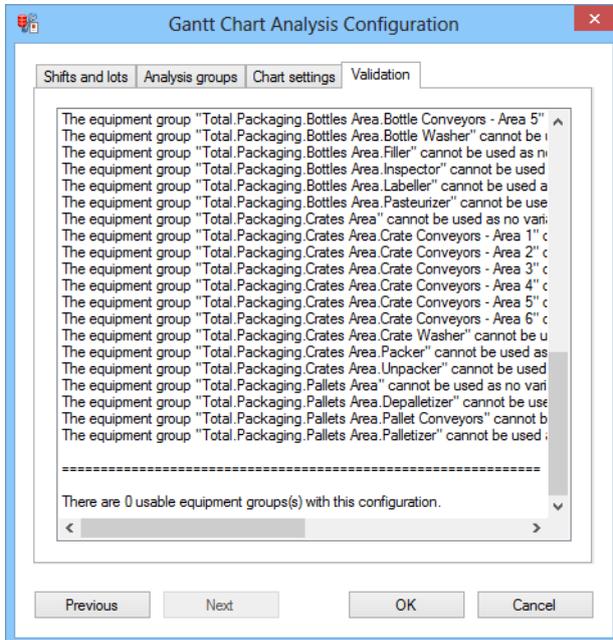
The following applies for validation:

1. A value must be selected or entered in all active input elements in the other tabs.
Exception: Analysis group label and Meaning in the **Analysis groups** tab.
2. There must be at least one analysis group defined.

3. If one of the previous conditions is not met, it is canceled.

If conditions 1 and 2 are met, then the following points are checked for each of the equipment groups:

- a) If the equipment model filter in the report is active, the equipment group must be assigned to the selected model.
- b) The equipment group must be assigned at least one variable with one of the meanings of the analysis groups. In doing so, the data source and any possible projects that are tied to the report are taken into account.
- c) If sorting with use of a fields in the `EQUIPMENTINFO` table has been selected, the equipment group must be assigned such a field with a numerical value and the given identification.



| Parameters | Description |
|------------|---|
| List | All messages for validation and a completion message with the number of analyzable equipment groups are written to the list. The listbox does not allow the selection of entries. |

NAVIGATION

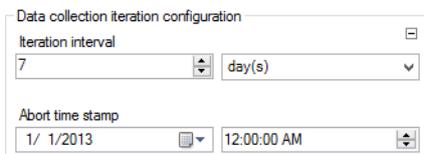
| Button | Description |
|----------|---|
| Previous | Switches to the previous tab. Inactive in the first tab. |
| Next | Switches to the next tab. Inactive in the last tab. |
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

13.1.14 Iterative data collection

Allows the configuration of an interval and the abort time stamp for the iterative data collation by stored procedures.

This configuration is necessary for archives with record on change. With these archives, it is possible that variables in the period under review do not have a value. That would lead to an undefined or incorrect result.

If all variables have not yet given valid values in the period under review then older data is read with retroactive effect for interactive data collection. This happens interactively in the `Iteration` interval until each variable has a valid value. If no valid value can be found up to the `time stamp` cancel, a 0 is assumed as a replacement.



| Parameters | Description |
|--|--|
| Data collection iteration configuration | Configuration for iteration interval and cancel time. |
| Iteration interval | Configuration of the iteration interval in: <ul style="list-style-type: none"> ▶ Minuten ▶ Hours ▶ Days Minimum: 1 Maximum: 1000 Default: 1 day |
| Start of archiving | Start of archiving <ul style="list-style-type: none"> ▶ Date ▶ Time Default: 01.01.2013 00:00:00 |

13.1.15 Load shedding

For report templates for hydro-electric power plants, there are elements for searching according to active power and turbine speed after load shedding.

ELEMENTS

LOAD SHEDDING: ACTIVE POWER LOOKBACK SECONDS

| Parameters | Description |
|--|--|
| Load shedding: Active power lookback seconds | <p>Selection of the number of seconds for how far before load shedding the maximum active power at the time of load shedding is searched for.</p> <p>Formula: Active power = Max(active power) from time range (load shedding – configured seconds) until load shedding.</p> |

LOAD SHEDDING: TURBINE SPEED LOOKFRONT SECONDS

| Parameters | Description |
|--|---|
| Load shedding: Turbine speed lookfront seconds | <p>Selection of the number of seconds for how far, after load shedding, the maximum turbine speed at the time of load shedding is searched for.</p> <p>Formula: Load shedding turbine speed = Max(turbine speed) from time period up to (load shedding + configured seconds).</p> |

13.1.16 Availability gauge ranges

Configuration and display for measurement device color areas. The elements can be used in a report for different areas.

Availability gauge ranges ☐

Low range goes until

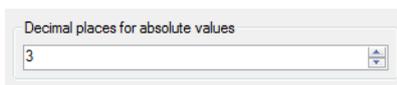
High range starts at

Low range: 0 - 85
 Medium range: 85 - 95
 High range: 95 - 100

| Parameters | Description |
|---------------------------|--|
| Availability gauge ranges | <p>Configuration of the color ranges:</p> <ul style="list-style-type: none"> ▶ Low range ▶ Medium range ▶ High range <p>The upper limit of the low range is the lower value of the high range. The lower limit of the high range is the upper value of the low range. Both limits are inclusive limits. Both elements can be set to the same value. In this case, there is no medium range. The lower limit for the low range and the upper limit for the high range come from the report template.</p> |
| Low range goes until | Defines the limit between the low (red) and medium (yellow) range in the measuring device. |
| High range starts at | Defines the limit between the medium (yellow) and high (green) range in the measuring device. |
| Display of the areas. | Preview of the configured color ranges. |

13.1.17 Decimal places

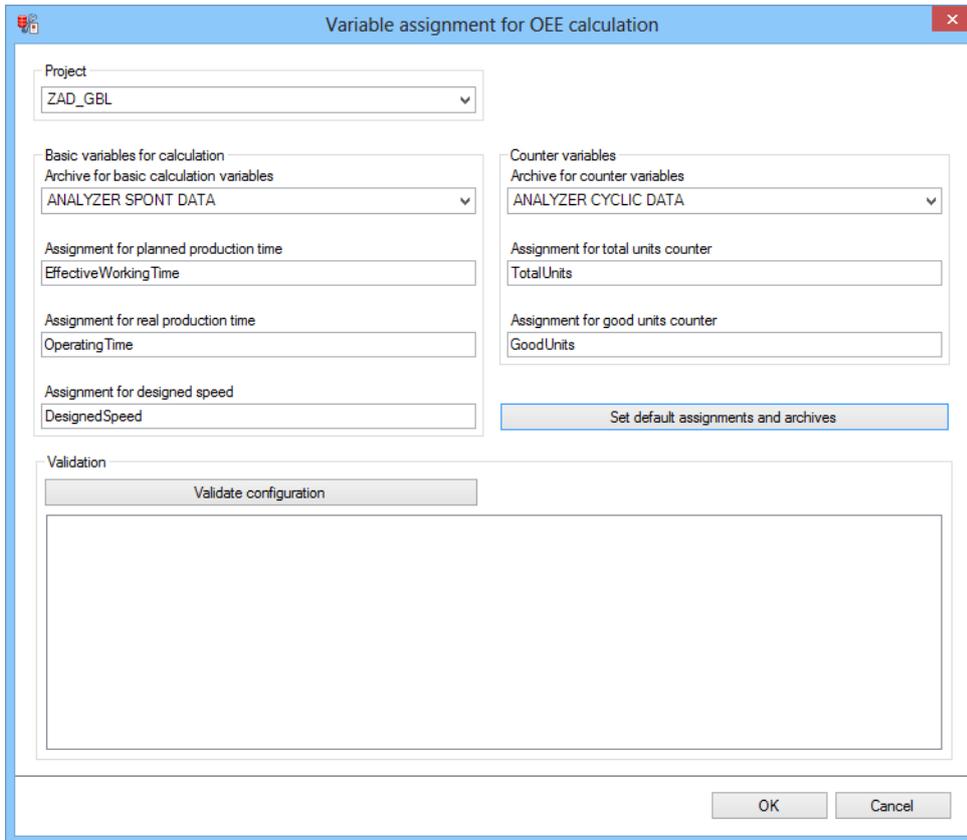
Stipulation of the decimal places for the counters of a report.



| | |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 <p>If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum.</p> |
|----------------|---|

13.1.18 OEE calculation

Clicking on the `Configure assignments` button in the ZAMS dialog for **variable assignments for OEE calculation** opens a dialog for the assignment of projects, archives and variables:



The dialog box, titled "Variable assignment for OEE calculation", contains the following elements:

- Project:** A dropdown menu with "ZAD_GBL" selected.
- Basic variables for calculation:**
 - Archive for basic calculation variables: "ANALYZER SPONT DATA" (dropdown)
 - Assignment for planned production time: "EffectiveWorkingTime" (text field)
 - Assignment for real production time: "OperatingTime" (text field)
 - Assignment for designed speed: "DesignedSpeed" (text field)
- Counter variables:**
 - Archive for counter variables: "ANALYZER CYCLIC DATA" (dropdown)
 - Assignment for total units counter: "TotalUnits" (text field)
 - Assignment for good units counter: "GoodUnits" (text field)
- Buttons:** "Set default assignments and archives" (button), "Validate configuration" (button), "OK" (button), and "Cancel" (button).
- Validation Area:** A large empty rectangular box below the "Validate configuration" button.

| Parameters | Description |
|---|---|
| Project | <p>Selection of a project from the drop-down list.</p> <p>The corresponding archives are available, depending on the project.</p> |
| Basic variables for calculation | Configuration of the variables for the OEE calculation. |
| Archive for basic calculation variables | Selection of a non-cyclical archive. |
| Assignment for planned production time | <p>Assignment of the variables for the planned production time.</p> <p>Default: EffectiveWorkingTime</p> |
| Assignment for real production time | <p>Assignment of the variables for the actual production time.</p> <p>Default: Operating Time</p> |
| Assignment for designed speed | <p>Assignment of the variables for the planned equipment speed.</p> <p>Default: DesignedSpeed</p> |
| Counter variables | Configuration of the counter variables. |
| Archive for counter variables | Selection of a cyclical archive. |
| Assignment for total units counter | <p>Assignment of the variables for the total production quantity.</p> <p>Default: TotalUnits</p> |
| Assignment for good units counter | <p>Assignment of the variables for the total quantity of good units produced.</p> <p>Default: GoodUnits</p> |
| Set default assignments and archives | Clicking on the button enters the standard configuration for assignments and archives. |
| Validation | Validation of the configuration entered |
| Validate configuration | <p>Clicking on the button checks:</p> <ul style="list-style-type: none"> ▶ Are all input fields populated? |

| | |
|---------------|---|
| | <p>► For how many and which equipment models is it possible to calculate the OEE key figures with the given configuration?</p> <p>The result of checking is shown in the input field.</p> |
| OK | Accepts all inputs and closes dialog. |
| Cancel | Discards all changes and closes dialog. |

Note:

- The term **Assignment** corresponds to the **Meaning** table column.
- OEE calculations require the corresponding configuration in zenon (on page 1257).

13.1.19 Production data filters

Configuration and display of the optional data filtering.

Production data filters ☐

Project
ZAD_GBL ▼

Data filter configuration

| | |
|----------------------|----------------|
| Pallet type | WS_Pallet_Type |
| Crate type | WS_Crate_Type |
| Bottle type | WS_Bottle_Type |
| Bottling tank number | WS_Bot_Tank_No |

Configure data filters...

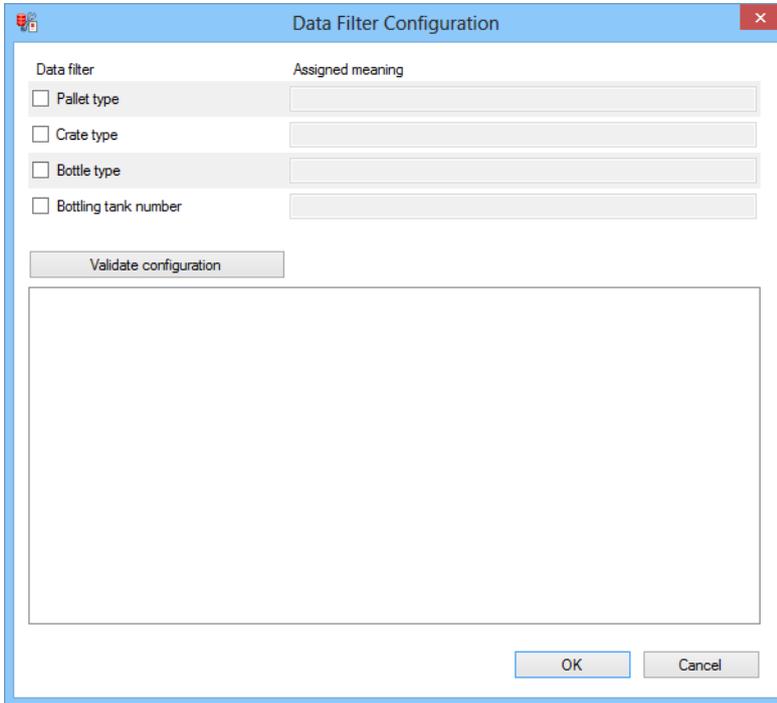
| Parameters | Description |
|----------------------------------|--|
| Production data filters | Configuration and display of the production data filter. |
| Project | <p>Selection of the project that is to be linked to a project from a drop-down list.</p> <p>If a project is selected, this project is forwarded to all other groupings in the report that offer project selection.</p> <p>If this grouping receives a message about a linked project from another grouping, this project is set in the drop-down list and the drop-down list is deactivated.</p> |
| Data Filter configuration | Table with the current settings for data filtering. |
| Configure data filters | Clicking on the button opens the dialog (on page 735) for configuring the data filters. |

Configuration of data filter

With this dialog:

- ▶ Data filters, if present, are activated or deactivated
- ▶ Enter meaning, which is used for addressing the variables for this data filtering

To be able to switch the dialog, a project must be selected in the configuration.



| Data filter | Assigned meaning |
|---|------------------|
| <input type="checkbox"/> Pallet type | |
| <input type="checkbox"/> Crate type | |
| <input type="checkbox"/> Bottle type | |
| <input type="checkbox"/> Bottling tank number | |

Validate configuration

OK Cancel

| Parameters | Description |
|----------------------------------|--|
| Data filter type | Activation and deactivation of the data filter types. |
| Meaning for data filter variable | <p>Enter the meaning for data filter variables.</p> <p>The input field is only active if the checkbox in front of it is active. If the input field is empty when the checkbox is activated, it is populated with the standard value for the meaning.</p> |
| Pallet type | <p>Active: It is filtered according to the pallet type.</p> <p>The input field next to the checkbox is for entering the meaning (Meaning) for the addressing of the variables for this filter.</p> |
| Crate type | <p>Active: It is filtered according to the crate type.</p> <p>The input field next to the checkbox is for entering the meaning (Meaning) for the addressing of the variables for this filter.</p> |
| Bottle type | <p>Active: It is filtered according to the bottle type.</p> <p>The input field next to the checkbox is for entering the meaning (Meaning) for the addressing of the variables for this filter.</p> |
| Bottling tank number | <p>Active: It is filtered according to the bottling tank number.</p> <p>The input field next to the checkbox is for entering the meaning (Meaning) for the addressing of the variables for this filter.</p> |
| Validate configuration | <p>Clicking on the button validates the inputs and provides the results in the list field.</p> <p>The following is checked during validation:</p> <ul style="list-style-type: none"> ▶ Whether the report is linked to a project and/or an equipment model ▶ For which equipment groups precisely one variable each per active filter can be addressed with the meanings entered |
| OK | Applies settings and closes the dialog. If one of the input fields is activated but empty, the button is not shown. |

| | |
|---------------|---|
| Cancel | Discards all changes and closes the dialog. |
|---------------|---|

13.1.20 Production indicators

Configuration and display of the indicators and the initial variables for their calculation.

Production indicators ☰

Project

Optional indicators

| | | |
|------------------------------------|-------------|---|
| Mean time between stoppages (MTBS) | Deactivated | ^ |
| Mean time between failures (MTBF) | Deactivated | |
| Mean time to repair (MTTR) | Deactivated | |
| Mean time between touch (MTBT) | Deactivated | |
| Total units | Deactivated | |
| Good units | Deactivated | v |

Assigned meanings

| | | |
|-------------------------|-------------------------|---|
| Loading time | LoadingTime | ^ |
| Operating time | OperatingTime | |
| Net operating time | NetOperatingTime | |
| Valuable operating time | ValuableOperatingTime | |
| MTBS time counter | (Field is not required) | |
| MTBS event counter | (Field is not required) | v |

| Parameters | Description |
|------------------------------|--|
| Production indicators | Configuration and display of the production indicators. |
| Project | <p>Selection of the project that is to be linked to a project from a drop-down list.</p> <p>If a project is selected, this project is forwarded to all other groupings in the report that offer project selection.</p> <p>If this grouping receives a message about a linked project from another grouping, this project is set in the drop-down list and the drop-down list is deactivated.</p> |
| Optional indicators | Table with the current settings for the optional indicators. |
| Assigned meanings | Table with the configuration of the field meanings for the calculation of the indicators. |
| Configure indicators | Clicking on the button opens the dialog (on page 739) for configuring the indicators. |

Configuration indicators

The indicators are configured in four tabs:

- ▶ Mandatory indicator meaning
- ▶ Optional indicators
- ▶ Optional indicator meaning
- ▶ Validation

A project must be selected in order to be able to configure the indicators.

MANDATORY INDICATOR MEANING

Indicator Configuration
✕

Mandatory indicator meanings
Optional indicators
Optional indicator meanings
Validation

| Field in formula | Meaning |
|-------------------------|-----------------------|
| Loading time | LoadingTime |
| Operating time | OperatingTime |
| Net operating time | NetOperatingTime |
| Valuable operating time | ValuableOperatingTime |

Previous
Next
OK
Cancel

| Parameters | Description |
|-------------------------|--|
| Field in formula | Time counters for the formula. Meanings must be set for these, because the attendant variables are needed for the main indicators. |
| Meaning | Input of the meaning for the addressing of the variables for the following time counters. If one of the input fields is empty when the dialog is called up, it is filled with the standard value. |
| Loading time | Planned running time. Default: Loading Time |
| Operating time | Actual running time. Sum of effective running time and downtimes. Default: Operating Time |
| Net operating time | Net running time. Default: NetOperating Time |
| Valuable operating time | Valuable running time. Default: ValuableOperating Time |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

CALCULATION OF THE MAIN INDICATORS

The four main indicators are calculated according to these formulas:

$$\text{Availability} = \frac{\text{@OperatingTime}}{\text{@LoadingTime}}$$

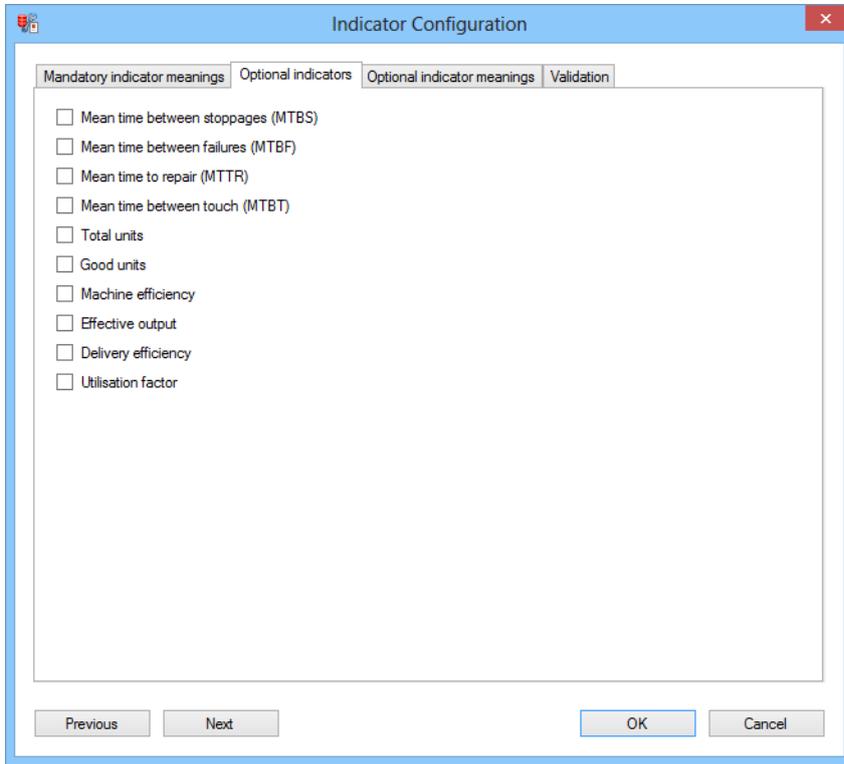
$$\text{Performance} = \frac{\text{@NetOperatingTime}}{\text{@OperatingTime}}$$

$$\text{Quality} = \frac{\text{@ValuableOperatingTime}}{\text{@NetOperatingTime}}$$

$$\text{OEE} = \text{Availability} * \text{Performance} * \text{Quality}$$

OPTIONAL INDICATORS

Optional indicators are activated and deactivated using this tab.



The image shows a software dialog box titled "Indicator Configuration". It has a standard Windows-style title bar with a close button (X) in the top right corner. The dialog contains four tabs: "Mandatory indicator meanings", "Optional indicators", "Optional indicator meanings", and "Validation". The "Optional indicators" tab is currently selected and active. Inside this tab, there is a list of ten indicators, each with an unchecked checkbox to its left. The indicators are: Mean time between stoppages (MTBS), Mean time between failures (MTBF), Mean time to repair (MTTR), Mean time between touch (MTBT), Total units, Good units, Machine efficiency, Effective output, Delivery efficiency, and Utilisation factor. At the bottom of the dialog, there are four buttons: "Previous", "Next", "OK", and "Cancel". The "OK" button is highlighted with a blue border.

| Indicator | Activated |
|------------------------------------|--------------------------|
| Mean time between stoppages (MTBS) | <input type="checkbox"/> |
| Mean time between failures (MTBF) | <input type="checkbox"/> |
| Mean time to repair (MTTR) | <input type="checkbox"/> |
| Mean time between touch (MTBT) | <input type="checkbox"/> |
| Total units | <input type="checkbox"/> |
| Good units | <input type="checkbox"/> |
| Machine efficiency | <input type="checkbox"/> |
| Effective output | <input type="checkbox"/> |
| Delivery efficiency | <input type="checkbox"/> |
| Utilisation factor | <input type="checkbox"/> |

| Parameters | Description |
|--|---|
| Activation of the optional indicators | <p>The following indicators can be activated or deactivated as required by activating the checkboxes:</p> <ul style="list-style-type: none"> ▶ Mean time between stoppages (MTBS) ▶ Mean time between failures (MTBF) ▶ Mean time to repair (MTTR) ▶ Mean time between touch (MTBT) ▶ Total units ▶ Good units ▶ Machine efficiency ▶ Effective output ▶ Delivery efficiency ▶ Utilisation factor |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | <p>Applies all changes in all tabs and closes the dialog.</p> <p>If one of the necessary input fields is empty, the button is deactivated.</p> |
| Cancel | Discards all changes in all tabs and closes the dialog. |

OPTIONAL INDICATOR MEANING

Indicator configuration

Mandatory indicator meanings | Optional indicators | **Optional indicator meanings** | Validation

| Field in formula | Meaning |
|-------------------------|----------------------|
| MTBS time counter | <input type="text"/> |
| MTBS event counter | <input type="text"/> |
| MTBF time counter | <input type="text"/> |
| MTBF event counter | <input type="text"/> |
| MTTR time counter | <input type="text"/> |
| MTTR event counter | <input type="text"/> |
| MTBT time counter | <input type="text"/> |
| MTBT event counter | <input type="text"/> |
| Total units | <input type="text"/> |
| Good units | <input type="text"/> |
| Effective running time | <input type="text"/> |
| General running time | <input type="text"/> |
| Filled and sealed units | <input type="text"/> |
| Machine nominal output | <input type="text"/> |
| Machine set output | <input type="text"/> |

Previous Next OK Cancel

| Parameters | Description |
|-------------------------|--|
| Field in formula | <p>Fields for the formula. Meanings must be set for these if the indicators are to be used.</p> <ul style="list-style-type: none"> ▶ MTBS time counter ▶ MTBS event counter ▶ MTBF time counter ▶ MTBF event counter ▶ MTTR time counter ▶ MTTR event counter ▶ MTBT time counter ▶ MTBT event counter ▶ Total units ▶ Good units ▶ Effective running time ▶ General running time ▶ Filled and sealed units ▶ Machine nominal output ▶ Machine set output |
| Meaning | <p>Input of the meaning for the addressing of the variables for the following indicators. The input field is only active if at least one of the indicators that uses the field that is assigned to the input field is active.</p> <p>If one of the input fields is empty when the dialog is called up, it is filled with the standard value.</p> |
| Field | Used by |
| MTBS time counter | Mean Time Between Stoppage |
| MTBS event counter | Mean Time Between Stoppage |
| MTBF time counter | Mean Time Between Failures |

| | |
|-------------------------|---|
| MTBF event counter | Mean Time Between Failures |
| MTTR time counter | Mean Time To Repair |
| MTTR event counter | Mean Time To Repair |
| MTBT time counter | Mean Time Between Touches |
| MTBT event counter | Mean Time Between Touches |
| Total units | Total Units |
| Good units | Good Units |
| Effective running time | Machine Efficiency |
| General running time | Machine Efficiency, Effective Output and Delivery Efficiency |
| Filled and sealed units | Effective Output and Delivery Efficiency |
| Machine nominal output | Delivery Efficiency and Utilization Factor |
| Machine set output | Utilization Factor |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

CALCULATION OF THE OPTIONAL INDICATORS

The optional indicators are calculated according to these formulas:

$$\text{MTBS (Mean Time Between Stoppages)} = \frac{@MTBS_TimeCounter}{@MTBS_EventCounter}$$

$$\text{MTBF (Mean Time Between Failures)} = \frac{@MTBF_TimeCounter}{@MTBF_EventCounter}$$

$$\text{MTTR (Mean Time To Repair)} = \frac{@MTTR_TimeCounter}{@MTTR_EventCounter}$$

$$\text{MTBT (Mean Time Between Touch)} = \frac{@MTBT_TimeCounter}{@MTBT_EventCounter}$$

Total Units = @TotalUnits

Good Units = @GoodUnits

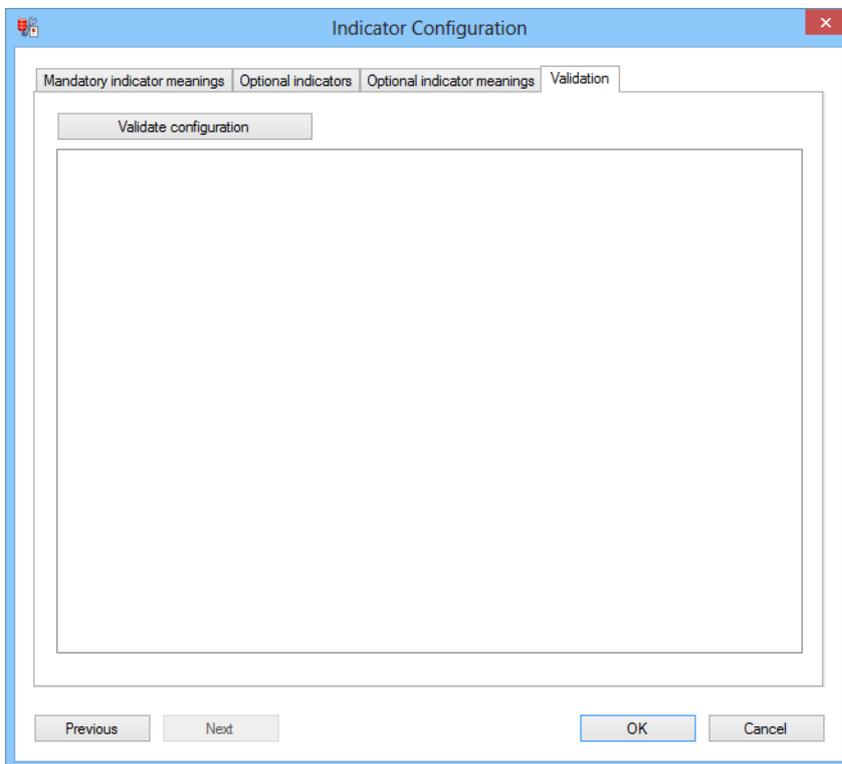
$$\text{Machine efficiency } \eta E = \frac{@EffectiveRuntime}{@Generalruntime}$$

$$\text{Effective Output } Q_{eff} E = \frac{@FilledAndSealedBottles}{@Generalruntime}$$

$$\text{Delivery efficiency } \lambda E = \frac{@MachineEffectiveOutput}{@MachineNominalOutput} = \frac{@FilledAndSealedBottles}{@Generalruntime \cdot @MachineNominalOutput}$$

$$\text{Utilisation factor } \phi E = \frac{@MachineSetOutput}{@MachineNominalOutput}$$

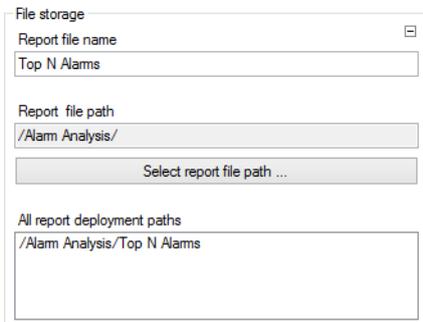
VALIDATION



| Parameters | Description |
|-------------------------------|--|
| Validate configuration | <p>Clicking on the button validates the inputs and provides the results in the list field.</p> <p>The following is checked during validation:</p> <ul style="list-style-type: none"> ▶ Whether the report is linked to a project and/or an equipment model ▶ For which equipment groups precisely one variable each per active filter can be addressed with the meanings entered |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | <p>Applies all changes in all tabs and closes the dialog.</p> <p>If one of the necessary input fields is empty, the button is deactivated.</p> |
| Cancel | Discards all changes in all tabs and closes the dialog. |

13.1.21 RDL file - path

The RDL file path is displayed and configured using four elements:



The screenshot shows a dialog box titled "File storage" with the following elements:

- Report file name:** A text input field containing "Top N Alarms".
- Report file path:** A text input field containing "/Alarm Analysis/".
- Select report file path ...:** A button to open a file selection dialog.
- All report deployment paths:** A list box containing the path "/Alarm Analysis/Top N Alarms".

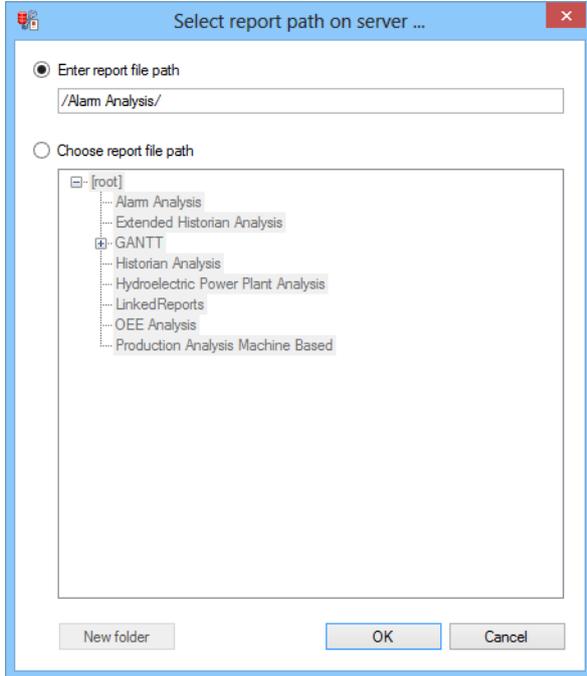
| Parameters | Description |
|-----------------------------|--|
| Report file name | Text field for the input of a name for the RDL file. The name may not contain any of the following characters: ;?:@&=+\$,*<> "/ |
| Report file path | Show the current RDL file path. |
| Choose report file path | Opens the dialog for configuring the path. |
| All report deployment paths | Shows all paths for language-dependent folders configured in the options (on page 574). |

CONFIGURING THE PATH

To configure the path for the RDL file:

1. Click on the `Select RDL folder path` button in the report window
2. The dialog for selecting and creating a folder is opened
3. Enter the path directly or select it in the tree
4. click on `OK`

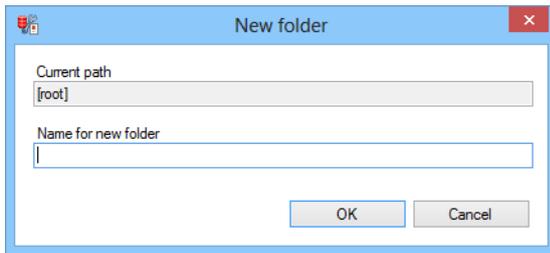
DIALOG TO SELECT REPORT PATH ON SERVER



| Parameters | Description |
|-------------------------|--|
| Enter report file path | <p>Active: The file path is entered into the field manually.</p> <p>The following applies for the input of the name:</p> <ul style="list-style-type: none"> ▶ The slash at the start of the name is set automatically ▶ The length of the complete path must not exceed 260 characters ▶ The name must not be empty nor consist solely of dots and/or spaces ▶ The name must not be the same as one of the language designators (EN, DE, ...) ▶ The name must not contain any non-permitted characters <p>The following are not permitted: ; ? : @ & = + \$, \ * < > " /</p> |
| Choose report file path | <p>Active: The file path is selected from the list.</p> <p>The list contains the current folder structure, whereby language folders (on page 574) are not shown. For example: Folder EN/folder 1 or folder1/EN are always displayed as folder1.</p> |
| List field | <p>Displays the folder structure of the Analyzer server. The currently-selected folder is highlighted.</p> <p>A folder can be selected in the list.</p> |
| New folder | <p>Opens dialog to add a new folder.</p> <p>Only active if <code>Select report file path</code> has been activated.</p> <p>For details, see the Creating a new folder section.</p> |
| OK | <p>Checks the inputs to ensure that they are valid, accepts the entered or selected folder including language variants as the path to store the RDL file and closes the dialog.</p> |
| Cancel | <p>Closes the dialog without changing the path.</p> |

CREATE NEW FOLDER

Clicking on the `New folder` button in the dialog to select the folder for the RDL file opens the dialog to create a folder:



| Parameters | Description |
|---------------------|--|
| Current path | Display of the current superordinate folder, under which the new folder is to be created. The folder highlighted in the Select report file path dialog is given. |
| Name for new folder | Entry of the name for the folder. The following applies for the input of the name: <ul style="list-style-type: none"> ▶ The slash at the start of the name is set automatically ▶ The length of the complete path must not exceed 260 characters ▶ The name must not be empty nor consist solely of dots and/or spaces ▶ The name must not be the same as one of the language designators (EN, DE, ...) ▶ The name must not contain any non-permitted characters The following are not permitted: ; ? : @ & = + \$, \ * < > " / |
| OK | Accepts settings and creates new folder. This is displayed in the list. |
| Cancel | Rejects all inputs and closes the dialog without creating a folder. |

13.1.22 Carpet Plot Colors

Configuration of the colors for the carpet plot.

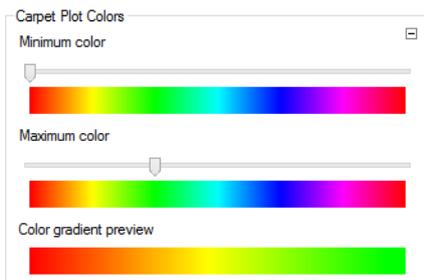
Only colors at the border of the HSV color circle are available for selection. S and V are fixed at 1 and H is gone through. The color gradient between minimum and maximum color is defined by the shortest connection route at the border of the HSV color circle.

HSV for carpet plot colors

- ▶ **H**: Color value as hue on the color circle.

- 0°: Red
 - 120°: Green
 - 240°: Blue
- ▶ s: Saturation at an interval of zero to one: Fixed value 1
 - ▶ v: Lightness value from zero to one, also called darkness level. Fixed value 1

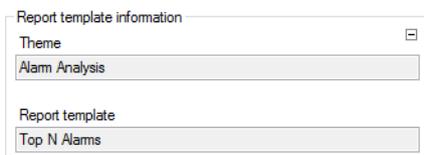
CONTROL ELEMENT FOR CARPET PLOT COLORS



| Parameters | Description |
|-------------------------------|---|
| Carpet Plot Colors | Color selection for start and end color of the color gradient in the carpet plot. |
| Minimum color | Color of the minimum value. Configuration using the slider. |
| Color maximum value | Color of the maximum value. Configuration using the slider. |
| Color gradient preview | Preview of the configured color. |

13.1.23 Report templates

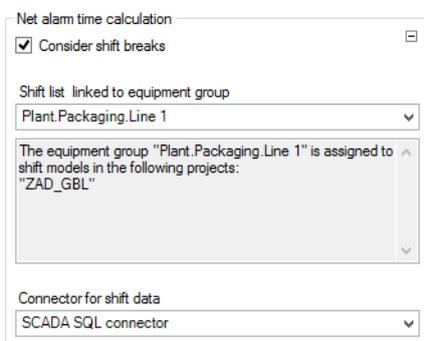
Information on the report templates:



| Parameters | Description |
|---------------------------------|---|
| Information on report templates | <p>Information on the report template, consisting of:</p> <ul style="list-style-type: none"> ▶ Theme ▶ Report template <p>Both localized names are read from the RTC at the time of the creation of the zams_rep file and then saved in the zams_rep file. Changes in the RTC file are thus not implemented here!</p> |
| Theme | <p>Localized name of the report template class from which the report template for the report comes.</p> <p>Display only.</p> |
| Report template | <p>Localized name of the report template used.</p> <p>Display only.</p> |

13.1.24 Shift data origin

The group **shift list** linked to **equipment group** in the dialog to configure alarm reports allows the assignment of alarm groups to shifts. Some reports use the shift data to determine the net waiting time for alarms.



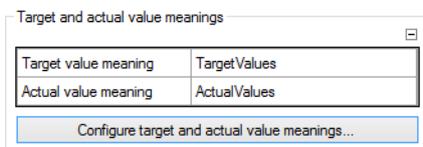
| Parameters | Description |
|--------------------------------------|---|
| Net alarm time calculation | Properties to calculate the net time. |
| Consider shift breaks | Active: Shift breaks are taken into account. |
| Shift list linked to equipment group | ID of the equipment model for which the shift data is to be obtained from drop-down list |
| List field | Shows the projects where the currently-selected equipment model is assigned a shift model. |
| Connector for shift data | Selection of the connector from where the shift data is to be obtained from a drop-down list. |

If the report is tied to a project via the time filter settings, the entries in the drop-down list are filtered to the equipment model selection. Only entries that are assigned a shift model in the tied project are available.

If a variant with shift filtering is selected for the time filter settings, then the shift data is accepted once the time filtering has been confirmed.

13.1.25 Set values and actual values

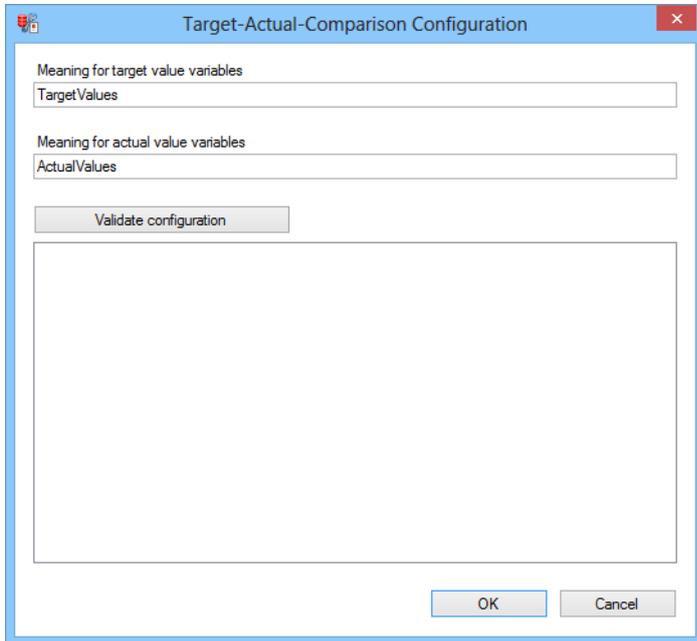
This group shows the configured meanings for set values and actual values that are being searched for an equipment group, and allows these to be configured.



| Parameters | Description |
|---|--|
| Target and actual value meanings | Display and configuration of the meanings for set points and actual values. |
| List of meanings | Table with the current settings for the meanings for the set points and actual values. |
| Configure target and actual value meanings | Clicking on the button opens the dialog for configuring the meanings (on page 756). |

Configure target and actual value meanings

Dialog to configure the meanings for set values and actual values.



| Parameters | Description |
|---|--|
| Meaning for variables with set value | Enter the meaning for set values. |
| Meaning for variables with actual value | Enter the meaning for actual values. |
| Validate configuration | <p>Clicking on the button checks the entries in both input fields.</p> <p>The following is checked:</p> <ul style="list-style-type: none"> ▶ Whether the report is linked to a project and/or an equipment model ▶ The equipment groups for which, with the meanings entered precisely, one variable each can be addressed |
| OK | <p>Applies settings and closes the dialog.</p> <p>Button is only available if both input fields are filled.</p> |
| Cancel | Discards all changes and closes the dialog. |

13.1.26 Element sort order

Configuration of the sorting of the modes of operation and the components.

Element sort order

Element ID ascending (same order as metadata) ▼

| Parameters | Description |
|--------------------|---|
| Element sort order | <p>Selection of the sorting criteria from the drop-down list:</p> <ul style="list-style-type: none"> ▶ Element ID ascending (same order as metadata table) ▶ Element ID descending (inverse order as metadata table) ▶ Element label alphabetically ascending ▶ Element label alphabetically descending |

13.1.27 Variance tolerance for loss detection

Defines the precision for loss detection.

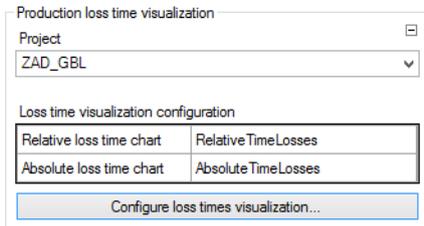
Variance tolerance for loss detection

10

| Parameters | Description |
|---------------------------------------|--|
| Variance tolerance for loss detection | <p>Denotes how many tenths of a percent the sum of the entries must deviate from the absolute difference of the sum of all entries and the sum of all outputs of a node in order to be recognized as a loss.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 1000 - loss detection deactivated. <p>Entry in the field or configuration using the cursor keys.</p> |

13.1.28 Visualizing loss times

Configuration and display of the meanings for the loss times.

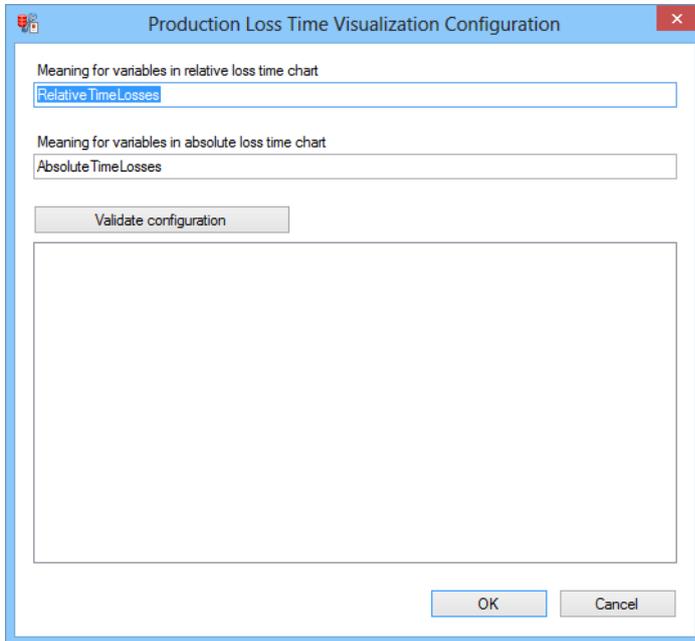


| Parameters | Description |
|--|--|
| Production loss time visualization | Configuration and display of the meanings for the loss times. |
| Project | Selection of the project that is to be linked to a project from a drop-down list. If a project is selected, this project is forwarded to all other groupings in the report that offer project selection. If this grouping receives a message about a linked project from another grouping, this project is set in the drop-down list and the drop-down list is deactivated. |
| Loss time visualization configuration | Table with the current settings for the meanings for the loss times. |
| Configure loss times visualization | Clicking on the button opens the dialog (on page 758) to configure the visualization of the loss times. |

Configure loss times visualization

The dialog allows the input of the meanings for variables that are to be displayed in relative or absolute loss time diagrams.

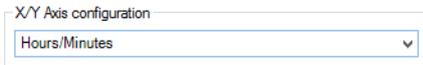
The dialog is opened by clicking on the **Configure loss times visualization** button. To do this, a project must be selected beforehand.



| Parameters | Description |
|---|--|
| Meaning for variables in relative loss time chart | Input of the meaning, which leads to the variable being included in the relative loss time diagram. |
| Meaning for variables in absolute loss time chart | Input of the meaning, which leads to the variable being included in the absolute loss time diagram. |
| Validate configuration | <p>Clicking on the button validates the inputs and provides the results in the list field.</p> <p>The following is checked during validation:</p> <ul style="list-style-type: none"> ▶ Whether the report is linked to a project and/or an equipment model ▶ For which equipment groups precisely one variable each per active filter can be addressed with the meanings entered |
| OK | <p>Applies settings and closes the dialog.</p> <p>The button is not shown if one of the input fields is empty.</p> |
| Cancel | Discards all changes and closes the dialog. |

13.1.29 XY axis configuration

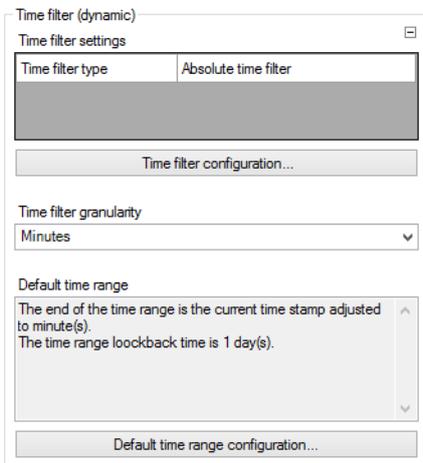
Configuration of the X/Y axes.



| Parameters | Description |
|-------------------|---|
| X/Y configuration | <p>Selection of the values for the X and Y axis from the drop-down list:</p> <ul style="list-style-type: none"> ▶ Hours/Minutes ▶ Days/Hours ▶ Months/Days |

13.1.30 Time filter

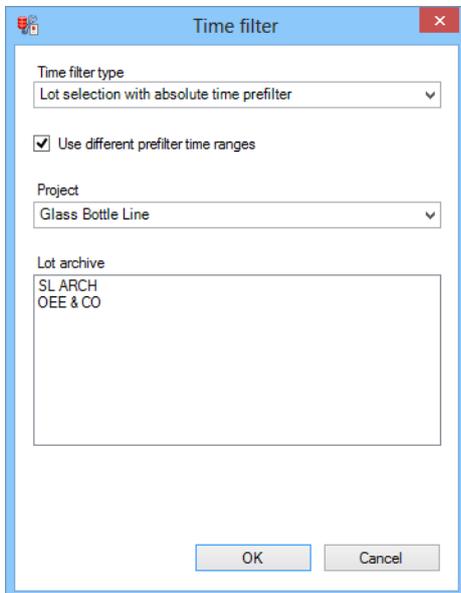
The time filter consists of several components:



| | |
|---|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | <p>Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration:</p> <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read if shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | Display of the requirements for standard values of the report time period. |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

Time filter settings

The settings for the time filter are changed by means of a dialog:



The dialog has different configuration features depending on the selection of the time filter type. For details, see the respective time filter types:

- ▶ **Absolute and relative time filter (on page 763)**
- ▶ Lots (on page 765)
- ▶ Shift (on page 767)

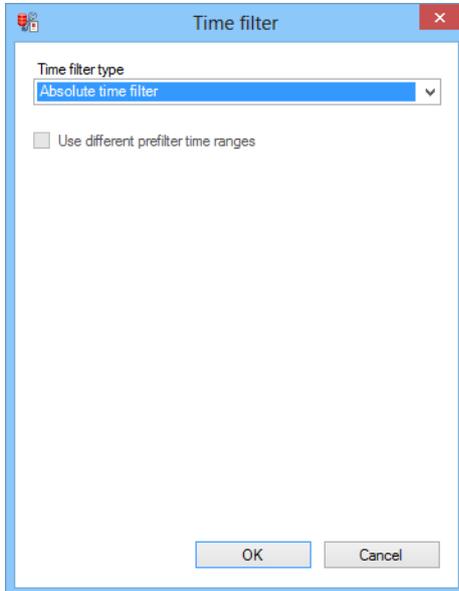
CONFIGURING THE TIME FILTER

To configure the time filter:

1. Select the desired time filter type.
2. Select the desired granularity. It determines what selection options are available in the Analyzer Manager.
3. Set the parameters for the default values: The configuration possibilities depend on the type and granularity of the time filter.

Absolute and relative time filter

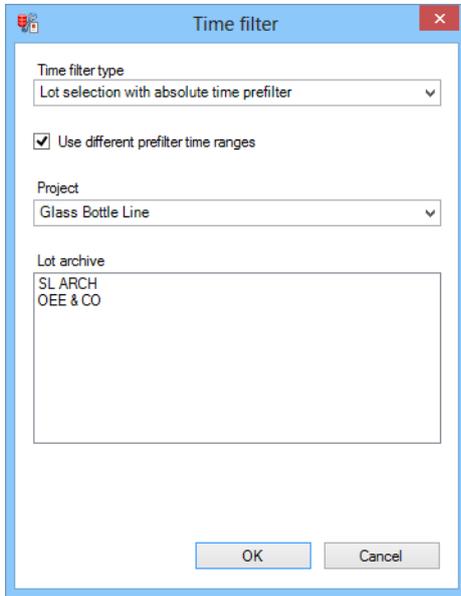
Configuration of the absolute time filter and relative time filter.



| Parameters | Description |
|-------------------------------------|---|
| Time filter type | <p>Selection of the time filter type from a drop-down list.</p> <ul style="list-style-type: none"> ▶ Absolute time filter: Date and time per time range. ▶ Relative time filter: Time span per time range. |
| Use different prefilter time ranges | <p>Only available for comparative report templates:</p> <ul style="list-style-type: none"> ▶ Active: Two time filter ranges (on page 774) are used. ▶ Inactive: One time filter range (on page 770) is used. <p>Usage:</p> <ul style="list-style-type: none"> ▶ If the report only has one time range, the checkbox is not checked and is deactivated. ▶ If the report has two time ranges and was selected as an absolute or relative time filter type, the checkbox is checked and activated. ▶ If the report has two time ranges and was selected as a lot or shift selection with absolute or relative time range as a pre-filter, then the checkbox is activated. |
| OK | Saves configuration in the report area in the Time filter configuration list field and closes the dialog. |
| Cancel | Discards changes and closes the dialog. |

For other time filter ranges, see the **Lots** (on page 765) and **Shift** (on page 767) chapters.

Lots



Time filter

Time filter type
Lot selection with absolute time prefilter

Use different prefilter time ranges

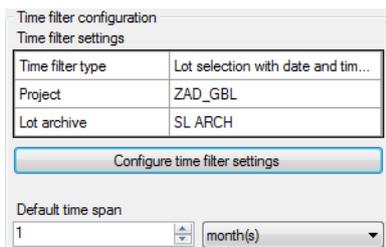
Project
Glass Bottle Line

Lot archive
SL ARCH
OEE & CO

OK Cancel

| Parameters | Description |
|-------------------------------------|---|
| Time filter type | <p>Selection of the type of time filtering from the drop-down list. The following are available for lots:</p> <ul style="list-style-type: none"> ▶ Lot selection with date and time prefilter: Selection of the lot with date and time per time range ▶ Lot selection with time span prefilter: Selection of the lot with time span per time range |
| Use different prefilter time ranges | <p>Only available for comparative report templates:</p> <ul style="list-style-type: none"> ▶ Active: Two time filter ranges (on page 774) are used. ▶ Inactive: One time filter range (on page 770) is used. <p>Usage:</p> <ul style="list-style-type: none"> ▶ If the report only has one time range, the checkbox is not checked and is deactivated. ▶ If the report has two time ranges and was selected as an absolute or relative time filter type, the checkbox is checked and activated. ▶ If the report has two time ranges and was selected as a lot or shift selection with absolute or relative time range as a pre-filter, then the checkbox is activated. |
| Project | Selection of a project from the drop-down list from which the lot data should come. The report is tied to this project as soon as the dialog is confirmed with OK . |
| Lot archive | List of the lot archives of the selected project. One of the archives must be selected. |
| OK | Saves configuration in the report area in the Time filter configuration list field and closes the dialog. |
| Cancel | Discards changes and closes the dialog. |

Possible result in the report area:



Time filter configuration
Time filter settings

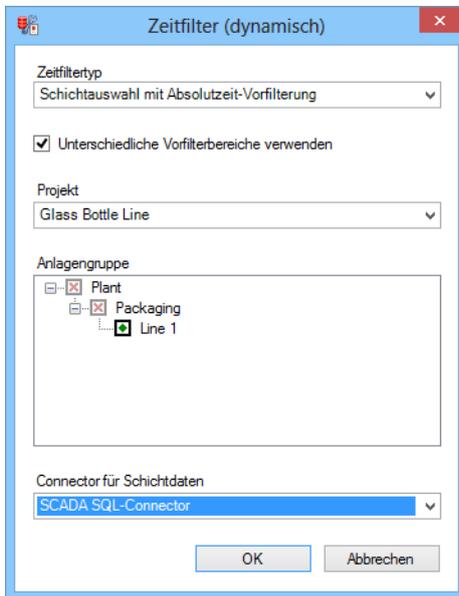
| | |
|------------------|------------------------------------|
| Time filter type | Lot selection with date and tim... |
| Project | ZAD_GBL |
| Lot archive | SL ARCH |

Configure time filter settings

Default time span
1 month(s)

Shift

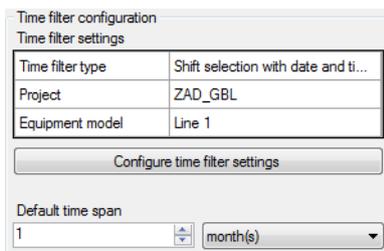
If the combobox is set to "Shift selection with datetime prefilter" or "Shift selection with timespan prefilter", additional controls are shown and the dialog will look as follows:



| Parameters | Description |
|-------------------------------------|--|
| Time filter type | <p>Selection of the type of time filtering from the drop-down list; the following are available for shift data:</p> <ul style="list-style-type: none"> ▶ Shift selection with date and time prefilter: Selection of the shift data with date and time per time range ▶ Shift selection with time span prefilter: Selection of the shift data with time span per time range |
| Use different prefilter time ranges | <p>Only available for comparative report templates:</p> <ul style="list-style-type: none"> ▶ Active: Two time filter ranges (on page 774) are used. ▶ Inactive: One time filter range (on page 770) is used. <p>Usage:</p> <ul style="list-style-type: none"> ▶ If the report only has one time range, the checkbox is not checked and is deactivated. ▶ If the report has two time ranges and was selected as an absolute or relative time filter type, the checkbox is checked and activated. ▶ If the report has two time ranges and was selected as a lot or shift selection with absolute or relative time range as a pre-filter, then the checkbox is activated. |
| Project | <p>Selection of a project from the drop-down list from which the shift data should come. The report is tied to this project as soon as the dialog is confirmed with OK.</p> |
| Equipment model | <p>Lists all the entries in the equipment model for which shift data is to be displayed in the selected project. For this, the following applies:</p> <ul style="list-style-type: none"> ▶ If an equipment group and all its subordinate equipment groups do not contain a shift model, the equipment group is not displayed. ▶ For all models with shift data, the entries are shown up to the root node, even if the superordinate nodes drawn do not contain any shift data. ▶ If an element is displayed as unusable in the tree is clicked, the first subordinate and usable element assigned to this element is used instead of this. ▶ There must be an equipment model with shift data selected. |
| Connector for shift data | <p>Selection of the connector to get shift data from drop-down list</p> <p>A connector must be selected.</p> |

| | |
|---------------|--|
| | Attention: The SCADA runtime connector cannot get any shift data. |
| OK | Saves configuration in the report area in the Time filter configuration list field and closes the dialog. |
| Cancel | Discards changes and closes the dialog. |

Possible result in the report area:




Attention

Each equipment group in zenon may only be assigned to one individual time model.

If several time model groups are assigned, the Analyzer Wizard Export uses the first that it finds and exports this to the metadata of the Analyzer. Other time model groups are ignored.

Default time range

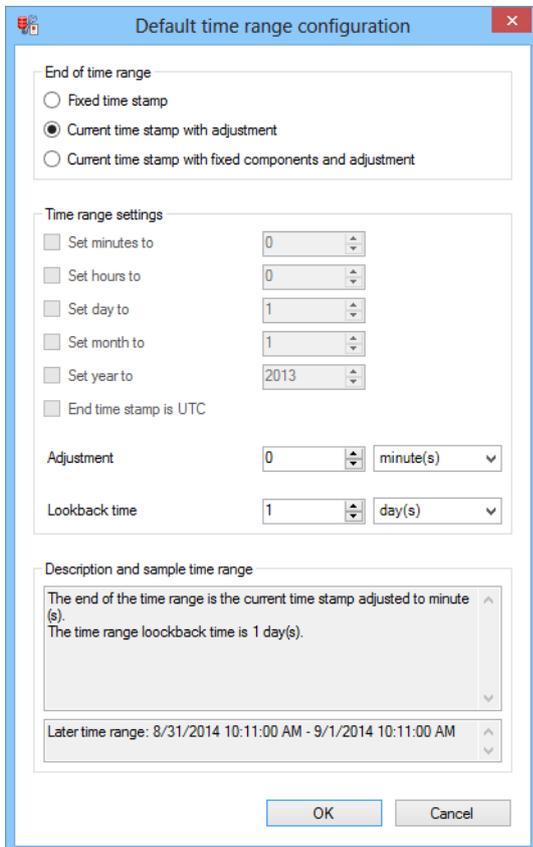
The standard time range is stipulated using a separate dialog. The display of the dialog depends on the settings for the `Use different prefilter time ranges` option in the time filter configuration.

Option:

- ▶ Inactive: **One time range** (on page 770)
- ▶ Active: **Two time ranges** (on page 774)

One time range

Configuration of the default time range if the Use different prefilter time ranges option is inactive:



The screenshot shows a dialog box titled "Default time range configuration" with a close button (X) in the top right corner. The dialog is divided into several sections:

- End of time range:** Contains three radio buttons. The middle option, "Current time stamp with adjustment", is selected.
- Time range settings:** Contains several checkboxes and spinners:
 - Set minutes to: 0
 - Set hours to: 0
 - Set day to: 1
 - Set month to: 1
 - Set year to: 2013
 - End time stamp is UTC
- Adjustment:** A spinner set to 0 and a dropdown menu set to "minute(s)".
- Lookback time:** A spinner set to 1 and a dropdown menu set to "day(s)".
- Description and sample time range:** A text area containing the text: "The end of the time range is the current time stamp adjusted to minute (s). The time range lookback time is 1 day(s)." Below this is a text box showing "Later time range: 8/31/2014 10:11:00 AM - 9/1/2014 10:11:00 AM".

At the bottom of the dialog are two buttons: "OK" and "Cancel".

END OF TIME RANGE

| Parameters | Description |
|---|--|
| End of time range | <p>Stipulates how the end of the time range is determined. Select an option:</p> <ul style="list-style-type: none"> ▶ Fixed time stamp ▶ Current time stamp with adjustment ▶ Current time stamp with fixed components and adjustment <p>The selection determines which options can be configured at the lower range of the dialog.</p> |
| Fixed time stamp | <p>Fixed time stamp with lookback time.</p> <p>The End time stamp is UTC and Lookback time options can be configured.</p> |
| Current time stamp with adjustment | <p>Fixed time stamp with adjustment and lookback time.</p> <p>The Adjustment and Lookback time options can be configured.</p> |
| Current time stamp with fixed components and adjustment | <p>Fixed time stamp with individual adjustment and lookback time.</p> <p>The Time, as well as Adjustment and Lookback time options can be configured.</p> |

TIME RANGE SETTINGS

| Parameters | Description |
|---------------------|---|
| Time range settings | <p>Elements to set the detail parameters of the time range. The elements that are available depend on the setting for End of time range.</p> |

| | |
|-----------------------|--|
| Set minutes to | <ul style="list-style-type: none"> ▶ Checkbox active: Minute is fixed. Only available if the time filter granularity and the setting for End of time range allow the use of minutes. ▶ numerical element : Input of the fixed minute. Possible values: 0 to 59 |
| Set hours to | <ul style="list-style-type: none"> ▶ Checkbox active: Hour is fixed. Only available if the time filter granularity and the setting for End of time range allow the use of hours. ▶ numerical element : Input of the fixed hour. Possible values: 0 to 23 |
| Set day to | <ul style="list-style-type: none"> ▶ Checkbox active: Day is fixed. Only available if the time filter granularity and the setting for End of time range allows the use of days. ▶ numerical element : Input of the fixed day. Possible values: 1 to 28 . Limited to 28, because the value for all months of a year must be valid. |
| Set month to | <ul style="list-style-type: none"> ▶ Checkbox active: Month is fixed. Only available if the time filter granularity and the setting for End of the time range allow the use of months. ▶ numerical element : Input of the fixed month. Possible values: 1 to 12 |
| Set year to | <ul style="list-style-type: none"> ▶ Checkbox active: Year is fixed. Only available if the time filter granularity and the setting for End of the time range allow the use of years. ▶ numerical element : Input of the fixed year. Possible values: 1900 to 3999 |
| End time stamp is UTC | <p>Stipulates whether the fixed end time that has been entered is UTC or local time.</p> <ul style="list-style-type: none"> ▶ Active: End time is UTC. Only available if the time filter granularity and the setting for End of the time range allow its use. |
| Adjustment | Adjustment of the end time. Only available if Fixed time stamp has been selected for End of the time |

| | |
|----------------------|---|
| | <p>range.</p> <p>Possible values for quantity: -1000 to 1000</p> <p>Granularity with selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| <p>Lookback time</p> | <p>Stipulation of the length of the time range for the lookback time.</p> <p>Possible values for quantity: 1 to 1000</p> <p>Granularity with selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |

DESCRIPTION AND SAMPLE TIME RANGE

| Parameters | Description |
|-----------------------------------|----------------------------------|
| Description and sample time range | Display of the current settings. |

| | |
|---------------------------|---|
| Description | Text description of the settings. |
| Example time range | Display of the default value calculated for the time range with the current settings. |

CLOSE DIALOG

| | |
|---------------|---|
| OK | Applies settings and closes the dialog. |
| Cancel | Discards all changes and closes the dialog. |

Two time ranges

Configuration of the default time ranges if the `Use different prefilter time ranges` option is active. The following are configured:

- ▶ Later time range
- ▶ Earlier time range

LATER TIME RANGE

Configuration of the later time range.

Default time range configuration
✕

Later time range
Earlier time range

End of time range

Fixed time stamp

Current time stamp with adjustment

Current time stamp with fixed components and adjustment

Time range settings

Set minutes to

Set hours to

Set day to

Set month to

Set year to

End time stamp is UTC

Adjustment:

Lookback time:

Description and sample time range

The end of the later time range is 1/1/2013 12:00:00 AM.
 The lookback of the later time range time is 1 day(s).
 The end of the earlier time range is the start of the later time range. Both time ranges have the same lookback time.

Earlier time range: 12/30/2012 12:00:00 AM - 12/31/2012 12:00:00 AM
 Later time range: 12/31/2012 12:00:00 AM - 1/1/2013 12:00:00 AM

END OF TIME RANGE

| Parameters | Description |
|---|--|
| End of time range | <p>Stipulates how the end of the time range is determined. Select an option:</p> <ul style="list-style-type: none"> ▶ Fixed time stamp ▶ Current time stamp with adjustment ▶ Current time stamp with fixed components and adjustment <p>The selection determines which options can be configured at the lower range of the dialog.</p> |
| Fixed time stamp | <p>Fixed time stamp with lookback time.</p> <p>The End time stamp is UTC and Lookback time options can be configured.</p> |
| Current time stamp with adjustment | <p>Fixed time stamp with adjustment and lookback time.</p> <p>The Adjustment and Lookback time options can be configured.</p> |
| Current time stamp with fixed components and adjustment | <p>Fixed time stamp with individual adjustment and lookback time.</p> <p>The Time, as well as Adjustment and Lookback time options can be configured.</p> |

TIME RANGE SETTINGS

| Parameters | Description |
|---------------------|---|
| Time range settings | <p>Elements to set the detail parameters of the time range. The elements that are available depend on the setting for End of time range.</p> |

| | |
|-----------------------|--|
| Set minutes to | <ul style="list-style-type: none"> ▶ Checkbox active: Minute is fixed. Only available if the time filter granularity and the setting for End of time range allow the use of minutes. ▶ numerical element : Input of the fixed minute. Possible values: 0 to 59 |
| Set hours to | <ul style="list-style-type: none"> ▶ Checkbox active: Hour is fixed. Only available if the time filter granularity and the setting for End of time range allow the use of hours. ▶ numerical element : Input of the fixed hour. Possible values: 0 to 23 |
| Set day to | <ul style="list-style-type: none"> ▶ Checkbox active: Day is fixed. Only available if the time filter granularity and the setting for End of time range allows the use of days. ▶ numerical element : Input of the fixed day. Possible values: 1 to 28 . Limited to 28, because the value for all months of a year must be valid. |
| Set month to | <ul style="list-style-type: none"> ▶ Checkbox active: Month is fixed. Only available if the time filter granularity and the setting for End of the time range allow the use of months. ▶ numerical element : Input of the fixed month. Possible values: 1 to 12 |
| Set year to | <ul style="list-style-type: none"> ▶ Checkbox active: Year is fixed. Only available if the time filter granularity and the setting for End of the time range allow the use of years. ▶ numerical element : Input of the fixed year. Possible values: 1900 to 3999 |
| End time stamp is UTC | <p>Stipulates whether the fixed end time that has been entered is UTC or local time.</p> <ul style="list-style-type: none"> ▶ Active: End time is UTC. Only available if the time filter granularity and the setting for End of the time range allow its use. |
| Adjustment | <p>Adjustment of the end time. Only available if Fixed time stamp has been selected for End of the time</p> |

| | |
|---------------|---|
| | <p>range.</p> <p>Possible values for quantity: -1000 to 1000</p> <p>Granularity with selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Lookback time | <p>Stipulation of the length of the time range for the lookback time.</p> <p>Possible values for quantity: 1 to 1000</p> <p>Granularity with selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |

DESCRIPTION AND SAMPLE TIME RANGE

| Parameters | Description |
|-----------------------------------|----------------------------------|
| Description and sample time range | Display of the current settings. |

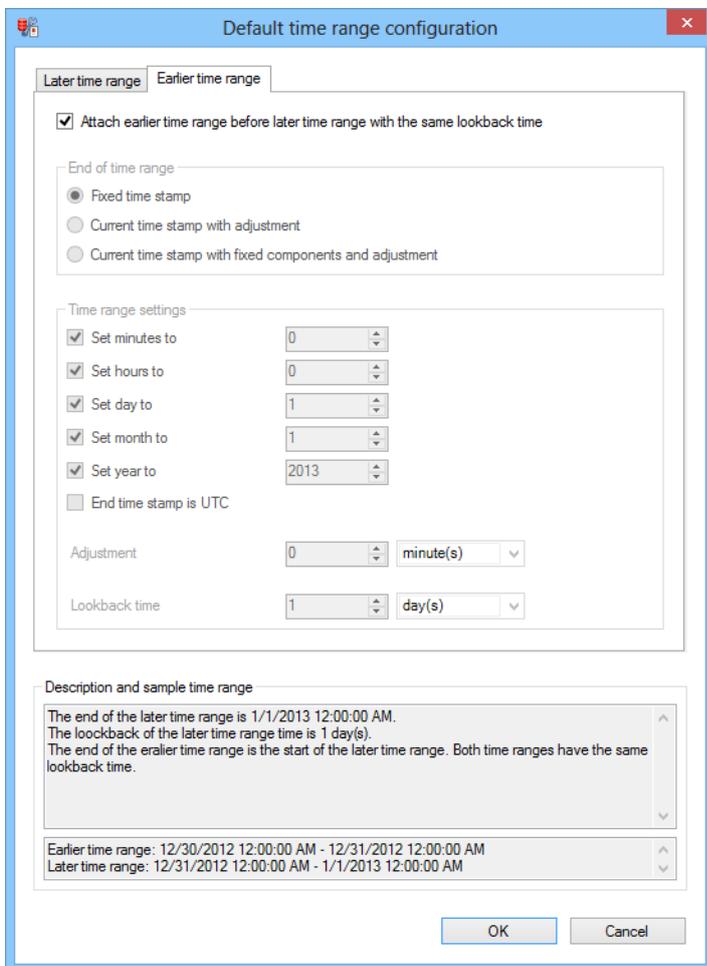
| | |
|---------------------------|---|
| Description | Text description of the settings. |
| Example time range | Display of the default value calculated for the time range with the current settings. |

CLOSE DIALOG

| | |
|---------------|---|
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

EARLIER TIME RANGE

Configuration of the earlier time range.



The screenshot shows a dialog box titled "Default time range configuration" with a close button (X) in the top right corner. It has two tabs: "Later time range" and "Earlier time range", with the latter selected. The "Earlier time range" tab contains the following settings:

- Attach earlier time range before later time range with the same lookback time
- End of time range**
 - Fixed time stamp
 - Current time stamp with adjustment
 - Current time stamp with fixed components and adjustment
- Time range settings**
 - Set minutes to: 0
 - Set hours to: 0
 - Set day to: 1
 - Set month to: 1
 - Set year to: 2013
 - End time stamp is UTC
- Adjustment**: 0 minute(s)
- Lookback time**: 1 day(s)

At the bottom, there is a section for "Description and sample time range" with a text area containing:

The end of the later time range is 1/1/2013 12:00:00 AM.
 The lookback of the later time range time is 1 day(s).
 The end of the earlier time range is the start of the later time range. Both time ranges have the same lookback time.

Below the text area, the calculated time ranges are displayed:

Earlier time range: 12/30/2012 12:00:00 AM - 12/31/2012 12:00:00 AM
 Later time range: 12/31/2012 12:00:00 AM - 1/1/2013 12:00:00 AM

At the bottom of the dialog are "OK" and "Cancel" buttons.

ATTACH EARLIER TIME RANGE BEFORE LATER TIME RANGE WITH THE SAME LOOKBACK TIME

| Parameters | Description |
|---|---|
| Attach earlier time range before later time range with the same lookback time | <p>Stipulation of whether the two time ranges to be compared border one another directly or are the same length.</p> <ul style="list-style-type: none"><li>▶ Active: The end of the earlier time range is also the start of the later time range. Both time ranges are the same length. All control elements in this tab have been deactivated.<li>▶ Inactive: Control elements in this tab are active. The earlier time range can be configured individually. |

END OF TIME RANGE

| Parameters | Description |
|---|--|
| End of time range | <p>Stipulates how the end of the time range is determined. Select an option:</p> <ul style="list-style-type: none"> ▶ Fixed time stamp ▶ Current time stamp with adjustment ▶ Current time stamp with fixed components and adjustment <p>The selection determines which options can be configured at the lower range of the dialog.</p> |
| Fixed time stamp | <p>Fixed time stamp with lookback time.</p> <p>The End time stamp is UTC and Lookback time options can be configured.</p> |
| Current time stamp with adjustment | <p>Fixed time stamp with adjustment and lookback time.</p> <p>The Adjustment and Lookback time options can be configured.</p> |
| Current time stamp with fixed components and adjustment | <p>Fixed time stamp with individual adjustment and lookback time.</p> <p>The Time, as well as Adjustment and Lookback time options can be configured.</p> |

TIME RANGE SETTINGS

| Parameters | Description |
|---------------------|---|
| Time range settings | <p>Elements to set the detail parameters of the time range. The elements that are available depend on the setting for End of time range.</p> |

| | |
|-----------------------|--|
| Set minutes to | <ul style="list-style-type: none"> ▶ Checkbox active: Minute is fixed. Only available if the time filter granularity and the setting for End of time range allow the use of minutes. ▶ numerical element : Input of the fixed minute. Possible values: 0 to 59 |
| Set hours to | <ul style="list-style-type: none"> ▶ Checkbox active: Hour is fixed. Only available if the time filter granularity and the setting for End of time range allow the use of hours. ▶ numerical element : Input of the fixed hour. Possible values: 0 to 23 |
| Set day to | <ul style="list-style-type: none"> ▶ Checkbox active: Day is fixed. Only available if the time filter granularity and the setting for End of time range allows the use of days. ▶ numerical element : Input of the fixed day. Possible values: 1 to 28 . Limited to 28, because the value for all months of a year must be valid. |
| Set month to | <ul style="list-style-type: none"> ▶ Checkbox active: Month is fixed. Only available if the time filter granularity and the setting for End of the time range allow the use of months. ▶ numerical element : Input of the fixed month. Possible values: 1 to 12 |
| Set year to | <ul style="list-style-type: none"> ▶ Checkbox active: Year is fixed. Only available if the time filter granularity and the setting for End of the time range allow the use of years. ▶ numerical element : Input of the fixed year. Possible values: 1900 to 3999 |
| End time stamp is UTC | <p>Stipulates whether the fixed end time that has been entered is UTC or local time.</p> <ul style="list-style-type: none"> ▶ Active: End time is UTC. Only available if the time filter granularity and the setting for End of the time range allow its use. |
| Adjustment | Adjustment of the end time. Only available if Fixed time stamp has been selected for End of the time |

| | |
|---------------|---|
| | <p>range.</p> <p>Possible values for quantity: -1000 to 1000</p> <p>Granularity with selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Lookback time | <p>Stipulation of the length of the time range for the lookback time.</p> <p>Possible values for quantity: 1 to 1000</p> <p>Granularity with selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |

DESCRIPTION AND SAMPLE TIME RANGE

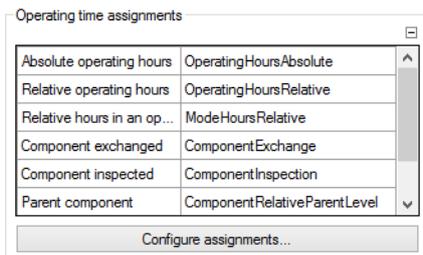
| Parameters | Description |
|-----------------------------------|---|
| Description and sample time range | Display of the current settings. |
| Description | Text description of the settings. |
| Example time range | Display of the default value calculated for the time range with the current settings. |

CLOSE DIALOG

| | |
|--------|---|
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

13.1.31 Operating time assignments

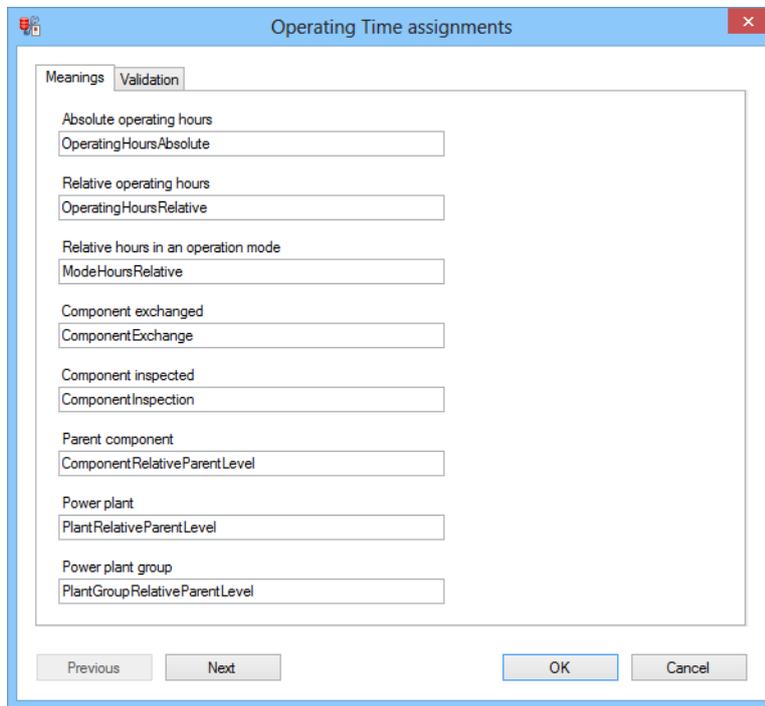
Display and configuration of the assignments for power station operating times per machine component and operating mode.



| Parameters | Description |
|-----------------------------------|--|
| Operating time assignments | Display and configuration of the assignments for power station operating times per machine component and operating mode. |
| List of assignments | Display of the configured assignments. |
| Configure assignments | Clicking on the button opens the dialog for configuring the archives (on page 785). |

Configure assignments

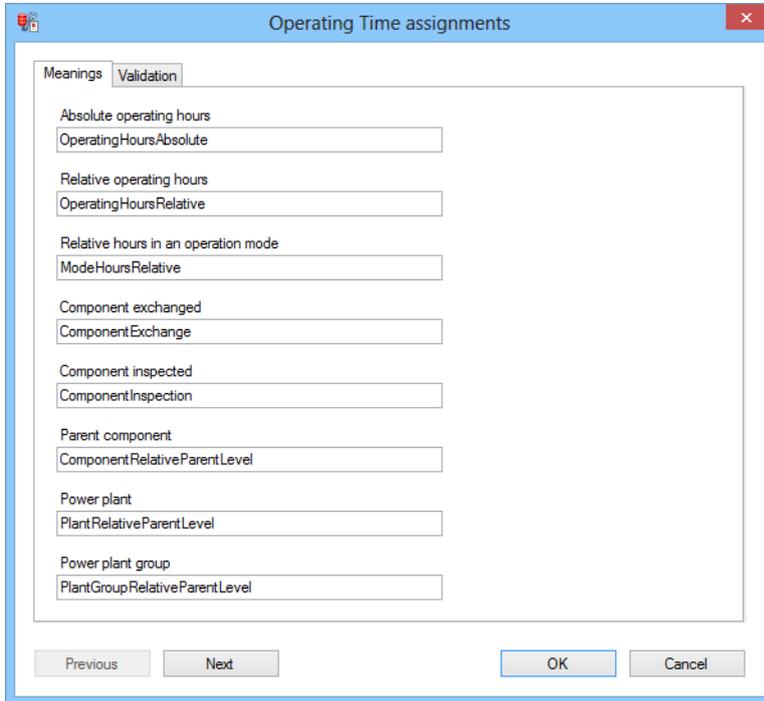
Dialog to configure the **operating time assignments** (on page 784). Dialog is started by clicking on the **Configure assignments** button. The dialog consists of two tabs:



| Parameters | Description |
|-------------------|---|
| Meanings | Configuration (on page 786) of the meanings. |
| Validation | Validation (on page 788) of the configuration. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Meanings

The assignments of the meanings are configured in this tab.



The screenshot shows a dialog box titled "Operating Time assignments" with a "Meanings" tab selected. The dialog contains a list of eight categories, each with a corresponding text input field for its meaning:

- Absolute operating hours: OperatingHoursAbsolute
- Relative operating hours: OperatingHoursRelative
- Relative hours in an operation mode: ModeHoursRelative
- Component exchanged: ComponentExchange
- Component inspected: ComponentInspection
- Parent component: ComponentRelativeParentLevel
- Power plant: PlantRelativeParentLevel
- Power plant group: PlantGroupRelativeParentLevel

At the bottom of the dialog, there are four buttons: "Previous", "Next", "OK", and "Cancel".

| Parameters | Description |
|-------------------------------------|--|
| Absolute operating hours | Entry of the meaning for the absolute operating hours counter of a machine. |
| Relative operating hours | Entry of the meaning for the relative operating hours counter of a machine. |
| Relative hours in an operation mode | Entry of the meaning for all relative operating hours counters for the operation modes of a machine. |
| Component exchanged | Entry of the meaning for all variables for component exchange events. |
| Component inspected | Entry of the meaning for all variables for component inspection events. |
| Parent component | <p>Entry of the identification for the field in the metadata table that determines the extent of superordinance the parent company has in relation to a component.</p> <p>Note for developer: ID for field in EQUIPMENTINFO table.</p> |
| Power plant | <p>Input of the identification for the field in the metadata table that determines the extent of superordinance the power station has in relation to a machine.</p> <p>Note for developer: ID for field in EQUIPMENTINFO table.</p> |
| Power plant group | <p>Input of the identification for the field in the metadata table that determines the extent of superordinance the power station group has in relation to a machine.</p> <p>Note for developer: ID for field in EQUIPMENTINFO table.</p> |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | <p>Applies all changes in all tabs and closes the dialog.</p> <p>If one of the necessary input fields is empty, the button is deactivated.</p> |
| Cancel | Discards all changes in all tabs and closes the dialog. |

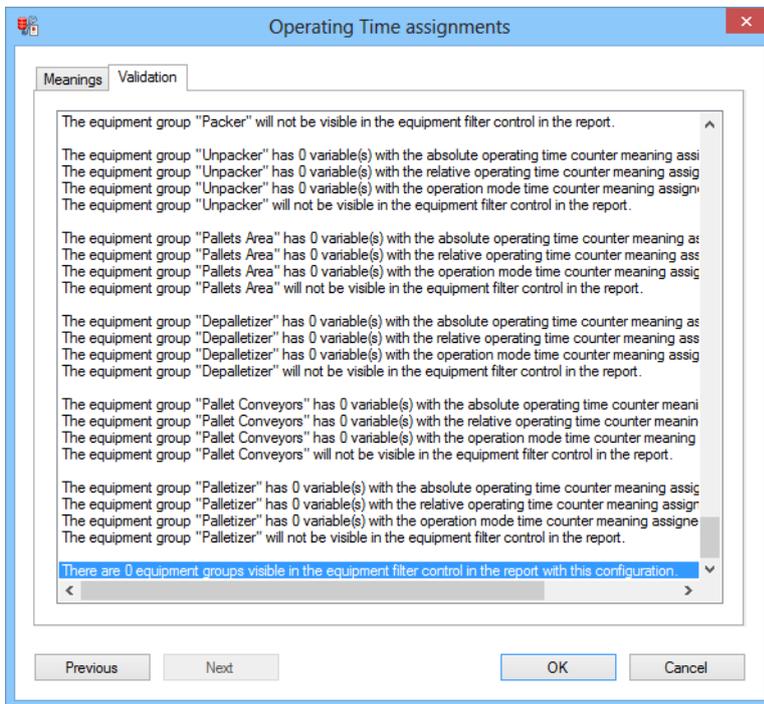
Note: The following is applicable for all input fields:

- ▶ If an input field is empty, this input field is marked with a color. The **OK** button is deactivated.
- ▶ If an input field was left empty when a dialog was called up, because the configuration of the report does not have any content for it, then this is filled with the standard value.

Validation

The assignments are validated in this tab.

In order for the validation to start, each entry field in the **Meanings** (on page 786) tab must be populated with a value.



| Parameters | Description |
|--|---|
| List of results of the verification | Lists all results of the validation of the assignments. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

VALIDATION PROCESS

The following is checked during validation:

1. Whether it is possible to read from an archive for the equipment group:

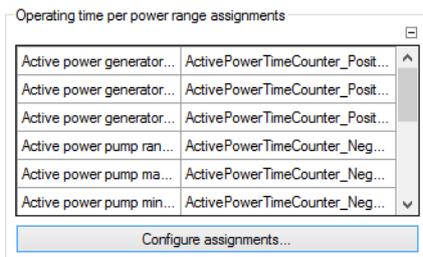
- Precisely 1 absolute operating time counter
- Precisely 1 relative operating time counter
- At least 1 operating mode relative counter.

If this is not the case, the equipment group cannot be used and the procedure is ended for this equipment group.

2. Whether information on the power plant and power plant group has been stored for this equipment group.
3. For which subelements of this equipment group precisely 1 replacement event and 0 or 1 inspection events can be read from an archive. If this condition is met, a check is also made to see if information for these subordinate equipment groups is stored via a superordinate component.

13.1.32 Operating time per power range assignments

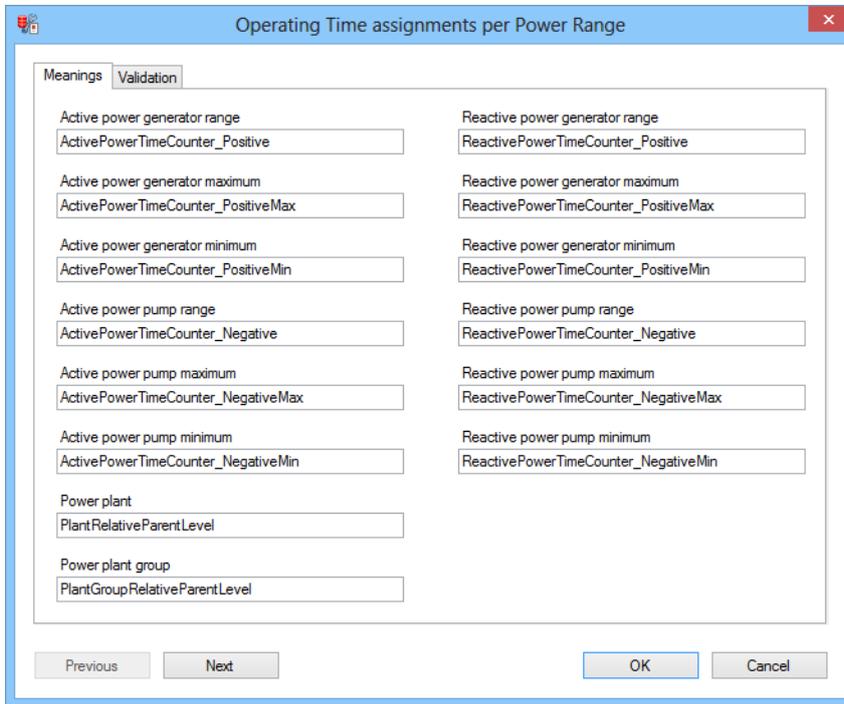
Display and configuration of the assignments for power station operating times per load area.



| Parameters | Description |
|---|---|
| Operating time per power range assignments | Display and configuration of the assignments for power station operating times per load area. |
| List of assignments | Display of the configured assignments. |
| Configure assignments | Clicking on the button opens the dialog for configuring the archives (on page 790). |

Configure assignments

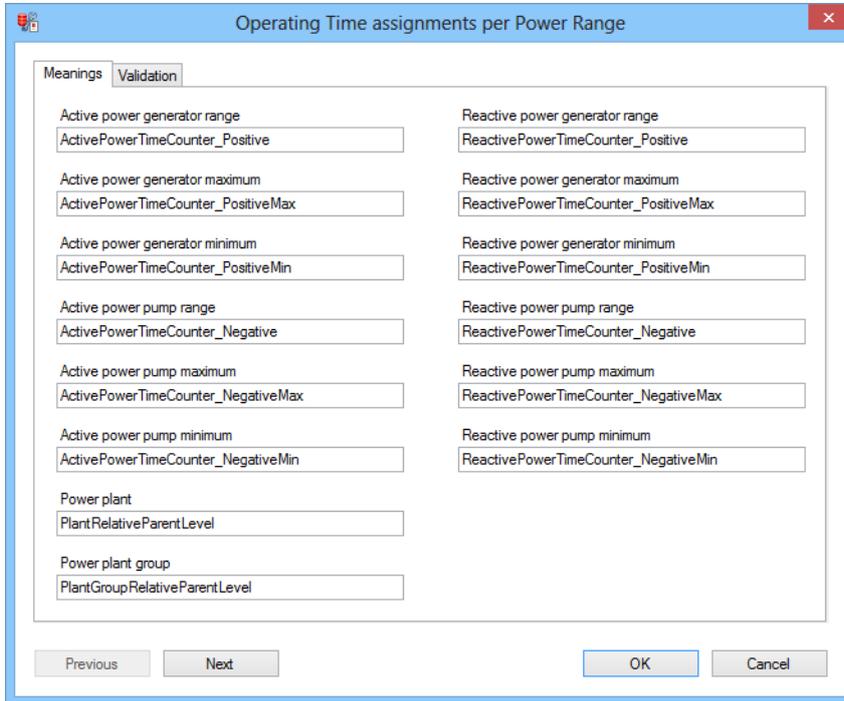
Dialog to configure the **operating time per power range assignments** (on page 789). Dialog is started by clicking on the **configure assignments** button. The dialog consists of two tabs:



| Parameters | Description |
|-------------------|---|
| Meanings | Configuration (on page 791) of the meanings. |
| Validation | Validation (on page 793) of the configuration. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Meanings

The assignments of the meanings are configured in this tab.



The screenshot shows a dialog box titled "Operating Time assignments per Power Range" with a "Meanings" tab selected. The dialog contains two columns of text boxes for assigning meanings to various power range parameters. The left column lists "Active power" parameters, and the right column lists "Reactive power" parameters. At the bottom, there are "Previous", "Next", "OK", and "Cancel" buttons.

| Active power parameter | Reactive power parameter |
|--|--|
| Active power generator range ActivePowerTimeCounter_Positive | Reactive power generator range ReactivePowerTimeCounter_Positive |
| Active power generator maximum ActivePowerTimeCounter_PositiveMax | Reactive power generator maximum ReactivePowerTimeCounter_PositiveMax |
| Active power generator minimum ActivePowerTimeCounter_PositiveMin | Reactive power generator minimum ReactivePowerTimeCounter_PositiveMin |
| Active power pump range ActivePowerTimeCounter_Negative | Reactive power pump range ReactivePowerTimeCounter_Negative |
| Active power pump maximum ActivePowerTimeCounter_NegativeMax | Reactive power pump maximum ReactivePowerTimeCounter_NegativeMax |
| Active power pump minimum ActivePowerTimeCounter_NegativeMin | Reactive power pump minimum ReactivePowerTimeCounter_NegativeMin |
| Power plant PlantRelativeParentLevel | |
| Power plant group PlantGroupRelativeParentLevel | |

| Parameters | Description |
|----------------------------------|--|
| Active power generator range | Input of the meaning for all time counters for operating time in an active power range in generator operation. |
| Active power generator maximum | Input of the meaning for the time counters for operating time at maximum active power in generator operation. |
| Active power generator minimum | Input of the meaning for the time counters for operating time at minimum active power in generator operation. |
| Active power pump range | Input of the meaning for all time counters for operating time in an active power range in pump operation. |
| Active power pump maximum | Input of the meaning for operating time at maximum active power in pump operation |
| Active power pump minimum | Input of the meaning for operating time at maximum active power in pump operation. |
| Reactive power generator range | Input of the meaning for all time counters for operating time in a reactive power range in generator operation. |
| Reactive power generator maximum | Input of the meaning for the time counters for operating time at maximum reactive power in generator operation. |
| Reactive power generator minimum | Input of the meaning for the time counters for operating time at minimum reactive power in generator operation. |
| Reactive power pump range | Input of the meaning for all time counters for operating time in reactive power range in pump operation. |
| Reactive power pump maximum | Input of the meaning for the time counters for operating time at maximum reactive power in pump operation. |
| Reactive power pump minimum | Input of the meaning for the time counters for operating time at minimum reactive power in pump operation. |
| Power plant | <p>Input of the identification for the field in the metadata table that determines the extent of superordinance the power station has in relation to a machine.</p> <p>Note for developer: ID for field in EQUIPMENTINFO table.</p> |
| Power plant group | <p>Input of the identification for the field in the metadata table that determines the extent of superordinance the power station group has in relation to a machine.</p> <p>Note for developer: ID for field in EQUIPMENTINFO table.</p> |

| | |
|-----------------|---|
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Note: The following is applicable for all input fields:

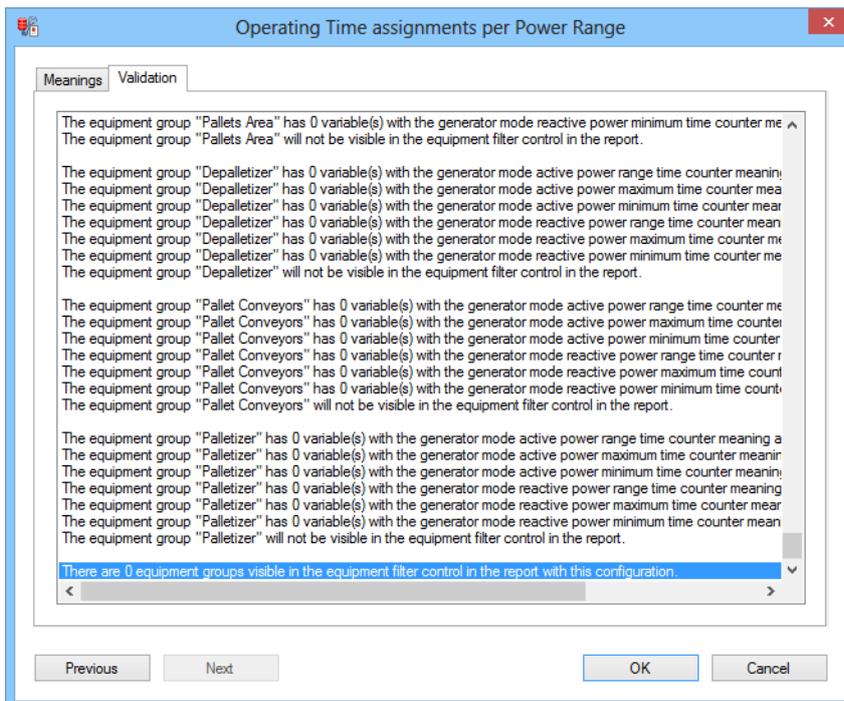
- ▶ If an input field is empty, this input field is marked with a color. The **OK** button is deactivated.

If an input field was left empty when a dialog was called up, because the configuration of the report does not have any content for it, then this is filled with the standard value.

Validation

The assignments are validated in this tab.

In order for the validation to start, each entry field in the **Meanings** (on page 791) tab must be populated with a value.



| Parameters | Description |
|-------------------------------------|---|
| List of results of the verification | Lists all results of the validation of the assignments. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

VALIDATION PROCESS

The following is checked during validation:

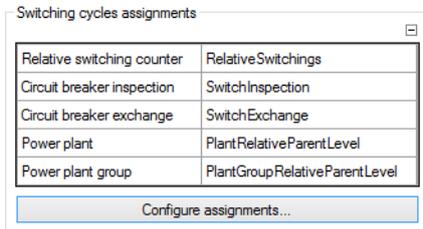
1. Whether it is possible to read from an archive for the equipment group in generator mode:
 - At least 1 active power range counter
 - Precisely 1 active power maximum counter
 - Precisely 1 active power minimum counter
 - At least 1 reactive power range counter
 - At least 1 reactive power range counter
 - Precisely 1 reactive power minimum counter.

If this is not the case, the equipment group cannot be used and the procedure is ended for this equipment group.

2. Whether it is possible to read from an archive for the equipment group in pump operation:
 - At least 1 active power range counter
 - Precisely 1 active power maximum counter
 - Precisely 1 active power minimum counter
 - At least 1 reactive power range counter
 - At least 1 reactive power range counter
 - Precisely 1 reactive power minimum counter

13.1.33 Switching cycles assignments

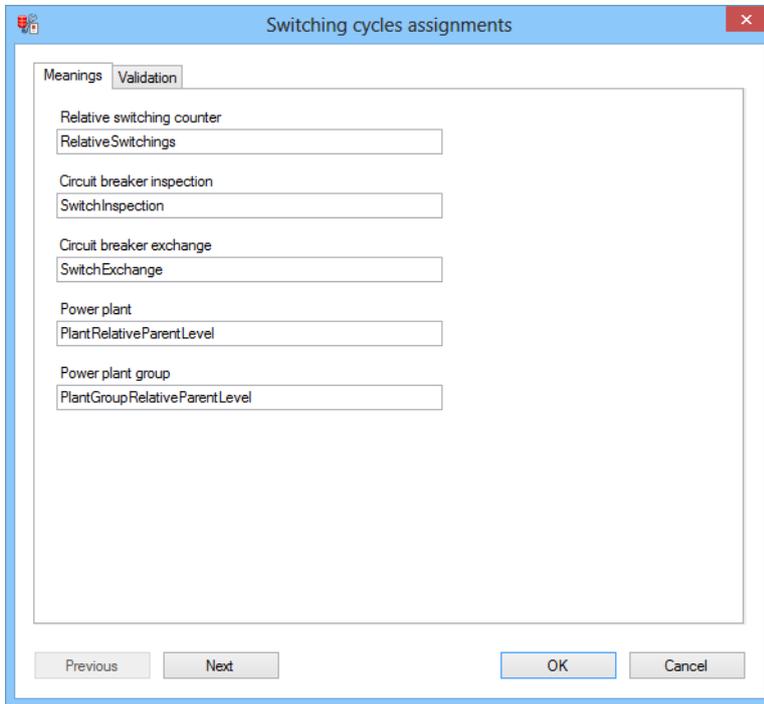
Display and configuration of the assignment for power switching cycles.



| Parameters | Description |
|-------------------------------------|---|
| Switching cycles assignments | Display and configuration of the assignment for power switching cycles. |
| List of assignments | Display of the configured assignments. |
| Configure assignments | Clicking on the button opens the dialog for configuring the archives (on page 796). |

Configure assignments

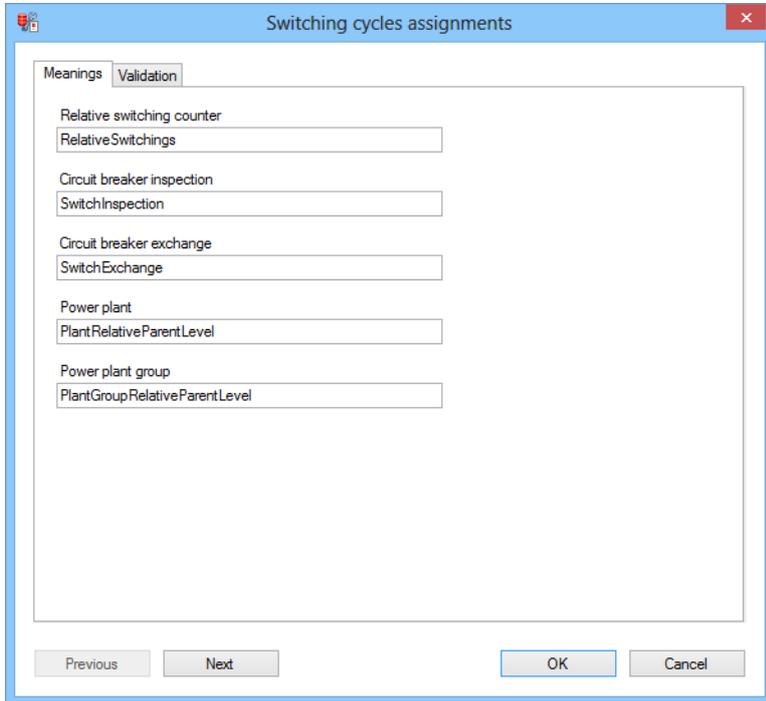
Dialog to configure the **Switching Cycles assignments**. (on page 795) Dialog is started by clicking on the **Configure assignments** button. The dialog consists of two tabs:



| Parameters | Description |
|-------------------|---|
| Meanings | Configuration (on page 797) of the meanings. |
| Validation | Validation (on page 798) of the configuration. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Meanings

The assignments of the meanings are configured in this tab.



The screenshot shows a dialog box titled "Switching cycles assignments" with a "Meanings" tab selected. The dialog contains five text input fields for assigning meanings to specific switching cycle types. The fields are:

- Relative switching counter:
- Circuit breaker inspection:
- Circuit breaker exchange:
- Power plant:
- Power plant group:

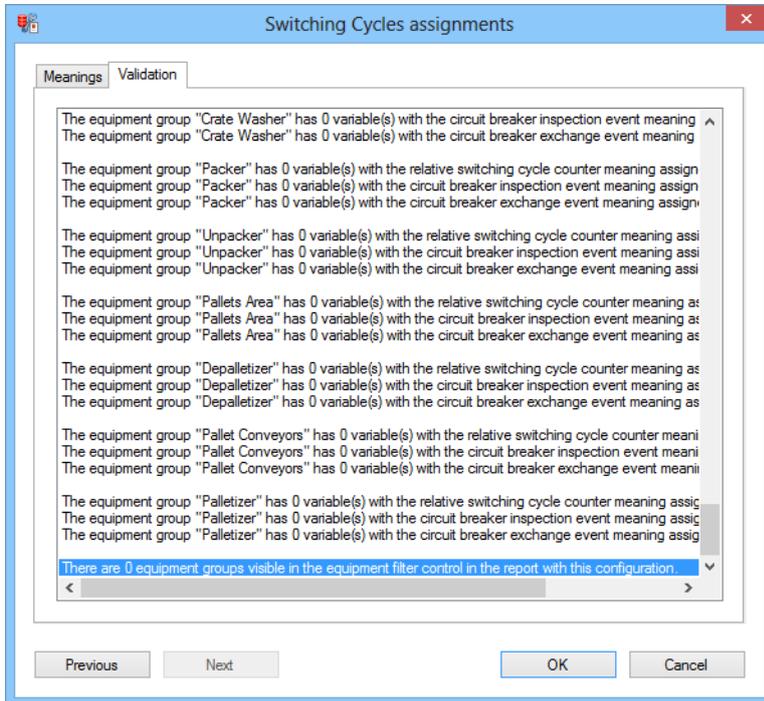
At the bottom of the dialog, there are four buttons: "Previous", "Next", "OK", and "Cancel".

| Parameters | Description |
|----------------------------|---|
| Relative switching counter | Enter the meaning for the relative switching counter. |
| Circuit breaker inspection | Enter the meaning for the circuit breaker inspection event variable. |
| Circuit breaker exchange | Enter the meaning for the circuit breaker exchange variable. |
| Power plant | Input of the identification for the field in the metadata table that determines the extent of superordinance the power station has in relation to a machine. Note for developer: ID for field in EQUIPMENTINFO table. |
| Power plant group | Input of the identification for the field in the metadata table that determines the extent of superordinance the power station group has in relation to a machine. Note for developer: ID for field in EQUIPMENTINFO table. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Validation

The assignments are validated in this tab.

In order for the validation to start, each entry field in the **Meanings** (on page 797) tab must be populated with a value.



| Parameters | Description |
|--|---|
| List of results of the verification | Lists all results of the validation of the assignments. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

VALIDATION PROCESS

The following is checked during validation:

1. A check is made to see whether it is possible to read from an archive for the equipment group:
 - Precisely 1 relative switching cycle counter
 - Precisely 1 circuit breaker replacement variable

- Precisely 1 circuit breaker inspection variable

If this is not the case, the equipment group cannot be used and the procedure is ended for this equipment group.

2. The equipment group is arranged in a list.
3. The equipment tree is built up in such a way that each equipment group that is present in the list in item 2 is present.
4. The equipment groups are given.

13.1.34 Active and reactive power counter assignments

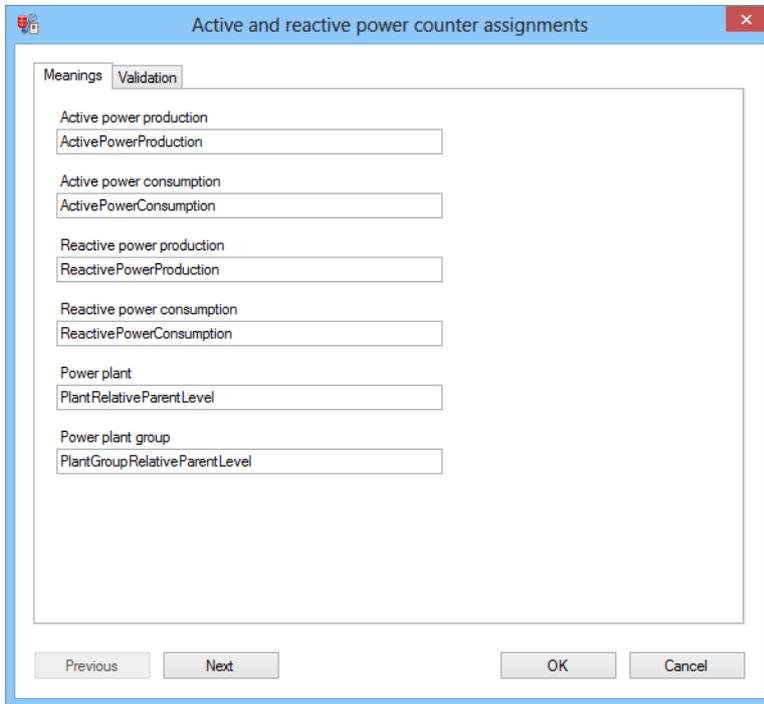
Display and configuration of the assignments for power station real and wattless power.

| | |
|-----------------------------|-------------------------------|
| Active power production | ActivePowerProduction |
| Active power consumption | ActivePowerConsumption |
| Reactive power production | ReactivePowerProduction |
| Reactive power consumpti... | ReactivePowerConsumption |
| Power plant | PlantRelativeParentLevel |
| Power plant group | PlantGroupRelativeParentLevel |
| Configure assignments... | |

| Parameters | Description |
|--|--|
| Active and reactive power counter assignments | Display and configuration of the assignments for active and reactive power counters. |
| List of assignments | Display of the configured assignments. |
| Configure assignments | Clicking on the button opens the dialog for configuring the archives (on page 801). |

Configure assignments

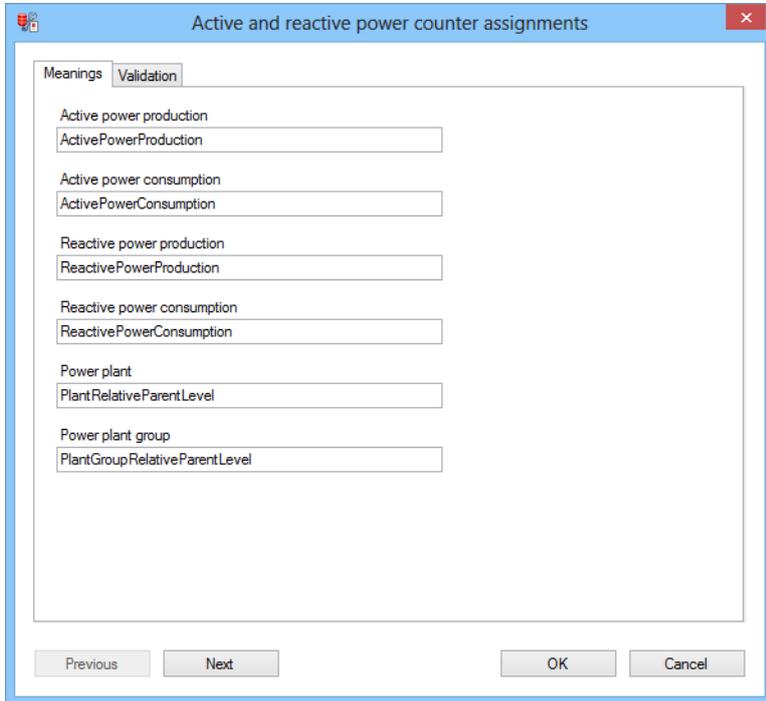
Dialog to configure the **Active and reactive power counter assignments** (on page 800). Dialog is started by clicking on the **Configure assignments** button. The dialog consists of two tabs:



| Parameters | Description |
|-------------------|---|
| Meanings | Configuration (on page 802) of the meanings. |
| Validation | Validation (on page 803) of the configuration. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Meanings

The assignments of the meanings are configured in this tab.



The screenshot shows a dialog box titled "Active and reactive power counter assignments" with a "Meanings" tab selected. The dialog contains six rows of text labels and text input fields:

- Active power production: ActivePowerProduction
- Active power consumption: ActivePowerConsumption
- Reactive power production: ReactivePowerProduction
- Reactive power consumption: ReactivePowerConsumption
- Power plant: PlantRelativeParentLevel
- Power plant group: PlantGroupRelativeParentLevel

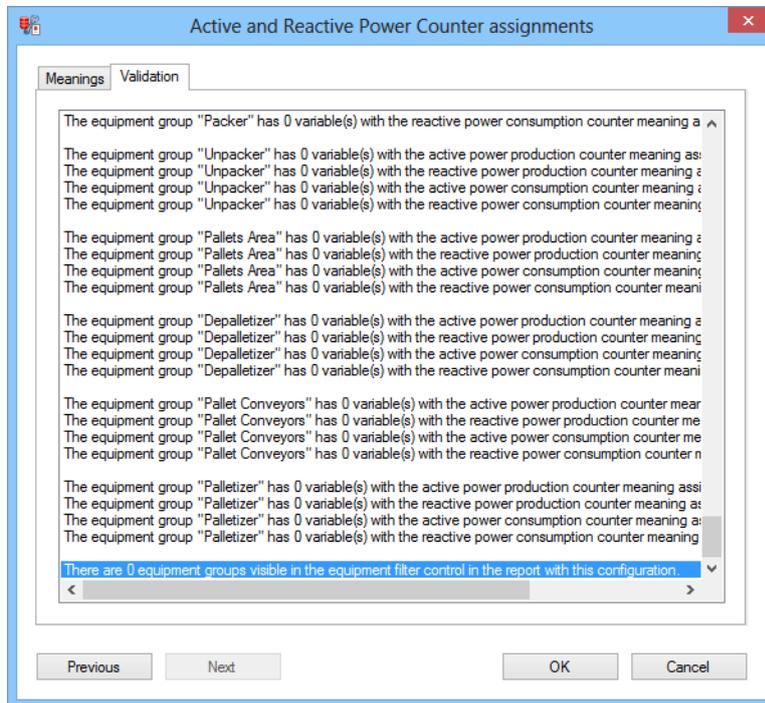
At the bottom of the dialog, there are four buttons: "Previous", "Next", "OK", and "Cancel".

| Parameters | Description |
|---------------------------|---|
| Active power production | Input of the meaning for the active power production. |
| Active power consumption | Input of the meaning for the active power consumption. |
| Reactive power production | Input of the meaning for the reactive power production. |
| Power plant | Input of the identification for the field in the metadata table that determines the extent of superordinance the power station has in relation to a machine. Note for developer: ID for field in EQUIPMENTINFO table. |
| Power plant group | Input of the identification for the field in the metadata table that determines the extent of superordinance the power station group has in relation to a machine. Note for developer: ID for field in EQUIPMENTINFO table. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Validation

The assignments are validated in this tab.

In order for the validation to start, each entry field in the **Meanings** (on page 802) tab must be populated with a value.



| Parameters | Description |
|--|---|
| List of results of the verification | Lists all results of the validation of the assignments. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

VALIDATION PROCESS

The following is checked during validation:

- Whether it is possible to read from an archive for the equipment group:
 - Precisely 1 active power counter for production
 - Precisely 1 reactive power counter for production

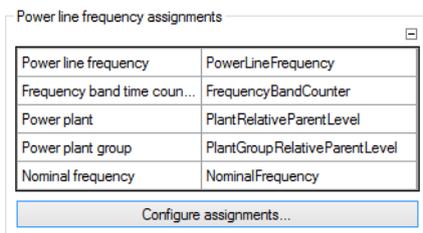
- At most 1 active power counter for consumption
- At most 1 reactive power counter for consumption

If this is not the case, the equipment group cannot be used and the procedure is ended for this equipment group.

2. The equipment group is arranged in a list.
3. The equipment tree is built up in such a way that each equipment group that is present in the list in item 2 is present.
4. The equipment groups are given.

13.1.35 Power line frequency assignments

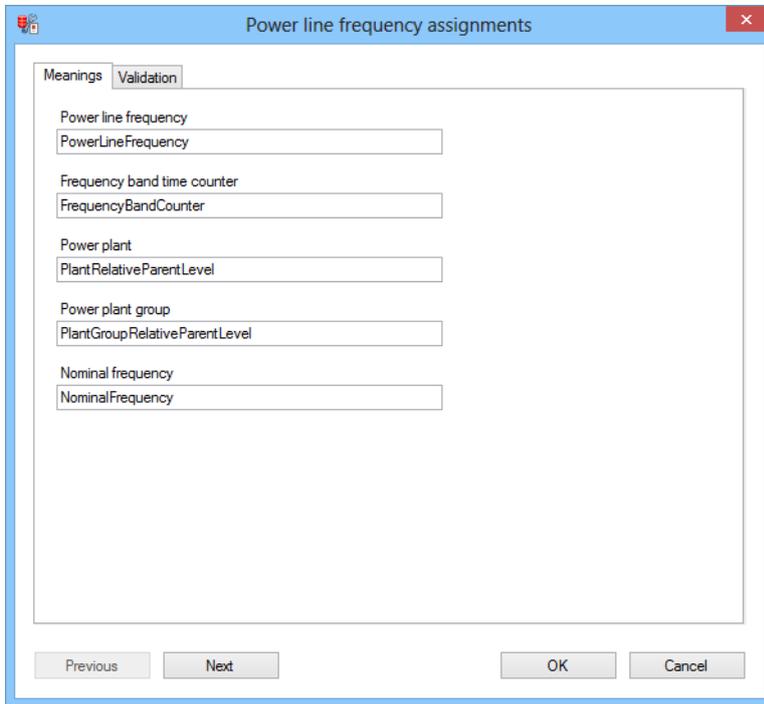
Display and configuration of the assignment for power line frequency.



| Parameters | Description |
|---|---|
| Power line frequency assignments | Display and configuration of the assignment for power line frequency. |
| List of assignments | Display of the configured assignments. |
| Configure assignments | Clicking on the button opens the dialog for configuring the archives (on page 806). |

Configure assignments

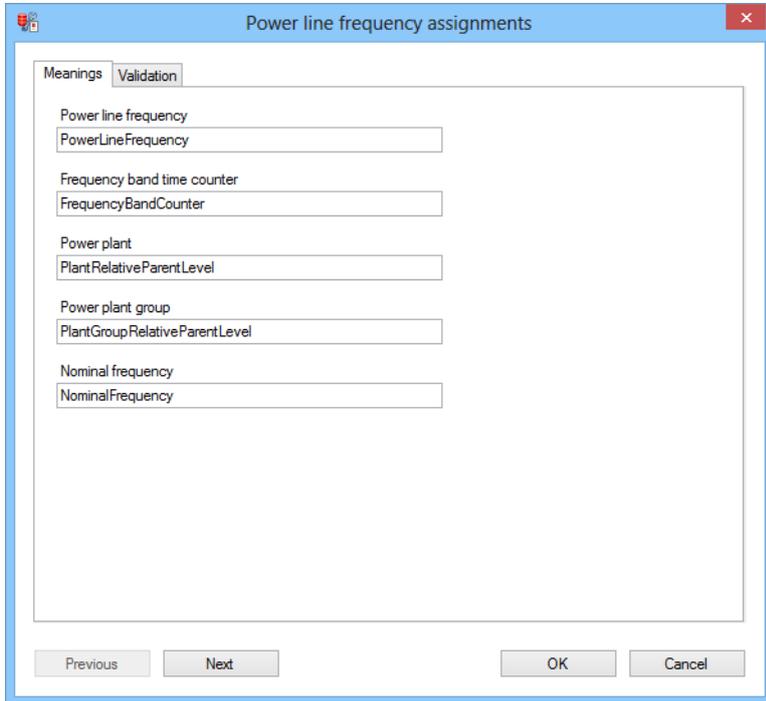
Dialog to configure the **Power line frequency assignments** (on page 805). Dialog is started by clicking on the **Configure assignments** button. The dialog consists of two tabs:



| Parameters | Description |
|-------------------|---|
| Meanings | Configuration (on page 807) of the meanings. |
| Validation | Validation (on page 808) of the configuration. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Meanings

The assignments of the meanings are configured in this tab.



The screenshot shows a dialog box titled "Power line frequency assignments" with a close button (X) in the top right corner. The dialog has two tabs: "Meanings" (selected) and "Validation". The "Meanings" tab contains a list of five items, each with a text input field below it:

- Power line frequency: PowerLineFrequency
- Frequency band time counter: FrequencyBandCounter
- Power plant: PlantRelativeParentLevel
- Power plant group: PlantGroupRelativeParentLevel
- Nominal frequency: NominalFrequency

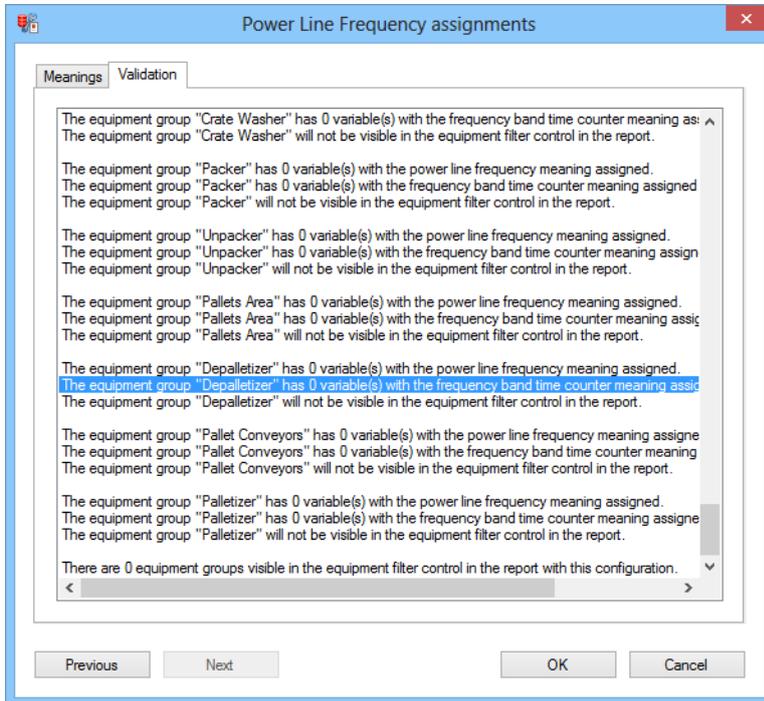
At the bottom of the dialog, there are four buttons: "Previous", "Next", "OK", and "Cancel".

| Parameters | Description |
|-----------------------------|--|
| Power Line Frequency | Entry of the meaning for the power line frequency of a machine. |
| Frequency band time counter | <p>Entry of the meaning for the relative time counter for a frequency band of a machine.</p> <p>All variables that are assigned to the equipment group and whose meaning starts precisely with the text entered here (and possible a suffix), are included in the report.</p> <p>Meaning of the variables either correspond precisely with the meaning entered or must start with the meaning entered.</p> <p>Attention: The suffix of the meaning of the variables must be numerical, because it might lead to a conversion error otherwise.</p> |
| Power plant | <p>Input of the identification for the field in the metadata table that determines the extent of superordinance the power station has in relation to a machine.</p> <p>Note for developer: ID for field in EQUIPMENTINFO table.</p> |
| Power plant group | <p>Input of the identification for the field in the metadata table that determines the extent of superordinance the power station group has in relation to a machine.</p> <p>Note for developer: ID for field in EQUIPMENTINFO table.</p> |
| Nominal frequency | <p>Input of the identification for the field in the metadata table that defines the nominal frequency for the machine.</p> <p>Note for developer: ID for field in EQUIPMENTINFO table.</p> |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | <p>Applies all changes in all tabs and closes the dialog.</p> <p>If one of the necessary input fields is empty, the button is deactivated.</p> |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Validation

The assignments are validated in this tab.

In order for the validation to start, each entry field in the **Meanings** (on page 807) tab must be populated with a value.



| Parameter | Description |
|--|---|
| List of results of the verification | Lists all results of the validation of the assignments. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

VALIDATION PROCESS

The following is checked during validation:

1. Whether it is possible to read from an archive for the equipment group:
 - Precisely 1 network frequency variable
 - At least one time counter for a frequency band

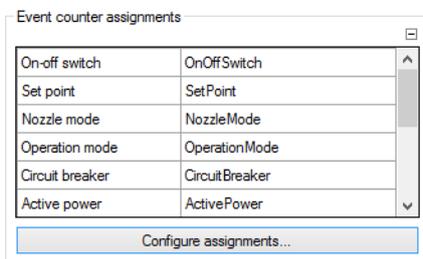
With the frequency band, the meaning of the variables must either correspond precisely with the meaning entered or the meaning of the variables must start with the meaning entered.

If this is not the case, the equipment group cannot be used and the procedure is ended for this equipment group.

2. A check is made to see if information on nominal frequency, power plant and power plant group have been stored for this equipment group.

13.1.36 Event counter assignments

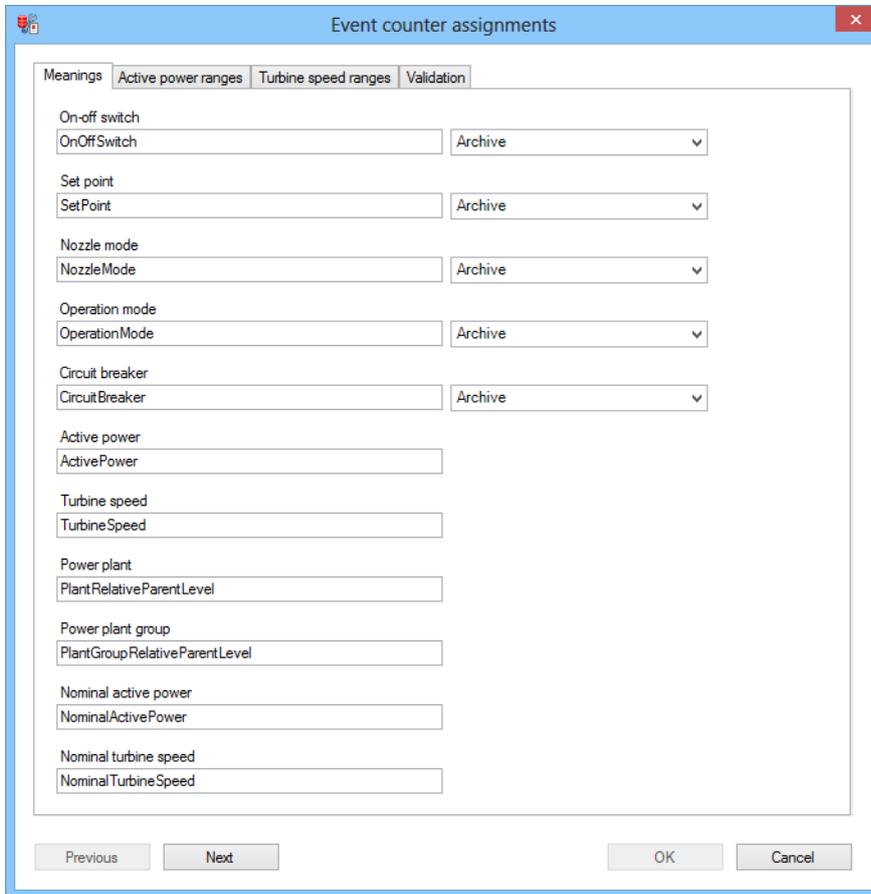
Display and configuration of the assignment for power station event counters.



| Parameters | Description |
|----------------------------------|---|
| Event counter assignments | Display and configuration of the assignment for power station event counters. |
| List of assignments | Display of the configured assignments. |
| Configure assignments | Clicking on the button opens the dialog for configuring the archives (on page 811). |

Configure assignments

Dialog to configure the **Event counter assignments** (on page 810). Dialog is started by clicking on the **Configure assignments** button. The dialog consists of two tabs:



Event counter assignments

Meanings | Active power ranges | Turbine speed ranges | Validation

On-off switch
OnOffSwitch | Archive

Set point
SetPoint | Archive

Nozzle mode
NozzleMode | Archive

Operation mode
OperationMode | Archive

Circuit breaker
CircuitBreaker | Archive

Active power
ActivePower

Turbine speed
TurbineSpeed

Power plant
PlantRelativeParentLevel

Power plant group
PlantGroupRelativeParentLevel

Nominal active power
NominalActivePower

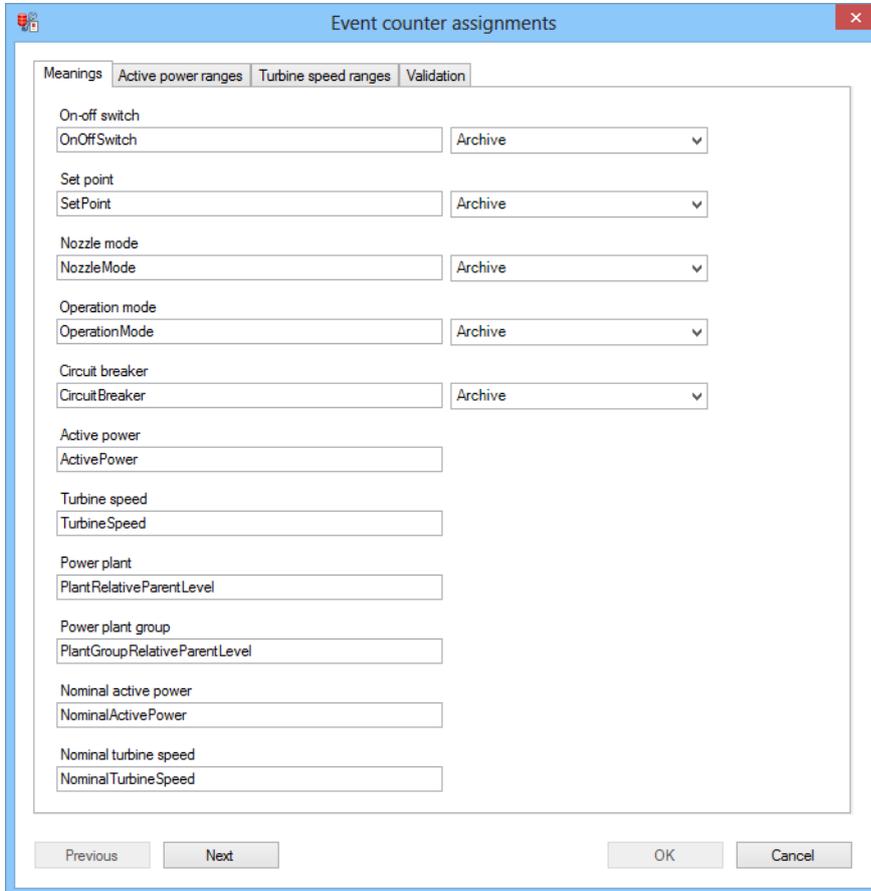
Nominal turbine speed
NominalTurbineSpeed

Previous | Next | OK | Cancel

| Parameters | Description |
|----------------------|---|
| Meanings | Configuration (on page 813) of the meanings. |
| Active power ranges | Configuration (on page 816) of the active power ranges. |
| Turbine speed ranges | Configuration (on page 819) of the turbine speed ranges. |
| Validation | Validation (on page 821) of the configuration. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Meanings

The assignments of the meanings are configured in this tab.



The screenshot shows a dialog box titled "Event counter assignments" with a close button (X) in the top right corner. The dialog has four tabs: "Meanings", "Active power ranges", "Turbine speed ranges", and "Validation". The "Meanings" tab is selected and contains the following configuration items:

| Meaning | Assignment |
|-----------------------|-------------------------------|
| On-off switch | OnOffSwitch |
| Set point | SetPoint |
| Nozzle mode | NozzleMode |
| Operation mode | OperationMode |
| Circuit breaker | CircuitBreaker |
| Active power | ActivePower |
| Turbine speed | TurbineSpeed |
| Power plant | PlantRelativeParentLevel |
| Power plant group | PlantGroupRelativeParentLevel |
| Nominal active power | NominalActivePower |
| Nominal turbine speed | NominalTurbineSpeed |

At the bottom of the dialog, there are four buttons: "Previous", "Next", "OK", and "Cancel".

| Parameters | Description |
|----------------|--|
| On-off switch | <p>Entry of the meaning for the machine's on/off switch.</p> <p>The data source for the variables that are referenced via this meaning are selected from the drop-down list next to the input field. Available are:</p> <ul style="list-style-type: none"> ▶ Alarm Message List ▶ Archive ▶ Chronological event list and selection. <p>Default: Archive</p> |
| Set point | <p>Input of the meaning for the set value for the machine power.</p> <p>The data source for the variables that are referenced via this meaning are selected from the drop-down list next to the input field. Available are:</p> <ul style="list-style-type: none"> ▶ Alarm Message List ▶ Archive ▶ Chronological event list and selection. <p>Default: Archive</p> |
| Nozzle mode | <p>Enter the meaning for the nozzle mode.</p> <p>The data source for the variables that are referenced via this meaning are selected from the drop-down list next to the input field. Available are:</p> <ul style="list-style-type: none"> ▶ Alarm Message List ▶ Archive ▶ Chronological event list and selection. <p>Default: Archive</p> |
| Operation mode | <p>Enter the meaning for the operation mode.</p> <p>The data source for the variables that are referenced via this meaning are selected from the drop-down list next to the input field. Available are:</p> <ul style="list-style-type: none"> ▶ Alarm Message List ▶ Archive |

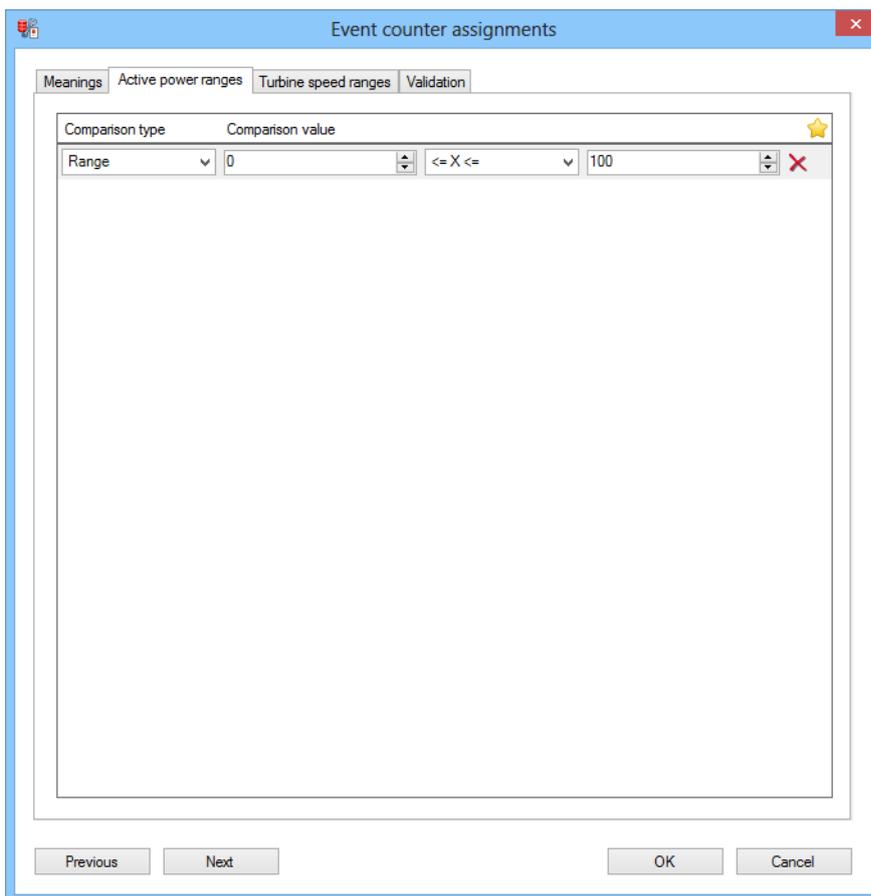
| | |
|-----------------------|---|
| | <p>▶ Chronological event list and selection.</p> <p>Default: Archive</p> |
| Circuit breaker | <p>Enter the meaning for the circuit breaker.</p> <p>The data source for the variables that are referenced via this meaning are selected from the drop-down list next to the input field. Available are:</p> <ul style="list-style-type: none"> ▶ Alarm Message List ▶ Archive ▶ Chronological event list and selection. <p>Default: Archive</p> |
| Active power | Enter the meaning for the active power. |
| Turbine speed | Enter the meaning for the turbine speed. |
| Power plant | <p>Input of the identification for the field in the metadata table that determines the extent of superordinance the power station has in relation to a machine.</p> <p>Note for developer: ID for field in EQUIPMENTINFO table.</p> |
| Power plant group | <p>Input of the identification for the field in the metadata table that determines the extent of superordinance the power station group has in relation to a machine.</p> <p>Note for developer: ID for field in EQUIPMENTINFO table.</p> |
| Nominal active power | <p>Input of the identification for the field in the metadata table that defined the nominal active power.</p> <p>Note for developer: ID for field in EQUIPMENTINFO table.</p> |
| Nominal turbine speed | <p>Input of the identification for the field in the metadata table that defines the nominal turbine speed.</p> <p>Note for developer: ID for field in EQUIPMENTINFO table.</p> |

| | |
|-----------------|--|
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |

| | |
|---------------|---|
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

Active power ranges

The assignments of the active power ranges are configured in this tab.



| Parameters | Description |
|--------------------|---|
| Area list | The area list shows previously-configured performance areas. The pre-existing areas are displayed: <ul style="list-style-type: none"> ▶ Comparison type ▶ Comparison value |
| Comparison type | Selection of the comparison type from the drop-down list. Available are: <ul style="list-style-type: none"> ▶ Less (<) ▶ Less or equal (<=) ▶ Greater (>) ▶ Greater or equal (>=) ▶ Range: Compares two values to one another and shows further input fields for Comparison type and Comparison value. |
| Comparison value | Entry of the comparison value. <ul style="list-style-type: none"> ▶ Numerical value ▶ Maximum: 2147483647 |
| Symbol: New | Click on button <ul style="list-style-type: none"> ▶ Creates a new area ▶ Initializes this with $0 \leq X \leq 100$ ▶ Inserts it as a new row at the bottom end of the list |
| X | Clicking on the button removes the attendant area from the list. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

COMPARISON TYPES AND AREAS

The following comparison types are available:

- ▶ Lower: $X < [\text{number}]$
- ▶ Lower or equal: $X \leq [\text{number}]$
- ▶ Greater than: $X > [\text{number}]$
- ▶ Greater than or equal to: $X \geq [\text{number}]$
- ▶ Areas

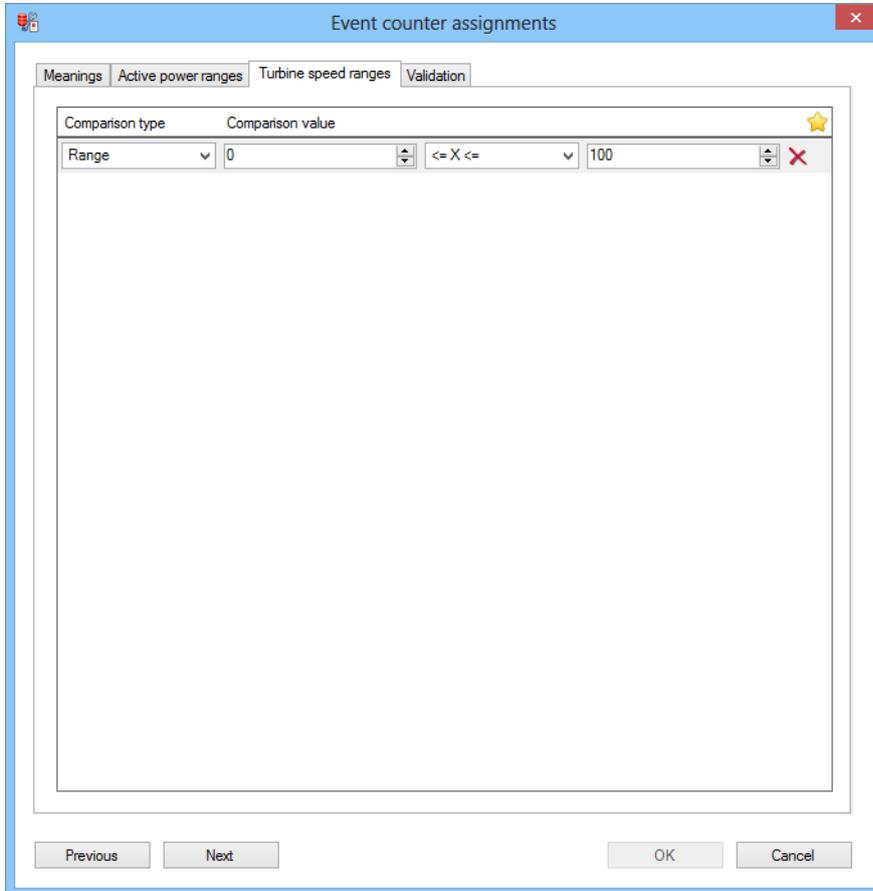
AREAS

The 'areas' comparison type defines a range between two values. The following rules are available:

- ▶ $[\text{number}] < X < [\text{number}]$
- ▶ $[\text{number}] < X \leq [\text{number}]$
- ▶ $[\text{number}] \leq X < [\text{number}]$
- ▶ $[\text{number}] \leq X \leq [\text{number}]$

Turbine speed ranges

The assignments of the turbine speeds are configured in this tab.



The screenshot shows a dialog box titled "Event counter assignments" with a close button (X) in the top right corner. The dialog has four tabs: "Meanings", "Active power ranges", "Turbine speed ranges" (which is selected), and "Validation". Inside the "Turbine speed ranges" tab, there is a table with two columns: "Comparison type" and "Comparison value". The table contains one row with the following values: "Range" (selected in a dropdown), "0" (in a numeric input field), "<= X <=" (selected in a dropdown), and "100" (in a numeric input field). There is a yellow star icon in the top right corner of the table area and a red X icon in the bottom right corner of the table area. At the bottom of the dialog, there are four buttons: "Previous", "Next", "OK", and "Cancel".

| Comparison type | Comparison value |
|-----------------|------------------|
| Range | 0 |
| <= X <= | 100 |

| Parameters | Description |
|--------------------|---|
| Area list | The area list shows previously-configured performance areas. The pre-existing areas are displayed: <ul style="list-style-type: none"> ▶ Comparison type ▶ Comparison value |
| Comparison type | Selection of the comparison type from the drop-down list. Available are: <ul style="list-style-type: none"> ▶ Less (<) ▶ Less or equal (<=) ▶ Greater (>) ▶ Greater or equal (>=) ▶ Range: Compares two values to one another and shows further input fields for Comparison type and Comparison value. |
| Comparison value | Entry of the comparison value. <ul style="list-style-type: none"> ▶ Numerical value ▶ Maximum: 2147483647 |
| Symbol: New | Click on button <ul style="list-style-type: none"> ▶ Creates a new area ▶ Initializes this with $0 \leq X \leq 100$ ▶ Inserts it as a new row at the bottom end of the list |
| X | Clicking on the button removes the attendant area from the list. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

COMPARISON TYPES AND AREAS

The following comparison types are available:

- ▶ Lower: $X < [\text{number}]$
- ▶ Lower or equal: $X \leq [\text{number}]$
- ▶ Greater than: $X > [\text{number}]$
- ▶ Greater than or equal to: $X \geq [\text{number}]$
- ▶ Areas

AREAS

The 'areas' comparison type defines a range between two values. The following rules are available:

- ▶ $[\text{number}] < X < [\text{number}]$
- ▶ $[\text{number}] < X \leq [\text{number}]$
- ▶ $[\text{number}] \leq X < [\text{number}]$
 - $[\text{number}] \leq X \leq [\text{number}]$

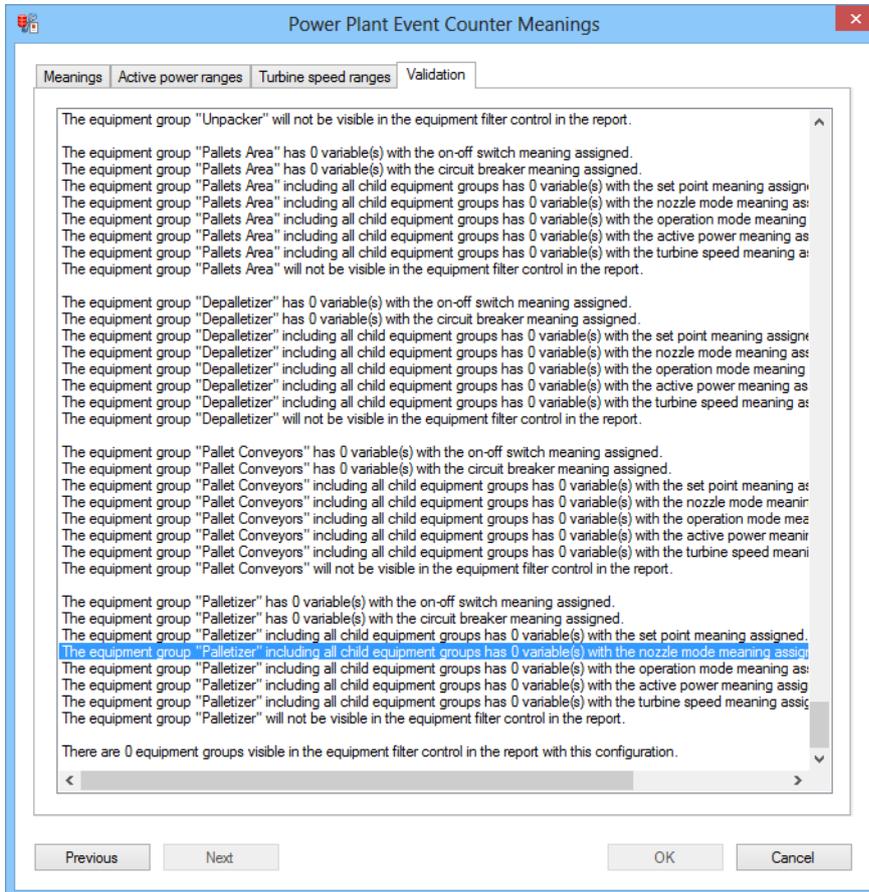
Validation

The assignments are validated in this tab.

The following must be the case in order for the validation to start:

- ▶ Each entry in the **Meanings** (on page 813) tab is filled with a value
- ▶ There is at least one Active power range (on page 816)

- There is at least one turbine speed range (on page 819)



| Parameters | Description |
|-------------------------------------|---|
| List of results of the verification | Lists all results of the validation of the assignments. |
| Previous | Switches to the previous tab. (deactivated in the first tab) |
| Next | Switches to the next tab. (deactivated in the last tab) |
| OK | Applies all changes in all tabs and closes the dialog. If one of the necessary input fields is empty, the button is deactivated. |
| Cancel | Discards all changes in all tabs and closes the dialog. |

VALIDATION PROCESS

During validation:

1. A check is made to see if the following can be read:

- Precisely 1 on/off switch for the equipment group
 - Precisely 1 or 2 circuit breakers from the respective configured data source
2. A check is made to see if it is possible to read the following for the equipment group or an equipment group subordinate to that:
- Precisely 1 target value for the machine power
 - At least 1 nozzle mode (see "HppEventCounters" SP for why more variables are possible here)
 - At least 1 operating mode (see "HppEventCounters" SP for why more variables are possible here)
 - At least 1 active power
 - Precisely 1 or 2 turbine speed(s) from the respective configured data source

If a field does not have the possibility to configure the data source (active power and turbine speed), it is always read from an archive.

3. If both of the first conditions are not met, the equipment group cannot be used and the procedure is ended for this equipment group.
4. A check is made to see if information on nominal active power, nominal turbine speed, power plant and power plant group have been stored for this equipment group.
5. Each area is checked for active power and the turbine speed is checked for feasibility.

A range is feasible if there is at least one figure that can be in this range.

A range of $100 < X < 50$ is not feasible.

A range of $100 < X < 100$ is not feasible.

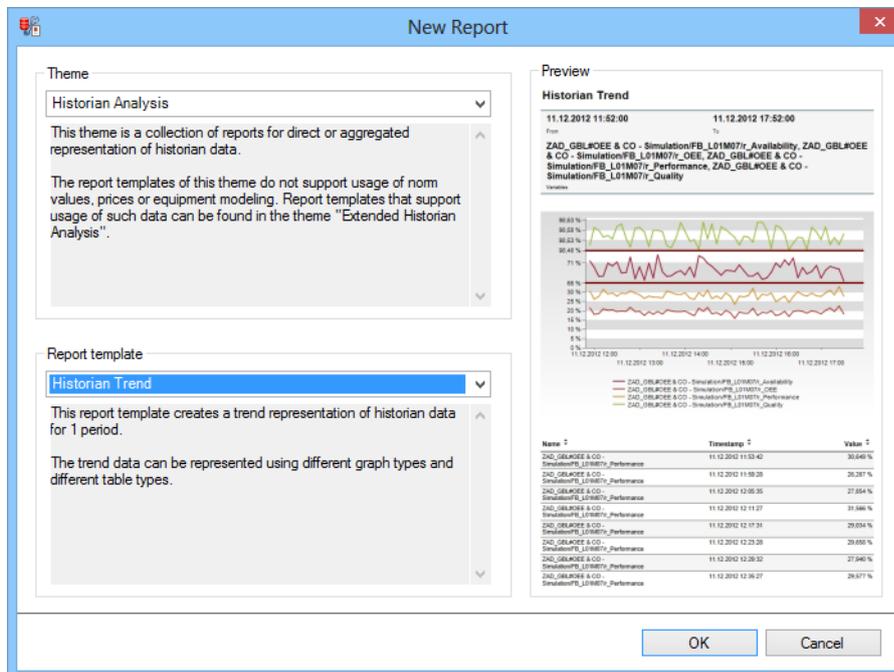
A range of $100 \leq X < 100$ is feasible.

13.2 Report templates

The following pre-configured report templates are available for zenon Analyzer:

- ▶ Alarm analysis (on page 826): Evaluation of alarms
- ▶ Custom Formula Analysis (on page 860): Evaluations with custom formulas
- ▶ Archive analysis (on page 920): Evaluation of archives
- ▶ Extended Historian Analysis (on page 1001): Extended evaluation of archives

- ▶ I (on page 1115)SO 50001: Report templates with the theme **ISO 5001** (on page 1115), **Custom Formula Analysis** (on page 860) and **Extended Historian Analysis** (on page 1001)
- ▶ **Production Analysis Machine Based** (on page 1182): Analysis of loss times and productivity, based on standards such as DIN 8782, DIN 8743, Weihenstephan standards and the best practices of some manufacturing companies
- ▶ **OEE analysis** (on page 1238): Evaluation of OEE performance indicators **Target Actual Analysis** (on page 1263) Calculates absolute or relative counters from set values or actual values for selected equipment groups.
- ▶ **Hydroelectric Power Plant Analysis** (on page 1280). Determines various counters for hydroelectric power plants.



For some reports, entries in zenon are necessary (meaning, waterfall for example).

SYNTAX FOR INPUTS IN ZENON

Input in in zenon depends on the version of zenon that is used.

UP TO ZENON 7.11

Up to and including zenon version 7.11, the meaning and waterfall model is entered in the zenon Resources label property. These can contain meanings for several categories.

The following is applicable to entries in the resource label property:

- ▶ Categories are separated by a semicolon (;).
- ▶ Areas within a category are separated by a comma (,).
- ▶ Categories are marked by an index:
 - ME=: Identifies a (Meaning).
 Syntax: ME=[main meaning as text],[additional meaning as text],[additional meaning as text],...;
 Example: **ME=Station_1,Station_2;**
 - WF=: Identifies a variable for the waterfall display.
 Syntax: WF=[model name text],[line index INT],[index in column INT],[color code as text #XXXXXX];
 - Every other entry is also understood as a Meaning

Complete syntax for the Resources label property:

```
ME=[meaning1],[meaning2],...,[meaningN];WF=[model name],[row index],[index in row],[color code];
```

Attention: The Resources label property is limited to 256 characters in the zenon Editor.

FROM ZENON 7.20

From zenon 7.20, there are separate properties in zenon for the definition of Meaning and waterfall, as well as the input of a display name. These entries do not need an identification in front of them.

The following properties in the zenon Analyzer variable properties group provide information for reports in the zenon Analyzer:

- ▶ Visual name: Entry of a display name of the variable in zenon Analyzer. This must be unique in the project. The check is not carried out when issued in zenon, but when imported into zenon Analyzer. If this property is changed after the first export to a zenon Analyzer, these changes are not applied in the zenon Analyzer.
- ▶ Meaning: Entry of the (Meaning) of a variable in the zenon Analyzer. Entry is manual or by means of the **Meaning and Waterfall Chart Wizard**. Several meanings are separated by a comma.
 Syntax: [Meaning1],[Meaning2],...,[MeaningN]

- ▶ `Parameter for waterfall diagram`: Parameters of a variable for a waterfall diagram in zenon Analyzer. Entry is manual or by means of the **Meaning and Waterfall Chart Wizard**. The individual parameters are separated by a comma. Several waterfalls are divided by a semicolon.
Syntax: `[model name],[row index],[index in row],[color code];`

Attention: All these input fields are limited to 256 characters in the zenon Editor.

13.2.1 Alarm Analysis

Reports with this theme provide a range of report templates that assist in the evaluation of alarms:

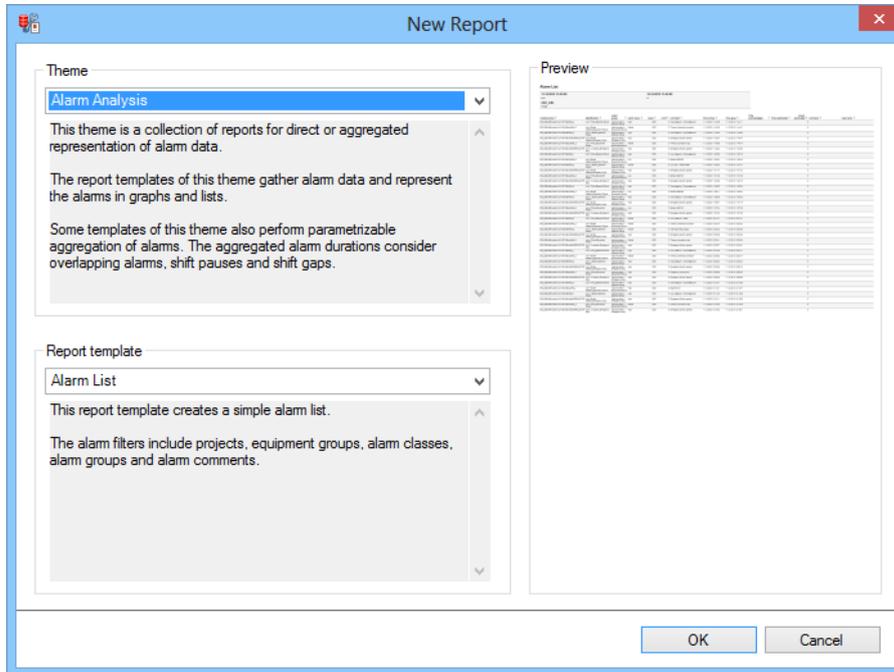
- ▶ `Alarm message list` (on page 828): Creates a list of alarms in table form for a time range.
- ▶ `Top N Alarms` (on page 837): Gets a defined number (N) of alarms that occur most frequently in a time range or have been active for the longest.
- ▶ `Alarm Aggregation` (on page 849): Gets the sum of all alarms triggered in a time range and adds up the duration of the different alarms

REPORT TEMPLATE SELECTION

To create a report based on this template:

1. Select the **New** entry in the **Report** menu or click on the corresponding symbol in the tool bar

2. The dialog for selecting a template is opened



3. In the **Theme** drop-down list, select **Alarm Analysis**
4. Select the template you want to use as a report template from the drop-down list

METADATA

| Metadata used: General | | |
|-----------------------------------|-------------|--|
| | used | If not used |
| Projects | + | mandatory. |
| Alarm/Event class | + | No filtering or prefiltering for alarm/event classes . |
| Alarm/Event groups | + | No filtering or prefiltering for alarm/event groups . |
| User | + | Alarm List No display of the user who acknowledges the alarms. |
| Equipment modeling | + | No filtering for equipment groups (such as machines). |
| Archives | - | |
| Variables | + | mandatory. |
| Prices | - | |
| Norm values | - | |
| Metadata used: Time filter | | |
| Lots | + | No reports possible with lot filter. |
| Shifts | + | No reports possible with shift filter. |

Alarm List

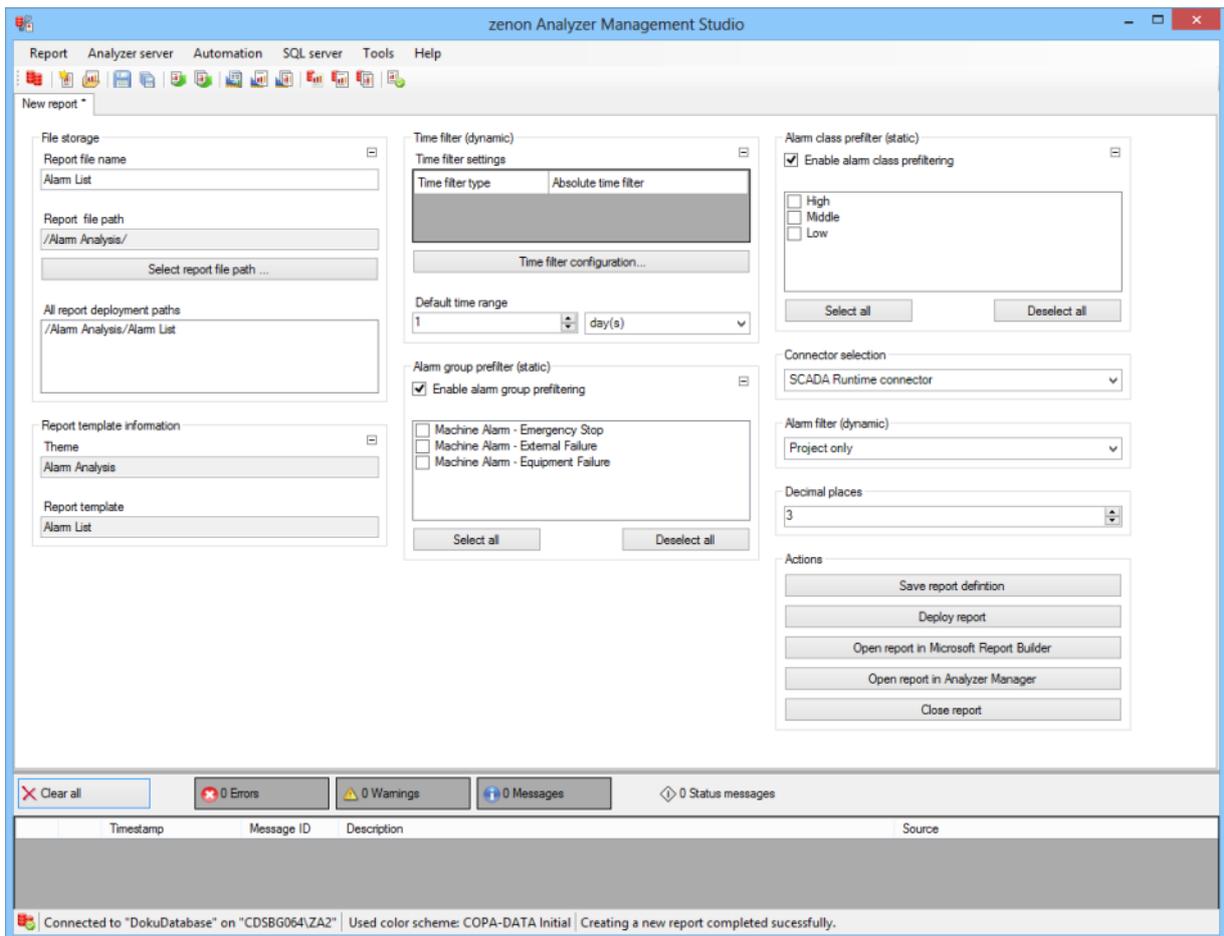
Reports that are base on this template create an alarm list in table form for a time range. In doing so, alarm filtering is possible according to the following criteria:

- ▶ Project only
- ▶ Project and alarm class
- ▶ Project and alarm group
- ▶ Project and equipment group
- ▶ Project and alarm comment

4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

ALARM GROUP PREFILTER (STATIC)

| Parameters | Description |
|---------------------------------------|--|
| Alarm group prefilter (static) | Properties for prefiltering the alarm groups. |
| Enable alarm group prefiltering | Active: The list of the alarm group prefilters can be configured and used. |

| | |
|-----------------------------|--|
| List of alarm group filters | <p>Selection of the criteria for the prefiltering of the alarm groups. Click in the check box to select the alarm group. Clicking on the corresponding button selects or deselects all alarm groups.</p> <p>For details, see the Alarm prefiltering (on page 664) chapter.</p> |
|-----------------------------|--|

ALARM CLASS PREFILTER (STATIC)

| Parameters | Description |
|---------------------------------------|--|
| Alarm class prefilter (static) | Properties for prefiltering the alarm classes. |
| Enable alarm class prefiltering | Active: The list of the alarm group prefilters can be configured and used. |

| | |
|-----------------------------|--|
| List of alarm class filters | <p>Selection of the criteria for the prefiltering of the alarm classes. Click on the check box to select alarm classes. Click on the corresponding button to select or deselect all alarm classes.</p> <p>For details, see the Alarm prefiltering (on page 664) chapter.</p> |
|-----------------------------|--|

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

ALARM FILTER (DYNAMIC)

| Parameters | Description |
|------------------------|---|
| Alarm filter (dynamic) | <p>Selection of alarm filtering:</p> <ul style="list-style-type: none"> ▶ Project only ▶ Project and alarm class ▶ Project and alarm group ▶ Project and equipment group ▶ Project and alarm comment |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to |

| | |
|--|---|
| | the minimum; if the minimum is gone below, it jumps to the maximum. |
|--|---|

ACTIONS

| Parameters | Description |
|------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

Note: If the report is linked to a project via time filtering, the project selection is set to the linked project and a check is made to ensure that only archives from this project can be selected in both groupings.

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots

- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection drop-down list for project selection (if not deactivated by time filtering)
- ▶ 1 x multiple-selection drop-down list for alarm class filtering (if activated via alarm filtering in ZAMS)
- ▶ 1 x multiple-selection drop-down list for alarm group filtering (if activated via alarm filtering in ZAMS)
- ▶ 1 x multiple-selection drop-down list (tree) for equipment model selection (if activated via alarm filtering in ZAMS)
- ▶ 1 x text input for alarm comment (if activated via alarm filtering in ZAMS)

DATA DISPLAY

The alarm data is always displayed as a table in this template.

The table has the following columns:

- ▶ Variable name (can be sorted dynamically)
- ▶ Description
- ▶ Alarm group (can be sorted dynamically)
- ▶ Alarm class (can be sorted dynamically)
- ▶ Value of the variables.
- ▶ Unit of the variable
- ▶ Limit value index
- ▶ Alarm text
- ▶ Incoming time (can be sorted dynamically)
- ▶ Outgoing time (can be sorted dynamically)
- ▶ Acknowledgment time (can be sorted dynamically)
- ▶ Reactivated time (can be sorted dynamically)

- ▶ Number denoting how often the alarm was reactivated
- ▶ Comment
- ▶ Username

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListProjects
- ▶ ListLots
- ▶ ListShifts
- ▶ ListAlarmClasses
- ▶ ListAlarmGroups
- ▶ ListEquipmentTree
- ▶ Alarm_GetGroupReferenceList
- ▶ Alarm_GetClassReferenceList
- ▶ Alarm_List
- ▶ Alarm_List_Equipment
- ▶ Alarm_List_Comment

Top N Alarms

Reports that are based on this template get a defined number (N) of alarms that occur most frequently in a time range or have been active for the longest. In doing so, different types of alarm filtering are made possible. As an option, the calculation of the active time can also take planned downtime due to shift breaks and shift gaps (time between 2 shifts) into account. Alarm filtering is possible according to the following criteria:

- ▶ Most frequent alarms per project
- ▶ Most frequent alarms per project and alarm class
- ▶ Most frequent alarms per project and alarm group
- ▶ Most frequent alarms per project and equipment group

- ▶ Longest alarm duration per project
- ▶ Longest alarm duration per project and alarm class
- ▶ Longest alarm duration per project and alarm group
- ▶ Longest alarm duration per project and equipment group

APPLICATION EXAMPLES

Top N alarm reports are also suitable for:

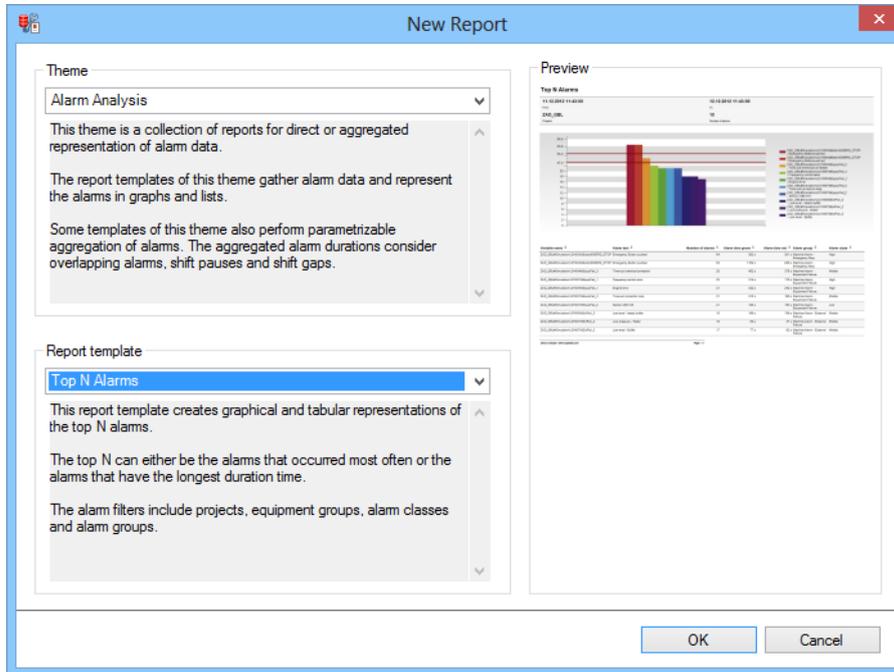
| Alarm analysis | Filter |
|---|------------------|
| ▶ The most frequent alarms of a machine in a certain time period | Equipment Groups |
| ▶ The most frequent urgent alarms | Alarm Classes |
| ▶ The most frequent alarms that have led to emergency stops, machine errors, etc. | Alarm groups |
| ▶ The most frequent alarms during a production lot | Lots |
| ▶ The most frequent alarms during a shift | Shift |
| ▶ The alarms for a machine that were active the longest in a certain time period | Equipment Groups |
| ▶ The urgent alarms that were active the longest | Alarm Classes |
| ▶ The most alarms that were active the longest that have led to emergency stops, machine errors, etc. | Alarm groups |
| ▶ The alarms that were active the longest during a production lot | Lots |
| ▶ The alarms that were active the longest during a shift | Shift |

CREATE REPORT

To create a **Top N alarms** report:

1. In the **Theme** drop-down list, select **Alarm Analysis**

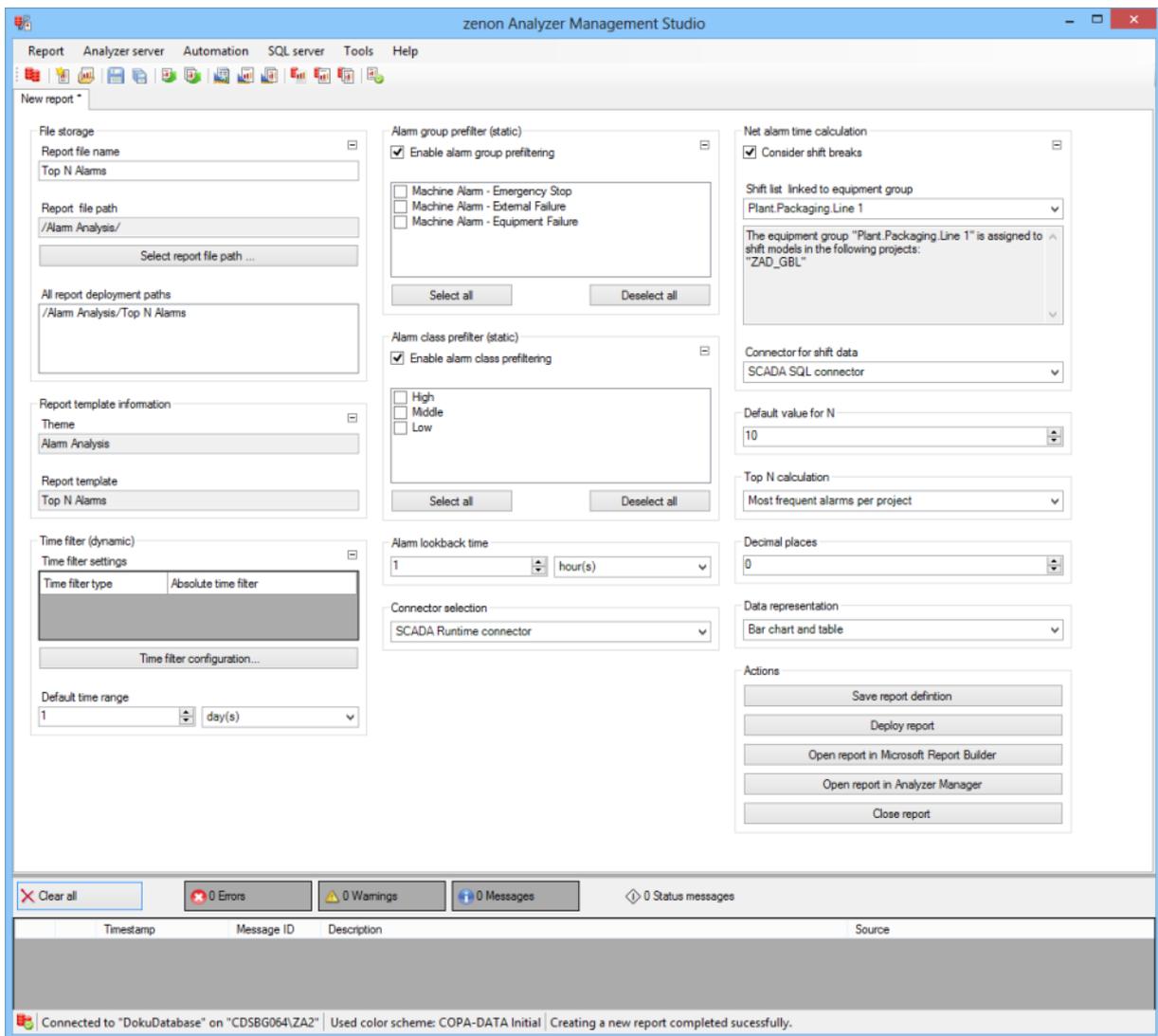
- from the drop-down list, select **Top N alarms** as a report template



- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

ALARM GROUP PREFILTER (STATIC)

| Parameters | Description |
|---------------------------------------|--|
| Alarm group prefilter (static) | Properties for prefiltering the alarm groups. |
| Enable alarm group prefiltering | Active: The list of the alarm group prefilters can be configured and used. |

| | |
|-----------------------------|--|
| List of alarm group filters | <p>Selection of the criteria for the prefiltering of the alarm groups. Click in the check box to select the alarm group. Clicking on the corresponding button selects or deselects all alarm groups.</p> <p>For details, see the Alarm prefiltering (on page 664) chapter.</p> |
|-----------------------------|--|

ALARM CLASS PREFILTER (STATIC)

| Parameters | Description |
|---------------------------------------|--|
| Alarm class prefilter (static) | Properties for prefiltering the alarm classes. |
| Enable alarm class prefiltering | Active: The list of the alarm group prefilters can be configured and used. |

| | |
|-----------------------------|--|
| List of alarm class filters | <p>Selection of the criteria for the prefiltering of the alarm classes. Click on the check box to select alarm classes. Click on the corresponding button to select or deselect all alarm classes.</p> <p>For details, see the Alarm prefiltering (on page 664) chapter.</p> |
|-----------------------------|--|

ALARM LOOKBACK TIME

| Parameters | Description |
|---------------------|---|
| Alarm lookback time | <p>Time range, which should be taken into account from the start of the time filter retrospectively.</p> <p>For details, see the Alarm Lookback time (on page 663) chapter.</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

NET ALARM TIME CALCULATION

| Parameters | Description |
|--------------------------------------|---|
| Net alarm time calculation | Properties to calculate the net time. |
| Consider shift breaks | Active: Shift breaks are taken into account. |
| Shift list linked to equipment group | <p>Selection of an equipment group for the shift model from the drop-down list.</p> <p>For details, see the Origin of shift data (on page 754) chapter.</p> |
| Connector for shift data | <p>Selection of a connector for the shift data from a drop-down list.</p> <p>For details, see the Origin of shift data (on page 754) chapter.</p> |

DEFAULT VALUE FOR N

| Parameters | Description |
|---------------------|---|
| Default value for N | <p>Definition of the standard value for N.</p> <ul style="list-style-type: none"> ▶ Minimum: 1 ▶ Maximum: 100 ▶ Default: 10 <p>Input directly into the field in whole numbers between 1 and 100 or using the Spincontrol arrow (granularity= 1).</p> |

TOP N CALCULATION

| Parameters | Description |
|-------------------|---|
| Top N calculation | <p>Selection of the calculation method:</p> <ul style="list-style-type: none"> ▶ Most frequent alarms per project ▶ Most frequent alarms per project and alarm class ▶ Most frequent alarms per project and alarm group ▶ Most frequent alarms per project and equipment model ▶ Longest pending alarm per project ▶ Longest active alarm per project and alarm class ▶ Longest active alarm per project and alarm group ▶ Longest active alarm per project and equipment model |

DECIMAL PLACES

| Parameters | Description |
|----------------|--|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the |

| | |
|--|----------|
| | maximum. |
|--|----------|

DATA REPRESENTATION

| Parameters | Description |
|---------------------|--|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Pie Chart and table ▶ Column chart and table ▶ Pie chart ▶ Column chart ▶ Table |

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. <p>Select by clicking on the respective button.</p> |

Note: If the report is linked to a project via time filtering, the project selection is set to the linked project and a check is made to ensure that only archives from this project can be selected in both groupings.

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection drop-down list for project selection (if not deactivated by time filtering)
- ▶ 1 x multiple-selection drop-down list for alarm class filtering (if activated via alarm filtering in ZAMS)
- ▶ 1 x multiple-selection drop-down list for alarm group filtering (if activated via alarm filtering in ZAMS)
- ▶ 1 x multiple-selection drop-down list (tree) for equipment model selection (if activated via alarm filtering in ZAMS)

DATA DISPLAY

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Column chart: Each alarm gets a column. Depending on the Top N calculation, either the number of times the alarm has occurred or active times of all instances of an alarm, summated and corrected for shift breaks and shift gaps, determines the height of the columns.
- ▶ Pie chart: Each alarm has a sector in the diagram. The size of the sector is calculated on the same lines as the calculation of a column in the column diagram.

▶ Data table:

The data table contains the following columns:

- Variable name (can be sorted dynamically)
- Alarm text
- Number denoting how often the alarm has occurred (can be sorted dynamically)
- Total active duration of all instances of an alarm without shift data correction (gross time, can be sorted dynamically)
- Total active duration of all instances of the alarm with shift data correction (net time, can be sorted dynamically)
- Alarm group (can be sorted dynamically)
- Alarm class (can be sorted dynamically)

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPS and UDFs:

- ▶ ListProjects
- ▶ ListLots
- ▶ ListShifts
- ▶ ListAlarmClasses
- ▶ ListAlarmGroups
- ▶ ListEquipmentTree
- ▶ Alarm_GetGroupReferenceList
- ▶ Alarm_GetClassReferenceList
- ▶ Alarm_GetSecondsWithoutShift
- ▶ Alarm_MostOften
- ▶ Alarm_MostOften2
- ▶ Alarm_MostOften_Equipment
- ▶ Alarm_MostOften_Equipment2
- ▶ Alarm_MostLong

- ▶ Alarm_MostLong2
- ▶ Alarm_MostLong_Equipment
- ▶ Alarm_MostLong_Equipment2

Alarm Aggregation

Reports that are based on this template obtain the sum of all alarms in a time range and add up the duration of the different alarms. In doing so, the duration of overlapping alarms is only calculated once (overlap adjustment). As an option, the pending time can also take into account planned down times that occur due to shift breaks and gaps between shifts. In addition, alarm filtering is possible according to the following criteria:

- ▶ Project only
- ▶ Project and alarm class
- ▶ Project and alarm group
- ▶ Project and equipment group
- ▶ Project and alarm comment

APPLICATION EXAMPLES

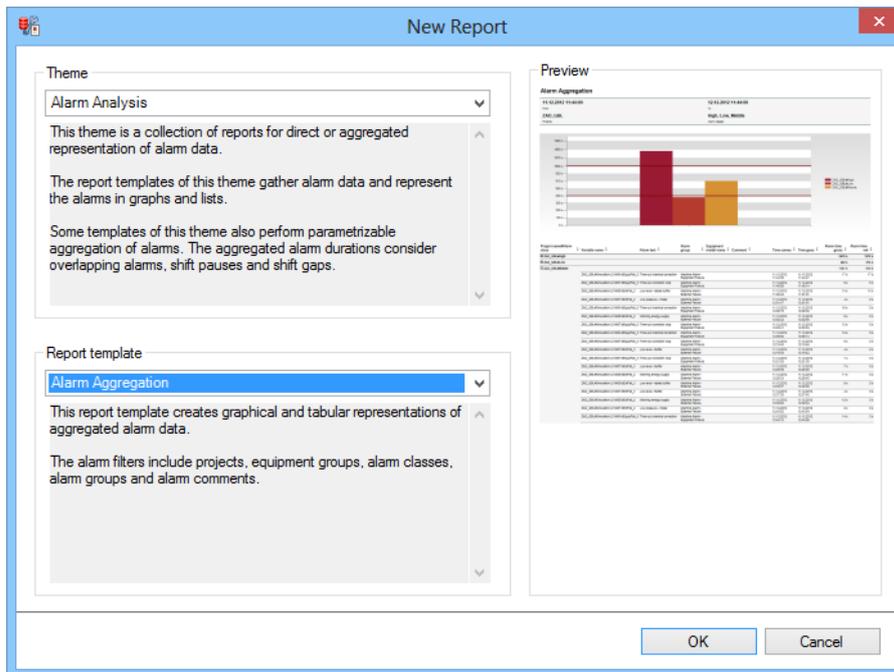
For example, `alarm list` reports are suitable for:

| Alarm analysis | Filter |
|--|----------------------------|
| ▶ The complete duration of a machine fault during a shift | Shift and equipment groups |
| ▶ The complete duration of a machine fault during a production lot | Lot and equipment groups |
| ▶ The complete down times of an item of equipment in a time period | Equipment Groups |
| ▶ The complete duration of an emergency stop, machine fault, external fault, etc. in a time period | Alarm groups |

CREATE REPORT

To create an **Alarm Aggregation** report:

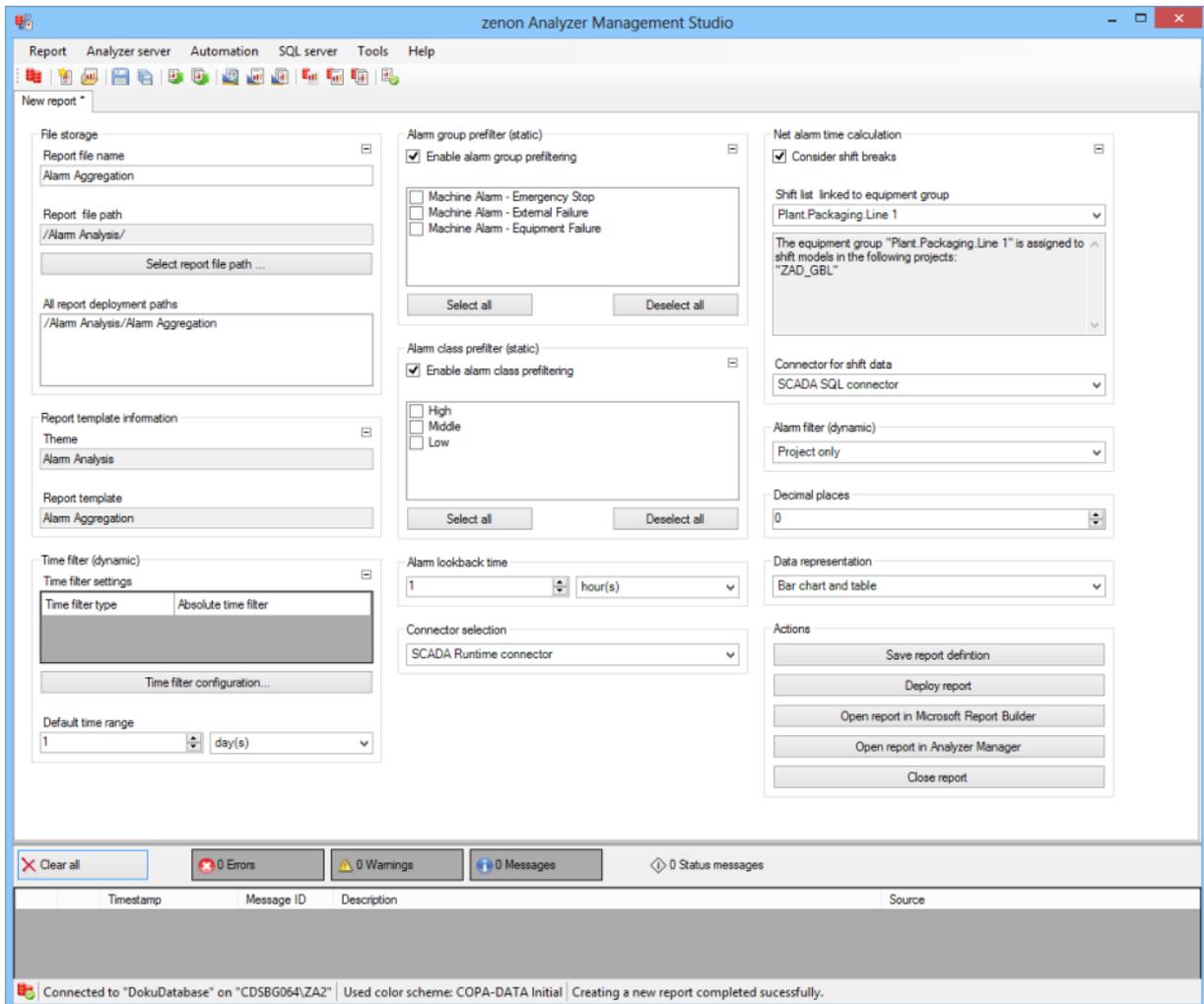
1. In the **Theme** drop-down list, select **Alarm Analysis**
2. from the drop-down list, select **Alarm Aggregation** as a report template



3. Click on the **OK** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

ALARM GROUP PREFILTER (STATIC)

| Parameters | Description |
|---------------------------------------|--|
| Alarm group prefilter (static) | Properties for prefiltering the alarm groups. |
| Enable alarm group prefiltering | Active: The list of the alarm group prefilters can be configured and used. |

| | |
|-----------------------------|--|
| List of alarm group filters | <p>Selection of the criteria for the prefiltering of the alarm groups. Click in the check box to select the alarm group. Clicking on the corresponding button selects or deselects all alarm groups.</p> <p>For details, see the Alarm prefiltering (on page 664) chapter.</p> |
|-----------------------------|--|

ALARM CLASS PREFILTER (STATIC)

| Parameters | Description |
|---------------------------------------|--|
| Alarm class prefilter (static) | Properties for prefiltering the alarm classes. |
| Enable alarm class prefiltering | Active: The list of the alarm group prefilters can be configured and used. |

| | |
|-----------------------------|--|
| List of alarm class filters | <p>Selection of the criteria for the prefiltering of the alarm classes. Click on the check box to select alarm classes. Click on the corresponding button to select or deselect all alarm classes.</p> <p>For details, see the Alarm prefiltering (on page 664) chapter.</p> |
|-----------------------------|--|

ALARM LOOKBACK TIME

| Parameters | Description |
|---------------------|---|
| Alarm lookback time | <p>Time range, which should be taken into account from the start of the time filter retrospectively.</p> <p>For details, see the Alarm Lookback time (on page 663) chapter.</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

NET ALARM TIME CALCULATION

| Parameters | Description |
|--------------------------------------|---|
| Net alarm time calculation | Properties to calculate the net time. |
| Consider shift breaks | Active: Shift breaks are taken into account. |
| Shift list linked to equipment group | <p>Selection of an equipment group for the shift model from the drop-down list.</p> <p>For details, see the Origin of shift data (on page 754) chapter.</p> |
| Connector for shift data | <p>Selection of a connector for the shift data from a drop-down list.</p> <p>For details, see the Origin of shift data (on page 754) chapter.</p> |

ALARM FILTER (DYNAMIC)

| Parameters | Description |
|------------------------|---|
| Alarm filter (dynamic) | <p>Selection of alarm filtering:</p> <ul style="list-style-type: none"> ▶ Project only ▶ Project and alarm class ▶ Project and alarm group ▶ Project and equipment group ▶ Project and alarm comment |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|--|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Pie Chart and table ▶ Column chart and table ▶ Pie chart ▶ Column chart ▶ Table |

ACTIONS

| Parameters | Description |
|----------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

Note: If the report is linked to a project via time filtering, the project selection is set to the linked project and a check is made to ensure that only archives from this project can be selected in both groupings.

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection drop-down list for project selection (if not deactivated by time filtering)
- ▶ 1 x multiple-selection drop-down list for alarm class filtering (if activated via alarm filtering in ZAMS)
- ▶ 1 x multiple-selection drop-down list for alarm group filtering (if activated via alarm filtering in ZAMS)
- ▶ 1 x multiple-selection drop-down list (tree) for equipment model selection (if activated via alarm filtering in ZAMS)
- ▶ 1 x text input for alarm comment (if activated via alarm filtering in ZAMS)

DATA DISPLAY

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Column chart: Each aggregation object (project, combination of project and alarm class, combination of project and alarm groups, combination of project and equipment model, combination of project and comment) has a column. The active duration of all instances of an alarm, summated and corrected for shift breaks and shift gaps determines the height of the column.
- ▶ Pie chart: Each aggregation object has a sector in the diagram. The size of the sector is calculated on the same lines as the calculation of a column in the column diagram.
- ▶ Data table:
The data table contains the following columns:
 - Name of the aggregation object (can be expanded)
 - Variable name
 - Alarm text
 - Alarm group (not present if contained in the aggregation)
 - Alarm class (not present if contained in the aggregation)
 - Equipment model (not present if contained in the aggregation)
 - Alarm comment (not present if contained in the aggregation)
 - Incoming time
 - Outgoing time

- Active duration without correction (gross time, sum per aggregation object)
- Active duration with correction (net time, sum per aggregation object)

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPS and UDFs:

- ▶ ListProjectsWithShift
- ▶ ListLots
- ▶ ListShifts
- ▶ ListAlarmClasses
- ▶ ListAlarmGroups
- ▶ ListEquipmentTree
- ▶ Alarm_GetGroupReferenceList
- ▶ Alarm_GetClassReferenceList
- ▶ Alarm_GetSecondsWithoutShift
- ▶ Alarm_Aggregate_Project
- ▶ Alarm_Aggregate_Project2
- ▶ Alarm_Aggregate_Class
- ▶ Alarm_Aggregate_Class2
- ▶ Alarm_Aggregate_Group
- ▶ Alarm_Aggregate_Group2
- ▶ Alarm_Aggregate_Equipment
- ▶ Alarm_Aggregate_Equipment2
- ▶ Alarm_Aggregate_Comment
- ▶ Alarm_Aggregate_Comment2

13.2.2 Custom Formula Analysis

Reports for this theme provide report templates for user-defined formulas:

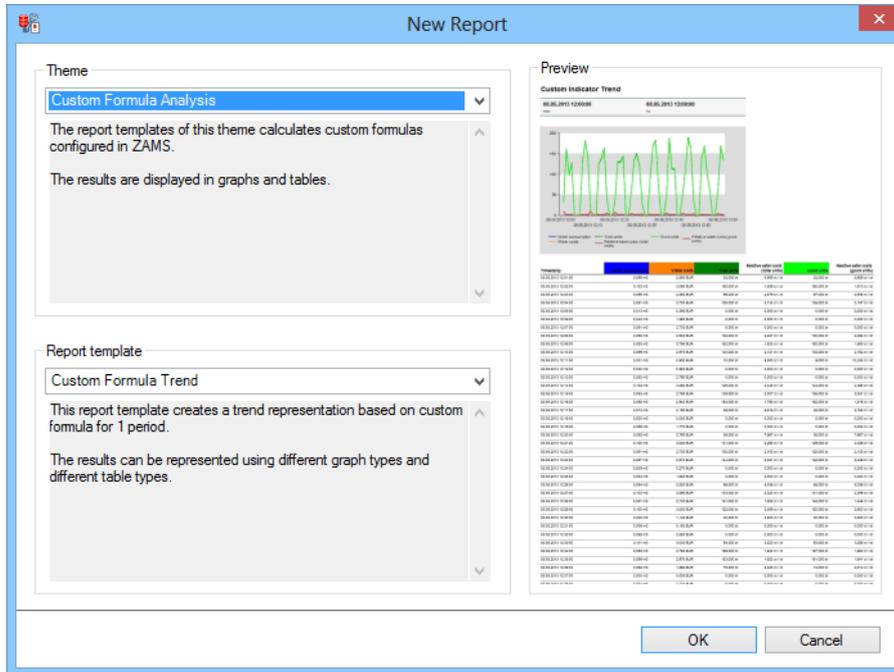
- ▶ Custom Formula Trend: (on page 862) Trend display of user-defined formulas for a time range.
- ▶ Custom Formula Trend Comparison (on page 870): Trend display of user-defined formulas for two time ranges.
- ▶ Custom Formula Aggregated Trend (on page 878): Trend display of aggregated user-defined formulas for a time range.
- ▶ Custom Formula Aggregated Trend Comparison (on page 887): Trend display of aggregated user-defined formulas for two time ranges.
- ▶ Custom Formula Aggregation (on page 895): Trend display of aggregated, user-defined formulas for a time range.
- ▶ Custom Formula Aggregation Comparison (on page 902): Trend display of aggregated, user-defined formulas for two time ranges.

REPORT TEMPLATE SELECTION

To create a report based on this template:

1. Select the **New** entry in the **Report** menu or click on the corresponding symbol in the tool bar

2. The dialog for selecting a template is opened



3. In the **Theme** drop-down list, select **Custom Formula Analysis**
4. Select the template you want to use as a report template from the drop-down list

CONFIGURING USER-DEFINED FORMULAS IN THE ZAMS

To configure user-defined formulas in a report of this topic in the ZAMS:

1. Open a report template
2. Configure the report as usual
3. Open the **Configure custom formulas** (on page 678) dialog
4. Filter the desired variables
5. Add the fields and set the parameters for these
6. Set the parameters for the cost fields
7. Add the constants as required
8. Create the basic data formulas

9. For reports with archive aggregation:
 - a) Configure the aggregations
10. For reports with archive aggregation, trend archiving and variants thereof with a comparison:
 - a) Set the parameters for the aggregation formulas
11. Confirm the configuration by clicking on **OK**.
12. Open the **Arrange and colorize formula results** (on page 712) dialog
13. Sort the formulas
14. Define, if desired, individual colors
15. Confirm the configuration by clicking on **OK**.

Custom Formula Trend

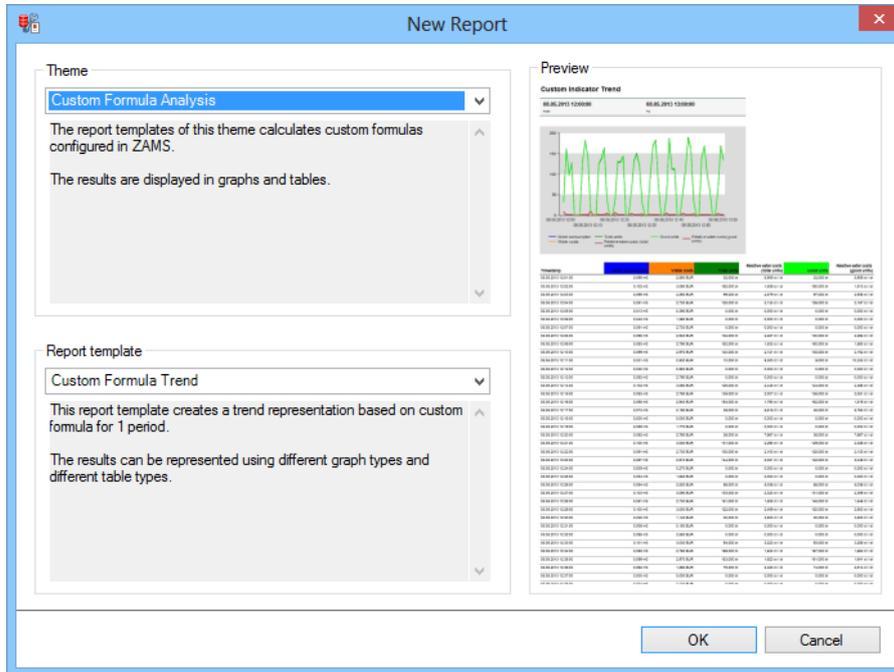
Reports that are based on this template create a trend display of user-defined formulas for a time range. The data can be displayed in graphics and tables.

CREATE REPORT

To create a **Custom Formula Trend** report:

1. In the **Theme** drop-down list, select **Custom Formula Analysis**

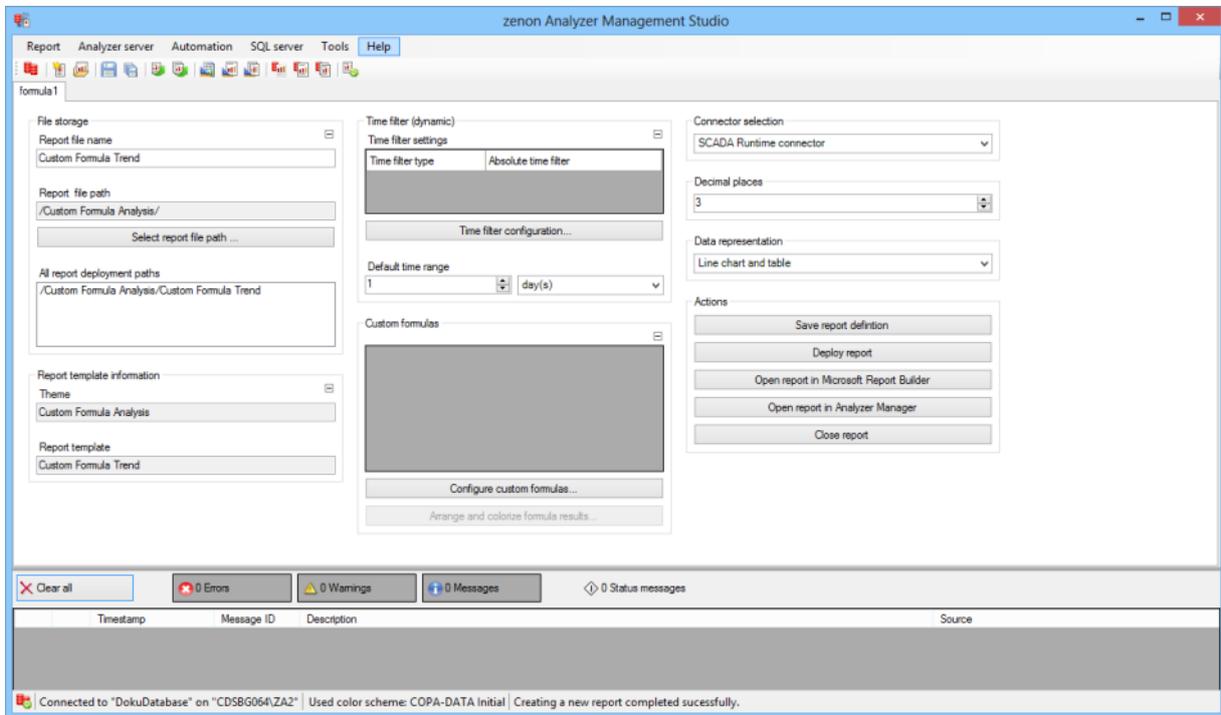
- from the drop-down list, select **Custom Formula Trend** as a report template



- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

CUSTOM FORMULAS

| Parameters | Description |
|-----------------|--|
| Custom formulas | List and buttons to display and configure user-defined formulas. |

| | |
|--------------------------------------|--|
| Configure custom formulas | <p>Opens the dialog to configure user-defined formulas (on page 678).</p> <p>The dialog is different for:</p> <ul style="list-style-type: none">▶ Reports without aggregation over the time range▶ Reports with aggregation over the time range |
| Arrange and colorize formula results | <p>Opens the dialog to sort and color (on page 712) user-defined formulas.</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list.</p> <p>Possible settings:</p> <ul style="list-style-type: none"> ▶ Line chart and table ▶ Column chart and table ▶ Line chart and pivot table ▶ Column chart and pivot table ▶ Line chart ▶ Column chart ▶ Table |

| | |
|--|---|
| | <ul style="list-style-type: none"> ▶ Pivot table |
|--|---|

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots

- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Parameter area: Is always present and shows the report parameter values.
- ▶ Line chart (optional): Trend of the detail values with one line per variable.
- ▶ Bar diagram (optional): Trend of the detail values with a set of columns per variable.
- ▶ Data as a table (optional) with the columns:
 - Indicator color (no text; if a color is set, this is used as a background color)
 - Indicator name
 - Timestamp
 - Value (with unit of measurement)
- ▶ Data as a pivot table (optional):
 - 1. Column: Timestamp
 - After this, a column per indicator with:
Indicator names as a heading (if a color is set, this is used as a background color)
and
value (with unit of measurement) as content

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ CustomIndicators_Trend

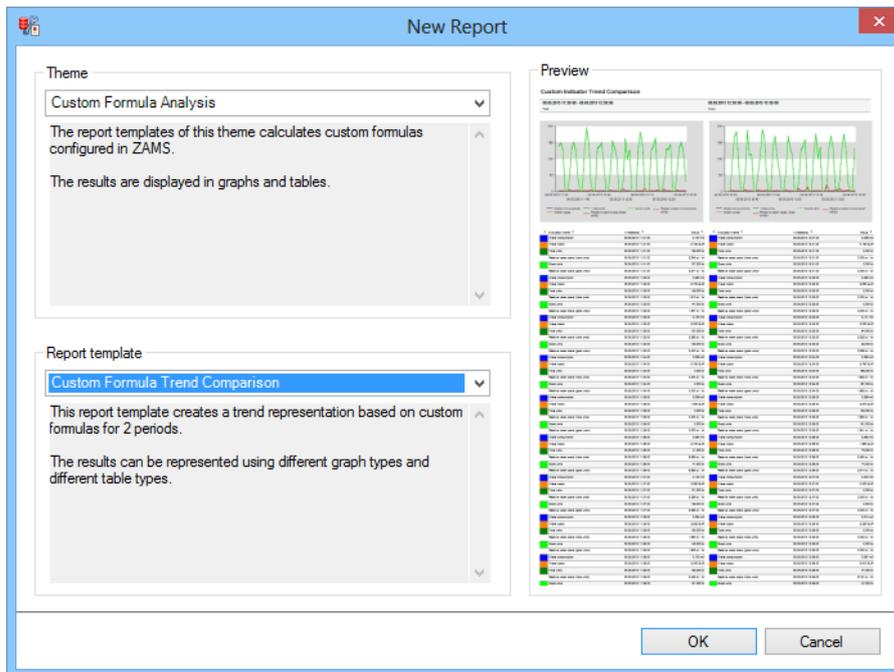
Custom Formula Trend Comparison

Reports that are based on this template create a trend display of user-defined formulas for two time ranges. The data can be displayed in graphics and tables.

CREATE REPORT

To create a **Custom Formula Trend Comparison** report:

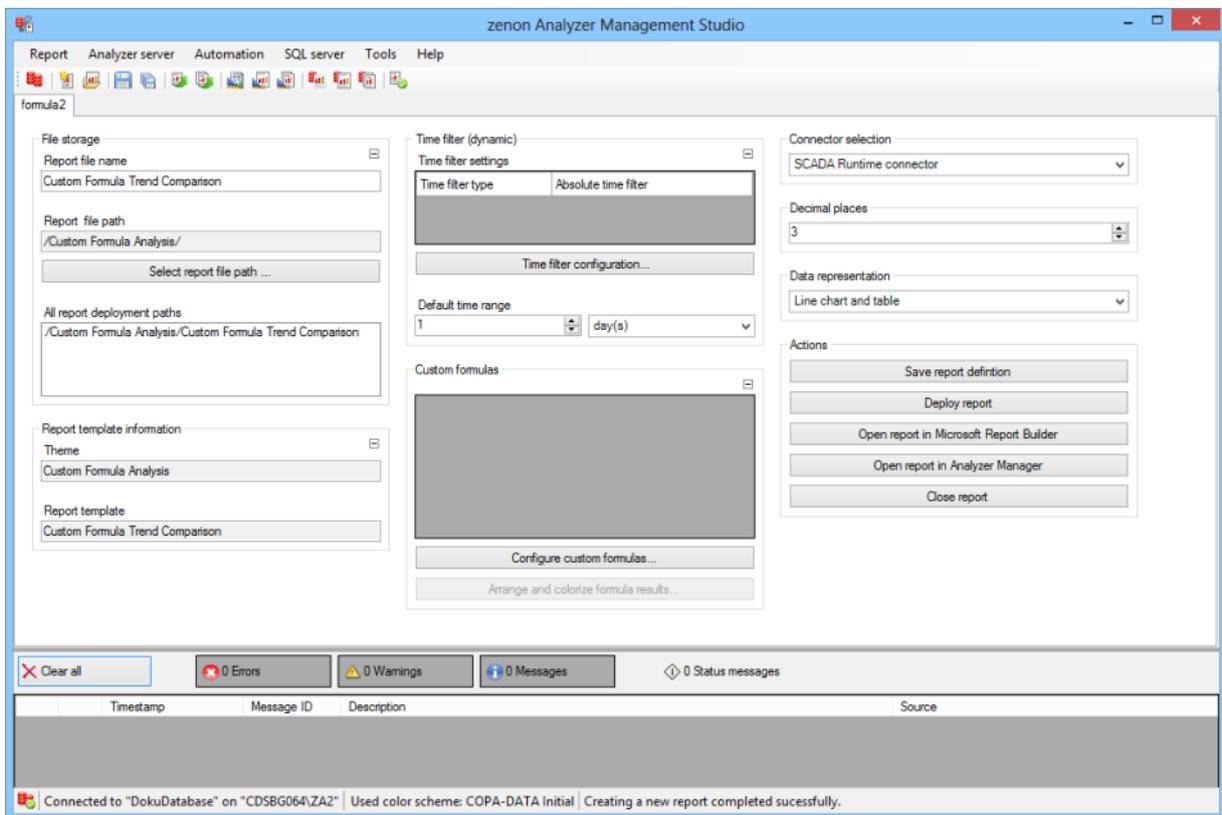
1. In the **Theme** drop-down list, select **Custom Formula Analysis**
2. from the drop-down list, select **Custom Formula Trend Comparison** as a report template



3. Click on the **ok** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

CUSTOM FORMULAS

| Parameters | Description |
|-----------------|--|
| Custom formulas | List and buttons to display and configure user-defined formulas. |

| | |
|--------------------------------------|--|
| Configure custom formulas | <p>Opens the dialog to configure user-defined formulas (on page 678).</p> <p>The dialog is different for:</p> <ul style="list-style-type: none">▶ Reports without aggregation over the time range▶ Reports with aggregation over the time range |
| Arrange and colorize formula results | <p>Opens the dialog to sort and color (on page 712) user-defined formulas.</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list.</p> <p>Possible settings:</p> <ul style="list-style-type: none"> ▶ Line chart and table ▶ Column chart and table ▶ Line chart and pivot table ▶ Column chart and pivot table ▶ Line chart ▶ Column chart ▶ Table |

| | |
|--|---|
| | <ul style="list-style-type: none"> ▶ Pivot table |
|--|---|

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots

- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Parameter area: Is always present and shows the report parameter values.
- ▶ Line chart (optional): Trend of the detail values with one line per variable.
- ▶ Bar diagram (optional): Trend of the detail values with a set of columns per variable.
- ▶ Data as a table (optional) with the columns:
 - Indicator color (no text; if a color is set, this is used as a background color)
 - Indicator name
 - Timestamp
 - Value (with unit of measurement)
- ▶ Data as a pivot table (optional):
 - 1. Column: Timestamp
 - After this, a column per indicator with:
Indicator names as a heading (if a color is set, this is used as a background color)
and
value (with unit of measurement) as content

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ CustomIndicators_Trend

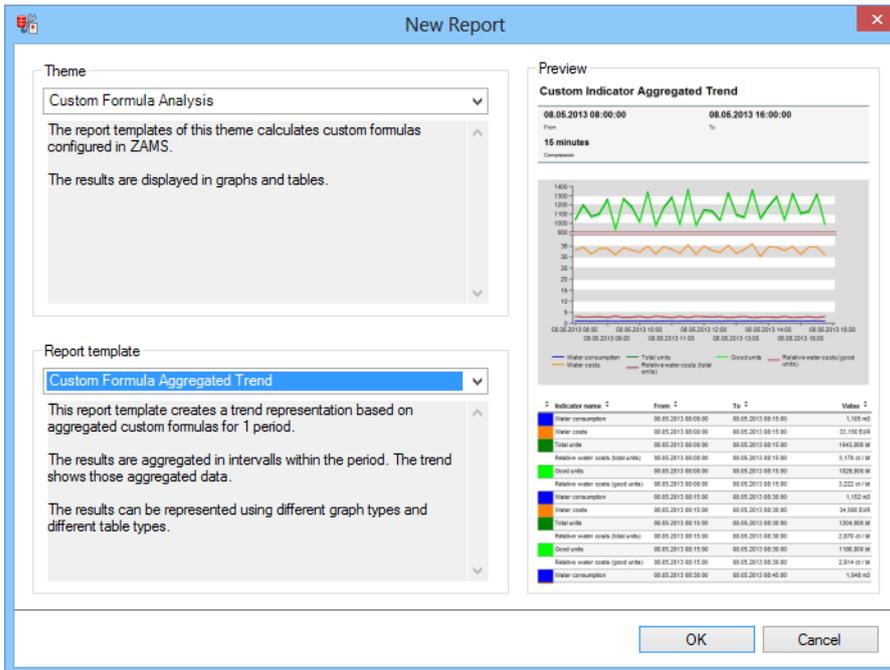
Custom Formula Aggregated Trend

Reports that are based on this template create a trend display of aggregated user-defined formulas for a time range. The values are aggregated in intervals within the time range. This aggregated data is displayed in the trend as graphics and tables.

CREATE REPORT

To create a **Custom Formula Aggregated Trend** report:

1. In the **Theme** drop-down list, select **Custom Formula Analysis**
2. from the drop-down list, select **Custom Formula Aggregated Trend** as a report template



Theme

Custom Formula Analysis

The report templates of this theme calculates custom formulas configured in ZAMS.

The results are displayed in graphs and tables.

Report template

Custom Formula Aggregated Trend

This report template creates a trend representation based on aggregated custom formulas for 1 period.

The results are aggregated in intervals within the period. The trend shows those aggregated data.

The results can be represented using different graph types and different table types.

Preview

Custom Indicator Aggregated Trend

08.05.2013 08:00:00 To 08.05.2013 16:00:00

15 minutes

Compress

Water consumption, Water costs, Total units, Relative water costs (total units), Good units, Relative water costs (good units)

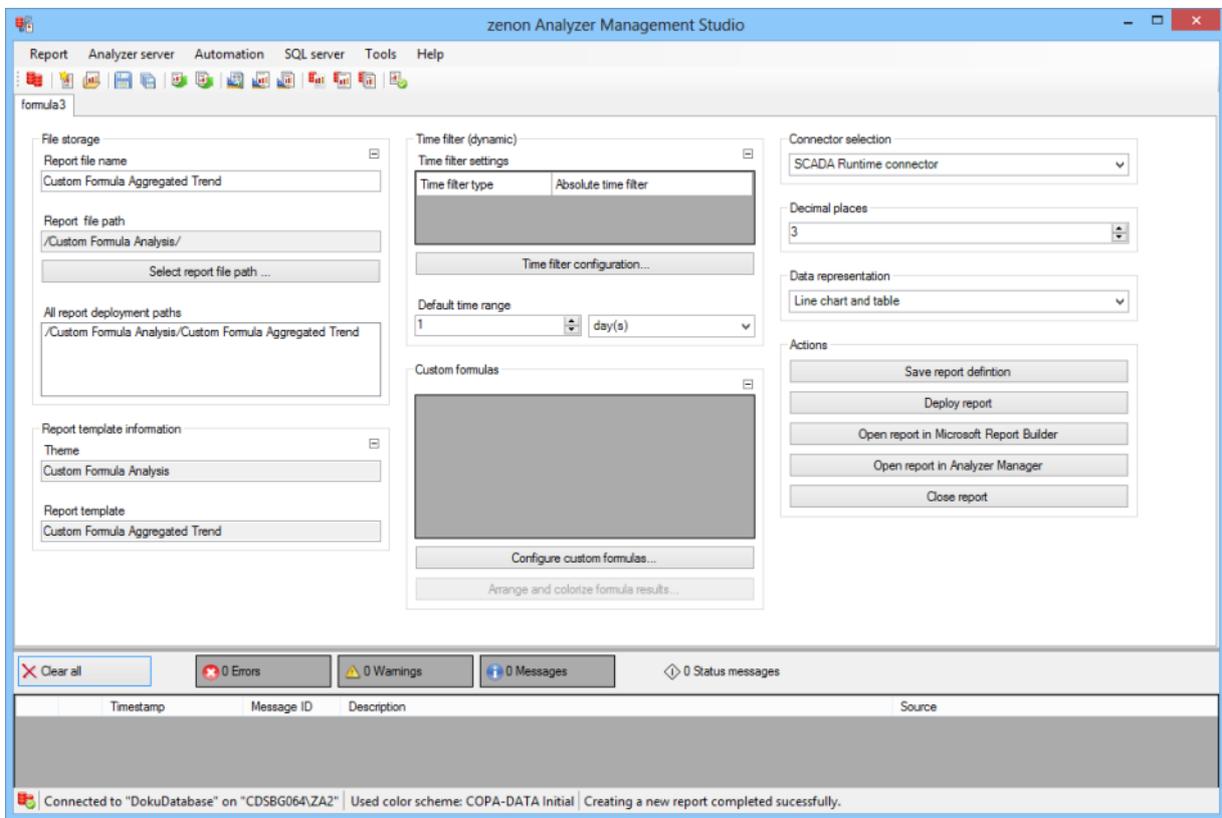
| Indicator name | From | To | Value |
|------------------------------------|---------------------|---------------------|-------------------------|
| Water consumption | 08.05.2013 08:00:00 | 08.05.2013 08:15:00 | 1,162 m ³ |
| Water costs | 08.05.2013 08:00:00 | 08.05.2013 08:15:00 | 31,158 EUR |
| Total units | 08.05.2013 08:00:00 | 08.05.2013 08:15:00 | 1943,808 m ³ |
| Relative water costs (total units) | 08.05.2013 08:00:00 | 08.05.2013 08:15:00 | 3,176 €/m ³ |
| Good units | 08.05.2013 08:00:00 | 08.05.2013 08:15:00 | 1828,808 m ³ |
| Relative water costs (good units) | 08.05.2013 08:00:00 | 08.05.2013 08:15:00 | 3,222 €/m ³ |
| Water consumption | 08.05.2013 08:15:00 | 08.05.2013 08:30:00 | 1,523 m ³ |
| Water costs | 08.05.2013 08:15:00 | 08.05.2013 08:30:00 | 34,566 EUR |
| Total units | 08.05.2013 08:15:00 | 08.05.2013 08:30:00 | 1204,808 m ³ |
| Relative water costs (total units) | 08.05.2013 08:15:00 | 08.05.2013 08:30:00 | 2,876 €/m ³ |
| Good units | 08.05.2013 08:15:00 | 08.05.2013 08:30:00 | 1188,808 m ³ |
| Relative water costs (good units) | 08.05.2013 08:15:00 | 08.05.2013 08:30:00 | 2,914 €/m ³ |
| Water consumption | 08.05.2013 08:30:00 | 08.05.2013 08:45:00 | 1,948 m ³ |

OK Cancel

3. Click on the **OK** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

CUSTOM FORMULAS

| Parameters | Description |
|-----------------|--|
| Custom formulas | List and buttons to display and configure user-defined formulas. |

| | |
|--------------------------------------|--|
| Configure custom formulas | <p>Opens the dialog to configure user-defined formulas (on page 678).</p> <p>The dialog is different for:</p> <ul style="list-style-type: none">▶ Reports without aggregation over the time range▶ Reports with aggregation over the time range |
| Arrange and colorize formula results | <p>Opens the dialog to sort and color (on page 712) user-defined formulas.</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|--|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Line chart and table ▶ Column chart and table ▶ Line chart and pivot table ▶ Column chart and pivot table ▶ Line chart ▶ Column chart ▶ Table |

| | |
|--|---------------|
| | ▶ Pivot table |
|--|---------------|

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots

- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single-selection drop-down list for the selection of the interval size in the time range

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Parameter area: Is always present and shows the report parameter values.
- ▶ Line chart (optional): Trend of the aggregated values with a line per variable.
- ▶ Bar diagram (optional): Trend of the aggregated values with a set of columns per variable.
- ▶ Data as a table (optional) with the columns:
 - Indicator color (no text; if a color is set, this is used as a background color)
 - Indicator name
 - Time stamp - interval start
 - Time stamp - interval end
 - Value (with unit of measurement)
- ▶ Data as a pivot table (optional):
 - 1. Column: Time stamp - interval start
 - 2. Column: Time stamp - interval end
 - After this, a column per indicator with:
Indicator names as a heading (if a color is set, this is used as a background color)
and
value (with unit of measurement) as content

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ CustomIndicators_AggregatedTrend

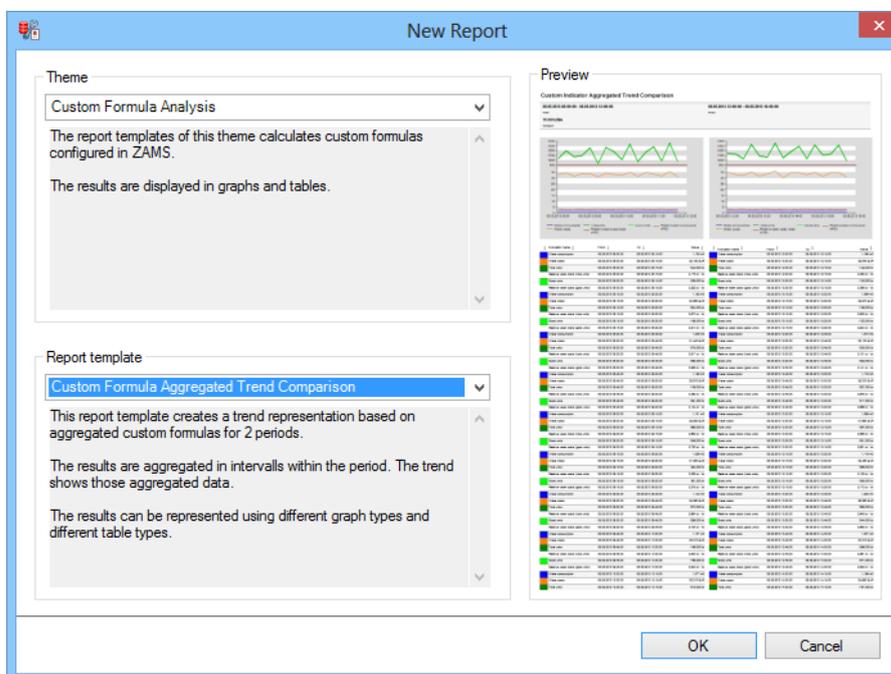
Custom Formula Aggregated Trend Comparison

Reports that are based on this template create a trend display of aggregated user-defined formulas for two time ranges. The values are aggregated in intervals within the time range. This aggregated data is displayed in the trend as graphics and tables.

CREATE REPORT

To create an archive aggregation trend comparison with user-defined formulas report:

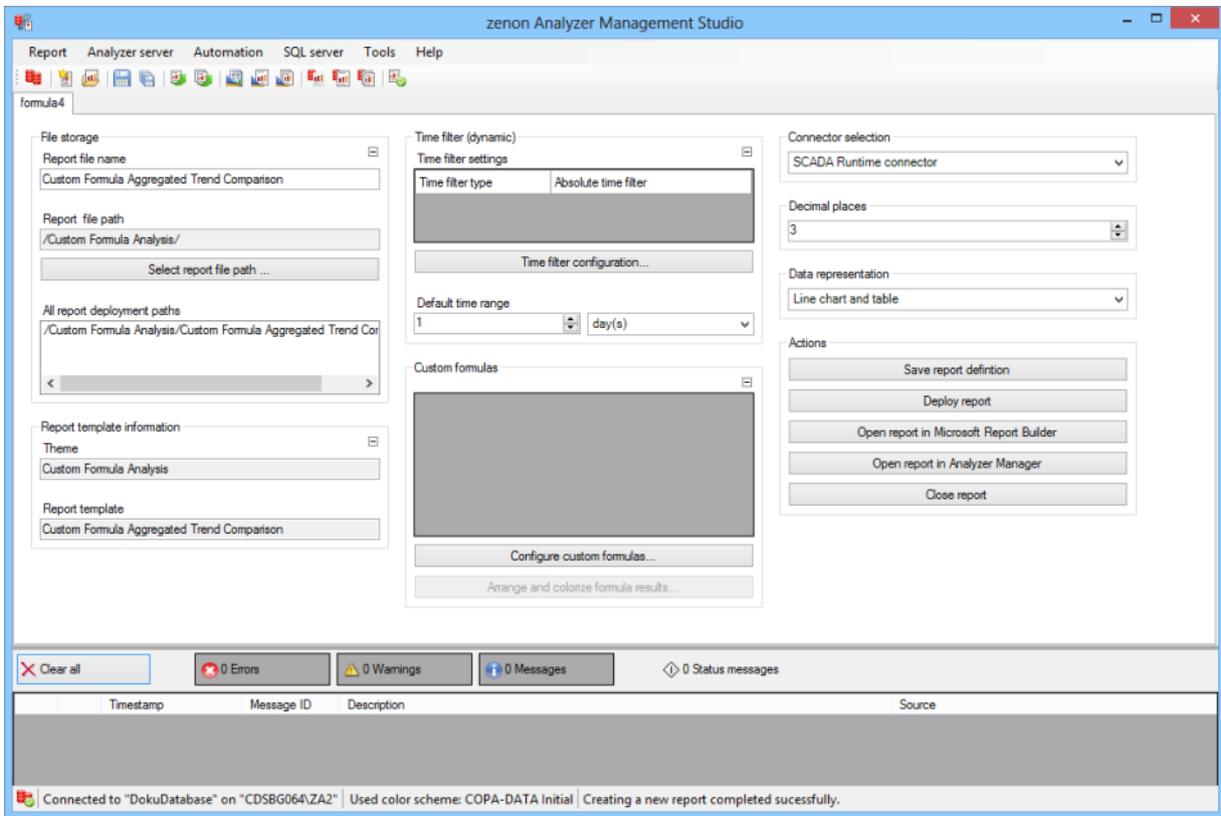
1. In the **Theme** drop-down list, select **Custom Formula Analysis**
2. Select, as a report template, **Archive aggregation trend comparison with user-defined formulas** from the drop-down list



3. Click on the **OK** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

CUSTOM FORMULAS

| Parameters | Description |
|-----------------|--|
| Custom formulas | List and buttons to display and configure user-defined formulas. |

| | |
|--------------------------------------|--|
| Configure custom formulas | <p>Opens the dialog to configure user-defined formulas (on page 678).</p> <p>The dialog is different for:</p> <ul style="list-style-type: none">▶ Reports without aggregation over the time range▶ Reports with aggregation over the time range |
| Arrange and colorize formula results | <p>Opens the dialog to sort and color (on page 712) user-defined formulas.</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list.</p> <p>Possible settings:</p> <ul style="list-style-type: none"> ▶ Line chart and table ▶ Column chart and table ▶ Line chart and pivot table ▶ Column chart and pivot table ▶ Line chart ▶ Column chart ▶ Table |

| | |
|--|---------------|
| | ▶ Pivot table |
|--|---------------|

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots

- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single-selection drop-down list for the selection of the interval size in the time range

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Parameter area: Is always present and shows the report parameter values.
- ▶ Line chart (optional): Trend of the aggregated values with a line per variable.
- ▶ Bar diagram (optional): Trend of the aggregated values with a set of columns per variable.
- ▶ Data as a table (optional) with the columns:
 - Indicator color (no text; if a color is set, this is used as a background color)
 - Indicator name
 - Time stamp - interval start
 - Time stamp - interval end
 - Value (with unit of measurement)
- ▶ Data as a pivot table (optional):
 - 1. Column: Time stamp - interval start
 - 2. Column: Time stamp - interval end
 - After this, a column per indicator with:
Indicator names as a heading (if a color is set, this is used as a background color)
and
value (with unit of measurement) as content

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ CustomIndicators_AggregatedTrend

Custom Formula Aggregation

Reports that are based on this template create a trend display of aggregated, user-defined formulas for a time range. The following aggregation functions are available:

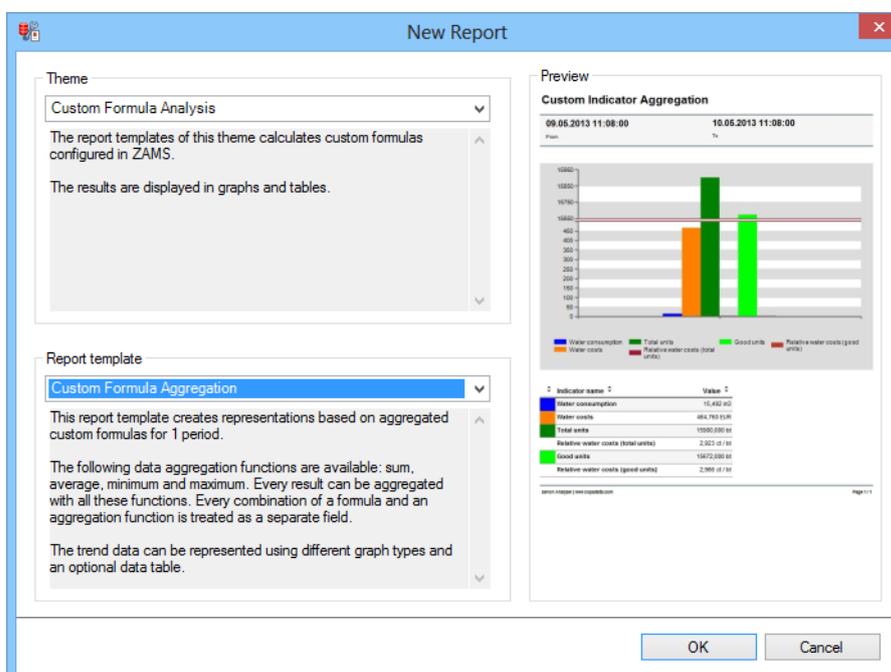
- ▶ Sum
- ▶ Average
- ▶ Minimum
- ▶ Maximum

Each formula can be aggregated with all functions. Each combination of a formula and an aggregation function is treated as a separate field. The data can be displayed as graphics and an optional table.

CREATE REPORT

To create an **Custom Formula Aggregation** report:

1. In the **Theme** drop-down list, select **Custom Formula Analysis**
2. Select **Custom Formula Aggregation** from the drop-down list as a report template

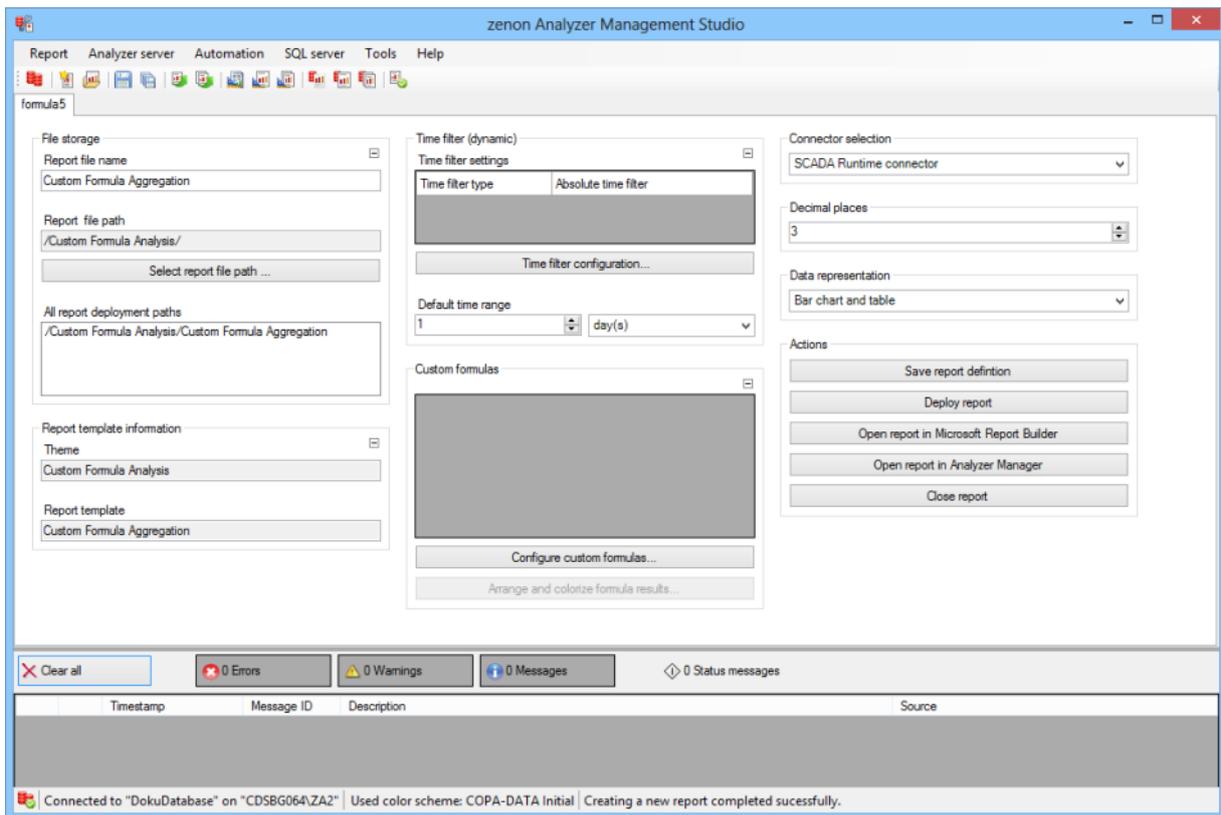


3. Click on the **OK** button

4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

CUSTOM FORMULAS

| Parameters | Description |
|-----------------|--|
| Custom formulas | List and buttons to display and configure user-defined formulas. |

| | |
|--------------------------------------|--|
| Configure custom formulas | <p>Opens the dialog to configure user-defined formulas (on page 678).</p> <p>The dialog is different for:</p> <ul style="list-style-type: none">▶ Reports without aggregation over the time range▶ Reports with aggregation over the time range |
| Arrange and colorize formula results | <p>Opens the dialog to sort and color (on page 712) user-defined formulas.</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list.</p> <p>Possible settings:</p> <ul style="list-style-type: none"> ▶ Pie Chart and table ▶ Column chart and table ▶ Pie chart ▶ Column chart ▶ Table |

ACTIONS

| Parameters | Description |
|----------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single-selection drop-down list for the selection of the interval size in the time range

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Parameter area: Is always present and shows the report parameter values.
- ▶ Bar diagram (optional): Display of the aggregation values in a column diagram.
- ▶ Pie chart (optional): Display of the aggregation values in a pie chart.
- ▶ Data as a table (optional) with the columns:
 - Indicator color (no text; if a color is set, this is used as a background color)
 - Indicator name
 - Value (with unit of measurement)

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ CustomIndicators_Aggregation

Custom Formula Aggregation Comparison

Reports that are based on this template create a trend display of aggregated, user-defined formulas for two time ranges. The following aggregation functions are available:

- ▶ Sum
- ▶ Average
- ▶ Minimum
- ▶ Maximum

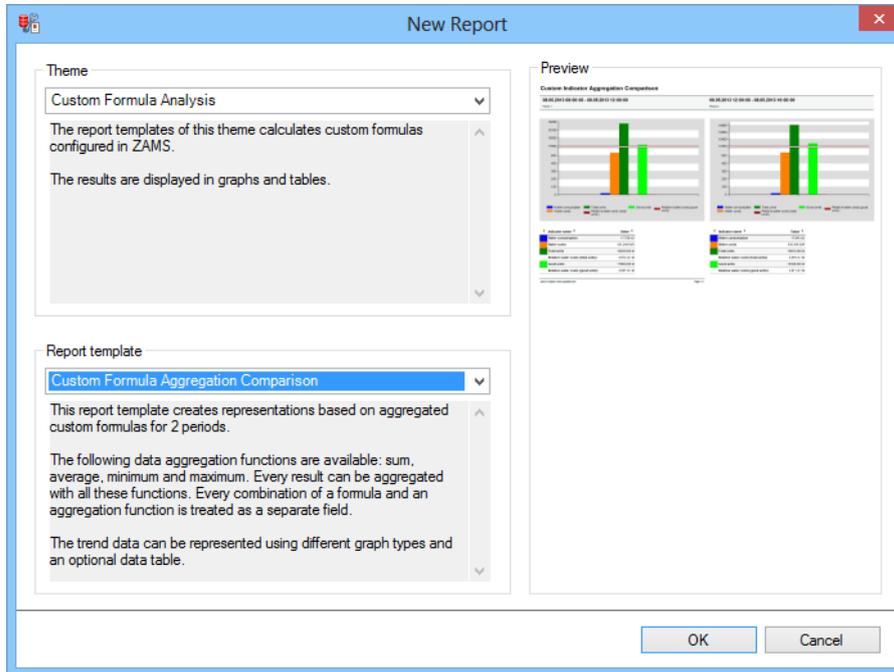
Each formula can be aggregated with all functions. Each combination of a formula and an aggregation function is treated as a separate field. The data can be displayed as graphics and an optional table.

CREATE REPORT

To create a **Custom Formula Aggregation Comparison** report:

1. In the **Theme** drop-down list, select **Custom Formula Analysis**

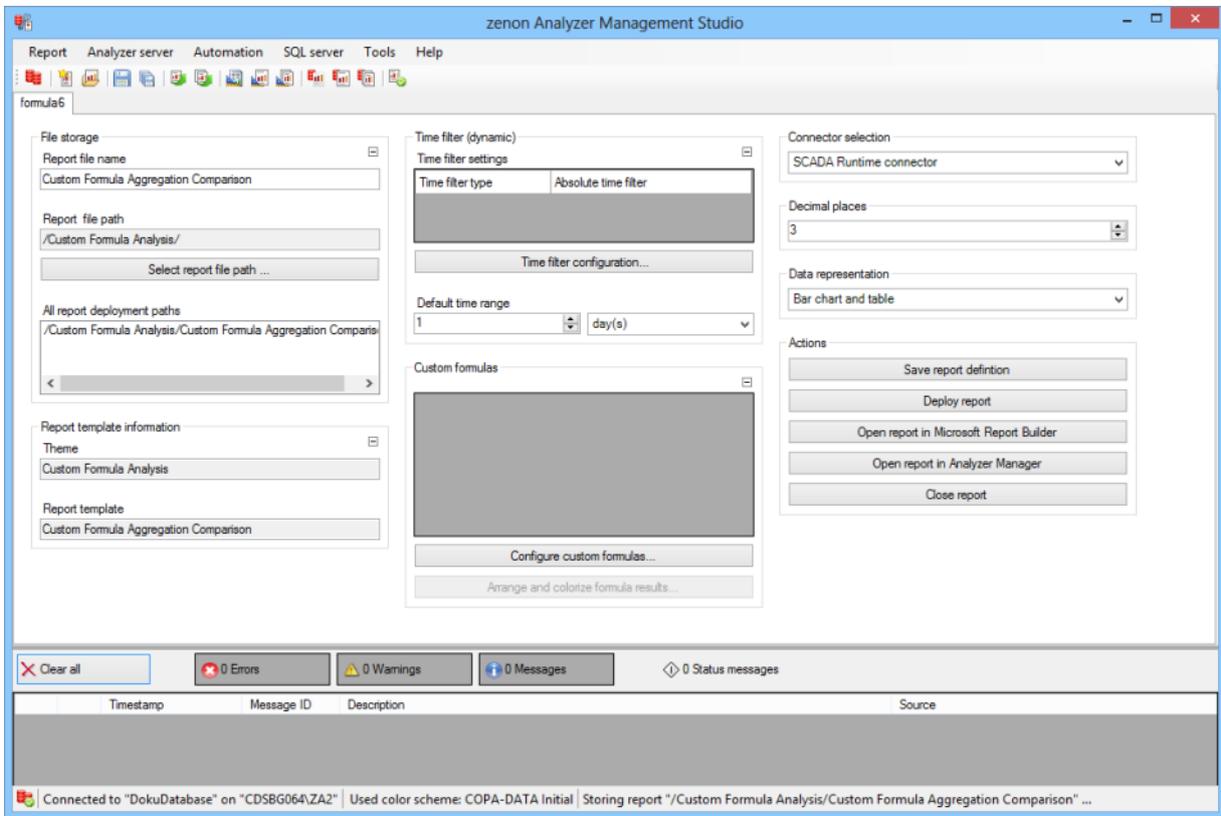
- from the drop-down list, select **Custom Formula Aggregation Comparison** as a report template



- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

CUSTOM FORMULAS

| Parameters | Description |
|-----------------|--|
| Custom formulas | List and buttons to display and configure user-defined formulas. |

| | |
|--------------------------------------|--|
| Configure custom formulas | <p>Opens the dialog to configure user-defined formulas (on page 678).</p> <p>The dialog is different for:</p> <ul style="list-style-type: none">▶ Reports without aggregation over the time range▶ Reports with aggregation over the time range |
| Arrange and colorize formula results | <p>Opens the dialog to sort and color (on page 712) user-defined formulas.</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list.</p> <p>Possible settings:</p> <ul style="list-style-type: none"> ▶ Pie Chart and table ▶ Column chart and table ▶ Pie chart ▶ Column chart ▶ Table |

ACTIONS

| Parameters | Description |
|----------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single-selection drop-down list for the selection of the interval size in the time range

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Parameter area: Is always present and shows the report parameter values.
- ▶ Bar diagram (optional): Display of the aggregation values in a column diagram.
- ▶ Pie chart (optional): Display of the aggregation values in a pie chart.
- ▶ Data as a table (optional) with the columns:
 - Indicator color (no text; if a color is set, this is used as a background color)
 - Indicator name
 - Value (with unit of measurement)

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ CustomIndicators_Aggregation

Example for configuration in the ZAMS

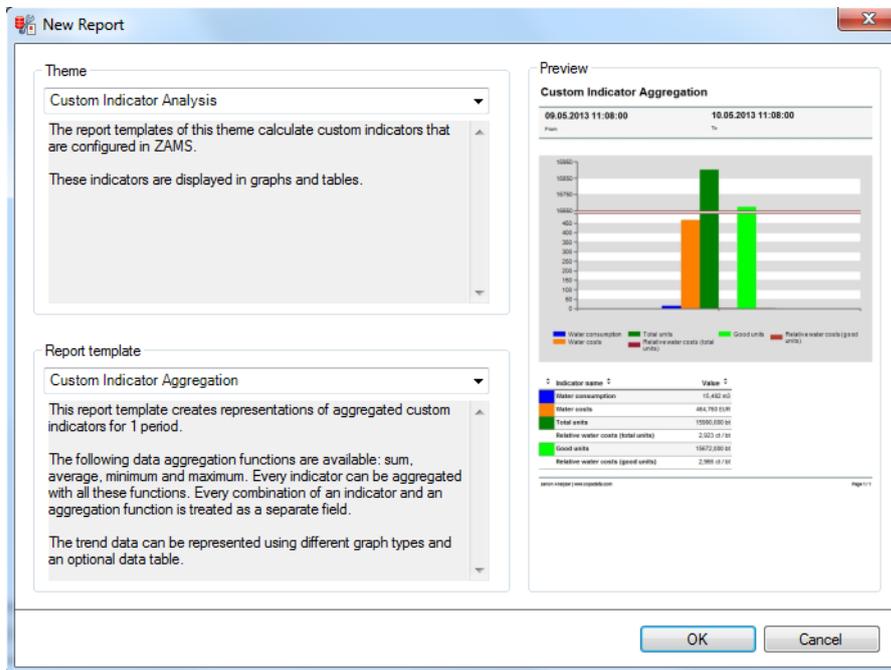
In a report:

- ▶ The average water costs per 1000 bottles are to be displayed
- ▶ A performance indicator value per report period is calculated and displayed as a bar chart and in a table
- ▶ The average costs in relation to the good units is to be colored green
- ▶ The average costs in relation to the total amount are to be colored yellow

The data for this example comes from the Analyzer 2.0 demo project **ZAD_GBL**.

To create this report:

1. Create a report based on the Archive aggregation with user-defined formulas (on page 895) report template.



2. In the report, click on the **configure custom formulas...** button.

New report

File storage

Report file name
Custom Indicator Aggregation

Report file path
/Custom Indicator Analysis/
[Select report file path ...](#)

All report deployment paths
/Custom Indicator Analysis/Custom Indicator Aggregation

Report template information

Theme
Custom Indicator Analysis

Report template
Custom Indicator Aggregation

Time filter (dynamic)

Time filter settings

| Time filter type | Absolute time filter |
|------------------|----------------------|
| | |

[Time filter configuration...](#)

Default time range
1 day(s)

Custom indicators

[Configure custom indicators](#)

[Arrange and colorize indicators...](#)

Connector selection
SCADA Runtime connector

Decimal places
3

Data representation
Bar chart and table

Actions

[Save report definition](#)

[Deploy report](#)

[Open report in Microsoft Report Builder](#)

[Open report in Analyzer Manager](#)

[Close report](#)

3. Configure the water meter:
 - a) These are logged in an archive called **WATER CYCLIC DATA**. Set the filter for the **archive name** accordingly.
 - b) Click on **Add all**.

c) Assign a suitable name

Custom formulas configuration

Variables selection | Costs calculation | Constant Fields | Calculated fields before aggregation | Aggregation fields | Calculated fields after aggregation

Project name: Archive name: Variable name: Measuring unit: Meanings: Equipment groups:

| Project name | Archive name | Variable name | Compression | Measuring unit | Meanings | Equipment groups |
|-------------------|-------------------|-------------------------|--------------------------|----------------|----------|------------------------|
| Glass Bottle Line | WATER CYCLIC DATA | Simulation/Global/M02_W | Raw data (Basis archive) | m3 | | Water Crate Washer |
| Glass Bottle Line | WATER CYCLIC DATA | Simulation/Global/M04_W | Raw data (Basis archive) | m3 | | Water Bottle Washer |

| Data origin | Field name | Measuring unit |
|---|--------------------------------------|--|
| Glass Bottle Line WATER CYCLIC DATA Simulation/Global/M02_Water_incremental Raw data (Basis archive) | <input type="text" value="WaterM2"/> | <input type="text" value="m3"/> <input type="button" value="X"/> |
| Glass Bottle Line WATER CYCLIC DATA Simulation/Global/M04_Water_incremental Raw data (Basis archive) | <input type="text" value="WaterM4"/> | <input type="text" value="m3"/> <input type="button" value="X"/> |

4. Carry out the same step for the production counters from the **PRODUCTION CYCLIC DATA** archive:

Custom formulas configuration

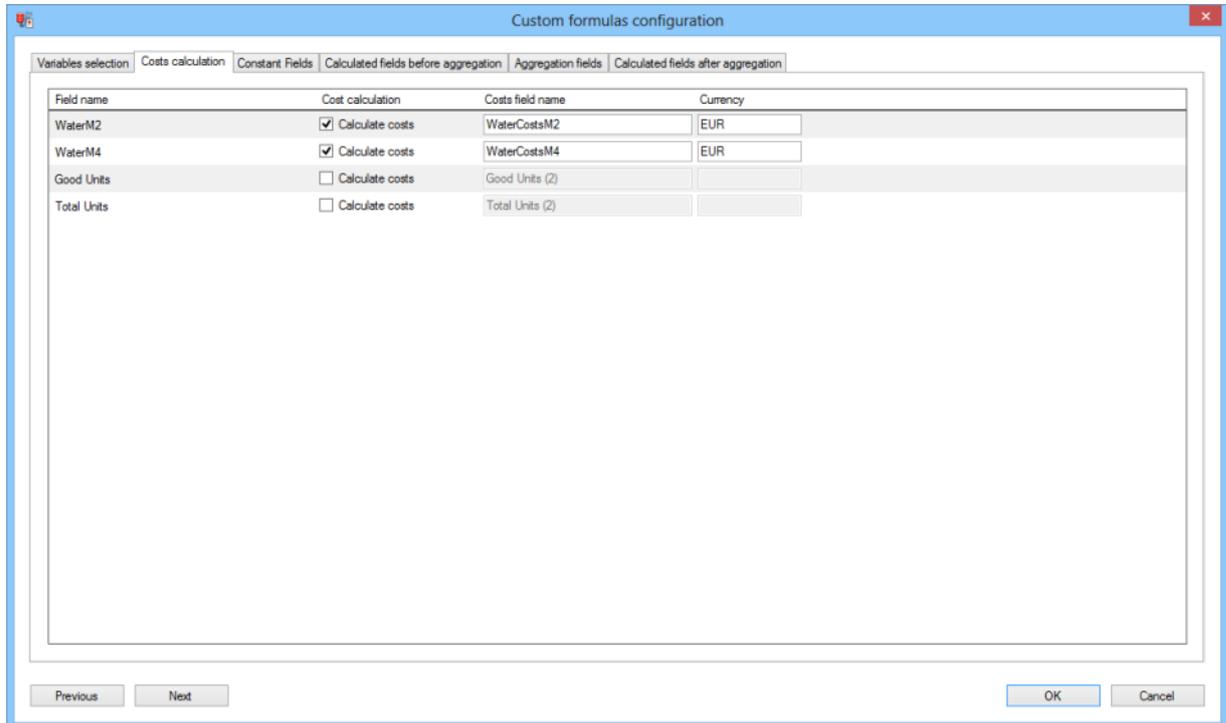
Variables selection | Costs calculation | Constant Fields | Calculated fields before aggregation | Aggregation fields | Calculated fields after aggregation

Project name: Archive name: Variable name: Measuring unit: Meanings: Equipment groups:

| Project name | Archive name | Variable name | Compression | Measuring unit | Meanings | Equipment groups |
|-------------------|------------------------|---------------|--------------------------|----------------|------------|------------------|
| Glass Bottle Line | PRODUCTION CYCLIC DATA | Good Units | Raw data (Basis archive) | bt. | GoodUnits | Filter |
| Glass Bottle Line | PRODUCTION CYCLIC DATA | Total Units | Raw data (Basis archive) | bt. | TotalUnits | Filter |

| Data origin | Field name | Measuring unit |
|---|---|---|
| Glass Bottle Line WATER CYCLIC DATA Simulation/Global/M02_Water_incremental Raw data (Basis archive) | <input type="text" value="WaterM2"/> | <input type="text" value="m3"/> <input type="button" value="X"/> |
| Glass Bottle Line WATER CYCLIC DATA Simulation/Global/M04_Water_incremental Raw data (Basis archive) | <input type="text" value="WaterM4"/> | <input type="text" value="m3"/> <input type="button" value="X"/> |
| Glass Bottle Line PRODUCTION CYCLIC DATA Good Units Raw data (Basis archive) | <input type="text" value="Good Units"/> | <input type="text" value="bt."/> <input type="button" value="X"/> |

5. Configure the **cost calculation** for both water meters:

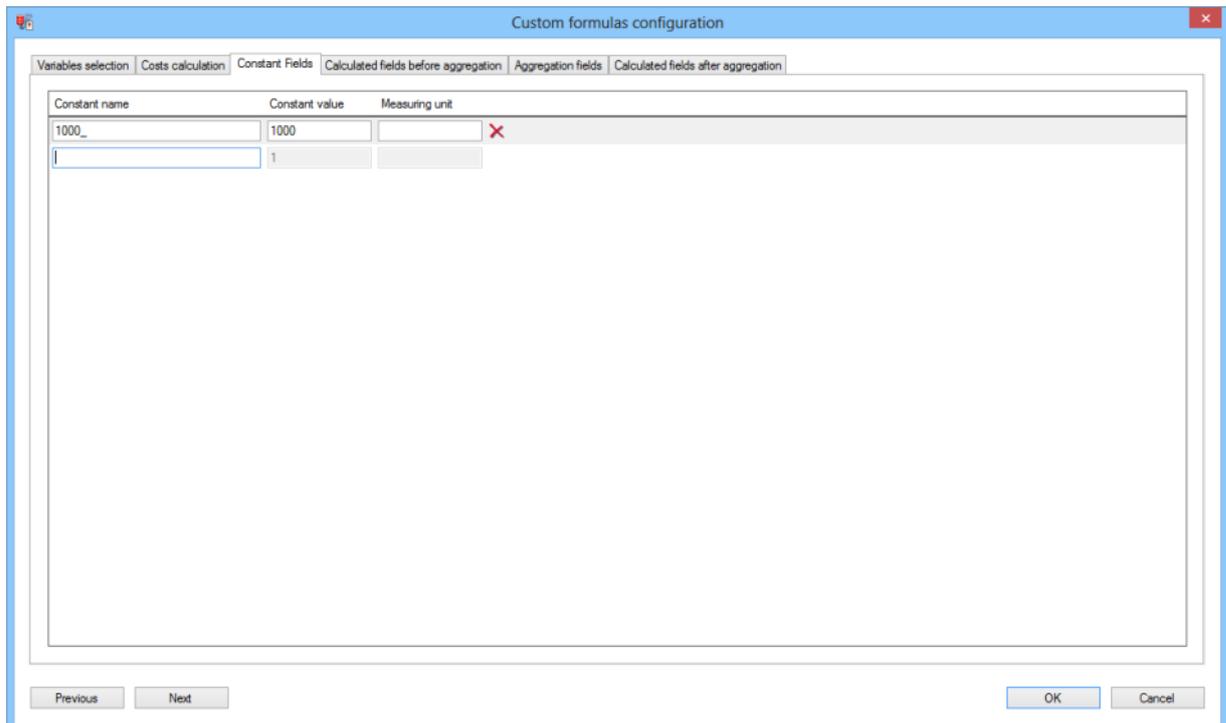


The screenshot shows the 'Custom formulas configuration' dialog box with the 'Costs calculation' tab selected. The dialog contains a table with the following data:

| Field name | Cost calculation | Costs field name | Currency |
|-------------|---|------------------|----------|
| WaterM2 | <input checked="" type="checkbox"/> Calculate costs | WaterCostsM2 | EUR |
| WaterM4 | <input checked="" type="checkbox"/> Calculate costs | WaterCostsM4 | EUR |
| Good Units | <input type="checkbox"/> Calculate costs | Good Units (2) | |
| Total Units | <input type="checkbox"/> Calculate costs | Total Units (2) | |

At the bottom of the dialog, there are buttons for 'Previous', 'Next', 'OK', and 'Cancel'.

6. Switch to the **constant Fields** tab and set the parameters for the constants:



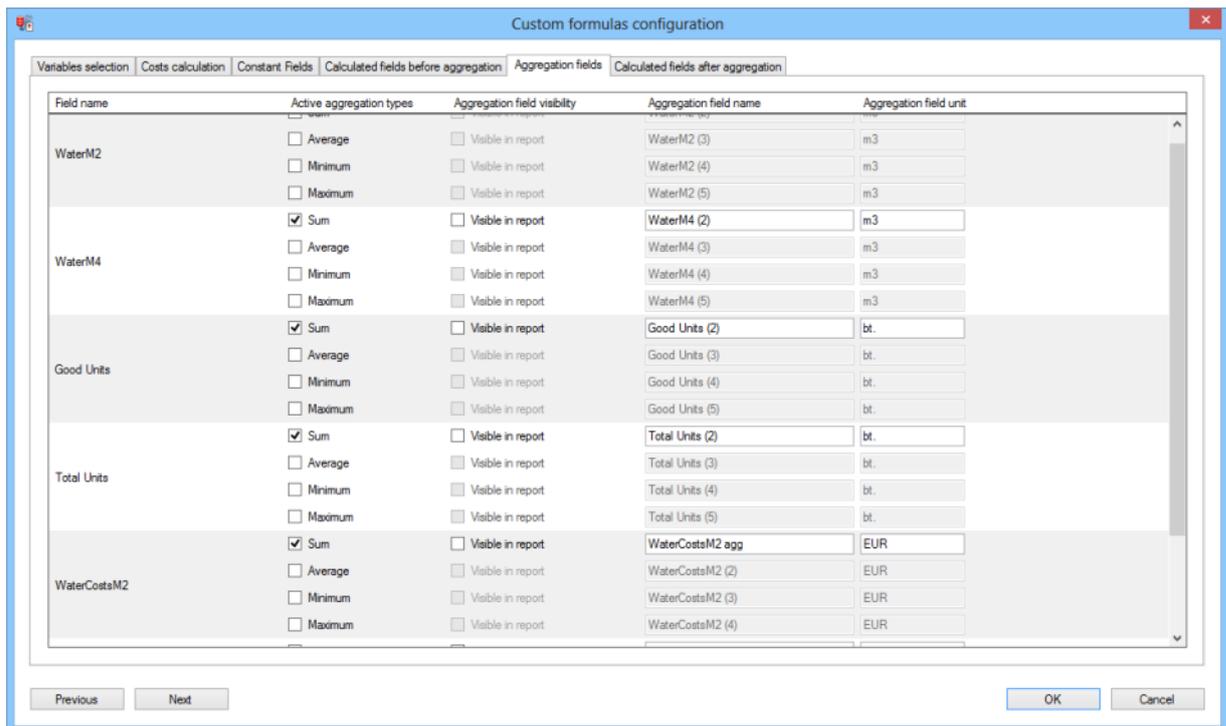
The screenshot shows the 'Custom formulas configuration' dialog box with the 'Constant Fields' tab selected. The dialog contains a table with the following data:

| Constant name | Constant value | Measuring unit |
|---------------|----------------|----------------|
| 1000_ | 1000 | |
| | 1 | |

At the bottom of the dialog, there are buttons for 'Previous', 'Next', 'OK', and 'Cancel'.

7. Configure the aggregation fields: Activate the checkboxes for:

- a) **Sum of Good Units**
- b) **Sum of Total Units**
- c) **Sum of WaterCostsM2**
- d) **Sum of WaterCostsM4**
- e) And for the constant value 1000_

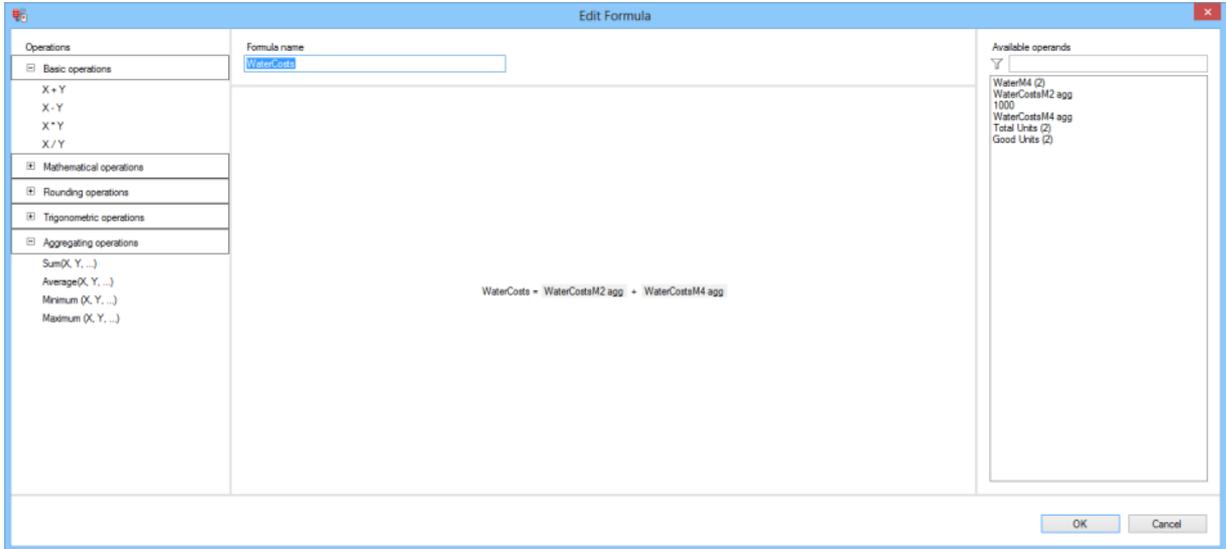


| Field name | Active aggregation types | Aggregation field visibility | Aggregation field name | Aggregation field unit |
|--------------|---|--|------------------------|------------------------|
| WaterM2 | <input type="checkbox"/> Average | <input type="checkbox"/> Visible in report | WaterM2 (3) | m3 |
| | <input type="checkbox"/> Minimum | <input type="checkbox"/> Visible in report | WaterM2 (4) | m3 |
| | <input type="checkbox"/> Maximum | <input type="checkbox"/> Visible in report | WaterM2 (5) | m3 |
| WaterM4 | <input checked="" type="checkbox"/> Sum | <input type="checkbox"/> Visible in report | WaterM4 (2) | m3 |
| | <input type="checkbox"/> Average | <input type="checkbox"/> Visible in report | WaterM4 (3) | m3 |
| | <input type="checkbox"/> Minimum | <input type="checkbox"/> Visible in report | WaterM4 (4) | m3 |
| | <input type="checkbox"/> Maximum | <input type="checkbox"/> Visible in report | WaterM4 (5) | m3 |
| Good Units | <input checked="" type="checkbox"/> Sum | <input type="checkbox"/> Visible in report | Good Units (2) | bt. |
| | <input type="checkbox"/> Average | <input type="checkbox"/> Visible in report | Good Units (3) | bt. |
| | <input type="checkbox"/> Minimum | <input type="checkbox"/> Visible in report | Good Units (4) | bt. |
| | <input type="checkbox"/> Maximum | <input type="checkbox"/> Visible in report | Good Units (5) | bt. |
| Total Units | <input checked="" type="checkbox"/> Sum | <input type="checkbox"/> Visible in report | Total Units (2) | bt. |
| | <input type="checkbox"/> Average | <input type="checkbox"/> Visible in report | Total Units (3) | bt. |
| | <input type="checkbox"/> Minimum | <input type="checkbox"/> Visible in report | Total Units (4) | bt. |
| | <input type="checkbox"/> Maximum | <input type="checkbox"/> Visible in report | Total Units (5) | bt. |
| WaterCostsM2 | <input checked="" type="checkbox"/> Sum | <input type="checkbox"/> Visible in report | WaterCostsM2 agg | EUR |
| | <input type="checkbox"/> Average | <input type="checkbox"/> Visible in report | WaterCostsM2 (2) | EUR |
| | <input type="checkbox"/> Minimum | <input type="checkbox"/> Visible in report | WaterCostsM2 (3) | EUR |
| | <input type="checkbox"/> Maximum | <input type="checkbox"/> Visible in report | WaterCostsM2 (4) | EUR |

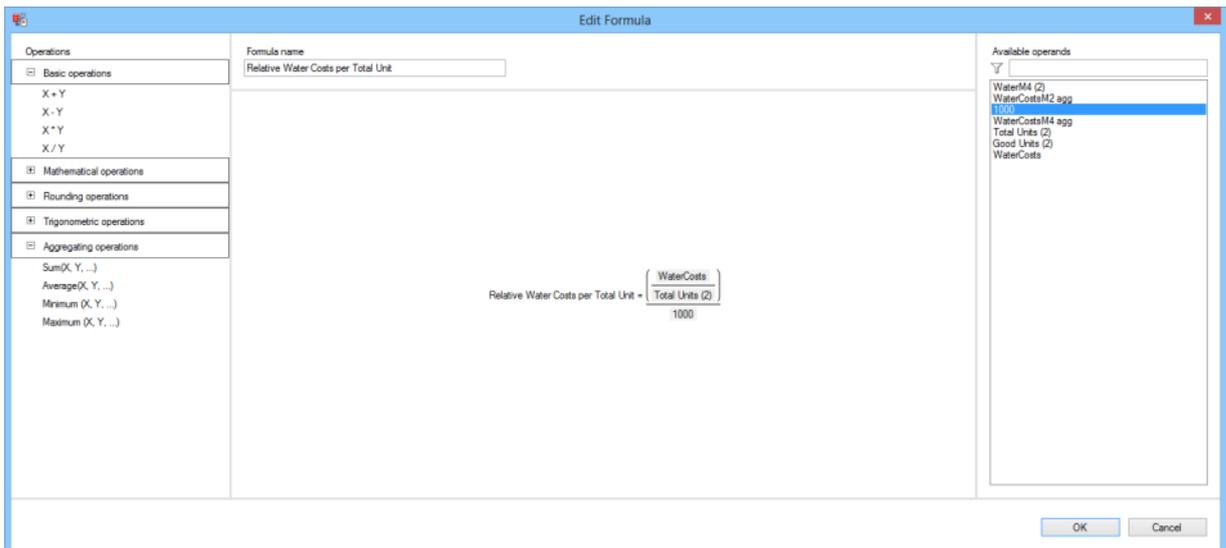
8. Switch to the tab of calculated fields after aggregation:

- a) Enter a formula name for the water costs: **WaterCosts**.
- b) Click on the symbol **Editing**:
- c) The formula editor is opened.

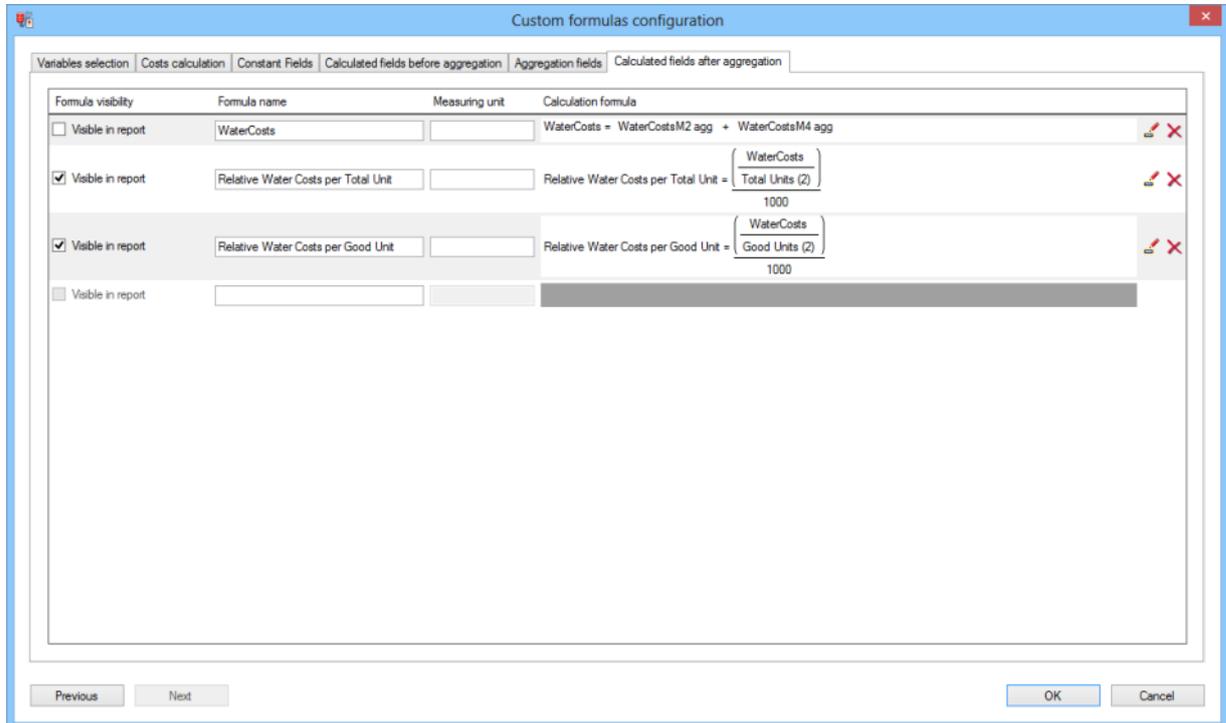
9. Calculate the water costs:



10. These are then used to calculate the first desired formula for the water costs for a total amount of 100 bottles in a new calculated field:



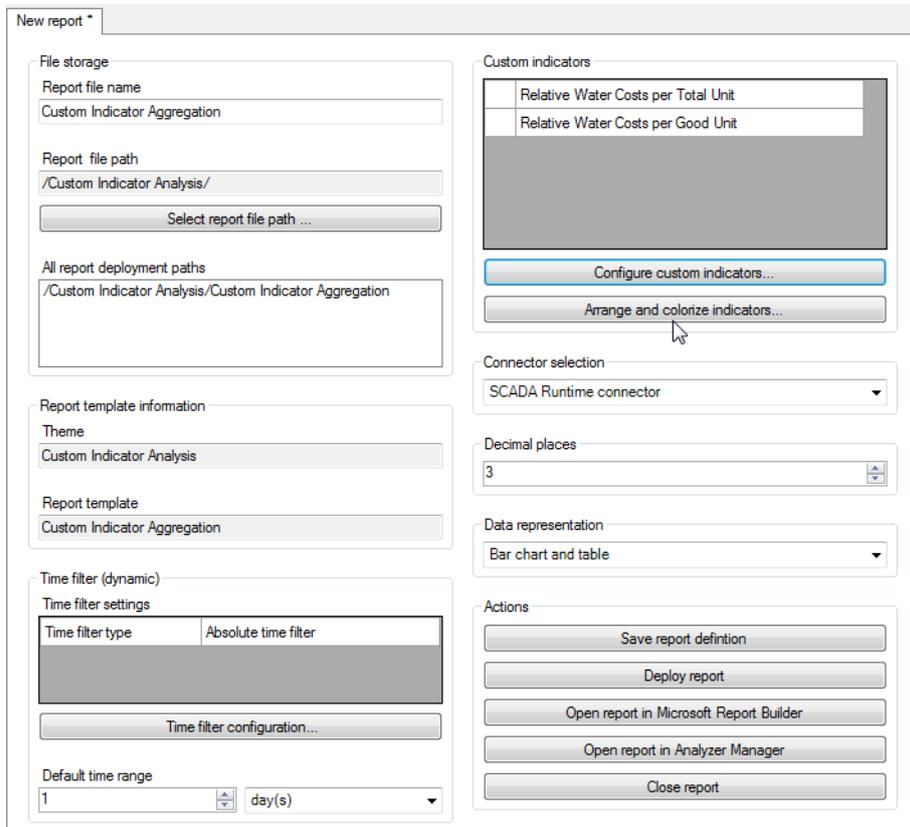
- With the calculation of the two formulas and the configuration of visibility and units of measurement, editing in the formula editor is concluded.



| Formula visibility | Formula name | Measuring unit | Calculation formula |
|---|-------------------------------------|----------------|---|
| <input type="checkbox"/> Visible in report | WaterCosts | | WaterCosts = WaterCostsM2 agg + WaterCostsM4 agg |
| <input checked="" type="checkbox"/> Visible in report | Relative Water Costs per Total Unit | | Relative Water Costs per Total Unit = $\frac{\text{WaterCosts}}{\text{Total Units (2)}} / 1000$ |
| <input checked="" type="checkbox"/> Visible in report | Relative Water Costs per Good Unit | | Relative Water Costs per Good Unit = $\frac{\text{WaterCosts}}{\text{Good Units (2)}} / 1000$ |
| <input type="checkbox"/> Visible in report | | | |

- In the ZAMS, click on the **Arrange and color formula results** button.

The dialog to configure sorting and coloring of the formula results is started:



The dialog box is titled 'New report' and contains several sections for configuration:

- File storage:**
 - Report file name: Custom Indicator Aggregation
 - Report file path: /Custom Indicator Analysis/ (with a 'Select report file path ...' button)
 - All report deployment paths: /Custom Indicator Analysis/Custom Indicator Aggregation
- Report template information:**
 - Theme: Custom Indicator Analysis
 - Report template: Custom Indicator Aggregation
- Time filter (dynamic):**
 - Time filter settings table:

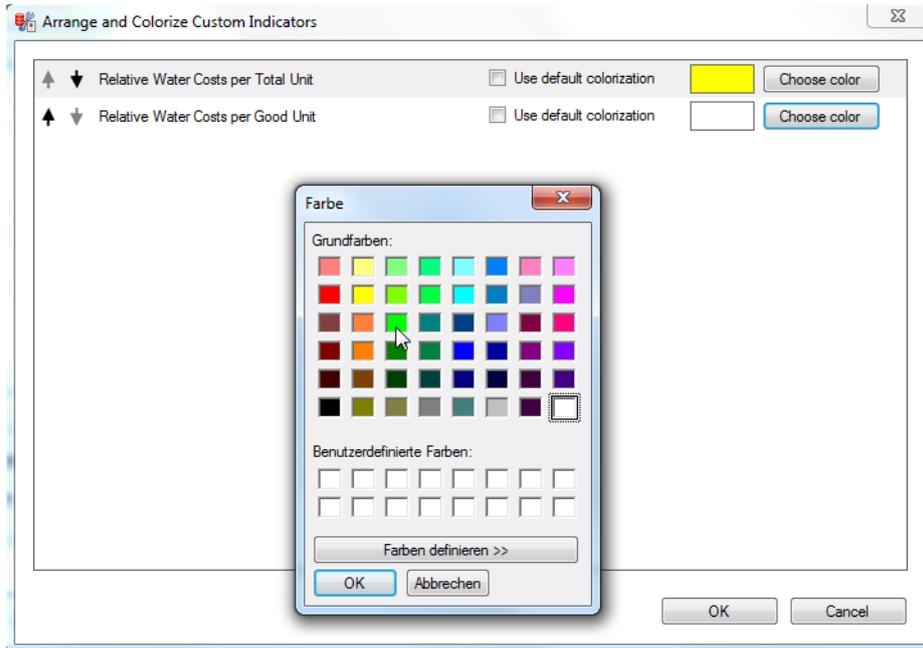
| Time filter type | Absolute time filter |
|------------------|----------------------|
| | |
 - Time filter configuration... button
 - Default time range: 1 day(s)
- Custom indicators:**
 - Table of indicators:

| |
|-------------------------------------|
| Relative Water Costs per Total Unit |
| Relative Water Costs per Good Unit |
 - Configure custom indicators... button
 - Arrange and colorize indicators... button (highlighted with a mouse cursor)
- Connector selection:** SCADA Runtime connector
- Decimal places:** 3
- Data representation:** Bar chart and table
- Actions:**
 - Save report definition
 - Deploy report
 - Open report in Microsoft Report Builder
 - Open report in Analyzer Manager
 - Close report

13. Define the coloring. To do this:

- Set the checkboxes in front of `Standard coloring` to inactive.
- The color preview and the button for the color configuration are displayed.
- Click on `color`.

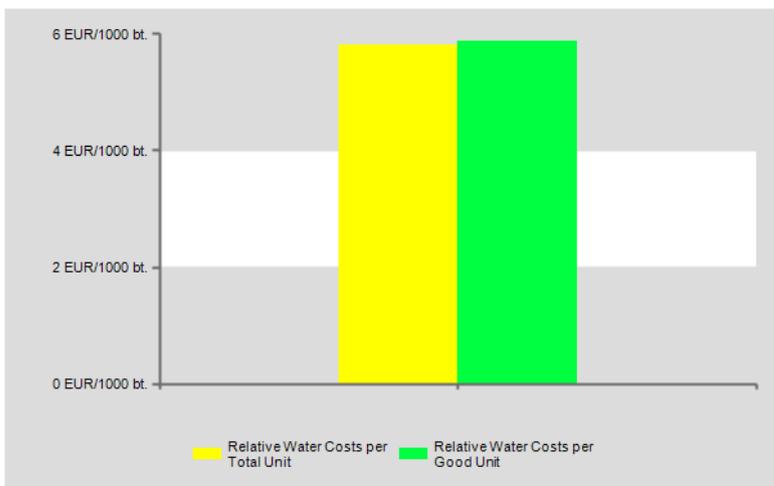
d) Select the desired color



Result in the Analyzer Manager:

Archivverdichtung mit benutzerdefinierten Formeln

| | |
|----------------------|----------------------|
| 9/11/2013 9:43:00 AM | 9/12/2013 9:43:00 AM |
| Von | Bis |



| Indikatorname | Wert |
|-------------------------------------|--------------------|
| Relative Water Costs per Total Unit | 5.798 EUR/1000 bt. |
| Relative Water Costs per Good Unit | 5.882 EUR/1000 bt. |

13.2.3 Historian Analysis

Reports of this theme provide report templates that aid the evaluation and direct or aggregated display of archive data:

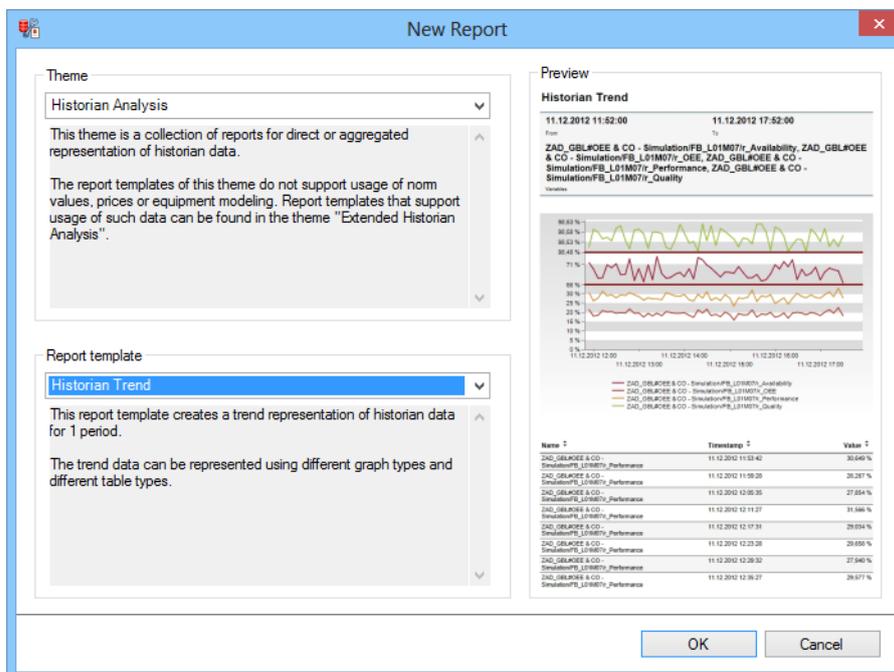
- ▶ **Historian Trend (on page 922):** Gets archive data for a time range and displays this without aggregation in a trend
- ▶ **Historian Trend Comparison (on page 930):** Gets archive data for two time ranges and provides this without aggregation of each trend for comparison.
- ▶ **Historian Aggregated Trend (on page 938):** Gets archive data for a time range, aggregates this in intervals in the time range and displays it as a trend.
- ▶ **Historian Aggregated Trend Comparison (on page 946):** Gets archive data for two time ranges, aggregates this in intervals in the time range and displays it as a trend for comparison.
- ▶ **Historian Aggregated Trend with online variable selection (on page 953):** Gets archive data for a time range, aggregates this in intervals in the time range and displays these aggregations as a trend.
- ▶ **Historian Aggregated Trend Comparison with online variable selection (on page 961):** Gets archive data for two time ranges, aggregates these in intervals in the time range and provides these aggregations each in a separate trend per time range.
- ▶ **Historian Aggregation (on page 969):** Gets archive data for a time range, aggregates this and displays each of the aggregation results separately
- ▶ **Historian Aggregation Comparison (on page 977):** Gets archive data for two time ranges, aggregates this and displays each of the aggregation results for both time ranges separately
- ▶ **Historian Distribution (on page 985):** Gets archive data for a variable, rounds this up to a configurable rounding factor and displays the distribution of the values. In addition, the types of aggregation are calculated and displayed with markers.

- ▶ **Historian Distribution Comparison** (on page 993): Gets archive data for a variable from two time ranges, rounds this up to a configurable rounding factor and displays the distribution of the values. In addition, the types of aggregation are calculated and displayed with markers.

REPORT TEMPLATE SELECTION

To create a report based on this template:

1. Select the **New** entry in the **Report** menu or click on the corresponding symbol in the tool bar
2. The dialog for selecting a template is opened



3. In the **Theme** drop-down list, select **Historian Analysis**
4. Select the template you want to use as a report template from the drop-down list

METADATA

| Metadata used: General | | |
|----------------------------|------|--|
| | used | If not used |
| Projects | + | mandatory. |
| Alarm/Event class | - | |
| Alarm/Event groups | - | |
| User | - | |
| Equipment modeling | - | |
| Archives | + | mandatory. |
| Variables | + | mandatory. |
| Prices | - | |
| Norm values | - | |
| Metadata used: Time filter | | |
| Lots | + | No reports possible with lot filter. |
| Shifts | + | No reports possible with shift filter. |

Archive trend

Reports that are based on this template get archive data for a time range and display this without aggregation in a trend.

APPLICATION EXAMPLES

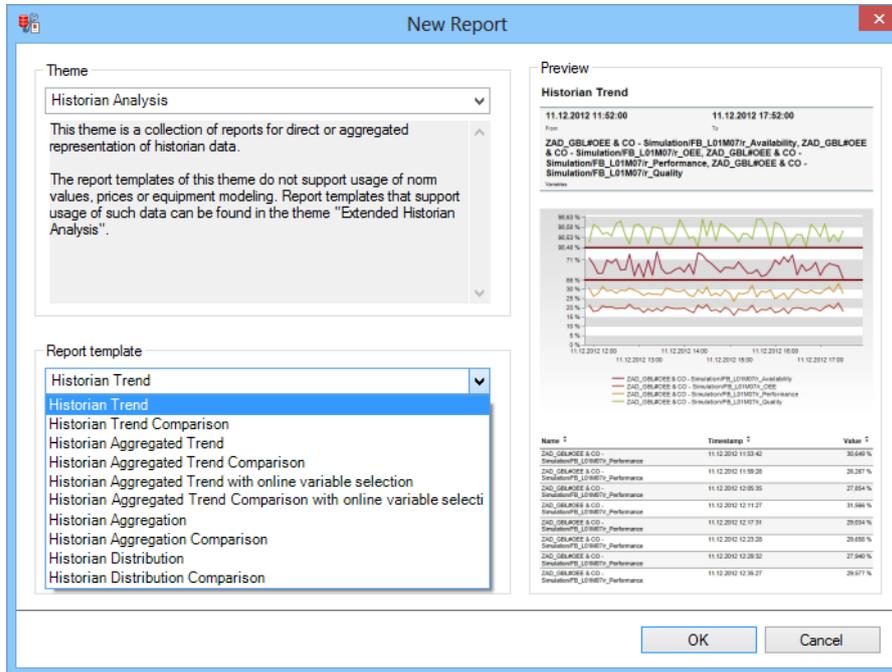
Historian Trend reports are suitable for the display of the course of all types of measurement values (such as pressures, temperatures etc.) within a freely-selectable time period, lot or shift.

CREATE REPORT

To create a **Historian Trend** report:

1. In the **Theme** drop-down list, select **Historian Analysis**

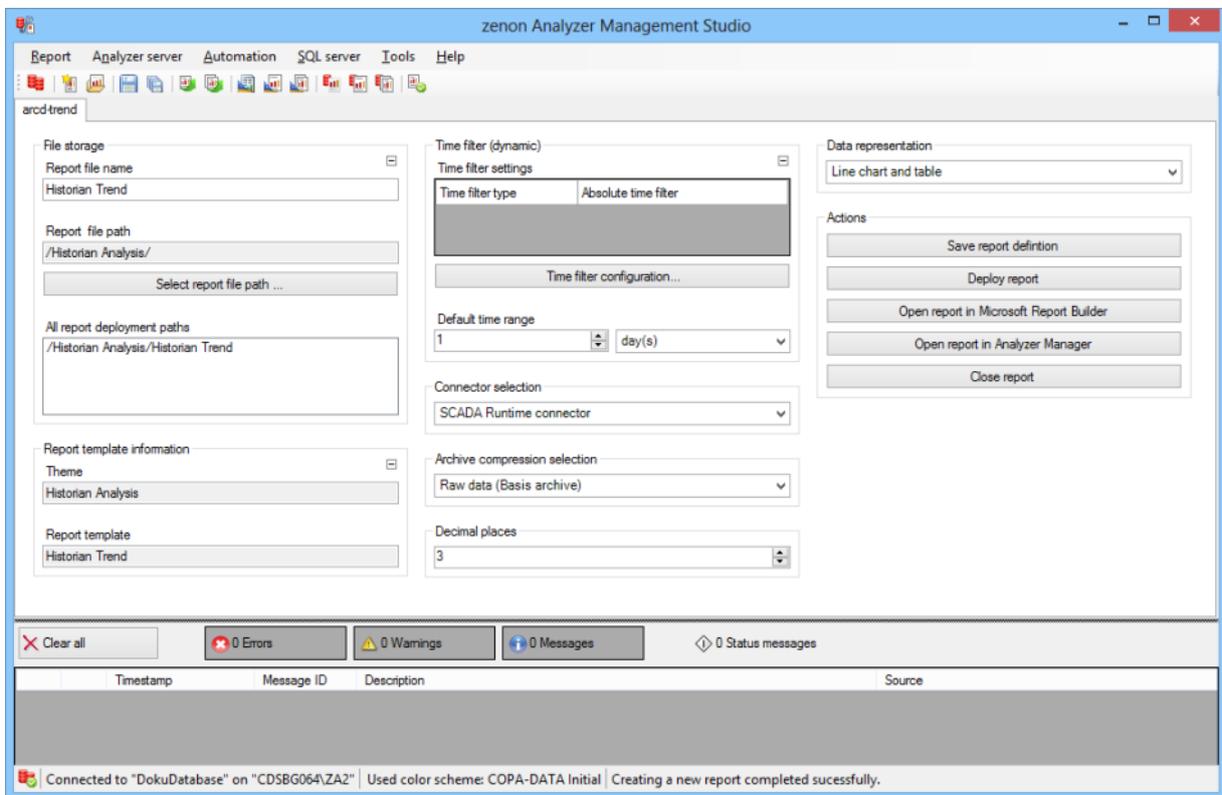
- from the drop-down list, select **Historian Trend** as a report template



- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available</p> |

| | |
|--|--|
| | <p>connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |
|--|--|

ARCHIVE COMPRESSION SELECTION

| Parameters | Description |
|-------------------------------|---|
| Archive compression selection | <p>The following types of archive aggregation are available. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Raw data (Basis archive) ▶ added up data (aggregated archive) ▶ average data (aggregated archive) ▶ minimum data (aggregated archive) ▶ maximum data (aggregated archive) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|------------|-------------|
|------------|-------------|

| | |
|----------------------------|---|
| <p>Data representation</p> | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Line chart and table ▶ Column chart and table ▶ Line chart and pivot table ▶ Column chart and pivot table ▶ Line chart ▶ Column chart ▶ Table ▶ Pivot table |
|----------------------------|---|

ACTIONS

| Parameters | Description |
|----------------|--|
| <p>Actions</p> | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection drop-down list for selection of the projects (if not prescribed by the time filter)
- ▶ 1 x multiple-selection drop-down list for selection of the archives
- ▶ 1 x multiple-selection drop-down list for selection of the variables

DATA DISPLAY

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Line chart: A trend line covering the curve is shown for each variable
- ▶ Column chart: The trend is constructed as a column diagram over the time period. In doing so, each variable gets a column for each time stamp.
- ▶ Archive data table:
Table with the following columns:
 - Variable name (can be sorted dynamically)
 - Time stamp (can be sorted dynamically)
 - Value
 - Text value
- ▶ Pivot table: A table with a column for the time stamp and a column each for the value of each variable.

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPS and UDFs:

- ▶ ListProjects
- ▶ ListArchivesForProjects
- ▶ ListVariablesForArchives
- ▶ ListLots
- ▶ ListShifts
- ▶ Archive_GetPlainTrendData

Historian Trend Comparison

Reports that are based on this template get archive data for two time ranges and display this without aggregation in a trend as a comparison.

APPLICATION EXAMPLES

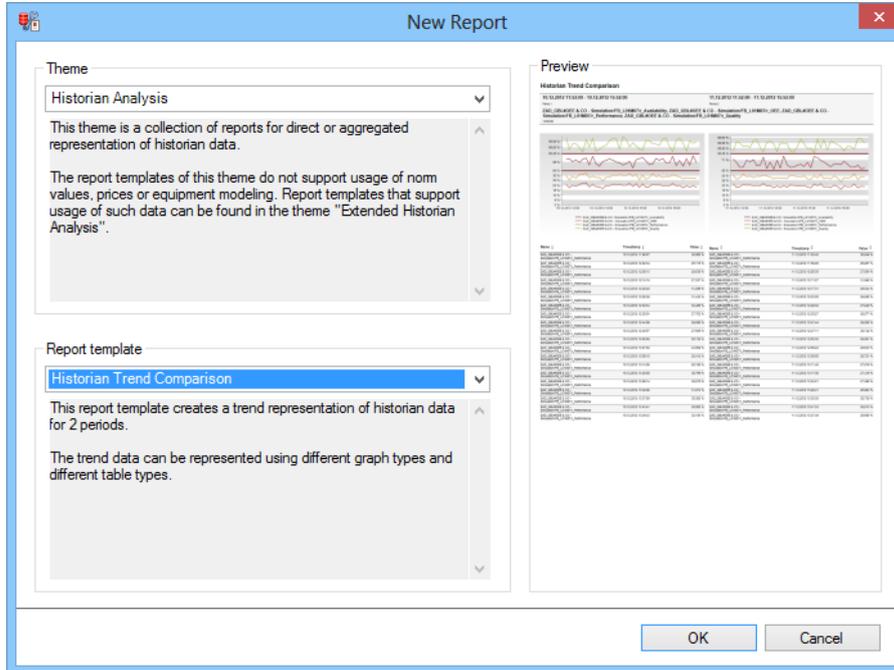
Historian Trend Comparison reports are suitable for the comparison of the development of all types of measured values (such as pressures, temperatures, etc.) over two time periods, lots or shifts.

CREATE REPORT

To create a **Historian Trend Comparison** report:

1. In the **Theme** drop-down list, select **Historian Analysis**

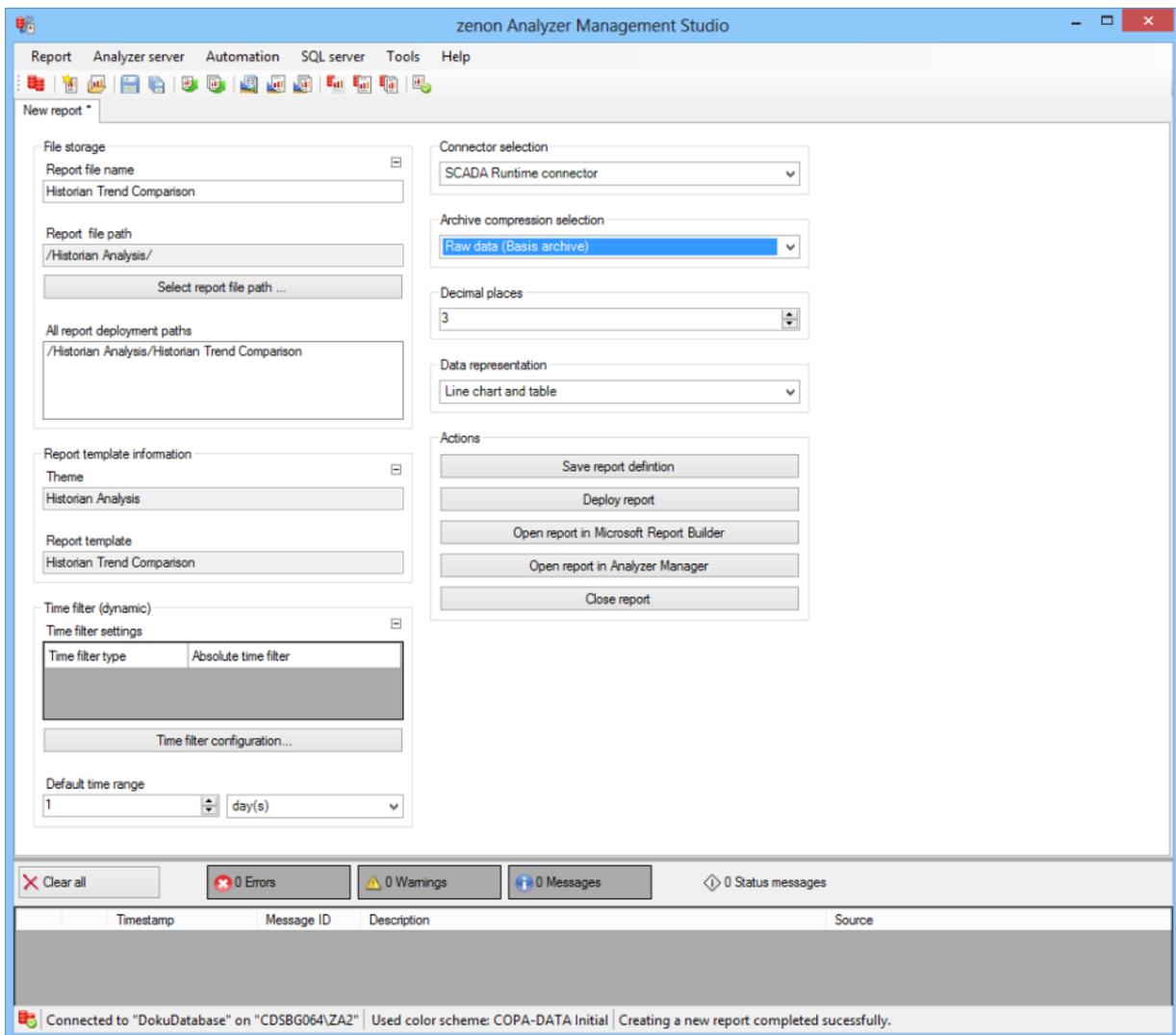
- from the drop-down list, select **Historian Trend Comparison** as a report template



- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available</p> |

| | |
|--|--|
| | <p>connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |
|--|--|

ARCHIVE COMPRESSION SELECTION

| Parameters | Description |
|-------------------------------|---|
| Archive compression selection | <p>The following types of archive aggregation are available. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Raw data (Basis archive) ▶ added up data (aggregated archive) ▶ average data (aggregated archive) ▶ minimum data (aggregated archive) ▶ maximum data (aggregated archive) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|------------|-------------|
|------------|-------------|

| | |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Line chart and table ▶ Column chart and table ▶ Line chart and pivot table ▶ Column chart and pivot table ▶ Line chart ▶ Column chart ▶ Table ▶ Pivot table |
|---------------------|---|

ACTIONS

| Parameters | Description |
|------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 4 x date and time selection ("from" and "to" for two time ranges)
- ▶ 2 x time range selection
- ▶ 2 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 2 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 2 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 2 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection drop-down list for selection of the projects (if not prescribed by the time filter)
- ▶ 1 x multiple-selection drop-down list for selection of the archives
- ▶ 1 x multiple-selection drop-down list for selection of the variables

DATA DISPLAY

- ▶ The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:
- ▶ Line chart: A trend line covering the curve is shown for each variable
- ▶ Column chart: The trend is created as a group of columns or bars over the time period. In doing so, each variable gets a column for each time stamp.
- ▶ Archive data table:
Table with the following columns:
 - Variable name (can be sorted dynamically)
 - Time stamp (can be sorted dynamically)
 - Value
 - Text value
- ▶ Pivot table: A table with a column for the time stamp and a column each for the value of each variable.

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListProjects
- ▶ ListArchivesForProjects
- ▶ ListVariablesForArchives
- ▶ ListLots
- ▶ ListShifts
- ▶ Archive_GetPlainTrendData

Historian Aggregated Trend

Reports that are based on this template get archive data for a time range, aggregate this into intervals in the time range and display it as a trend.

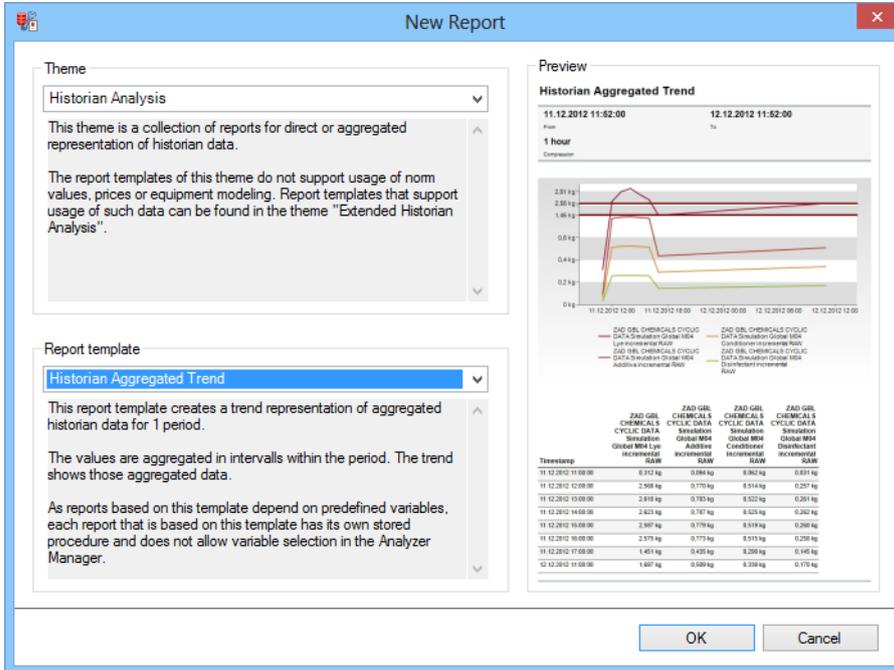
CREATE REPORT

Reports that are based on this template get archive data for a time range, aggregate this into intervals in the time range and display it as a trend.

To create a **Historian Aggregated Trend** report:

1. In the **Theme** drop-down list, select **Historian Analysis**

- from the drop-down list, select **Historian Aggregated Trend** as a report template



Theme

Historian Analysis

This theme is a collection of reports for direct or aggregated representation of historian data.

The report templates of this theme do not support usage of nom values, prices or equipment modeling. Report templates that support usage of such data can be found in the theme "Extended Historian Analysis".

Report template

Historian Aggregated Trend

This report template creates a trend representation of aggregated historian data for 1 period.

The values are aggregated in intervals within the period. The trend shows those aggregated data.

As reports based on this template depend on predefined variables, each report that is based on this template has its own stored procedure and does not allow variable selection in the Analyzer Manager.

Preview

Historian Aggregated Trend

From: 11.12.2012 11:52:00 To: 12.12.2012 11:52:00

1 hour

Compression

2.01 kg
1.80 kg
0.6 kg
0.4 kg
0.2 kg
0 kg

11.12.2012 12:00 11.12.2012 18:00 12.12.2012 00:00 12.12.2012 06:00 12.12.2012 12:00

ZAD GBL CHEMICALS CYCLIC DATA Simulation Global MMS4 Incremental SUM ZAD GBL CHEMICALS CYCLIC DATA Simulation Global MMS4 Incremental SUM ZAD GBL CHEMICALS CYCLIC DATA Simulation Global MMS4 Incremental SUM ZAD GBL CHEMICALS CYCLIC DATA Simulation Global MMS4 Incremental SUM

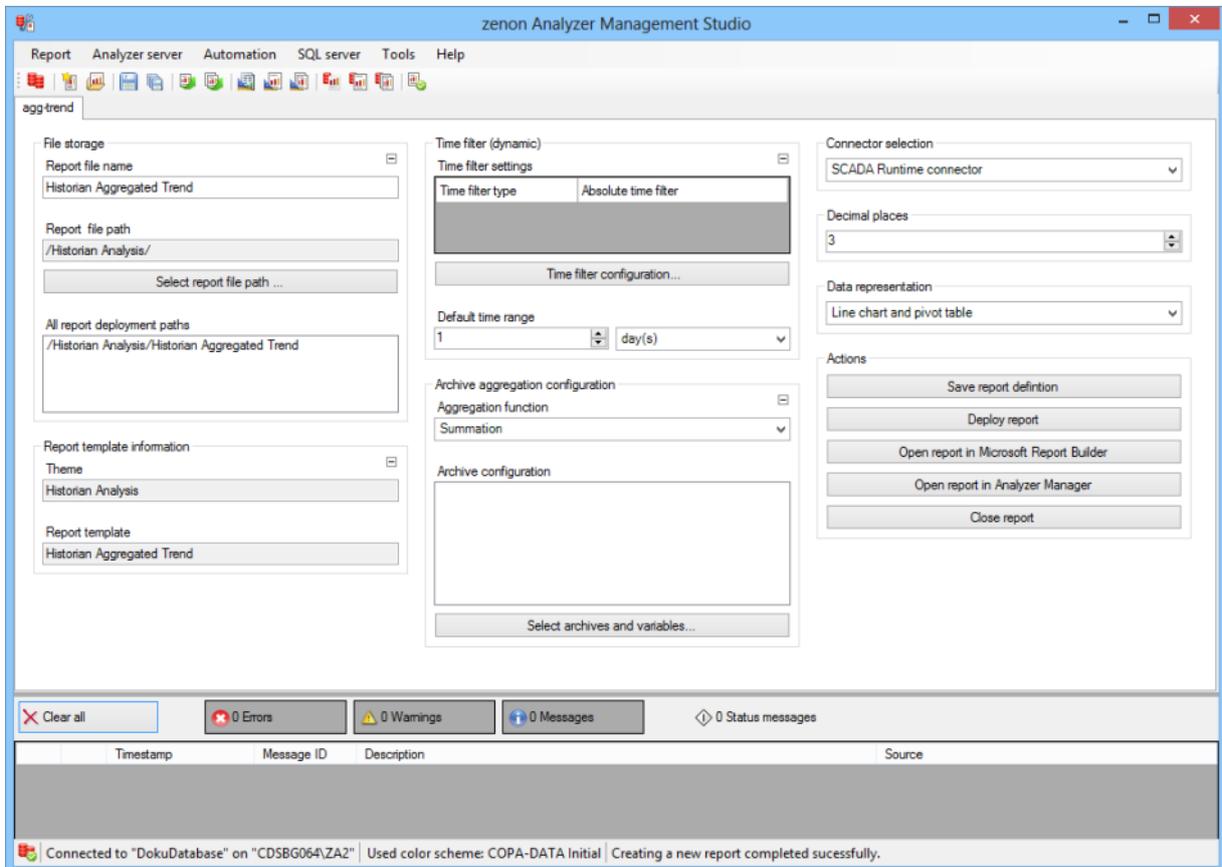
| Timestamp | ZAD GBL CHEMICALS CYCLIC DATA Simulation Global MMS4 Incremental SUM | ZAD GBL CHEMICALS CYCLIC DATA Simulation Global MMS4 Incremental SUM | ZAD GBL CHEMICALS CYCLIC DATA Simulation Global MMS4 Incremental SUM | ZAD GBL CHEMICALS CYCLIC DATA Simulation Global MMS4 Incremental SUM |
|---------------------|--|--|--|--|
| 11.12.2012 11:00:00 | 0.312 kg | 0.084 kg | 0.362 kg | 0.811 kg |
| 11.12.2012 12:00:00 | 2.368 kg | 0.770 kg | 0.914 kg | 0.297 kg |
| 11.12.2012 13:00:00 | 2.818 kg | 0.702 kg | 0.522 kg | 0.281 kg |
| 11.12.2012 14:00:00 | 2.423 kg | 0.787 kg | 0.523 kg | 0.262 kg |
| 11.12.2012 15:00:00 | 2.807 kg | 0.779 kg | 0.919 kg | 0.280 kg |
| 11.12.2012 16:00:00 | 2.979 kg | 0.773 kg | 0.919 kg | 0.280 kg |
| 11.12.2012 17:00:00 | 1.451 kg | 0.435 kg | 0.266 kg | 0.145 kg |
| 12.12.2012 11:00:00 | 1.807 kg | 0.589 kg | 0.308 kg | 0.170 kg |

OK Cancel

- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|---|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template For further details see chapter Report templates (on page 753) |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

ARCHIVE AGGREGATION CONFIGURATION

| Parameters | Description |
|--|--|
| Archive aggregation configuration | Archive aggregation configuration |
| Aggregation function | The following are available for aggregation: |

| | |
|-------------------------------|---|
| | <ul style="list-style-type: none"> ▶ Summation ▶ Calculate average values ▶ Determine minimum values ▶ Determine maximum values <p>Select from drop-down list.</p> |
| Archive configuration | <p>Display of the archive variables in a tree structure. This structure is constructed as follows:</p> <ul style="list-style-type: none"> ▶ Project name ▶ Archive name ▶ Variable name ▶ Aggregation type of the variables in the archive <p>Selection by clicking on the desired object.</p> <p>If the report is linked to a project via the parameters of the time filter, a check is made to ensure that only archives and variables from the project to which the report is linked are used.</p> |
| Select archives and variables | <p>Clicking on the button opens the dialog to select the archives and variables. For details, see the Configure archives (on page 666) section.</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | Selection of the decimal places to be displayed. Selection by |

| | |
|--|---|
| | <p>means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |
|--|---|

DATA REPRESENTATION

| Parameters | Description |
|---------------------|--|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Line chart and pivot table ▶ Column chart and pivot table ▶ Line chart ▶ Column chart ▶ Pivot table |

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager |

| | |
|--|--|
| | <p>▶ <code>Close report</code>: Closes the report.</p> <p>Select by clicking on the respective button.</p> |
|--|--|

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection drop-down list for selection of the aggregation interval

DATA DISPLAY

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Line chart: A trend curve over the time period is shown for each variable
- ▶ Column chart: The trend is constructed as a column diagram over the time period. In doing so, each variable gets a column for each time stamp.
- ▶ Pivot table: A table with a column for the time stamp and a column each for the value of each variable.

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ Archive_ConvertToOneSecondCycle (UDF)
- ▶ ListLots
- ▶ ListShifts
- ▶ Archive_GetAggregatedTrendData

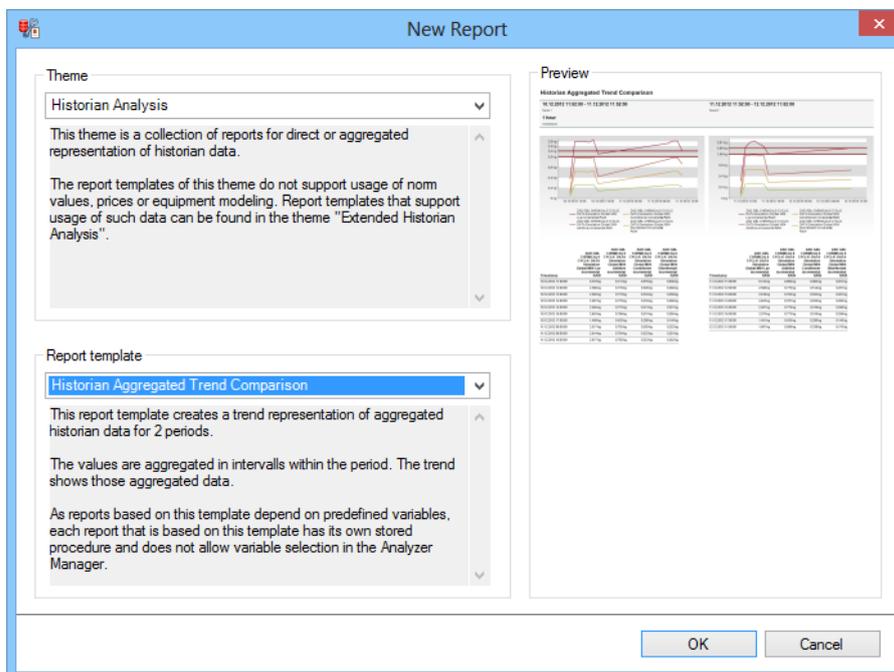
Historian Aggregated Trend Comparison

Reports that are based on this template get archive data for two time ranges, aggregate this into intervals in the time range and display these as a trend for comparison.

CREATE REPORT

To create a **Historian Aggregated Trend Comparison** report:

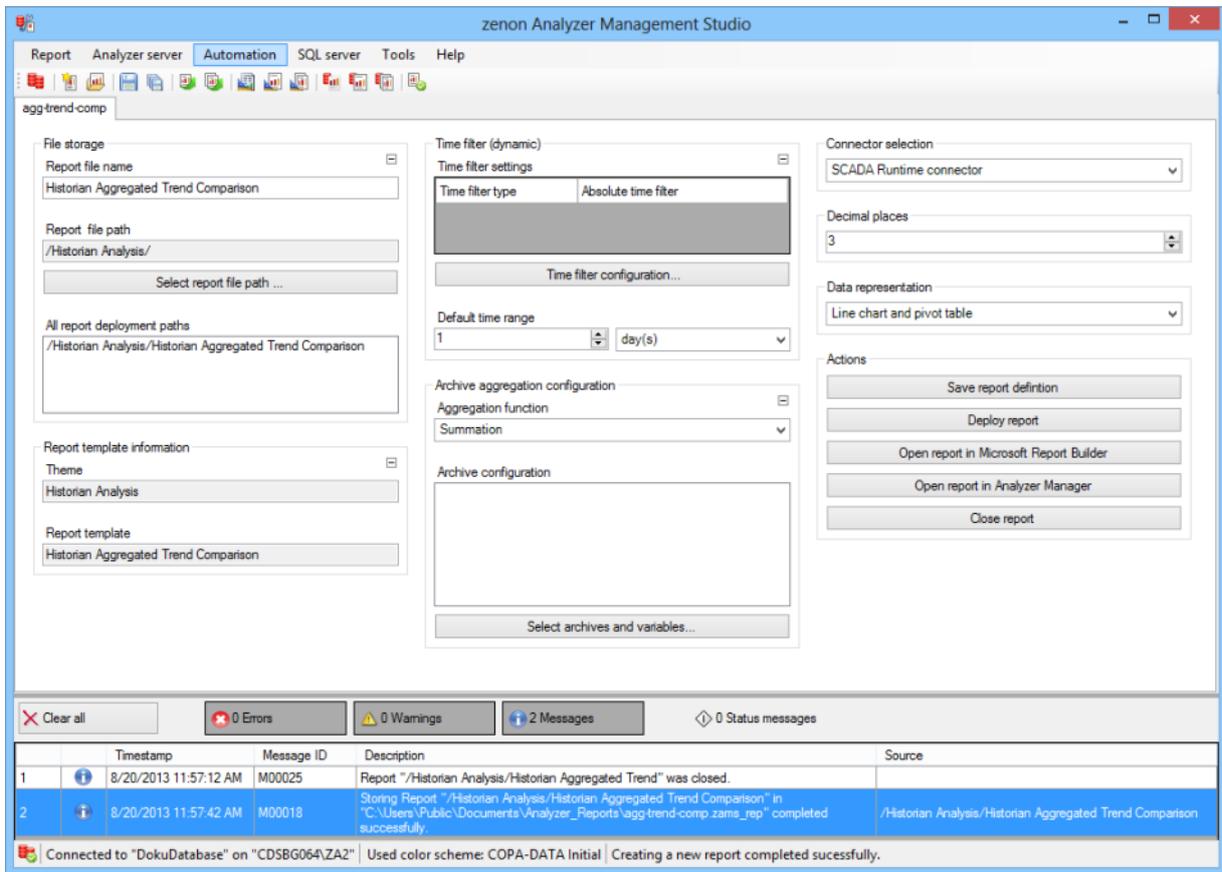
1. In the **Theme** drop-down list, select **Historian Analysis**
2. from the drop-down list, select **Historian Aggregated Trend Comparison** as a report template



3. Click on the  button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



The screenshot shows the 'zenon Analyzer Management Studio' window with the 'Automation' tab selected. The main area displays the configuration for a report template named 'agg-trend-comp'. The configuration is organized into several sections:

- File storage:** Report file name: 'Historian Aggregated Trend Comparison'; Report file path: '/Historian Analysis/'; All report deployment paths: '/Historian Analysis/Historian Aggregated Trend Comparison'.
- Report template information:** Theme: 'Historian Analysis'; Report template: 'Historian Aggregated Trend Comparison'.
- Time filter (dynamic):** Time filter settings: 'Absolute time filter'; Default time range: '1' day(s).
- Archive aggregation configuration:** Aggregation function: 'Summation'.
- Archive configuration:** (Empty field with 'Select archives and variables...' button).
- Connector selection:** 'SCADA Runtime connector'.
- Decimal places:** '3'.
- Data representation:** 'Line chart and pivot table'.
- Actions:** 'Save report definition', 'Deploy report', 'Open report in Microsoft Report Builder', 'Open report in Analyzer Manager', 'Close report'.

At the bottom, there is a status bar with a message log table:

| | Timestamp | Message ID | Description | Source |
|---|-----------------------|------------|---|---|
| 1 | 8/20/2013 11:57:12 AM | M00025 | Report "/Historian Analysis/Historian Aggregated Trend" was closed. | |
| 2 | 8/20/2013 11:57:42 AM | M00018 | Storing Report "/Historian Analysis/Historian Aggregated Trend Comparison" in "C:\Users\Public\Documents\Analyzer_Reports\agg-trend-comp.zamis_rep" completed successfully. | /Historian Analysis/Historian Aggregated Trend Comparison |

Below the table, a status message reads: 'Connected to "DokuDatabase" on "CDSBG064\ZA2" | Used color scheme: COPA-DATA Initial | Creating a new report completed successfully.'

FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

ARCHIVE AGGREGATION CONFIGURATION

| Parameters | Description |
|--|--|
| Archive aggregation configuration | Archive aggregation configuration |
| Aggregation function | The following are available for aggregation: |

| | |
|-------------------------------|---|
| | <ul style="list-style-type: none"> ▶ Summation ▶ Calculate average values ▶ Determine minimum values ▶ Determine maximum values <p>Select from drop-down list.</p> |
| Archive configuration | <p>Display of the archive variables in a tree structure. This structure is constructed as follows:</p> <ul style="list-style-type: none"> ▶ Project name ▶ Archive name ▶ Variable name ▶ Aggregation type of the variables in the archive <p>Selection by clicking on the desired object.</p> <p>If the report is linked to a project via the parameters of the time filter, a check is made to ensure that only archives and variables from the project to which the report is linked are used.</p> |
| Select archives and variables | <p>Clicking on the button opens the dialog to select the archives and variables. For details, see the Configure archives (on page 666) section.</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | Selection of the decimal places to be displayed. Selection by |

| | |
|--|---|
| | <p>means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |
|--|---|

DATA REPRESENTATION

| Parameters | Description |
|---------------------|--|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Line chart and pivot table ▶ Column chart and pivot table ▶ Line chart ▶ Column chart ▶ Pivot table |

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager |

| | |
|--|--|
| | <p>▶ <code>Close report</code>: Closes the report.</p> <p>Select by clicking on the respective button.</p> |
|--|--|

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 4 x date and time selection ("from" and "to" for two time ranges)
- ▶ 2 x time range selection
- ▶ 2 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 2 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 2 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 2 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single-selection drop-down list for selection of the aggregation interval

DATA DISPLAY

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Line chart: A trend curve over the time period is shown for each variable
- ▶ Column chart: The trend is constructed as a column diagram over the time period. In doing so, each variable gets a column for each time stamp.
- ▶ Pivot table: A table with a column for the time stamp and a column each for the value of each variable.

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ Archive_ConvertToOneSecondCycle (UDF)
- ▶ ListLots
- ▶ ListShifts
- ▶ Archive_GetAggregatedTrendData

Historian Aggregated Trend with online variable selection

Reports that are based on this template:

- ▶ Gets archive data for a time range
- ▶ Aggregates this in intervals in the time range
- ▶ Displays these aggregations in a trend

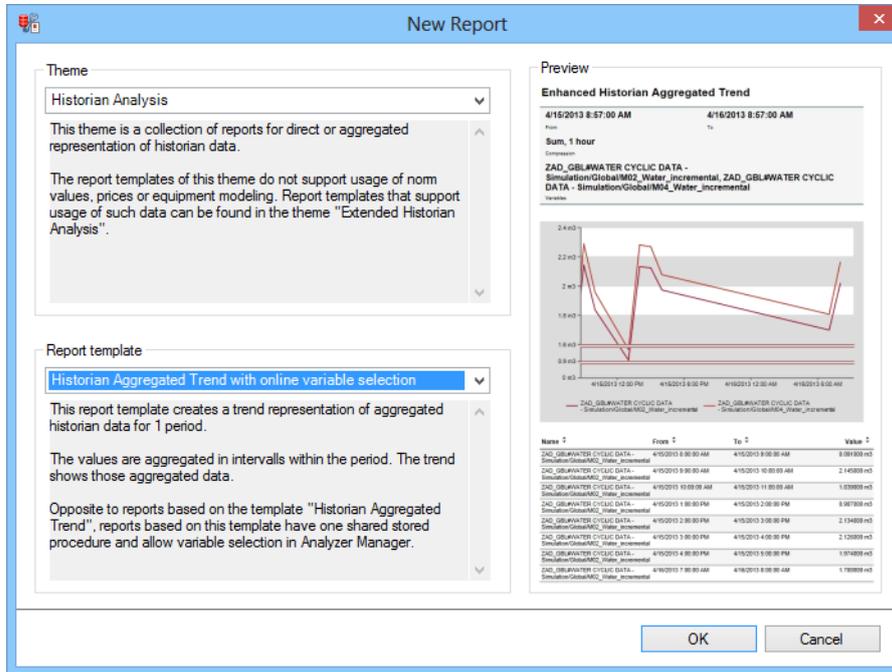
Difference to Historian Aggregated Trend (on page 938): All reports with this template use a common main stored procedure and the variables are selected in the Analyzer Manager.

CREATE REPORT

To create an **Historian Aggregated Trend with online variable selection** report:

1. In the **Theme** drop-down list, select **Historian Analysis**

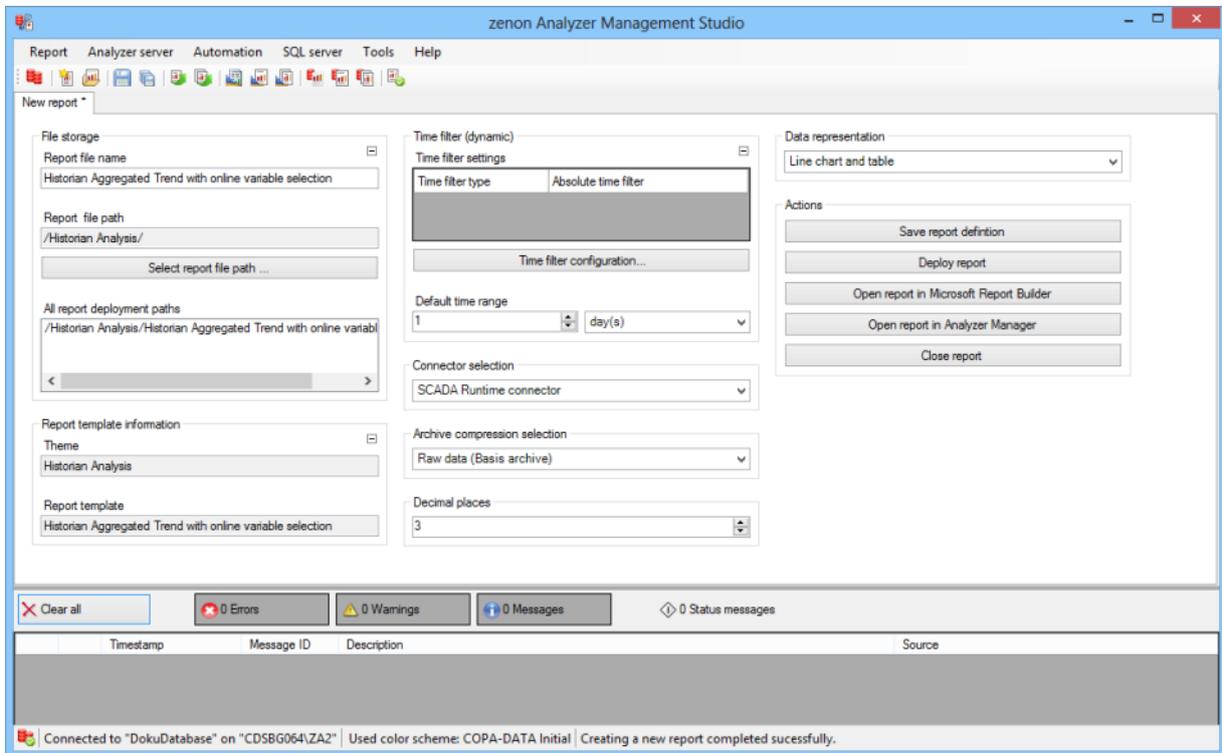
- from the drop-down list, select **Historian Aggregated Trend with online variable selection** as a report template



- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available</p> |

| | |
|--|--|
| | <p>connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |
|--|--|

ARCHIVE COMPRESSION SELECTION

| Parameters | Description |
|-------------------------------|---|
| Archive compression selection | <p>The following types of archive aggregation are available. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Raw data (Basis archive) ▶ added up data (aggregated archive) ▶ average data (aggregated archive) ▶ minimum data (aggregated archive) ▶ maximum data (aggregated archive) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|------------|-------------|
|------------|-------------|

| | |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Line chart and table ▶ Column chart and table ▶ Line chart and pivot table ▶ Column chart and pivot table ▶ Line chart ▶ Column chart ▶ Table ▶ Pivot table |
|---------------------|---|

ACTIONS

| Parameters | Description |
|------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection drop-down list for selection of the projects (if not prescribed by the time filter)
- ▶ 1 x multiple-selection drop-down list for selection of the archives
- ▶ 1 x multiple-selection drop-down list for selection of the variables
- ▶ 1 x single-selection drop-down list to select the aggregation function (sum, average value, minimum, maximum)
- ▶ 1 x single-selection drop-down list to select the aggregation interval (1 minute, 15 minutes, 30 minutes, 1 hour, 2 hours, 6 hours, 12 hours, 1 day, 1 week, 1 month, 1 quarter, 1 year)

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Line chart: A trend curve over the time period is shown for each variable
- ▶ Column chart: The trend is constructed as a column diagram over the time period. Each variable gets a column for each time stamp.
- ▶ Archive data table: A table with the following columns:
 - Variable name (can be sorted dynamically)
 - Time stamp from the start of the aggregation interval (can be sorted dynamically)
 - Time stamp from the end of the aggregation interval (can be sorted dynamically)

- Numerical value with unit or text value (is decided on the basis of the data type)
- ▶ Pivot table: A table with a column each for:
 - Time stamp from the start and end of the aggregation interval
 - Numerical value with unit or text value (decided on the basis of the data type)

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPS and UDFs:

- ▶ ListProjects
- ▶ ListArchivesForProjects
- ▶ ListVariablesForArchives
- ▶ Archive_GetDynamicAggregatedTrendData
- ▶ ListLots
- ▶ ListShifts

Historian Aggregated Trend Comparison with online variable selection

Reports that are based on this template:

- ▶ Get archive data for two time ranges
- ▶ Aggregates this in intervals in the time range
- ▶ Display these aggregations in a separate trend per time range

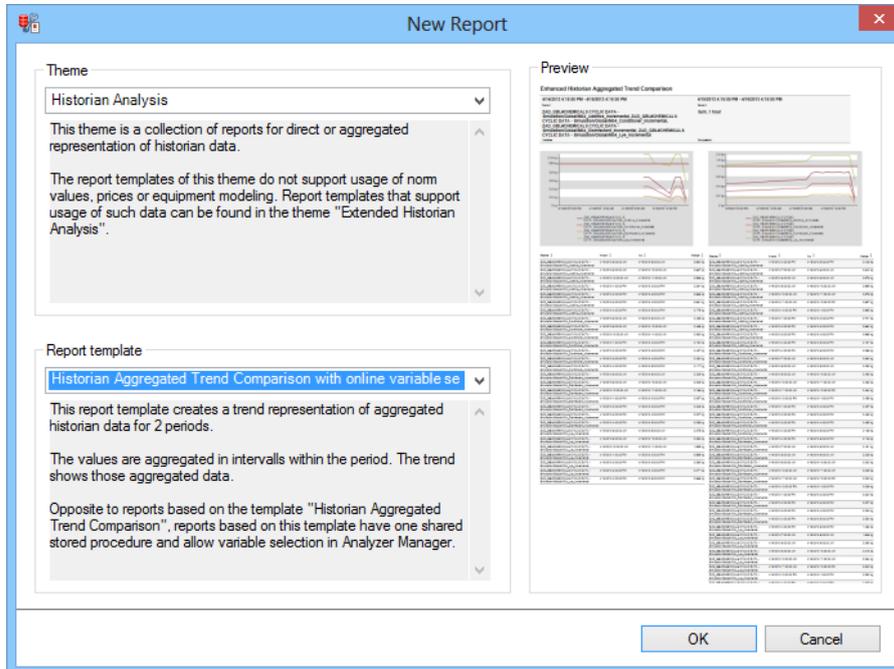
The difference to Historian Aggregated Trend Comparison (on page 946): All reports with this template use a common main stored procedure and the variables are selected in the Analyzer Manager.

CREATE REPORT

To create an **Historian Aggregated Trend Comparison with online variable selection** report:

1. In the **Theme** drop-down list, select **Historian Analysis**

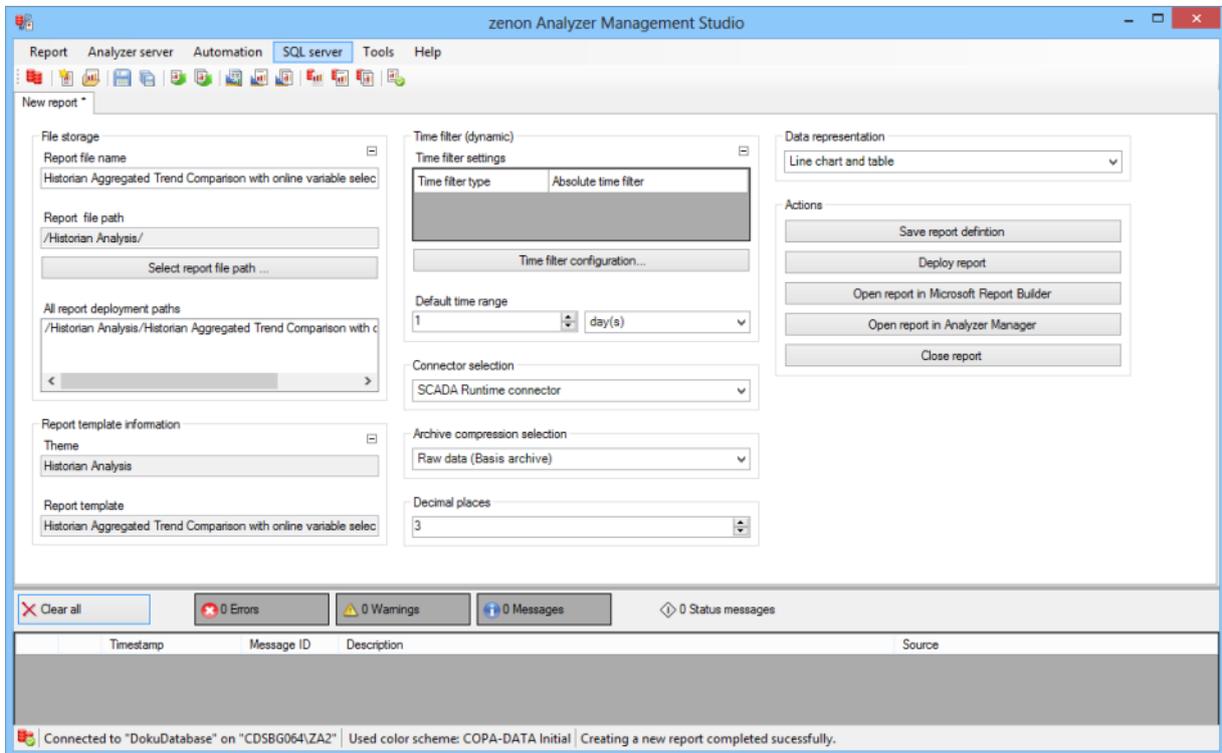
- from the drop-down list, select **Historian Aggregated Trend Comparison with online variable selection** as a report template



- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769) .</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available</p> |

| | |
|--|--|
| | <p>connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |
|--|--|

ARCHIVE COMPRESSION SELECTION

| Parameters | Description |
|-------------------------------|---|
| Archive compression selection | <p>The following types of archive aggregation are available. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Raw data (Basis archive) ▶ added up data (aggregated archive) ▶ average data (aggregated archive) ▶ minimum data (aggregated archive) ▶ maximum data (aggregated archive) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|------------|-------------|
|------------|-------------|

| | |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Line chart and table ▶ Column chart and table ▶ Line chart and pivot table ▶ Column chart and pivot table ▶ Line chart ▶ Column chart ▶ Table ▶ Pivot table |
|---------------------|---|

ACTIONS

| Parameters | Description |
|------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 4 x date and time selection ("from" and "to" for two time ranges)
- ▶ 2 x time range selection
- ▶ 2 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 2 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 2 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 2 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection drop-down list for selection of the projects (if not prescribed by the time filter)
- ▶ 1 x multiple-selection drop-down list for selection of the archives
- ▶ 1 x multiple-selection drop-down list for selection of the variables
- ▶ 1 x single-selection drop-down list to select the aggregation function (sum, average value, minimum, maximum)
- ▶ 1 x single-selection drop-down list to select the aggregation interval (1 minute, 15 minutes, 30 minutes, 1 hour, 2 hours, 6 hours, 12 hours, 1 day, 1 week, 1 month, 1 quarter, 1 year)

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Line chart: A trend curve over the time period is shown for each variable
- ▶ Column chart: The trend is constructed as a column diagram over the time period. Each variable gets a column for each time stamp.
- ▶ Archive data table: A table with the following columns:
 - Variable name (can be sorted dynamically)
 - Time stamp from the start of the aggregation interval (can be sorted dynamically)
 - Time stamp from the end of the aggregation interval (can be sorted dynamically)

- Numerical value with unit or text value (is decided on the basis of the data type)
- ▶ Pivot table: A table with a column each for:
 - Time stamp from the start and end of the aggregation interval
 - Numerical value with unit or text value (decided on the basis of the data type)

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPS and UDFs:

- ▶ ListProjects
- ▶ ListArchivesForProjects
- ▶ ListVariablesForArchives
- ▶ Archive_GetDynamicAggregatedTrendData
- ▶ ListLots
- ▶ ListShifts

Historian Aggregation

Reports that are based on this template get archive data for a time range, aggregate this and display each of the following aggregation types separately:

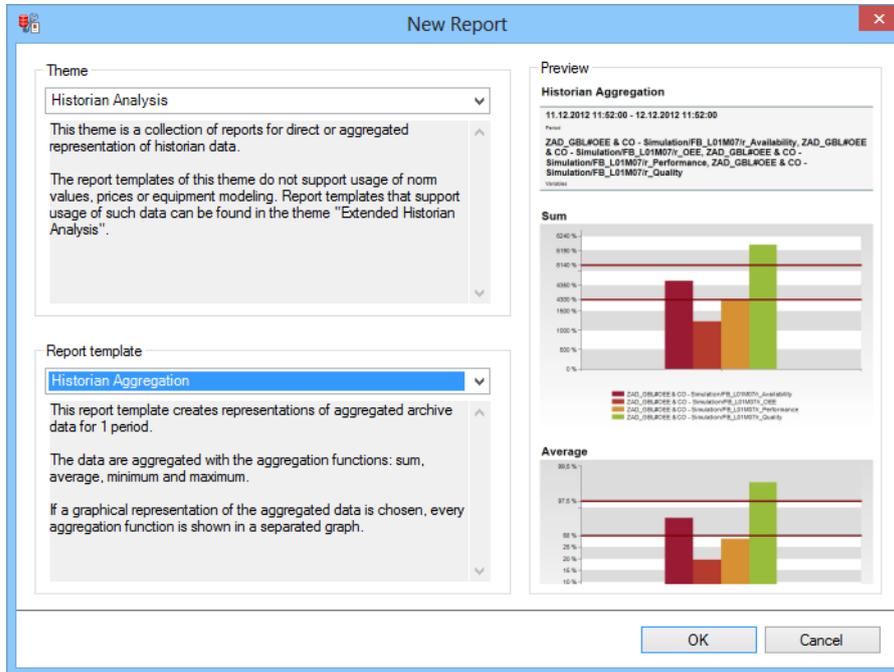
- ▶ Sum
- ▶ Average
- ▶ Minimum
- ▶ Maximum

CREATE REPORT

To create a **Historian Aggregation** report:

1. In the **Theme** drop-down list, select **Historian Analysis**

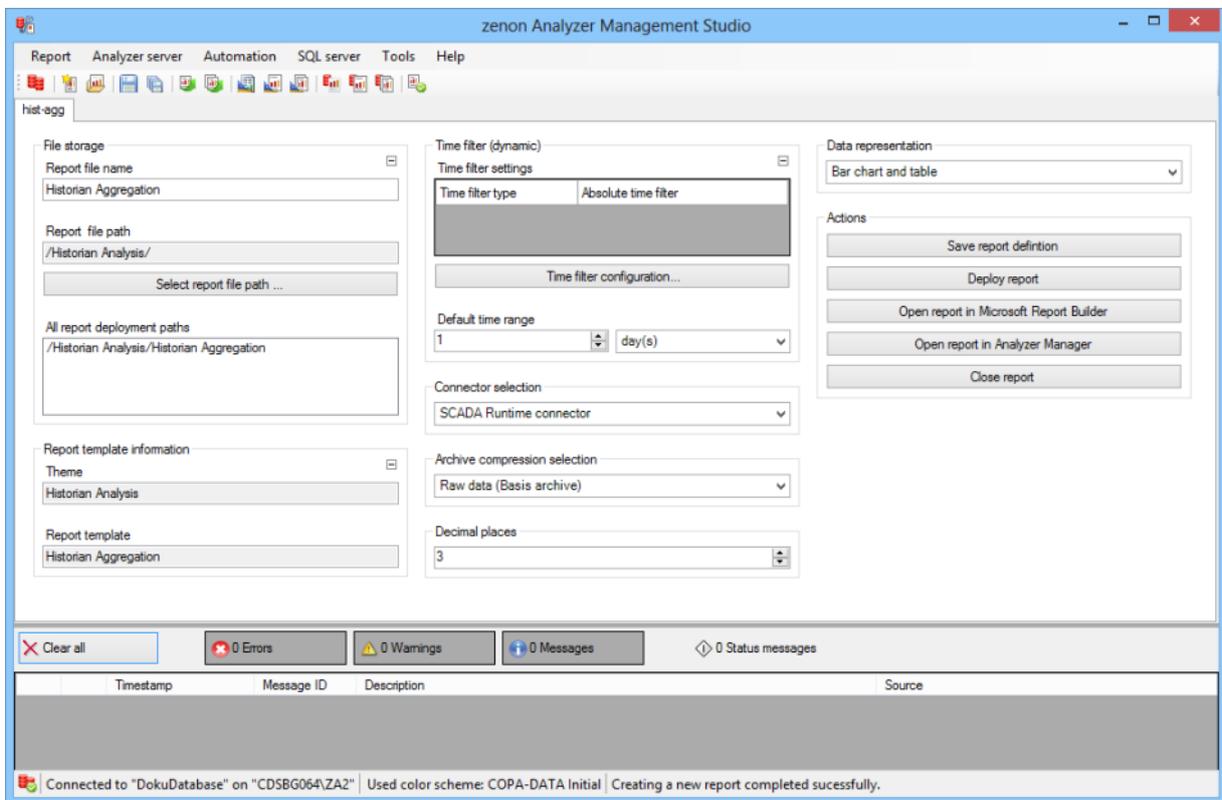
- from the drop-down list, select **Historian Aggregation** as a report template



- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available</p> |

| | |
|--|--|
| | <p>connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |
|--|--|

ARCHIVE COMPRESSION SELECTION

| Parameters | Description |
|-------------------------------|---|
| Archive compression selection | <p>The following types of archive aggregation are available. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Raw data (Basis archive) ▶ added up data (aggregated archive) ▶ average data (aggregated archive) ▶ minimum data (aggregated archive) ▶ maximum data (aggregated archive) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|------------|-------------|
|------------|-------------|

| | |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list.</p> <p>Possible settings:</p> <ul style="list-style-type: none"> ▶ Pie Chart and table ▶ Column chart and table ▶ Pie chart ▶ Column chart ▶ Table |
|---------------------|---|

ACTIONS

| Parameters | Description |
|------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)

- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection drop-down list for selection of the projects (if not prescribed by the time filter)
- ▶ 1 x multiple-selection drop-down list for selection of the archives
- ▶ 1 x multiple-selection drop-down list for selection of the variables

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Column chart: A column chart is drawn for each aggregation function. The respective aggregation result of each variable contains a column
- ▶ Pie chart: A pie chart is drawn for each aggregation function. The respective aggregation result of each variable contains a sector.
- ▶ Table: A table with the following columns:
 - Variable name (can be sorted dynamically)
 - Sum (can be sorted dynamically)
 - Minimum (can be sorted dynamically)
 - Average (can be sorted dynamically)
 - Maximum (can be sorted dynamically)

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListProjects

- ▶ ListArchivesForProjects
- ▶ ListVariablesForArchives
- ▶ Archive_GetAggregatedData
- ▶ ListLots
- ▶ ListShifts

Archive aggregation comparison

Reports that are based on this template get archive data for two time ranges and display each of the following aggregation types for both time ranges separately:

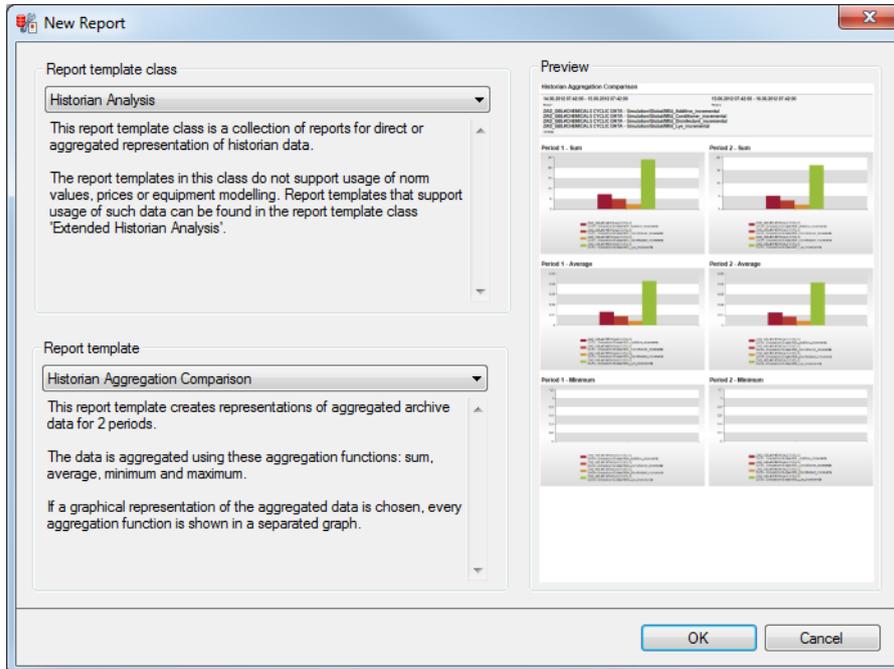
- ▶ Sum
- ▶ Average
- ▶ Minimum
- ▶ Maximum

CREATE REPORT

To create a **Historian Aggregation** report:

1. In the **Theme** drop-down list, select **Historian Analysis**

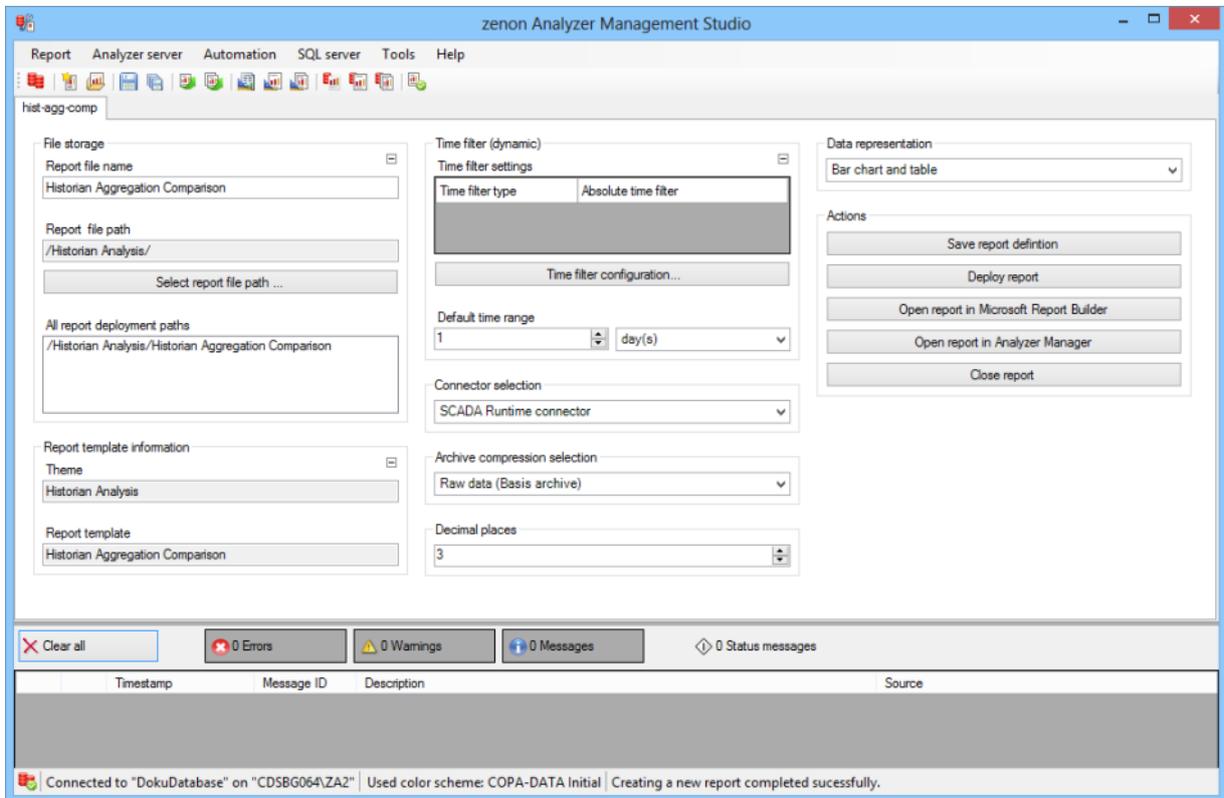
- from the drop-down list, select **Historian Aggregation** as a report template



- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available</p> |

| | |
|--|--|
| | <p>connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |
|--|--|

ARCHIVE COMPRESSION SELECTION

| Parameters | Description |
|-------------------------------|---|
| Archive compression selection | <p>The following types of archive aggregation are available. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Raw data (Basis archive) ▶ added up data (aggregated archive) ▶ average data (aggregated archive) ▶ minimum data (aggregated archive) ▶ maximum data (aggregated archive) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|------------|-------------|
|------------|-------------|

| | |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list.</p> <p>Possible settings:</p> <ul style="list-style-type: none"> ▶ Pie Chart and table ▶ Column chart and table ▶ Pie chart ▶ Column chart ▶ Table |
|---------------------|---|

ACTIONS

| Parameters | Description |
|------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 4 x date and time selection ("from" and "to" for two time ranges)

- ▶ 2 x time range selection
- ▶ 2 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 2 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 2 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 2 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection drop-down list for selection of the projects (if not prescribed by the time filter)
- ▶ 1 x multiple-selection drop-down list for selection of the archives
- ▶ 1 x multiple-selection drop-down list for selection of the variables

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Column chart: A column chart is drawn for each aggregation. The respective aggregation of each variable contains a column.
- ▶ Pie chart: A pie chart is drawn for each aggregation. The respective aggregation of each variable contains a sector.
- ▶ Table: A table with the following columns:
 - Variable name (can be sorted dynamically)
 - Sum (can be sorted dynamically)
 - Minimum (can be sorted dynamically)
 - Average (can be sorted dynamically)
 - Maximum (can be sorted dynamically)

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListProjects

- ▶ ListArchivesForProjects
- ▶ ListVariablesForArchives
- ▶ Archive_GetAggregatedData
- ▶ ListLots
- ▶ ListShifts

Historian Distribution

Reports that are based on this template get archive data for a variable, round this up to a configurable rounding factor and display the distribution of the values. In addition, the following types of aggregation are calculated and displayed with markers:

- ▶ Minimum
- ▶ Average
- ▶ Maximum

APPLICATION EXAMPLES

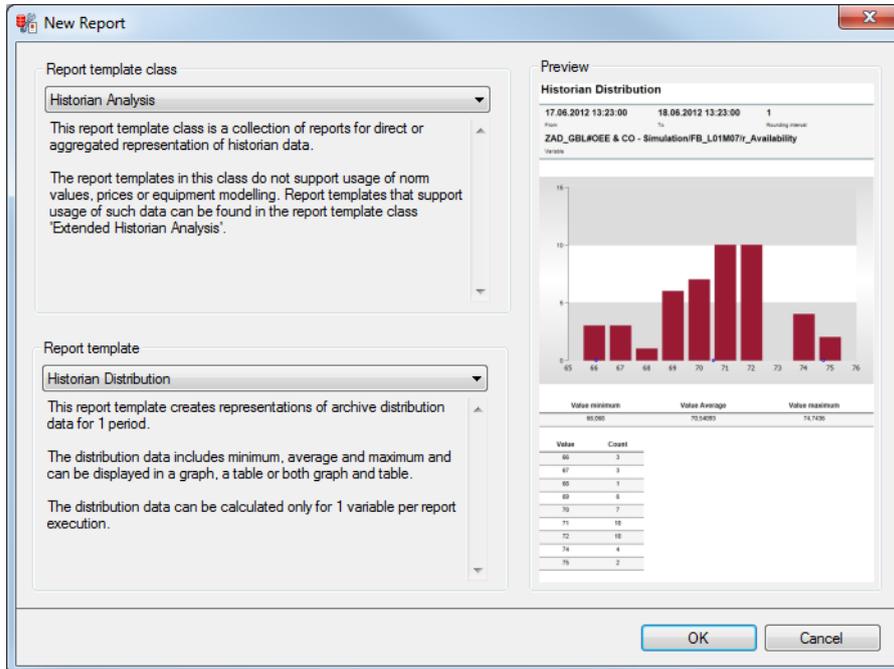
Historian Trend reports are suitable for the graphic display of distributions of measured values. This can establish how many production items are within the permitted tolerances. In addition, it is possible to assess whether the measured values tend to deviate upwards or downwards.

CREATE REPORT

To create a **Historian Distribution** report:

1. In the **Theme** drop-down list, select **Historian Analysis**

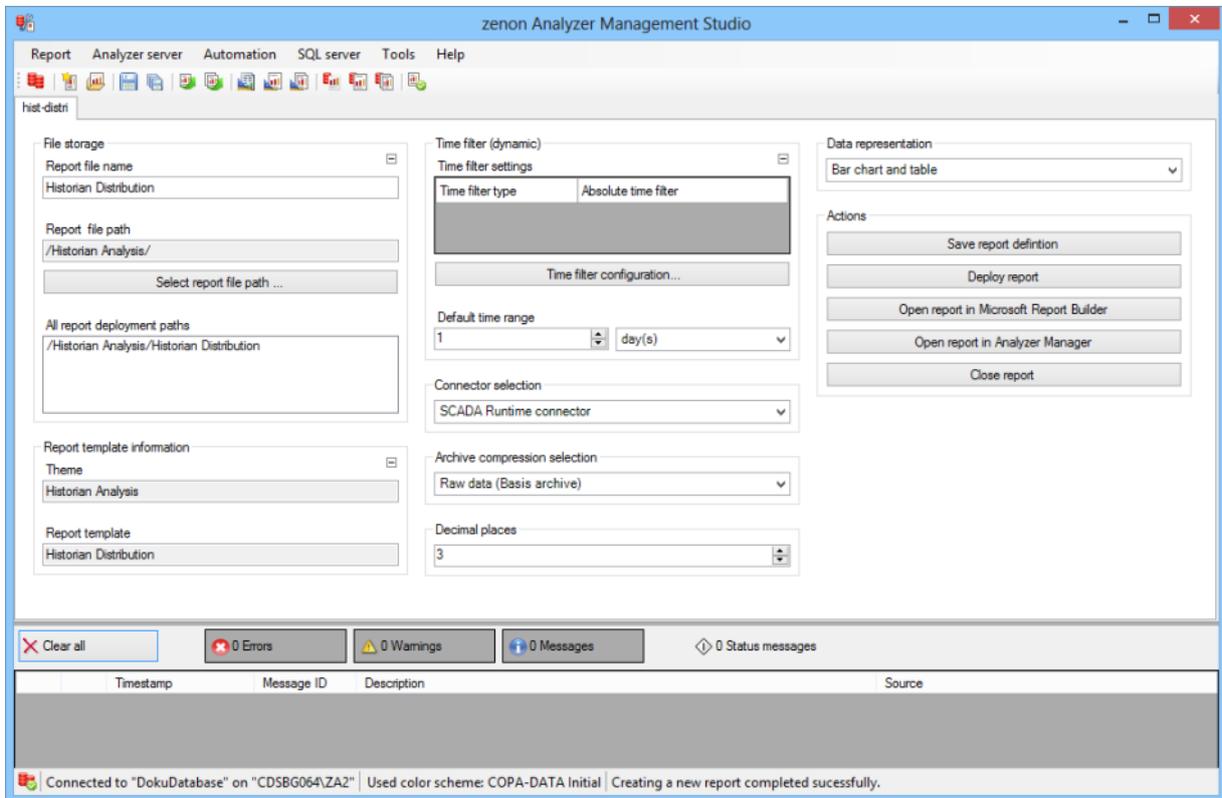
- from the drop-down list, select **Historian Distribution** as a report template



- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available</p> |

| | |
|--|--|
| | <p>connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |
|--|--|

ARCHIVE COMPRESSION SELECTION

| Parameters | Description |
|-------------------------------|---|
| Archive compression selection | <p>The following types of archive aggregation are available. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Raw data (Basis archive) ▶ added up data (aggregated archive) ▶ average data (aggregated archive) ▶ minimum data (aggregated archive) ▶ maximum data (aggregated archive) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Column chart and table |

| | |
|--|---|
| | <ul style="list-style-type: none"> ▶ Column chart ▶ Table |
|--|---|

ACTIONS

| Parameters | Description |
|----------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts

- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single-selection drop-down list for selection of the projects (if not prescribed by the time filter)
- ▶ 1 x single-selection drop-down list for selection of the archive
- ▶ 1 x single-selection drop-down list for selection of the variables
- ▶ 1 x single-selection drop-down list for selection of the rounding intervals

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Column chart: For the distribution, a trend is drawn using the X axis. Each variable value has a column. The height of this shows how often the value has occurred. Markers for minimum, average and maximum are drawn
- ▶ Table: There are 2 tables.

Columns table 1:

- Minimum
- Average
- Maximum

Columns table 2:

- Variable value
- Number denoting how often the value occurred.

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListProjects
- ▶ ListArchivesForProjects
- ▶ ListVariablesForArchives

- ▶ Archive_GetAggregatedData
- ▶ Archive_GetDistributionData
- ▶ ListLots
- ▶ ListShifts

Archive distribution comparison

Reports that are based on this template get archive data for a variable from two time ranges, round this up to a configurable rounding factor and display the distribution of the values as a comparison. In addition, the following types of aggregation are calculated and displayed with markers:

- ▶ Minimum
- ▶ Average
- ▶ Maximum

APPLICATION EXAMPLES

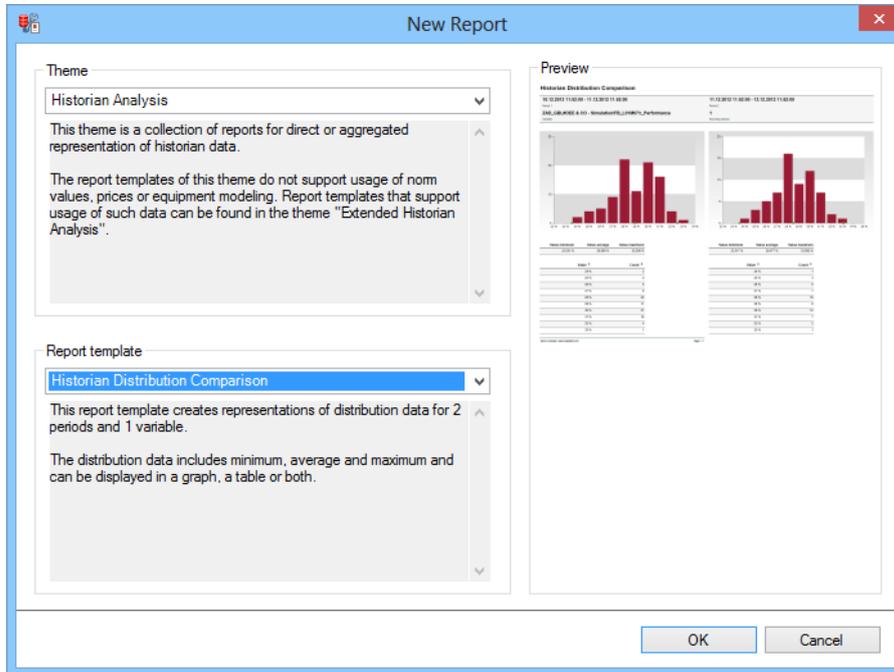
Historian Trend reports are suitable for the graphic display of the distribution of measured values between two lots.

CREATE REPORT

To create a **Historian Distribution Comparison** report:

1. In the **Theme** drop-down list, select **Historian Analysis**

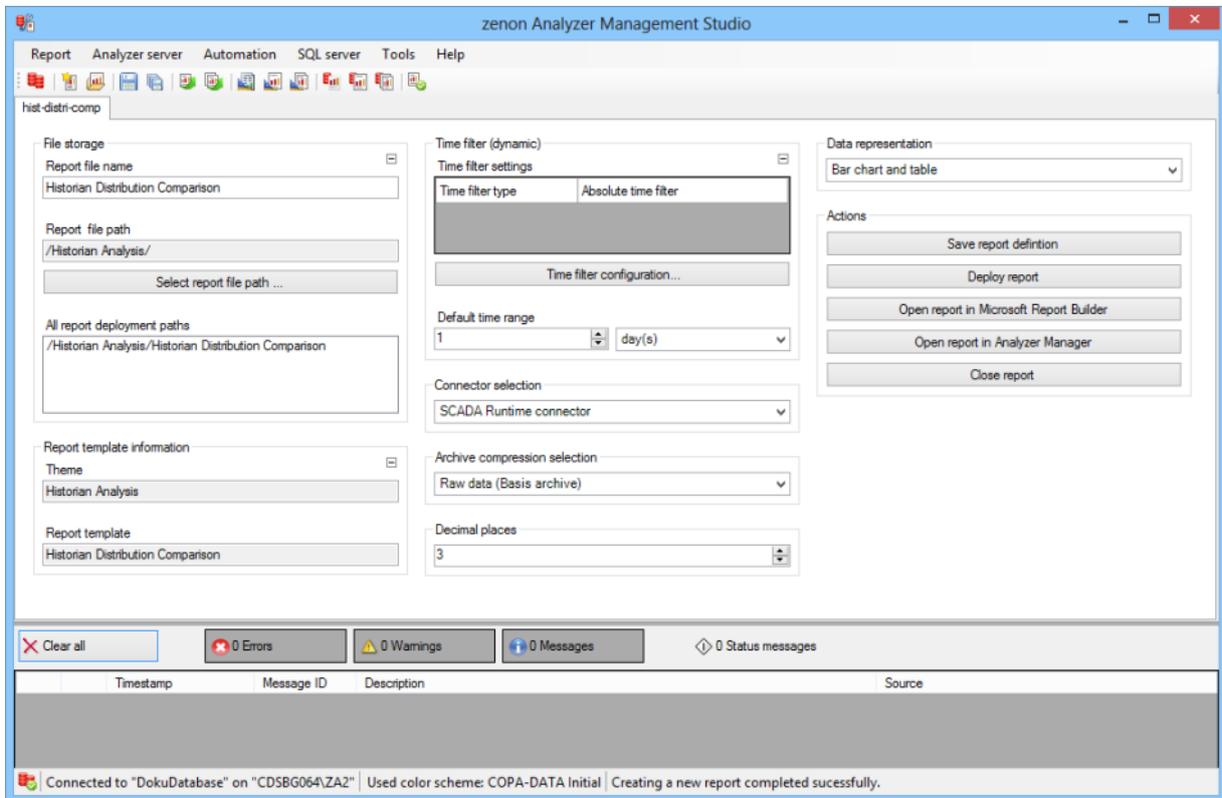
- from the drop-down list, select **Historian Distribution Comparison** as a report template



- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available</p> |

| | |
|--|--|
| | <p>connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |
|--|--|

ARCHIVE COMPRESSION SELECTION

| Parameters | Description |
|-------------------------------|---|
| Archive compression selection | <p>The following types of archive aggregation are available. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Raw data (Basis archive) ▶ added up data (aggregated archive) ▶ average data (aggregated archive) ▶ minimum data (aggregated archive) ▶ maximum data (aggregated archive) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Column chart and table |

| | |
|--|---|
| | <ul style="list-style-type: none"> ▶ Column chart ▶ Table |
|--|---|

ACTIONS

| Parameters | Description |
|----------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 4 x date and time selection ("from" and "to" for two time ranges)
- ▶ 2 x time range selection
- ▶ 2 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 2 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 2 x shift selection with 2 x data and time selection for prefiltering of the shifts

- ▶ 2 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single-selection drop-down list for selection of the projects (if not prescribed by the time filter)
- ▶ 1 x single-selection drop-down list for selection of the archive
- ▶ 1 x single-selection drop-down list for selection of the variables
- ▶ 1 x single-selection drop-down list for selection of the rounding intervals

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Column chart: For the distribution, a trend is drawn using the X axis. Each variable value has a column. The height of this shows how often the value has occurred. Markers for minimum, average and maximum are drawn.
- ▶ Table: There are 2 tables.

Columns table 1:

- Minimum
- Average
- Maximum

Columns table 2:

- Variable value
- Number denoting how often the value occurred.

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListProjects
- ▶ ListArchivesForProjects
- ▶ ListVariablesForArchives

- ▶ Archive_GetAggregatedData
- ▶ Archive_GetDistributionData
- ▶ ListLots
- ▶ ListShifts

13.2.4 Extended Historian Analysis

Reports with this theme provide report templates for archive aggregation or archive distribution, taking prices, norm values and production counters into account. The use of equipment modeling is obligatory for these reports.

The following are available for the evaluation of archive aggregation or archive distribution:

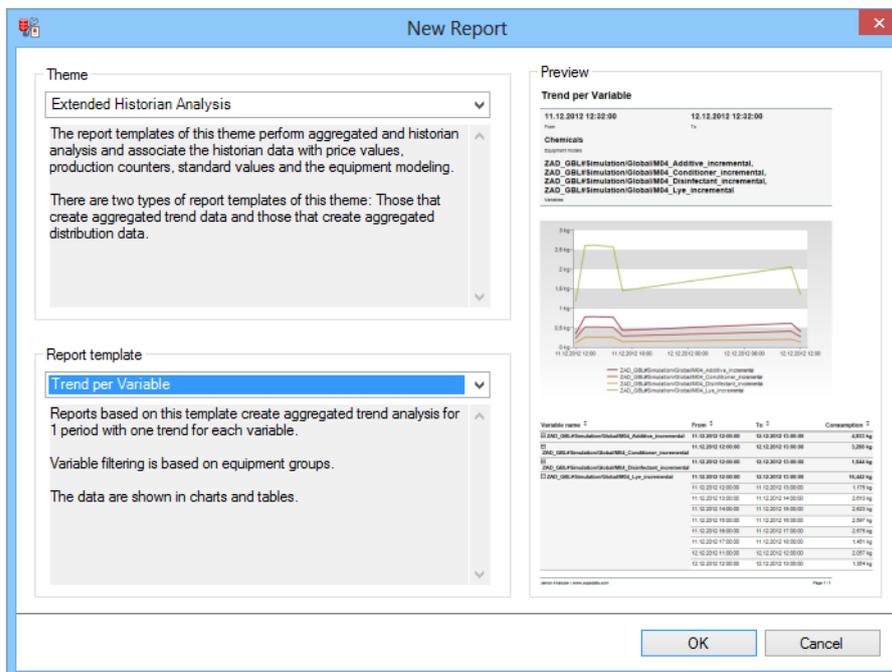
- ▶ Trend per Variable (on page 1003): Creates an aggregated trend analysis for a time period with a trend for each variable.
- ▶ Trend per Variable Comparison (on page 1011): Creates an aggregated trend analysis for two time periods with a trend for each variable.
- ▶ Trend per Equipment Model (on page 1019): Creates an aggregated trend analysis for a time period with a trend for each equipment model.
- ▶ Trend per Equipment Model Comparison (on page 1027): Creates an aggregated trend analysis for two time periods with a trend for each equipment model.
- ▶ Relative Trend per Variable (on page 1035): Creates a relative aggregated trend analysis for a time period with a trend for each variable.
- ▶ Relative Trend per Variable Comparison (on page 1043): Creates a relative aggregated trend analysis for two time periods with a trend for each variable.
- ▶ Relative Trend to Standard (on page 1051): Creates a relative aggregated trend analysis for a time period for a variable with a comparison with standard values.
- ▶ Relative Trend to Standard Comparison (on page 1059): Creates a relative aggregated trend analysis for two time periods for a variable with a comparison with standard values.
- ▶ Distribution per Variable (on page 1067): Calculates the aggregated cost distributions for a time period that is based on variables.

- ▶ Distribution per Variable Comparison (on page 1075): Calculates the aggregated cost distributions for two time periods that are based on variables.
- ▶ Cost Distribution per Variable: (on page 1083)Calculates the aggregated cost distributions for a time period that is based on variables.
- ▶ Cost Distribution per Variable Comparison (on page 1091): Calculates the aggregated cost distributions for two time periods that are based on variables.
- ▶ Cost Distribution per Equipment Model: (on page 1099)Calculates the aggregated cost distributions for a time period that is based on equipment models.
- ▶ Cost Distribution per Equipment Model Comparison (on page 1107): Calculates the aggregated cost distributions for two time periods that are based on equipment models.

REPORT TEMPLATE SELECTION

To create a report based on this template:

1. Select the **New** entry in the **Report** menu or click on the corresponding symbol in the tool bar
2. The dialog for selecting a template is opened



3. In the **Theme** drop-down list, select **Extended Historian Analysis**

4. Select the template you want to use as a report template from the drop-down list

METADATA

| Metadata used: General | | |
|-----------------------------------|-------------|--|
| | used | If not used |
| Projects | + | mandatory. |
| Alarm/Event class | - | |
| Alarm/Event groups | - | |
| User | - | |
| Equipment modeling | + | mandatory. |
| Archives | + | mandatory. |
| Variables | + | mandatory. |
| Prices | + | |
| Norm values | + | |
| Metadata used: Time filter | | |
| Lots | + | No reports possible with lot filter. |
| Shifts | + | No reports possible with shift filter. |

Trend per Variable

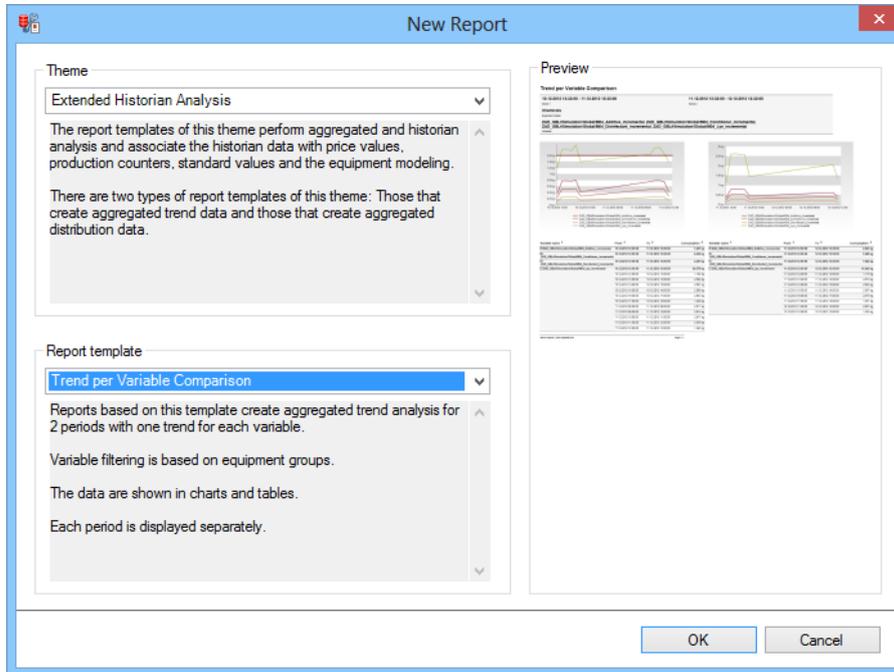
Reports that are based on this template get consumption data for variables over a time range, add this up into intervals within the time range and display the data as a trend and in a table.

CREATE REPORT

To create a **Trend per Variable** report:

1. In the **Theme** drop-down list, select **Extended Historian Analysis**

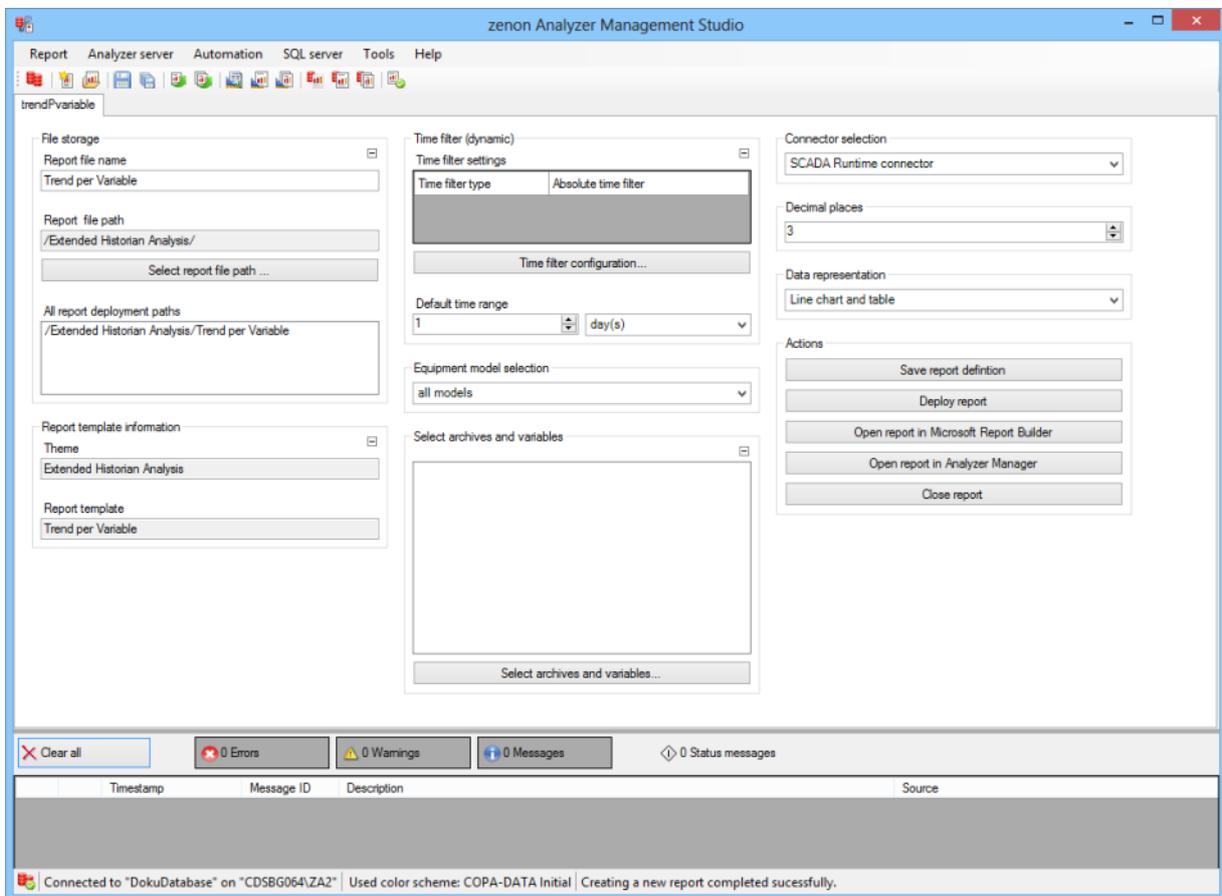
- from the drop-down list, select **Trend per Variable** as a report template



- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

ARCHIVE VARIABLES CONFIGURATION

| Parameters | Description |
|--|---|
| <code>Archive variables configuration</code> | <p>Display of the archive variables in a tree structure. This structure is constructed as follows:</p> <ul style="list-style-type: none"> ▶ Project name ▶ Archive name ▶ Variable name with aggregation type <p>Selection by clicking on the desired object.</p> <p>If the report is linked to a project via the parameters of the time filter, a check is made to ensure that only archives and variables from the project to which the report is linked are used.</p> |
| <code>Select archives and variables</code> | <p>Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable configuration (on page 675)</p> |

CONNECTOR SELECTION

| Parameters | Description |
|----------------------------------|---|
| <code>Connector selection</code> | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|-----------------------------|---|
| <code>Decimal places</code> | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|--|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Column chart and table ▶ Line chart and table ▶ Column chart ▶ Line chart ▶ Table |

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection drop-down list for selection of the projects
- ▶ 1 x multiple-selection tree display list for selection of the active equipment models
- ▶ 1 x multiple-selection drop-down list for selection of the variables
- ▶ 1 x single-selection drop-down list for the selection of the interval size in the time range

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Parameter area: Is always present and shows the report parameter values
- ▶ Interval amounts (optional):
 - Trend with a line per variable
 - Trend with a set of columns per variable
- ▶ Data as a table (optional) with the columns:
 - Variable name (can be expanded)
 - Interval Start
 - Interval End
 - Consumption
 - Unit

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPS and UDFs:

- ▶ ListProjects
- ▶ ListLots
- ▶ ListShifts
- ▶ ListEquipmentTree
- ▶ ListVariablesArchiveEx
- ▶ ArchiveEx_GetRelevantMetaData
- ▶ ArchiveEx_GetConnectorInputData
- ▶ ArchiveEx_GetAggregatedTrendData

Trend comparison per variable

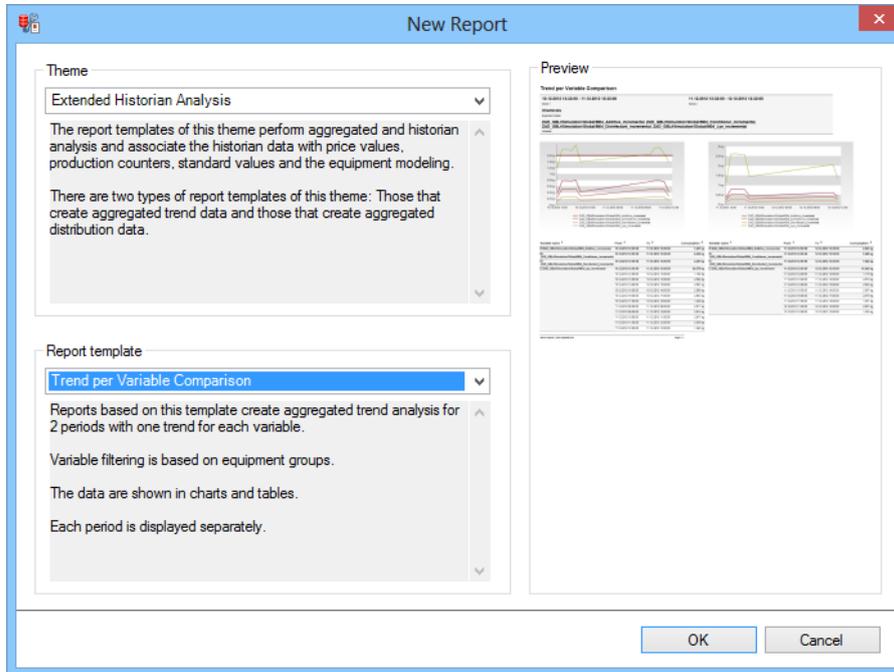
Reports that are based on this template get consumption data for variables over two time ranges, add this up into intervals within the time range and display the data as a trend and in a table. Both time ranges are displayed separately.

CREATE REPORT

To create a **Trend per Variable Comparsion** report:

1. In the **Theme** drop-down list, select **Extended Historian Analysis**

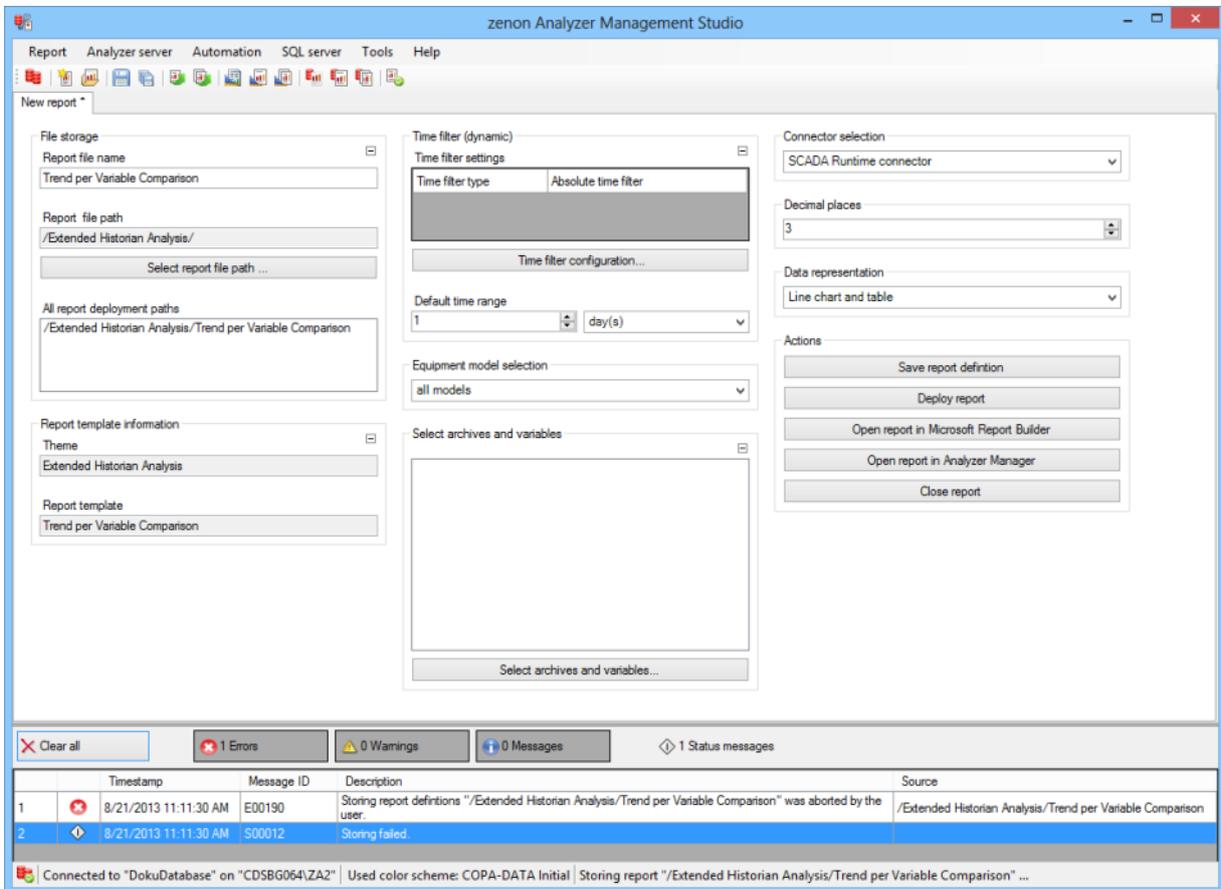
- from the drop-down list, select **Trend per Variable Comparison** as a report template



- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

ARCHIVE VARIABLES CONFIGURATION

| Parameters | Description |
|--|---|
| <code>Archive variables configuration</code> | <p>Display of the archive variables in a tree structure. This structure is constructed as follows:</p> <ul style="list-style-type: none"> ▶ Project name ▶ Archive name ▶ Variable name with aggregation type <p>Selection by clicking on the desired object.</p> <p>If the report is linked to a project via the parameters of the time filter, a check is made to ensure that only archives and variables from the project to which the report is linked are used.</p> |
| <code>Select archives and variables</code> | <p>Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable configuration (on page 675)</p> |

CONNECTOR SELECTION

| Parameters | Description |
|----------------------------------|---|
| <code>Connector selection</code> | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|-----------------------------|---|
| <code>Decimal places</code> | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list.</p> <p>Possible settings:</p> <ul style="list-style-type: none"> ▶ Column chart and table ▶ Line chart and table ▶ Column chart ▶ Line chart ▶ Table |

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 4 x date and time selection ("from" and "to" for one time range)
- ▶ 2 x time range selection
- ▶ 2 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 2 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 2 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 2 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection drop-down list for selection of the projects
- ▶ 1 x multiple-selection tree display list for selection of the active equipment models
- ▶ 1 x multiple-selection drop-down list for selection of the variables
- ▶ 1 x single-selection drop-down list for the selection of the interval size in the time range

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Parameter area: Is always present and shows the report parameter values
- ▶ Interval amounts (optional):
 - Trend with a line per variable
 - Trend with a set of columns per variable
- ▶ Data as a table (optional) with the columns:
 - Variable name (can be expanded)
 - Interval Start
 - Interval End
 - Consumption
 - Unit

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListProjects
- ▶ ListLots
- ▶ ListShifts
- ▶ ListEquipmentTree
- ▶ ListVariablesArchiveEx
- ▶ ArchiveEx_GetRelevantMetaData
- ▶ ArchiveEx_GetConnectorInputData
- ▶ ArchiveEx_GetAggregatedTrendData

Trend per Equipment Group

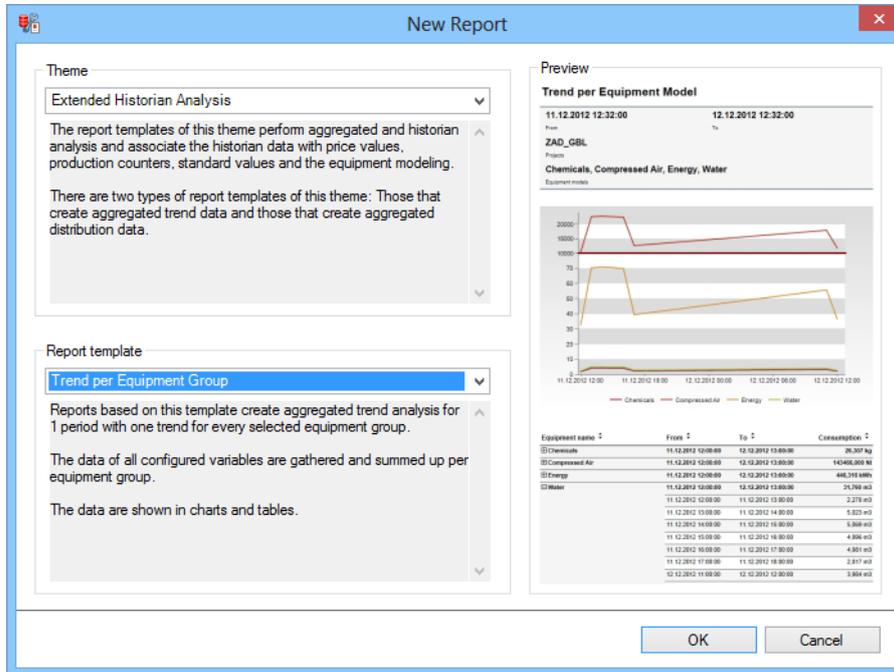
Reports that are based on this template get consumption data for all variables from the selected equipment groups over a time range, add this up into intervals within the time range and display the data as a trend and in a table.

CREATE REPORT

To create a **Trend per Equipment Group** report:

1. In the **Theme** drop-down list, select **Extended Historian Analysis**

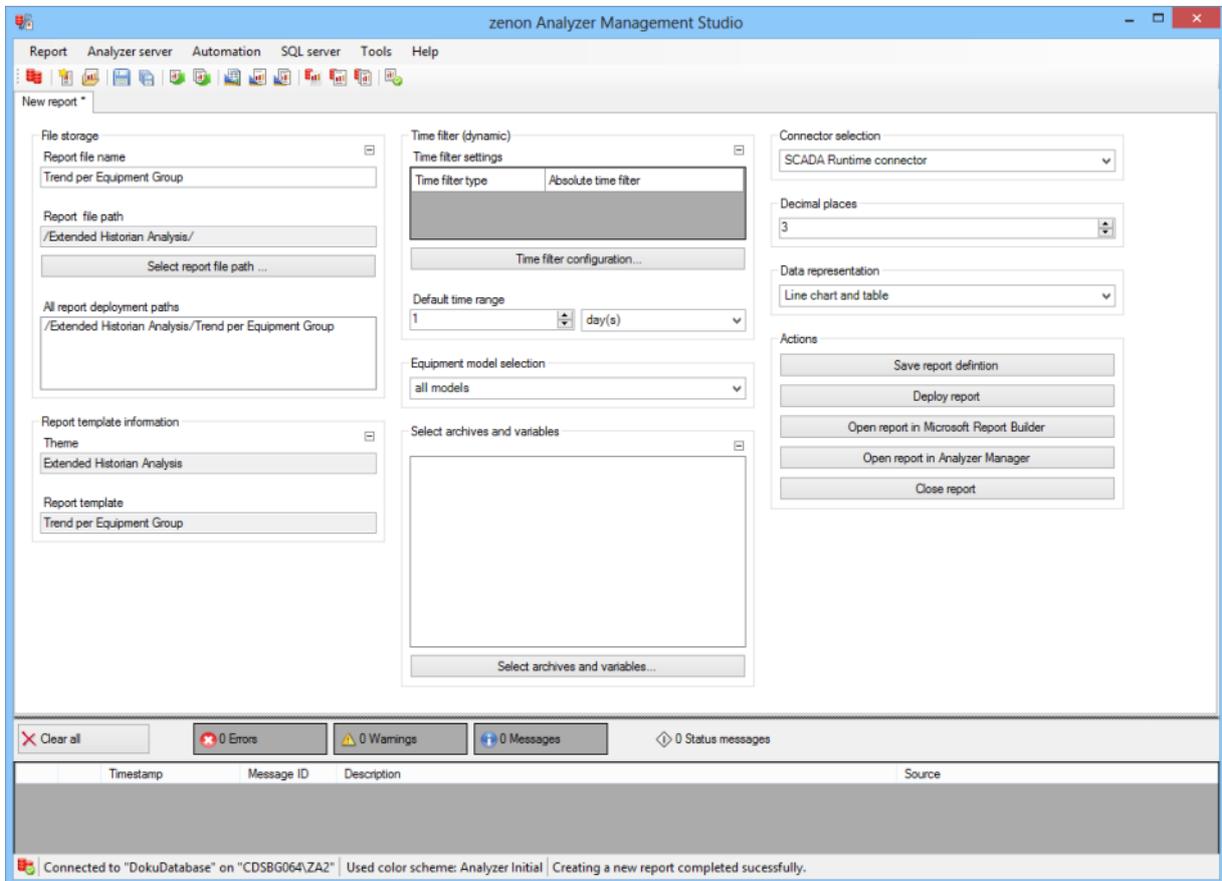
- from the drop-down list, select **Trend per Equipment Group** as a report template



- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

ARCHIVE VARIABLES CONFIGURATION

| Parameters | Description |
|--|---|
| <code>Archive variables configuration</code> | <p>Display of the archive variables in a tree structure. This structure is constructed as follows:</p> <ul style="list-style-type: none"> ▶ Project name ▶ Archive name ▶ Variable name with aggregation type <p>Selection by clicking on the desired object.</p> <p>If the report is linked to a project via the parameters of the time filter, a check is made to ensure that only archives and variables from the project to which the report is linked are used.</p> |
| <code>Select archives and variables</code> | <p>Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable configuration (on page 675)</p> |

CONNECTOR SELECTION

| Parameters | Description |
|----------------------------------|---|
| <code>Connector selection</code> | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|-----------------------------|---|
| <code>Decimal places</code> | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list.</p> <p>Possible settings:</p> <ul style="list-style-type: none"> ▶ Column chart and table ▶ Line chart and table ▶ Column chart ▶ Line chart ▶ Table |

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection drop-down list for selection of the projects
- ▶ 1 x multiple-selection tree display list for selection of the active equipment models
- ▶ 1 x multiple-selection drop-down list for selection of the variables
- ▶ 1 x single-selection drop-down list for the selection of the interval size in the time range

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Parameter area: Is always present and shows the report parameter values
- ▶ Interval amounts (optional):
 - Trend with a line per variable
 - Trend with a set of columns per variable
- ▶ Data as a table (optional) with the columns:
 - Variable name (can be expanded)
 - Interval Start
 - Interval End
 - Consumption
 - Unit

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListProjects
- ▶ ListLots
- ▶ ListShifts
- ▶ ListEquipmentTree
- ▶ ListVariablesArchiveEx
- ▶ ArchiveEx_GetRelevantMetaData
- ▶ ArchiveEx_GetConnectorInputData
- ▶ ArchiveEx_GetAggregatedTrendData

Trend per Equipment Group Comparison

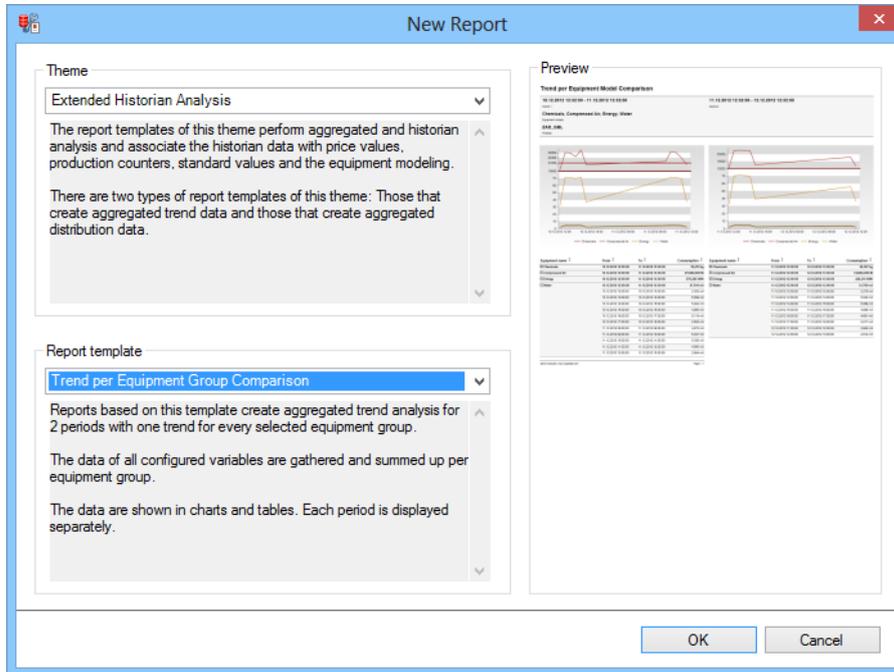
Reports that are based on this template get consumption data for variables over two time ranges, add this up into intervals within the time range and display the data as a trend and in a table. Both time ranges are displayed separately.

CREATE REPORT

To create a **Trend per Equipment Group Comparison** report:

1. In the **Theme** drop-down list, select **Extended Historian Analysis**

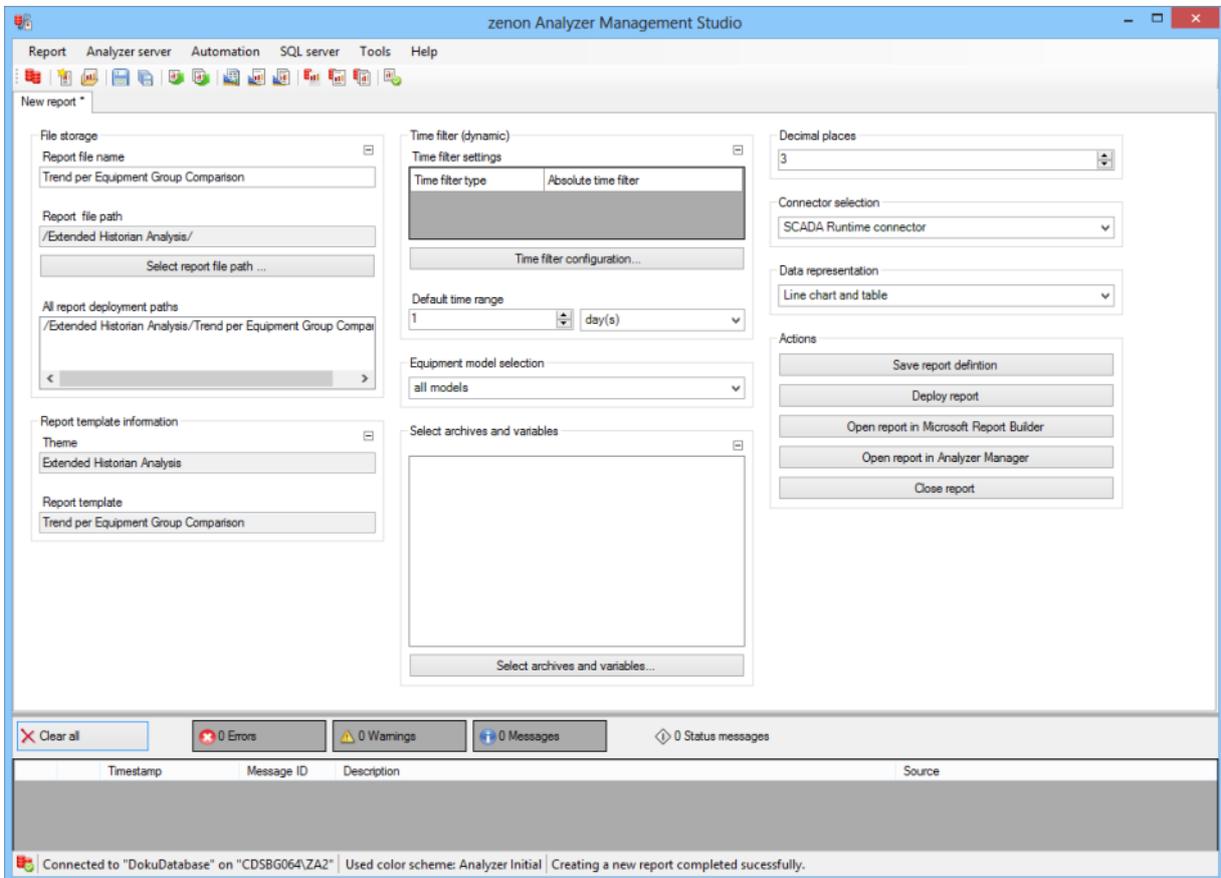
- from the drop-down list, select **Trend per Equipment Group Comparison** as a report template



- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

ARCHIVE VARIABLES CONFIGURATION

| Parameters | Description |
|---------------------------------|---|
| Archive variables configuration | <p>Display of the archive variables in a tree structure. This structure is constructed as follows:</p> <ul style="list-style-type: none"> ▶ Project name ▶ Archive name ▶ Variable name with aggregation type <p>Selection by clicking on the desired object.</p> <p>If the report is linked to a project via the parameters of the time filter, a check is made to ensure that only archives and variables from the project to which the report is linked are used.</p> |
| Select archives and variables | <p>Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable configuration (on page 675)</p> |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list.</p> <p>Possible settings:</p> <ul style="list-style-type: none"> ▶ Column chart and table ▶ Line chart and table ▶ Column chart ▶ Line chart ▶ Table |

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 4 x date and time selection ("from" and "to" for one time range)
- ▶ 2 x time range selection
- ▶ 2 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 2 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 2 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 2 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection drop-down list for selection of the projects
- ▶ 1 x multiple-selection tree display list for selection of the active equipment models
- ▶ 1 x multiple-selection drop-down list for selection of the variables
- ▶ 1 x single-selection drop-down list for the selection of the interval size in the time range

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Parameter area: Is always present and shows the report parameter values
- ▶ Interval amounts (optional):
 - Trend with a line per variable
 - Trend with a set of columns per variable
- ▶ Data as a table (optional) with the columns:
 - Variable name (can be expanded)
 - Interval Start
 - Interval End
 - Consumption
 - Unit

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPS and UDFs:

- ▶ ListProjects
- ▶ ListLots
- ▶ ListShifts
- ▶ ListEquipmentTree
- ▶ ListVariablesArchiveEx
- ▶ ArchiveEx_GetRelevantMetaData
- ▶ ArchiveEx_GetConnectorInputData
- ▶ ArchiveEx_GetAggregatedTrendData

Relative Trend per Variable

Reports that are based on this template:

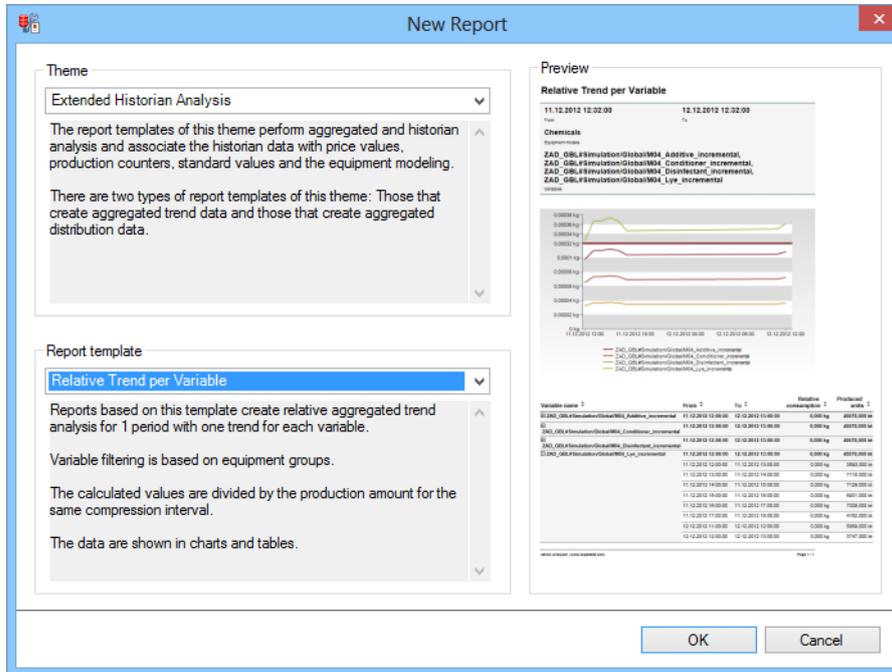
- ▶ Get consumption data for variables over a time range,
- ▶ add these up in intervals within the time range,
- ▶ divide the interval amounts by the production in the interval (if this is not 0) and
- ▶ display the data as a trend and as a table.

CREATE REPORT

To create a **Relative Trend per Variable** report:

1. In the **Theme** drop-down list, select **Extended Historian Analysis**

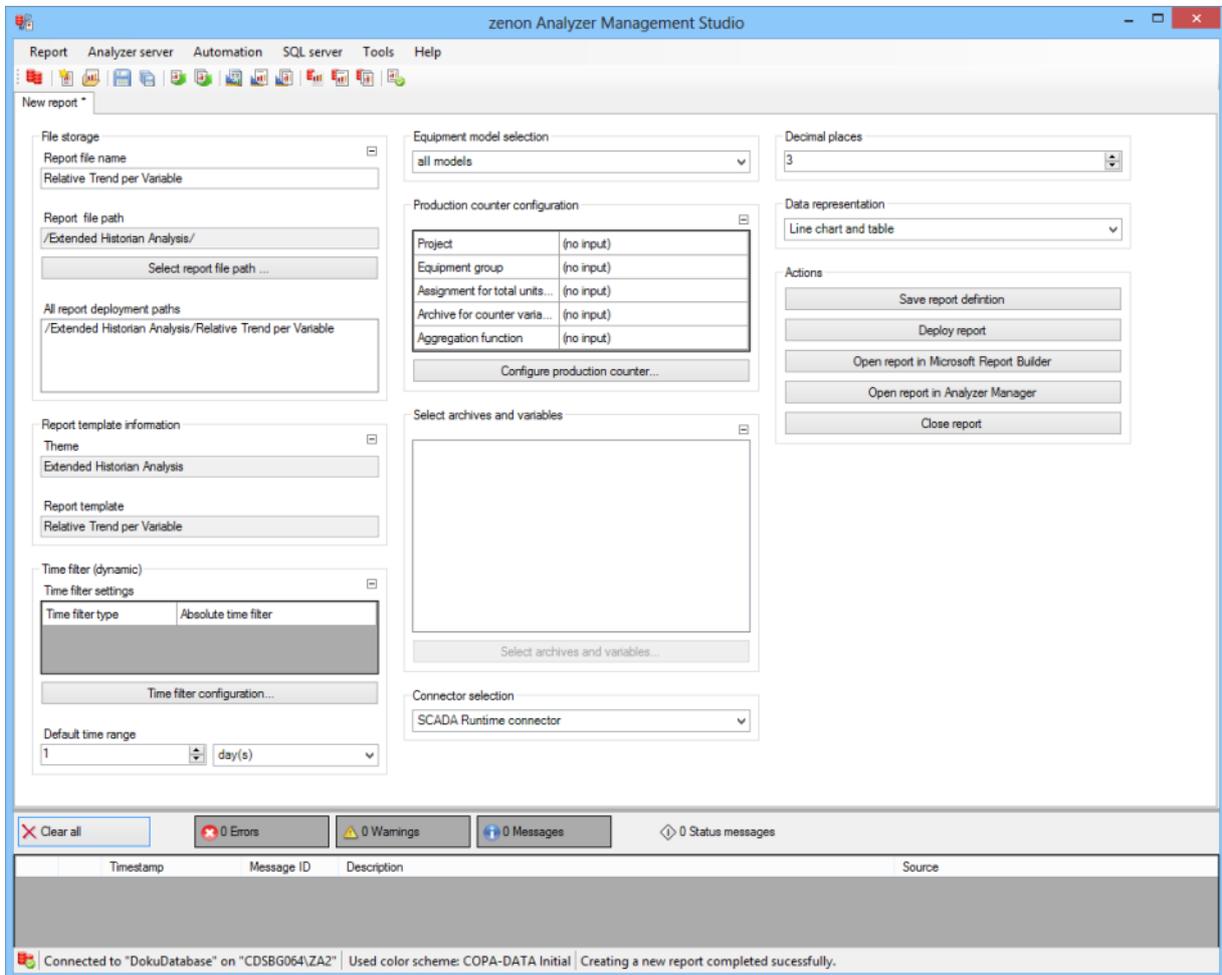
- from the drop-down list, select **Relative Trend per Variable** as a report template



- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

PRODUCTION COUNTER CONFIGURATION

| Parameters | Description |
|----------------------------------|--|
| Production counter configuration | Display of the configuration of the production counter. |
| Configure production counter | Opens the dialog (on page 673) for configuring the production counter. |

ARCHIVE VARIABLES CONFIGURATION

| Parameters | Description |
|---------------------------------|---|
| Archive variables configuration | <p>Display of the archive variables in a tree structure. This structure is constructed as follows:</p> <ul style="list-style-type: none"> ▶ Project name ▶ Archive name ▶ Variable name with aggregation type <p>Selection by clicking on the desired object.</p> <p>If the report is linked to a project via the parameters of the time filter, a check is made to ensure that only archives and variables from the project to which the report is linked are used.</p> |
| Select archives and variables | Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable configuration (on page 675) |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|------------|-------------|
|------------|-------------|

| | |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |
|----------------|---|

DATA REPRESENTATION

| Parameters | Description |
|---------------------|--|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Column chart and table ▶ Line chart and table ▶ Column chart ▶ Line chart ▶ Table |

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the |

| | |
|--|--|
| | <p>report in the web browser with the Analyzer Manager</p> <ul style="list-style-type: none"> ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |
|--|--|

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection tree display list for selection of the active equipment models
- ▶ 1 x multiple-selection drop-down list for selection of the variables
- ▶ 1 x single-selection drop-down list for the selection of the interval size in the time range

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Parameter area: Is always present and shows the report parameter values
- ▶ Interval amounts (optional):
 - Trend with a line per variable
 - Trend with a set of columns per variable

- ▶ Data as a table (optional) with the columns:
 - Variable name (can be expanded)
 - Interval Start
 - Interval End
 - Relative consumption
 - Unit
 - Production counter

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListLots
- ▶ ListShifts
- ▶ ListEquipmentTree
- ▶ ListVariablesArchiveEx
- ▶ ArchiveEx_GetRelevantMetaData
- ▶ ArchiveEx_GetConnectorInputData
- ▶ ArchiveEx_GetAggregatedTrendProductionData

Relative Trend per Variable Comparison

Reports that are based on this template:

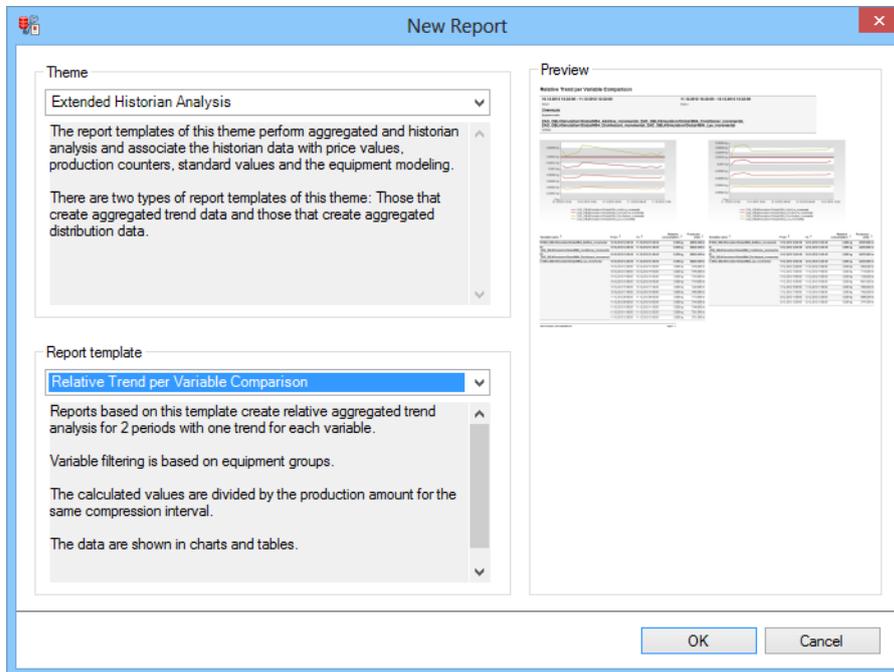
- ▶ Get consumption data for variables over two time ranges,
- ▶ add these up in intervals within the time range,
- ▶ divide the interval amounts by the production in the interval (if this is not 0) and
- ▶ display the data as a trend and as a table.

Both time ranges are displayed separately.

CREATE REPORT

To create a **Relative Trend per Variable Comparison** report:

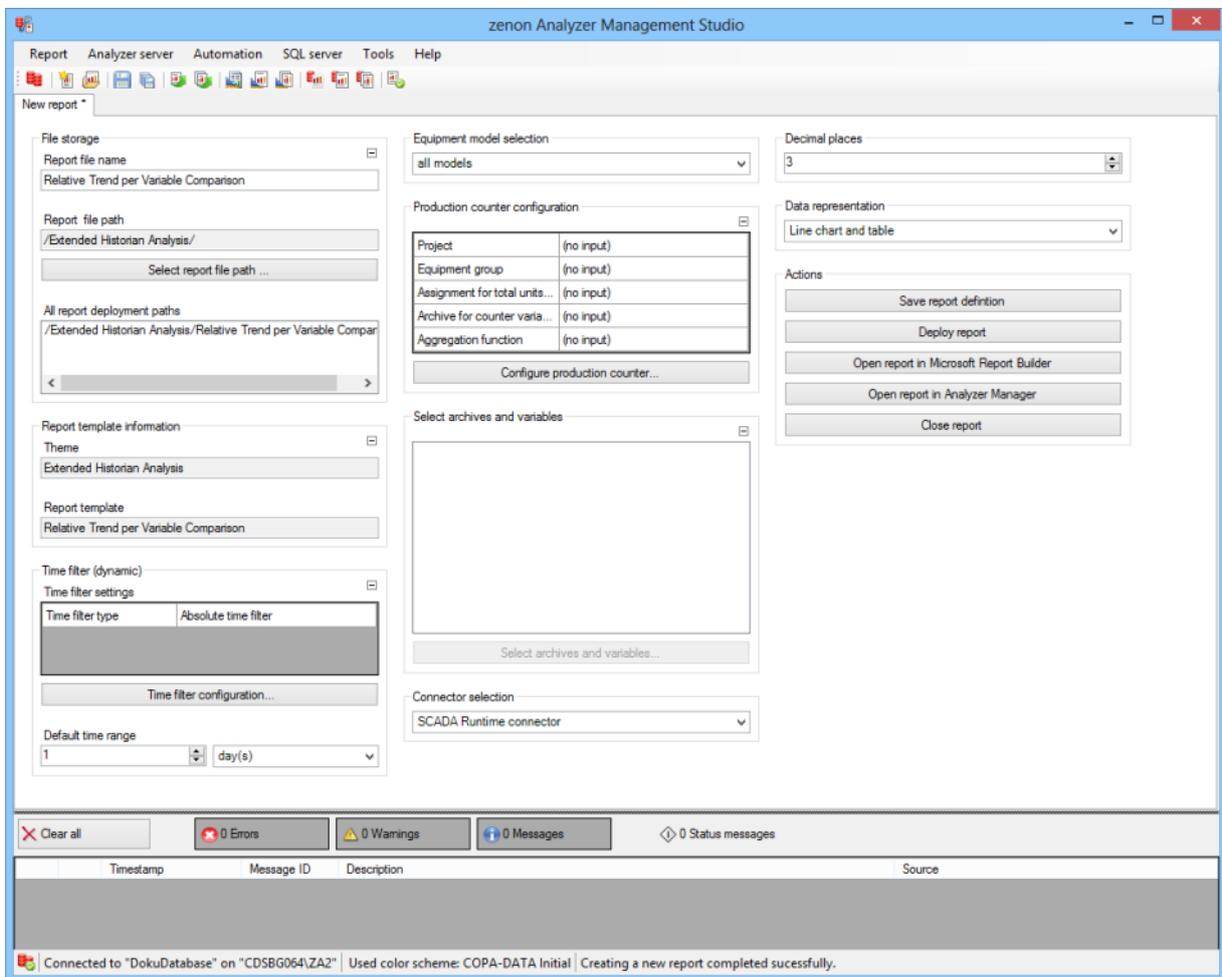
1. In the **Theme** drop-down list, select **Extended Historian Analysis**
2. from the drop-down list, select **Relative Trend per Variable Comparison** as a report template



3. Click on the **OK** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

PRODUCTION COUNTER CONFIGURATION

| Parameters | Description |
|----------------------------------|--|
| Production counter configuration | Display of the configuration of the production counter. |
| Configure production counter | Opens the dialog (on page 673) for configuring the production counter. |

ARCHIVE VARIABLES CONFIGURATION

| Parameters | Description |
|---------------------------------|---|
| Archive variables configuration | <p>Display of the archive variables in a tree structure. This structure is constructed as follows:</p> <ul style="list-style-type: none"> ▶ Project name ▶ Archive name ▶ Variable name with aggregation type <p>Selection by clicking on the desired object.</p> <p>If the report is linked to a project via the parameters of the time filter, a check is made to ensure that only archives and variables from the project to which the report is linked are used.</p> |
| Select archives and variables | Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable configuration (on page 675) |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|------------|-------------|
|------------|-------------|

| | |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |
|----------------|---|

DATA REPRESENTATION

| Parameters | Description |
|---------------------|--|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Column chart and table ▶ Line chart and table ▶ Column chart ▶ Line chart ▶ Table |

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the |

| | |
|--|--|
| | <p>report in the web browser with the Analyzer Manager</p> <ul style="list-style-type: none"> ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |
|--|--|

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 4 x date and time selection ("from" and "to" for one time range)
- ▶ 2 x time range selection
- ▶ 2 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 2 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 2 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 2 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection tree display list for selection of the active equipment models
- ▶ 1 x multiple-selection drop-down list for selection of the variables
- ▶ 1 x single-selection drop-down list for the selection of the interval size in the time range

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Parameter area: Is always present and shows the report parameter values
- ▶ Interval amounts (optional):
 - Trend with a line per variable
 - Trend with a set of columns per variable

- ▶ Data as a table (optional) with the columns:
 - Variable name (can be expanded)
 - Interval Start
 - Interval End
 - Relative consumption
 - Unit
 - Production counter

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListLots
- ▶ ListShifts
- ▶ ListEquipmentTree
- ▶ ListVariablesArchiveEx
- ▶ ArchiveEx_GetRelevantMetaData
- ▶ ArchiveEx_GetConnectorInputData
- ▶ ArchiveEx_GetAggregatedTrendProductionData

Relative Trend to Standard

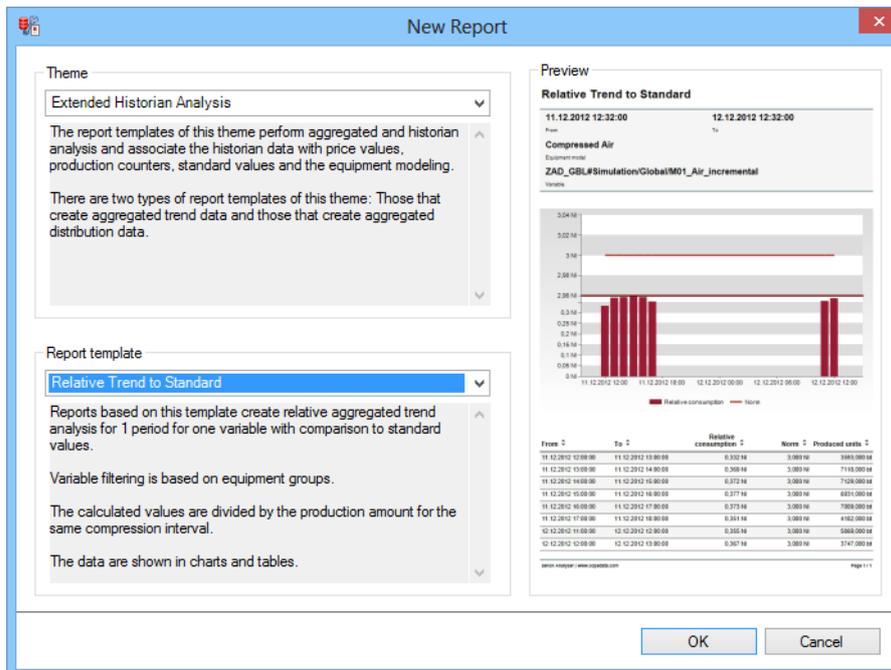
Reports that are based on this template:

- ▶ Get consumption data for a variable over a time range,
- ▶ add these up in intervals within the time range,
- ▶ divide the interval amounts by the production in the interval (if this is not 0),
- ▶ display the data as a trend and as a table and
- ▶ get a norm value for comparison purposes for the value from the NORM table and include this in the display of data.

CREATE REPORT

To create a **Relative Trend to Standard** report:

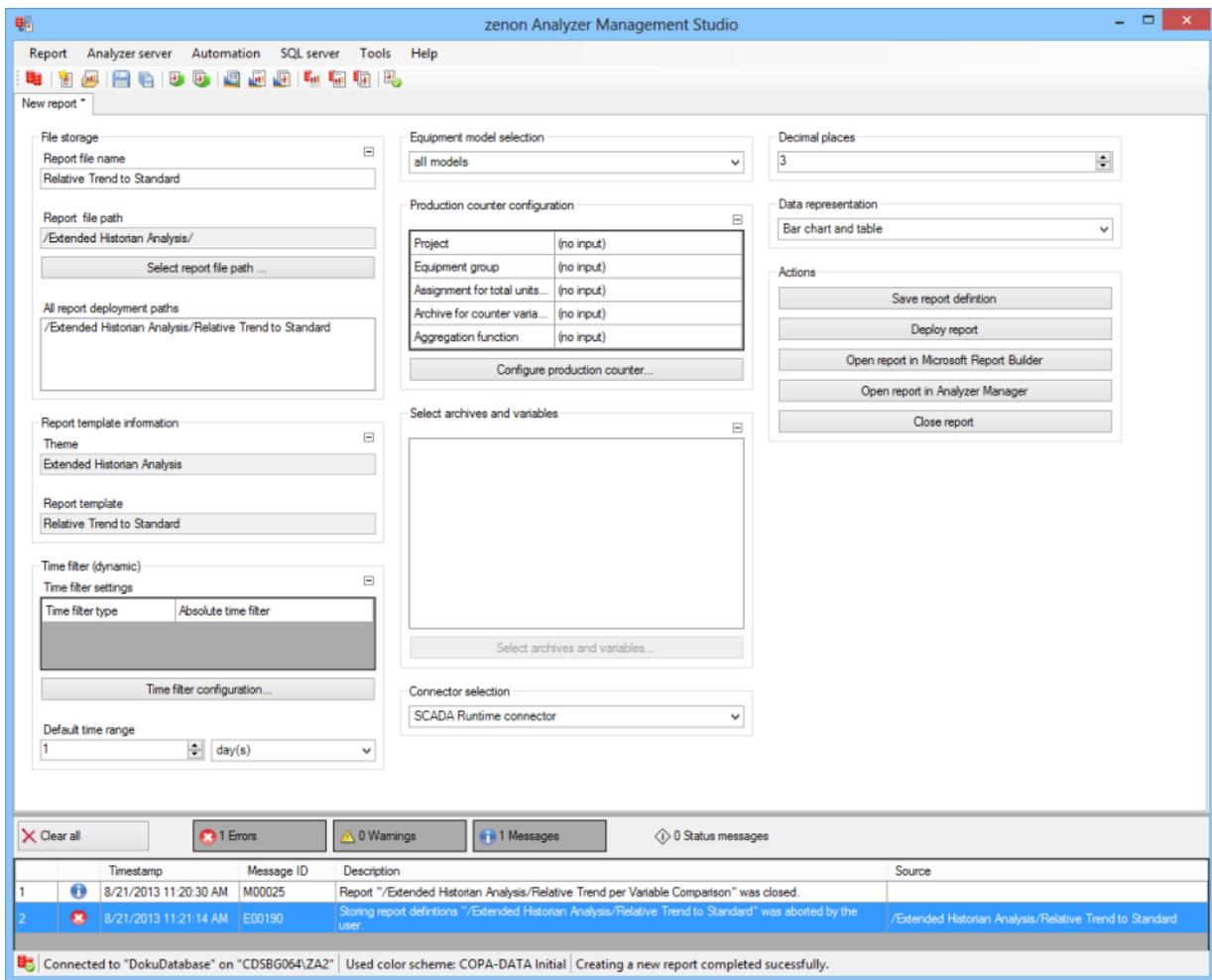
1. In the **Theme** drop-down list, select **Extended Historian Analysis**
2. from the drop-down list, select **Relative Trend to Standard** as a report template



3. Click on the **OK** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

PRODUCTION COUNTER CONFIGURATION

| Parameters | Description |
|----------------------------------|--|
| Production counter configuration | Display of the configuration of the production counter. |
| Configure production counter | Opens the dialog (on page 673) for configuring the production counter. |

ARCHIVE VARIABLES CONFIGURATION

| Parameters | Description |
|---------------------------------|---|
| Archive variables configuration | <p>Display of the archive variables in a tree structure. This structure is constructed as follows:</p> <ul style="list-style-type: none"> ▶ Project name ▶ Archive name ▶ Variable name with aggregation type <p>Selection by clicking on the desired object.</p> <p>If the report is linked to a project via the parameters of the time filter, a check is made to ensure that only archives and variables from the project to which the report is linked are used.</p> |
| Select archives and variables | Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable configuration (on page 675) |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|------------|-------------|
|------------|-------------|

| | |
|-----------------------|---|
| <p>Decimal places</p> | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |
|-----------------------|---|

DATA REPRESENTATION

| Parameters | Description |
|----------------------------|--|
| <p>Data representation</p> | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Column chart and table ▶ Column chart ▶ Table |

ACTIONS

| Parameters | Description |
|----------------|---|
| <p>Actions</p> | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. |

| | |
|--|--|
| | Select by clicking on the respective button. |
|--|--|

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single-selection tree display for selection of the active equipment model
- ▶ 1 x single-selection drop-down list for selection of the variables
- ▶ 1 x single-selection drop-down list for the selection of the interval size in the time range

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Parameter area: Is always present and shows the report parameter values
- ▶ Relative consumption (optional): Trend with a set of columns per variable and a line for the norm value
- ▶ Data as a table (optional) with the columns:
 - Variable name (can be expanded)
 - Interval Start

- Interval End
- Relative consumption
- Norm value
- Unit
- Production counter

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListLots
- ▶ ListShifts
- ▶ ListEquipmentTree
- ▶ ListVariablesArchiveEx
- ▶ ArchiveEx_GetRelevantMetaData
- ▶ ArchiveEx_GetConnectorInputData
- ▶ ArchiveEx_GetAggregatedTrendProductionNormData

Relative Trend to Standard Comparison

Reports that are based on this template:

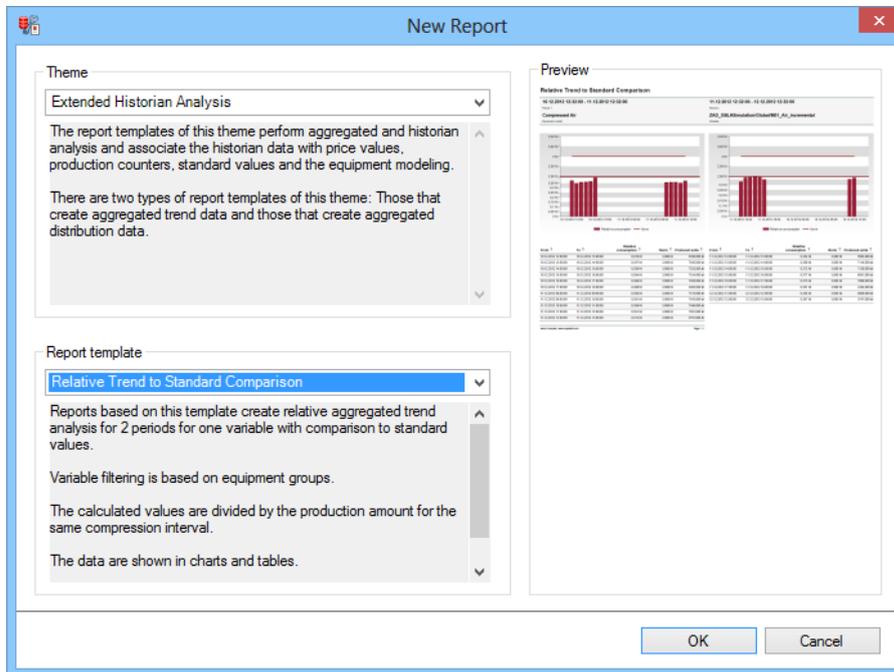
- ▶ Get consumption data for a variable over two time ranges,
- ▶ add these up in intervals within the time range,
- ▶ divide the interval amounts by the production in the interval (if this is not 0),
- ▶ display the data as a trend and as a table and
- ▶ get a norm value for comparison purposes for the value from the NORM table and include this in the display of data.

Both time ranges are displayed separately.

CREATE REPORT

To create a **Relative Trend to Standard Comparison** report:

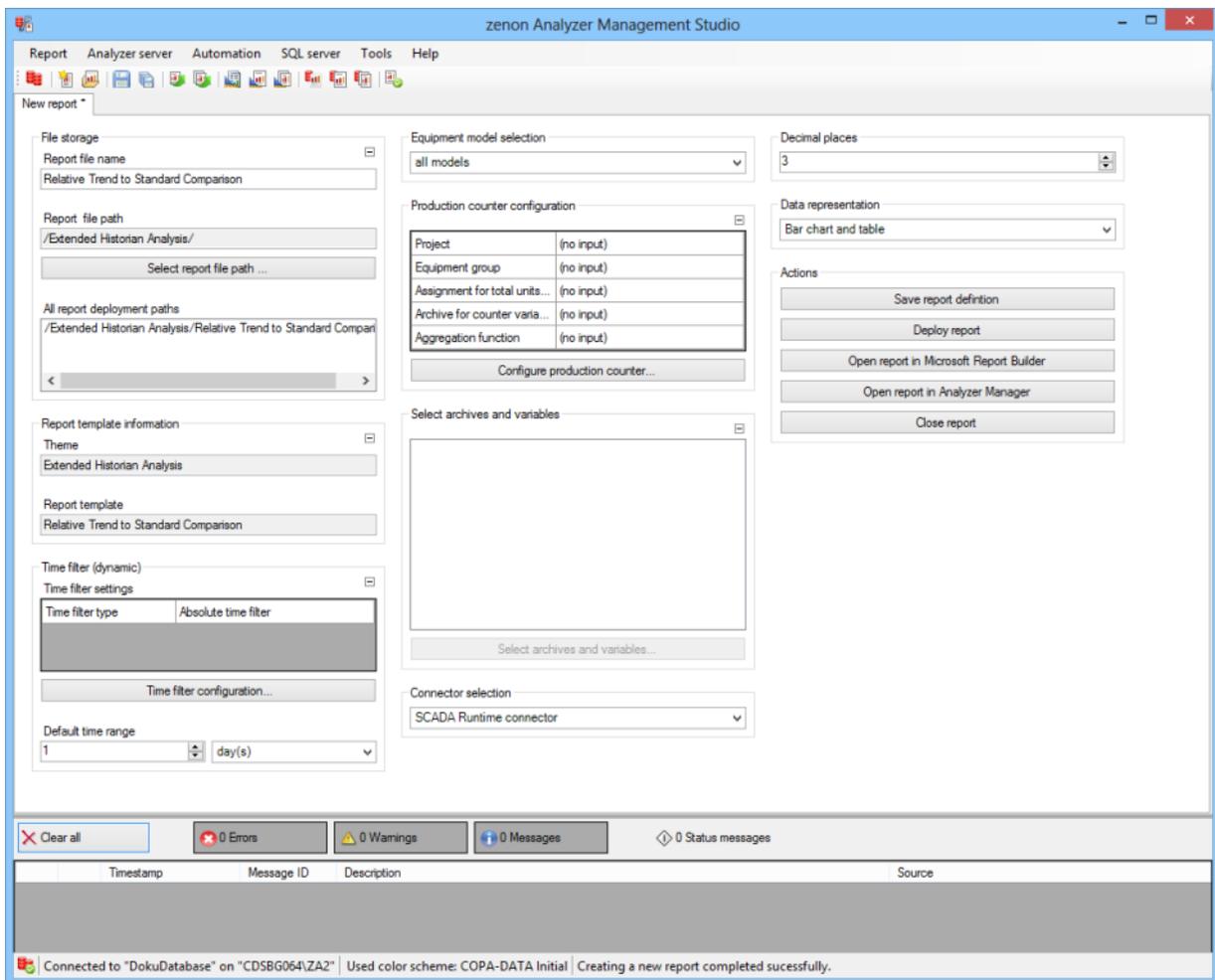
1. In the **Theme** drop-down list, select **Extended Historian Analysis**
2. From the drop-down list, select **Relative Trend Comparison** as a report template



3. Click on the **OK** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

PRODUCTION COUNTER CONFIGURATION

| Parameters | Description |
|----------------------------------|--|
| Production counter configuration | Display of the configuration of the production counter. |
| Configure production counter | Opens the dialog (on page 673) for configuring the production counter. |

ARCHIVE VARIABLES CONFIGURATION

| Parameters | Description |
|---------------------------------|---|
| Archive variables configuration | <p>Display of the archive variables in a tree structure. This structure is constructed as follows:</p> <ul style="list-style-type: none"> ▶ Project name ▶ Archive name ▶ Variable name with aggregation type <p>Selection by clicking on the desired object.</p> <p>If the report is linked to a project via the parameters of the time filter, a check is made to ensure that only archives and variables from the project to which the report is linked are used.</p> |
| Select archives and variables | Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable configuration (on page 675) |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|------------|-------------|
|------------|-------------|

| | |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |
|----------------|---|

DATA REPRESENTATION

| Parameters | Description |
|---------------------|--|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Column chart and table ▶ Column chart ▶ Table |

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. |

| | |
|--|--|
| | Select by clicking on the respective button. |
|--|--|

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 4 x date and time selection ("from" and "to" for one time range)
- ▶ 2 x time range selection
- ▶ 2 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 2 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 2 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 2 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection tree display list for selection of the active equipment models
- ▶ 1 x multiple-selection drop-down list for selection of the variables
- ▶ 1 x single-selection drop-down list for the selection of the interval size in the time range

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Parameter area: Is always present and shows the report parameter values
- ▶ Relative consumption (optional, 1 x per time range): Trend with a set of columns per variable and a line for the norm value
- ▶ Data as a table (optional) with the columns:
 - Variable name (can be expanded)
 - Interval Start

- Interval End
- Relative consumption
- Norm value
- Unit
- Production counter

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPS and UDFs:

- ▶ ListLots
- ▶ ListShifts
- ▶ ListEquipmentTree
- ▶ ListVariablesArchiveEx
- ▶ ArchiveEx_GetRelevantMetaData
- ▶ ArchiveEx_GetConnectorInputData
- ▶ ArchiveEx_GetAggregatedTrendProductionNormData

Distribution per Variable

Reports that are based on this template get consumption data for variables over a time range, add this up and display the consumption amounts graphically and in a table for comparison.

APPLICATION EXAMPLES

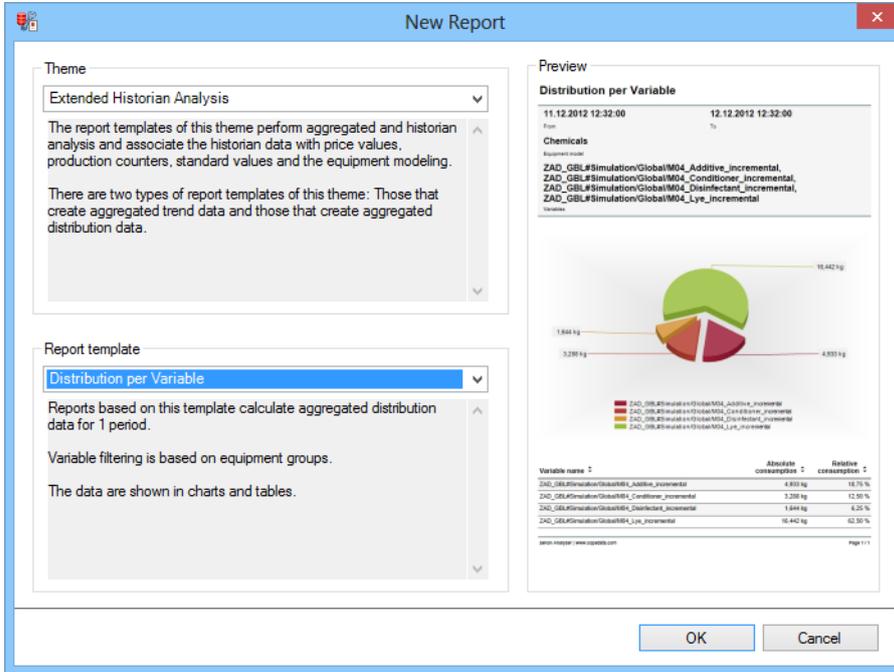
Distribution per Variable reports are suited, for example, to the comparison of the deviation of the measured value distribution between two lots.

CREATE REPORT

To create a **Distribution per Variable** report:

1. In the **Theme** drop-down list, select **Extended Historian Analysis**

- from the drop-down list, select **Distribution per Variable** as a report template



New Report

Theme: Extended Historian Analysis

The report templates of this theme perform aggregated and historian analysis and associate the historian data with price values, production counters, standard values and the equipment modeling.

There are two types of report templates of this theme: Those that create aggregated trend data and those that create aggregated distribution data.

Report template: **Distribution per Variable**

Reports based on this template calculate aggregated distribution data for 1 period.

Variable filtering is based on equipment groups.

The data are shown in charts and tables.

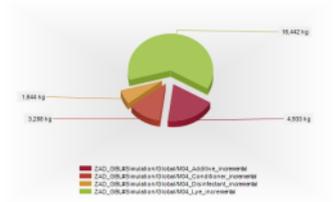
Preview: Distribution per Variable

From: 11.12.2012 12:32:00 To: 12.12.2012 12:32:00

Chemicals

Equipment code: ZAD_GBL#SimulationGlobalMO4_Additive_incremental, ZAD_GBL#SimulationGlobalMO4_Conditioner_incremental, ZAD_GBL#SimulationGlobalMO4_Disinfectant_incremental, ZAD_GBL#SimulationGlobalMO4_Lye_incremental

Variables



| Variable name | Absolute consumption | Relative consumption |
|--|----------------------|----------------------|
| ZAD_GBL#SimulationGlobalMO4_Additive_incremental | 4.893 kg | 18.75% |
| ZAD_GBL#SimulationGlobalMO4_Conditioner_incremental | 3.261 kg | 12.50% |
| ZAD_GBL#SimulationGlobalMO4_Disinfectant_incremental | 1.844 kg | 6.25% |
| ZAD_GBL#SimulationGlobalMO4_Lye_incremental | 16.442 kg | 62.50% |

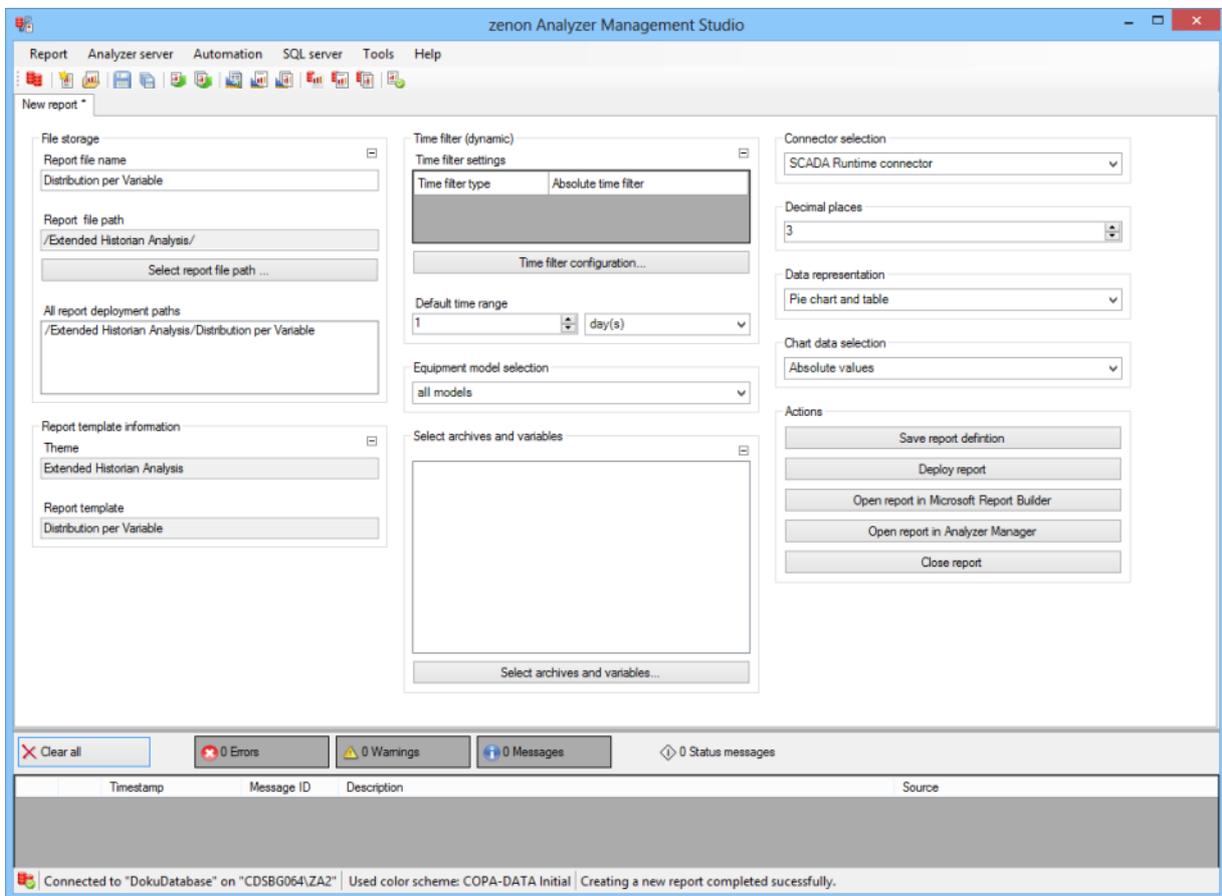
www.zenon.com Page 1/1

OK Cancel

- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

ARCHIVE VARIABLES CONFIGURATION

| Parameters | Description |
|--|---|
| <code>Archive variables configuration</code> | <p>Display of the archive variables in a tree structure. This structure is constructed as follows:</p> <ul style="list-style-type: none"> ▶ Project name ▶ Archive name ▶ Variable name with aggregation type <p>Selection by clicking on the desired object.</p> <p>If the report is linked to a project via the parameters of the time filter, a check is made to ensure that only archives and variables from the project to which the report is linked are used.</p> |
| <code>Select archives and variables</code> | <p>Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable configuration (on page 675)</p> |

CONNECTOR SELECTION

| Parameters | Description |
|----------------------------------|---|
| <code>Connector selection</code> | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|-----------------------------|---|
| <code>Decimal places</code> | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|--|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Pie Chart and table ▶ Column chart and table ▶ Pie chart ▶ Column chart ▶ Table |

CHART DATA SELECTION

| Parameters | Description |
|----------------------|--|
| Chart data selection | <p>Selection of the value type to be displayed from drop-down list:</p> <ul style="list-style-type: none"> ▶ Absolute values ▶ Relative values |

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. |

| | |
|--|--|
| | Select by clicking on the respective button. |
|--|--|

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection drop-down list for selection of the active projects
- ▶ 1 x single-selection tree display for selection of the active equipment model
- ▶ 1 x multiple-selection drop-down list for selection of the variables

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Parameter area: Is always present and shows the report parameter values
- ▶ Data (optional):
 - Pie chart with the absolute or relative overall consumption in a segment for each variable
 - Bar chart with the absolute or relative overall consumption in a segment for each variable

- ▶ Data as a table (optional) with the columns:
 - Variable name
 - Total consumption
 - Unit
 - Relative consumption

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPS and UDFs:

- ▶ ListProjects
- ▶ ListLots
- ▶ ListShifts
- ▶ ListEquipmentTree
- ▶ ListVariablesArchiveEx
- ▶ ArchiveEx_GetRelevantMetaData
- ▶ ArchiveEx_GetConnectorInputData
- ▶ ArchiveEx_GetAggregatedData

Distribution per Variable Comparison

Reports that are based on this template get consumption data for variables over two time periods, add this up and display the consumption amounts graphically and in a table for comparison. Both time ranges are displayed separately.

APPLICATION EXAMPLES

Distribution per Variable Comparison reports are suited, for example, to the comparison of the deviation of the measured value distribution between two lots.

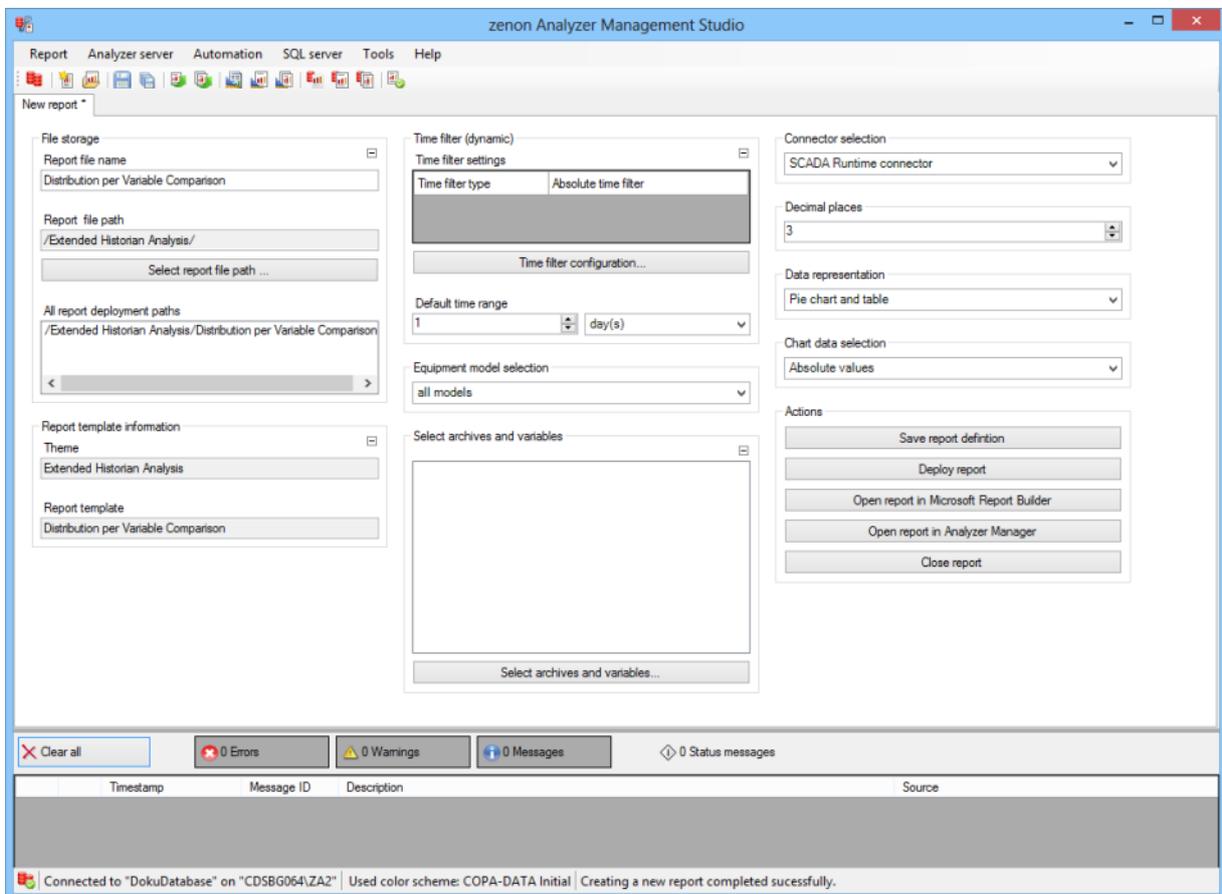
CREATE REPORT

To create a **Distribution per Variable Comparison** report:

1. In the **Theme** drop-down list, select **Extended Historian Analysis**

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

ARCHIVE VARIABLES CONFIGURATION

| Parameters | Description |
|--|---|
| <code>Archive variables configuration</code> | <p>Display of the archive variables in a tree structure. This structure is constructed as follows:</p> <ul style="list-style-type: none"> ▶ Project name ▶ Archive name ▶ Variable name with aggregation type <p>Selection by clicking on the desired object.</p> <p>If the report is linked to a project via the parameters of the time filter, a check is made to ensure that only archives and variables from the project to which the report is linked are used.</p> |
| <code>Select archives and variables</code> | <p>Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable configuration (on page 675)</p> |

CONNECTOR SELECTION

| Parameters | Description |
|----------------------------------|---|
| <code>Connector selection</code> | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|-----------------------------|---|
| <code>Decimal places</code> | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|--|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Pie Chart and table ▶ Column chart and table ▶ Pie chart ▶ Column chart ▶ Table |

CHART DATA SELECTION

| Parameters | Description |
|----------------------|--|
| Chart data selection | <p>Selection of the value type to be displayed from drop-down list:</p> <ul style="list-style-type: none"> ▶ Absolute values ▶ Relative values |

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. |

| | |
|--|--|
| | Select by clicking on the respective button. |
|--|--|

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 4 x date and time selection ("from" and "to" for one time range)
- ▶ 2 x time range selection
- ▶ 2 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 2 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 2 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 2 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection drop-down list for selection of the active projects
- ▶ 1 x single-selection tree display for selection of the active equipment model
- ▶ 1 x multiple-selection drop-down list for selection of the variables

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Parameter area: Is always present and shows the report parameter values
- ▶ Data (optional):
 - Pie chart with the absolute or relative overall consumption in a segment for each variable; 1x per time range
 - Bar chart with the absolute or relative overall consumption in a segment for each variable; 1x per time range

- ▶ Data as a table (optional) with the columns:
 - Variable name
 - Total consumption
 - Unit
 - Relative consumption

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPS and UDFs:

- ▶ ListProjects
- ▶ ListLots
- ▶ ListShifts
- ▶ ListEquipmentTree
- ▶ ListVariablesArchiveEx
- ▶ ArchiveEx_GetRelevantMetaData
- ▶ ArchiveEx_GetConnectorInputData
- ▶ ArchiveEx_GetAggregatedData

Cost Distribution per Variable

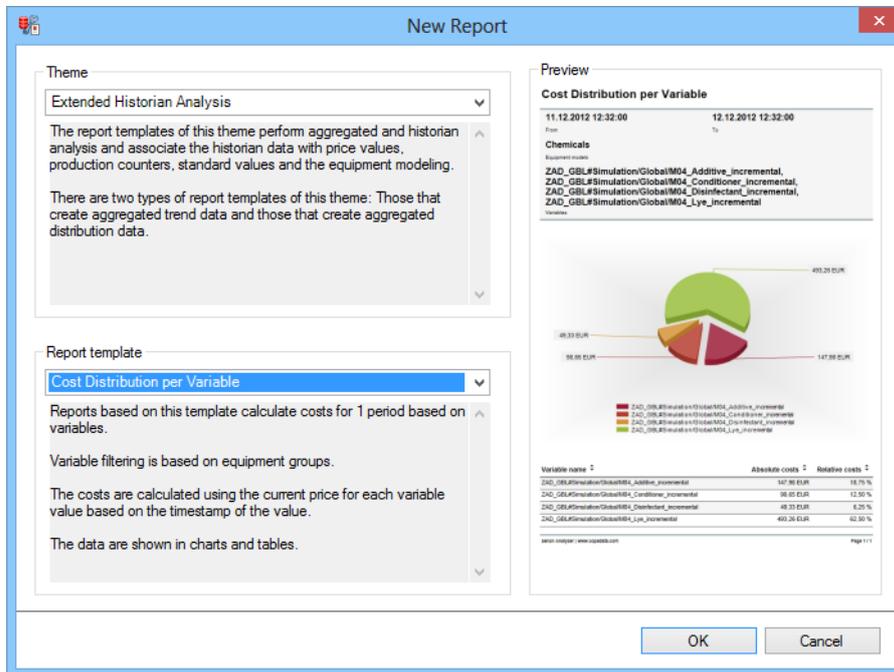
Reports that are based on this template:

- ▶ Get consumption data for variables over a time range,
- ▶ link the consumption values with the respective applicable prices from the `Price` table , in order to get the costs,
- ▶ add up the costs and
- ▶ display the cost sums graphically and in a table for comparison.

CREATE REPORT

To create a `Cost Distribution per Variable` report:

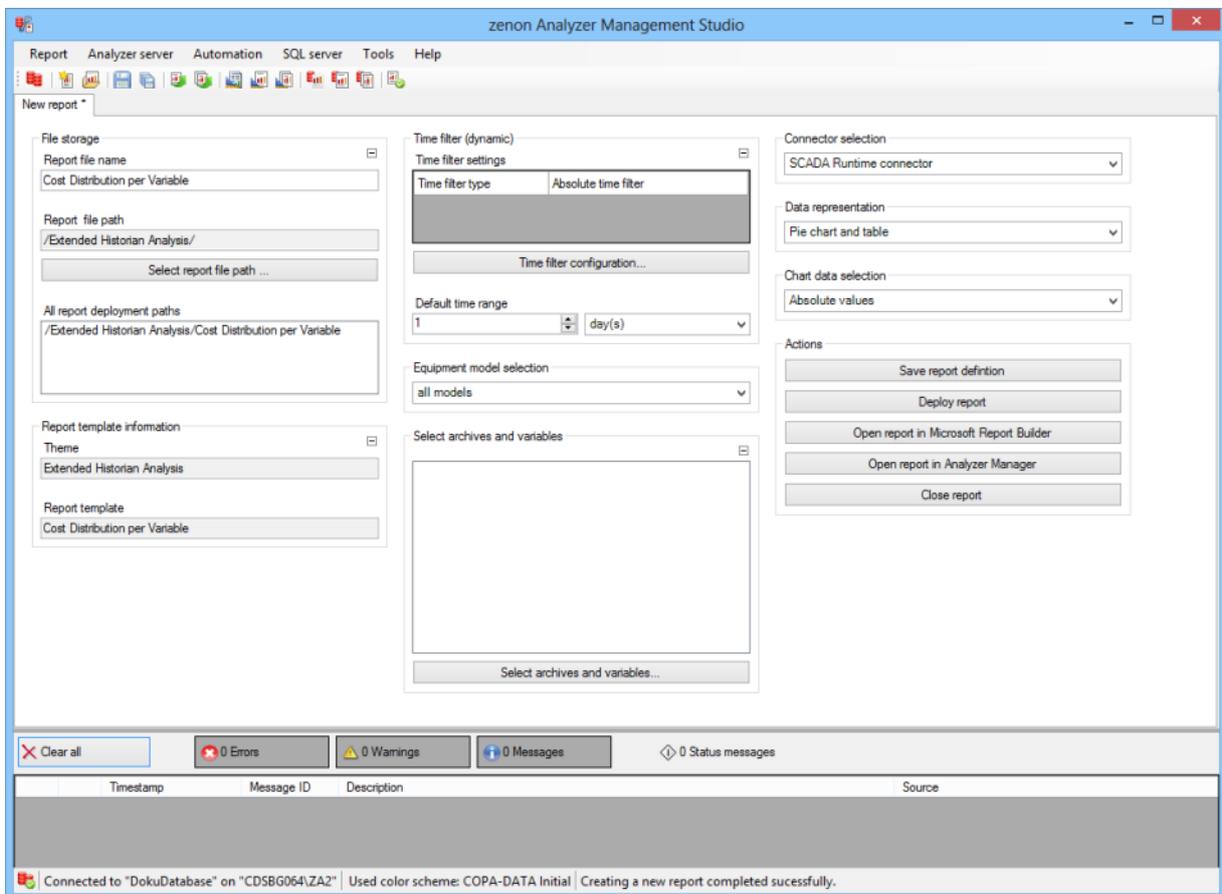
1. In the **Theme** drop-down list, select **Extended Historian Analysis**
2. from the drop-down list, select **Cost Distribution per Variable** as a report template



3. Click on the **OK** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

ARCHIVE VARIABLES CONFIGURATION

| Parameters | Description |
|---------------------------------|---|
| Archive variables configuration | <p>Display of the archive variables in a tree structure. This structure is constructed as follows:</p> <ul style="list-style-type: none"> ▶ Project name ▶ Archive name ▶ Variable name with aggregation type <p>Selection by clicking on the desired object.</p> <p>If the report is linked to a project via the parameters of the time filter, a check is made to ensure that only archives and variables from the project to which the report is linked are used.</p> |
| Select archives and variables | <p>Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable configuration (on page 675)</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Pie Chart and table ▶ Column chart and table ▶ Pie chart ▶ Column chart |

| | |
|--|---|
| | <ul style="list-style-type: none"> ▶ Table |
|--|---|

CHART DATA SELECTION

| Parameters | Description |
|----------------------|---|
| Chart data selection | Selection of the value type to be displayed from drop-down list: <ul style="list-style-type: none"> ▶ Absolute values ▶ Relative values |

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | Possible actions for the report: <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. Select by clicking on the respective button. |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection drop-down list for selection of the active projects
- ▶ 1 x multiple-selection tree display list for selection of the active equipment models
- ▶ 1 x multiple-selection drop-down list for selection of the variables

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Parameter area: Is always present and shows the report parameter values
- ▶ Data (optional):
 - Pie chart with the absolute or relative overall consumption in a segment for each variable
 - Bar chart with the absolute or relative overall consumption in a segment for each variable
- ▶ Data as a table (optional) with the columns:
 - Variable name
 - Total costs, absolute
 - Total costs, relative

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPS and UDFs:

- ▶ ListProjects
- ▶ ListLots
- ▶ ListShifts
- ▶ ListEquipmentTree
- ▶ ListVariablesArchiveEx
- ▶ ArchiveEx_GetRelevantMetaData
- ▶ ArchiveEx_GetConnectorInputData
- ▶ ArchiveEx_GetAggregatedCostData

Cost Distribution per Variable Comparison

Reports that are based on this template:

- ▶ Get consumption data for variables over two time ranges,
- ▶ link the consumption values with the respective applicable prices from the `Price` table, in order to get the costs,
- ▶ add up the costs and
- ▶ display the cost sums graphically and in a table for comparison.

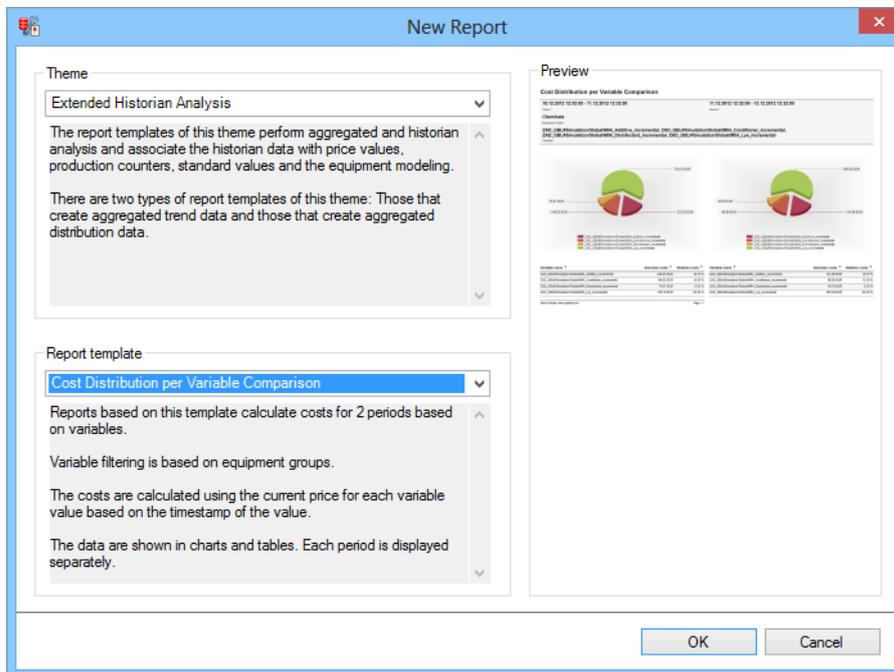
Both time ranges are displayed separately.

CREATE REPORT

To create a `Cost Distribution per Variable Comparison` report:

1. In the `Theme` drop-down list, select `Extended Historian Analysis`

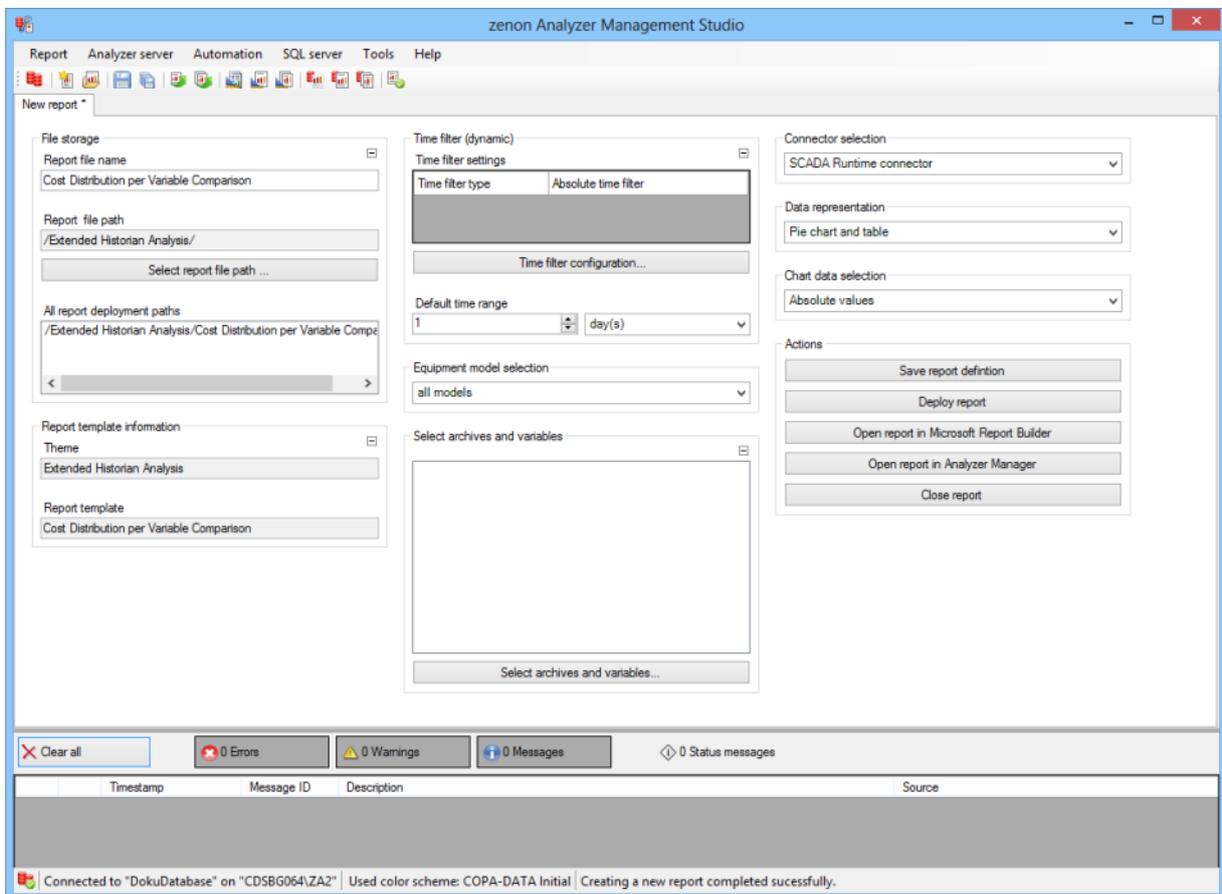
- from the drop-down list, select **Cost Distribution per Variable Comparison** as a report template



- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

ARCHIVE VARIABLES CONFIGURATION

| Parameters | Description |
|---------------------------------|---|
| Archive variables configuration | <p>Display of the archive variables in a tree structure. This structure is constructed as follows:</p> <ul style="list-style-type: none"> ▶ Project name ▶ Archive name ▶ Variable name with aggregation type <p>Selection by clicking on the desired object.</p> <p>If the report is linked to a project via the parameters of the time filter, a check is made to ensure that only archives and variables from the project to which the report is linked are used.</p> |
| Select archives and variables | <p>Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable configuration (on page 675)</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Pie Chart and table ▶ Column chart and table ▶ Pie chart ▶ Column chart |

| | |
|--|---|
| | <ul style="list-style-type: none"> ▶ Table |
|--|---|

CHART DATA SELECTION

| Parameters | Description |
|----------------------|---|
| Chart data selection | Selection of the value type to be displayed from drop-down list: <ul style="list-style-type: none"> ▶ Absolute values ▶ Relative values |

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | Possible actions for the report: <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. Select by clicking on the respective button. |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 4 x date and time selection ("from" and "to" for one time range)
- ▶ 2 x time range selection
- ▶ 2 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 2 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 2 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 2 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection drop-down list for selection of the active projects
- ▶ 1 x multiple-selection tree display list for selection of the active equipment models
- ▶ 1 x multiple-selection drop-down list for selection of the variables

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Parameter area: Is always present and shows the report parameter values
- ▶ Data (optional):
 - Pie chart with the absolute or relative overall consumption in a segment for each variable; 1 x per time range
 - Bar chart with the absolute or relative overall consumption in a segment for each variable; 1 x per time range
- ▶ Data as a table (optional) with the columns:
 - Variable name
 - Total costs, absolute
 - Total costs, relative

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListProjects
- ▶ ListLots
- ▶ ListShifts
- ▶ ListEquipmentTree
- ▶ ListVariablesArchiveEx
- ▶ ArchiveEx_GetRelevantMetaData
- ▶ ArchiveEx_GetConnectorInputData
- ▶ ArchiveEx_GetAggregatedCostData

Cost Distribution per Equipment Model

Reports that are based on this template:

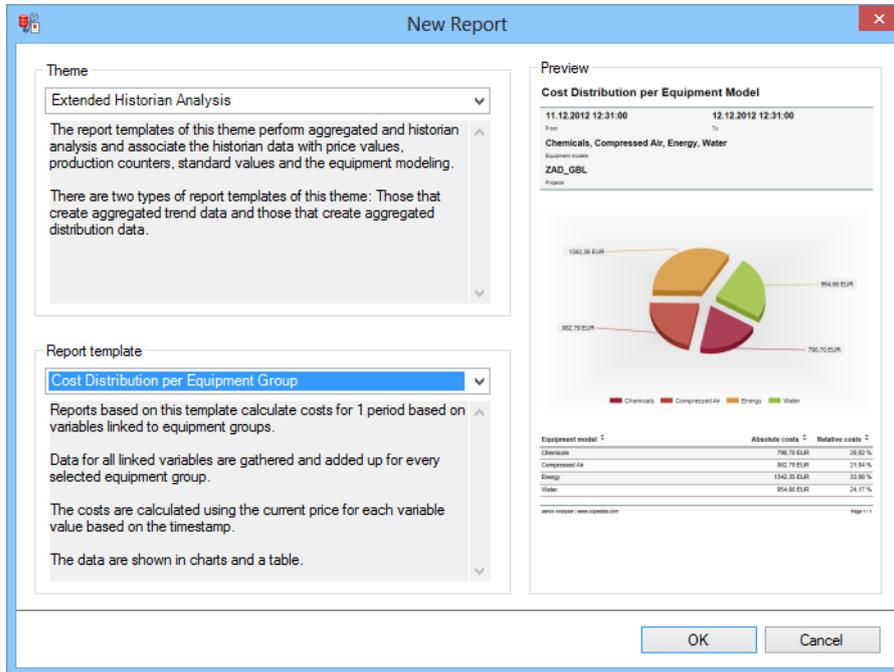
- ▶ Get consumption data for all variables of the selected equipment models over a time range,
- ▶ link the consumption values with the respective applicable prices from the `Price` table , in order to get the costs,
- ▶ add up the costs per equipment model and
- ▶ display the cost sums graphically and in a table for comparison.

CREATE REPORT

To create a `Cost Distribution per Equipment Model` report:

1. In the `Theme` drop-down list, select `Extended Historian Analysis`

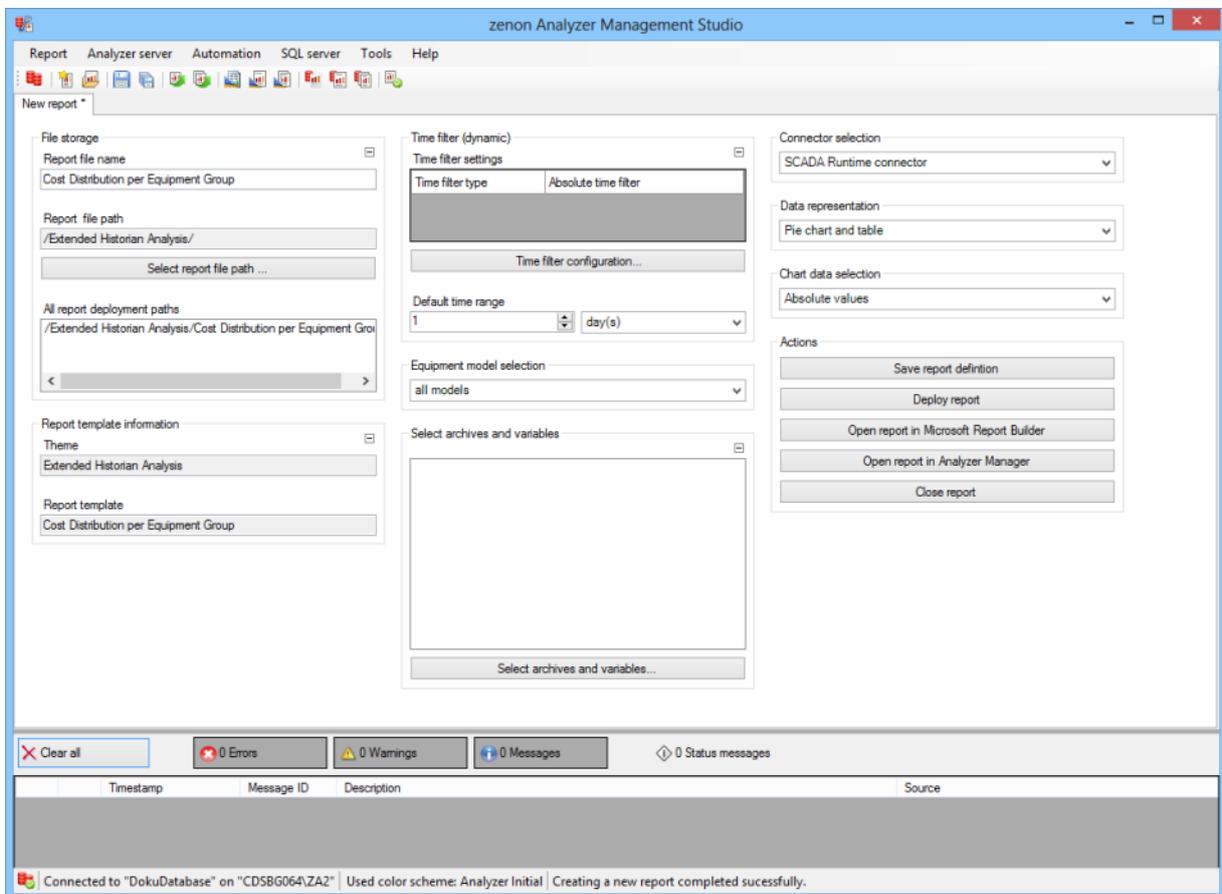
- from the drop-down list, select **Cost Distribution per Equipment Model** as a report template



- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

ARCHIVE VARIABLES CONFIGURATION

| Parameters | Description |
|---------------------------------|---|
| Archive variables configuration | <p>Display of the archive variables in a tree structure. This structure is constructed as follows:</p> <ul style="list-style-type: none"> ▶ Project name ▶ Archive name ▶ Variable name with aggregation type <p>Selection by clicking on the desired object.</p> <p>If the report is linked to a project via the parameters of the time filter, a check is made to ensure that only archives and variables from the project to which the report is linked are used.</p> |
| Select archives and variables | <p>Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable configuration (on page 675)</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Pie Chart and table ▶ Column chart and table ▶ Pie chart ▶ Column chart |

| | |
|--|---------|
| | ▶ Table |
|--|---------|

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots

- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection drop-down list for selection of the active projects
- ▶ 1 x multiple-selection tree display list for selection of the active equipment models

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Parameter area: Is always present and shows the report parameter values
- ▶ Data (optional):
 - Pie chart with the absolute or relative overall consumption in a segment for each variable
 - Bar chart with the absolute or relative overall consumption in a segment for each variable
- ▶ Data as a table (optional) with the columns:
 - Equipment name
 - Total costs, absolute
 - Total costs, relative

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListProjects
- ▶ ListLots
- ▶ ListShifts
- ▶ ListEquipmentTree
- ▶ ListVariablesArchiveEx

- ▶ ArchiveEx_GetRelevantMetaData
- ▶ ArchiveEx_GetConnectorInputData
- ▶ ArchiveEx_GetAggregatedEquipmentCostData

Cost Distribution per Equipment Model Comparison

Reports that are based on this template:

- ▶ Get consumption data for all variables of the selected equipment models over a two time ranges,
- ▶ link the consumption values with the respective applicable prices from the `price` table , in order to get the costs,
- ▶ add up the costs per equipment model and
- ▶ display the cost sums graphically and in a table for comparison.

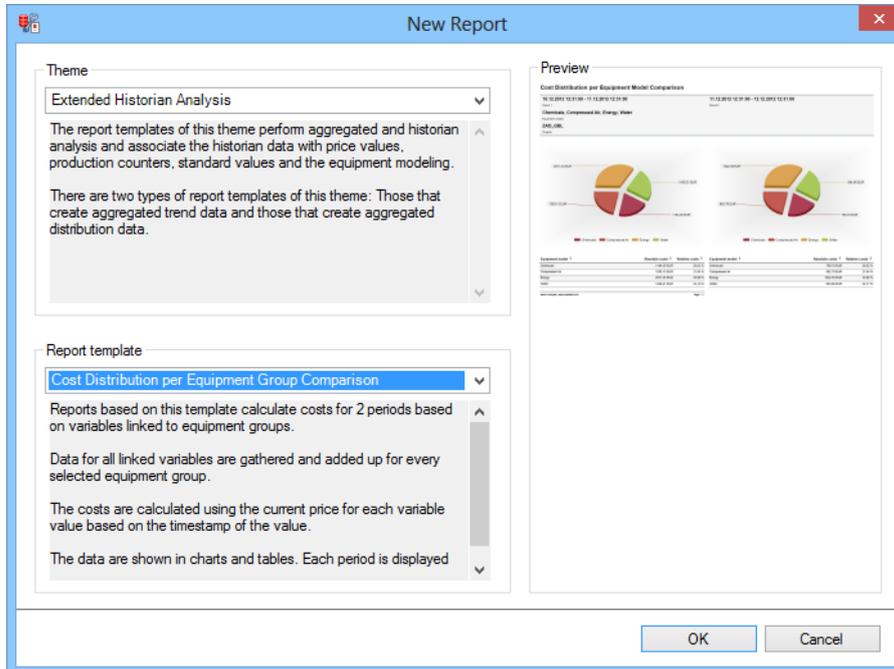
Both time ranges are displayed separately.

CREATE REPORT

To create a `Cost Distribution per Equipment Model Comparison` report:

1. In the `Theme` drop-down list, select `Extended Historian Analysis`

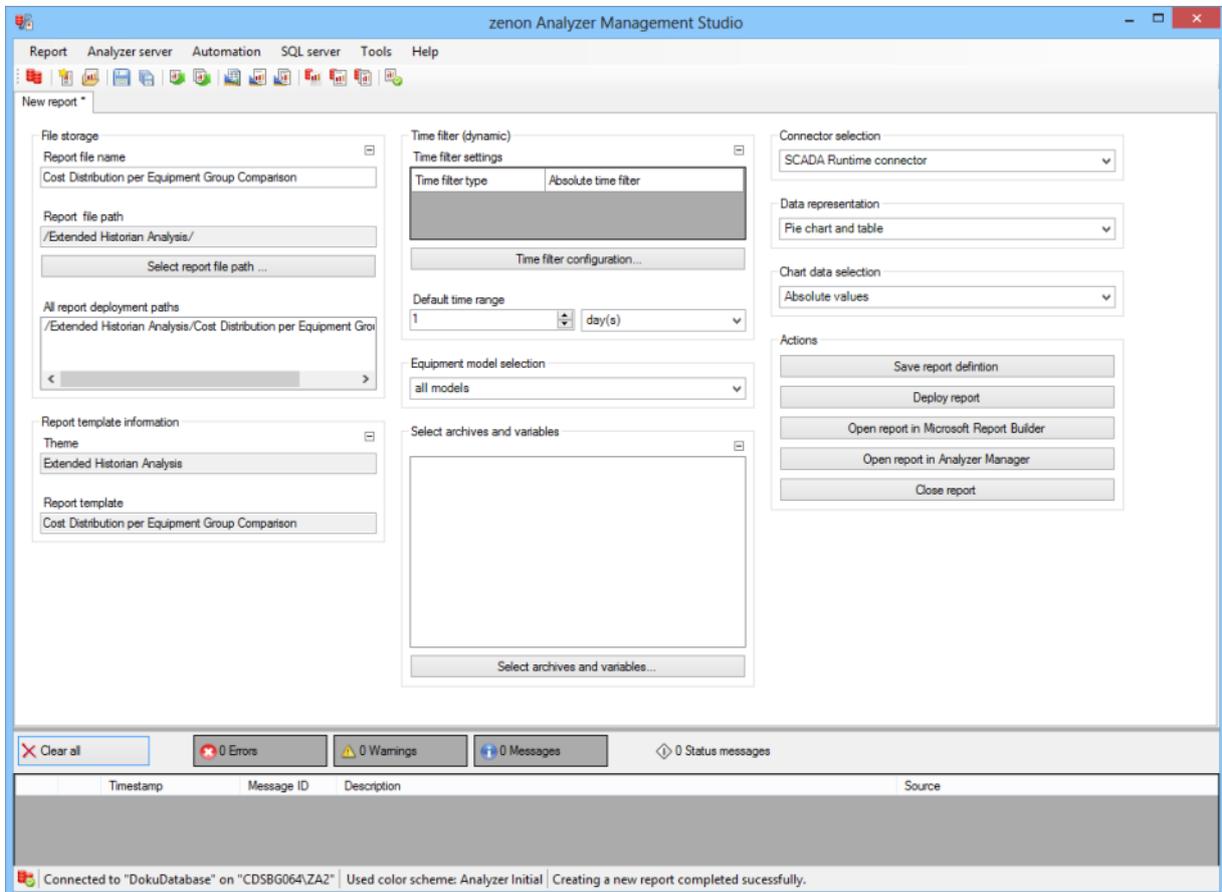
- From the drop-down list, select **Cost Distribution per Equipment Model Comparison** as a report template



- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

ARCHIVE VARIABLES CONFIGURATION

| Parameters | Description |
|---------------------------------|---|
| Archive variables configuration | <p>Display of the archive variables in a tree structure. This structure is constructed as follows:</p> <ul style="list-style-type: none"> ▶ Project name ▶ Archive name ▶ Variable name with aggregation type <p>Selection by clicking on the desired object.</p> <p>If the report is linked to a project via the parameters of the time filter, a check is made to ensure that only archives and variables from the project to which the report is linked are used.</p> |
| Select archives and variables | <p>Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable configuration (on page 675)</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Pie Chart and table ▶ Column chart and table ▶ Pie chart ▶ Column chart |

| | |
|--|---|
| | <ul style="list-style-type: none"> ▶ Table |
|--|---|

CHART DATA SELECTION

| Parameters | Description |
|----------------------|---|
| Chart data selection | Selection of the value type to be displayed from drop-down list: <ul style="list-style-type: none"> ▶ Absolute values ▶ Relative values |

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | Possible actions for the report: <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. Select by clicking on the respective button. |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 4 x date and time selection ("from" and "to" for one time range)
- ▶ 2 x time range selection
- ▶ 2 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 2 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 2 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 2 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x multiple-selection drop-down list for selection of the active projects
- ▶ 1 x multiple-selection tree display list for selection of the active equipment models

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Parameter area: Is always present and shows the report parameter values
- ▶ Data (optional):
 - Pie chart with the absolute or relative overall consumption in a segment for each variable, 1 x per time range
 - Bar chart with the absolute or relative overall consumption in a segment for each variable, 1 x per time range
- ▶ Data as a table (optional) with the columns:
 - Equipment name
 - Total costs, absolute
 - Total costs, relative

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListProjects
- ▶ ListLots
- ▶ ListShifts
- ▶ ListEquipmentTree
- ▶ ListVariablesArchiveEx
- ▶ ArchiveEx_GetRelevantMetaData
- ▶ ArchiveEx_GetConnectorInputData
- ▶ ArchiveEx_GetAggregatedEquipmentCostData

13.2.5 ISO 50001

Reports with this theme provide report templates from the **ISO50001, Extended Historian Analysis** (on page 1001) and **Custom Formula Analysis** (on page 860) themes:

ISO 50001

- ▶ Load Duration Curve with variable selection (on page 1118): Creates a load duration curve that is based on variable selection.
- ▶ Load Duration Curve Comparison with variable selection (on page 1126): Creates a comparison between two load duration curves that is based on variable selection.
- ▶ Load Duration Curve for Equipment Groups (on page 1134): Creates a load duration curve that is based on variable selection per equipment group.
- ▶ Load Duration Curve Comparison for Equipment Groups (on page 1142): Creates a comparison between two load duration curves that is based on variable selection for each equipment group.
- ▶ Carpet Plot (on page 1150): Gets and aggregates data for a carpet plot.
- ▶ Sankey Diagram (on page 1158): Reads the Sankey definitions, gets data and aggregates it, integrates dynamic loss detection if required and displays the result as a diagram or table.

- ▶ Sankey Diagram (double width) (on page 1165): Displays the Sankey diagram in double width or places tables next to one another.

Extended Historian Analysis

- ▶ Trend per Variable (on page 1003): Creates an aggregated trend analysis for a time period with a trend for each variable.
- ▶ Trend per Variable Comparison (on page 1011): Creates an aggregated trend analysis for two time periods with a trend for each variable.
- ▶ Trend per Equipment Model (on page 1019): Creates an aggregated trend analysis for a time period with a trend for each equipment model.
- ▶ Trend per Equipment Model Comparison (on page 1027): Creates an aggregated trend analysis for two time periods with a trend for each equipment model.
- ▶ Relative Trend per Variable (on page 1035): Creates a relative aggregated trend analysis for a time period with a trend for each variable.
- ▶ Relative Trend per Variable Comparison (on page 1043): Creates a relative aggregated trend analysis for two time periods with a trend for each variable.
- ▶ Relative Trend to Standard (on page 1051): Creates a relative aggregated trend analysis for a time period for a variable with a comparison with standard values.
- ▶ Relative Trend to Standard Comparison (on page 1059): Creates a relative aggregated trend analysis for two time periods for a variable with a comparison with standard values.
- ▶ Distribution per Variable (on page 1067): Calculates the aggregated cost distributions for a time period that is based on variables.
- ▶ Distribution per Variable Comparison (on page 1075): Calculates the aggregated cost distributions for two time periods that are based on variables.
- ▶ Cost Distribution per Variable: (on page 1083)Calculates the aggregated cost distributions for a time period that is based on variables.
- ▶ Cost Distribution per Variable Comparison (on page 1091): Calculates the aggregated cost distributions for two time periods that are based on variables.
- ▶ Cost Distribution per Equipment Model: (on page 1099)Calculates the aggregated cost distributions for a time period that is based on equipment models.

- ▶ Cost Distribution per Equipment Model Comparison (on page 1107): Calculates the aggregated cost distributions for two time periods that are based on equipment models.

Custom Formula Analysis

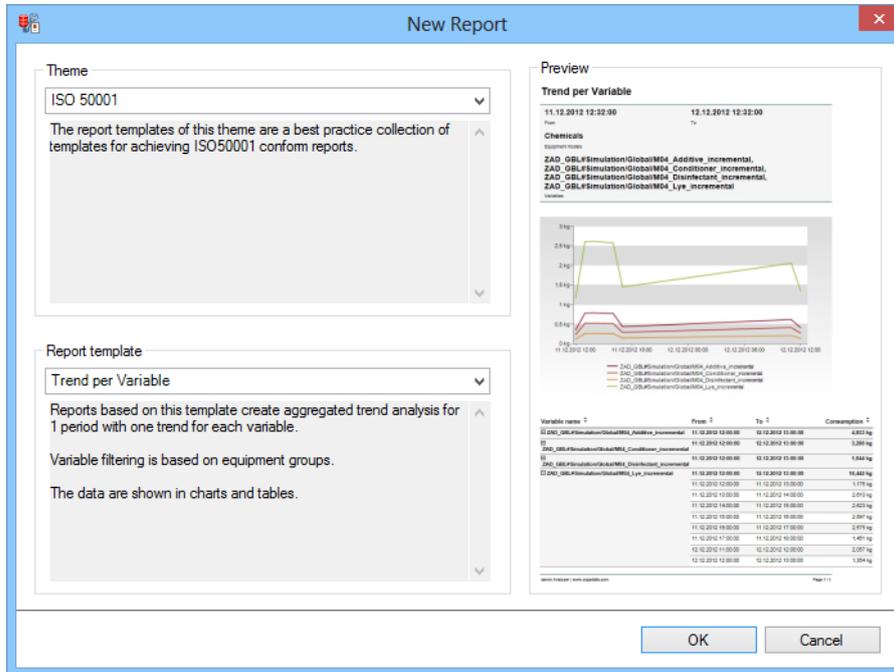
- ▶ Custom Formula Trend: (on page 862) Trend display of user-defined formulas for a time range.
- ▶ Custom Formula Trend Comparison (on page 870): Trend display of user-defined formulas for two time ranges.
- ▶ Custom Formula Aggregated Trend (on page 878): Trend display of aggregated user-defined formulas for a time range.
- ▶ Custom Formula Aggregated Trend Comparison (on page 887): Trend display of aggregated user-defined formulas for two time ranges.
- ▶ Custom Formula Aggregation (on page 895): Trend display of aggregated, user-defined formulas for a time range.
- ▶ Custom Formula Aggregation Comparison (on page 902): Trend display of aggregated, user-defined formulas for two time ranges.
- ▶

REPORT TEMPLATE SELECTION

To create a report based on this template:

1. Select the **New** entry in the **Report** menu or click on the corresponding symbol in the tool bar

- The dialog for selecting a template is opened



- In the **Theme** drop-down list, select **iso 50001**
- Select the template you want to use as a report template from the drop-down list

Load Duration Curve with variable selection

Reports that are based on this template:

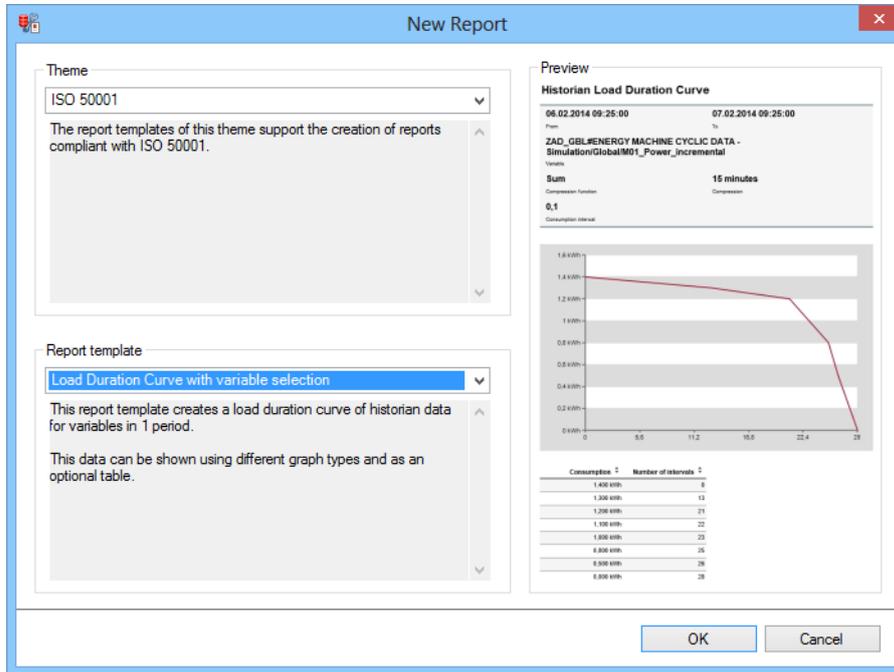
- ▶ Get data for a load duration curve
- ▶ Display these as a line chart, area chart or table

CREATE REPORT

To create an **Load Duration Curve with variable selection** report:

- In the **Theme** drop-down list, select **iso 50001**

- From the drop-down list, select **Load Duration Curve with variable selection** as a report template



Theme

ISO 50001

The report templates of this theme support the creation of reports compliant with ISO 50001.

Report template

Load Duration Curve with variable selection

This report template creates a load duration curve of historian data for variables in 1 period.

This data can be shown using different graph types and as an optional table.

Preview

Historian Load Duration Curve

From: 06.02.2014 09:25:00 To: 07.02.2014 09:25:00

ZAD_GBL#ENERGY MACHINE CYCLIC DATA - Simulation/Global/IM01_Power_incremental

Sum: 15 minutes

Compression function: Compression

0,1

Consumption interval

Graph showing Consumption (kWh) vs. Time (h). The curve starts at approximately 1.4 kWh and decreases to 0 kWh over 28 hours.

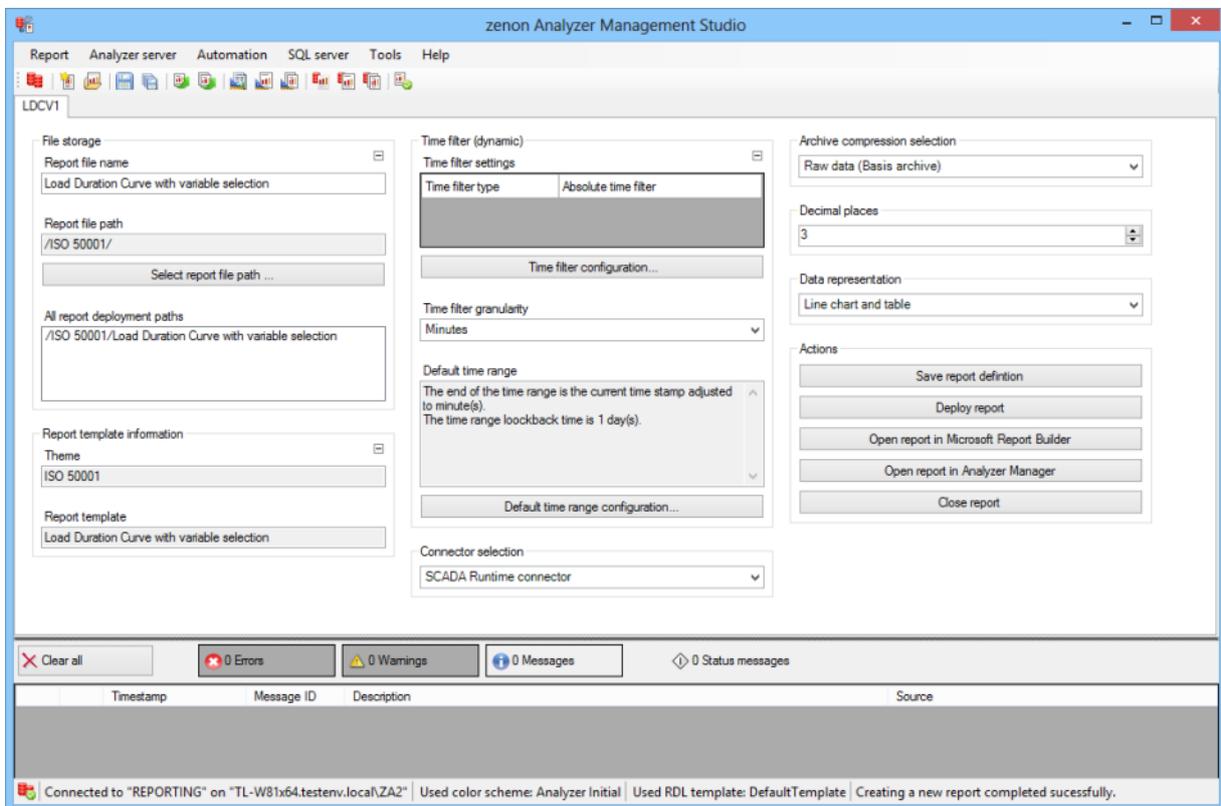
| Consumption | Number of intervals |
|-------------|---------------------|
| 1.400 kWh | 2 |
| 1.200 kWh | 13 |
| 1.000 kWh | 21 |
| 1.000 kWh | 22 |
| 1.000 kWh | 23 |
| 0.800 kWh | 24 |
| 0.500 kWh | 26 |
| 0.500 kWh | 28 |

OK Cancel

- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available</p> |

| | |
|--|--|
| | <p>connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |
|--|--|

ARCHIVE COMPRESSION SELECTION

| Parameters | Description |
|-------------------------------|---|
| Archive compression selection | <p>The following types of archive aggregation are available. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Raw data (Basis archive) ▶ added up data (aggregated archive) ▶ average data (aggregated archive) ▶ minimum data (aggregated archive) ▶ maximum data (aggregated archive) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|--|
| Data representation | <p>Configuration of the data display. Selection from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Line chart and table |

| | |
|--|---|
| | <ul style="list-style-type: none"> ▶ Area chart and table ▶ Line chart ▶ Area chart ▶ Table |
|--|---|

ACTIONS

| Parameters | Description |
|----------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ Configured time filtering for a time range.
- ▶ Project multiple selection (not available if the report has been tied to a project through filter settings)
- ▶ Archive multiple selection
- ▶ Variable multiple selection

▶ Aggregation function single selection.

Value list:

- Sum
- Average
- Minimum
- Maximum

▶ Time aggregation interval single selection.

Value list:

- 1 minute
- 15 minutes
- 30 minutes
- 1 hour
- 2 hours
- 6 hours
- 12 hours
- 1 day
- 1 week
- 1 month
- 1 quarter
- 1 year

▶ Interval size for the consumption intervals single selection.

Value list:

- 0,00001
- 0,0001
- 0,001
- 0,01
- 0,1
- 1
- 10
- 100
- 1000
- 10000

- 100000

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Line chart:
 - Horizontal axis: Number of time intervals
 - Vertical axis: Consumption
- ▶ Area chart with the same axis settings as the line chart
- ▶ Table with the columns:
 - Consumption (with unit of measurement)
 - Number of intervals in which at least the consumption stated in this line was present

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListProjects
- ▶ ListArchivesForProjects
- ▶ ListVariablesForArchives
- ▶ Archive_GetLoadDurationCurveData
- ▶ ListLots
- ▶ ListShifts

Load Duration Curve Comparison with variable selection

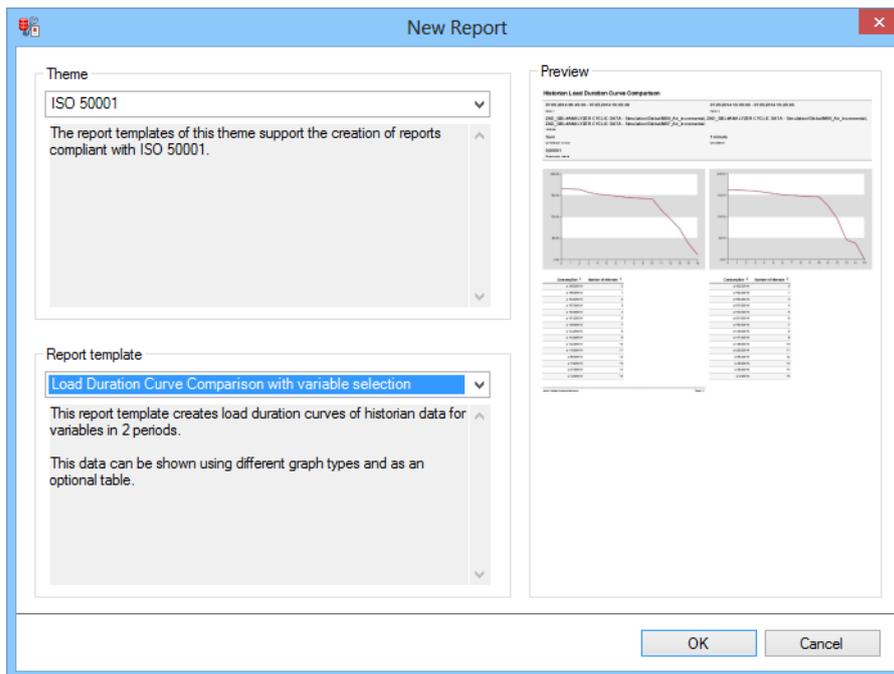
Reports that are based on this template:

- ▶ Get data for two load duration curves
- ▶ Display these as a line chart, area chart or table

CREATE REPORT

To create a **Load Duration Curve Comparison with variable selection** report:

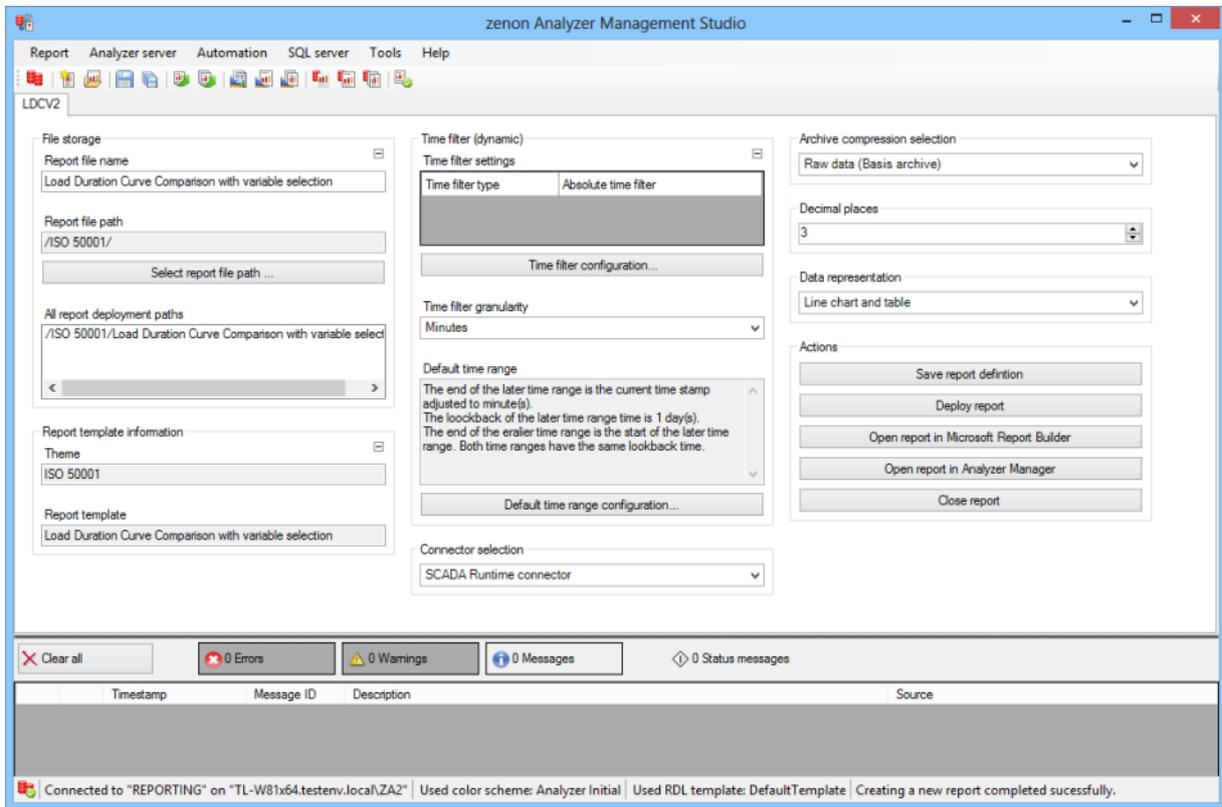
1. In the **Theme** drop-down list, select **ISO 50001**
2. from the drop-down list, select **Load Duration Curve Comparison with variable selection** as a report template



3. Click on the **OK** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available</p> |

| | |
|--|--|
| | <p>connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |
|--|--|

ARCHIVE COMPRESSION SELECTION

| Parameters | Description |
|-------------------------------|---|
| Archive compression selection | <p>The following types of archive aggregation are available. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Raw data (Basis archive) ▶ added up data (aggregated archive) ▶ average data (aggregated archive) ▶ minimum data (aggregated archive) ▶ maximum data (aggregated archive) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|--|
| Data representation | <p>Configuration of the data display. Selection from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Line chart and table |

| | |
|--|---|
| | <ul style="list-style-type: none"> ▶ Area chart and table ▶ Line chart ▶ Area chart ▶ Table |
|--|---|

ACTIONS

| Parameters | Description |
|----------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ Configured time filtering for the selection of two time periods
- ▶ Project multiple selection (not available if the report has been tied to a project through filter settings)
- ▶ Archive multiple selection
- ▶ Variable multiple selection

▶ Aggregation function single selection.

Value list:

- Sum
- Average
- Minimum
- Maximum

▶ Time aggregation interval single selection.

Value list:

- 1 minute
- 15 minutes
- 30 minutes
- 1 hour
- 2 hours
- 6 hours
- 12 hours
- 1 day
- 1 week
- 1 month
- 1 quarter
- 1 year

▶ Interval size for the consumption intervals single selection.

Value list:

- 0.00001
- 0.0001
- 0.001
- 0.01
- 0.1
- 1
- 10
- 100
- 1000
- 10000

- 100000

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Line chart:
 - Horizontal axis: Number of time intervals
 - Vertical axis: Consumption
- ▶ Area chart with the same axis settings as the line chart
- ▶ Table with the columns:
 - Consumption (with unit of measurement)
 - Number of intervals in which at least the consumption stated in this line was present

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListProjects
- ▶ ListArchivesForProjects
- ▶ ListVariablesForArchives
- ▶ Archive_GetLoadDurationCurveData
- ▶ ListLots
- ▶ ListShifts

Load Duration Curves for Equipment Groups

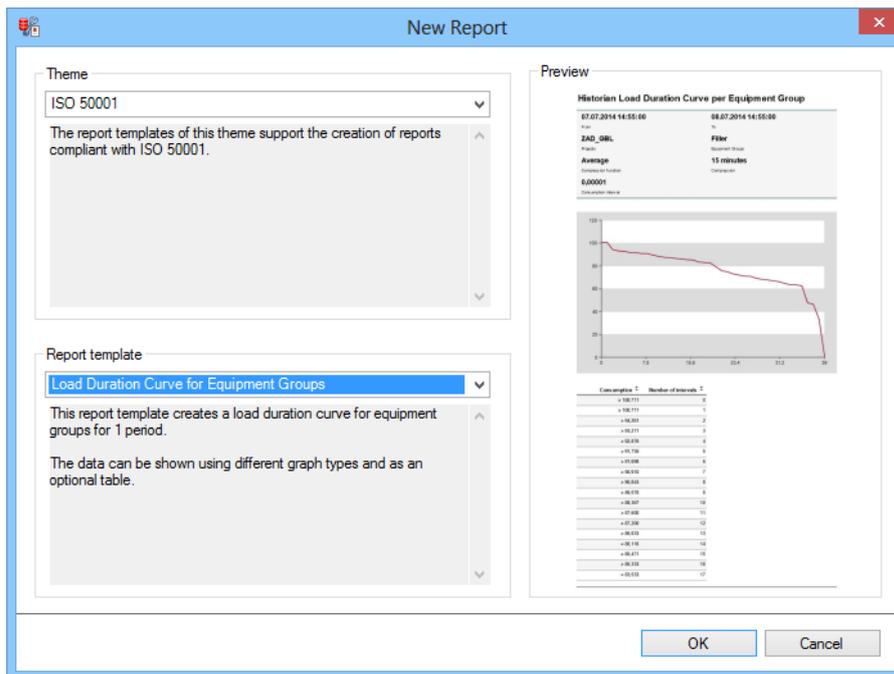
Reports that are based on this template:

- ▶ Get data by equipment group for the load duration curve
- ▶ Display these as a line chart, area chart or table

CREATE REPORT

To create a **Load Duration Curve for Equipment Groups** report:

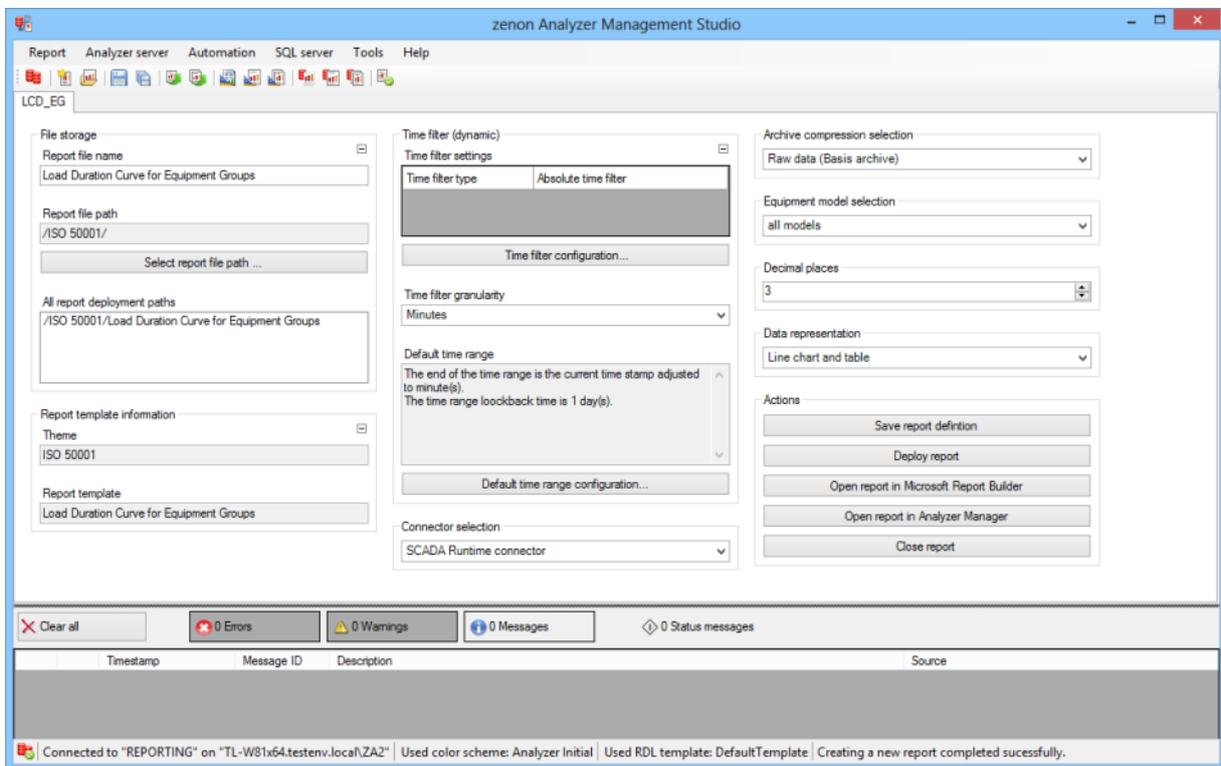
1. In the **Theme** drop-down list, select **ISO 50001**
2. from the drop-down list, select **Load Duration Curve for Equipment Groups** as a report template



3. Click on the **OK** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available</p> |

| | |
|--|--|
| | <p>connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |
|--|--|

ARCHIVE COMPRESSION SELECTION

| Parameters | Description |
|-------------------------------|---|
| Archive compression selection | <p>The following types of archive aggregation are available. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Raw data (Basis archive) ▶ added up data (aggregated archive) ▶ average data (aggregated archive) ▶ minimum data (aggregated archive) ▶ maximum data (aggregated archive) |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Selection from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Line chart and table ▶ Area chart and table ▶ Line chart ▶ Area chart ▶ Table |

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ Configured time filtering for a time range.

- ▶ Project multiple selection (not available if the report has been tied to a project through filter settings)
- ▶ Equipment groups multiple selection
- ▶ Aggregation function single selection.
Value list:
 - Sum
 - Average
 - Minimum
 - Maximum
- ▶ Time aggregation interval single selection.
Value list:
 - 1 minute
 - 15 minutes
 - 30 minutes
 - 1 hour
 - 2 hours
 - 6 hours
 - 12 hours
 - 1 day
 - 1 week
 - 1 month
 - 1 quarter
 - 1 year
- ▶ Interval size for the consumption intervals single selection.
Value list:
 - 0,00001
 - 0,0001
 - 0,001
 - 0,01
 - 0,1
 - 1
 - 10

- 100
- 1000
- 10000
- 100000

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Line chart:
 - Horizontal axis: Number of time intervals
 - Vertical axis: Consumption
- ▶ Area chart with the same axis settings as the line chart
- ▶ Table with the columns:
 - Consumption (with unit of measurement)
 - Number of intervals in which at least the consumption stated in this line was present

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPS and UDFs:

- ▶ ListProjects
- ▶ ListEquipmentTree
- ▶ Archive_GetLoadDurationCurveData
- ▶ ListLots
- ▶ ListShifts

Load Duration Curve Comparison for Equipment Groups

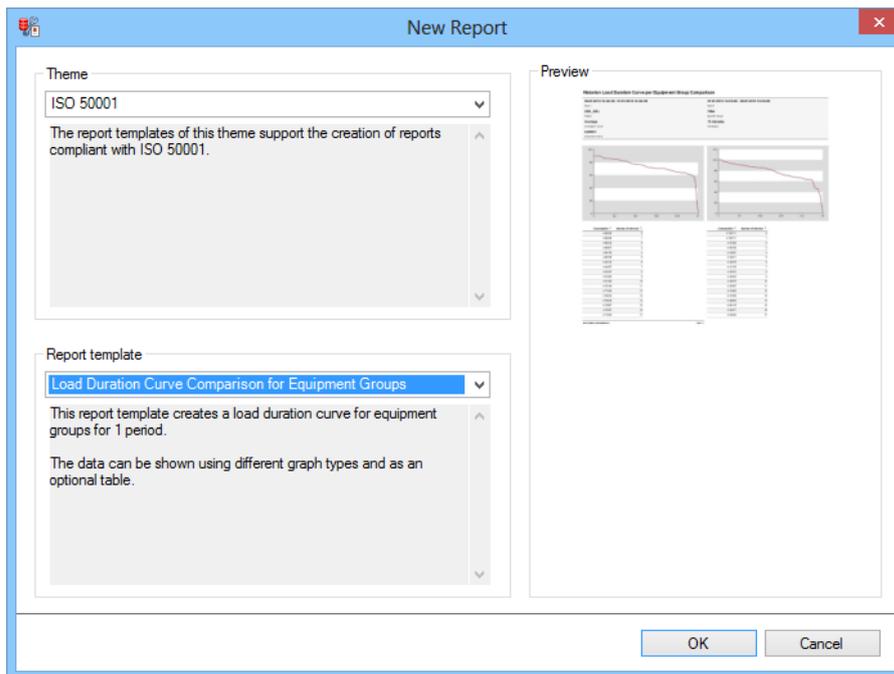
Reports that are based on this template:

- ▶ Get data by equipment group for two load duration curves
- ▶ Display these as a line chart, area chart or table

CREATE REPORT

To create a **Load Duration Curve Comparison for Equipment Groups** report:

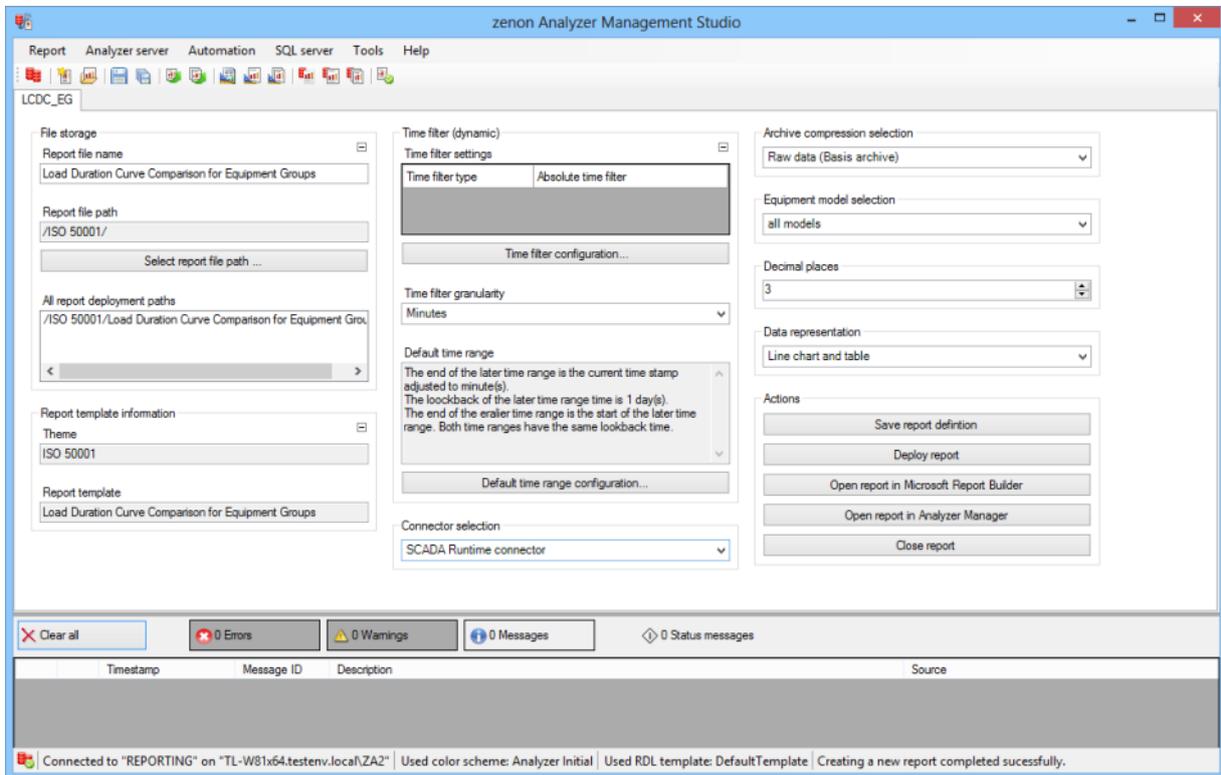
1. In the **Theme** drop-down list, select **ISO 50001**
2. from the drop-down list, select **Load Duration Curve Comparison for Equipment Groups** as a report template



3. Click on the **OK** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available</p> |

| | |
|--|--|
| | <p>connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |
|--|--|

ARCHIVE COMPRESSION SELECTION

| Parameters | Description |
|-------------------------------|---|
| Archive compression selection | <p>The following types of archive aggregation are available. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Raw data (Basis archive) ▶ added up data (aggregated archive) ▶ average data (aggregated archive) ▶ minimum data (aggregated archive) ▶ maximum data (aggregated archive) |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Selection from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Line chart and table ▶ Area chart and table ▶ Line chart ▶ Area chart ▶ Table |

ACTIONS

| Parameters | Description |
|------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ Configured time filtering for the selection of two time periods

- ▶ Project multiple selection (not available if the report has been tied to a project through filter settings)
- ▶ Equipment groups multiple selection
- ▶ Aggregation function single selection.
Value list:
 - Sum
 - Average
 - Minimum
 - Maximum
- ▶ Time aggregation interval single selection.
Value list:
 - 1 minute
 - 15 minutes
 - 30 minutes
 - 1 hour
 - 2 hours
 - 6 hours
 - 12 hours
 - 1 day
 - 1 week
 - 1 month
 - 1 quarter
 - 1 year
- ▶ Interval size for the consumption intervals single selection.
Value list:
 - 0,00001
 - 0,0001
 - 0,001
 - 0,01
 - 0,1
 - 1
 - 10

- 100
- 1000
- 10000
- 100000

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Line chart:
 - Horizontal axis: Number of time intervals
 - Vertical axis: Consumption
- ▶ Area chart with the same axis settings as the line chart
- ▶ Table with the columns:
 - Consumption (with unit of measurement)
 - Number of intervals in which at least the consumption stated in this line was present

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPS and UDFs:

- ▶ ListProjects
- ▶ ListEquipmentTree
- ▶ Archive_GetLoadDurationCurveData
- ▶ ListLots
- ▶ ListShifts

Carpet Plot

Reports that are based on this template:

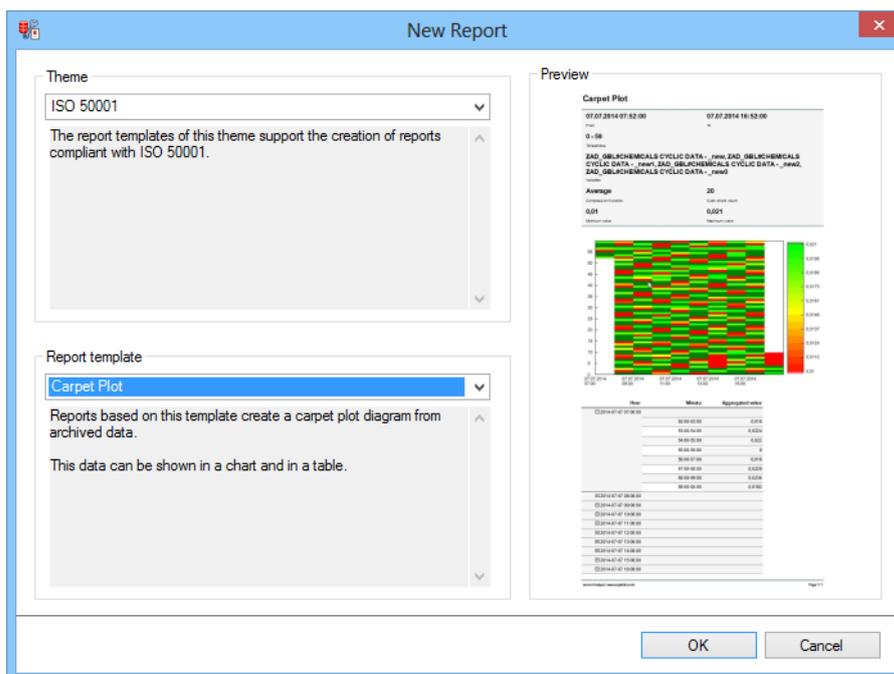
- ▶ Get and aggregate data for a carpet plot.
- ▶ Assign colors to this

- Display this as a carpet plot or table

CREATE REPORT

To create a **Carpet Plot** report:

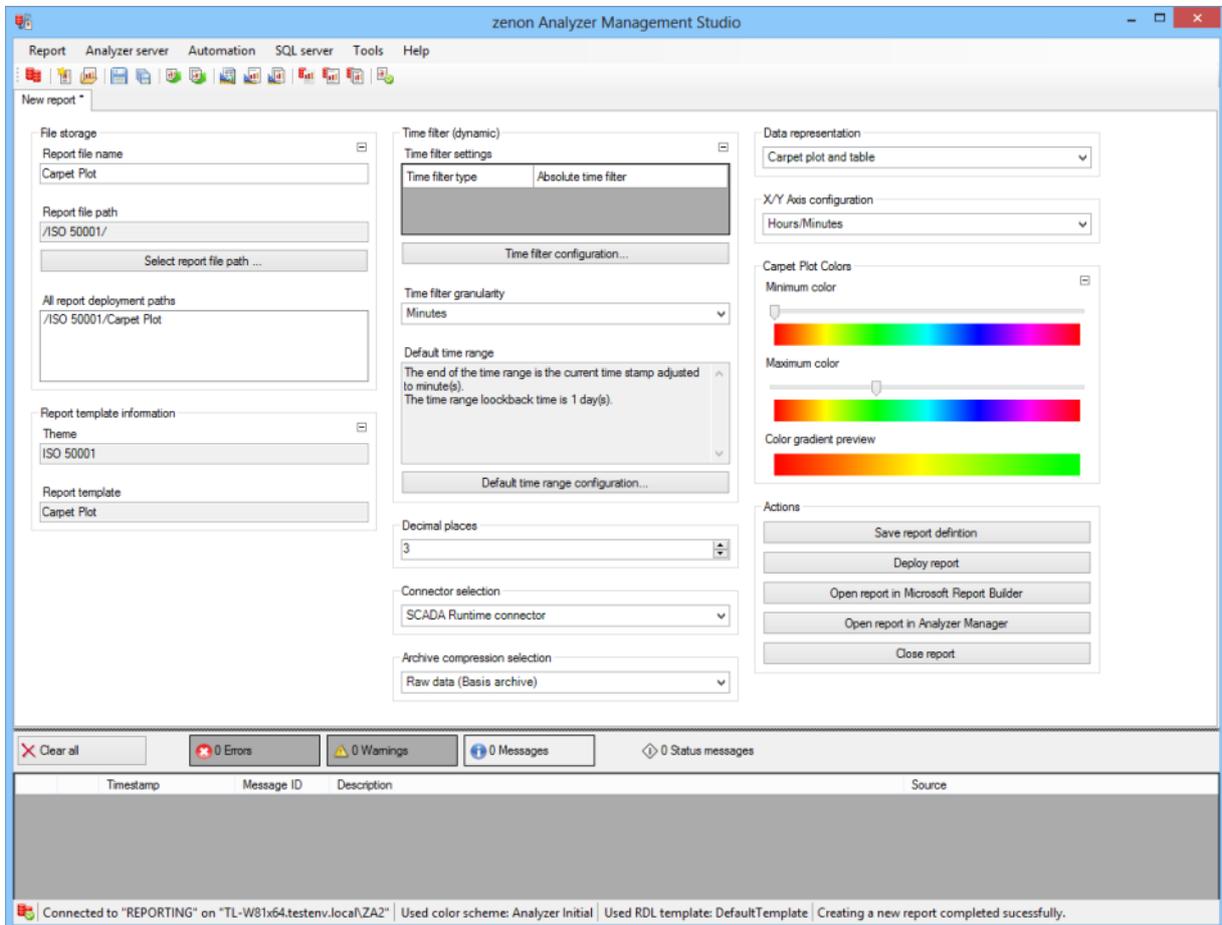
1. In the **Theme** drop-down list, select **ISO 50001**
2. from the drop-down list, select **Carpet Plot** as a report template



3. Click on the **OK** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

DECIMAL PLACES

| Parameters | Description |
|----------------|--|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 |

| | |
|--|---|
| | <ul style="list-style-type: none"> ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |
|--|---|

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

ARCHIVE COMPRESSION SELECTION

| Parameters | Description |
|-------------------------------|---|
| Archive compression selection | <p>The following types of archive aggregation are available. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Raw data (Basis archive) ▶ added up data (aggregated archive) ▶ average data (aggregated archive) ▶ minimum data (aggregated archive) ▶ maximum data (aggregated archive) |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|--|
| Data representation | <p>Configuration of the data display. Selection from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Carpet plot and table ▶ Carpet Plot |

| | |
|--|---------|
| | ▶ Table |
|--|---------|

CONFIGURATION OF XY-AXES CONFIGURATION OF XY-AXES

| Parameters | Description |
|------------------------|---|
| X/Y Axis configuration | <p>Selection of the values for the X and Y axis from the drop-down list:</p> <ul style="list-style-type: none"> ▶ Hours/Minutes ▶ Days/Hours ▶ Months/Days |

CARPET PLOT COLORS

| Parameters | Description |
|------------------------|---|
| Carpet Plot Colors | Color selection for start and end color of the color gradient in the carpet plot. |
| Minimum color | Color of the minimum value. Configuration using the slider. |
| Color maximum value | Color of the maximum value. Configuration using the slider. |
| Color gradient preview | Preview of the configured color. |

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the |

| | |
|--|--|
| | <p>report in the web browser with the Analyzer Manager</p> <ul style="list-style-type: none">▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |
|--|--|

APPEARANCE IN THE ANALYZER MANAGER

The following are available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ Configured time filtering for a from-to time and a time window
- ▶ Project multiple selection (not available if the report has been tied to a project through filter settings)
- ▶ Archive multiple selection
- ▶ Variable multiple selection
- ▶ Compression function single selection.
Value list:
 - Sum
 - Average
 - Minimum
 - Maximum
- ▶ Value Minimum
- ▶ Value maximum
- ▶ Number of colors

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Carpet Plot:
 - Longer time periods are plotted against shorter ones
- ▶ Table with the columns:
 - Grouped according to longer time intervals

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListProjects
- ▶ ListArchivesForProjects
- ▶ ListVariablesForArchives
- ▶ ISO50001_GetCarpetPlotData
- ▶ ListLots
- ▶ ListShifts
- ▶ ListTimeWindowFrom
- ▶ ListTimeWindowTo

Sankey Diagram

Reports that are based on this template:

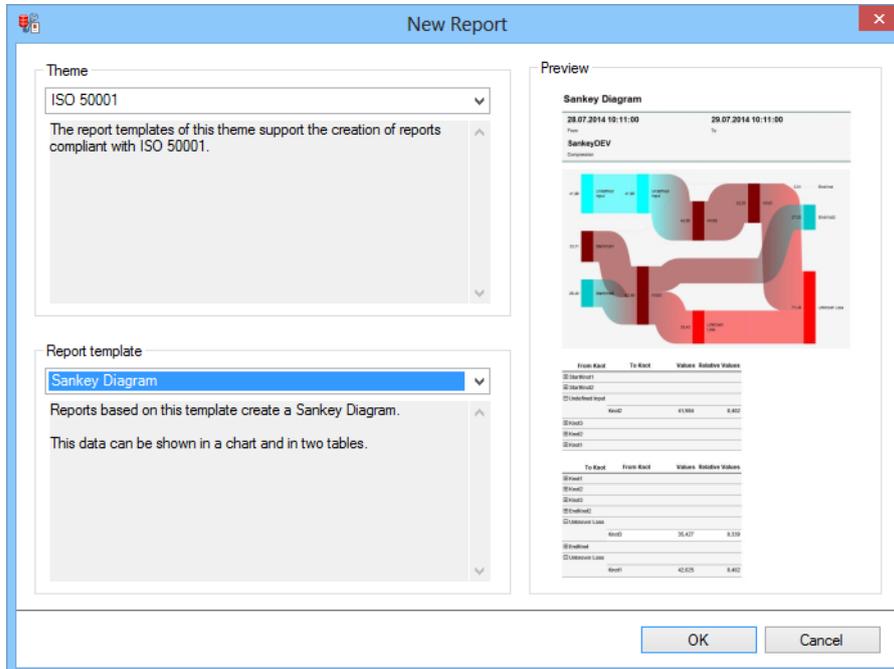
- ▶ Reads off the Sankey definitions
- ▶ Get data and aggregate this over the defined time period
- ▶ Integrate dynamic loss detection if required
- ▶ Display the result as a diagram or table

CREATE REPORT

To create a **Sankey Diagram** report:

1. In the **Theme** drop-down list, select **ISO 50001**

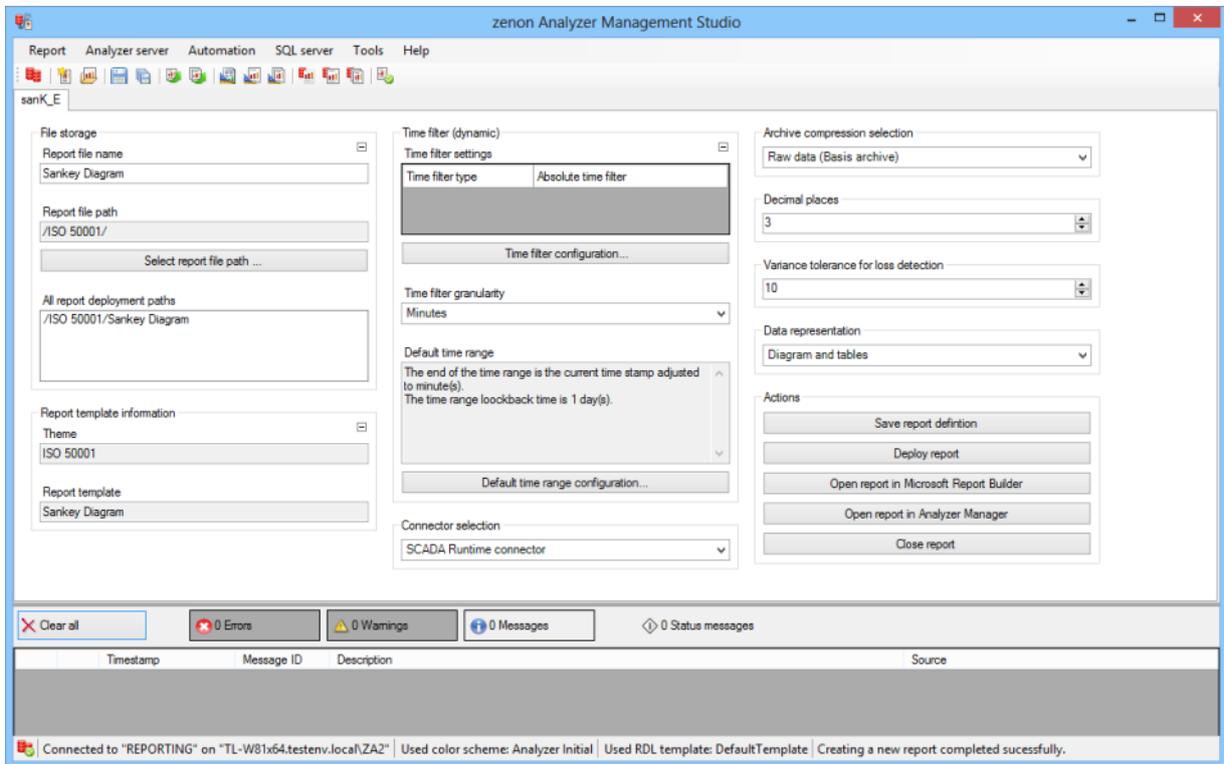
- from the drop-down list, select **Sankey Diagram** as a report template



- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available</p> |

| | |
|--|--|
| | <p>connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |
|--|--|

ARCHIVE COMPRESSION SELECTION

| Parameters | Description |
|-------------------------------|---|
| Archive compression selection | <p>The following types of archive aggregation are available. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Raw data (Basis archive) ▶ added up data (aggregated archive) ▶ average data (aggregated archive) ▶ minimum data (aggregated archive) ▶ maximum data (aggregated archive) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

VARIANCE TOLERANCE FOR LOSS DETECTION

| Parameters | Description |
|---------------------------------------|--|
| Variance tolerance for loss detection | <p>Denotes how many tenths of a percent the sum of the entries must deviate from the absolute difference of the sum of all entries and the sum of all outputs of a node in order to be recognized as a loss.</p> |

| | |
|--|---|
| | <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 1000 - loss detection deactivated. <p>Entry in the field or configuration using the cursor keys.</p> |
|--|---|

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Selection from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Diagram and table ▶ Diagram ▶ Table |

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

The following are available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ Configured time filtering
- ▶ Select Sankey diagram from drop-down list

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Diagram
- ▶ Tables:
 - One below the other
 - Decimal points with relative display: always 2 (0.00 %)
 - Decimal points in the relative value columns of the table: always 2 (0.00 %)
 - Vertical text alignment of the column headings in the tables: always `Top`
 - Horizontal text alignment of the column headings for source and target nodes: always `Left`

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ `ISO50001_GetSankeyDiagramData`
- ▶ `ListAvailableSankeyDiagrams`
- ▶ `ListLots`
- ▶ `ListShifts`
- ▶ `ListSankeyRelAbsCalc`

Sankey Diagram (double width)

Reports that are based on this template:

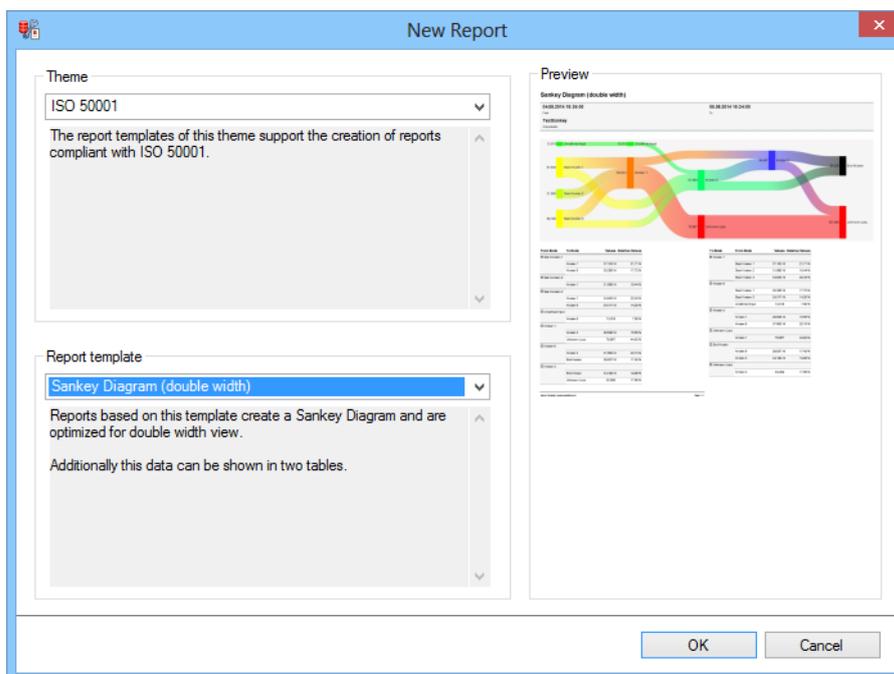
- ▶ Reads off the Sankey definitions
- ▶ Get data and aggregate this over the defined time period
- ▶ Integrate dynamic loss detection if required

- ▶ Display the result in reports of double width
- ▶ with graphics over the complete width or tables next to one another

CREATE REPORT

To create an **Sankey Diagram (double width)** report:

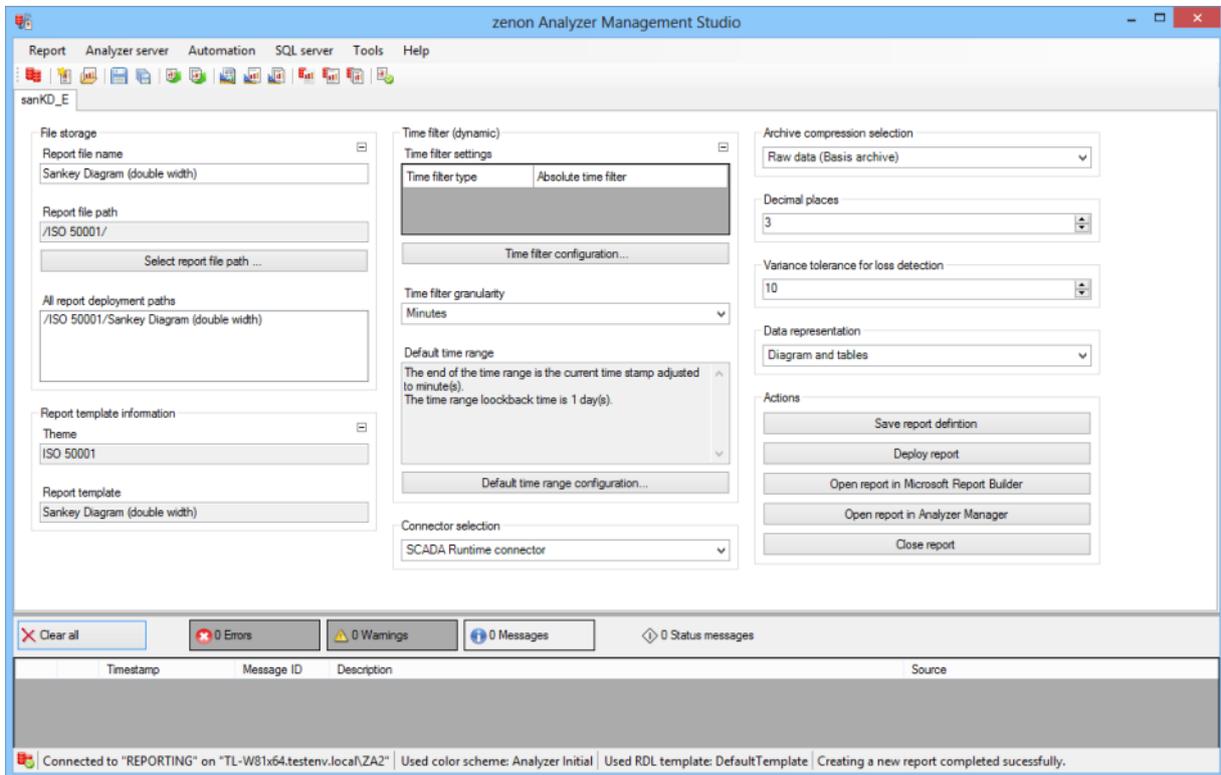
1. In the **Theme** drop-down list, select **ISO 50001**
2. from the drop-down list, select **Sankey Diagram (double width)** as a report template



3. Click on the **OK** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available</p> |

| | |
|--|--|
| | <p>connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |
|--|--|

ARCHIVE COMPRESSION SELECTION

| Parameters | Description |
|-------------------------------|---|
| Archive compression selection | <p>The following types of archive aggregation are available. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Raw data (Basis archive) ▶ added up data (aggregated archive) ▶ average data (aggregated archive) ▶ minimum data (aggregated archive) ▶ maximum data (aggregated archive) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

VARIANCE TOLERANCE FOR LOSS DETECTION

| Parameters | Description |
|---------------------------------------|--|
| Variance tolerance for loss detection | <p>Denotes how many tenths of a percent the sum of the entries must deviate from the absolute difference of the sum of all entries and the sum of all outputs of a node in order to be recognized as a loss.</p> |

| | |
|--|---|
| | <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 1000 - loss detection deactivated. <p>Entry in the field or configuration using the cursor keys.</p> |
|--|---|

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Selection from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Diagram and table ▶ Diagram ▶ Table |

ACTIONS

| Parameters | Description |
|------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

The following are available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ Configured time filtering
- ▶ Select Sankey diagram from drop-down list

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Diagram
 - Double width (33.2 cm)
 - Graphics cover the whole width
- ▶ Tables:
 - Next to one another
 - Decimal points with relative display: always 2 (0.00 %)
 - Decimal points in the relative value columns of the table: always 2 (0.00 %)
 - Vertical text alignment of the column headings in the tables: always `Top`
 - Horizontal text alignment of the column headings for source and target nodes: always `Left`

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ `ISO50001_GetSankeyDiagramData`
- ▶ `ListAvailableSankeyDiagrams`
- ▶ `ListLots`
- ▶ `ListShifts`
- ▶ `ListSankeyRelAbsCalc`

13.2.6 Production Analysis Line Based

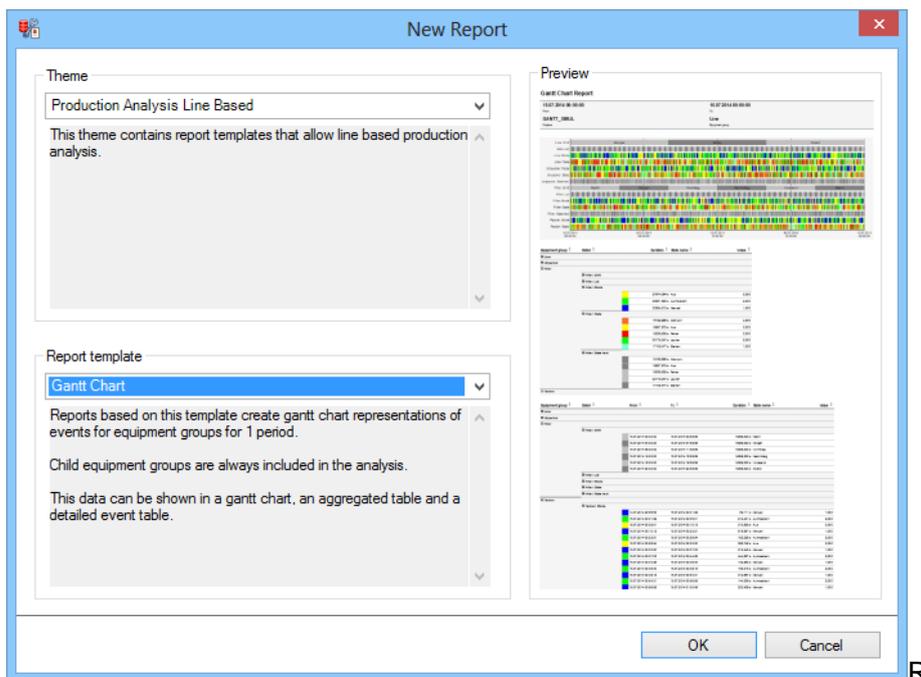
Reports with this theme provide a range of report templates that assist in the evaluation and display of line-based production analyzes:

- ▶ Gantt chart (on page 1173): Analyzes lots, shifts and variables - specified through meanings, from AML, CEL or archive - and displays the results as a Gantt chart and as a table.

REPORT TEMPLATE SELECTION

To create a report based on this template:

1. Select the **New** entry in the **Report** menu or click on the corresponding symbol in the tool bar
2. The dialog for selecting a template is opened



3. In the **Theme** drop-down list, select **Production Analysis Line Based**
4. Select the template you want to use as a report template from the drop-down list

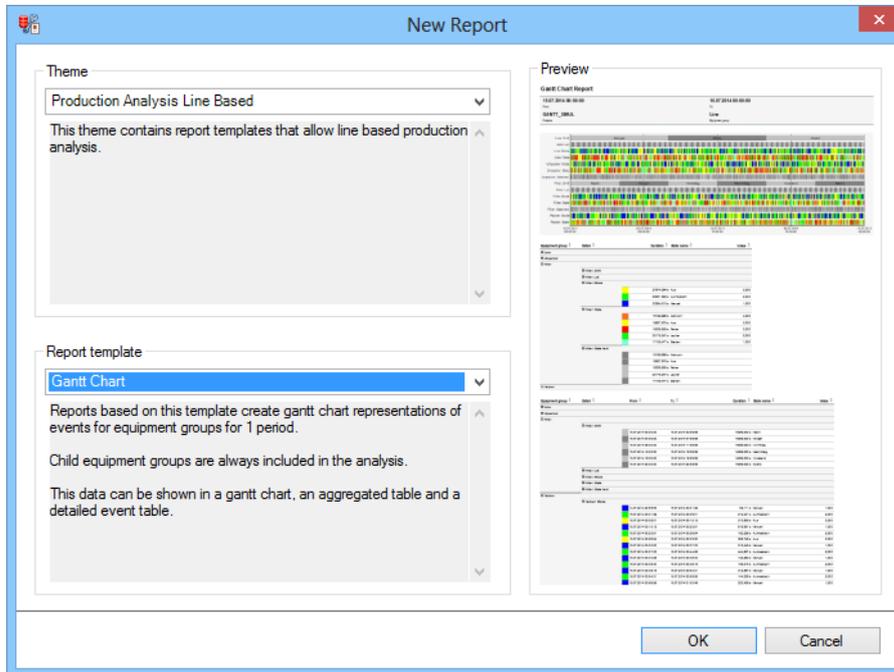
Gantt chart

Reports that are based on this template analyze lots, shifts and variables - specified through meanings, from AML, CEL or archive - and display the results as a Gantt chart and as a table.

CREATE REPORT

To create a **Gantt chart** report:

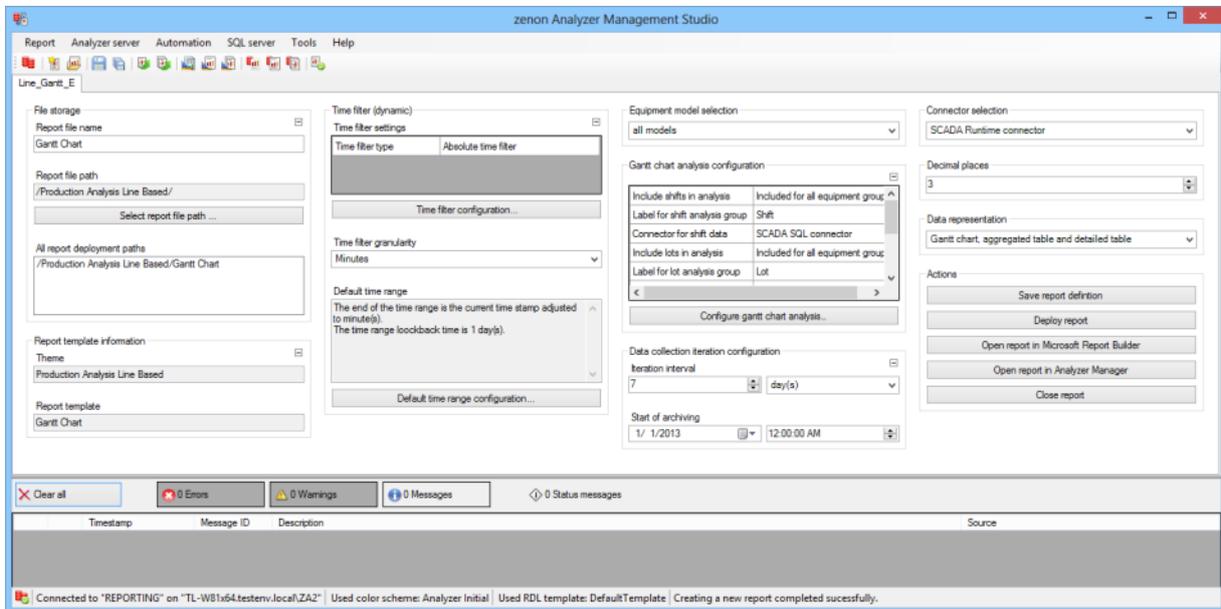
1. Select **Production Analysis Line Based** in the drop-down list in the dialog to create new reports as a **theme**
2. from the drop-down list, select **Gantt chart** as a report template



3. Click on the **OK** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

GANTT CHART ANALYSIS CONFIGURATION

| Parameters | Description |
|--------------------------------|--|
| Display settings | Display of the current settings for the Gantt diagram. |
| Configure gantt chart analysis | <p>The dialog to configure the Gantt analysis is started by clicking on the button.</p> <p>For details, see Gantt-Diagram (on page 718).</p> |

DATA COLLECTION ITERATION CONFIGURATION

| Parameters | Description |
|---|--|
| Data collection iteration configuration | Configuration for iteration interval and cancel time. |
| Iteration interval | <p>Configuration of the iteration interval in:</p> <ul style="list-style-type: none"> ▶ Minuten ▶ Hours ▶ Days <p>Minimum: 1</p> <p>Maximum: 1000</p> <p>Default: 1 day</p> |
| Start of archiving | <p>Start of archiving</p> <ul style="list-style-type: none"> ▶ Date ▶ Time ▶ Default: 01.01.2013 00:00:00 |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) |

| | |
|--|----------------------------------|
| | ▶ SCADA SQL Connector (zenonSQL) |
|--|----------------------------------|

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|--|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Gantt chart, aggregated table and detailed table ▶ Gantt chart and aggregated table ▶ Gantt chart and detailed table ▶ Aggregated table and detailed table ▶ Gantt chart ▶ Aggregation table ▶ Detailed table |

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked |

| | |
|--|---|
| | <p>to confirm that you wish to overwrite this.</p> <ul style="list-style-type: none"> ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |
|--|---|

APPEARANCE IN THE ANALYZER MANAGER

The following are available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ Configured time filtering with:
 - 2 x date and time selection (`from` and `to` for one time range)
 - 1 x time range selection.
 - 1 x lot selection with 2 x date and time selection for prefiltering of the lots.
 - 1 x lot selection with 1 x time range selection for prefiltering of the lots.
 - 1 x shift selection with 2 x date and time selection for prefiltering of the shifts.
 - 1 x shift selection with 1 x time range selection for prefiltering of the shifts.
- ▶ Multiple project selection (not available with lot or shift filter).
- ▶ Single selection from the equipment tree. Only analyzable equipment groups are available.

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Gantt chart
- ▶ Aggregation table:
 - a) First grouping: Equipment group name
 - b) Second grouping: complete name of the analysis group

c) Detail column per analysis group:

Complete duration of all events in the analysis group. Calculation down to millisecond precision. Only within the time filter is relevant for the calculation.

Status text: Shift name, lot name, text value of the variables if text data type, status name from the reaction matrix assigned from the variables for numerical data type.

Numeric value for numeric data type of the variables.

▶ Detail table:

a) First grouping: Equipment group name

b) Second grouping: complete name of the analysis group

c) Detail columns per event of an analysis group:

Incoming time.

Outgoing time.

Duration of the event: Calculation down to millisecond precision. Only within the time filter is relevant for the calculation.

Status text: Shift name, lot name, text value of the variables if text data type, status name from the reaction matrix assigned from the variables for numerical data type.

Numeric value for numeric data type of the variables.

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPS and UDFs:

- ▶ ListProjects
- ▶ ListLots
- ▶ ListShifts
- ▶ GetEquipmentTreeForGroup
- ▶ ListEquipmentTree_Gantt
- ▶ LineAnalysis_GetGanttBaseData
- ▶ LineAnalysis_GetGanttData

RECOMMENDATIONS

EQUIPMENT GROUPS

For all equipment groups of an equipment model, use the same identification in the **EQUIPMENTINFO** table for the sorting field, provided this is used for the sorting.

ARCHIVES

Use the following for the recording of data for analysis groups:

- ▶ AML
- ▶ CEL
- ▶ Archives with record on change

The stored procedure can also work with cyclical archives and event-controlled archives, but this is expressly not recommended.

Background:

- ▶ Minimization of the amount of data for saving, evacuating and querying.
- ▶ Only the recommended recording types provide a correct millisecond time stamp for the incoming time of an event.

13.2.7 Production Analysis Machine Based

Reports with this theme provide report templates for the analysis of loss times and productivity, based on standards such as DIN 8782, DIN 8743, Weihenstephan Standards and the best practices of some manufacturing companies:

- ▶ **Losses Analysis** (on page 1184): Analyze archive data and calculate aggregated loss times for a time period, based on an equipment group and a waterfall model.
- ▶ **Productivity Indicators Analysis** (on page 1192): Analyze archive data and calculate aggregated productivity indicators for a time period, based on an equipment group.
- ▶ **Comprehensive Productivity Analysis** (on page 1200): Combines the **Losses Analysis** (on page 1184) and **Productivity indicators Analysis** (on page 1192) report templates.

- ▶ Losses Lot History (on page 1210): Analyze archive data and calculate aggregated loss times for each lot, based on an equipment group.
- ▶ Productivity Indicators Lot History (on page 1219): Analyze archive data and calculate aggregated production indicators for each lot in a time period, based on an equipment group.
- ▶ Comprehensive Productivity Lot History (on page 1226): Combines the **Losses Lot History** (on page 1210) and **Productivity Indicators Lot History** (on page 1219) templates.

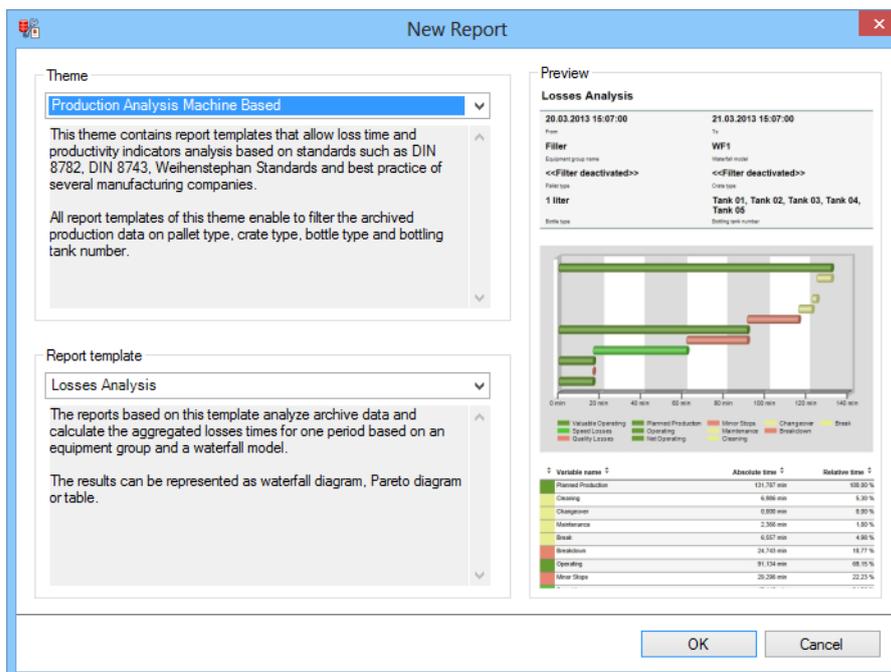
All report templates in this theme allow the filtering of archived production data according to pallet type, crate type, bottle type and number of the filling tank. These four optional data filters can also be used for other filters. In this case, it is recommended that the parameters concerned are changed after the report has been provided in ZAMS.

Recommendation: Each waterfall model should have an unique name.

REPORT TEMPLATE SELECTION

To create a report based on this template:

1. Select the **New** entry in the **Report** menu or click on the corresponding symbol in the tool bar
2. The dialog for selecting a template is opened



3. In the **Theme** drop-down list, select **Production Analysis Machine Based**

4. Select the template you want to use as a report template from the drop-down list

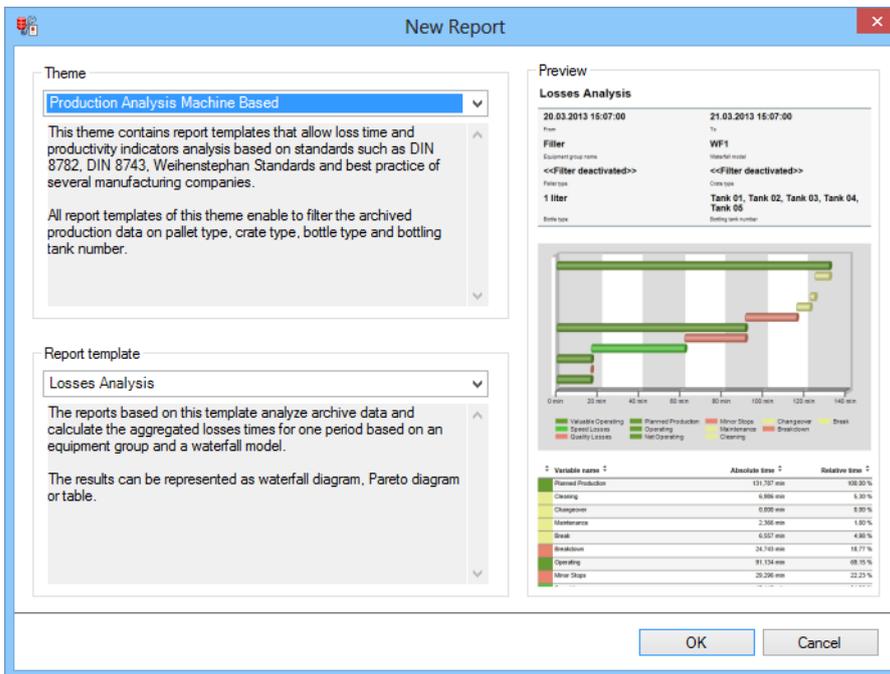
Losses Analysis

Reports that are based on this template analyze archive data and calculate aggregated loss times for a time period, based on an equipment group and a waterfall model. The results can be displayed as a Waterfall diagram, Pareto diagram or as a table.

CREATE REPORT

To create a **Losses Analysis** report:

1. Select **Production Analysis Machine Based** in the drop-down list in the dialog to create new reports as a theme
2. from the drop-down list, select **Losses Analysis** as a report template



Theme

Production Analysis Machine Based

This theme contains report templates that allow loss time and productivity indicators analysis based on standards such as DIN 8782, DIN 8743, Weihenstephan Standards and best practice of several manufacturing companies.

All report templates of this theme enable to filter the archived production data on pallet type, crate type, bottle type and bottling tank number.

Report template

Losses Analysis

The reports based on this template analyze archive data and calculate the aggregated losses times for one period based on an equipment group and a waterfall model.

The results can be represented as waterfall diagram, Pareto diagram or table.

Preview

Losses Analysis

From: 20.03.2013 15:07:00 To: 21.03.2013 15:07:00

Filter: WFS

Equipment group name: WFS

<<Filter deactivated>> <<Filter deactivated>>

Filter type: WFS

Crate type: Tank 01, Tank 02, Tank 03, Tank 04, Tank 05

Bottle type: Bottling unit number

Variable name | **Absolute time** | **Relative time**

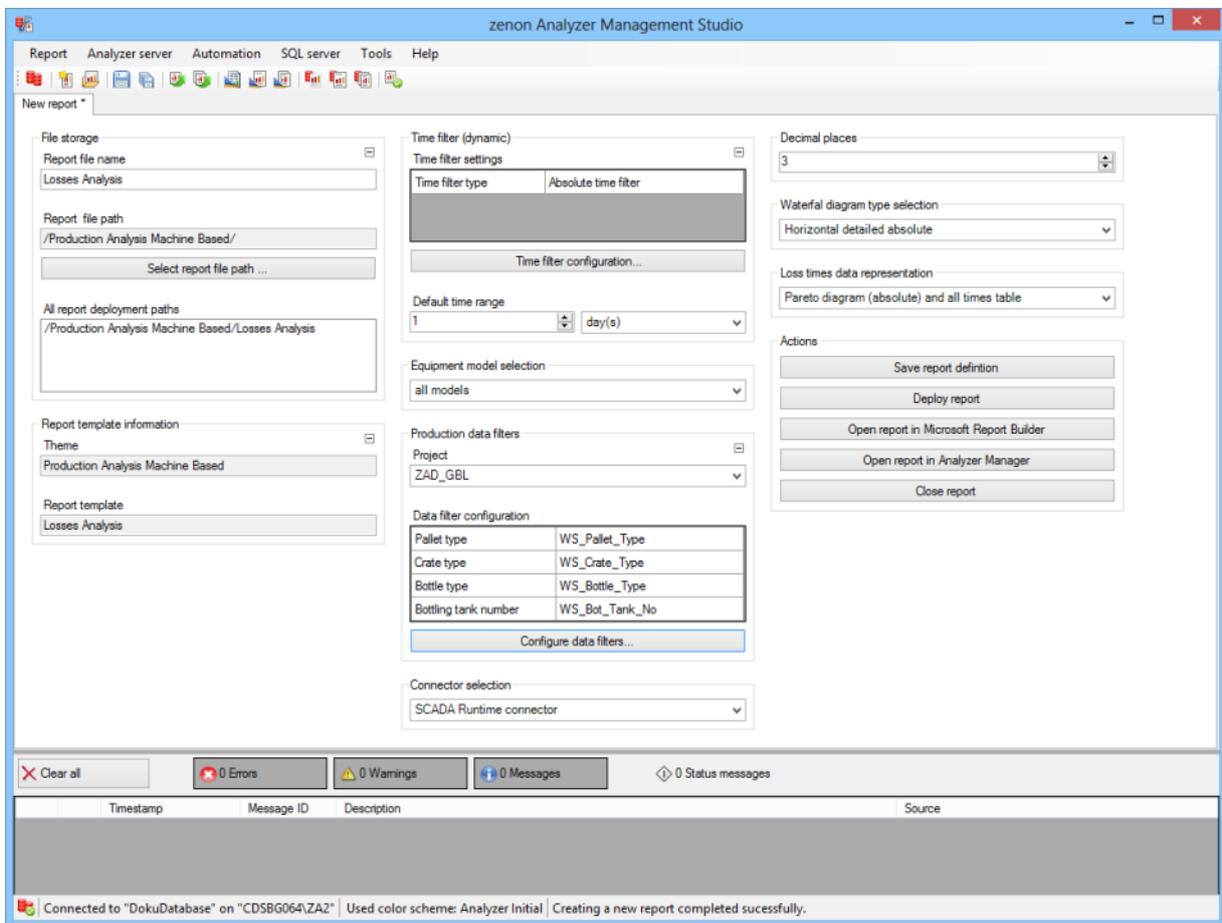
| Variable name | Absolute time | Relative time |
|--------------------|---------------|---------------|
| Planned Production | 131,767 min | 99,30 % |
| Cleaning | 4,866 min | 3,70 % |
| Changeover | 0,806 min | 0,61 % |
| Maintenance | 2,366 min | 1,80 % |
| Break | 6,557 min | 4,98 % |
| Breakdown | 24,740 min | 18,77 % |
| Operating | 91,124 min | 69,16 % |
| Minor Stops | 25,266 min | 19,23 % |

OK Cancel

3. Click on the **OK** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

PRODUCTION DATA FILTERS

| Parameters | Description |
|----------------------------------|---|
| Production data filters | Configuration and display of the production data filter. |
| Project | Selection of the project that is to be linked to a project from a drop-down list. |
| Data Filter configuration | Table with the current settings for data filtering. |
| Configure data filters | Clicking on the button opens the dialog (on page 735) for configuring the data filters. |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

SELECTION OF THE WATERFALL DIAGRAM TYPE:

| Parameters | Description |
|------------------------|---|
| Used for selecting the | Selection of the waterfall diagram from a drop-down list: |

| | |
|------------------|--|
| intended purpose | <ul style="list-style-type: none"> ▶ Horizontal, compact, absolute ▶ Horizontal, compact, relative ▶ Horizontal detailed absolute ▶ Horizontal, detailed, relative ▶ Vertical, compact, absolute ▶ Vertical, compact, relative ▶ Vertical, detailed, absolute ▶ Vertical, detailed, relative ▶ No waterfall diagram |
|------------------|--|

LOSS TIMES DATA REPRESENTATION

| Parameters | Description |
|--------------------------------|--|
| Loss times data representation | <p>Selection of the display type for the time distribution from the drop-down list.</p> <ul style="list-style-type: none"> ▶ Pareto diagram (absolute) and table with all times ▶ Pareto diagram (relative) and table with all times ▶ Pareto diagram (absolute) and table with the loss times ▶ Pareto diagram (relative) and table with the loss times ▶ Pareto diagram (absolute) ▶ Pareto diagram (relative) ▶ All times table ▶ Table with the loss times |

ACTIONS

| Parameters | Description |
|----------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked |

| | |
|--|---|
| | <p>to confirm that you wish to overwrite this.</p> <ul style="list-style-type: none"> ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |
|--|---|

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single selection from the equipment model
- ▶ 1 x single-selection from pre-defined values for waterfall model name
- ▶ Optional:
 - x multiple selection from pre-defined values for pallet type filter (if activated)
 - 1 x multiple selection from pre-defined values for crate type filter (if activated)

- 1 x multiple selection from pre-defined values for bottle type filter (if activated)
- 1 x multiple selection from pre-defined values for tank number type filter (if activated)

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ One of the eight waterfall diagrams (optional):
 - Horizontal, compact, absolute
 - Horizontal, compact, relative
 - Horizontal detailed absolute
 - Horizontal, detailed, relative
 - Vertical, compact, absolute
 - Vertical, compact, relative
 - Vertical, detailed, absolute
 - Vertical, detailed, relative
- ▶ Absolute or relative Pareto diagram (optional). If no table is used, a Pareto diagram must be used.
- ▶ Table with all rows or table with the loss times (optional). If no Pareto diagram is used, a table must be used.

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListLots
- ▶ ListShifts
- ▶ ListFilterValueForEquipment
- ▶ ListWaterfallModelsForEquipment
- ▶ FNB_GetMetaDataEntries
- ▶ FNB_WaterfallData

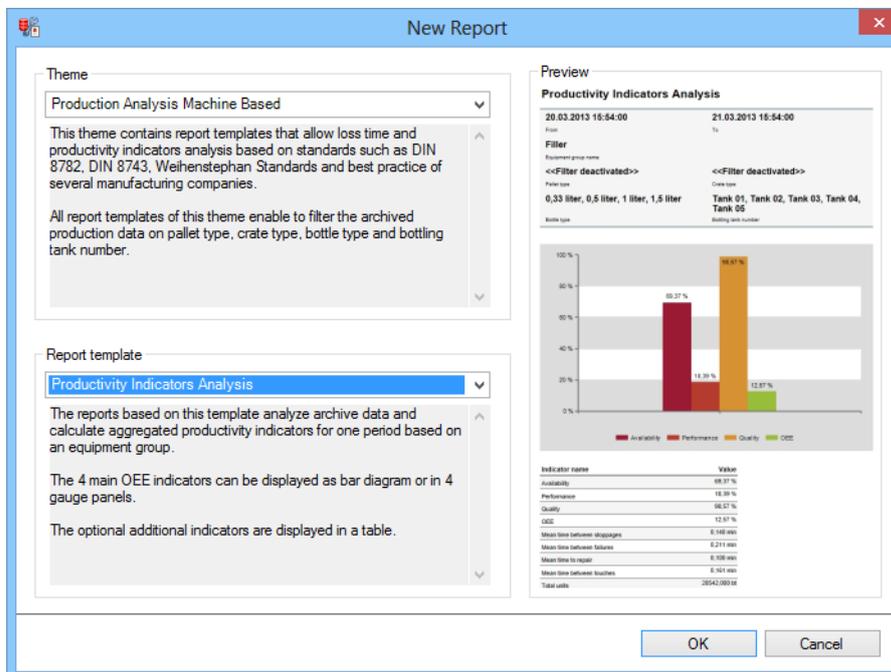
Productivity Indicators Analysis

Reports that are based on this template analyze archive data and calculate aggregated productivity indicators for a time period, based on an equipment group. The four central OEE indicators can be displayed as a bar chart or in four measurement devices. The additional optional indicators are displayed in a table.

CREATE REPORT

To create a **Productivity Indicators Analysis** report:

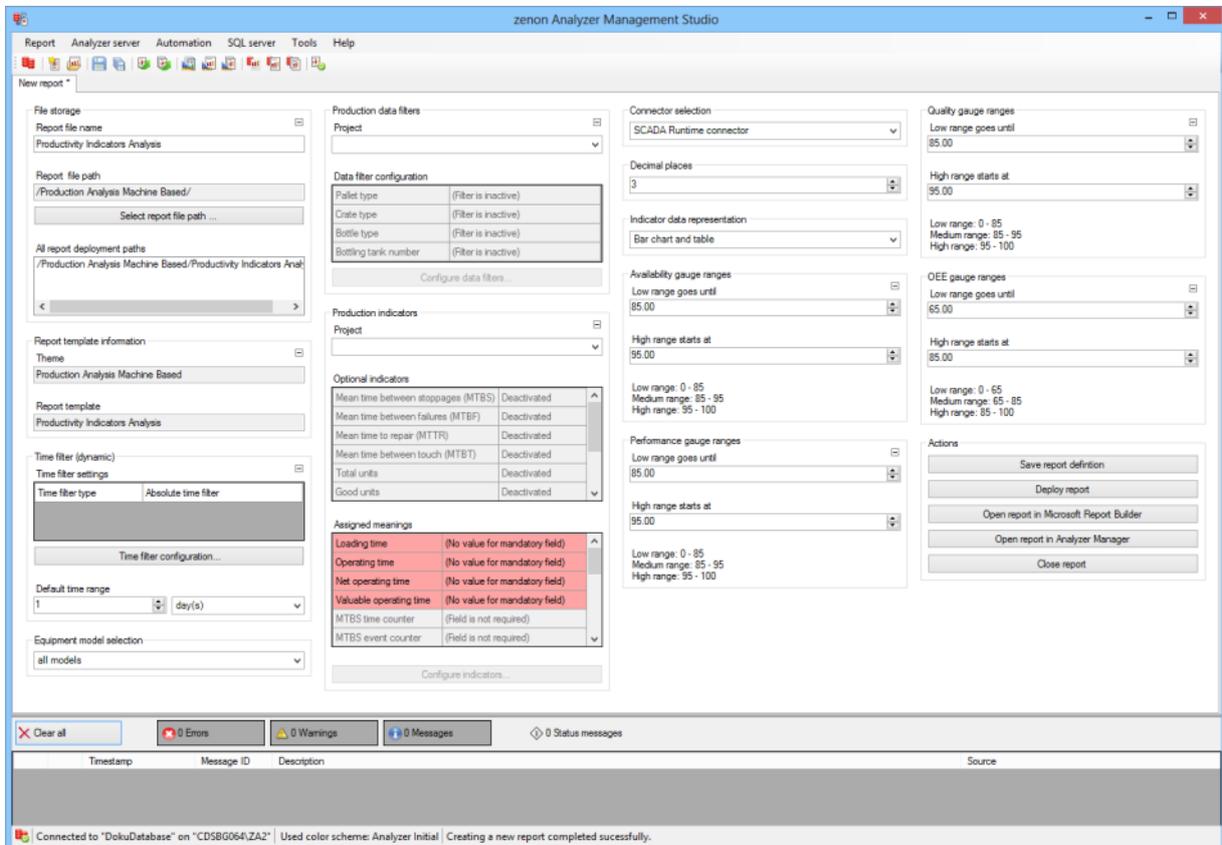
1. Select **Production Analysis Machine Based** in the drop-down list in the dialog to create new reports as a **theme**
2. from the drop-down list, select **Productivity Indicators Analysis** as a report template



3. Click on the **OK** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

PRODUCTION DATA FILTERS

| Parameters | Description |
|----------------------------------|---|
| Production data filters | Configuration and display of the production data filter. |
| Project | Selection of the project that is to be linked to a project from a drop-down list. |
| Data Filter configuration | Table with the current settings for data filtering. |
| Configure data filters | Clicking on the button opens the dialog (on page 735) for configuring the data filters. |

PRODUCTION INDICATORS

| Parameters | Description |
|------------------------------|--|
| Production indicators | Configuration and display of the production indicators. |
| Project | <p>Selection of the project that is to be linked to a project from a drop-down list.</p> <p>If a project is selected, this project is forwarded to all other groupings in the report that offer project selection.</p> <p>If this grouping receives a message about a linked project from another grouping, this project is set in the drop-down list and the drop-down list is deactivated.</p> |
| Optional indicators | Table with the current settings for the optional indicators. |
| Assigned meanings | Table with the configuration of the field meanings for the calculation of the indicators. |
| Configure indicators | Clicking on the button opens the dialog (on page 739) for configuring the indicators. |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

INDICATOR DATA REPRESENTATION

| Parameters | Description |
|-------------------------------|--|
| Indicator data representation | <p>Selection of the display type for the indicators from the drop-down list:</p> <ul style="list-style-type: none"> ▶ Bar chart and table ▶ Measuring devices and table ▶ Table |

AVAILABILITY GAUGE RANGES

| Parameters | Description |
|---------------------------|---|
| Availability gauge ranges | <p>Availability color ranges.</p> <p>Configuration of the color ranges:</p> <ul style="list-style-type: none"> ▶ Low range ▶ Medium range ▶ High range <p>The upper limit of the <code>low range</code> is the lower value of the <code>high range</code>. The lower limit of the <code>high range</code> is the upper value of the <code>low range</code>. Both limits are inclusive limits. Both elements can be set to the same value. In this case, there is no medium range. The lower limit for the <code>low range</code> and the upper limit for the <code>high range</code> come from the report</p> |

| | |
|---------------------------------|---|
| | template. |
| Low range goes until | Defines the limit between the low (red) and medium (yellow) range in the measuring device. |
| High range starts at | Defines the limit between the medium (yellow) and high (green) range in the measuring device. |
| Display of ranges | Preview of the configured color ranges. |
| Performance gauge ranges | Performance color ranges Configuration similar to Availability gauge ranges . |
| Quality gauge ranges | Quality color ranges Configuration similar to Availability gauge ranges . |
| OEE gauge ranges | OEE color ranges Configuration similar to Availability gauge ranges . |

ACTIONS

| Parameters | Description |
|----------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single selection from the equipment model
- ▶ Optional:
 - 1 x multiple selection from pre-defined values for pallet type filter (if activated)
 - 1 x multiple selection from pre-defined values for crate type filter (if activated)
 - 1 x multiple selection from pre-defined values for bottle type filter (if activated)
 - 1 x multiple selection from pre-defined values for tank number type filter (if activated)

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Bar chart or four measurement devices for the main indicators (optional).
- ▶ Table with all indicators Cells for indicators that are not calculated remain empty.

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListLots
- ▶ ListShifts

- ▶ ListFilterValueForEquipment
- ▶ FNB_GetMetaDataEntries
- ▶ FNB_OeeData

Comprehensive Productivity Analysis

This template combines the **Losses Analysis** (on page 1184) and **Productivity Indicators Analysis** (on page 1192) report templates.

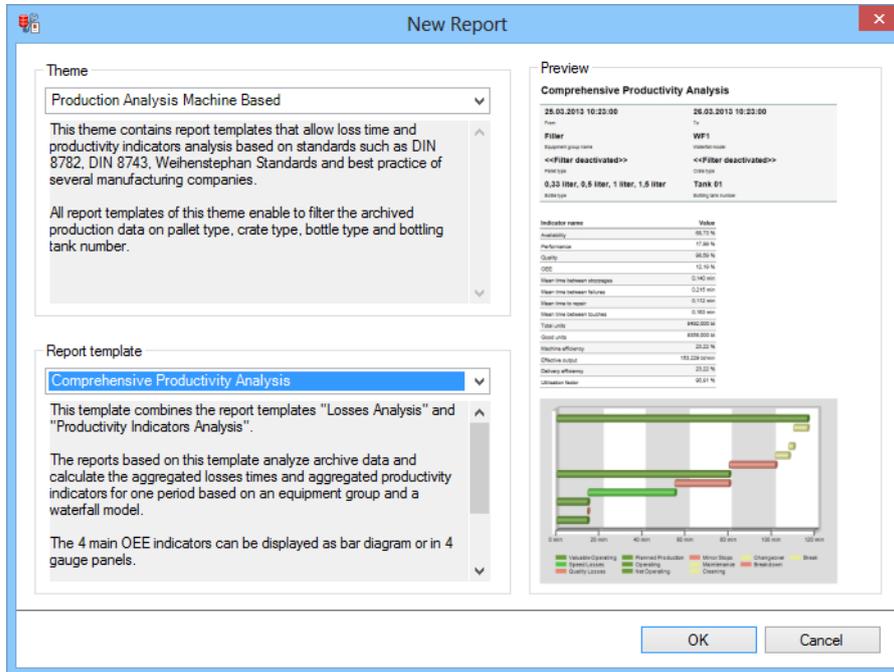
Reports that are based on this template analyze archive data and calculate aggregated loss times and aggregated productivity indicators for a time period, based on an equipment group and a waterfall model. The four central OEE indicators can be displayed as a bar chart or in four measurement devices. The additional optional indicators are displayed in a table. The loss times can be displayed as a Waterfall diagram, Pareto diagram or as a table.

CREATE REPORT

To create a **Comprehensive Productivity Analysis** report:

1. Select **Production Analysis Machine Based** in the drop-down list in the dialog to create new reports as a **theme**

- from the drop-down list, select **Comprehensive Productivity Analysis** as a report template



Theme

Production Analysis Machine Based

This theme contains report templates that allow loss time and productivity indicators analysis based on standards such as DIN 8782, DIN 8743, Weihenstephan Standards and best practice of several manufacturing companies.

All report templates of this theme enable to filter the archived production data on pallet type, crate type, bottle type and bottling tank number.

Report template

Comprehensive Productivity Analysis

This template combines the report templates "Losses Analysis" and "Productivity Indicators Analysis".

The reports based on this template analyze archive data and calculate the aggregated losses times and aggregated productivity indicators for one period based on an equipment group and a waterfall model.

The 4 main OEE indicators can be displayed as bar diagram or in 4 gauge panels.

Preview

Comprehensive Productivity Analysis

From: 25.03.2013 10:23:00 To: 26.03.2013 10:23:00

Filter: WPF

Equipment name: C100000000

<<Filter deactivated>> <<Filter deactivated>>

Plant type: C1000000

0,25 liter, 0,5 liter, 1 liter, 1,5 liter Tank 01

Unit type: Bottling tank number

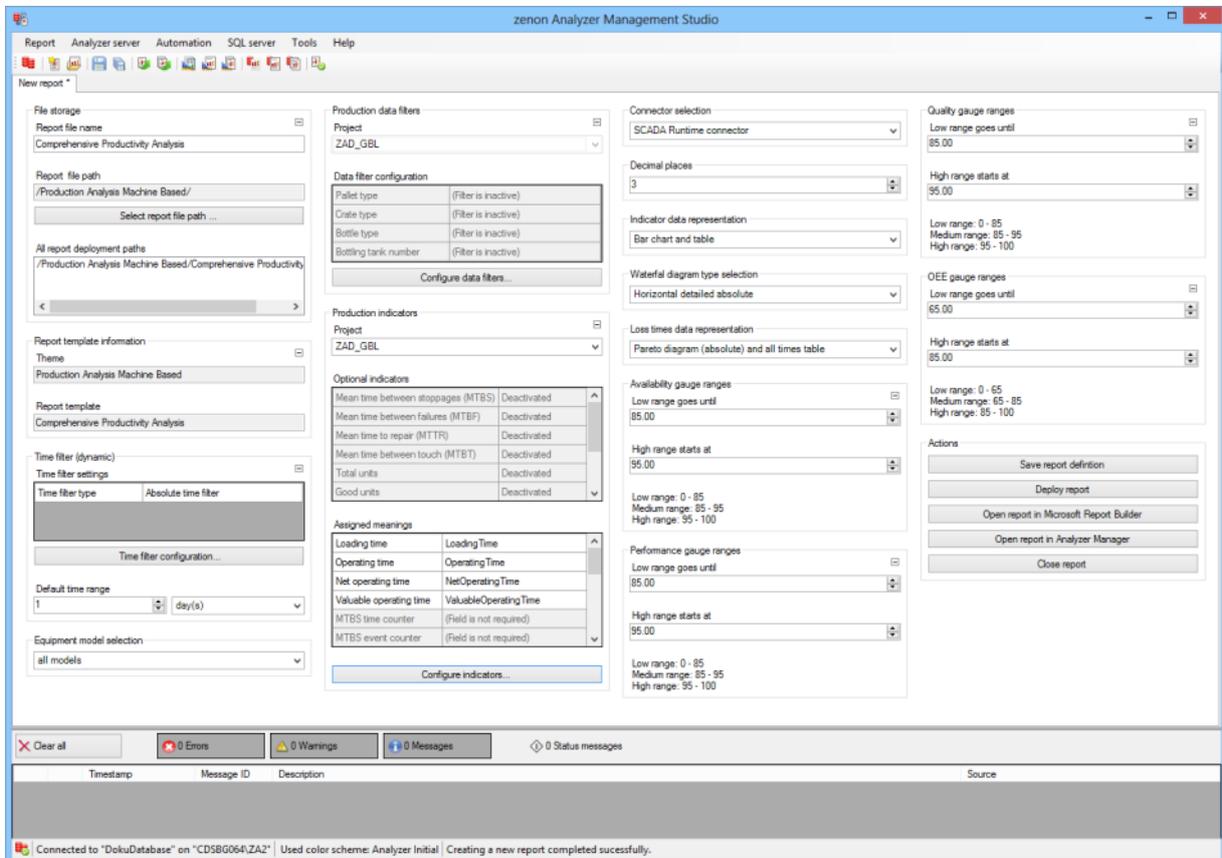
| Indicator name | Value |
|-----------------------------|---------------|
| Availability | 99,73 % |
| Performance | 11,24 % |
| Quality | 99,99 % |
| OEE | 12,14 % |
| Mean time between stoppages | 0,140 min |
| Mean time between failures | 0,214 min |
| Mean time to repair | 0,112 min |
| Mean time between touches | 0,160 min |
| Total units | 9420,000 u |
| Good units | 8996,000 u |
| Machine efficiency | 23,22 % |
| Effective output | 188,228 u/min |
| Capacity efficiency | 23,22 % |
| Utilization factor | 99,81 % |

OK Cancel

- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

PRODUCTION DATA FILTERS

| Parameters | Description |
|----------------------------------|---|
| Production data filters | Configuration and display of the production data filter. |
| Project | Selection of the project that is to be linked to a project from a drop-down list. |
| Data Filter configuration | Table with the current settings for data filtering. |
| Configure data filters | Clicking on the button opens the dialog (on page 735) for configuring the data filters. |

PRODUCTION INDICATORS

| Parameters | Description |
|------------------------------|--|
| Production indicators | Configuration and display of the production indicators. |
| Project | <p>Selection of the project that is to be linked to a project from a drop-down list.</p> <p>If a project is selected, this project is forwarded to all other groupings in the report that offer project selection.</p> <p>If this grouping receives a message about a linked project from another grouping, this project is set in the drop-down list and the drop-down list is deactivated.</p> |
| Optional indicators | Table with the current settings for the optional indicators. |
| Assigned meanings | Table with the configuration of the field meanings for the calculation of the indicators. |
| Configure indicators | Clicking on the button opens the dialog (on page 739) for configuring the indicators. |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

INDICATOR DATA REPRESENTATION

| Parameters | Description |
|-------------------------------|--|
| Indicator data representation | <p>Selection of the display type for the indicators from the drop-down list:</p> <ul style="list-style-type: none"> ▶ Bar chart and table ▶ Measuring devices and table ▶ Table |

SELECTION OF THE WATERFALL DIAGRAM TYPE:

| Parameters | Description |
|---|---|
| Used for selecting the intended purpose | <p>Selection of the waterfall diagram from a drop-down list:</p> <ul style="list-style-type: none"> ▶ Horizontal, compact, absolute ▶ Horizontal, compact, relative ▶ Horizontal detailed absolute ▶ Horizontal, detailed, relative ▶ Vertical, compact, absolute ▶ Vertical, compact, relative ▶ Vertical, detailed, absolute ▶ Vertical, detailed, relative |

| | |
|--|------------------------|
| | ▶ No waterfall diagram |
|--|------------------------|

LOSS TIMES DATA REPRESENTATION

| Parameters | Description |
|--------------------------------|--|
| Loss times data representation | <p>Selection of the display type for the time distribution from the drop-down list.</p> <ul style="list-style-type: none"> ▶ Pareto diagram (absolute) and table with all times ▶ Pareto diagram (relative) and table with all times ▶ Pareto diagram (absolute) and table with the loss times ▶ Pareto diagram (relative) and table with the loss times ▶ Pareto diagram (absolute) ▶ Pareto diagram (relative) ▶ All times table ▶ Table with the loss times |

AVAILABILITY GAUGE RANGES

| Parameters | Description |
|---------------------------|---|
| Availability gauge ranges | <p>Availability color ranges.</p> <p>Configuration of the color ranges:</p> <ul style="list-style-type: none"> ▶ Low range ▶ Medium range ▶ High range <p>The upper limit of the low range is the lower value of the high range. The lower limit of the high range is the upper value of the low range. Both limits are inclusive limits. Both elements can be set to the same value. In this case, there is no medium range. The lower limit for the low range and the upper limit for the high range come from the report template.</p> |
| Low range goes until | Defines the limit between the low (red) and medium (yellow) |

| | |
|---------------------------------|---|
| | range in the measuring device. |
| High range starts at | Defines the limit between the medium (yellow) and high (green) range in the measuring device. |
| Display of ranges | Preview of the configured color ranges. |
| Performance gauge ranges | Performance color ranges Configuration similar to Availability gauge ranges . |
| Quality gauge ranges | Quality color ranges Configuration similar to Availability gauge ranges . |
| OEE gauge ranges | OEE color ranges Configuration similar to Availability gauge ranges . |

ACTIONS

| Parameters | Description |
|----------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single selection from the equipment model
- ▶ 1 x single-selection from pre-defined values for waterfall model name
- ▶ Optional:
 - 1 x multiple selection from pre-defined values for pallet type filter (if activated)
 - 1 x multiple selection from pre-defined values for crate type filter (if activated)
 - 1 x multiple selection from pre-defined values for bottle type filter (if activated)
 - 1 x multiple selection from pre-defined values for tank number type filter (if activated)

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Bar chart or four measurement devices for the main indicators (optional).
- ▶ Table with all indicators Cells for indicators that are not calculated remain empty.
- ▶ One of the eight waterfall diagrams (optional):
 - Horizontal, compact, absolute
 - Horizontal, compact, relative
 - Horizontal detailed absolute
 - Horizontal, detailed, relative
 - Vertical, compact, absolute

- Vertical, compact, relative
- Vertical, detailed, absolute
- Vertical, detailed, relative
- ▶ Absolute or relative Pareto diagram (optional). If no table is used, a Pareto diagram must be used.
- ▶ Table with all rows or table with the loss times (optional). If no Pareto diagram is used, a table must be used.

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPS and UDFs:

- ▶ ListLots
- ▶ ListShifts
- ▶ ListFilterValueForEquipment
- ▶ ListWaterfallModelsForEquipment
- ▶ FNB_GetMetaDataEntries
- ▶ FNB_WaterfallData
- ▶ FNB_OeeData

Losses Lot History

The reports that are based on this template analyze archive data and calculate aggregated loss times and productivity indicators for each lot in a time period, based on an equipment group. The results can be displayed as a bar chart or as a table.

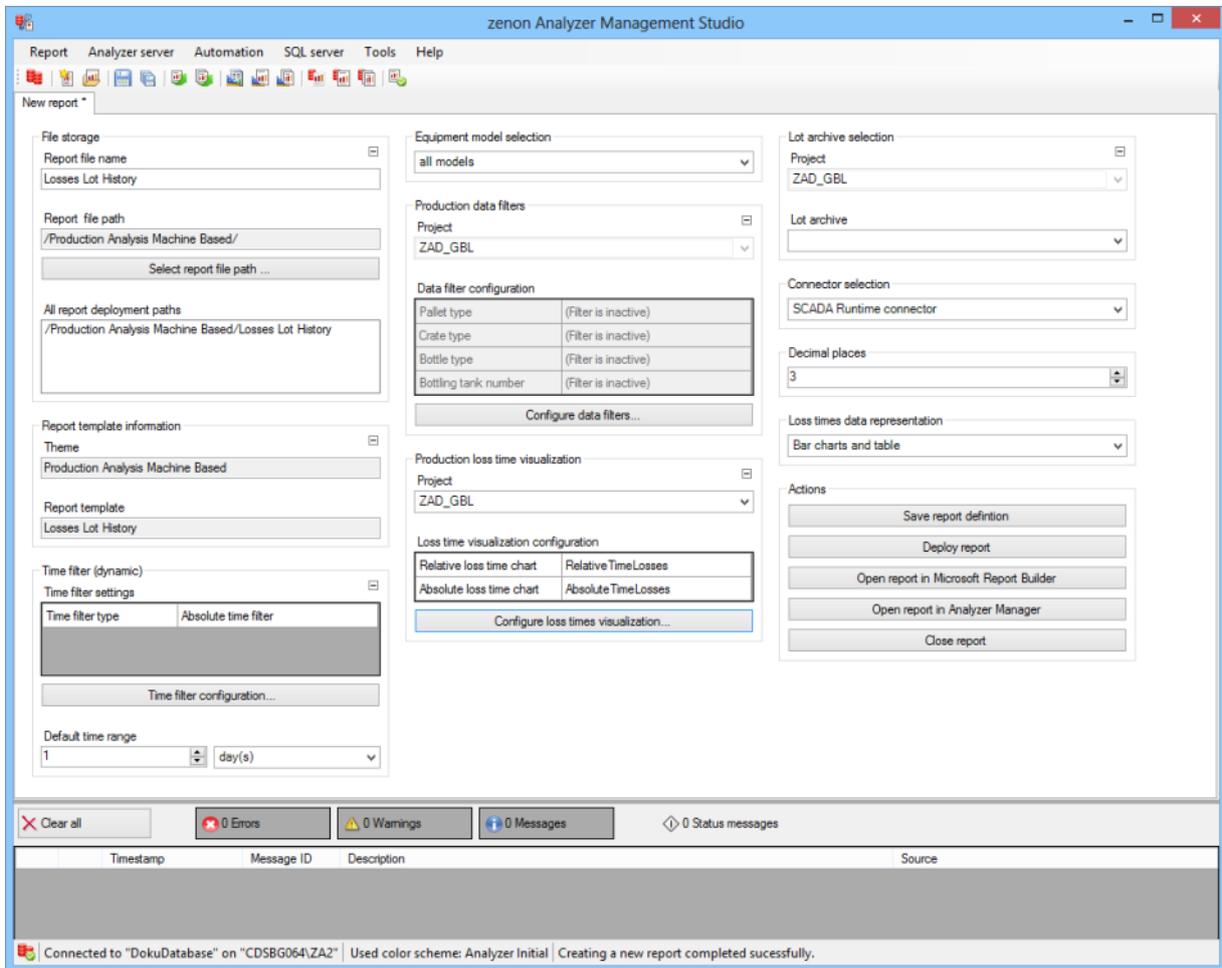
CREATE REPORT

To create a **Losses Lot History** report:

1. Select **Production Analysis Machine Based** in the drop-down list in the dialog to create new reports as a **theme**

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

PRODUCTION DATA FILTERS

| Parameters | Description |
|----------------------------------|---|
| Production data filters | Configuration and display of the production data filter. |
| Project | Selection of the project that is to be linked to a project from a drop-down list. |
| Data Filter configuration | Table with the current settings for data filtering. |
| Configure data filters | Clicking on the button opens the dialog (on page 735) for configuring the data filters. |

PRODUCTION LOSS TIME VISUALIZATION

| Parameters | Description |
|--|--|
| Production loss time visualization | Configuration and display of the meanings for the loss times. |
| Project | <p>Selection of the project that is to be linked to a project from a drop-down list.</p> <p>If a project is selected, this project is forwarded to all other groupings in the report that offer project selection.</p> <p>If this grouping receives a message about a linked project from another grouping, this project is set in the drop-down list and the drop-down list is deactivated.</p> |
| Loss time visualization configuration | Table with the current settings for the meanings for the loss times. |
| Configure loss times visualization | Clicking on the button opens the dialog (on page 758) to configure the visualization of the loss times. |

LOT ARCHIVE SELECTION

| Parameters | Description |
|------------------------------|---|
| Lot archive selection | Configuration of the lot archive. |
| Project | <p>Selection of the project that is to be linked to a project from a drop-down list.</p> <p>If a project is selected, this project is forwarded to all other groupings in the report that offer project selection.</p> <p>If this grouping receives a message about a linked project from another grouping, this project is set in the drop-down list and</p> |

| | |
|-------------|--|
| | the drop-down list is deactivated. |
| Lot archive | Selection of a lot archive for the selected project from the drop-down list. |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

LOSS TIMES DATA REPRESENTATION

| Parameters | Description |
|--------------------------------|--|
| Loss times data representation | <p>Selection of the display type for the time distribution from the drop-down list.</p> <ul style="list-style-type: none"> ▶ Pareto diagram (absolute) and table with all times ▶ Pareto diagram (relative) and table with all times ▶ Pareto diagram (absolute) and table with the loss times ▶ Pareto diagram (relative) and table with the loss times |

| | |
|--|--|
| | <ul style="list-style-type: none"> ▶ Pareto diagram (absolute) ▶ Pareto diagram (relative) ▶ All times table ▶ Table with the loss times |
|--|--|

ACTIONS

| Parameters | Description |
|----------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots

- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single selection from the equipment model
- ▶ Optional:
 - 1 x multiple selection from pre-defined values for pallet type filter (if activated)
 - 1 x multiple selection from pre-defined values for crate type filter (if activated)
 - 1 x multiple selection from pre-defined values for bottle type filter (if activated)
 - 1 x multiple selection from pre-defined values for tank number type filter (if activated)

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Bar charts with relative and absolute display of the configured losses (optional). If no table is used, a bar chart must be used.
- ▶ Table with the configured loss times (optional). If no bar chart is used, a table must be used.

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPS and UDFs:

- ▶ ListLots
- ▶ ListShifts
- ▶ ListFilterValueForEquipment
- ▶ FNB_GetMetaDataEntries
- ▶ FNB_LossTimesLotHistory

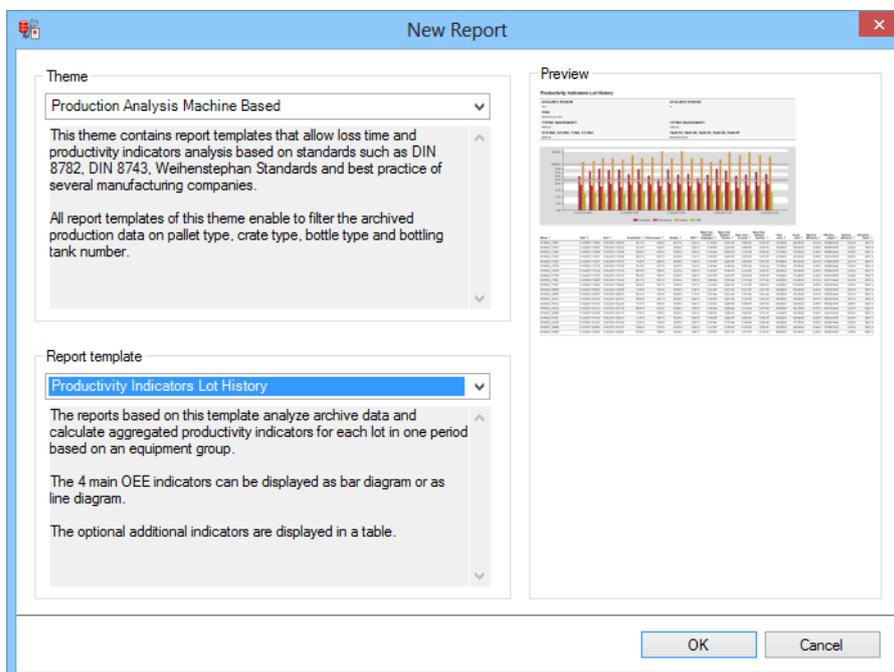
Productivity Indicators Lot History

The reports that are based on this template analyze archive data and calculate aggregated loss times and productivity indicators for each lot in a time period, based on an equipment group. The results can be displayed as a bar chart or as a line chart. The additional optional indicators are displayed in a table.

CREATE REPORT

To create a **Productivity Indicators Lot History** report:

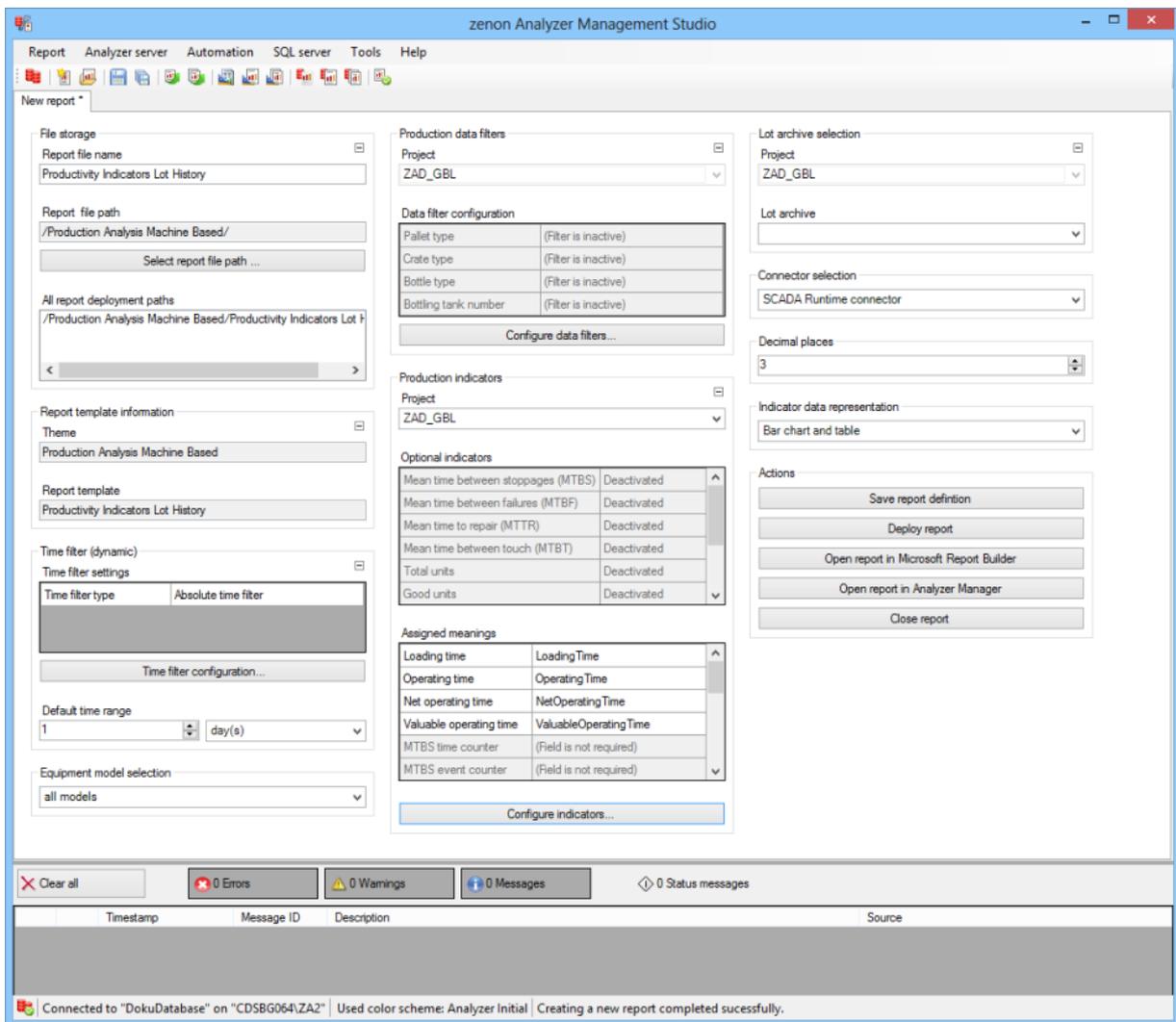
1. Select **Production Analysis Machine Based** in the drop-down list in the dialog to create new reports as a **theme**
2. from the drop-down list, select **Productivity Indicators Lot History** as a report template



3. Click on the **OK** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

PRODUCTION DATA FILTERS

| Parameters | Description |
|----------------------------------|---|
| Production data filters | Configuration and display of the production data filter. |
| Project | Selection of the project that is to be linked to a project from a drop-down list. |
| Data Filter configuration | Table with the current settings for data filtering. |
| Configure data filters | Clicking on the button opens the dialog (on page 735) for configuring the data filters. |

PRODUCTION INDICATORS

| Parameters | Description |
|------------------------------|--|
| Production indicators | Configuration and display of the production indicators. |
| Project | <p>Selection of the project that is to be linked to a project from a drop-down list.</p> <p>If a project is selected, this project is forwarded to all other groupings in the report that offer project selection.</p> <p>If this grouping receives a message about a linked project from another grouping, this project is set in the drop-down list and the drop-down list is deactivated.</p> |
| Optional indicators | Table with the current settings for the optional indicators. |
| Assigned meanings | Table with the configuration of the field meanings for the calculation of the indicators. |
| Configure indicators | Clicking on the button opens the dialog (on page 739) for configuring the indicators. |

LOT ARCHIVE SELECTION

| Parameters | Description |
|------------------------------|---|
| Lot archive selection | Configuration of the lot archive. |
| Project | <p>Selection of the project that is to be linked to a project from a drop-down list.</p> <p>If a project is selected, this project is forwarded to all other groupings in the report that offer project selection.</p> <p>If this grouping receives a message about a linked project from</p> |

| | |
|-------------|--|
| | another grouping, this project is set in the drop-down list and the drop-down list is deactivated. |
| Lot archive | Selection of a lot archive for the selected project from the drop-down list. |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

INDICATOR DATA REPRESENTATION

| Parameters | Description |
|-------------------------------|--|
| Indicator data representation | <p>Selection of the display type for the indicators from the drop-down list:</p> <ul style="list-style-type: none"> ▶ Bar chart and table ▶ Measuring devices and table ▶ Table |

ACTIONS

| Parameters | Description |
|----------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single selection from the equipment model
- ▶ Optional:
 - 1 x multiple selection from pre-defined values for pallet type filter (if activated)
 - 1 x multiple selection from pre-defined values for crate type filter (if activated)
 - 1 x multiple selection from pre-defined values for bottle type filter (if activated)
 - 1 x multiple selection from pre-defined values for tank number type filter (if activated)

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Bar chart or line chart for the main indicators (optional).
- ▶ Table with all indicators Cells for indicators that are not calculated remain empty.

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListLots
- ▶ ListShifts
- ▶ ListFilterValueForEquipment
- ▶ FNB_GetMetaDataEntries
- ▶ FNB_OeeLotHistory

Comprehensive Productivity Lot History

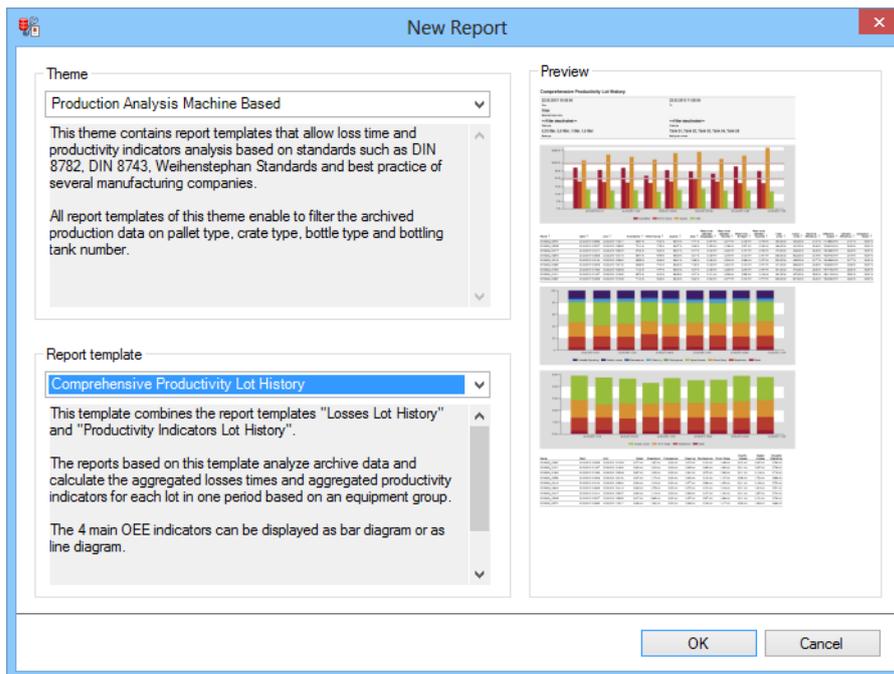
The report template combines the templates **Losses Lot history** (on page 1210) and **Productivity Indicators Lot History** (on page 1219).

The reports that are based on this template analyze archive data and calculate compressed loss times and productivity indicators for each lot in a time period, based on an equipment group. The four central OEE indicators can be displayed as a bar chart or as a line chart. The additional optional indicators are displayed in a table. The losses can be displayed as a bar chart or as a table.

CREATE REPORT

To create a **Comprehensive Productivity Lot History** report:

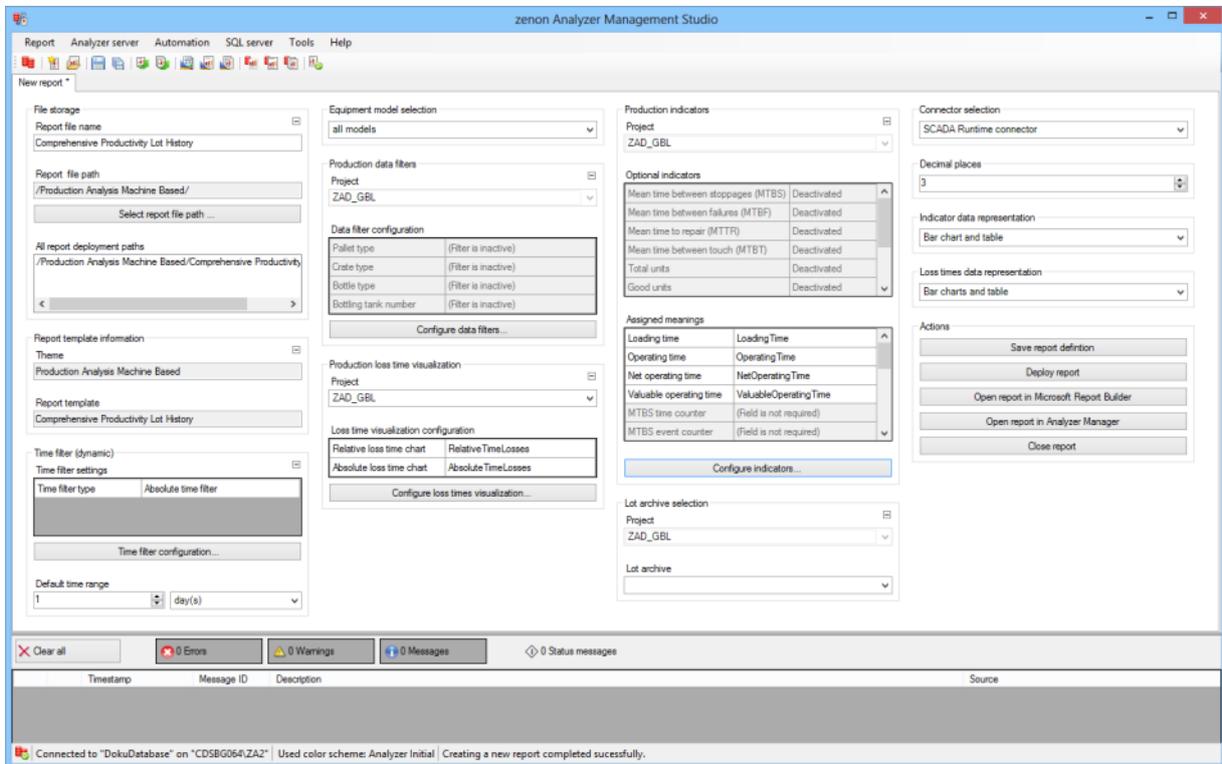
1. Select **Production Analysis Machine Based** in the drop-down list in the dialog to create new reports as a **theme**
2. from the drop-down list, select **Comprehensive Productivity Lot History** as a report template



3. Click on the **OK** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

PRODUCTION DATA FILTERS

| Parameters | Description |
|----------------------------------|---|
| Production data filters | Configuration and display of the production data filter. |
| Project | Selection of the project that is to be linked to a project from a drop-down list. |
| Data Filter configuration | Table with the current settings for data filtering. |
| Configure data filters | Clicking on the button opens the dialog (on page 735) for configuring the data filters. |

PRODUCTION LOSS TIME VISUALIZATION

| Parameters | Description |
|--|--|
| Production loss time visualization | Configuration and display of the meanings for the loss times. |
| Project | <p>Selection of the project that is to be linked to a project from a drop-down list.</p> <p>If a project is selected, this project is forwarded to all other groupings in the report that offer project selection.</p> <p>If this grouping receives a message about a linked project from another grouping, this project is set in the drop-down list and the drop-down list is deactivated.</p> |
| Loss time visualization configuration | Table with the current settings for the meanings for the loss times. |
| Configure loss times visualization | Clicking on the button opens the dialog (on page 758) to configure the visualization of the loss times. |

PRODUCTION INDICATORS

| Parameters | Description |
|------------------------------|---|
| Production indicators | Configuration and display of the production indicators. |
| Project | <p>Selection of the project that is to be linked to a project from a drop-down list.</p> <p>If a project is selected, this project is forwarded to all other groupings in the report that offer project selection.</p> <p>If this grouping receives a message about a linked project from another grouping, this project is set in the drop-down list and</p> |

| | |
|----------------------------|---|
| | the drop-down list is deactivated. |
| Optional indicators | Table with the current settings for the optional indicators. |
| Assigned meanings | Table with the configuration of the field meanings for the calculation of the indicators. |
| Configure indicators | Clicking on the button opens the dialog (on page 739) for configuring the indicators. |

LOT ARCHIVE SELECTION

| Parameters | Description |
|-----------------------|--|
| Lot archive selection | Configuration of the lot archive. |
| Project | <p>Selection of the project that is to be linked to a project from a drop-down list.</p> <p>If a project is selected, this project is forwarded to all other groupings in the report that offer project selection.</p> <p>If this grouping receives a message about a linked project from another grouping, this project is set in the drop-down list and the drop-down list is deactivated.</p> |
| Lot archive | Selection of a lot archive for the selected project from the drop-down list. |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|--|
| Decimal places | Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field. |

| | |
|--|---|
| | <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |
|--|---|

INDICATOR DATA REPRESENTATION

| Parameters | Description |
|-------------------------------|--|
| Indicator data representation | <p>Selection of the display type for the indicators from the drop-down list:</p> <ul style="list-style-type: none"> ▶ Bar chart and table ▶ Measuring devices and table ▶ Table |

LOSS TIMES DATA REPRESENTATION

| Parameters | Description |
|--------------------------------|--|
| Loss times data representation | <p>Selection of the display type for the time distribution from the drop-down list.</p> <ul style="list-style-type: none"> ▶ Pareto diagram (absolute) and table with all times ▶ Pareto diagram (relative) and table with all times ▶ Pareto diagram (absolute) and table with the loss times ▶ Pareto diagram (relative) and table with the loss times ▶ Pareto diagram (absolute) ▶ Pareto diagram (relative) ▶ All times table ▶ Table with the loss times |

ACTIONS

| Parameters | Description |
|------------|-------------|
|------------|-------------|

| | |
|-----------------------|--|
| <p>Actions</p> | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |
|-----------------------|--|

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single selection from the equipment model
- ▶ Optional:

- 1 x multiple selection from pre-defined values for pallet type filter (if activated)
- 1 x multiple selection from pre-defined values for crate type filter (if activated)
- 1 x multiple selection from pre-defined values for bottle type filter (if activated)
- 1 x multiple selection from pre-defined values for tank number type filter (if activated)

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Bar chart or line chart for the main indicators (optional).
- ▶ Table with all indicators Cells for indicators that are not calculated remain empty.
- ▶ Bar charts with relative and absolute display of the configured losses (optional). If no table is used, a bar chart must be used.
- ▶ Table with the configured loss times (optional). If no bar chart is used, a table must be used.

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListLots
- ▶ ListShifts
- ▶ ListFilterValueForEquipment
- ▶ FNB_GetMetaDataEntries
- ▶ FNB_LossTimesLotHistory
- ▶ FNB_OeeLotHistory

Configuration of the reports for machine-based production analysis in zenon

You can find notes on configuration of the data basis in zenon for **Production Analysis Machine Based** reports.

The project and/or the metadata must provide the following data:

- ▶ Variables for filter

- ▶ Variables for the OEE calculation
- ▶ Variables for the calculation of performance indicators
- ▶ Variables for waterfall and loss time diagram
- ▶ Archives

VARIABLES FOR FILTER:

| Filter – Variables | | | | | | | | | |
|--------------------|----------------------------|---------------------|----------------------|--------------------------------|--------------------------|------------------------------|--------------------------------|-----------|-----------|
| No. | Standardization Properties | | | | | Properties of SCADA variable | | | |
| | Standard | Standard tag number | Standard name | Standard tag name | Machine | Name* (recommended) | Resource label | Origin | Data type |
| 12. | WS | 30001 | Pallet Type | WS_Pallet_Type | palletizer, depalletizer | [L][M]_WS_Pallet_Type | WS_Pallet_Type | Archive A | UDINT |
| 13. | WS | 30002 | Crate Type | WS_Crate_Type | packer, unpacker | [L][M]_WS_Crate_Type | WS_Crate_Type | Archive A | UDINT |
| 14. | WS | 30003 | Bottle Type | WS_Bottle_Type | | [L][M]_WS_Bottle_Type | WS_Bottle_Type | Archive A | UDINT |
| 15. | WS | 30021 | Bottling Tank Number | WS_Bot_Tank_No | all | [L][M]_WS_Bot_Tank_No | WS_Bot_Tank_No | Archive A | UDINT |

Each variable must be assigned to a reaction matrix that contains the available filter details. For this, the following applies:

- ▶ Only `numerical reaction matrices` are permitted.
- ▶ The assignment must be made with `=`. The characters `>` and `<` are not permitted.
- ▶ The default setting of the reaction matrix is ignored.
- ▶ If the same assignment exists more than once (for example: `xy = 3`), only the one that is found first is used. All others are ignored.
- ▶ The name displayed in the filter is the limit value text. The language of this cannot be switched; existing control characters are cut off (e).

The use of individual variables is optional. Only the variables that are needed for the filter need to be configured.

VARIABLES FOR THE OEE CALCULATION

| OEE – Variables | | | | | | |
|-----------------|---------------------------------------|-----------|----------|-----------|--------------|------------------|
| Variable name* | Meaning | Data type | Unit | Origin | Connector | Equipment modell |
| (user-defined) | OperatingTime | REAL | min or h | archive A | SQL/zenon V6 | * |
| (user-defined) | LoadingTime | REAL | min or h | archive A | SQL/zenon V6 | * |
| (user-defined) | NetOperatingTime | REAL | min or h | archive A | SQL/zenon V6 | * |
| (user-defined) | ValuableOperatingTime | REAL | min or h | archive A | SQL/zenon V6 | * |

Note:

- ▶ * Variables must, for each equipment group for which an evaluation is possible, be created and linked to the equipment model. The same variables are, labeled otherwise (with WF=), also used for the waterfall diagram.
- ▶ These variables must be defined in zenon depending on the version in the Resources label (up to 7.11) with ME=... (for example: ME=OperatingTime, ...) or from zenon 7.20 in Meaning (OperatingTime, ...).

VARIABLES FOR THE CALCULATION OF PERFORMANCE INDICATORS

| Indicators – Variables | | | | | | |
|------------------------|--|-----------|----------|-----------|--------------|-----------------|
| Variable name* | Meaning | Data type | Unit | Origin | Connector | Equipment model |
| (user-defined) | MTBS_TimeCounter | REAL | min or h | archive A | SQL/zenon V6 | * |
| (user-defined) | MTBS_EventCounter | UDINT | --- | archive A | SQL/zenon V6 | * |
| (user-defined) | MTBF_TimeCounter | REAL | min or h | archive A | SQL/zenon V6 | * |
| (user-defined) | MTBF_EventCounter | UDINT | --- | archive A | SQL/zenon V6 | * |
| (user-defined) | MTTR_TimeCounter | REAL | min or h | archive A | SQL/zenon V6 | * |
| (user-defined) | MTTR_EventCounter | UDINT | --- | archive A | SQL/zenon V6 | * |
| (user-defined) | MTBL_TimeCounter | REAL | min or h | archive A | SQL/zenon V6 | * |
| (user-defined) | MTBL_EventCounter | UDINT | --- | archive A | SQL/zenon V6 | * |
| (user-defined) | TotalBottles | UDINT | bt. | archive A | SQL/zenon V6 | * |
| (user-defined) | GoodBottles | UDINT | bt. | archive A | SQL/zenon V6 | * |
| (user-defined) | EffectiveRuntime | REAL | min or h | archive A | SQL/zenon V6 | * |
| (user-defined) | GeneralRuntime | REAL | min or h | archive A | SQL/zenon V6 | * |
| (user-defined) | FilledAndSealedBottles | UDINT | bt. | archive A | SQL/zenon V6 | * |
| (user-defined) | MachineEffectiveOutput | REAL | bt./min | archive A | SQL/zenon V6 | * |
| (user-defined) | NominalOutput | REAL | bt./min | archive A | SQL/zenon V6 | * |
| (user-defined) | NominalSetOutput | REAL | bt./min | archive A | SQL/zenon V6 | * |

Note:

- ▶ * Variables must, for each equipment group for which an evaluation is possible, be created and linked to the equipment model.
- ▶ These variables must be defined in zenon depending on the version in the Resources label (up to 7.11) with ME=... (ME=MTBS_TimeCounter, ... or from zenon 7.20 in Meaning (MTBS_TimeCounter, ...).

VARIABLES FOR WATERFALL AND LOSS TIME DIAGRAM

| Origin for waterfall- and losses analysis | | | | | | | |
|---|----------|---------------------|------------------------|-----------|----------|-----------|--------------|
| Name | WF model | Waterfall index row | Waterfall index column | Data type | Unit | Origin | Connector |
| [L][M][Index]_CD_WF_Time_Batch* | name** | [Index]** | [Index]** | REAL | min or h | archive A | SQL/zenon V6 |

Examples:

| | | | | | | | |
|--------------------------------|------|-----|-----|------|----------|-----|----------|
| L01M03_0101_CD_WF_EffArbZeit | abcd | 01 | 01 | REAL | min or h | WF | zenon V6 |
| L01M03_0201_CD_WF_TatsProdZeit | abcd | 02 | 01 | REAL | min or h | WF | zenon V6 |
| ... | | ... | ... | ... | ... | ... | ... |

Note:

- ▶ * Proposed name in zenon. Not relevant to zenon Analyzer.
- ▶ ** Identical names identify related variables for the waterfall display.
This also applies to the loss time diagram.
- ▶ *** [Index] provides the position for the display in the waterfall diagram as a row number or column number.
- ▶ These variables must be defined in zenon depending on the version in the Resources label (up to 7.11) with WF=... (for example: WF=01, 01, #FFAD5B; ...) or from zenon 7.20 in Parameter for waterfall diagram(01,01,#FFAD5B; ...).

ARCHIVES

| Archives | | | |
|----------------|----------------|-----------------|---|
| Identification | Archive name | Type of scan | Description |
| (user-defined) | (user-defined) | event triggered | Lot archive, started and stopped with zenon functions. It contains the following data: <ul style="list-style-type: none"> - Variables used for the waterfall- and losses analysis - Variables used for the optional filters - Variables used for OEE- and indicator calculations |

Note: * Archive is linked to the equipment group.

13.2.8 OEE Analysis

Reports with this theme provide report templates that calculate and display OEE indicators:

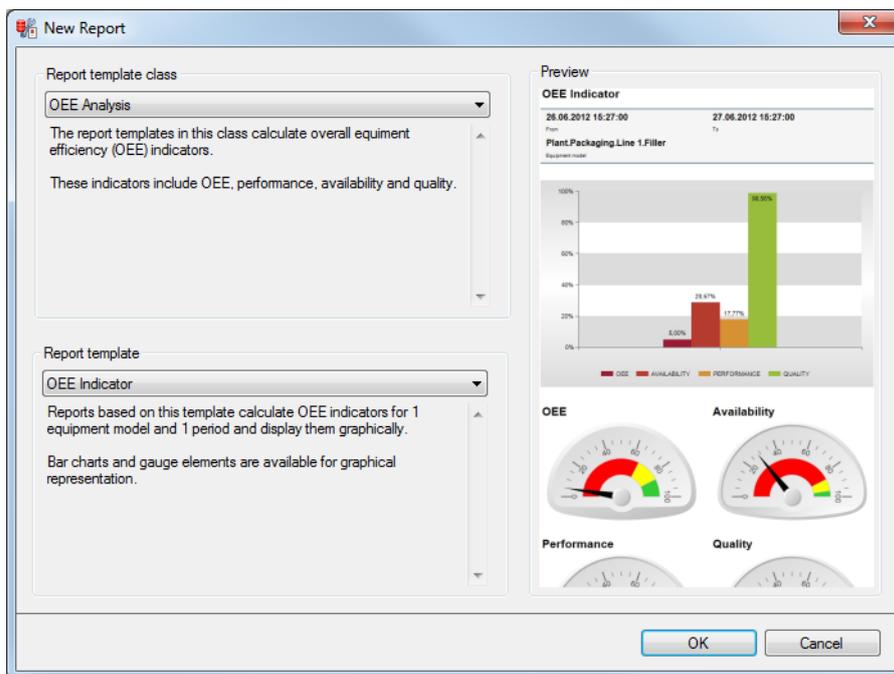
- ▶ OEE Indicator (on page 1240): Calculates the OEE performance figures for a selected equipment model in a time period and displays the performance figures in graphic form

- ▶ OEE Indicator Lot History (on page 1249): Calculates the OEE indicators for a selected equipment model for each lot in a period of time and displays the performance figures in graphic form and table form

REPORT TEMPLATE SELECTION

To create a report based on this template:

1. Select the **New** entry in the **Report** menu or click on the corresponding symbol in the tool bar
2. The dialog for selecting a template is opened



3. In the **Theme** drop-down list, select **OEE Analysis**
4. Select the template you want to use as a report template from the drop-down list

METADATA

| Metadata used: General | | |
|----------------------------|------|--|
| | used | If not used |
| Projects | + | mandatory. |
| Alarm/Event class | - | |
| Alarm/Event groups | - | |
| User | - | |
| Equipment modeling | + | mandatory. |
| Archives | + | mandatory. |
| Variables | + | mandatory. |
| Prices | - | |
| Norm values | - | |
| Metadata used: Time filter | | |
| Lots | + | No reports possible with lot filter. |
| Shifts | + | No reports possible with shift filter. |

OEE Indicator

Reports that are based on this template calculate the OEE indicators of an equipment group and display the performance figures in graphic form. These reports are always linked to a certain project.

APPLICATION EXAMPLES

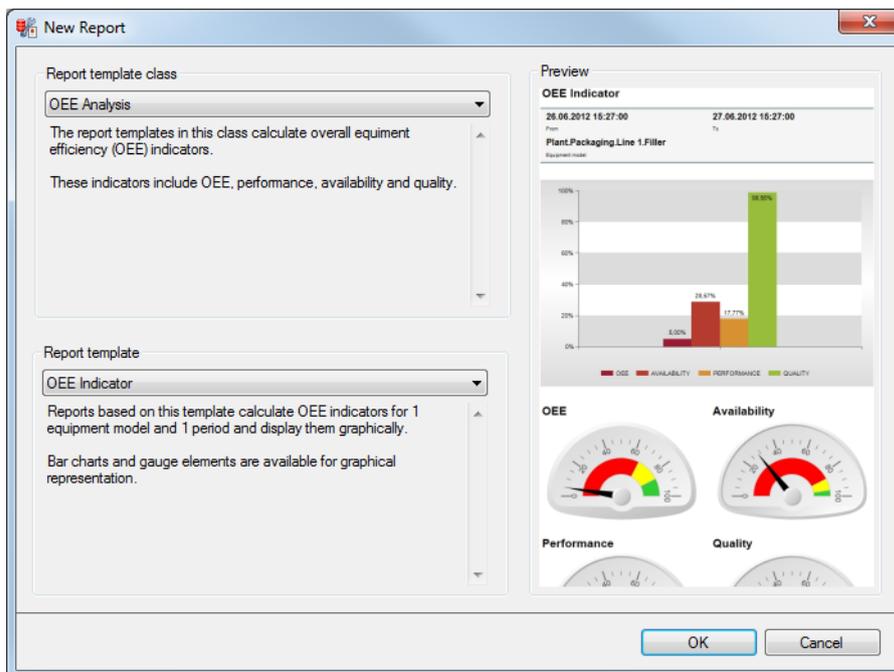
Alarm list reports are suited, for example, to determining the quality indicators in a shift, lot or certain time period for:

- ▶ A critical machine in the production process
- ▶ A production line
- ▶ A complete factory

CREATE REPORT

To create an **OEE performance figure** report:

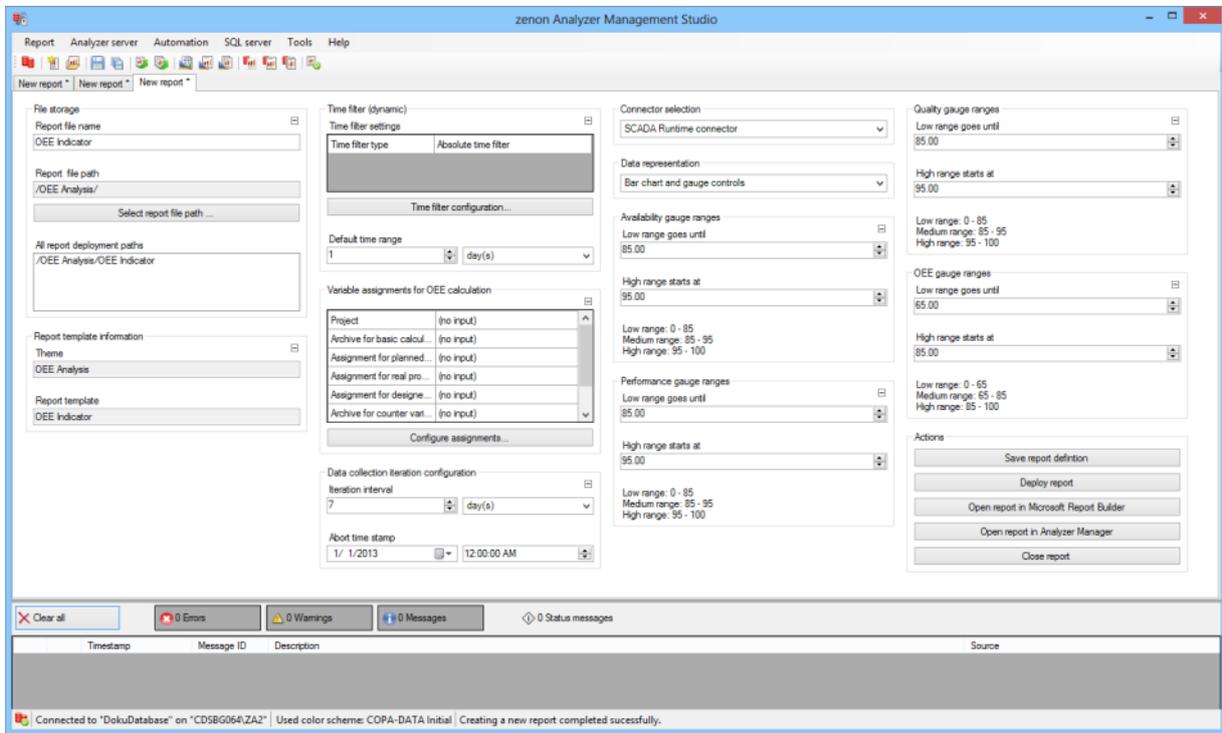
1. In the **Theme** drop-down list, select **OEE Analysis**
2. from the drop-down list, select **OEE performance figures** as a report template



3. Click on the **OK** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

VARIABLE ASSIGNMENT FOR OEE CALCULATION

| Parameters | Description |
|--|--|
| Variable assignment for OEE calculation | <p>Assignment of the project, the archive and the variables.</p> <p>Field shows the current configuration.</p> |

| | |
|-----------------------|--|
| Configure assignments | Clicking on the button opens the dialog for configuring (on page 732) the assignments. |
|-----------------------|--|

DATA COLLECTION ITERATION CONFIGURATION

| Parameters | Description |
|--|--|
| Data collection iteration configuration | Configuration for iteration interval and cancel time. |
| Iteration interval | <p>Configuration of the iteration interval in:</p> <ul style="list-style-type: none"> ▶ Minuten ▶ Hours ▶ Days <p>Minimum: 1</p> <p>Maximum: 1000</p> <p>Default: 1 day</p> |
| Start of archiving | <p>Start of archiving</p> <ul style="list-style-type: none"> ▶ Date ▶ Time ▶ Default: 01.01.2013 00:00:00 |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DATA REPRESENTATION

| Parameters | Description |
|------------|-------------|
|------------|-------------|

| | |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Selection from drop-down list.</p> <p>Possible settings:</p> <ul style="list-style-type: none"> ▶ Column chart and pointer instruments ▶ Column chart ▶ Gauge controls |
|---------------------|---|

AVAILABILITY GAUGE RANGES

| Parameters | Description |
|----------------------------------|---|
| Availability gauge ranges | <p>Availability color ranges.</p> <p>Configuration of the color ranges:</p> <ul style="list-style-type: none"> ▶ Low range ▶ Medium range ▶ High range <p>The upper limit of the <code>low range</code> is the lower value of the <code>high range</code>. The lower limit of the <code>high range</code> is the upper value of the <code>low range</code>. Both limits are inclusive limits. Both elements can be set to the same value. In this case, there is no medium range. The lower limit for the <code>low range</code> and the upper limit for the <code>high range</code> come from the report template.</p> |
| Low range goes until | Defines the limit between the low (red) and medium (yellow) range in the measuring device. |
| High range starts at | Defines the limit between the medium (yellow) and high (green) range in the measuring device. |
| Display of ranges | Preview of the configured color ranges. |
| Performance gauge ranges | <p>Performance color ranges</p> <p>Configuration similar to Availability gauge ranges.</p> |
| Quality gauge ranges | <p>Quality color ranges</p> <p>Configuration similar to Availability gauge ranges.</p> |
| OEE gauge ranges | <p>OEE color ranges</p> <p>Configuration similar to Availability gauge ranges.</p> |

ACTIONS

| Parameters | Description |
|----------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

Note: If the report is linked to a project via time filtering, the project selection is set to the linked project and a check is made to ensure that only archives from the project can be selected in both groupings.

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single-selection drop-down list with the equipment models for which the OEE performance figures can be calculated. Each equipment model contains the complete hierarchy path in its name.

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Column chart: Each indicator (OEE, availability, performance, quality) has a column with data annotation.
- ▶ Measurement devices: Each indicator has a measurement device. These have the following ranges:
 - OEE:
 - Red from 0% to 65%,
 - Yellow from 65% to 85%,
 - Green from 85% to 100%
 - Availability, Performance and Quality:
 - Red from 0% to 85 %,
 - Yellow from 85 % to 95 %,
 - Green from 95 % to 100%

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListEquipments_OEE
- ▶ OEE_GetCounters
- ▶ OEE_GetStates
- ▶ OEE_Indicators
- ▶ ListLots
- ▶ ListShifts

OEE Indicator Lot History

Reports with this template calculate the OEE indicators of lots of an equipment group in a time period and display the performance figures graphically and in tables. In doing so, the performance figures are calculated separately for each lot. These reports are always linked to a certain project.

APPLICATION EXAMPLES

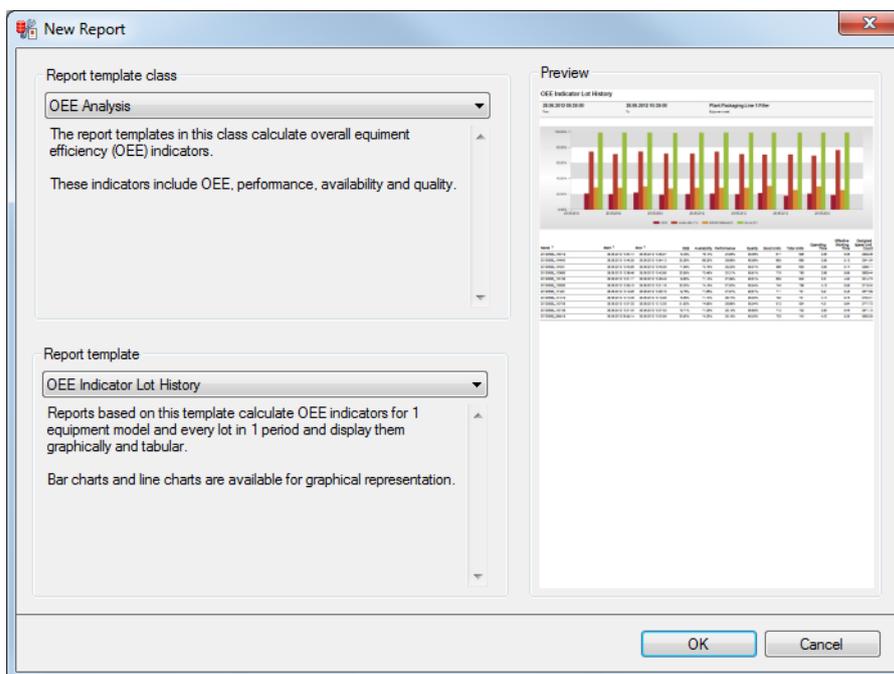
Alarm list reports are suited, for example, to checking the development of performance indicators during a shift or in a certain time period for:

- ▶ A critical machine
- ▶ A production line
- ▶ A complete factory

CREATE REPORT

To create an **OEE performance figure lot archive** report:

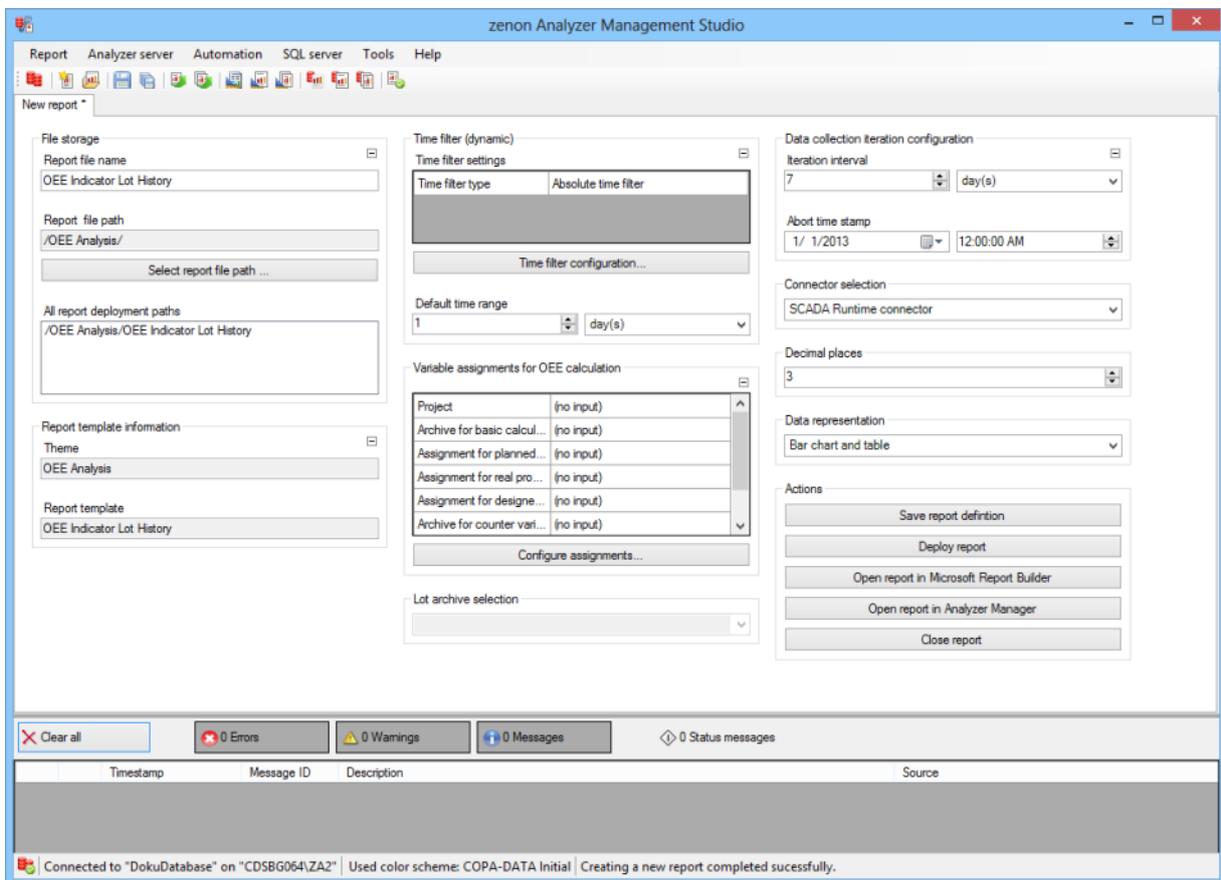
1. In the **Theme** drop-down list, select **OEE Analysis**
2. from the drop-down list, select **OEE performance figure lot archive** as a report template



3. Click on the  button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|---|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template For further details see chapter Report templates (on page 753) |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

VARIABLE ASSIGNMENT FOR OEE CALCULATION

| Parameters | Description |
|--|--|
| Variable assignment for OEE calculation | <p>Assignment of the project, the archive and the variables.</p> <p>Field shows the current configuration.</p> |

| | |
|-----------------------|--|
| Configure assignments | Clicking on the button opens the dialog for configuring (on page 732) the assignments. |
|-----------------------|--|

LOT ARCHIVE SELECTION

| Parameters | Description |
|-----------------------|--|
| Lot archive selection | Configuration of the lot archive. |
| Project | <p>Selection of the project that is to be linked to a project from a drop-down list.</p> <p>If a project is selected, this project is forwarded to all other groupings in the report that offer project selection.</p> <p>If this grouping receives a message about a linked project from another grouping, this project is set in the drop-down list and the drop-down list is deactivated.</p> |
| Lot archive | Selection of a lot archive for the selected project from the drop-down list. |

DATA COLLECTION ITERATION CONFIGURATION

| Parameters | Description |
|---|--|
| Data collection iteration configuration | Configuration for iteration interval and cancel time. |
| Iteration interval | <p>Configuration of the iteration interval in:</p> <ul style="list-style-type: none"> ▶ Minuten ▶ Hours ▶ Days <p>Minimum: 1</p> <p>Maximum: 1000</p> <p>Default: 1 day</p> |
| Start of archiving | <p>Start of archiving</p> <ul style="list-style-type: none"> ▶ Date ▶ Time <p>▶ Default: 01.01.2013 00:00:00</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list.</p> <p>Possible settings:</p> <ul style="list-style-type: none"> ▶ Column chart and table ▶ Line chart and table ▶ Column chart ▶ Line chart ▶ Table |

ACTIONS

| Parameters | Description |
|----------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

Note: If the report is linked to a project via time filtering, the project selection is set to the linked project and a check is made to ensure that only archives from the project can be selected in both groupings.

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single-selection drop-down list with the equipment models for which the OEE performance figures can be calculated. Each equipment model contains the complete hierarchy path in its name.

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Column chart: A column chart for the time period is drawn. For each lot, a column is drawn for each indicator at the start time.
- ▶ Line chart: A trend line is drawn for each indicator. The times are the lot start times.
- ▶ Table: a table with the following columns:
 - Lot name (can be sorted dynamically)
 - Start time (can be sorted dynamically)
 - End time stamp (can be sorted dynamically)
 - OEE in %
 - Availability in %
 - Performance in %
 - Quality in %
 - Total production quantity in units
 - Good production quantity in units
 - Actual operating time in minutes
 - Planned operating time in minutes
 - Number of units that were possible with the planned equipment speed in the actual operating time

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListEquipments_OEE
- ▶ OEE_GetCounters

- ▶ OEE_GetStates
- ▶ OEE_Indicators_LotHistory
- ▶ ListLots
- ▶ ListShifts

Configuration of the OEE reports in zenon

For the calculation of the OEE performance indicators, certain metadata must be provided and configured in zenon.

OEE PERFORMANCE INDICATOR IN ACCORDANCE WITH WEIHENSTEPHAN STANDARD

The project and/or the metadata must provide the following data:

- ▶ Variables for filter
- ▶ Variables for OEE calculation
- ▶ Variables for calculation of performance indicators
- ▶ Variables for relative loss times
- ▶ Variables for absolute loss times
- ▶ Archives

VARIABLES FOR FILTER:

| Filter – Variables | | | | | | | | | |
|--------------------|----------------------------|---------------------|----------------------|-----------------------|--------------------------|------------------------------|-----------------------|-----------|-----------|
| No. | Standardization Properties | | | | | Properties of SCADA variable | | | |
| | Standard | Standard tag number | Standard name | Standard tag name | Machine | Name* (recommended) | Resource label | Origin | Data type |
| 12. | WS | 30001 | Pallet Type | <u>WS_Pallet_Type</u> | palletizer, depalletizer | [L][M]_WS_Pallet_Type | <u>WS_Pallet_Type</u> | Archive A | UDINT |
| 13. | WS | 30002 | Crate Type | <u>WS_Crate_Type</u> | packer, unpacker | [L][M]_WS_Crate_Type | <u>WS_Crate_Type</u> | Archive A | UDINT |
| 14. | WS | 30003 | Bottle Type | <u>WS_Bottle_Type</u> | | [L][M]_WS_Bottle_Type | <u>WS_Bottle_Type</u> | Archive A | UDINT |
| 15. | WS | 30021 | Bottling Tank Number | <u>WS_Bot_Tank_No</u> | all | [L][M]_WS_Bot_Tank_No | <u>WS_Bot_Tank_No</u> | Archive A | UDINT |

Each variable must be assigned to a reaction matrix that contains the available filter details. For this, the following applies:

- ▶ Only `numerical reaction matrices` are permitted.

- ▶ The assignment must be made with =. The characters > and < are not permitted.
- ▶ The default setting of the reaction matrix is ignored.
- ▶ If the same assignment exists more than once (for example: $xy = z$), only the one that is found first is used. All others are ignored.
- ▶ The name displayed in the filter is the limit value text. The language of this cannot be switched; existing control characters are cut off (e).
- ▶ The use of individual variables is optional. Only the variables that are needed for the filter need to be configured.

VARIABLES FOR OEE CALCULATION:

| OEE - Variables | | | | | | |
|-----------------|-----------------------|-----------|----------|-----------|--------------|------------------|
| Variable name* | Meaning | Data type | Unit | Origin | Connector | Equipment modell |
| (user-defined) | OperatingTime | REAL | min or h | archive A | SQL/zenon V6 | * |
| (user-defined) | LoadingTime | REAL | min or h | archive A | SQL/zenon V6 | * |
| (user-defined) | NetOperatingTime | REAL | min or h | archive A | SQL/zenon V6 | * |
| (user-defined) | ValuableOperatingTime | REAL | min or h | archive A | SQL/zenon V6 | * |

Note:

- ▶ * Variables must, for each equipment group for which an evaluation is possible, be created and linked to the equipment model. The same variables are, labeled otherwise (with WF=), also used for the waterfall diagram.
- ▶ These variables must be defined in zenon depending on the version in the Resources label (up to 7.11) with ME=... (for example: ME=OperatingTime, ...) or from zenon 7.20 in Meaning(OperatingTime, ...).

VARIABLES FOR PERFORMANCE FIGURE CALCULATION:

| Indicators – Variables | | | | | | |
|------------------------|-------------------------------|-----------|----------|-----------|--------------|-----------------|
| Variable name* | Meaning | Data type | Unit | Origin | Connector | Equipment model |
| (user-defined) | <u>MTBS_TimeCounter</u> | REAL | min or h | archive A | SQL/zenon V6 | * |
| (user-defined) | <u>MTBS_EventCounter</u> | UDINT | --- | archive A | SQL/zenon V6 | * |
| (user-defined) | <u>MTBF_TimeCounter</u> | REAL | min or h | archive A | SQL/zenon V6 | * |
| (user-defined) | <u>MTBF_EventCounter</u> | UDINT | --- | archive A | SQL/zenon V6 | * |
| (user-defined) | <u>MTTR_TimeCounter</u> | REAL | min or h | archive A | SQL/zenon V6 | * |
| (user-defined) | <u>MTTR_EventCounter</u> | UDINT | --- | archive A | SQL/zenon V6 | * |
| (user-defined) | <u>MTBL_TimeCounter</u> | REAL | min or h | archive A | SQL/zenon V6 | * |
| (user-defined) | <u>MTBL_EventCounter</u> | UDINT | --- | archive A | SQL/zenon V6 | * |
| (user-defined) | <u>TotalBottles</u> | UDINT | bt. | archive A | SQL/zenon V6 | * |
| (user-defined) | <u>GoodBottles</u> | UDINT | bt. | archive A | SQL/zenon V6 | * |
| (user-defined) | <u>EffectiveRuntime</u> | REAL | min or h | archive A | SQL/zenon V6 | * |
| (user-defined) | <u>GeneralRuntime</u> | REAL | min or h | archive A | SQL/zenon V6 | * |
| (user-defined) | <u>FilledAndSealedBottles</u> | UDINT | bt. | archive A | SQL/zenon V6 | * |
| (user-defined) | <u>MachineEffectiveOutput</u> | REAL | bt./min | archive A | SQL/zenon V6 | * |
| (user-defined) | <u>NominalOutput</u> | REAL | bt./min | archive A | SQL/zenon V6 | * |
| (user-defined) | <u>NominalSetOutput</u> | REAL | bt./min | archive A | SQL/zenon V6 | * |

Note:

- ▶ * Variables must, for each equipment group for which an evaluation is possible, be created and linked to the equipment model.
- ▶ These variables must be defined in zenon depending on the version in the Resources label (up to 7.11) with ME=... (ME=MTBS_TimeCounter, ... or from zenon 7.20 in Meaning (MTBS_TimeCounter, ...).

VARIABLES FOR RELATIVE LOSS TIMES

| Origin for relative losses analysis | | | | | |
|-------------------------------------|---------------------------|-----------|----------|-----------|--------------|
| Name | Meaning | Data type | Unit | Origin | Connector |
| [L][M]_ [Index]_CD_WF_Time_Batch* | <u>RelativeTimeLosses</u> | REAL | min or h | archive A | SQL/zenon V6 |

Examples:

| | | | | | |
|--------------------------------|---------------------------|------|----------|-----|-----|
| L01M03_0101_CD_WF_EffArbZeit | <u>RelativeTimeLosses</u> | REAL | min or h | WF | SQL |
| L01M03_0201_CD_WF_TatsProdZeit | <u>RelativeTimeLosses</u> | REAL | min or h | WF | SQL |
| ... | ... | ... | ... | ... | ... |

Note:

- ▶ * Proposed name in zenon. Not relevant to zenon Analyzer.
- ▶ These variables must be defined in zenon depending on version in the Resources label (up to 7.11) with ME=RelativeTimeLosses or from zenon 7.20 in Meaning with RelativeTimeLosses.

VARIABLES FOR ABSOLUTE LOSS TIMES

| Origin for absolute losses analysis | | | | | |
|-------------------------------------|------------------------------------|-----------|----------|-----------|-------------------------------|
| Name | Meaning | Data type | Unit | Origin | Connector |
| [L][M]_[Index]_CD_WF_Time_Batch* | AbsoluteTimeLosses | REAL | min or h | archive A | SQL/ zenon V6 |

Examples:

| | | | | | |
|--------------------------------|------------------------------------|------|----------|-----|-----|
| L01M03_0101_CD_WF_EffArbZeit | AbsoluteTimeLosses | REAL | min or h | WF | SQL |
| L01M03_0201_CD_WF_TatsProdZeit | AbsoluteTimeLosses | REAL | min or h | WF | SQL |
| ... | ... | ... | ... | ... | ... |

Note:

- ▶ * Proposed name in zenon. Not relevant to zenon Analyzer.
- ▶ These variables must be defined in zenon depending on version in the Resources label (up to 7.11) with ME=[AbsoluteTimeLosses](#) or from zenon 7.20 in Meaning with [AbsoluteTimeLosses](#).

ARCHIVES:

| Archives | | | |
|----------------------------------|----------------------------------|---------------------------------|---|
| Identification | Archive name | Type of scan | Description |
| (user-defined) | (user-defined) | event triggered | Lot archive, started and stopped with zenon functions. It contains the following data: <ul style="list-style-type: none"> - Variables used for the waterfall- and losses analysis - Variables used for the optional filters - Variables used for OEE- and indicator calculations |

Note: * Archive is linked to the equipment group.

OEE_INDICATOR STANDARD

The project and/or the metadata must contain the following data:

VARIABLES

| Variable name | Assignment (meaning) | Data type | Archive | Connector |
|---------------------|--|-----------|---|-------------|
| Freely selectable*. | Freely selectable. Default: Operating Time | BOOL** | Freely selectable. Identical for all three variables. Default: s1 | SQL/zenonV6 |
| Freely selectable*. | Freely selectable. Default: EffectiveWorkingTime | BOOL** | | SQL/zenonV6 |
| Freely selectable*. | Freely selectable. Default: DesignedSpeed | REAL | | SQL/zenonV6 |
| Freely selectable*. | Freely selectable. Default: GoodUnits | UDINT | Freely selectable. Identical for both variables. Default: c1 | SQL/zenonV6 |
| Freely selectable*. | Freely selectable. Default: TotalUnits | UDINT | | SQL/zenonV6 |

- ▶ * All variables are assigned to the same equipment group that is offered in the report as a filter. For each equipment group for which OEE evaluations are possible, variables with this meaning are created and linked to the equipment group.
- ▶ ** The times are calculated in the report and provide the time in which the variable was in the Period under review = 1.

ARCHIVES

| Archive short description | Archive name | Type of scan | Connector |
|-----------------------------------|--------------------|--------------------------------|-------------|
| Freely selectable. e.g.: S1 | Freely selectable. | On-change. | SQL/zenonV6 |
| Freely selectable. e.g.: C1 | Freely selectable. | Cyclical or event-controlled*. | SQL/zenonV6 |

- ▶ * The counters must be set to 0 after successful archiving.

OEE_INDICATOR PER BATCH

This report calculates the OEE performance indicators for each lot of an equipment group in a time period and provides these figures graphically and in a table.

VARIABLES

| Variable name | Assignment (meaning) | Data type | Archive | Connector |
|-------------------------------------|---|-----------|---|-------------|
| Freely selectable*. | Freely selectable. Default: Operating Time | BOOL** | Freely selectable. Identical for all three variables. Default: s1 | SQL/zenonV6 |
| Freely selectable*. | Freely selectable. Default: EffectiveWorkingTime | BOOL** | | SQL/zenonV6 |
| Freely selectable*. | Freely selectable. Default: DesignedSpeed | REAL | | SQL/zenonV6 |
| Freely selectable*. | Freely selectable. Default: GoodUnits | UDINT | Freely selectable. Identical for both variables. Default: c1 | SQL/zenonV6 |
| Freely selectable*. | Freely selectable. Default: TotalUnits | UDINT | | SQL/zenonV6 |
| For batch names, freely selectable. | - | STRING | Freely selectable. Default: oE | SQL/zenonV6 |

- ▶ * All variables are assigned to the same equipment group that is offered in the report as a filter. For each equipment group for which OEE evaluations are possible, variables with this meaning are created and linked to the equipment group.
- ▶ ** The times are calculated in the report and provide the time in which the variable was in the `Period under review = 1`.

ARCHIVES

| Archive | Archive name | Type of scan | Connector |
|---------|--------------------|--------------------------------|-------------|
| S1 | Freely selectable. | On-change. | SQL/zenonV6 |
| C1 | Freely selectable. | Cyclical or event-controlled*. | SQL/zenonV6 |
| oE* | Freely selectable. | Event-triggered. | SQL/zenonV6 |

- ▶ * The batch archive oE must be started and stopped using zenon functions. In the event of a stop, the value of the batch variable in the archive is saved as a batch name with start and stop time.

13.2.9 Target Actual Analysis

Reports with this theme provide report templates that allow the comparison of any desired machine-related measured sizes with prescribed values. In doing so, the actual values always come from an archive. The target values can come from an archive. If these are not archived, the target values are, if possible, extracted from the **NORM** table. The variables are addressed using equipment groups and meanings.

For this, the following applies:

- ▶ Variables that can be used for the target-actual analysis.
 - Are addressed using meanings
 - Must be linked to the respective equipment group
- ▶ The archive in which the actual values are saved must be linked to the respective equipment group.
- ▶ If these target values come from an archive instead of from the **NORM** table, then this archive must be linked to the respective equipment group.

REPORT TEMPLATES

The following report templates are available:

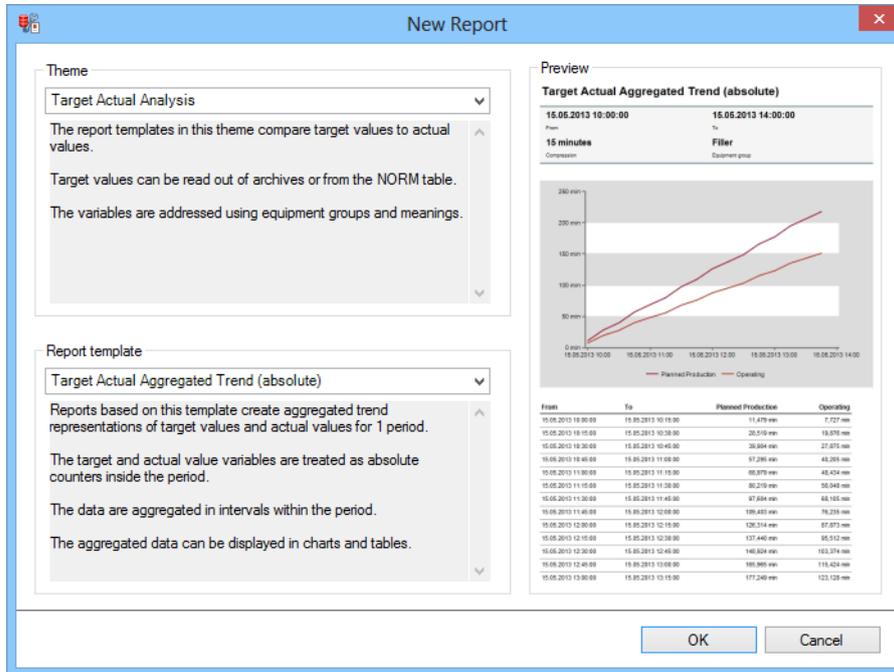
- ▶ Target Actual Aggregated Trend (absolute) (on page 1264): Gets the target and actual values for the set meanings and the selected equipment group and calculates absolute counters from this.
- ▶ Target Actual Aggregated Trend (relative) (on page 1272): Gets the target and actual values for the set meanings and the selected equipment group and calculates relative counters from this.

REPORT TEMPLATE SELECTION

To create a report based on this template:

1. Select the **New** entry in the **Report** menu or click on the corresponding symbol in the tool bar

- The dialog for selecting a template is opened



- In the **Theme** drop-down list, select **OEE Analysis**
- Select the template you want to use as a report template from the drop-down list

Target Actual Aggregated Trend (absolute)

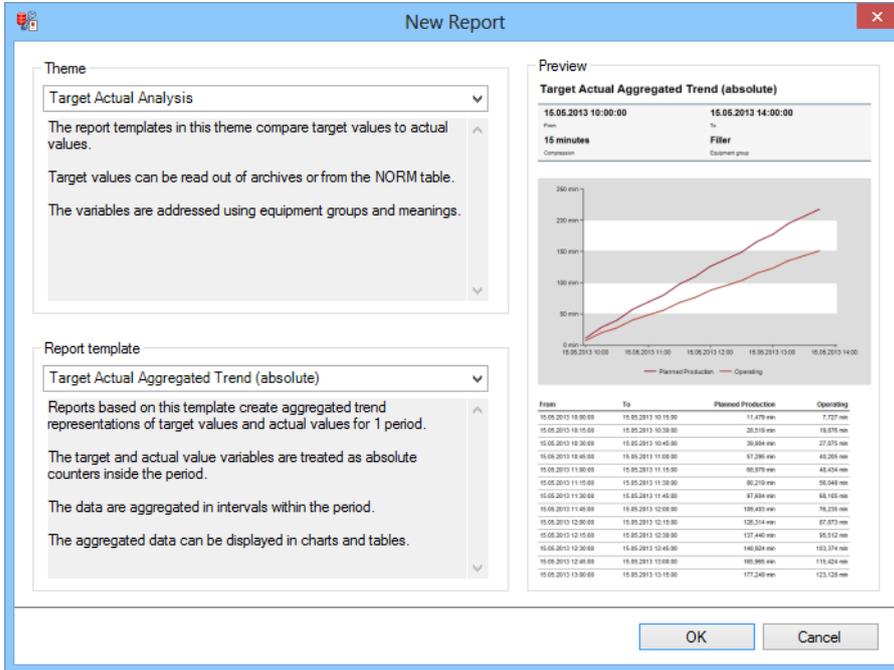
Reports that are based on this template get the set values and actual values for the set meanings and the selected equipment group. The absolute counters are calculated and displayed from this.

CREATE REPORT

To create a **Target Actual Aggregated Trend (absolute)** report:

- In the **Theme** drop-down list, select **Target Actual Analysis**

- from the drop-down list, select **Target Actual Aggregated Trend (absolute)** as a report template



Theme

Target Actual Analysis

The report templates in this theme compare target values to actual values.

Target values can be read out of archives or from the NORM table.

The variables are addressed using equipment groups and meanings.

Report template

Target Actual Aggregated Trend (absolute)

Reports based on this template create aggregated trend representations of target values and actual values for 1 period.

The target and actual value variables are treated as absolute counters inside the period.

The data are aggregated in intervals within the period.

The aggregated data can be displayed in charts and tables.

Preview

Target Actual Aggregated Trend (absolute)

From: 15.05.2013 10:00:00 To: 15.05.2013 14:00:00

15 minutes Filter

Compressor Equipment group

200 min
150 min
100 min
50 min
0 min

15.05.2013 10:00 15.05.2013 11:00 15.05.2013 12:00 15.05.2013 13:00 15.05.2013 14:00

Planned Production Operating

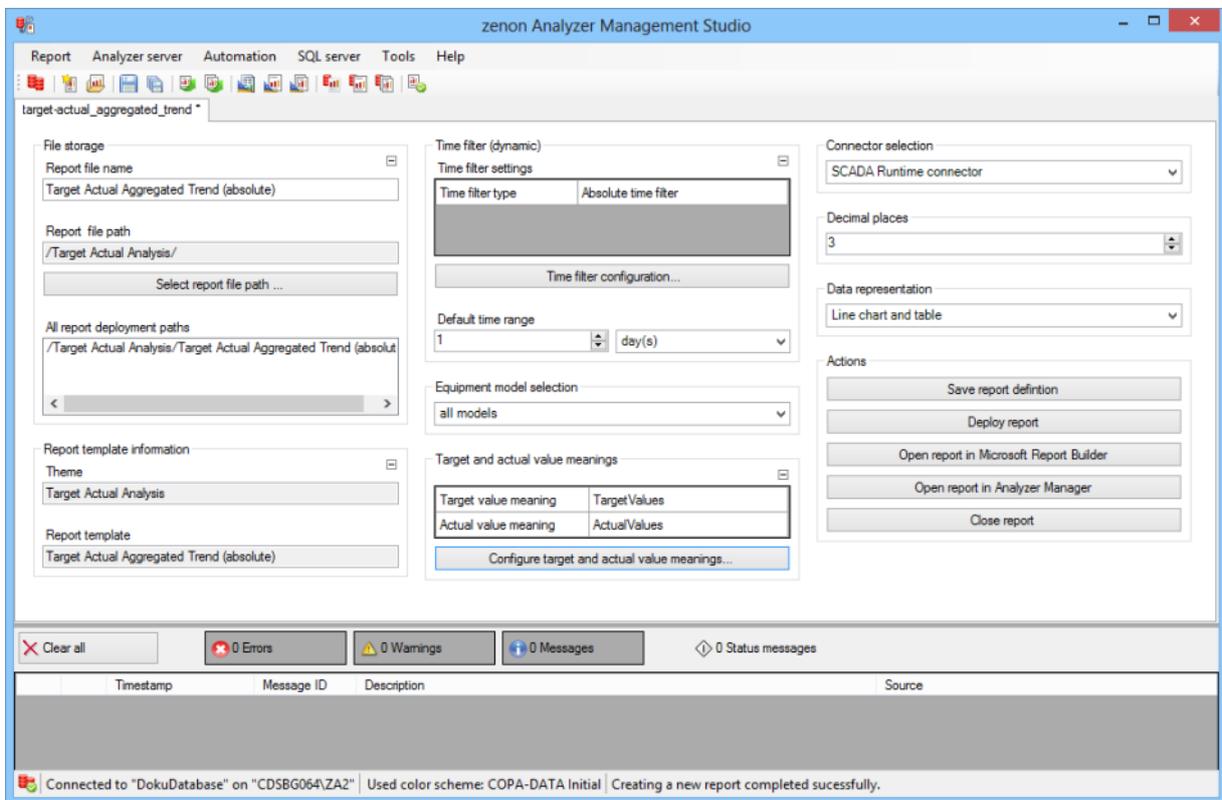
| From | To | Planned Production | Operating |
|---------------------|---------------------|--------------------|-------------|
| 15.05.2013 10:00:00 | 15.05.2013 10:15:00 | 11,479 min | 7,727 min |
| 15.05.2013 10:15:00 | 15.05.2013 10:30:00 | 25,510 min | 16,676 min |
| 15.05.2013 10:30:00 | 15.05.2013 10:45:00 | 36,884 min | 27,676 min |
| 15.05.2013 10:45:00 | 15.05.2013 11:00:00 | 57,260 min | 42,269 min |
| 15.05.2013 11:00:00 | 15.05.2013 11:15:00 | 66,970 min | 46,424 min |
| 15.05.2013 11:15:00 | 15.05.2013 11:30:00 | 82,219 min | 55,940 min |
| 15.05.2013 11:30:00 | 15.05.2013 11:45:00 | 97,654 min | 68,165 min |
| 15.05.2013 11:45:00 | 15.05.2013 12:00:00 | 109,431 min | 78,238 min |
| 15.05.2013 12:00:00 | 15.05.2013 12:15:00 | 126,314 min | 87,673 min |
| 15.05.2013 12:15:00 | 15.05.2013 12:30:00 | 137,440 min | 95,512 min |
| 15.05.2013 12:30:00 | 15.05.2013 12:45:00 | 142,503 min | 101,274 min |
| 15.05.2013 12:45:00 | 15.05.2013 13:00:00 | 165,965 min | 115,424 min |
| 15.05.2013 13:00:00 | 15.05.2013 13:15:00 | 177,240 min | 123,128 min |

OK Cancel

- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

TARGET AND ACTUAL VALUE MEANINGS

| Parameters | Description |
|--|--|
| Target and actual value meanings | Display and configuration of the meanings for set points and actual values. |
| List of configured meanings for set values and actual values | Table with the current settings for the meanings for the set points and actual values. |
| Configure target and actual value meanings | Clicking on the button opens the dialog for configuring the meanings (on page 756). |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list.</p> <p>Possible settings:</p> <ul style="list-style-type: none"> ▶ Column chart and table ▶ Line chart and table ▶ Column chart ▶ Line chart ▶ Table |

ACTIONS

| Parameters | Description |
|------------|----------------------------------|
| Actions | Possible actions for the report: |

| | |
|--|--|
| | <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |
|--|--|

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single selection from the equipment model.
- ▶ 1 x single selection of the aggregation interval. The following values are available:
 - 1 minute

- 15 minutes
- 30 minutes
- 1 hour
- 2 hours
- 6 hours
- 12 hours
- 1 day
- 1 week
- 1 month
- 1 quarter
- 1 year

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Line chart with the data
- ▶ Bar chart with the data
- ▶ Table with the following columns:
 - Interval Start
 - Interval End
 - Set value (heading: Variable name)
 - Actual value (heading: Variable name)

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListLots
- ▶ ListShifts
- ▶ TargetActualComparison_Absolute

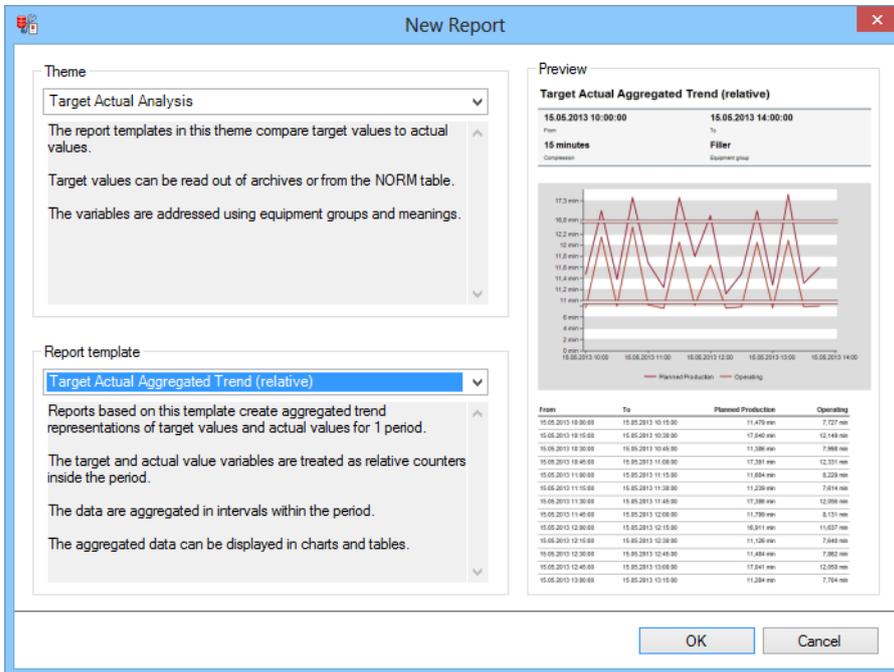
Target Actual Aggregated Trend (relative)

Reports that are based on this template get the set values and actual values for the set meanings and the selected equipment group. The relative counters are calculated and displayed from this.

CREATE REPORT

To create a **Target Actual Aggregated Trend (relative)** report:

1. In the **Theme** drop-down list, select **Target Actual Analysis**
2. from the drop-down list, select **Target Actual Aggregated Trend (relative)** as a report template



Theme

Target Actual Analysis

The report templates in this theme compare target values to actual values.

Target values can be read out of archives or from the NORM table.

The variables are addressed using equipment groups and meanings.

Report template

Target Actual Aggregated Trend (relative)

Reports based on this template create aggregated trend representations of target values and actual values for 1 period.

The target and actual value variables are treated as relative counters inside the period.

The data are aggregated in intervals within the period.

The aggregated data can be displayed in charts and tables.

Preview

Target Actual Aggregated Trend (relative)

15.05.2013 10:00:00 15.05.2013 14:00:00

From: 15 minutes To: Filter

Comment: Equipment group

17.3 min
16.8 min
16.3 min
15.8 min
15.3 min
14.8 min
14.3 min
13.8 min
13.3 min
12.8 min
12.3 min
11.8 min
11.3 min
10.8 min
10.3 min
9.8 min
9.3 min
8.8 min
8.3 min
7.8 min
7.3 min
6.8 min
6.3 min
5.8 min
5.3 min
4.8 min
4.3 min
3.8 min
3.3 min
2.8 min
2.3 min
1.8 min
1.3 min
0.8 min
0.3 min
0 min

15.05.2013 10:00 15.05.2013 11:00 15.05.2013 12:00 15.05.2013 13:00 15.05.2013 14:00

Planned Production Operating

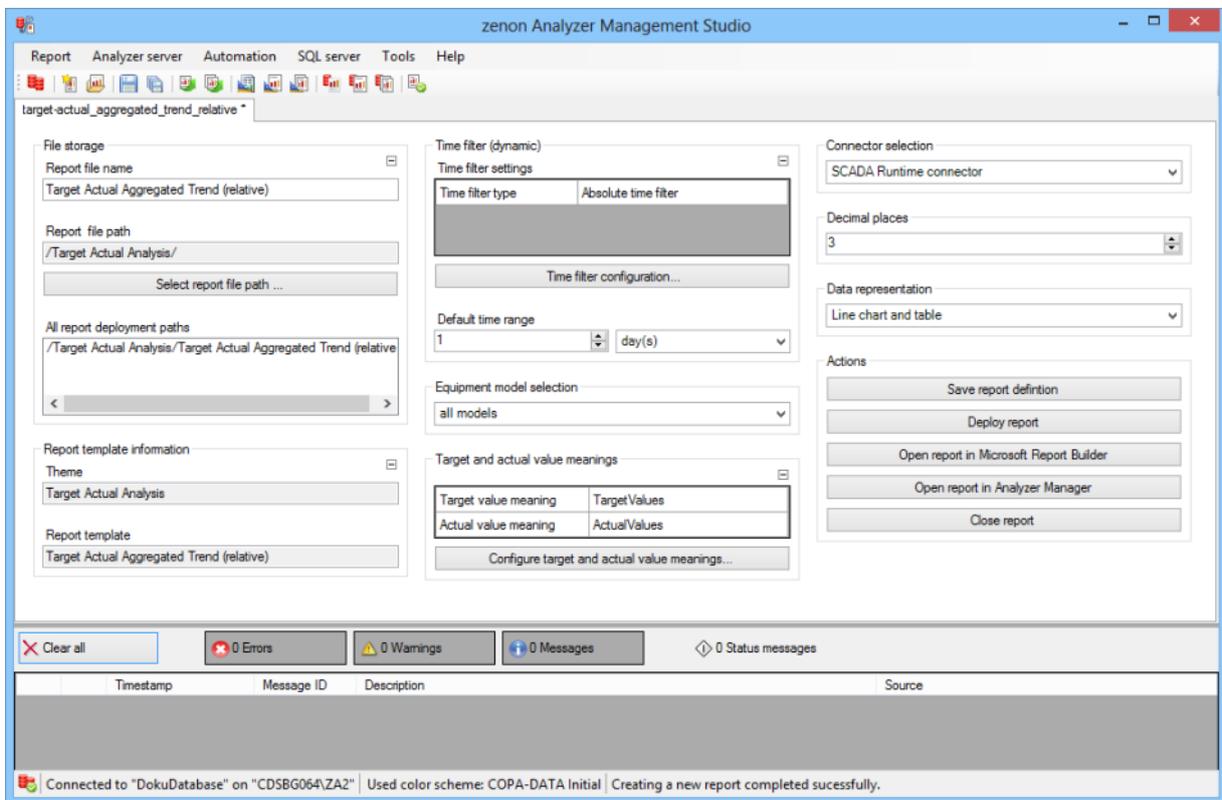
| From | To | Planned Production | Operating |
|---------------------|---------------------|--------------------|------------|
| 15.05.2013 10:00:00 | 15.05.2013 10:15:00 | 11,470 min | 7,727 min |
| 15.05.2013 10:15:00 | 15.05.2013 10:30:00 | 17,040 min | 12,149 min |
| 15.05.2013 10:30:00 | 15.05.2013 10:45:00 | 11,280 min | 7,968 min |
| 15.05.2013 10:45:00 | 15.05.2013 11:00:00 | 17,261 min | 12,331 min |
| 15.05.2013 11:00:00 | 15.05.2013 11:15:00 | 11,694 min | 8,229 min |
| 15.05.2013 11:15:00 | 15.05.2013 11:30:00 | 11,230 min | 7,614 min |
| 15.05.2013 11:30:00 | 15.05.2013 11:45:00 | 17,380 min | 12,998 min |
| 15.05.2013 11:45:00 | 15.05.2013 12:00:00 | 11,760 min | 8,131 min |
| 15.05.2013 12:00:00 | 15.05.2013 12:15:00 | 16,811 min | 11,027 min |
| 15.05.2013 12:15:00 | 15.05.2013 12:30:00 | 11,130 min | 7,460 min |
| 15.05.2013 12:30:00 | 15.05.2013 12:45:00 | 11,484 min | 7,862 min |
| 15.05.2013 12:45:00 | 15.05.2013 13:00:00 | 17,041 min | 12,059 min |
| 15.05.2013 13:00:00 | 15.05.2013 13:15:00 | 11,284 min | 7,794 min |

OK Cancel

3. Click on the **OK** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

TARGET AND ACTUAL VALUE MEANINGS

| Parameters | Description |
|--|--|
| Target and actual value meanings | Display and configuration of the meanings for set points and actual values. |
| List of configured meanings for set values and actual values | Table with the current settings for the meanings for the set points and actual values. |
| Configure target and actual value meanings | Clicking on the button opens the dialog for configuring the meanings (on page 756). |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|--|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Column chart and table ▶ Line chart and table ▶ Column chart ▶ Line chart ▶ Table |

ACTIONS

| Parameters | Description |
|------------|----------------------------------|
| Actions | Possible actions for the report: |

| | |
|--|--|
| | <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |
|--|--|

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single selection from the equipment model.
- ▶ 1 x single selection of the aggregation interval. The following values are available:
 - 1 minute

- 15 minutes
- 30 minutes
- 1 hour
- 2 hours
- 6 hours
- 12 hours
- 1 day
- 1 week
- 1 month
- 1 quarter
- 1 year

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Line chart with the data
- ▶ Bar chart with the data
- ▶ Table with the following columns:
 - Interval Start
 - Interval End
 - Set value (heading: Variable name)
 - Actual value (heading: Variable name)

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListLots
- ▶ ListShifts
- ▶ TargetActualComparison_Relative

Example

OBJECTIVE

An analysis is to take place for five machines, using a comparison of target and actual values with absolute counters:

- ▶ Production quantity
- ▶ Electricity consumption
- ▶ Operating temperature

PREPARATION

- ▶ A separate report is configured for each statistic.
- ▶ Each report works with different meanings.
- ▶ In zenon, archived variables are present for the desired statistics.
- ▶ The meanings are set as follows for all machines:

| Variable | Meaning |
|----------------------------------|-------------|
| Production quantity - target | ProdTarget |
| Production quantity - actual | ProdActual |
| Electricity consumption - target | PowerTarget |
| Electricity consumption - actual | PowerActual |
| Operating temperature - target | TempTarget |
| Operating temperature - actual | TempActual |

REPORT

In the next step, three reports are created on the basis of the report template `TargetActualComparison_Absolute`:

| Report name | Meanings | Report provides: |
|--------------------------------------|--|---|
| Target Actual Analysis - Production | <ul style="list-style-type: none"> ▶ ProdTarget ▶ ProdActual | Target-actual comparison for production quantity for all five machines. |
| Target Actual Analysis - Power | <ul style="list-style-type: none"> ▶ PowerTarget ▶ PowerActual | Target-actual comparison for electricity consumption for all five machines. |
| Target Actual Analysis - Temperature | <ul style="list-style-type: none"> ▶ TempTarget ▶ TempActual | Target-actual comparison for operating temperature for all five machines. |

13.2.10 Hydroelectric Power Plant Analysis

Reports with this theme provide report templates that determine and display various counters for hydraulic power plants.

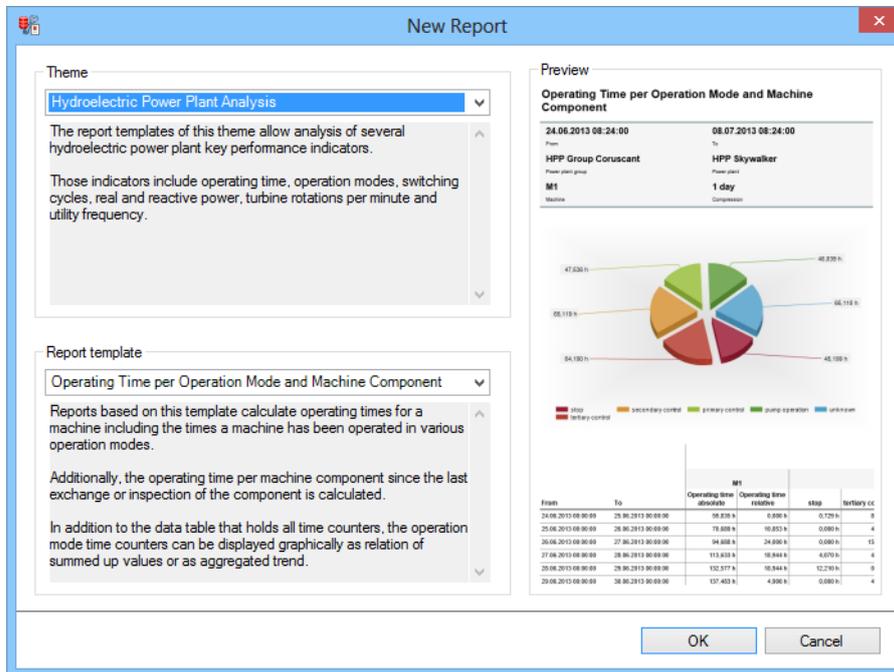
The following report templates are available:

- ▶ Operating Time per Operation Mode and Machine Component (on page 1281): Calculates operating times for the individual operating modes of a machine and machine components.
- ▶ Operating Time per Power Range (on page 1291): Calculates operating times for a machine per power range.
- ▶ Circuit Breaker Switching Cycles (on page 1300): Calculates switching cycles for circuit breakers.
- ▶ Active and Reactive Power Counters (on page 1310): Calculates counter values for active and reactive power.
- ▶ Power Line Frequency (on page 1320): Calculates time counters for different frequency bands of the network frequency of a machine.
- ▶ Machine Event Counters (on page 1329): Calculates counters for different events that may occur for a machine.

REPORT TEMPLATE SELECTION

To create a report based on this template:

1. Select the **New** entry in the **Report** menu or click on the corresponding symbol in the tool bar
2. The dialog for selecting a template is opened



3. In the **Theme** drop-down list, select **Hydroelectric Power Plant Analysis**
4. Select the template you want to use as a report template from the drop-down list

Operating Time per Operation Mode and Machine Component

Reports that are based on this template calculate operating times for the individual operating modes of a machine. In addition, the operating times per machine component since the last inspection of the components are calculated.

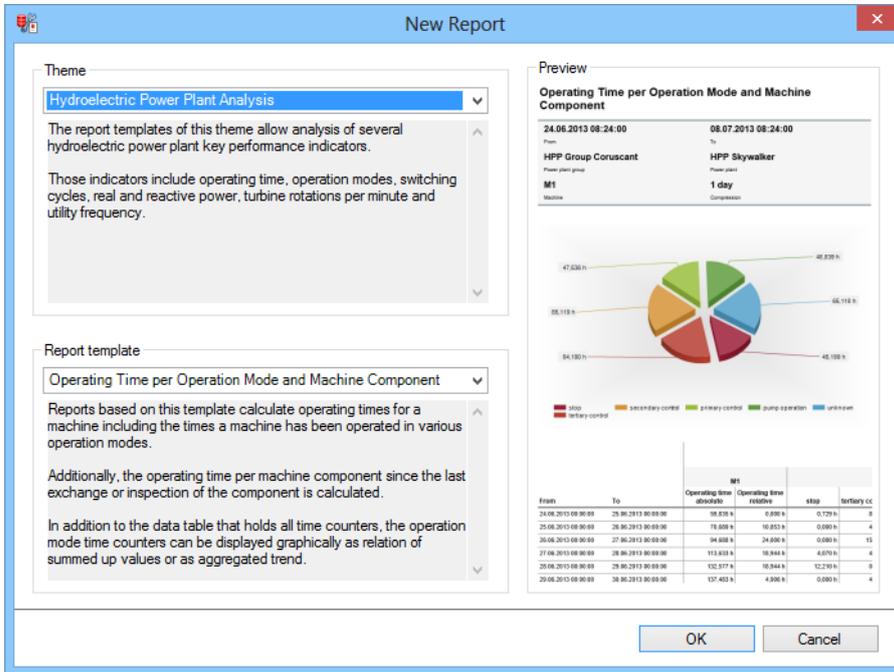
The display is a data table that contains all time counters. In addition, the time counters for the operating modes can be displayed graphically as a sum or aggregation trend.

CREATE REPORT

To create an **Operating Time per Operation Mode and Machine Component** report:

1. In the **Theme** drop-down list, select **Hydroelectric Power Plant Analysis**

- from the drop-down list, select **Operating Time per Operation Mode and Machine Component** as a report template



Theme

Hydroelectric Power Plant Analysis

The report templates of this theme allow analysis of several hydroelectric power plant key performance indicators.

Those indicators include operating time, operation modes, switching cycles, real and reactive power, turbine rotations per minute and utility frequency.

Report template

Operating Time per Operation Mode and Machine Component

Reports based on this template calculate operating times for a machine including the times a machine has been operated in various operation modes.

Additionally, the operating time per machine component since the last exchange or inspection of the component is calculated.

In addition to the data table that holds all time counters, the operation mode time counters can be displayed graphically as relation of summed up values or as aggregated trend.

Preview

Operating Time per Operation Mode and Machine Component

From: 24.06.2013 08:24:00 To: 08.07.2013 08:24:00

HPP Group Coruscant HPP Skywalker

M1 1 day

Machine Component

47,536 h 48,839 h 66,118 h 66,118 h 48,198 h

stop secondary control primary control pump operation unknown

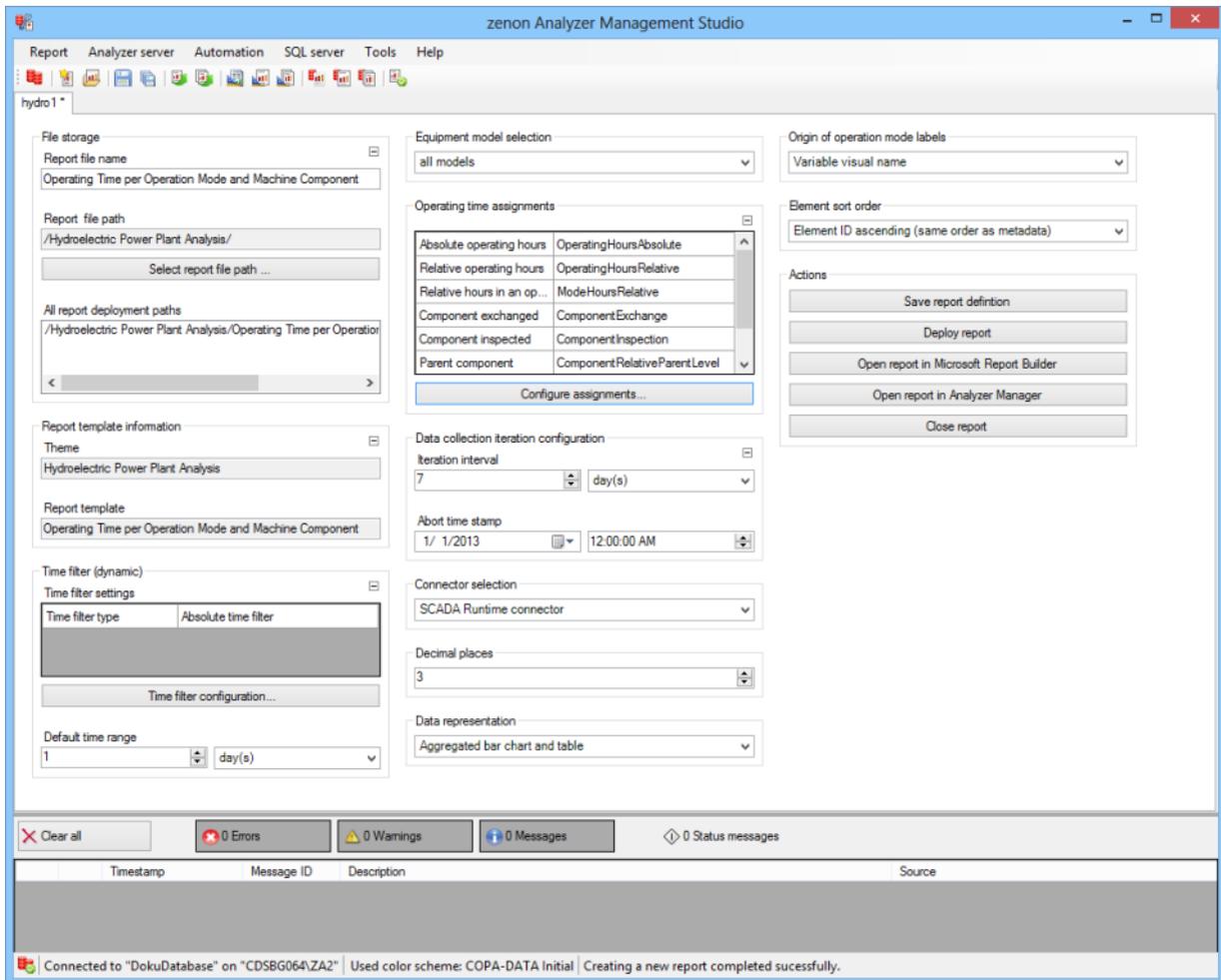
| | | M1 | | | | |
|---------------------|---------------------|-------------------------|-------------------------|----------|-------------|----|
| | | Operating time absolute | Operating time relative | stop | tertiary CC | |
| From: | To: | | | | | |
| 24.06.2013 08:00:00 | 25.06.2013 00:00:00 | 19,839 h | 0,890 h | 0,729 h | | 4 |
| 25.06.2013 08:00:00 | 26.06.2013 00:00:00 | 19,839 h | 10,833 h | 0,000 h | | 4 |
| 26.06.2013 08:00:00 | 27.06.2013 00:00:00 | 94,868 h | 24,880 h | 0,000 h | | 15 |
| 27.06.2013 08:00:00 | 28.06.2013 00:00:00 | 113,833 h | 18,944 h | 4,070 h | | 4 |
| 28.06.2013 08:00:00 | 29.06.2013 00:00:00 | 122,273 h | 18,944 h | 12,219 h | | 9 |
| 29.06.2013 08:00:00 | 30.06.2013 00:00:00 | 127,452 h | 4,998 h | 0,000 h | | 4 |

OK Cancel

- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

ASSIGNMENTS FOR POWER STATION OPERATING TIMES

| Parameters | Description |
|---|--|
| Assignments for power station operating times | Display and configuration of the assignments for power station operating times per machine component and operating mode. |
| Configure assignments | Clicking on the button opens the dialog for configuring the archives (on page 785). |

DATA COLLECTION ITERATION CONFIGURATION

| Parameters | Description |
|--|--|
| Data collection iteration configuration | Configuration for iteration interval and cancel time. |
| Iteration interval | <p>Configuration of the iteration interval in:</p> <ul style="list-style-type: none"> ▶ Minuten ▶ Hours ▶ Days <p>Minimum: 1</p> <p>Maximum: 1000</p> <p>Default: 1 day</p> |
| Start of archiving | <p>Start of archiving</p> <ul style="list-style-type: none"> ▶ Date ▶ Time <p>▶ Default: 01.01.2013 00:00:00</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|--|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ aggregated column chart and table ▶ aggregated pie chart and table ▶ Aggregated trend bar chart and table ▶ Aggregated trend line chart and table ▶ Table |

ORIGIN OF OPERATION MODE LABELS

| Parameters | Description |
|-----------------------|---|
| Operation mode labels | <p>Selection of the marking for operating modes from drop-down list:</p> <ul style="list-style-type: none"> ▶ Variable visual name ▶ Descriptive text for the variables |

ELEMENT SORT ORDER

| Parameters | Description |
|------------|-------------|
|------------|-------------|

| | |
|--------------------|---|
| Element sort order | <p>Selection of the sorting criteria from the drop-down list:</p> <ul style="list-style-type: none"> ▶ Element ID ascending (same order as metadata table) ▶ Element ID descending (inverse order as metadata table) ▶ Element label alphabetically ascending ▶ Element label alphabetically descending |
|--------------------|---|

ACTIONS

| Parameters | Description |
|------------|---|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection

- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single selection from the equipment model.
- ▶ 1 x single selection of the aggregation interval. The following values are available:
 - 1 minute
 - 15 minutes
 - 30 minutes
 - 1 hour
 - 2 hours
 - 6 hours
 - 12 hours
 - 1 day
 - 1 week
 - 1 month
 - 1 quarter
 - 1 year

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Bar chart with the sums of the relative counters for operating modes.
- ▶ Pie chart with the sums of the relative counters for operating modes.
- ▶ Bar chart with the aggregation trends of the relative counters for operating modes.
- ▶ Line chart with the aggregation trends of the relative counters for operating modes.
- ▶ Table with the following structure:

Detail cells: Always contain the counter value for the column group in the interval.

Sum row: Has the sum for relative counters and the last value for absolute counters.

Row groups: Time intervals within the report period under review.

There are the following column groupings:

- Absolute and relative counter for machine operating time.
- Relative counter for operation modes.
The sorting configuration takes effect within this group.
- Components that do not use a component name (such as a running wheel) and do not have a superordinate component.
The sorting configuration takes effect within this group.
- Components that use a component name (such as a running wheel) but do not have a superordinate component.
The sorting configuration takes effect within this group.
- Components that do not use a component name (such as a running wheel) but do have a superordinate component.
The sorting configuration takes effect within this group.
- Components that use a component name (such as a running wheel) and have a superordinate component.
The sorting configuration takes effect within this group.



Attention

If several elements in the table have the same name and one of the marking-based sorting variants (alphabetical) was selected, then these fields overlap and their values are combined.

If a sorting variant based on the ID is selected, this effect does not occur. In this case, there are several columns with the same marking in the table.

Several elements with the same name can be present if, for example, the descriptive text is selected as a marking and descriptive texts are identical.

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListLots

- ▶ ListShifts
- ▶ GetEquipmentTreeForGroup
- ▶ ListEquipmentTree_Meanings
- ▶ ListHppStructureNames
- ▶ GetChildEquipments
- ▶ HppOperatingHours

Operating Time per Power Range

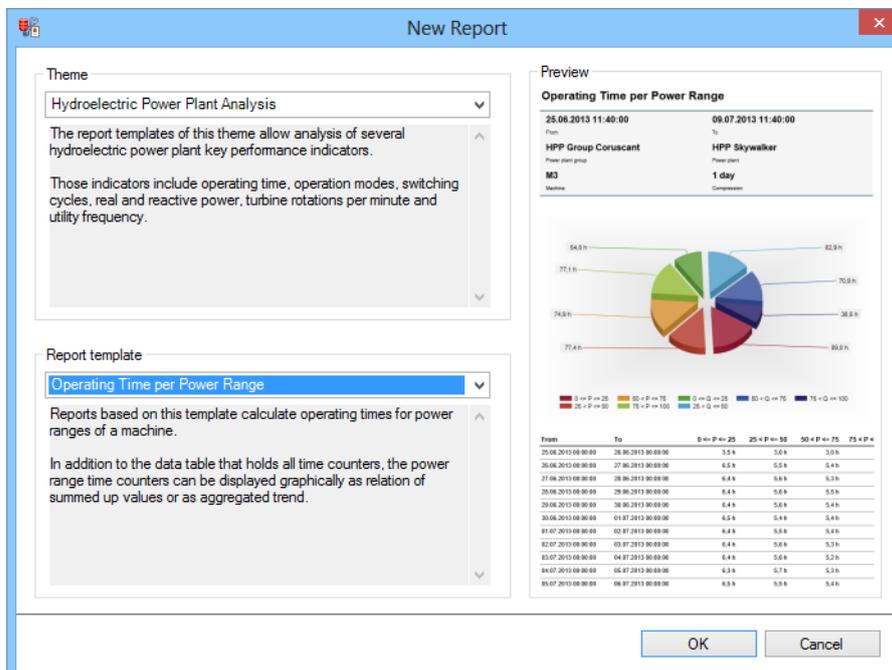
Reports that are based on this template calculate operating times for a machine per power range.

The display is a data table that contains all time counters. In addition, the time counters for the power ranges can be displayed graphically as a sum or aggregation trend.

CREATE REPORT

To create an **Operating Time per Power Range** report:

1. In the **Theme** drop-down list, select **Hydroelectric Power Plant Analysis**
2. from the drop-down list, select **Operating Time per Power Range** as a report template



Theme

Hydroelectric Power Plant Analysis

The report templates of this theme allow analysis of several hydroelectric power plant key performance indicators.

Those indicators include operating time, operation modes, switching cycles, real and reactive power, turbine rotations per minute and utility frequency.

Report template

Operating Time per Power Range

Reports based on this template calculate operating times for power ranges of a machine.

In addition to the data table that holds all time counters, the power range time counters can be displayed graphically as relation of summed up values or as aggregated trend.

Preview

Operating Time per Power Range

From: 25.06.2013 11:40:00 To: 09.07.2013 11:40:00

HPP Group Coruscant HPP Skywalker

Power plant group Power plant

1 day

Comparison

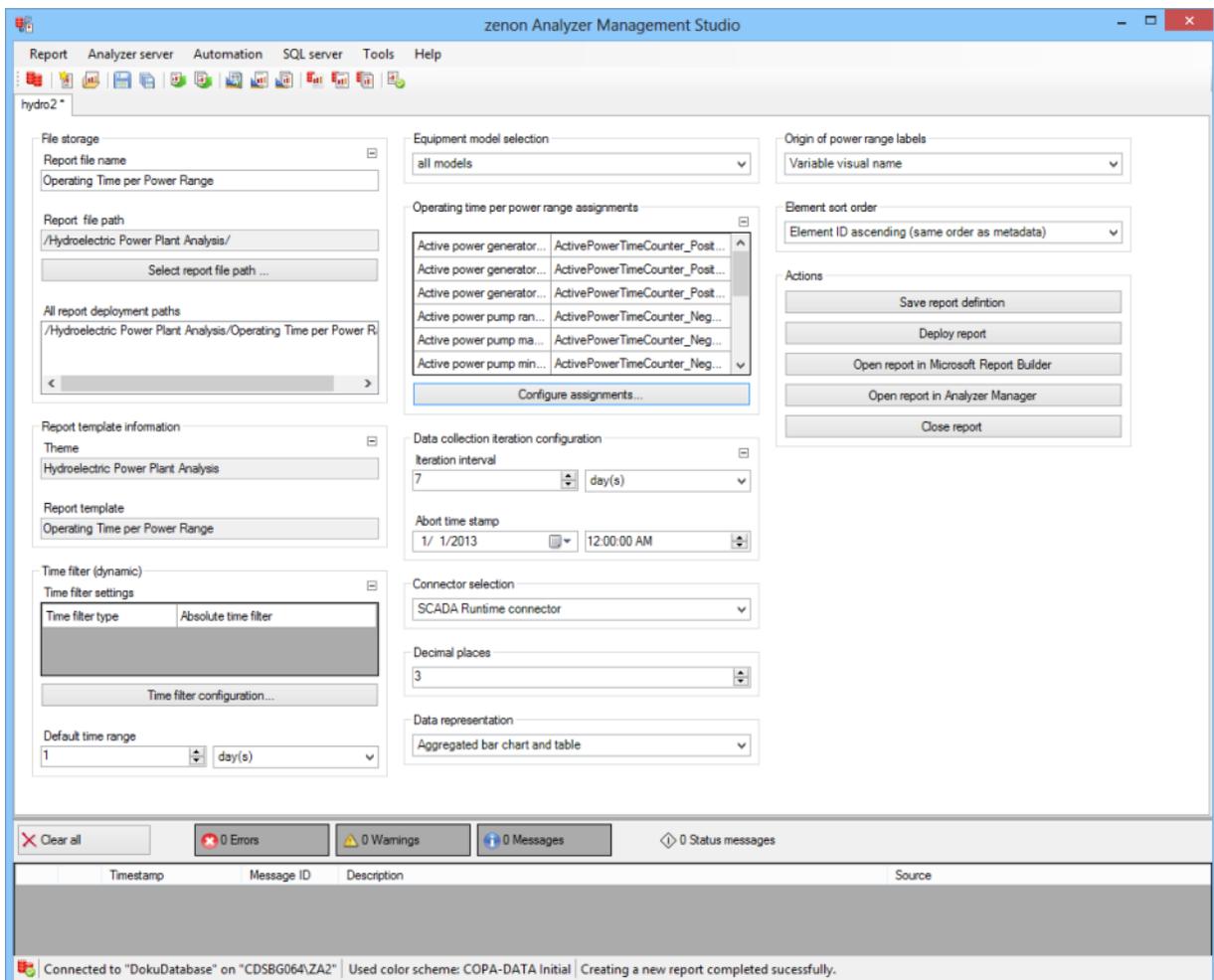


| From | To | 0 <= P <= 25 | 25 < P <= 50 | 50 <= P <= 75 | 75 < P <= 100 |
|---------------------|---------------------|--------------|--------------|---------------|---------------|
| 25.06.2013 00:00:00 | 26.06.2013 00:00:00 | 3.5 h | 3.0 h | 3.0 h | |
| 26.06.2013 00:00:00 | 27.06.2013 00:00:00 | 6.5 h | 5.5 h | 5.4 h | |
| 27.06.2013 00:00:00 | 28.06.2013 00:00:00 | 6.4 h | 6.6 h | 5.8 h | |
| 28.06.2013 00:00:00 | 29.06.2013 00:00:00 | 6.4 h | 5.6 h | 5.5 h | |
| 29.06.2013 00:00:00 | 30.06.2013 00:00:00 | 6.4 h | 5.6 h | 5.4 h | |
| 30.06.2013 00:00:00 | 01.07.2013 00:00:00 | 6.5 h | 5.4 h | 5.4 h | |
| 01.07.2013 00:00:00 | 02.07.2013 00:00:00 | 6.4 h | 5.5 h | 5.4 h | |
| 02.07.2013 00:00:00 | 03.07.2013 00:00:00 | 6.4 h | 5.6 h | 5.3 h | |
| 03.07.2013 00:00:00 | 04.07.2013 00:00:00 | 6.4 h | 5.6 h | 5.2 h | |
| 04.07.2013 00:00:00 | 05.07.2013 00:00:00 | 6.3 h | 5.7 h | 5.3 h | |
| 05.07.2013 00:00:00 | 06.07.2013 00:00:00 | 6.5 h | 5.5 h | 5.4 h | |

3. Click on the  button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

OPERATING TIME PER POWER RANGE ASSIGNMENTS

| Parameters | Description |
|--|---|
| Operating time per power range assignments | Display and configuration of the assignments for power station operating times per load area. |
| Configure assignments | Clicking on the button opens the dialog for configuring the archives (on page 790). |

DATA COLLECTION ITERATION CONFIGURATION

| Parameters | Description |
|---|--|
| Data collection iteration configuration | Configuration for iteration interval and cancel time. |
| Iteration interval | <p>Configuration of the iteration interval in:</p> <ul style="list-style-type: none"> ▶ Minuten ▶ Hours ▶ Days <p>Minimum: 1</p> <p>Maximum: 1000</p> <p>Default: 1 day</p> |
| Start of archiving | <p>Start of archiving</p> <ul style="list-style-type: none"> ▶ Date ▶ Time <p>▶ Default: 01.01.2013 00:00:00</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|--|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ aggregated column chart and table ▶ aggregated pie chart and table ▶ Aggregated trend bar chart and table ▶ Aggregated trend line chart and table ▶ Table |

ORIGIN OF OPERATION MODE LABELS

| Parameters | Description |
|-----------------------|---|
| Operation mode labels | <p>Selection of the marking for operating modes from drop-down list:</p> <ul style="list-style-type: none"> ▶ Variable visual name ▶ Descriptive text for the variables |

ELEMENT SORT ORDER

| Parameters | Description |
|------------|-------------|
|------------|-------------|

| | |
|--------------------|---|
| Element sort order | <p>Selection of the sorting criteria from the drop-down list:</p> <ul style="list-style-type: none"> ▶ Element ID ascending (same order as metadata table) ▶ Element ID descending (inverse order as metadata table) ▶ Element label alphabetically ascending ▶ Element label alphabetically descending |
|--------------------|---|

ACTIONS

| Parameters | Description |
|------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection

- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single selection from the equipment model.
- ▶ 1 x single selection of the aggregation interval. The following values are available:
 - 1 minute
 - 15 minutes
 - 30 minutes
 - 1 hour
 - 2 hours
 - 6 hours
 - 12 hours
 - 1 day
 - 1 week
 - 1 month
 - 1 quarter
 - 1 year

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Bar chart with the sums of the relative counters for power range operating time.
- ▶ Pie chart with the sums of the relative counters for power range operating time.
- ▶ Bar chart with the aggregation trends of the relative counters for power range operating time.
- ▶ Line chart with the aggregation trends of the relative counters for power range operating time.
- ▶ Table with the following structure:

Detail cells: Always contain the counter value for the column group in the interval.

Sum row: Has the sum for relative counters and the last value for absolute counters.

Row groups: Time intervals within the report period under review.

There are the following column groupings:

- Active power generator range.
The sorting configuration takes effect within this group.
- Active power generator maximum.
- Active power generator minimum.
- Active power pump range.
The sorting configuration takes effect within this group.
- Active power pump maximum.
- Active power pump minimum.
- Reactive power generator range.
The sorting configuration takes effect within this group.
- Reactive power generator maximum.
- Reactive power generator minimum.
- Reactive power pump range.
The sorting configuration takes effect within this group.
- Reactive power pump maximum.
- Reactive power pump minimum.



Attention

If several elements in the table have the same name and one of the marking-based sorting variants (alphabetical) was selected, then these fields overlap and their values are combined.

If a sorting variant based on the ID is selected, this effect does not occur. In this case, there are several columns with the same marking in the table.

Several elements with the same name can be present if, for example, the descriptive text is selected as a marking and descriptive texts are identical.

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPS and UDFs:

- ▶ ListLots
- ▶ ListShifts
- ▶ GetEquipmentTreeForGroup
- ▶ ListEquipmentTree_Meanings
- ▶ ListHppStructureNames
- ▶ HppPowerHours

Circuit Breaker Switching Cycles

Reports that are based on this template calculate switching cycles for circuit breakers. Based on a relative switching cycle counter, absolute switching cycle counters for a circuit breaker are calculated. These absolute counters are reset if the circuit breaker is inspected or replaced.

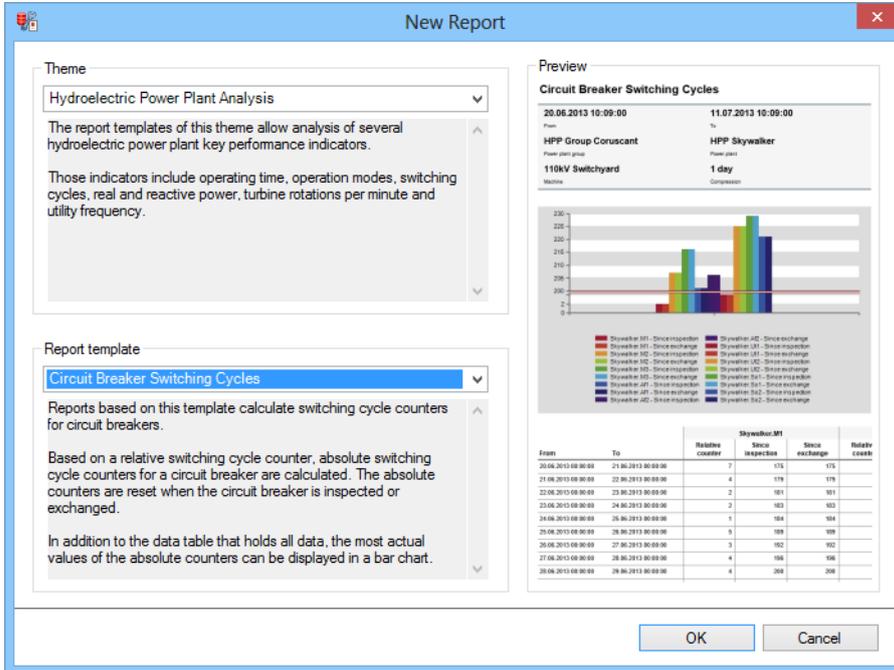
The display is a data table that contains all data. In addition, the most recent absolute counters can be displayed in a bar chart.

CREATE REPORT

To create a **Circuit Breaker Switching Cycles** report:

1. In the **Theme** drop-down list, select **Hydroelectric Power Plant Analysis**

2. Select **Circuit Breaker Switching Cycles** from the drop-down list as a report template



Theme
Hydroelectric Power Plant Analysis

The report templates of this theme allow analysis of several hydroelectric power plant key performance indicators. Those indicators include operating time, operation modes, switching cycles, real and reactive power, turbine rotations per minute and utility frequency.

Report template
Circuit Breaker Switching Cycles

Reports based on this template calculate switching cycle counters for circuit breakers.

Based on a relative switching cycle counter, absolute switching cycle counters for a circuit breaker are calculated. The absolute counters are reset when the circuit breaker is inspected or exchanged.

In addition to the data table that holds all data, the most actual values of the absolute counters can be displayed in a bar chart.

Preview
Circuit Breaker Switching Cycles

From: 20.06.2013 10:09:00 To: 11.07.2013 10:09:00
HPP Group Coruscent HPP Skywalker
110kV Switchyard 1 day
Machine

Bar chart showing switching cycles for various circuit breakers (e.g., S11, S12, S13, S14, S15, S16, S17, S18, S19, S20, S21, S22, S23, S24, S25, S26, S27, S28, S29, S30, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45, S46, S47, S48, S49, S50, S51, S52, S53, S54, S55, S56, S57, S58, S59, S60, S61, S62, S63, S64, S65, S66, S67, S68, S69, S70, S71, S72, S73, S74, S75, S76, S77, S78, S79, S80, S81, S82, S83, S84, S85, S86, S87, S88, S89, S90, S91, S92, S93, S94, S95, S96, S97, S98, S99, S100).

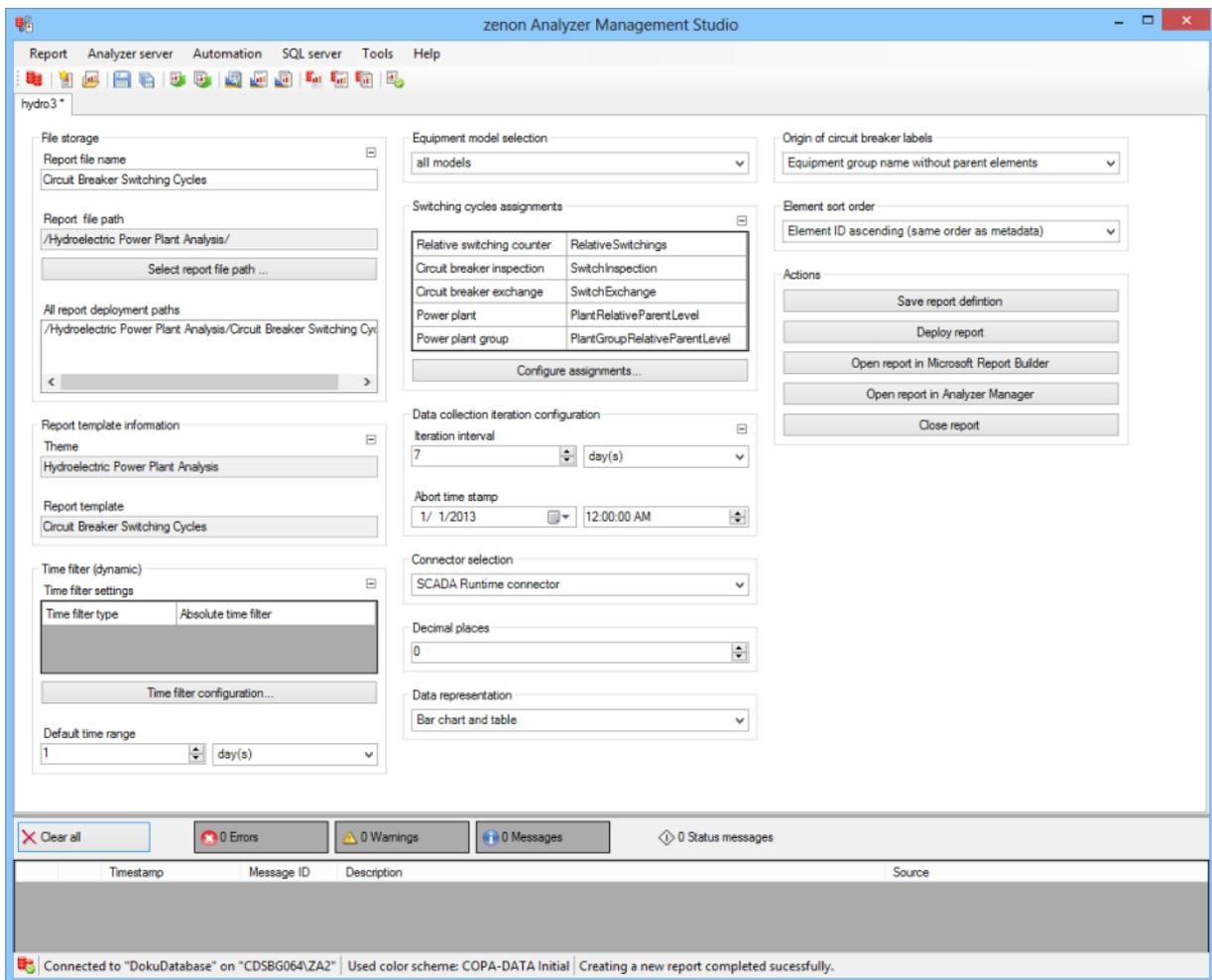
| From | To | Relative counter | Since inspection | Since exchange | Relativ count |
|---------------------|---------------------|------------------|------------------|----------------|---------------|
| 20.06.2013 00:00:00 | 21.06.2013 00:00:00 | 7 | 176 | 176 | |
| 21.06.2013 00:00:00 | 22.06.2013 00:00:00 | 4 | 179 | 179 | |
| 22.06.2013 00:00:00 | 23.06.2013 00:00:00 | 2 | 181 | 181 | |
| 23.06.2013 00:00:00 | 24.06.2013 00:00:00 | 2 | 183 | 183 | |
| 24.06.2013 00:00:00 | 25.06.2013 00:00:00 | 1 | 184 | 184 | |
| 25.06.2013 00:00:00 | 26.06.2013 00:00:00 | 3 | 188 | 188 | |
| 26.06.2013 00:00:00 | 27.06.2013 00:00:00 | 3 | 192 | 192 | |
| 27.06.2013 00:00:00 | 28.06.2013 00:00:00 | 4 | 196 | 196 | |
| 28.06.2013 00:00:00 | 29.06.2013 00:00:00 | 4 | 200 | 200 | |

OK Cancel

3. Click on the **OK** button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

SWITCHING CYCLES ASSIGNMENTS

| Parameters | Description |
|------------------------------|---|
| Switching cycles assignments | Display and configuration of the assignment for power switching cycles. |
| Configure assignments | Clicking on the button opens the dialog for configuring the archives (on page 796). |

DATA COLLECTION ITERATION CONFIGURATION

| Parameters | Description |
|--|--|
| Data collection iteration configuration | Configuration for iteration interval and cancel time. |
| Iteration interval | <p>Configuration of the iteration interval in:</p> <ul style="list-style-type: none"> ▶ Minuten ▶ Hours ▶ Days <p>Minimum: 1</p> <p>Maximum: 1000</p> <p>Default: 1 day</p> |
| Start of archiving | <p>Start of archiving</p> <ul style="list-style-type: none"> ▶ Date ▶ Time ▶ Default: 01.01.2013 00:00:00 |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|--|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"><li>▶ Minimum: 0<li>▶ Maximum: 10<li>▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

Data representation

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list.</p> <p>Possible settings:</p> <ul style="list-style-type: none"> ▶ Column chart and table ▶ Table |

ORIGIN OF OPERATION MODE LABELS

| Parameters | Description |
|-----------------------|---|
| Operation mode labels | <p>Selection of the marking for operating modes from drop-down list:</p> <ul style="list-style-type: none"> ▶ Variable visual name ▶ Descriptive text for the variables |

ELEMENT SORT ORDER

| Parameters | Description |
|--------------------|---|
| Element sort order | <p>Selection of the sorting criteria from the drop-down list:</p> <ul style="list-style-type: none"> ▶ Element ID ascending (same order as metadata table) ▶ Element ID descending (inverse order as metadata table) ▶ Element label alphabetically ascending ▶ Element label alphabetically descending |

ACTIONS

| Parameters | Description |
|------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ Save report definition: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ Deploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked |

| | |
|--|--|
| | <p>to confirm this.</p> <ul style="list-style-type: none"> ▶ Open report in Microsoft Report Builder: Opens the report in Microsoft Report Builder. ▶ Open report in Analyzer Manager: opens the report in the web browser with the Analyzer Manager ▶ Close report: Closes the report. <p>Select by clicking on the respective button.</p> |
|--|--|

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single selection from the equipment model.
- ▶ 1 x single selection of the aggregation interval. The following values are available:
 - 1 minute
 - 15 minutes
 - 30 minutes
 - 1 hour
 - 2 hours
 - 6 hours

- 12 hours
- 1 day
- 1 week
- 1 month
- 1 quarter
- 1 year

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Bar charts with the last values of the absolute counter since inspection or replacement.
- ▶ Table with the following structure:

Detail cells: Always contain the counter value for the column group in the interval.

Sum row: Has the sum for relative counters and the last value for absolute counters.

Row groups: Time intervals within the report period under review.

The column grouping is primarily based on the name of the counter (origin can be controlled in ZAMS). In doing so, the defined sorting sequence is used. Within these groups:

- First there is the relative counter,
- then the absolute counter since inspection and
- then the absolute counter since replacement



Attention

If several elements in the table have the same name and one of the marking-based sorting variants (alphabetical) was selected, then these fields overlap and their values are combined.

If a sorting variant based on the ID is selected, this effect does not occur. In this case, there are several columns with the same marking in the table.

Several elements with the same name can be present if, for example, the descriptive text is selected as a marking and descriptive texts are identical.

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPS and UDFs:

- ▶ ListLots
- ▶ ListShifts
- ▶ GetEquipmentTreeForGroup
- ▶ ListEquipmentTree_Meanings
- ▶ ListHppStructureNames
- ▶ GetChildEquipments
- ▶ GetFullEquipmentGroupName
- ▶ HppSwitchingCycles

Active and Reactive Power Counters

Reports that are based on this template calculate counter values for active and reactive power.

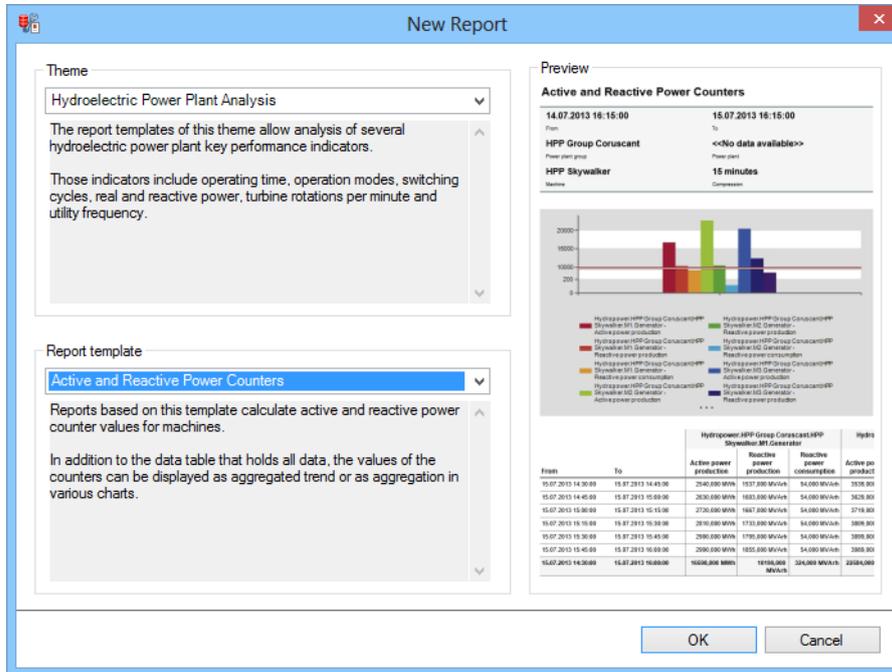
The display is a data table that contains all data. In addition, the counter values can be displayed as an aggregation or aggregation trend in various diagrams.

CREATE REPORT

To create an **Active and Reactive Power Counters** report:

1. In the **Theme** drop-down list, select **Hydroelectric Power Plant Analysis**

- from the drop-down list, select **Active and Reactive Power Counters** as a report template



Theme
Hydroelectric Power Plant Analysis

The report templates of this theme allow analysis of several hydroelectric power plant key performance indicators. Those indicators include operating time, operation modes, switching cycles, real and reactive power, turbine rotations per minute and utility frequency.

Report template
Active and Reactive Power Counters

Reports based on this template calculate active and reactive power counter values for machines. In addition to the data table that holds all data, the values of the counters can be displayed as aggregated trend or as aggregation in various charts.

Preview
Active and Reactive Power Counters

From: 14.07.2013 16:15:00 To: 15.07.2013 16:15:00
HPP Group Coruscant <<No data available>>
Power plant group
HPP Skywalker 15 minutes
Machine

Hydro power HPP Group Coruscant HPP
Skywalker M1 Generator Active power production
Hydro power HPP Group Coruscant HPP
Skywalker M2 Generator Active power production
Hydro power HPP Group Coruscant HPP
Skywalker M3 Generator Active power production
Hydro power HPP Group Coruscant HPP
Skywalker M4 Generator Active power production
Hydro power HPP Group Coruscant HPP
Skywalker M5 Generator Active power production
Hydro power HPP Group Coruscant HPP
Skywalker M6 Generator Active power production
Hydro power HPP Group Coruscant HPP
Skywalker M7 Generator Active power production
Hydro power HPP Group Coruscant HPP
Skywalker M8 Generator Active power production
Hydro power HPP Group Coruscant HPP
Skywalker M9 Generator Active power production
Hydro power HPP Group Coruscant HPP
Skywalker M10 Generator Active power production
Hydro power HPP Group Coruscant HPP
Skywalker M11 Generator Active power production
Hydro power HPP Group Coruscant HPP
Skywalker M12 Generator Active power production
Hydro power HPP Group Coruscant HPP
Skywalker M13 Generator Active power production
Hydro power HPP Group Coruscant HPP
Skywalker M14 Generator Active power production
Hydro power HPP Group Coruscant HPP
Skywalker M15 Generator Active power production
Hydro power HPP Group Coruscant HPP
Skywalker M16 Generator Active power production
Hydro power HPP Group Coruscant HPP
Skywalker M17 Generator Active power production
Hydro power HPP Group Coruscant HPP
Skywalker M18 Generator Active power production
Hydro power HPP Group Coruscant HPP
Skywalker M19 Generator Active power production
Hydro power HPP Group Coruscant HPP
Skywalker M20 Generator Active power production

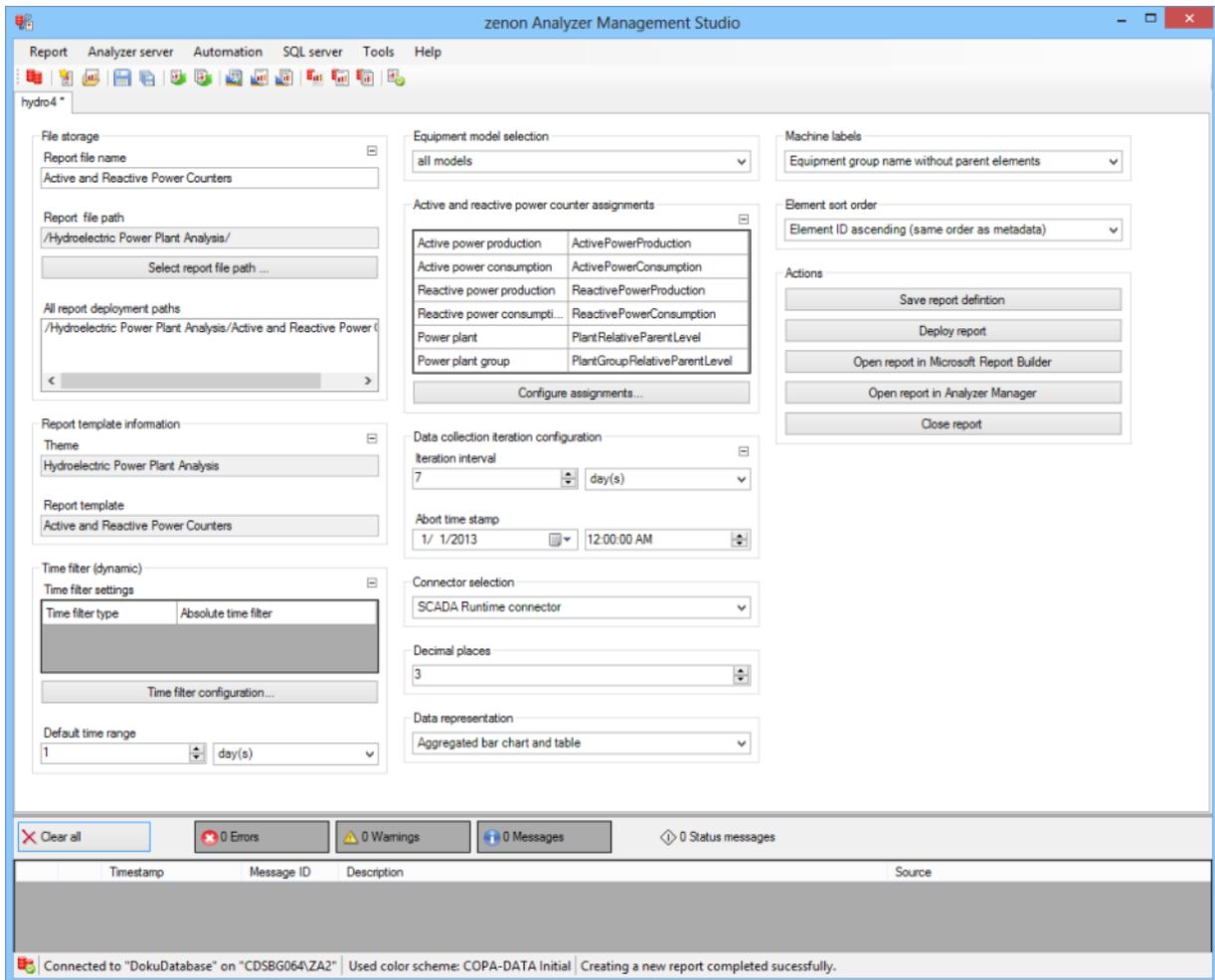
| | | Hydro power HPP Group Coruscant HPP Skywalker M1 Generator | | | Hydro |
|---------------------|---------------------|---|---------------------------------|----------------------------------|----------------------|
| From | To | Active power production | Reactive power production | Reactive power consumption | Active po product |
| 15.07.2013 14:30:00 | 15.07.2013 14:45:00 | 2362,00 MVAh | 1537,00 MVAh | 54,000 MVAh | 3959,00 |
| 15.07.2013 14:45:00 | 15.07.2013 15:00:00 | 2630,00 MVAh | 1603,00 MVAh | 54,000 MVAh | 3679,00 |
| 15.07.2013 15:00:00 | 15.07.2013 15:15:00 | 2730,00 MVAh | 1607,00 MVAh | 54,000 MVAh | 3779,00 |
| 15.07.2013 15:15:00 | 15.07.2013 15:30:00 | 2810,00 MVAh | 1773,00 MVAh | 54,000 MVAh | 3999,00 |
| 15.07.2013 15:30:00 | 15.07.2013 15:45:00 | 2980,00 MVAh | 1795,00 MVAh | 54,000 MVAh | 3999,00 |
| 15.07.2013 15:45:00 | 15.07.2013 16:00:00 | 2990,00 MVAh | 1855,00 MVAh | 54,000 MVAh | 3999,00 |
| 15.07.2013 16:00:00 | 15.07.2013 16:15:00 | 1650,00 MVAh | 1450,00 MVAh | 54,000 MVAh | 2250,00 |

OK Cancel

- Click on the **OK** button
- The report template is opened
- Save the report with the desired name
- Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

ACTIVE AND REACTIVE POWER COUNTER ASSIGNMENTS

| Parameters | Description |
|---|--|
| Active and reactive power counter assignments | Display and configuration of the assignments for active and reactive power counters. |
| Configure assignments | Clicking on the button opens the dialog for configuring the archives (on page 801). |

DATA COLLECTION ITERATION CONFIGURATION

| Parameters | Description |
|--|--|
| Data collection iteration configuration | Configuration for iteration interval and cancel time. |
| Iteration interval | <p>Configuration of the iteration interval in:</p> <ul style="list-style-type: none"> ▶ Minuten ▶ Hours ▶ Days <p>Minimum: 1</p> <p>Maximum: 1000</p> <p>Default: 1 day</p> |
| Start of archiving | <p>Start of archiving</p> <ul style="list-style-type: none"> ▶ Date ▶ Time <p>▶ Default: 01.01.2013 00:00:00</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|--|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ aggregated column chart and table ▶ aggregated pie chart and table ▶ Aggregated trend bar chart and table ▶ Aggregated trend line chart and table ▶ Table |

ORIGIN OF OPERATION MODE LABELS

| Parameters | Description |
|-----------------------|---|
| Operation mode labels | <p>Selection of the marking for operating modes from drop-down list:</p> <ul style="list-style-type: none"> ▶ Variable visual name ▶ Descriptive text for the variables |

ELEMENT SORT ORDER

| Parameters | Description |
|------------|-------------|
|------------|-------------|

| | |
|--------------------|---|
| Element sort order | <p>Selection of the sorting criteria from the drop-down list:</p> <ul style="list-style-type: none"> ▶ Element ID ascending (same order as metadata table) ▶ Element ID descending (inverse order as metadata table) ▶ Element label alphabetically ascending ▶ Element label alphabetically descending |
|--------------------|---|

ACTIONS

| Parameters | Description |
|------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection

- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single selection from the equipment model.
- ▶ 1 x single selection of the aggregation interval. The following values are available:
 - 1 minute
 - 15 minutes
 - 30 minutes
 - 1 hour
 - 2 hours
 - 6 hours
 - 12 hours
 - 1 day
 - 1 week
 - 1 month
 - 1 quarter
 - 1 year

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Bar chart with the sums of the counters.
- ▶ Pie chart with the sums of the counters.
- ▶ Bar chart with the aggregation trends of the counters.
- ▶ Line chart with the aggregation trends of the counters.
- ▶ Table with the following structure:

Detail cells: Always contain the counter value for the column group in the interval.

First level of the column groupings: Is always the name of the machine.

Second level of the column groupings: consists of these elements in this sequence:

- Active power production
- Active power consumption
- Reactive power production
- Reactive power consumption



Attention

If several elements in the table have the same name and one of the marking-based sorting variants (alphabetical) was selected, then these fields overlap and their values are combined.

If a sorting variant based on the ID is selected, this effect does not occur. In this case, there are several columns with the same marking in the table.

Several elements with the same name can be present if, for example, the descriptive text is selected as a marking and descriptive texts are identical.

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListLots
- ▶ ListShifts
- ▶ GetEquipmentTreeForGroup
- ▶ ListEquipmentTree_ChildMeanings
- ▶ ListHppStructureNames
- ▶ GetChildEquipments
- ▶ GetFullEquipmentGroupName
- ▶ HppActiveReactiveCounters

Power Line Frequency

Reports that are based on this template calculate time counters for different frequency bands of the network frequency of a machine.

Archives with the following recording type are processed:

- ▶ cyclic
- ▶ on change

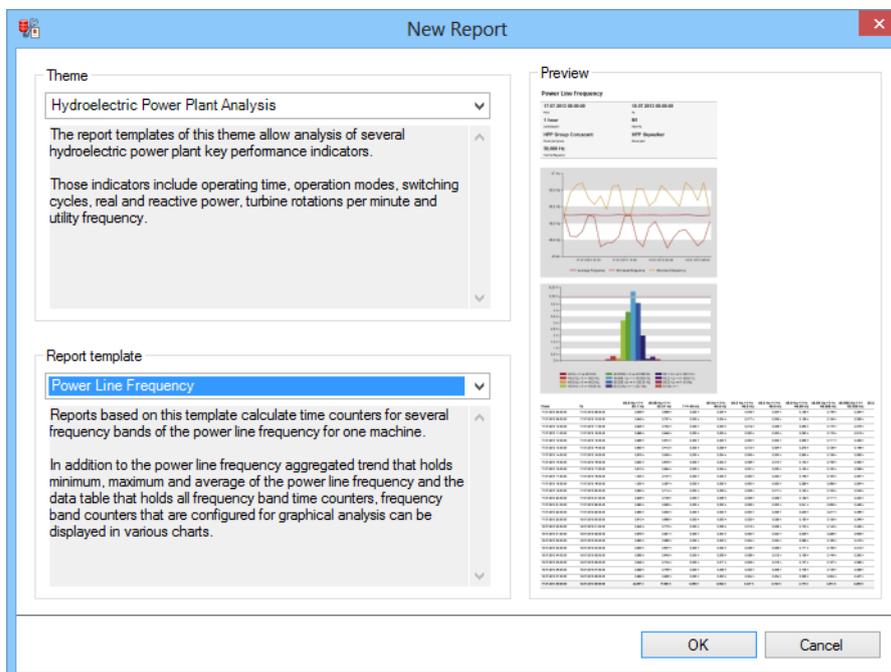
The display is:

- ▶ Aggregation trend of the network frequency with minimum, maximum and average network frequency
- ▶ Data table with the time counters of all frequency counters
- ▶ Diagrams with the configured time counters for frequency counters

CREATE REPORT

To create a **Power Line Frequency** report:

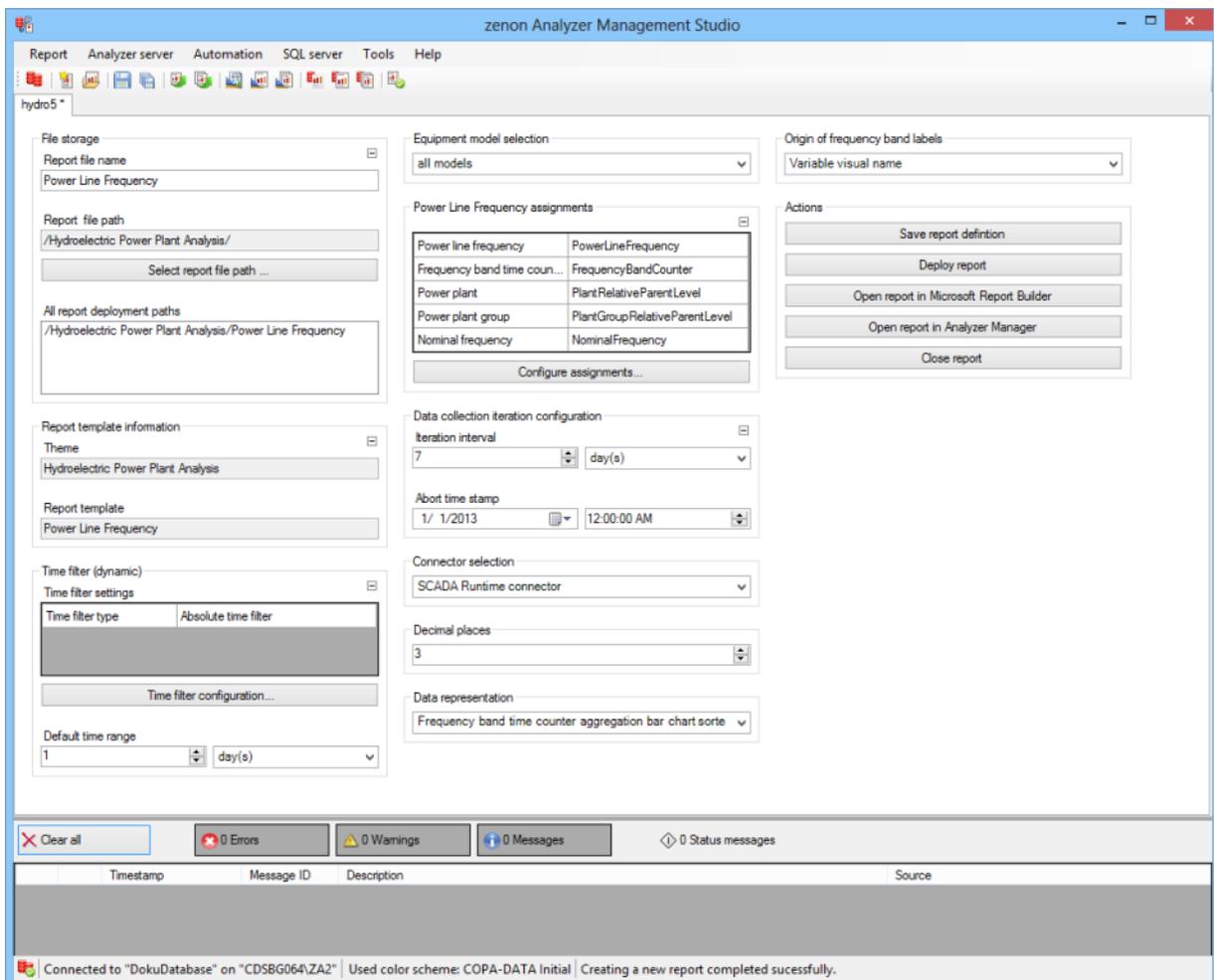
1. In the **Theme** drop-down list, select **Hydroelectric Power Plant Analysis**
2. from the drop-down list, select **Power Line Frequency** as a report template



3. Click on the  button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

POWER LINE FREQUENCY ASSIGNMENTS

| Parameters | Description |
|----------------------------------|---|
| Power line frequency assignments | Display and configuration of the assignment for power line frequency. |
| Configure assignments | Clicking on the button opens the dialog for configuring the archives (on page 806). |

DATA COLLECTION ITERATION CONFIGURATION

| Parameters | Description |
|--|--|
| Data collection iteration configuration | Configuration for iteration interval and cancel time. |
| Iteration interval | <p>Configuration of the iteration interval in:</p> <ul style="list-style-type: none"> ▶ Minuten ▶ Hours ▶ Days <p>Minimum: 1</p> <p>Maximum: 1000</p> <p>Default: 1 day</p> |
| Start of archiving | <p>Start of archiving</p> <ul style="list-style-type: none"> ▶ Date ▶ Time <p>▶ Default: 01.01.2013 00:00:00</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

DATA REPRESENTATION

| Parameters | Description |
|---------------------|---|
| Data representation | <p>Configuration of the data display. Select from drop-down list. Possible settings:</p> <ul style="list-style-type: none"> ▶ Aggregated bar chart for frequency band time counter ▶ Aggregated pie chart for frequency band time counter ▶ Aggregated trend - bar chart for frequency band time counter ▶ Aggregated trend - line chart for frequency band time counter ▶ Power line frequency trend line chart and table |

ORIGIN OF OPERATION MODE LABELS

| Parameters | Description |
|-----------------------|---|
| Operation mode labels | <p>Selection of the marking for operating modes from drop-down list:</p> <ul style="list-style-type: none"> ▶ Variable visual name ▶ Descriptive text for the variables |

ELEMENT SORT ORDER

| Parameters | Description |
|------------|-------------|
|------------|-------------|

| | |
|---------------------------|---|
| <p>Element sort order</p> | <p>Selection of the sorting criteria from the drop-down list:</p> <ul style="list-style-type: none"> ▶ Element ID ascending (same order as metadata table) ▶ Element ID descending (inverse order as metadata table) ▶ Element label alphabetically ascending ▶ Element label alphabetically descending |
|---------------------------|---|

ACTIONS

| Parameters | Description |
|-----------------------|--|
| <p>Actions</p> | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection

- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single selection from the equipment model.
- ▶ 1 x single selection of the aggregation interval. The following values are available:
 - 1 minute
 - 15 minutes
 - 30 minutes
 - 1 hour
 - 2 hours
 - 6 hours
 - 12 hours
 - 1 day
 - 1 week
 - 1 month
 - 1 quarter
 - 1 year

DATA REPRESENTATION

The display of data after report creation depends on the setting in ZAMS. The following elements are available for the display:

- ▶ Bar chart sorted according to frequency bands with the sums of the relative counters for frequency bands.
- ▶ Bar chart sorted according to counter values with the sums of the relative counters for frequency bands.
- ▶ Pie chart with the sums of the relative counters for frequency bands.
- ▶ Bar chart with the aggregation trends of the relative counters for frequency bands.

- ▶ Line chart with the aggregation trends of the relative counters for frequency bands.
- ▶ Line chart with the aggregation trends for average, minimum and maximum of the network frequency.
- ▶ Table with the following structure:
 - The time intervals within the report period under review always act as the row groups.
 - The frequency band variables always act as column groups.
 - The sorting is created on the basis of the `Sort_Order` column in the `HpFrequencyCounters` SP.

Detail cells always contain the counter value for the column group in the interval.

The sum row has the sum of the relative counters.

 **Attention**

If several elements in the table have the same name and one of the marking-based sorting variants (alphabetical) was selected, then these fields overlap and their values are combined.

If a sorting variant based on the ID is selected, this effect does not occur. In this case, there are several columns with the same marking in the table.

Several elements with the same name can be present if, for example, the descriptive text is selected as a marking and descriptive texts are identical.

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListLots
- ▶ ListShifts
- ▶ GetEquipmentTreeForGroup
- ▶ ListEquipmentTree_MeaningsWithPrefix
- ▶ ListHpStructureNamesWithFrequency
- ▶ HpFrequencyTrend

- ▶ HppFrequencyCounters

Machine Event Counters

Reports that are based on this template calculate counters for different events that can occur on a machine. Counters can be calculated for the following events:

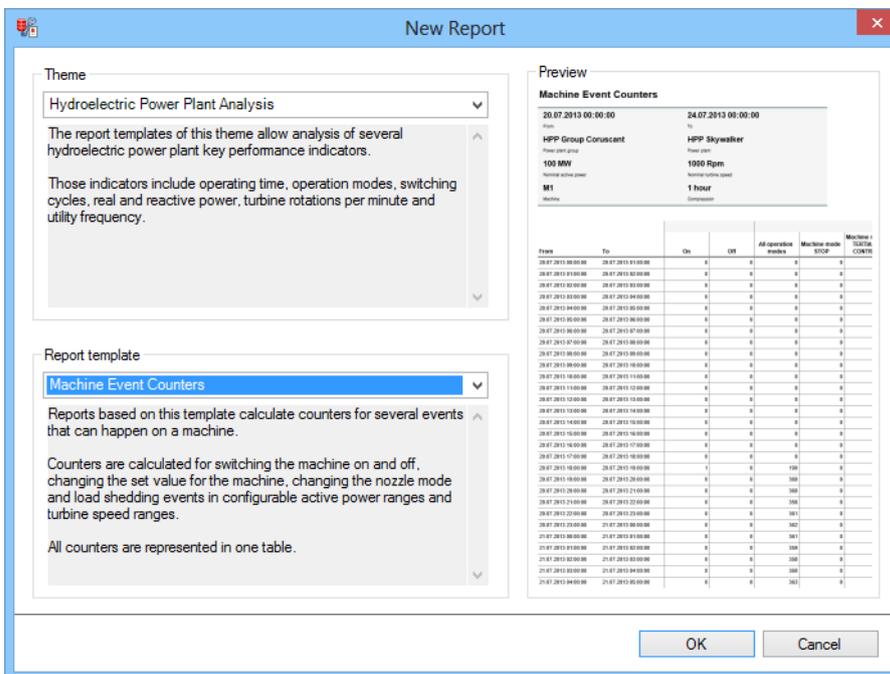
- ▶ Switching the machine on and off
- ▶ Changes to the target value for the machine
- ▶ Changes to nozzle mode
- ▶ Load shedding events in configurable active power ranges and turbine speed ranges

All counters are displayed in a table.

CREATE REPORT

To create a **Machine Event Counters** report:

1. In the **Theme** drop-down list, select **Hydroelectric Power Plant Analysis**
2. from the drop-down list, select **Machine Event Counters** as a report template



Theme

Hydroelectric Power Plant Analysis

The report templates of this theme allow analysis of several hydroelectric power plant key performance indicators.

Those indicators include operating time, operation modes, switching cycles, real and reactive power, turbine rotations per minute and utility frequency.

Report template

Machine Event Counters

Reports based on this template calculate counters for several events that can happen on a machine.

Counters are calculated for switching the machine on and off, changing the set value for the machine, changing the nozzle mode and load shedding events in configurable active power ranges and turbine speed ranges.

All counters are represented in one table.

Preview

Machine Event Counters

20.07.2013 00:00:00 24.07.2013 00:00:00

Plant: HPP Group Cousacant HPP Skywalker

Flow part group: 100 MW 1000 Rpm

Machine name: M1

Machine: 1 hour

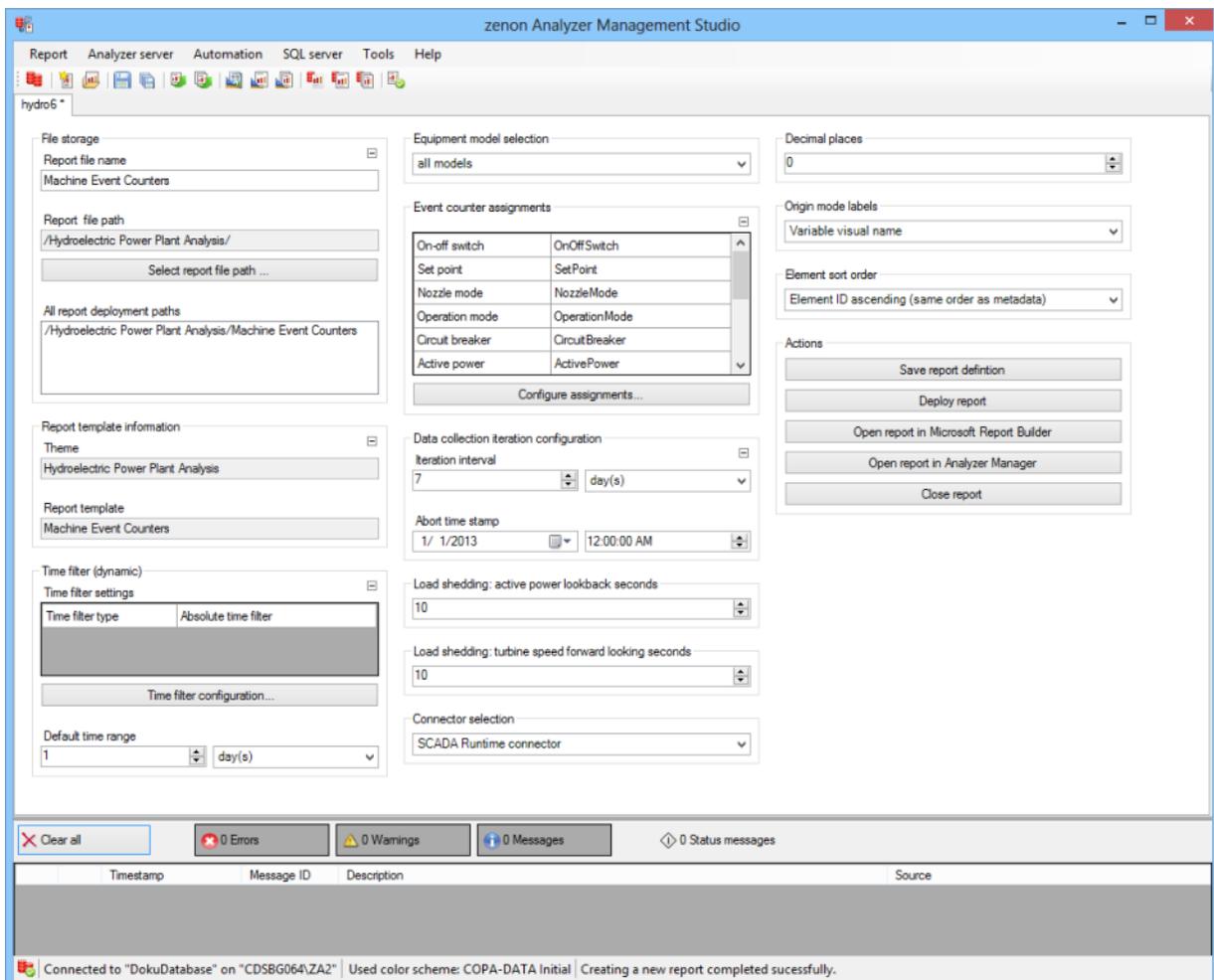
| From | To | On | Off | All operation modes | Machine mode STOP | Machine 1 TOU/TA COUNTS |
|---------------------|---------------------|----|-----|---------------------|-------------------|-------------------------|
| 20.07.2013 00:00:00 | 20.07.2013 01:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 01:00:00 | 20.07.2013 02:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 02:00:00 | 20.07.2013 03:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 03:00:00 | 20.07.2013 04:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 04:00:00 | 20.07.2013 05:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 05:00:00 | 20.07.2013 06:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 06:00:00 | 20.07.2013 07:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 07:00:00 | 20.07.2013 08:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 08:00:00 | 20.07.2013 09:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 09:00:00 | 20.07.2013 10:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 10:00:00 | 20.07.2013 11:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 11:00:00 | 20.07.2013 12:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 12:00:00 | 20.07.2013 13:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 13:00:00 | 20.07.2013 14:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 14:00:00 | 20.07.2013 15:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 15:00:00 | 20.07.2013 16:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 16:00:00 | 20.07.2013 17:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 17:00:00 | 20.07.2013 18:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 18:00:00 | 20.07.2013 19:00:00 | 1 | 0 | 0 | 0 | 100 |
| 20.07.2013 19:00:00 | 20.07.2013 20:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 20:00:00 | 20.07.2013 21:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 21:00:00 | 20.07.2013 22:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 22:00:00 | 20.07.2013 23:00:00 | 0 | 0 | 0 | 0 | 0 |
| 20.07.2013 23:00:00 | 21.07.2013 00:00:00 | 0 | 0 | 0 | 0 | 0 |
| 21.07.2013 00:00:00 | 21.07.2013 01:00:00 | 0 | 0 | 0 | 0 | 0 |
| 21.07.2013 01:00:00 | 21.07.2013 02:00:00 | 0 | 0 | 0 | 0 | 0 |
| 21.07.2013 02:00:00 | 21.07.2013 03:00:00 | 0 | 0 | 0 | 0 | 0 |
| 21.07.2013 03:00:00 | 21.07.2013 04:00:00 | 0 | 0 | 0 | 0 | 0 |
| 21.07.2013 04:00:00 | 21.07.2013 05:00:00 | 0 | 0 | 0 | 0 | 0 |

OK Cancel

3. Click on the  button
4. The report template is opened
5. Save the report with the desired name
6. Configure the report

CONFIGURING THE REPORT

You can also find details on the control elements in the report window in the Elements in the report area (on page 658) chapter.



FILE STORAGE

| Parameters | Description |
|-----------------------------|---|
| File storage | Name and path of the report on the Analyzer server. |
| Report file name | Name of the report file on the server. |
| Report file path | Current path of the report file. Display only. |
| Choose report file path | Opens dialog to select a folder on the Analyzer server or the RDL file. New folders can also be created. For details, see the Path to RDL file (on page 748) section. |
| All report deployment paths | List of the language-dependent paths (on page 574) defined in the options for distribution of the reports. |

INFORMATION ON THE REPORT TEMPLATE

| Parameters | Description |
|---|--|
| Information on the report template | Information on the report template, consisting of: <ul style="list-style-type: none"> ▶ Theme: selected superordinate theme of the report template ▶ Report template: selected report template <p>For further details see chapter Report templates (on page 753)</p> |
| Theme | Selected theme for report templates. Display only. |
| Report template | Selected report template. Display only. |

TIME FILTER (DYNAMIC)

| Parameters | Description |
|------------------------------|---|
| Time filter (dynamic) | Setting the parameters for the time filters. |
| Time filter settings | Display of details on the current configuration of the time filter. The list can contain the following information, depending on the configuration: |

| | |
|---|--|
| | <ul style="list-style-type: none"> ▶ Type of the time filtering ▶ Project from which the lot or shift data comes, if lot selection or shift selection is active. This is also the project to which the report is linked. ▶ Lot archive from which the lot data comes, if lot selection is active. ▶ Equipment model from which the shift data is to be read is shift selection is active. <p>If information is only displayed in part due to its length, move the mouse over the corresponding element. The complete information is then displayed in a tooltip.</p> |
| Time filter configuration | <p>Clicking on the button Time filter configuration opens the dialog to configure the time filter.</p> <p>For further details see chapter Time filter configuration (on page 762).</p> |
| Time filter granularity | <p>Setting for the granularity for the time filter. Selection from drop-down list:</p> <ul style="list-style-type: none"> ▶ Minutes ▶ Hours ▶ Days ▶ Months ▶ Years |
| Default time range | <p>Display of the requirements for standard values of the report time period.</p> |
| Default time range configuration | <p>Clicking on the standard time period configuration button opens the dialog for configuration.</p> <p>For details, see standard time period (on page 769).</p> |

EQUIPMENT MODEL SELECTION

| Parameters | Description |
|---------------------------|---|
| Equipment model selection | Selection of a equipment model from the drop-down list. |

EVENT COUNTER ASSIGNMENTS

| Parameters | Description |
|---------------------------|---|
| Event counter assignments | Display and configuration of the assignment for power station event counters. |
| Configure assignments | Clicking on the button opens the dialog for configuring the archives (on page 811). |

DATA COLLECTION ITERATION CONFIGURATION

| Parameters | Description |
|---|--|
| Data collection iteration configuration | Configuration for iteration interval and cancel time. |
| Iteration interval | <p>Configuration of the iteration interval in:</p> <ul style="list-style-type: none"> ▶ Minuten ▶ Hours ▶ Days <p>Minimum: 1</p> <p>Maximum: 1000</p> <p>Default: 1 day</p> |
| Start of archiving | <p>Start of archiving</p> <ul style="list-style-type: none"> ▶ Date ▶ Time <p>▶ Default: 01.01.2013 00:00:00</p> |

LOAD SHEDDING: ACTIVE POWER LOOKBACK SECONDS

| Parameters | Description |
|--|--|
| Load shedding: Active power lookback seconds | <p>Selection of the number of seconds for how far before load shedding the maximum active power at the time of load shedding is searched for.</p> <p>Formula: Active power = Max(active power) from time range (load shedding – configured seconds) until load shedding.</p> |

LOAD SHEDDING: TURBINE SPEED LOOKFRONT SECONDS

| Parameters | Description |
|--|---|
| Load shedding: Turbine speed lookfront seconds | <p>Selection of the number of seconds for how far, after load shedding, the maximum turbine speed at the time of load shedding is searched for.</p> <p>Formula: Load shedding turbine speed = Max(turbine speed) from time period up to (load shedding + configured seconds).</p> |

CONNECTOR SELECTION

| Parameters | Description |
|---------------------|---|
| Connector selection | <p>Selection of the connector from the drop-down list.</p> <p>The drop-down list contains the name of the available connectors:</p> <ul style="list-style-type: none"> ▶ SCADA Runtime Connector (zenonV6) ▶ SCADA SQL Connector (zenonSQL) |

DECIMAL PLACES

| Parameters | Description |
|----------------|---|
| Decimal places | <p>Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.</p> <ul style="list-style-type: none"> ▶ Minimum: 0 ▶ Maximum: 10 ▶ If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum. |

ORIGIN OF OPERATION MODE LABELS

| Parameters | Description |
|-----------------------|---|
| Operation mode labels | <p>Selection of the marking for operating modes from drop-down list:</p> <ul style="list-style-type: none"> ▶ Variable visual name |

| | |
|--|--------------------------------------|
| | ▶ Descriptive text for the variables |
|--|--------------------------------------|

ELEMENT SORT ORDER

| Parameters | Description |
|--------------------|---|
| Element sort order | <p>Selection of the sorting criteria from the drop-down list:</p> <ul style="list-style-type: none"> ▶ Element ID ascending (same order as metadata table) ▶ Element ID descending (inverse order as metadata table) ▶ Element label alphabetically ascending ▶ Element label alphabetically descending |

ACTIONS

| Parameters | Description |
|------------|--|
| Actions | <p>Possible actions for the report:</p> <ul style="list-style-type: none"> ▶ <code>Save report definition</code>: Opens dialog for saving reports. If there is already a report with this name, you are asked to confirm that you wish to overwrite this. ▶ <code>Deploy report</code>: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this. ▶ <code>Open report in Microsoft Report Builder</code>: Opens the report in Microsoft Report Builder. ▶ <code>Open report in Analyzer Manager</code>: opens the report in the web browser with the Analyzer Manager ▶ <code>Close report</code>: Closes the report. <p>Select by clicking on the respective button.</p> |

APPEARANCE IN THE ANALYZER MANAGER

TIME FILTERING

One of the following report parameter groups is available in the Analyzer Manager, depending on the parameters set up in ZAMS:

- ▶ 2 x date and time selection ("from" and "to" for one time range)
- ▶ 1 x time range selection
- ▶ 1 x lot selection with 2 x date and time selection for prefiltering of the lots
- ▶ 1 x lot selection with 1 x time range selection for prefiltering of the lots
- ▶ 1 x shift selection with 2 x data and time selection for prefiltering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

OTHER PARAMETERS

- ▶ 1 x single selection from the equipment model.
- ▶ 1 x single selection of the aggregation interval. The following values are available:
 - 1 minute
 - 15 minutes
 - 30 minutes
 - 1 hour
 - 2 hours
 - 6 hours
 - 12 hours
 - 1 day
 - 1 week
 - 1 month
 - 1 quarter
 - 1 year

DATA REPRESENTATION

The data is always displayed using a data table once it has been created. The table has the following structure:

- ▶ The time intervals within the report period under review always act as the row groups.

- ▶ There are the following column groupings:
 - Switch-on and switch-off events.
 - Overall changes to target values (always first) and per operating mode (sorting can be configured).
 - Change to nozzle mode (counter states how often a change to this mode has been made, sorting can be configured).
 - Active power when load is switched off (same sequence as in the configuration dialog).
 - Turbine speed when load is switched off (same sequence as in the configuration dialog).

Detailed cells always contain the counter value for the column group in the interval, sum row has the sum.

 **Attention**

If several elements in the table have the same name and one of the marking-based sorting variants (alphabetical) was selected, then these fields overlap and their values are combined.

If a sorting variant based on the ID is selected, this effect does not occur. In this case, there are several columns with the same marking in the table.

Several elements with the same name can be present if, for example, the descriptive text is selected as a marking and descriptive texts are identical.

NOTE FOR REPORT DEVELOPER: SPS AND UDFS

Reports that are based on this template use the following SPs and UDFs:

- ▶ ListLots
- ▶ ListShifts
- ▶ GetEquipmentTreeForGroup
- ▶ ListEquipmentTree_MeaningsAndChildMeanings
- ▶ ListHppStructureNamesWithNominalPowerAndRpm
- ▶ GetChildEquipments
- ▶ HppEventCounters

13.3 Example zenon

On the installation medium you can find a zenon example project and reports which are used by this project as data source.

To get to know the zenon Analyzer we recommend that you open the workspace of the example project in zenon and you try out the interaction with the reports.

- ▶ start the Runtime
- ▶ in the start screen you can see a F&B bottle filling line



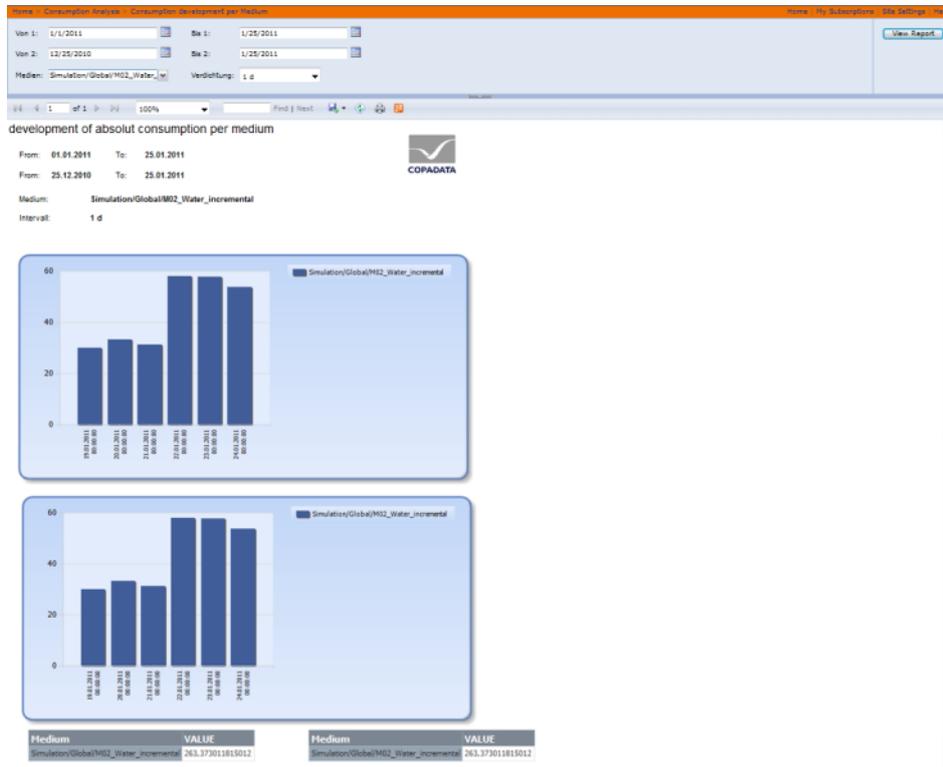
- ▶ switch to the **Line Overview** via
 - Online status
 - Graphic analysis

- Counter



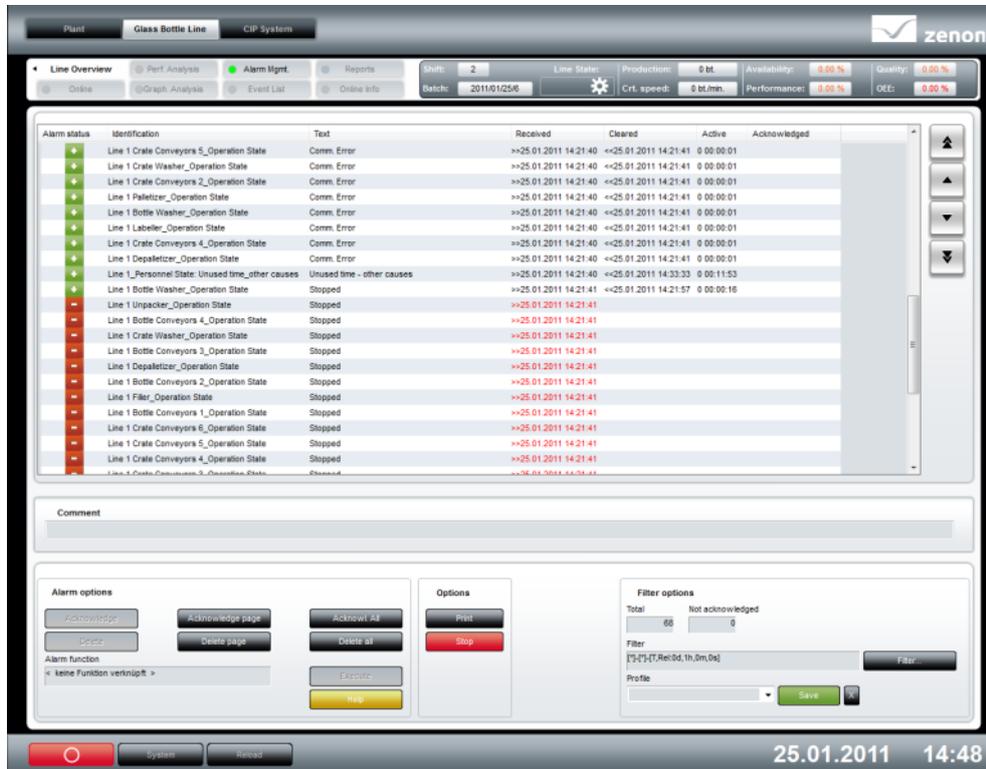
The data from screen counter are directly processed in the reports.

EXAMPLE CONSUMPTION OF A MEDIUM IN TIME COMPARISON



TOPIC ALARMING

► Entries in Alarm Message List



Plant: Glass Bottle Line CIP System

Line Overview | Shift: 2 | Line Status: Production: 0 t | Availability: 100% | Quality: 100% | Batch: 201101056 | Crit. speed: 0 t/min | Performance: 100% | OEE: 100%

| Alarm status | Identification | Text | Received | Cleared | Active | Acknowledged |
|--------------|--|----------------------------|-----------------------|-----------------------|------------|--------------|
| + | Line 1 Crate Conveyors 5_Operation State | Comm. Error | >>25.01.2011 14:21:40 | <<25.01.2011 14:21:41 | 0 00:00:01 | |
| + | Line 1 Crate Washer_Operation State | Comm. Error | >>25.01.2011 14:21:40 | <<25.01.2011 14:21:41 | 0 00:00:01 | |
| + | Line 1 Crate Conveyors 2_Operation State | Comm. Error | >>25.01.2011 14:21:40 | <<25.01.2011 14:21:41 | 0 00:00:01 | |
| + | Line 1 Palettizer_Operation State | Comm. Error | >>25.01.2011 14:21:40 | <<25.01.2011 14:21:41 | 0 00:00:01 | |
| + | Line 1 Bottle Washer_Operation State | Comm. Error | >>25.01.2011 14:21:40 | <<25.01.2011 14:21:41 | 0 00:00:01 | |
| + | Line 1 Labeler_Operation State | Comm. Error | >>25.01.2011 14:21:40 | <<25.01.2011 14:21:41 | 0 00:00:01 | |
| + | Line 1 Crate Conveyors 4_Operation State | Comm. Error | >>25.01.2011 14:21:40 | <<25.01.2011 14:21:41 | 0 00:00:01 | |
| + | Line 1 Depalettizer_Operation State | Comm. Error | >>25.01.2011 14:21:40 | <<25.01.2011 14:21:41 | 0 00:00:01 | |
| + | Line 1 Personnel State: Unused time - other causes | Unused time - other causes | >>25.01.2011 14:21:40 | <<25.01.2011 14:33:33 | 0 00:11:53 | |
| + | Line 1 Bottle Washer_Operation State | Stopped | >>25.01.2011 14:21:41 | <<25.01.2011 14:21:57 | 0 00:00:16 | |
| - | Line 1 Unpacker_Operation State | Stopped | >>25.01.2011 14:21:41 | | | |
| - | Line 1 Bottle Conveyors 4_Operation State | Stopped | >>25.01.2011 14:21:41 | | | |
| - | Line 1 Crate Washer_Operation State | Stopped | >>25.01.2011 14:21:41 | | | |
| - | Line 1 Bottle Conveyors 3_Operation State | Stopped | >>25.01.2011 14:21:41 | | | |
| - | Line 1 Depalettizer_Operation State | Stopped | >>25.01.2011 14:21:41 | | | |
| - | Line 1 Bottle Conveyors 2_Operation State | Stopped | >>25.01.2011 14:21:41 | | | |
| - | Line 1 Filler_Operation State | Stopped | >>25.01.2011 14:21:41 | | | |
| - | Line 1 Bottle Conveyors 1_Operation State | Stopped | >>25.01.2011 14:21:41 | | | |
| - | Line 1 Crate Conveyors 6_Operation State | Stopped | >>25.01.2011 14:21:41 | | | |
| - | Line 1 Crate Conveyors 5_Operation State | Stopped | >>25.01.2011 14:21:41 | | | |
| - | Line 1 Crate Conveyors 4_Operation State | Stopped | >>25.01.2011 14:21:41 | | | |
| - | Line 1 Crate Conveyors 3_Operation State | Stopped | >>25.01.2011 14:21:41 | | | |

Comment:

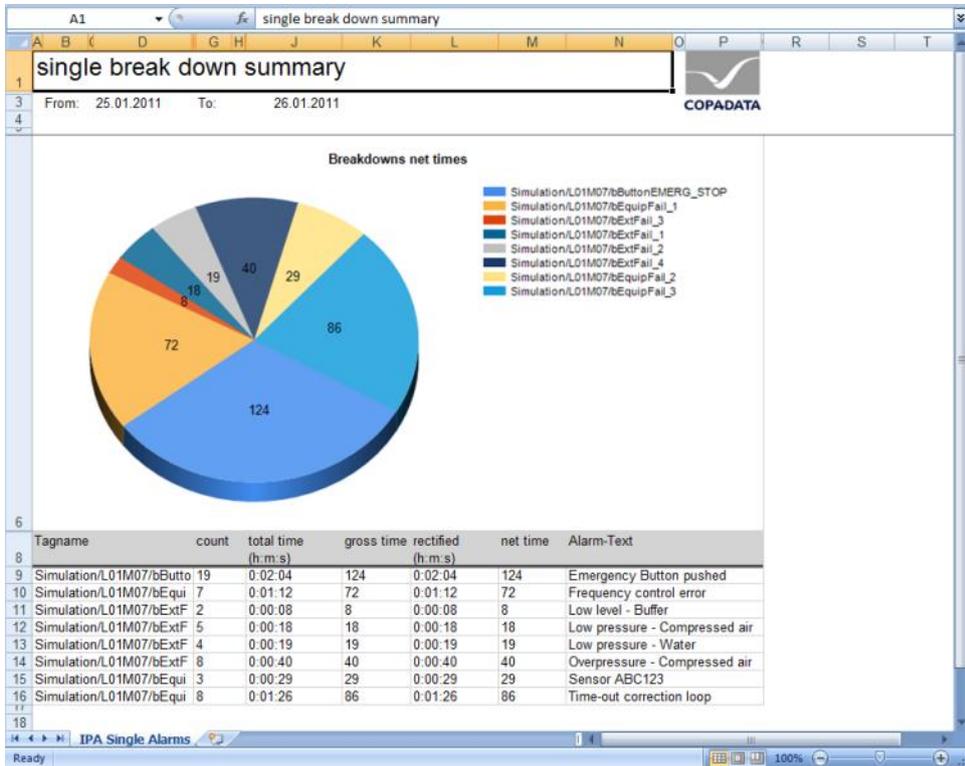
Alarm options: Acknowledge, Acknowledge page, Acknowled All, Delete page, Delete all, Alarm function: keine Funktion verfügbar

Options: Print, Stop

Filter options: Total: 66, Not acknowledged: 0. Filter: [T:14(T:Rel:0d,Th:0m,0s)]

25.01.2011 14:48

- ▶ are the basis for a report for displaying interruptions



You can adapt the project and the reports according to your needs and set the reports to your own data sources.

14. Event-driven report creation

Event-triggered report creation makes it possible to use an event - such as a change of value, for instance - as a trigger for the creation and sending of a report. These reports can be created:

- ▶ by means of a zenon function (on page 1343): in zenon from version 7.20
- ▶ By means of VSTA programming: For details, see the **zenon Analyzer for Developers** manual

14.1 Create an Analyzer report using the zenon function

REQUIREMENTS

In order for you to be able to create an event-triggered report for the zenon Analyzer via the zenon **Analyzer: Create report** function, the following requirements must be met:

- ▶ zenon version 7.20 or higher
- ▶ Connection with corresponding rights to an Analyzer server version 2 or higher
- ▶ **Analyzer Server Wrapper** must be installed. Installation is carried out by means of a selection item in the zenon setup.
- ▶ Runtime and Editor must both be restarted after installation of the **Analyzer Server Wrapper**, so that they can find the installed **Analyzer Server Wrapper** DLLs.
- ▶ Recommendation: In order to be sure that the Windows authentication works, the Analyzer server should be in the same domain as zenon Editor and zenon Runtime.

PROBLEM SOLUTION

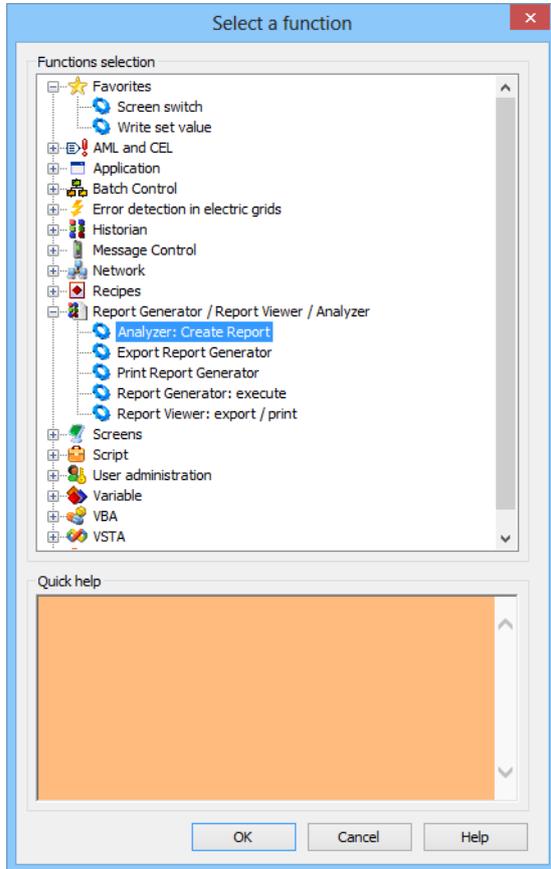
- ▶ Communication problems with the Analyzer server: Check the communication in the network as well as the authentication (user and access rights).
- ▶ Reports are rendered but do not contain any data: Check the license of the Analyzer server:

CREATE FUNCTION

To create the function:

1. Create a new function.

2. Navigate to the **Report Generator** group in the selection dialog.



3. Select the **Analyzer: function Create report**.
4. The dialog for configuration is opened:
5. Configure, in the **General settings** (on page 1345) tab, the connection parameters and select the desired report.

Attention: Before a switch is made to the second tab, a connection must be made and a report must be selected!

6. Configure the report parameters in the **Parameter list** (on page 1349) tab.
When switching to the second tab, an attempt is made to set values that already exist for the parameter input. If this is not successful, the list of set parameter values is displayed as empty.
Default values can be replaced by individual values. To do this, deactivate the checkbox in front of the value and click on the value. A dialog to enter the new value is opened
7. Connect the function with a button or an event in order to be able to access it in Runtime

PROCEDURE IN RUNTIME

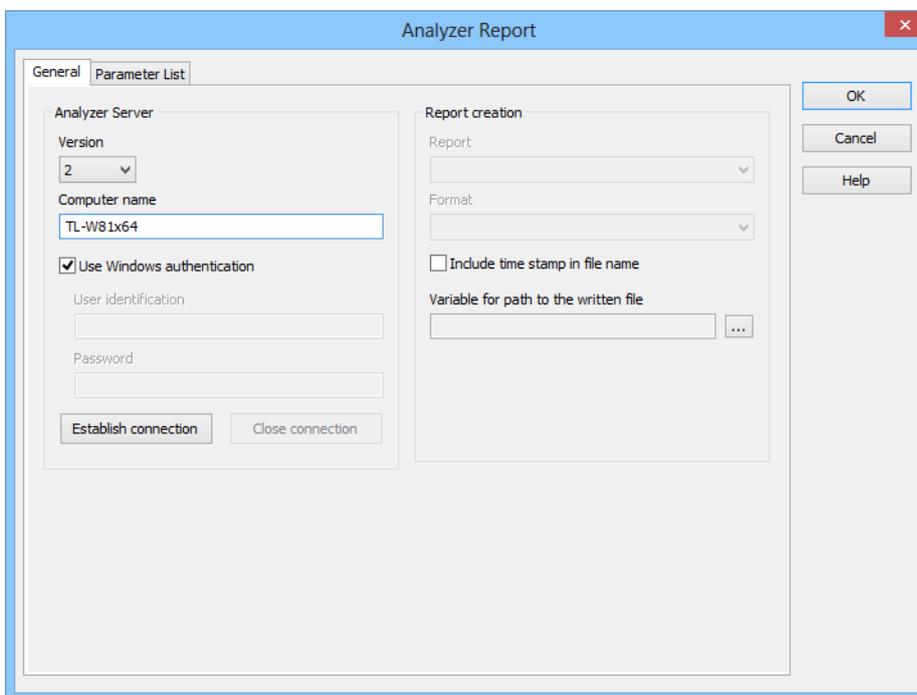
Procedure when triggering the function to create a report in Runtime:

1. The configured connection is established.
2. The selected report is set.
3. The selected parameter values are set for this report.
4. The report is created and output in the desired form.
5. The file name is generated and the file is saved in the export folder of the project.
6. The complete file name is written to the selected variable.

14.1.1 General settings

In this tab, the connection to the Analyzer server is configured and selected in the report. This tab must be configured before the switch to **parameter list**.

GENERAL SETTINGS TAB



The screenshot shows the 'Analyzer Report' dialog box with the 'General' tab selected. The dialog is divided into two main sections: 'Analyzer Server' and 'Report creation'. The 'Analyzer Server' section includes a 'Version' dropdown set to '2', a 'Computer name' text box containing 'TL-W81x64', a checked 'Use Windows authentication' checkbox, and fields for 'User identification' and 'Password'. Below these are 'Establish connection' and 'Close connection' buttons. The 'Report creation' section includes a 'Report' dropdown, a 'Format' dropdown, an unchecked 'Include time stamp in file name' checkbox, and a 'Variable for path to the written file' text box with a browse button (...). On the right side of the dialog are 'OK', 'Cancel', and 'Help' buttons.

ANALYZER SERVER

| Parameters | Description |
|----------------------------|--|
| Analyzer server | Configuration of the connection to the Analyzer server. |
| Version | Select the version of the Analyzer server from the drop-down list. Only available if there is no connection. |
| Computer name | Entry of the name of the computer on which the Analyzer server runs. Only available if there is no connection. |
| Use windows authentication | Selection of the type of authentication: <ul style="list-style-type: none"> ▶ Active: Windows authentication is used. ▶ Inactive: The user must enter the user name and password. |
| Username | Entry of the user name. Only available if Use Windows authentication is inactive and there is no connection. |
| Password | Entry of the password for authentication. The characters entered are not shown and the length of the password is hidden. The password is saved in encrypted form and is only decrypted to establish a connection. Only available if Use Windows authentication is inactive and there is no connection. |
| Connect | Clicking on the button establishes a connection to the analyzer server. Once the connection has been successfully established, the drop-down lists for <code>report</code> and <code>format</code> are updated. |
| Close connection | Clicking on the button disconnects the existing connection. |

REPORT CREATION

| Parameters | Description |
|------------------------|---|
| Report creation | Configuration of the basis data for the report. |
| Report | Selection of the report from a drop-down list. |
| Format | Selection of the output format from a drop-down list: |

- ▶ CSV
- ▶ Excel
- ▶ MHTML (Web Archive)
- ▶ PDF
- ▶ TIFF file
- ▶ Word
- ▶ XML file with report data

| | |
|--|---|
| <p>Include time stamp in file name</p> | <ul style="list-style-type: none"> ▶ Active: The execution time stamp is included in the file name. <p>Sequence of file name creation:</p> <ul style="list-style-type: none"> ▶ The report name without a path is the starting point. Example: Alarms ▶ The time stamp is then added if activated. Example on 15/8/2014 at 15:20:00: Alarms_2014_08_15_15_20_00 ▶ The file name extension is then added according to the selected output format. Example: Alarms_2014_08_15_15_20_00.pdf ▶ If there is already a file with this name in the export folder of the project, a counter is added until the file name is unique. Example: Alarms_2014_08_15_15_20_00.pdf Alarms_2014_08_15_15_20_00 (2).pdf Alarms_2014_08_15_15_20_00 (3).pdf |
| <p>Variable for path to file created</p> | <p>Shows the currently-selected zenon variable that contains the path to the written report file.</p> <p>Click on button . . . in order to open the dialog for selecting a variable.</p> <p>Hint: An event-triggered report can thus be -sent from zenon via a script or email when a lot archive is closed or when a limit has been breached In doing so, this variable is used to define the attachment of the Message Control function <code>Sende Nachricht</code>.</p> <p>Procedure:</p> <ul style="list-style-type: none"> ▶ Firstly, the report function that writes the variable is executed. ▶ Then the <code>Sende Nachricht</code> function is executed, which reads the attachment path from the variables. |

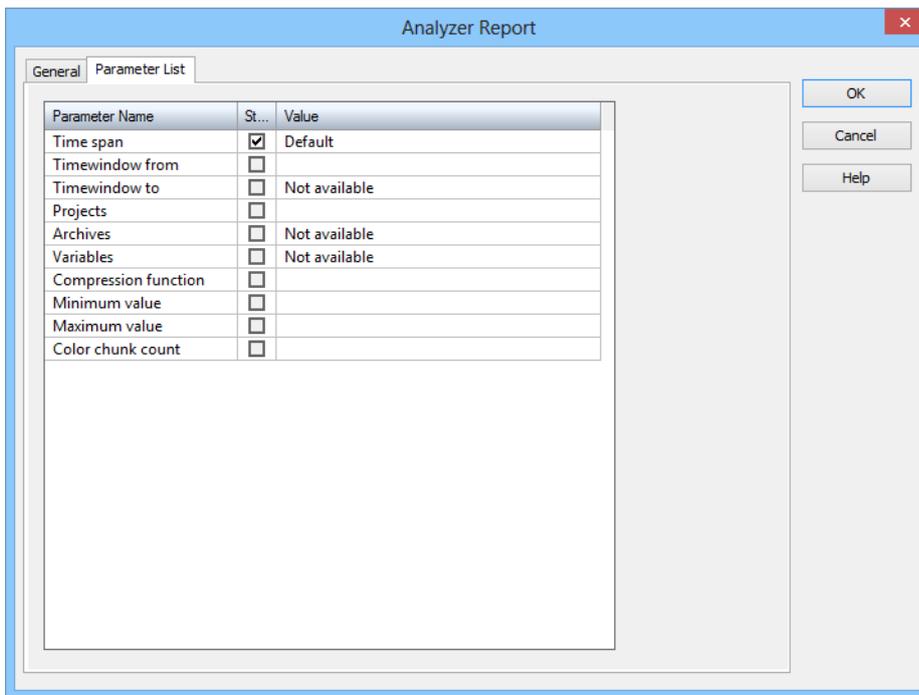
CLOSE DIALOG

| | |
|---------------|---|
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |
| Help | Opens online help. |

14.1.2 TAG list

You configure the report parameters in this tab. The controls that are offered depend on the selection of the report in the **General settings** tab.

PARAMETER LIST TAB



| Parameters | Description |
|-----------------------|---|
| TAG list | <p>Display of the report parameters. The sequence corresponds to the sequence in the report.</p> <p>Recommendation: Configure the parameters from top to bottom.</p> |
| Parameter Name | <p>Display of the parameter name. Cannot be configured here.</p> |
| Standard | <p>Defines whether the parameter is set to its default value.</p> <ul style="list-style-type: none"> ▶ Active: The default value from the report is used. ▶ Inactive: The value is selected individually by clicking in the Value column. <p>Clicking with the mouse or pressing the empty button with the parameter highlighted switches the checkbox. If a parameter has a default value, the checkbox is grayed out and inactive.</p> |
| Value | <p>Display of the current value of the parameter.</p> <ul style="list-style-type: none"> ▶ If the Standard checkbox is activated, the text default value is displayed here and the cell does not allow any input. ▶ If the Standard checkbox is deactivated, the currently-configured value is shown here. Clicking on the cell or pressing the Enter key with the parameter highlighted opens the input dialog (on page 1351) for the respective value. <p>If a parameter cannot be entered, the text not available is displayed and the cell is deactivated. This can mean, for example, that values for a different parameter must be set first in order to fill the list of values.</p> |

CLOSE DIALOG

| | |
|---------------|---|
| OK | Applies all changes in all tabs and closes the dialog. |
| Cancel | Discards all changes in all tabs and closes the dialog. |
| Help | Opens online help. |

Tip for lot/shift reports

In Runtime, the value of a zenon string variable is read. A search for this string as a label is carried out in the list of predefined values for the parameter. The value of the label to be corresponded to is then the parameter value, i.e. the selected shift or lot.

The lot variables of a lot archive can be used here. For the lot report, carry out the **Analyzer: Create report** function when closing the lot archive. The report then has the last lot of this archive as a time filter.

Configuration of the values

For the configuration of the parameter values, there are appropriate dialogs available for each input. The configuration is carried out depending on the input possibility for:

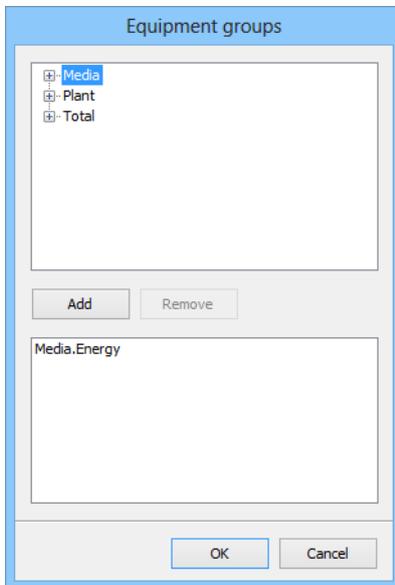
- ▶ A value without a predefined value: Entry of the value.
- ▶ Several values without predefined values: Entry of the values and adding to a list.
- ▶ A value with predefined value: Selection from drop-down list or list.
- ▶ Several values with pre-defined values: Select from list.

The dialogs that are offered depend on the report selection:

Examples of frequently-used dialogs:

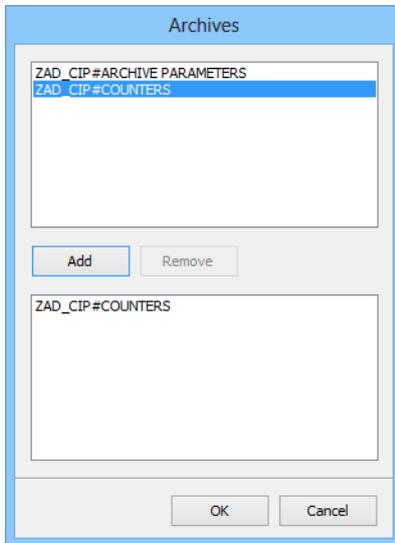
EQUIPMENT GROUPS

Selection of desired equipment groups:



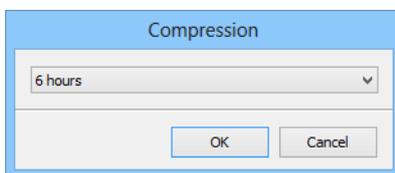
1. Select the desired equipment groups in the top list.
2. Click on **Add**.
The selected groups are added to the lower list.
3. If you want to remove equipment groups again, highlight these in the lower list and click on **Remove**.
4. To transfer all selected equipment groups to the report, click on **OK**.

ARCHIVES

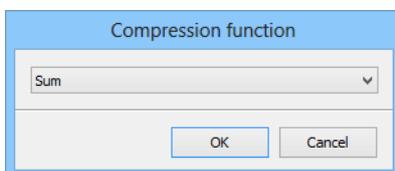


1. Select the desired archive in the the upper list.
2. Click on **Add**.
the selected archives are added to the lower list.
3. If you want to remove archives again, highlight these in the lower list and click on **Remove**.
4. To transfer all selected archives groups to the report, click on **OK**.

COMPRESSION



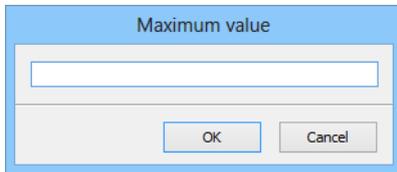
1. Select the desired compression from the drop-down list
2. Click on **OK**.



1. Select the desired compression function from the drop-down list.

2. Click on **OK**.

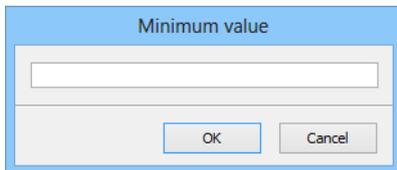
VALUE MAXIMUM



A dialog box titled "Maximum value" with a text input field and "OK" and "Cancel" buttons.

1. Enter the desired value into the field.
2. Click on **OK**.

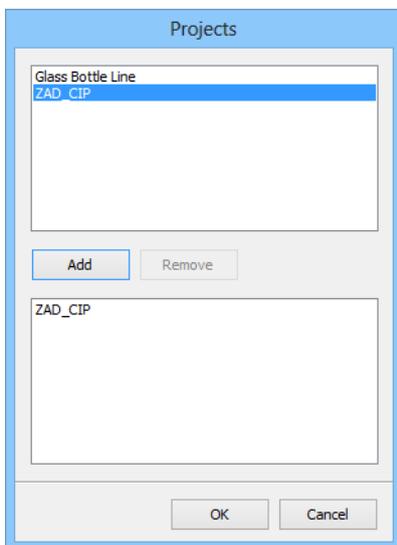
Value minimum



A dialog box titled "Minimum value" with a text input field and "OK" and "Cancel" buttons.

1. Enter the desired value into the field.
2. Click on **OK**.

PROJECTS

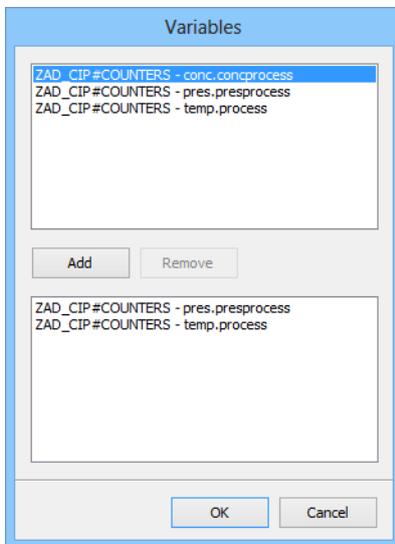


A dialog box titled "Projects" with a list box containing "Glass Bottle Line" and "ZAD_CIP", "Add" and "Remove" buttons, and "OK" and "Cancel" buttons.

1. Select the desired project in the upper list.
2. Click on **Add**.
the selected projects are added to the lower list.
3. If you want to remove projects again, highlight these in the lower list and click on **Remove**.
4. To transfer all selected projects to the report, click on **OK**.

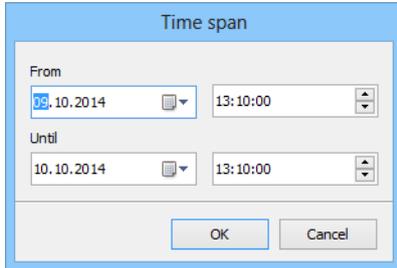
VARIABLES

Selection of the desired variables.



1. Select the desired variables in the upper list.
2. Click on **Add**.
The selected variables are added to the lower list.
3. If you want to remove variables, highlight these in the lower list and click on **Remove**.
4. To transfer all selected variables to the report, click on **OK**.

TIME SPAN



1. Select the desired date and the time for
 - a) From
 - b) To
2. Click on **OK**.

15. Error logging

zenon Analyzer uses the zenon Diagnosis Viewer (on page 1356) logging service to collect and display error messages.

Note: The connector cannot forward messages to the Diagnosis Viewer under Windows XP. In this case, error messages are saved locally.

15.1 Diagnosis Viewer

All zenon modules such as Editor, Runtime, drivers, etc. as well as zenon Analyzer write messages to a joint log file. These can be read and configured with the **Diagnosis Viewer** program. The Diagnosis Viewer allows the reading of existing log files, online logging, saving of the current view, setting parameters for the Diagnosis Clients and the Diagnosis Server.



License information

Part of the standard license of the Editor and Runtime.

STARTING THE DIAGNOSIS VIEWER

The **Diagnosis Viewer** will be installed in the folder: %Program Files (x86)%\Common Files\COPA-DATA\STARTUP. Call it up under:

- ▶ Windows 8: Enter "**Diagnosis Viewer**" on the desktop for **Apps**
- ▶ Windows 7: *Start/All Programs/zenon/Version Independent Tools -> Diagnosis Viewer.*

The Diagnosis Viewer is only available in English.

USING IPV6

The Diagnosis Server also works with Diagnosis Clients which addresses via IPv6 addresses. For this the format of the log file has been adapted. The Diagnosis Viewer only reads the new format of the log files. If files from older zenon versions are opened (or vice versa), the IP address of the Diagnosis Client is not displayed correctly.

DRIVER ANALYSIS

zenon driver log all errors in the log files. The default folder for the log files is subfolder `LOG` in directory `ProgramData`, example:

`C:\ProgramData\COPA-DATA\LOG`. Log files are text files with a special structure.

Attention: With the default settings, a driver only logs error information. With the **Diagnosis Viewer** you can enhance the diagnosis level for most of the drivers to "Debug" and "Deep Debug". With this the driver also logs all other important tasks and events.

In the Diagnosis Viewer you can also:

- ▶ follow currently created entries live
- ▶ customize the logging settings
- ▶ change the folder in which the log files are saved

Hints:

1. In Windows CE even errors are not logged per default due to performance reasons.
2. The Diagnosis Viewer displays all entries in UTC (coordinated world time) and not in local time.

3. The Diagnosis Viewer does not display all columns of a log file per default. To display more columns activate property **Add all columns with entry** in the context menu of the column header.
4. If you only use **Error logging**, the problem description is in column **Error text**. For other diagnosis level the description is in column **General text**.
5. For communication problems many drivers also log error numbers which the PLC assigns to them. They are displayed in **Error text** and/or **Error code** and/or **Driver error parameter (1 and 2)**. Hints on the meaning of error codes can be found in the driver documentation and the protocol/PLC description.
6. At the end of your test set back the diagnosis level from **Debug Or Deep Debug**. At **Debug** and **Deep Debug** there are a great deal of data for logging which are saved to the hard drive and which can influence your system performance. They are still logged even after you close the **Diagnosis Viewer**.

15.1.1 General

The zenon Diagnosis System logs error messages from zenon and zenon Analyzer. It consists of three parts:

- ▶ Diagnosis Server (on page 1372): local or or defined in zenon6.ini defined **zenLogSrv**
- ▶ Diagnosis Clients (on page 1377): all modules, drivers, services, etc. which write messages
- ▶ Diagnosis Viewer (on page 1381): Analysis program

VERSIONS

From version zenon 7.00 on the service **zenLogSrv** is used instead of the **zenSysSrv** for the diagnosis system. That means:

- ▶ Diagnosis systems up to version 6.51 and from version 7.00 are each compatible among themselves.
- ▶ The diagnosis mechanism of zenon 6.51 SPO and zenon 7.00 SPO are not compatible.

| Compatibility | Diagnosis Server 6.51 SP0 and earlier | Diagnosis Server 7.00 SP0 and higher |
|---------------------------------------|---------------------------------------|--------------------------------------|
| Diagnosis Client 6.51 SP0 and earlier | compatible | incompatible |
| Diagnosis Viewer 6.51 SP0 and earlier | compatible | incompatible |
| Diagnosis Client 7.00 SP0 and higher | incompatible | compatible |
| Diagnosis Viewer 7.00 SP0 and higher | incompatible | compatible |

With the Diagnosis Viewer version 7.00 SP0 and higher you can open log files which were created by Diagnosis Server version 6.51 SP0 (or earlier). It does not work the other way round.

DEFAULT PORTS

- ▶ Version 7 and higher: 50780 (port of service zenLogSrv)
- ▶ up to 6.51: 1101 (port of service zenSysSrv)

If the port cannot be opened, the service closes itself.

Attention

If the port to which the Diagnosis Viewer should connect is closes, then it is tried to start the local Diagnosis Server. This makes sure that local logging is carried out if no Diagnosis Server is available in the network.

MEMORY OCCUPANCY

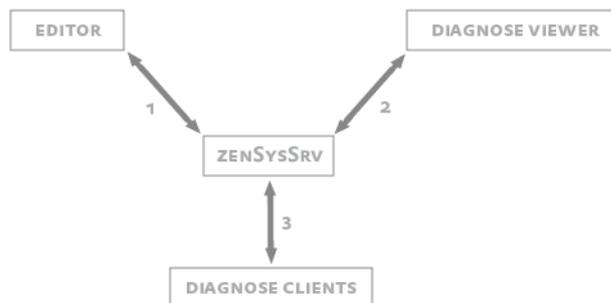
Service `zenLogSrv` buffers log entries until they can be written in the log file. If the memory consumptions increases continuously by `zenLogSrv`, it is an indicator that the log file cannot be written.

15.1.2 Topology of the diagnosis system

The topology of the diagnosis system differs for versions up to 6.51 SP0 and from 7.00 SP0 on.

TOPOLOGY BEFORE ZENON 7.00 SP0

The diagram displays all possible connections for which `zenSysSrv` is responsible. Each arrow represents a network connection between the applications. All applications connect to the `zenSysSrv` on port 1101 regardless of whether Client and Server are on the same computer or communicate with each other via a network.



1. The Editor sends log entries, commands and data of the Remote Transport to `zenSysSrv`. `zenSysSrv` sends the configuration of the Diagnosis Clients (Editor, Runtime, driver, Web Server, Web Client, etc.) and the Remote Transport data to the Editor.
2. The Diagnosis Viewer sends diagnosis commands, diagnosis configurations and log entries to `zenSysSrv`. `zenSysSrv` sends diagnosis data and the Diagnosis Client configuration to the Diagnosis Viewer.
3. `zenSysSrv` sends the Diagnosis Client configuration to the Diagnosis Clients. The Diagnosis Clients send log entries to `zenSysSrv`.

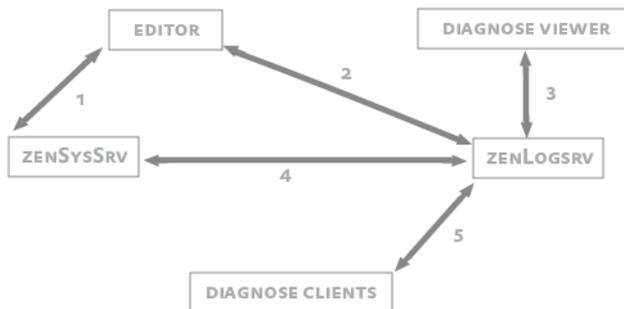
`zenSysSrv` reacts correspondingly to each incoming message:

- ▶ Log entries are written in log files.
- ▶ Remote Transport commands (start Runtime, write/read back data, etc.) are executed.
- ▶ Diagnosis commands (set Server/Client configuration, start online logging, etc.) are executed.

TOPOLOGY AS OF ZENON 7.00 SP0

The diagram displays all possible connections for which `zenSysSrv` and `zenLogSrv` (as of version 7.00 SP0) are responsible. Each arrow represents a network connection between the applications. All applications connect to `zenLogSrv` on port 50780. The editor connects to `zenSysSrv` on port 1101. It is

regardless of whether Client and Server are on the same computer or communicate with each other via a network.



1. The Editor sends commands and data of the Remote Transport to `zenSysSrv`. `zenSysSrv` sends data of the Remote Transport to the Editor.
2. The Editors send log entries to `zenLogSrv`. `zenLogSrv` sends the Diagnosis Client configuration to the Editor.
3. The Diagnosis Viewer sends diagnosis commands, diagnosis configurations and log entries to `zenSysSrv`. `zenSysSrv` sends diagnosis data and the Diagnosis Client configuration to the Diagnosis Viewer.
4. The `zenSysSrv` sends log entries to the `zenLogSrv`. `zenLogSrv` sends the Diagnosis Client configuration to `zenSysSrv`.
5. `zenLogSrv` sends the Diagnosis Client configuration to the Diagnosis Clients. The Diagnosis Clients send log entries to `zenLogSrv`.

`zenSysSrv` reacts to: incoming Remote Transport commands.

`zenLogSrv` reacts to incoming diagnosis commands and log entries

EXAMPLE

IN an environment with a central Diagnosis Server the Runtime is started on a device. Based on the Runtime version the configuration is read from `zenon6.ini`. Versions before 7.00 SP0 read entry `LOG_CONFIG` from `[SYS_REMOTE]`, later versions read this entry from `[LOGGING_SYSTEM]`. This configuration is used to establish a diagnosis connection. (For details see Standard procedure (on page 1362).) Each additional component loaded by the Runtime (driver, `zenNetSrv`, etc.) also establish a diagnosis connection.

15.1.3 Standard process

As default only error messages (errors) are sent from the Clients to the Diagnosis Server.

The Diagnosis Server saves the received messages in TXT files with a special structure (on page 1398).

The default folder for the log files is subfolder `LOG` in folder `ProgramData`. For example:

```
%ProgramData%\COPA-DATA \LOG.
```

For more information see manual Installation and Updates chapter File structure.

Note: Under Windows CE error messages are also not created per default due to resource issues.

In order to report not only error messages to the Diagnosis Server but also other information important for the diagnosis, the according settings have to be defined for the Client (on page 1377).

You can also configure the behavior of the Server (on page 1372).

CONFIGURATION

The configuration of the connection is done in `zenon6.ini` (on page 1363) divided in:

- ▶ Diagnosis Clients
- ▶ Diagnosis Server
- ▶ Versions to make sure that the configuration of the versions does not affect each other

The configuration of the Diagnosis Viewer (on page 1381) also enables you to configure settings for the connection:

- ▶ Settings of the server (on page 1374)
- ▶ Connection settings Diagnosis Server connection (on page 1383)
- ▶ Diagnosis Client (on page 1377)
- ▶ Diagnosis Viewer - Analysis Program (on page 1381)

We recommend to do the configuration of the connection for Server and Client via `zenon6.ini`.

PROCEDURE

The Diagnosis Server is:

- ▶ a service at the PC.

The service starts automatically when the operating system boots. The local service can only be started once.

- ▶ an application under CE.

Under CE only one process can use the port. Additionally started processes terminate themselves as the port cannot be opened. If the local configuration of the Diagnosis Server is set under CE in such a way that only the user interface is displayed (INIT=2), several processes could emerge by the Diagnosis Clients trying to start the local Diagnosis Server.

As soon as a Diagnosis Client gets active, the following steps are carried out:

1. The Diagnosis Client reads and uses the configuration from `zenon6.ini`. If no configuration is available in `zenon6.ini`, the default configuration (`Diagnose Server=localhost:50780`) is used.
2. The Diagnosis Client tries to establish a connection to the Diagnosis Server:

Establishing successful:

- a) The diagnosis connection has been established and the log entries are sent.

Establishing failed:

- b) The Diagnosis Client tries to start and use the local Diagnosis Server.
On a PC it tries to start the service.
Under CE it tries to create the process.
- c) The Diagnosis Client tries to establish a connection to the local Diagnosis Server. If it succeeds, the diagnosis connection is established and the log entries are sent.

If it fails, no log entries are created.

Entries in zenon6.ini

The configuration of `zenSysSrv` and `zenLogSrv` is carried out via `zenon6.ini`. At this it is differentiated between version 7.00 and up and versions 6.51 and earlier. With this you can configure old and new Diagnosis Clients and Diagnosis Servers independent of each other on one device. For example, the LOG entries of old Diagnosis Clients are diverted, without the LOG entries of new clients being affected.

DIAGNOSIS SERVER BEFORE VERSION 7.00 SP0

| INI entry | Description |
|----------------------|---|
| [SYS_REMOTE] | Section in zenon6.ini. Contains parameters for zenSysSrv (Remote Transport and Diagnosis Server). |
| LOGDirectory= | Defines folder for the LOG files. If there is no entry, the LOG folder in the %ProgramData% folder is used as a default value. Example: LOGDirectory= %ProgramData%\COPA-DATA\zenon651\LOG |
| CONFIG= | Configuration string for the Diagnosis Server and zenSysSrv . Remote Transport and the diagnosis system use the same server configuration up to and including version 6.51 SP0. The string consists of the following parts: DEVICE= [Device] ; HOST= [Hostname] ; PORT= [Port] ; TIMEOUT= [Timeout] <ul style="list-style-type: none"> ▶ DEVICE: Sets the communication type used. TCP/IP and serial are available. ▶ HOST: Is set to the computer name of the Diagnosis Server. ▶ PORT: states the port to be used. ▶ TIMEOUT: Provides the time-out time for the connection in seconds. ▶ BAUD: Provides the connection speed of a serial connection. <u>PC configuration:</u> <ul style="list-style-type: none"> ▶ DEVICE=TCP/IP ▶ HOST=localhost ▶ PORT=1101 ▶ TIMEOUT=10 <u>CE configuration:</u> <ul style="list-style-type: none"> ▶ DEVICE=COM1 ▶ BAUD=115200 |
| LOGMinFreeDiskSpace= | Defines minimum memory (in MB) that must be available on the hard drive. LOG files are deleted before this value is gone below. |

| | |
|----------------------|--|
| | Default: 1024 |
| LOGMaxUsedDiskSpace= | <p>Defines the maximum memory on the hard drive in MB used for LOG files. LOG files are deleted if this value is exceeded.</p> <p>Default: 1024</p> |
| LOGMinUsedDiskSpace= | <p>Defines memory on the hard drive (in MB) that is used even if there are no LOG files.</p> <p>Default: 5</p> |
| LOGLogLifeTime= | <p>Defines the lifecycle of the LOG files in seconds. Older LOG files are deleted.</p> <p>Default: 1209600 (corresponds to 14 days)</p> |
| LOGImageCnt= | <p>Defines the number of LOG entries, after which all incremental LOG files are written.</p> <ul style="list-style-type: none"> ▶ 0: inactive (default) |
| LOGLogUpdateTime= | <p>Number of milliseconds, after which the LOG entries received are written to a LOG file.</p> <p>Default: 2000</p> |
| LOGMaxBufferedRecs= | <p>Defines the number of LOG entries that are buffered if they cannot be written to files.</p> <p>Default: 10240</p> |
| LOGMaxLogFileSize= | <p>Maximal size of a log file in bytes. If a log file reaches this size, it is closed and a new log file is created.</p> <p>Default: 5242880 (corresponds to 5 MB)</p> |
| LOGCheckDiskTime= | <p>Defines the interval in seconds, in which the memory occupied by LOG files is checked.</p> <p>Default: 60</p> |
| INIT= | <p>Action when starting the application with Windows CE:</p> <ul style="list-style-type: none"> ▶ 0: end immediately ▶ 1 (or other value greater than 2): Open listening port in minimize to system tray ▶ 2: only display surface <p>Default: 1</p> <p>Note: As part of the separation of zenSysServ and zenLogServ for zenon 7.00,</p> |

| | |
|--|---|
| | this default value was also changed for other versions. The default value was previously 2. |
|--|---|

DIAGNOSIS SERVER FROM VERSION 7.00 SP0

| INI entry | Description |
|----------------------|--|
| [LOGGING_SYSTEM] | Section in zenon6.ini. Contains parameters for the Diagnosis Server. Only affects zenLogSrv and has no effect on zenSysSrv . |
| LOGDirectory= | Defines the folder for the LOG files. If there is no entry, the following is used as a standard value: <ul style="list-style-type: none"> ▶ The path extracted from the Registry, for example: %ProgramData%\COPA-DATA\LOG ▶ the LOG folder in the ProgramData folder of the zenLogSrv, if no path is defined in the registry, e. g. %ProgramData%\COPA-DATA\zenon700\LOG |
| CONFIG= | Configuration string for the Diagnosis Server. The string consists of the following parts: DEVICE=TCP/IP;HOST=[Hostname];PORT=[Port];TIMEOUT=[Timeout] <ul style="list-style-type: none"> ▶ DEVICE: Sets the communication type used and must always be set to TCP/IP ▶ HOST: Is set to the computer name of the Diagnosis Server. ▶ PORT: states the port to be used. ▶ TIMEOUT: Provides the time-out time for the connection in seconds. <u>Configuration:</u> <ul style="list-style-type: none"> ▶ DEVICE=TCP/IP ▶ HOST=localhost ▶ PORT=50780 ▶ TIMEOUT=10 |
| LOGMinFreeDiskSpace= | Defines minimum memory (in MB) that must be available on the hard drive. LOG files are deleted before this value is gone below. Default: 1024 |

| | |
|------------------------|---|
| LOGMaxUsedDiskSpace= | <p>Defines the maximum memory on the hard drive in MB used for LOG files. LOG files are deleted if this value is exceeded.</p> <p>Default: 1024</p> |
| LOGMinUsedDiskSpace= | <p>Defines memory on the hard drive (in MB) that is used even if there are no LOG files.</p> <p>Default: 5</p> |
| LOGLogLifeTime= | <p>Defines the lifecycle of the LOG files in seconds. Older LOG files are deleted.</p> <p>Default: 1209600 (corresponds to 14 days)</p> |
| LOGImageCnt= | <p>Defines the number of LOG entries, after which all incremental LOG files are written.</p> <p>Default: 0</p> |
| LOGLogUpdateTime= | <p>Number of milliseconds, after which the LOG entries received are written to a LOG file.</p> <p>Default: 2000</p> |
| LOGMaxBufferedRecords= | <p>Defines the number of LOG entries that are buffered if they cannot be written to files.</p> <p>Default: 10240</p> |
| LOGMaxLogFileSize= | <p>Maximal size of a log file in bytes. If a log file reaches this size, it is closed and a new log file is created.</p> <p>Default: 5242880 (corresponds to 5 MB)</p> |
| LOGCheckDiskTime= | <p>Defines the interval in seconds, in which the memory occupied by LOG files is checked.</p> <p>Default: 60</p> |
| INIT= | <p>Action when starting the application with Windows CE:</p> <ul style="list-style-type: none"> ▶ 0: end immediately ▶ 1 (or other value greater than 2): Open listening port in minimize to system tray ▶ 2: only display surface <p>Default: 1</p> |

DIAGNOSIS CLIENT BEFORE VERSION 7.00 SP0:

| INI entry | Description |
|--------------|--|
| [SYS_REMOTE] | Section in zenon6.ini. Contains parameters for the Diagnosis Client. |
| LOG_CONFIG= | <p>A configuration string for the Diagnosis Client is stored here. The string consists of the following parts: DEVICE=TCP/IP;HOST=[Hostname];PORT=[Port];TIMEOUT=[Timeout]</p> <ul style="list-style-type: none"> ▶ DEVICE: Sets the communication type used and must always be set to TCP/IP ▶ HOST: Is set to the computer name of the Diagnosis Server. ▶ PORT: states the port to be used. ▶ TIMEOUT: Provides the time-out time for the connection in seconds. <p><u>Configuration:</u></p> <ul style="list-style-type: none"> ▶ DEVICE=TCP/IP ▶ HOST=localhost ▶ PORT=1101 ▶ TIMEOUT=10 |

DIAGNOSIS CLIENT FROM VERSION 7.00 SP0

| INI entry | Description |
|------------------|--|
| [LOGGING_SYSTEM] | Section in zenon6.ini. Contains parameters for the Diagnosis Client. |
| LOG_CONFIG= | <p>A configuration string for the Diagnosis Client is stored here. The string consists of the following parts: DEVICE=TCP/IP;HOST=[Hostname];PORT=[Port];TIMEOUT=[Timeout]</p> <ul style="list-style-type: none"> ▶ DEVICE: Sets the communication type used and must always be set to TCP/IP ▶ HOST: Is set to the computer name of the Diagnosis Server. ▶ PORT: states the port to be used. ▶ TIMEOUT: Provides the time-out time for the connection in seconds. |

| | |
|--|--|
| | <p><u>Configuration:</u></p> <ul style="list-style-type: none"> ▶ DEVICE=TCP/IP ▶ HOST=localhost ▶ PORT=50780 ▶ TIMEOUT=10 |
|--|--|

NOTE:**INIT UNDER CE**

Under Windows CE we urgently recommend to not set entry `INIT=` (in section `[LOGGING_SYSTEM]` or `[SYS_REMOTE]`) to value 2.

Reason: The value 2 means that both `sysSrvCE` and `LogSrvCE` only display the user interface and do not open the listening port.

If now a Diagnosis Client wants to establish a connection, it will fail. As in this case the Diagnosis Clients start process `LogSrvCE` and the process does not open the port, each Diagnosis Client starts such a process. This leads to several parallel `LogSrvCE` processes and to a delay in starting the Diagnosis Clients as it waits for the timeout of the connection while establishing the diagnosis connection.

ZENLOGSRV ON A SYSTEM WITH DIFFERENT VERSIONS

If `zenLogSrv` is used on a system with different versions as a central local diagnosis server, the entry `LOG_CONFIG` in the `[SYS_REMOTE]` such must be as follows:
`DEVICE=TCP/IP;HOST=localhost;PORT=5780;TIMEOUT=10`

Reason: Older clients then use `zenLogSrv` as the Diagnosis Server. New clients do this automatically. This service is switched on automatically on the PC when the system is started; it must be started manually with CE.

Attention: If the port cannot be reached, older clients start `zenSysSrv` and retry connecting to it.

Windows CE

Under Windows CE the Diagnosis Server is started as an application.

At the configuration (on page 1363) of the connection consider the recommendation for parameter `INIT`:

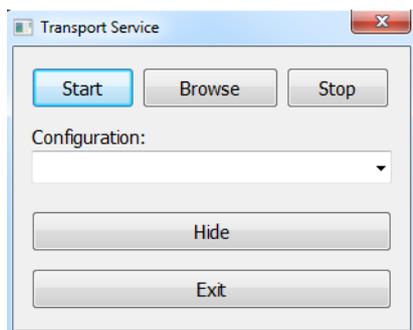
Under Windows CE we urgently recommend to not set entry `INIT=` (in section `[LOGGING_SYSTEM]` or `[SYS_REMOTE]`) to value 2.

Reason: The value 2 means that both `sysSrvCE` and `LogSrvCE` only display the user interface and do not open the listening port.

If now a Diagnosis Client wants to establish a connection, it will fail. As in this case the Diagnosis Clients start process `LogSrvCE` and the process does not open the port, each Diagnosis Client starts such a process. This leads to several parallel `LogSrvCE` processes and to a delay in starting the Diagnosis Clients as it waits for the timeout of the connection while establishing the diagnosis connection.

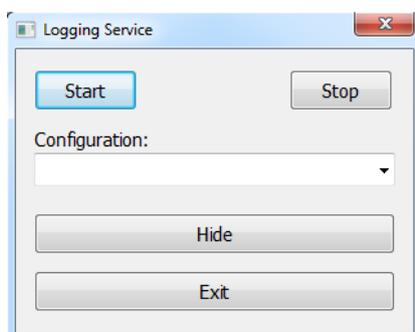
USER INTERFACE UNDER CE

TRANSPORT SERVICE (ZENSYSSRV)



| Parameters | Description |
|--------------------------------|--|
| Start | Opens the Listening port and enables <code>zenSysSrv</code> to receive Remote Transport commands. |
| Browse | Opens the dialog for browsing the file system. |
| Stop | Terminates the receiving of Remote Transport commands and closes the Listening port. |
| Configuration | <p>Selection of an existing server configuration from drop-down list. New connections cannot be configured. See section Entries in <code>zenon6.ini</code> (on page 1363) for the configuration of the connection. Available are:</p> <ul style="list-style-type: none"> ▶ Configuration from <code>zenon6.ini</code> ▶ Standard configuration for TCP/IP ▶ Standard configuration for COM1 to COM4 |
| Hide | Minimizes the user interface into the task bar. |
| Exit | Terminates the application and closes the Listening port if necessary. |
| X (button top right) | Minimizes the user interface into the task bar. |

LOGGING SERVICE (ZENLOGSRV)



| Parameters | Description |
|--------------------------------|---|
| Start | Opens the Listening port and enables <code>zenLogSrv</code> to receive log entries. |
| Stop | Terminates the receiving of log entries and closes the Listening port. |
| Configuration | Selection of an existing configuration from drop-down list. New connections cannot be configured. See section Entries in <code>zenon6.ini</code> (on page 1363) for the configuration of the connection. Available are: <ul style="list-style-type: none"> ▶ Configuration from <code>zenon6.ini</code> ▶ Standard configuration for TCP/IP |
| Hide | Minimizes the user interface into the task bar. |
| Exit | Terminates the application and closes the Listening port if necessary. |
| X (button top right) | Minimizes the user interface into the task bar. |

15.1.4 Diagnosis Server

The Diagnosis Server:

- ▶ Creates and manages log files.
- ▶ The Server is:
 - implemented from zenon 7.00 on as `zenLogSrv`
 - up until zenon 6.51 integrated in the `zenSysSrv`.
- ▶ The configuration of the server is read from the `zenon6.ini` (on page 1363).
- ▶ The server writes the received log data into the log file.
- ▶ The saving location for the files has to be configured. Standard:

```
%ProgramData%\COFA-DATA\LOG\
```

- ▶ Log files are named after the following fashion LOG<YYMMThhmmss>.txt.
- ▶ The server is multi client able. Several evaluations can connect to the server simultaneously.
- ▶ It is possible to connect to the server online, to see the current logging messages.
- ▶ It is possible to connect to diagnosis servers other than the local and to execute the same tasks (configuring server, configuring clients, online logging) as on the local server.
- ▶ The parameters of the current server (with which the Diagnosis Viewer is connected) can be modified. If a modification of another diagnosis server is needed, the server connection can be changed in the menu under *File – Connect to...*
- ▶ The menu entry **Settings – Server configuration** is only available, if online logging is not used at the moment.

System integrity monitoring

At the start of the Runtime a monitoring thread with high priority is also started. The monitoring thread checks critical parameters every ten seconds and writes corresponding warnings or errors in module Supervisor of the Diagnosis Server.

The following parameters are monitored.

| Parameters | Limit |
|---|-----------|
| Warning threshold for used handles | > 5000 |
| Error threshold for used handles | > 9000 |
| Warning threshold for used GDI objects | > 5000 |
| Error threshold for used GDI objects | > 9000 |
| Warning threshold for CPU use for the main thread | > 70 % |
| Error threshold for CPU use for the main thread | > 90 % |
| Warning threshold for total CPU use | > 70 % |
| Warning threshold for total CPU use | > 90 % |
| Warning threshold for free main memory | < 30 % |
| Error threshold for free main memory | < 10 % |
| Warning threshold for OnTimer in the main frame | > 1000 ms |
| Error threshold for OnTimer in the main frame | > 5000 ms |

Settings of the server

The Diagnosis Server can be configured via entries in file zenon6.ini or via dialog **Server configuration** in the Diagnosis Client. We recommend to do the settings in file zenon6.ini.

CONFIGURATION VIA ZENON6.INI

See section Entries in zenon6.ini (on page 1363).

CONFIGURATION VIA DIALOG

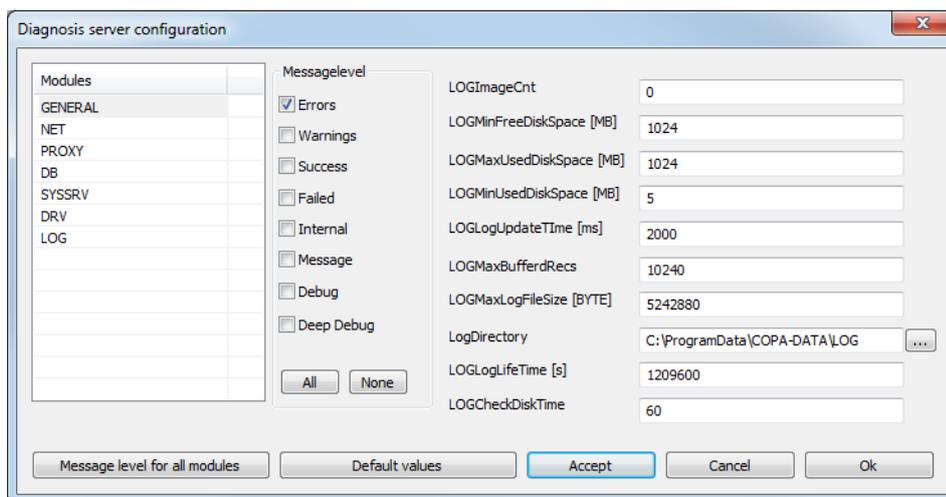
To configure the Diagnosis Server via the dialog:

1. start the Diagnosis Viewer
2. open entry *File Connect to...* (on page 1383).

3. configure the desired Server
(Take care of the correct port selection depending on the version!)
4. open entry *Settings* -> *Server configuration*
5. configure the events which should be logged
6. Close the dialog by clicking on **OK**

Note: All changes are written to `zenon6.ini` when the dialog is confirmed.

Configuration of the events which should be logged by the Diagnosis Viewer:



| Parameters | Description |
|-----------------------|--|
| Modules | Selection of the modules which you want to configure. |
| Message level | Selection of the events which should be logged. Default: Errors |
| LOGImageCnt | Number of records, after which all incremental fields will be written. Default: 0 (not active) |
| LOGMinFreeDiskSpace | It is continuously checked, if less than the configured minimal free disk space is available. The oldest log files are deleted. Minimal free disk space in MB, before log files are deleted. Default: 1024 MB |
| LOGMaxUsedDiskSpace | Maximal used disk space for the log in MB. Default: 1024 MB |
| LOGMinUsedDiskSpace | Minimal used disk space in MB independent whether LOGMinFreeDiskSpace is under-run. Default: 5 MB |
| LOGLogUpdateTime | Time in ms, after which the received entries are saved. Default: 2000 ms |
| LOGMaxBufferedRecords | The server buffers the contents of all incremental log fields for diverse applications, in order to be able to write images of them into the log file. With the start of a log file and after configurable number of log entries a complete image for all addresses is written into the log file. Received data are written to the log files. The entry is done via temporary buffer. It can be configured whether the data should be written immediately or delayed. Number of buffered entries if they cannot be saved. Default: 10240 |
| LOGMaxLogFileSize | The server writes the received log data into the log file. If this log file reaches the configured size, a new file is started. Maximal size of a single log file in bytes. Default: 5 MB |
| LOGDirectory | Folder in which the log files are written. Default: %ProgramData%\COPA-DATA\LOG\ |
| LOGLogLifeTime | It is continuously checked, if the lifetime of the log files is exceeded. The oldest log files are deleted. Number of seconds to keep the log files. Default: 14 days |
| LOGCheckDiskTime | Time in sec, in which the used disk space is checked. |

| | |
|--------------------------------------|--|
| | Default: 60 s |
| Message level for all modules | Settings are taken over for all modules. |
| Default values | Restore default settings. |
| Accept | Take over settings for this module. |
| Cancel | Discards changes and closes the dialog. |
| OK | Applies changes and closes dialog. |

15.1.5 Diagnosis Client

All programs which create log entries are Diagnosis Clients. These log entries are sent to the Diagnosis Server via TCP/IP. Server computer and port are read - dependent on the used version - from the local `zenon6.ini` (on page 1363) and contacted. If the connection fails the following procedure is carried out cyclically:

- ▶ If the Diagnosis Server cannot be reached, a attempt to reconnect is made every 500 ms.
- ▶ If no connection could be established after half the timeout time, the system tries to start the service `zenSysSrv` or `zenLogSrv`.

The settings are configured via entry `LOG_CONFIG=` in section `[SYS_REMOTE]` (up to 6.51) or `[LOGGING_SYSTEM]` (from 7.00).

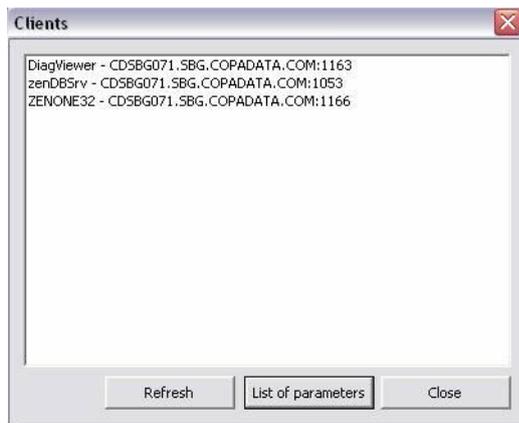
CONFIGURATION DIAGNOSIS CLIENT

To configure the Diagnosis Client via the dialog:

1. start the Diagnosis Viewer
2. open entry *Settings* -> *Client configuration*
(only available if logging is inactive)
3. highlight a Client
4. click on **List of parameters**
5. The dialog for configuration is opened

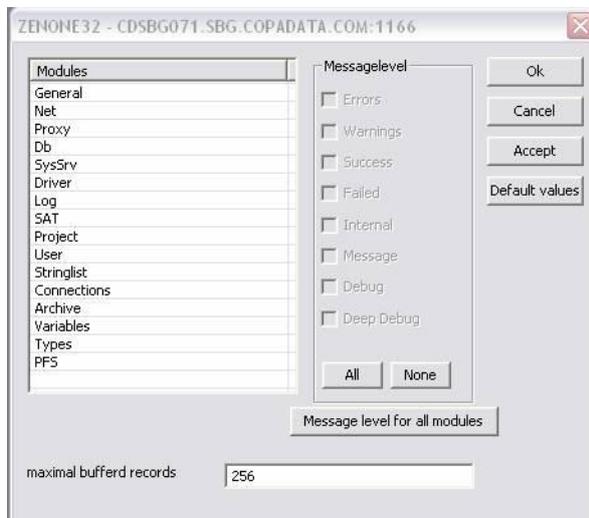
6. configure the Client
7. Close the dialog by clicking on **OK**
8. repeat the procedure for other Clients if necessary

CLIENT LIST



| Parameters | Description |
|--------------------|---|
| Clients | Lists all available Clients. |
| Refresh | Updates the list of the Clients. |
| List of parameters | Opens the dialog for configuring the selected Client. |
| Close | Closes the dialog. |

CONFIGURE CLIENT



The available standard modules:

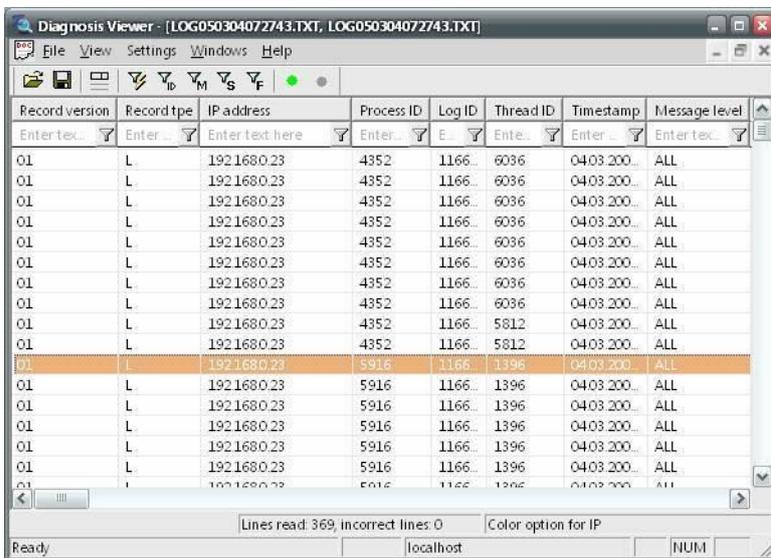
| Parameters | Description |
|--------------------------------------|---|
| Modules | <p>Selection of the modules which you want to configure.</p> <p>The list is made up of standard modules and modules dependent on the respective client.</p> <ul style="list-style-type: none"> ▶ General: General messages ▶ Net: Network messages ▶ Proxy: Messages of the zenon Proxy ▶ Db: Messages of ZenDbSrv ▶ SysSrv: Messages of ZenSysSrv ▶ Driver: Messages from a driver ▶ Log: Messages from logging ▶ SAT: SICAM 230 specific messages |
| Message level | Type of information which should be logged. |
| All | Selects all. |
| None | Deselects all. |
| Message level for all modules | Assigns highlighted message levels to all modules. |
| Max buffered records | Number of records to be buffered if no connection to the server is established. Default: 256 |
| OK | Applies all changes and closes dialog. |
| Cancel | Discards all changes and closes the dialog. |
| Accept | Applies all changes. The dialog remains open. |
| Default values | Enters the default values. |

15.1.6 Diagnosis Viewer - Analysis Program

The Diagnosis Viewer is used to display the log data. It connects to the Diagnosis Server in order to display data online or read back historic log files. Log files contain not only the log data, additional information which is important for the analysis such as column headings are also saved in them.

To display a log file:

1. select File -> Open
2. the dialog for selecting a log file is opened with focus on the configured default folder
3. select the desired file
4. the log file is displayed



The screenshot shows the 'Diagnosis Viewer' application window with the following data table:

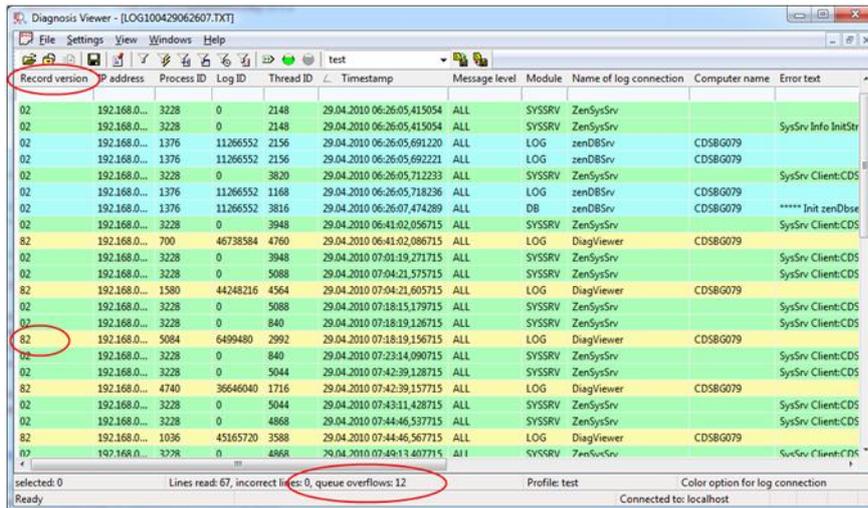
| Record version | Record type | IP address | Process ID | Log ID | Thread ID | Timestamp | Message level |
|----------------|-------------|--------------|------------|--------|-----------|--------------|---------------|
| 01 | L | 192.168.0.23 | 4352 | 1166 | 6036 | 04.03.200... | ALL |
| 01 | L | 192.168.0.23 | 4352 | 1166 | 6036 | 04.03.200... | ALL |
| 01 | L | 192.168.0.23 | 4352 | 1166 | 6036 | 04.03.200... | ALL |
| 01 | L | 192.168.0.23 | 4352 | 1166 | 6036 | 04.03.200... | ALL |
| 01 | L | 192.168.0.23 | 4352 | 1166 | 6036 | 04.03.200... | ALL |
| 01 | L | 192.168.0.23 | 4352 | 1166 | 6036 | 04.03.200... | ALL |
| 01 | L | 192.168.0.23 | 4352 | 1166 | 6036 | 04.03.200... | ALL |
| 01 | L | 192.168.0.23 | 4352 | 1166 | 5812 | 04.03.200... | ALL |
| 01 | L | 192.168.0.23 | 4352 | 1166 | 5812 | 04.03.200... | ALL |
| 01 | L | 192.168.0.23 | 5916 | 1166 | 1396 | 04.03.200... | ALL |
| 01 | L | 192.168.0.23 | 5916 | 1166 | 1396 | 04.03.200... | ALL |
| 01 | L | 192.168.0.23 | 5916 | 1166 | 1396 | 04.03.200... | ALL |
| 01 | L | 192.168.0.23 | 5916 | 1166 | 1396 | 04.03.200... | ALL |
| 01 | L | 192.168.0.23 | 5916 | 1166 | 1396 | 04.03.200... | ALL |
| 01 | L | 192.168.0.23 | 5916 | 1166 | 1396 | 04.03.200... | ALL |
| 01 | L | 192.168.0.23 | 5916 | 1166 | 1396 | 04.03.200... | ALL |

At the bottom of the window, it shows 'Lines read: 369, incorrect lines: 0' and 'Color option for IP' set to 'localhost'.

5. Double click an entry to open the detail view

RECOGNIZING QUEUE OVERFLOW AT DRIVER

If messages of a driver are deleted because of queue overflow, the Diagnosis Client and the Diagnosis Server set a marker in the new entry when writing a new entry for all activated modules (on page 1390) that older entries were deleted from the queue. The overflow recognitions contained in the opened log files are counted:



| Record version | P address | Process ID | Log ID | Thread ID | Timestamp | Message level | Module | Name of log connection | Computer name | Error text |
|----------------|--------------|------------|----------|-----------|----------------------------|---------------|--------|------------------------|---------------|--------------------|
| 02 | 192.168.0... | 3228 | 0 | 2148 | 29.04.2010 06:26:05,415054 | ALL | SYSSRV | ZenSysSrv | | |
| 02 | 192.168.0... | 3228 | 0 | 2148 | 29.04.2010 06:26:05,415054 | ALL | SYSSRV | ZenSysSrv | | |
| 02 | 192.168.0... | 1376 | 11266552 | 2156 | 29.04.2010 06:26:05,691220 | ALL | LOG | zenDBSrv | CDSBG079 | |
| 02 | 192.168.0... | 1376 | 11266552 | 2156 | 29.04.2010 06:26:05,692221 | ALL | LOG | zenDBSrv | CDSBG079 | |
| 02 | 192.168.0... | 3228 | 0 | 3820 | 29.04.2010 06:26:05,712233 | ALL | SYSSRV | ZenSysSrv | | SysSrv Client:CDS |
| 02 | 192.168.0... | 1376 | 11266552 | 1168 | 29.04.2010 06:26:05,718236 | ALL | LOG | zenDBSrv | CDSBG079 | |
| 02 | 192.168.0... | 1376 | 11266552 | 3816 | 29.04.2010 06:26:07,474289 | ALL | DB | zenDBSrv | CDSBG079 | ***** Init zenDbse |
| 02 | 192.168.0... | 3228 | 0 | 3948 | 29.04.2010 06:41:02,056715 | ALL | SYSSRV | ZenSysSrv | | SysSrv Client:CDS |
| 82 | 192.168.0... | 700 | 46738584 | 4760 | 29.04.2010 06:41:02,086715 | ALL | LOG | DiagViewer | CDSBG079 | |
| 02 | 192.168.0... | 3228 | 0 | 3948 | 29.04.2010 07:01:19,271715 | ALL | SYSSRV | ZenSysSrv | | SysSrv Client:CDS |
| 02 | 192.168.0... | 3228 | 0 | 5088 | 29.04.2010 07:04:21,575715 | ALL | SYSSRV | ZenSysSrv | | SysSrv Client:CDS |
| 02 | 192.168.0... | 1580 | 44248216 | 4564 | 29.04.2010 07:04:21,605715 | ALL | LOG | DiagViewer | CDSBG079 | |
| 02 | 192.168.0... | 3228 | 0 | 5088 | 29.04.2010 07:18:15,179715 | ALL | SYSSRV | ZenSysSrv | | SysSrv Client:CDS |
| 02 | 192.168.0... | 3228 | 0 | 840 | 29.04.2010 07:18:19,126715 | ALL | SYSSRV | ZenSysSrv | | SysSrv Client:CDS |
| 82 | 192.168.0... | 5084 | 6499480 | 2992 | 29.04.2010 07:18:19,156715 | ALL | LOG | DiagViewer | CDSBG079 | |
| 02 | 192.168.0... | 3228 | 0 | 840 | 29.04.2010 07:23:14,090715 | ALL | SYSSRV | ZenSysSrv | | SysSrv Client:CDS |
| 02 | 192.168.0... | 3228 | 0 | 5044 | 29.04.2010 07:42:39,128715 | ALL | SYSSRV | ZenSysSrv | | SysSrv Client:CDS |
| 82 | 192.168.0... | 4740 | 36646040 | 1716 | 29.04.2010 07:42:39,157715 | ALL | LOG | DiagViewer | CDSBG079 | |
| 02 | 192.168.0... | 3228 | 0 | 5044 | 29.04.2010 07:43:11,428715 | ALL | SYSSRV | ZenSysSrv | | SysSrv Client:CDS |
| 02 | 192.168.0... | 3228 | 0 | 4868 | 29.04.2010 07:44:46,537715 | ALL | SYSSRV | ZenSysSrv | | SysSrv Client:CDS |
| 82 | 192.168.0... | 1036 | 45165720 | 3588 | 29.04.2010 07:44:46,567715 | ALL | LOG | DiagViewer | CDSBG079 | |
| 02 | 192.168.0... | 3228 | 0 | 4868 | 29.04.2010 07:49:13,407715 | ALL | SYSSRV | ZenSysSrv | | SysSrv Client:CDS |

selected: 0 Lines read: 67, incorrect lines: 0, queue overflows: 12 Profile: test Color option for log connection Connected to: localhost

| Parameters | Description |
|------------------------------------|---|
| Column Record version | This column must be part of the column selection. It shows the version of the data record. Version 8x tags overflows. |
| Counter 82 | 8 refers to overflow, 2 refers to the concerned version of the data record. |
| Status bar: queue overflows | If status bar is active, the number of overflows is displayed there. |

Note: Not all entries written in the log file are displayed. If a not displayed log data record is tagged with an overflow, it will be displayed at the next visualized data record of this client. If several not displayed entries in a row are tagged with an overflow, the counter in the status bar can deviate from the number of data records with overflow tags.

Global settings

The entries are in the English language.

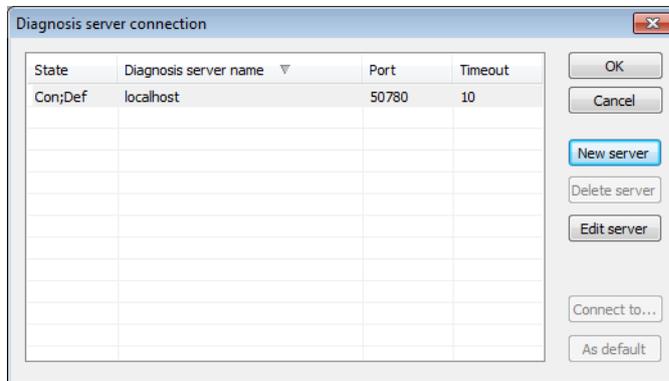
| Parameters | Description |
|--------------------------------|---|
| File | Commands in menu File. |
| Open | Opens dialog for selecting a log file saved in TXT format. Each newly opened log file is displayed in its own window. |
| Open to active document | Each new log file is added to the active window. |
| Close | Closes the active window. |
| Save | Saves the log files of the active window. |
| Save as | Saves the current view of the active window (e.g. filter settings) to a file to be selected. |
| Remote Download | Only available, if a connection to a Remote Diagnosis Server exists. Enables the download of logging files of the Remote Server to the local log folder. A subdirectory with the name of the PC is created. Only file, which have changed or which are new, are available. |
| Connect to | Opens the dialog for the Connection selection (on page 1374). |
| Online | <p>Activates the online error view.</p> <p>If online logging is started, all incoming entries are displayed. The same filter dialog as for reading files can also be set here.</p> <p>Difference: If no log connection is selected, all incoming log entries will be displayed, otherwise only the ones from the selected clients.</p> <p>If the filter of the log connection is modified, all entries not fulfilling the filter criteria will be lost. (Logging file nevertheless is created and all entries are saved.) Displayed entries can be saved.</p> |
| Offline | Deactivates the online error view. (Default) |
| Exit | Closes the Diagnosis Viewer. |

Connection settings Diagnosis Server connection

The Diagnosis Viewer automatically connects to a selected standard Server at the start. If no standard server is defined, `localhost` is used as standard server. The Server configuration can also be done via `zenon6.ini` (on page 1363) (recommended).

SELECT DIAGNOSIS SERVER

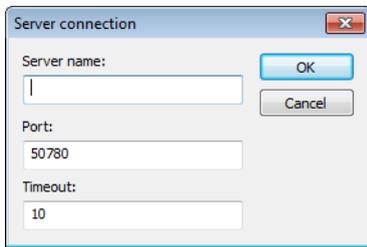
Click on *File* -> *Connect to...* to open the dialog for selecting a Server:



| Parameters | Description |
|---------------|---|
| List Server | Lists all configured Servers and displays them: <ul style="list-style-type: none"> ▶ Status ▶ Name ▶ Port ▶ Timeout |
| OK | Applies settings and closes the dialog. |
| Cancel | Discards settings and closes the dialog. |
| New Server | Opens the dialog for configuring a new Server. |
| Delete Server | Selected Server entry is deleted from the list. |
| Edit Server | Opens the dialog for configuring the selected Server. |
| Connect to | Establishes a connection to the selected Server. |
| As default | Selected server becomes the standard server. |

CREATE AND EDIT DIAGNOSIS SERVER

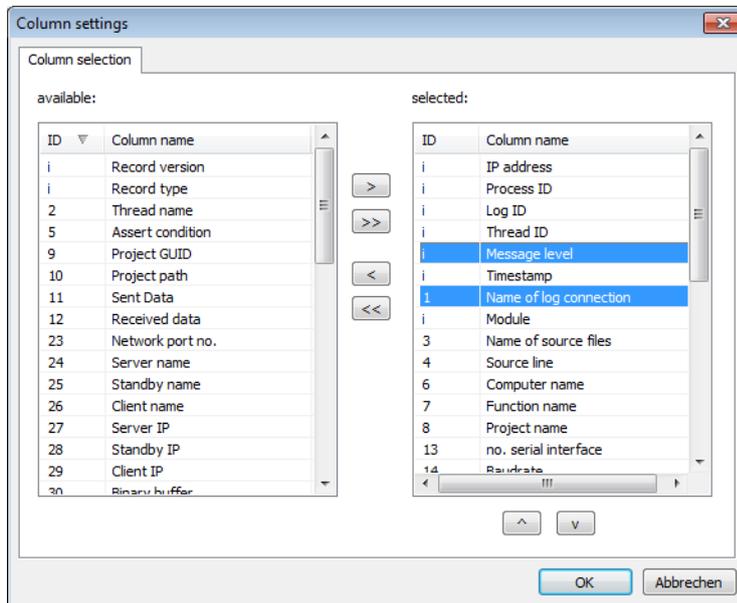
Click on **New server** or **Edit server** in dialog Diagnosis Server connection to open the dialog for configuring the Server:



| Parameters | Description |
|---------------|---|
| Server name | Name of the PC to which to connect. The following must run on the PC: up to version 6.51: zenSysSrv from version 7.00: zenLogSrv |
| Port | Port of the service on the target computer: up to version 6.51: 1101 from version 7.00 on: 50780 |
| Timeout | Time in seconds to wait for a response from the Sysservice . Default: 10 s |
| OK | Applies settings and closes the dialog. |
| Cancel | Discards settings and closes the dialog. |

Column settings

A number of pre-defined columns can be selected in the menu under *Settings -> Column settings*. These columns and their entries are automatically displayed on opening a new file. Also the sorting and the column width of the selection are regarded. On opening the column width has to be set to **Autosize**.



| Parameters | Description |
|------------------|--|
| available | available columns |
| selected | Columns which are displayed |
| > | adds columns selected at "available" to "selected" |
| >> | adds all available columns at "available" to "selected" |
| < | removes selected columns from "selected" |
| << | removes all available columns from "selected" |
| ^ | sorts selected entries one level higher (multi-select is possible) |
| v | sorts selected entries one level lower (multi-select is possible) |
| OK | Applies settings and closes the dialog. |
| Cancel | Discards settings and closes the dialog. |

Columns can also be configured via the context menu:

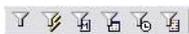
| Parameters | Description |
|------------------------------|---|
| Add all columns with entry | Adds all columns which contain entries. |
| Remove Column | Hides the selected column. |
| Remove all empty columns | Hides all columns which do not contain entries. |
| Column width automatic | The width of the selected column is automatically adjusted to the longest entry |
| All columns widths automatic | The width of all columns is automatically adjusted to the longest entry |

15.1.7 Possibilities of Filtering

To define filters open the corresponding filter dialog via the corresponding symbol or the tab of the filter.

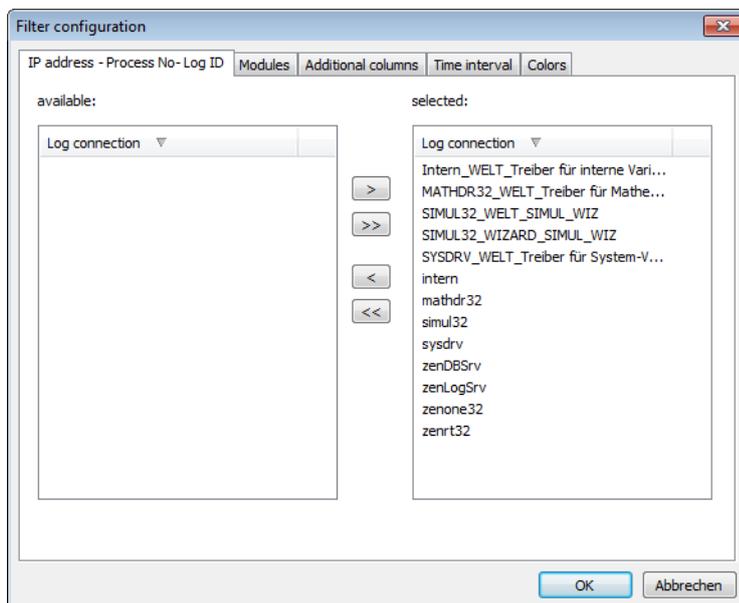
SYMBOL BAR FILTER

To use the symbol bar, you must activate it in menu **view** via menu item **Icon bar**.



| Symbol | Tool tip | Description |
|--------|--|---|
| 1 | Change pre-filter settings | Opens dialog with five tabs for defining filters. |
| 2 | Change pre-filter for IP-ProcessID-LogID | Opens tab IP address - Process No - Log ID (on page 1389) . |
| 3 | Change pre-filter for modules | Opens tab Modules (on page 1390). |
| 4 | Change pre-filter for additional columns | Opens tab Additional columns (on page 1391). |
| 5 | Change pre-filter for time interval | Opens tab Time interval (on page 1392). |
| 6 | Change pre-filter for coloring | Opens tab Colors (on page 1393). |

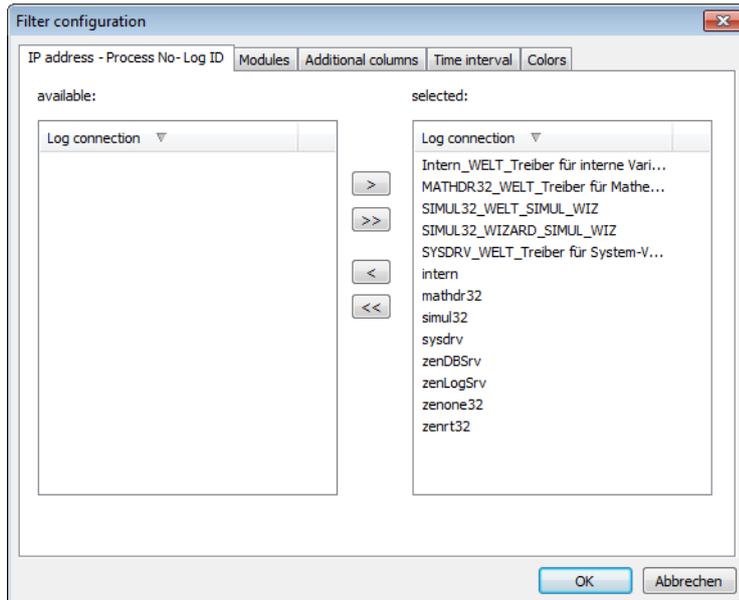
FILTER DIALOG



| Tabs | Description |
|---------------------------|---|
| IP-ProcessID-LogID | Opens tab IP address - Process No - Log ID (on page 1389) for configuring the connection which should be logged. |
| Modules | Opens tab Modules (on page 1390) for the modules which should be logged. |
| Additional columns | Opens tab Additional columns (on page 1391) for selecting additional columns which should be displayed. |
| Time interval | Opens tab Time interval (on page 1392) for defining time filter. |
| Colors | Opens tab Colors (on page 1393) for selecting the color-coding of information. |

IP address - Process No - Log ID

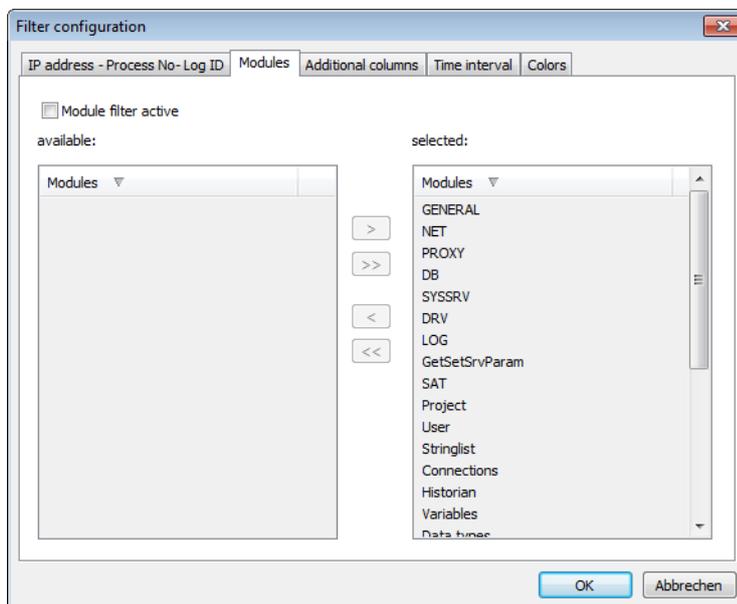
Configuration of the connections and processes which should be displayed.



| Parameters | Description |
|--------------------|---|
| available | List of available connections. |
| selected | List of selected connections. |
| Cursor keys | Add selected (>) or all (>>) connections to list selected or removes them from the list (< or <<). |
| OK | Applies all changes on all tabs and closes the dialog. |
| Cancel | Discards all changes on all tabs and closes the dialog. |

Modules

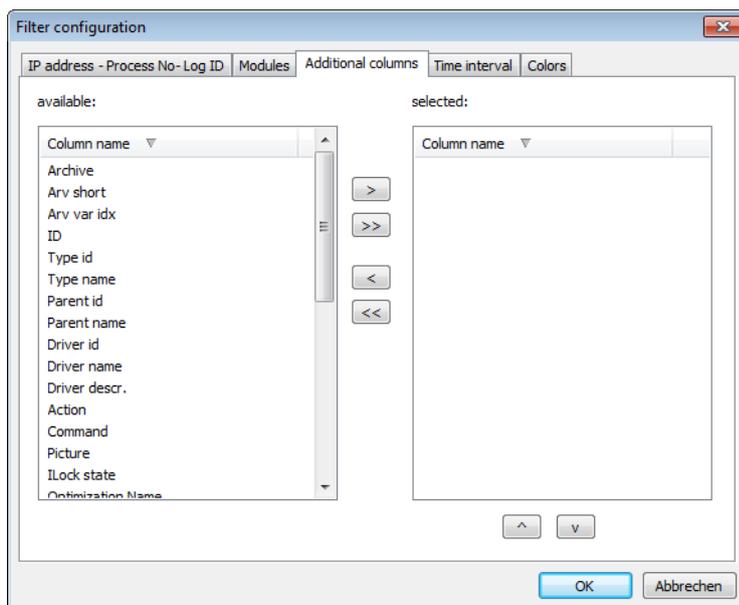
Selection of the modules which should be displayed.



| Parameters | Description |
|-----------------------------|--|
| Module filter active | Active: It is filtered on modules. With this only log data records are displayed which are assigned to a selected module. |
| available | Available modules. |
| selected | Selected modules. |
| Cursor keys | Add selected (>) or all (>>) connections to list selected or removes them from the list (< or <<). |
| OK | Applies all changes on all tabs and closes the dialog. |
| Cancel | Discards all changes on all tabs and closes the dialog. |

Additional columns

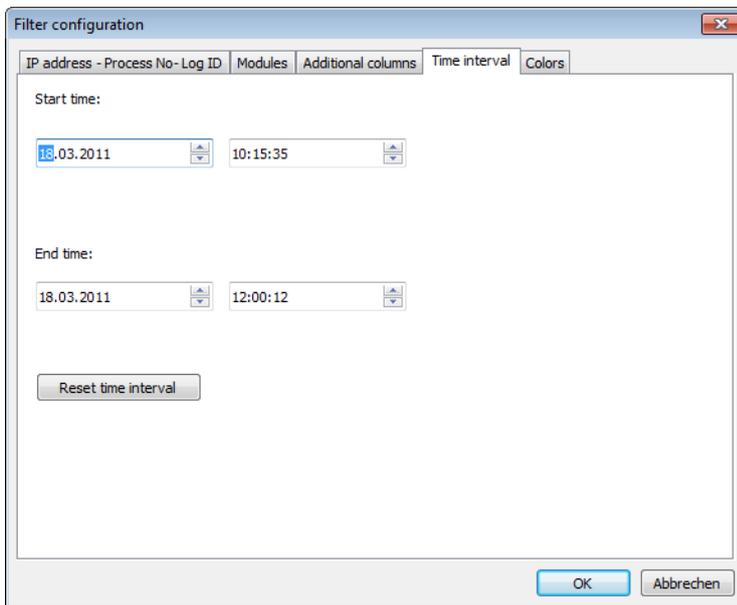
Selection of the columns which should be displayed additionally.



| Parameters | Description |
|--------------------|---|
| available | List of the available columns. All field definitions existing in the file are displayed. |
| selected | List of the selected columns. |
| Cursor keys | Add selected (>) or all (>>) connections to list selected or removes them from the list (< or <<). |
| OK | Applies all changes on all tabs and closes the dialog. |
| Cancel | Discards all changes on all tabs and closes the dialog. |

Time interval

Configuration of the time filter for displaying the entries.



Filter configuration

IP address - Process No - Log ID | Modules | Additional columns | Time interval | Colors

Start time:

18.03.2011 10:15:35

End time:

18.03.2011 12:00:12

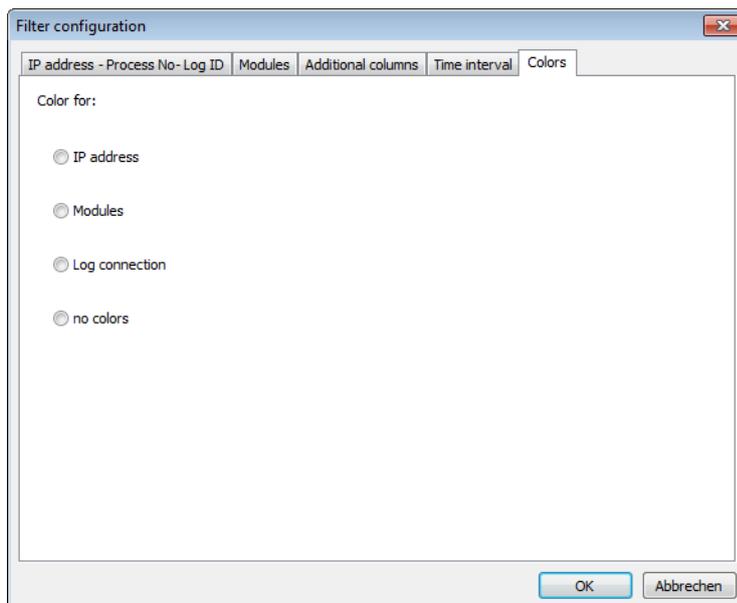
Reset time interval

OK Abbrechen

| Parameters | Description |
|----------------------------|--|
| Start time: | Selection of the date and point in time from which entries should be displayed. Default: actual date |
| End time: | Selection of the date and point in time up to which entries should be displayed. Default: actual date |
| Reset time interval | Sets filter back to default value. |
| OK | Applies all changes on all tabs and closes the dialog. |
| Cancel | Discards all changes on all tabs and closes the dialog. |

Colors

Selection of the color-coding of the information.



| Parameters | Description |
|----------------|--|
| Colors for: | Selection of the color |
| IP address | Active: Different IP addresses are colored differently. |
| Modules | Active: Different modules are colored differently. |
| Log connection | Active: Different names of the log connection are colored differently. |
| no colors | Active: Entries are not colored. |
| OK | Applies all changes on all tabs and closes the dialog. |
| Cancel | Discards all changes on all tabs and closes the dialog. |

15.1.8 Reading the log files

One or more log files can be opened in an analysis at the same time. A pre-filter (on page 1387) has to be set to limit the display. This is possible with five property pages. This filter can be modified later on. If the filter is set, only the entries fulfilling these filter criteria are displayed. The entries are listed chronologically.

FILTER COLUMNS

Another filter possibility is available with the filter columns. Filter criteria can be entered for each column in the input field below the column header. The fields support regular expressions, so that also complex filter criteria can be defined. The list can be sorted ascending or descending by clicking the column headers. Displayed entries can be saved. Fields to be displayed can be selected using the *Settings* -> *Column settings* menu entry.

STANDARD FIELDS IN THE LOG FILE:

| ID | Parameters | Description |
|----|----------------|---|
| i | IP address | IP address. These fields identify the clients and allow the message to be assigned. |
| i | Log ID | entry ID These fields identify the clients and allow the message to be assigned. |
| i | Message Level | Name of the message level for which the message was entered. |
| i | Module | Name of the module, which entered the message. |
| i | Process ID | ID of the project. These fields identify the clients and allow the message to be assigned. |
| i | Record type | Type of entry. |
| i | Record version | Version number of the entry. |
| i | Thread ID | ID of the thread, from which the message was entered. |
| i | Timestamp | Time of the message in UTC. |

OPTIONAL FIELDS WITH FIX ID.

| ID | Constant | Description |
|----|------------------------|----------------------------|
| 1 | Name of log connection | Name of logging connection |
| 2 | Thread name | Name of the threads. |
| 3 | Name of source files | Name of the source file. |
| 4 | Source line | Source line |
| 5 | Assert condition | Assert condition |
| 6 | Computer name | Computer name |
| 7 | Function name | Function name |
| 8 | Project name | Project name |

| | | |
|----|----------------------|---------------------------------|
| 9 | Project GUID | GUID of the project. |
| 10 | Project path | Project path |
| 11 | Sent Data | Sent data |
| 12 | Received data | Received data |
| 13 | no. serial interface | Number of the serial interface. |
| 14 | Baudrate | Baud rate |
| 15 | dtr setting | DTR setting. |
| 16 | rts setting | RTS setting. |
| 17 | Serial char. length | Serial character length |
| 18 | Parity | Parity |
| 19 | No. stopbits | Number of stop bits |
| 20 | CTS | CTS. |
| 21 | dsr | DSR |
| 22 | dsr sensitivity | DSR sensitivity. |
| 23 | Network port no. | Port number in the network. |
| 24 | Server name | Server name. |
| 25 | Standby name | Name of standby server |
| 26 | Client name | Client name. |
| 27 | Server IP | IP address server. |
| 28 | Standby IP | IP address standby. |
| 29 | Client IP | IP address client. |
| 30 | Binary buffer | Binary buffer. |
| 31 | Pointer | Pointer |
| 32 | Class name | Class name |
| 33 | Error code | Error code: |
| 34 | DLL instance handle | DLL instance handle |
| 35 | DLL name | DLL name |

| | | |
|----|---------------------------|---|
| 36 | Driver error parameter 1 | Driver error parameter 1 |
| 37 | Driver error parameter 2 | Driver error parameter 2 |
| 38 | Trace Message | Trace message |
| 39 | Errortext | Error text |
| 40 | Error file name | Name of error file. |
| 41 | Success condition | Condition for success |
| 42 | Value if successful | Value when successful |
| 43 | Net adress | Net address: |
| 44 | Datablock | Data block. |
| 45 | Offset | Offset: |
| 46 | Bit number | Bit number |
| 47 | Area in PLC | Area in the PLC. |
| 48 | Communication direction | Shows the direction of the communication in a string. |
| 49 | General text | General text |
| 50 | Main version no. | Number of main version. |
| 51 | Sub version no. | Number of sub-version. |
| 52 | Build no. | Build number. |
| 53 | Servicepack | Service pack |
| 54 | Hotfix no. | Hotfix number |
| 55 | Sending client | Client, which sent the command |
| 56 | Target client for command | Client that is the target of the command. |
| 57 | Database no. | Number of database. |
| 58 | Datapoint no. | Datapoint number (channel number) |
| 59 | Datapoint value | Value of datapoint |
| 60 | Datapoint status | Status of datapoint |
| 61 | Datapoint timestamp | Time stamp of datapoint in seconds |
| 62 | Duration in ms | Error wait time in milliseconds. |

| | | |
|----|-----------------|------------------|
| 63 | Number, counter | number, counter. |
|----|-----------------|------------------|

15.1.9 Structure of the log file

Log files are ANSI text files. The single fields are separated by tabs. The final character is CR+LF. So, the Notepad can be opened to display the files.

Log files contain information sequentially, not chronologically sorted.

Message levels

Eight groups exist for the subdivision of log messages. They are bit coded and therefore can be combined.

| | |
|-----|-----------------|
| 1 | Error messages |
| 2 | Warnings |
| 4 | Success message |
| 8 | TRACE |
| 16 | ASSERT |
| 32 | Log messages |
| 64 | Debug |
| 128 | Extended debug |

Search function

With `view/Find` the current window can be searched. All hits are marked.

Profiles

Column settings can be saved as profiles.

To save profiles:

1. enter a name into the field in the tool bar
2. click on the disk symbol on the right-hand side

To load profiles:

1. select a saved profile from the combo box
2. click on the second symbol on the right-hand side with the disk

The profiles are saved as *.lvs files.

15.1.10 Handling of errors and messages for the Diagnosis Viewer

ERRORS

| Errors | Possible causes |
|---|---|
| The port cannot be opened. | <ul style="list-style-type: none"> ▶ Another application uses the port. Check via "netstat". ▶ The ports for entries <code>[SYS_REMOTE] CONFIG</code> and <code>[LOGGING_SYSTEM] CONFIG</code> are identical. <code>zenLogSrv</code> and <code>zenSysSrv</code> then try to open the same port. |
| Diagnosis Clients do not start the zenLogSrv | <ul style="list-style-type: none"> ▶ <code>zenAdminSrv</code> was terminated. Without it the service cannot be started. ▶ <code>zenLogSrv</code> is not registered as a service at the PC. In this case enter the following in the command line: <code>zenLogSrv.exe -Service</code> ▶ Diagnosis Clients are not of version 7.00 SP0 or higher. The <code>zenLogSrv</code> is only supported from this version on. ▶ Under Windows CE: The individual components (Runtime, SysSrvCE, LogSrvCE) are located in different folders. They must be located in the same folder. Otherwise the components do not find one another. |
| Under CE many processes are created by SysSrvCE.exe or LogSrvCE.exe. | <ul style="list-style-type: none"> ▶ One of the two entries in zenon6.ini <code>[SYS_REMOTE] INIT</code> or <code>[LOGGING_SYSTEM] INIT</code> has the value 2. <p>As a result the application only displays the user interface and does not open the Listening port. Each Diagnosis Client then tries to start the process as it cannot connect to the Diagnosis Server.</p> |
| Several processes crash. (Unhandled Exceptions of the Diagnosis Server at receiving log messages or configuration commands or of the Diagnosis Client and Diagnosis Viewer during booting or during receiving the configuration) | <ul style="list-style-type: none"> ▶ The versions do not match. Diagnosis Clients, Diagnosis Server and Diagnosis Viewer must either all have version 7.00 SP0 or higher or all version 6.51 SP0 or earlier (see Compatibility (on page 1358)). |

LOG ENTRIES

| Entry | Description |
|---|--|
| SysSrv received not supported network message! | zenSysSrv received a network telegram which is not supported. Example: Log entries. |
| LogSrv received not supported network message! | zenLogSrv received a network telegram which is not supported. Example: Remote Transport commands |
| Could not open listening port. Server will be stopped. | The zenLogSrv or the zenSysSrv could not open its Listening port. The error message is logged as follows: <ul style="list-style-type: none"> ▶ zenLogSrv and zenSysSrv at PC: Entry in the Windows event display. ▶ zenSysSrv under CE: Message box for the user and log entry to the Diagnosis Server. ▶ zenLogSrv under CE: Message box for the user. |

The following log entries are assigned to different systems. The first part of the messages states whether service or Client are effected:

- ▶ SysSrv: zenSysSrv
- ▶ SysCli: Client to the zenSysSrv
- ▶ LogSrv: zenLogSrv
- ▶ LogCli: Diagnosis Client

| Entry | Description |
|---|--|
| [SysSrv/LogSrv/SysCli/LogCli] Info InitString [String] | A network connection has been initialized with the displayed configuration string. Server opens ports and Clients connect to the Server. |
| [SysSrv/LogSrv/SysCli/LogCli] WINSOCK ERROR | An exception occurred during a network operation. The details are also displayed. |
| [SysSrv/LogSrv] Accept Failed! | An incoming connection from a Client could not be accepted. |
| [SysSrv/LogSrv/SysCli/ LogCli] Write Faild | Not all data which should be sent could be sent. The number of the sent bytes and the number of the bytes which should be sent is displayed. |
| [SysSrv/LogSrv] Client [String] in List Delete! | The Client log off from the Server. |
| [SysSrv/LogSrv] Client [String] in List Insert | The Client log on to the Server. |

15.2 Error messages, zenon Analyzer general

ANALYZER MANAGER

GENERAL

| Message | Description |
|---|--|
| Javascript error message: Error 500 | Possible cause: Variable name contains two or more consecutive spaces. |

ANALYZER MANAGER LOG

| Entry | Level | Description |
|---|---|---|
| Application_Error: [Fehlerinformationen] | ERRORS | An error has triggered the ASP.Net application error event. |
| Analyzer Manager Application Start | DEBUG | The ASP.Net web application is being started up. |
| Application_AuthenticateRequest: User=[Benutzername], HTTP Method=[HTTP-Methode], URL=[URL] | DEEPDEBUG | An authentication query was received. |
| Application_BeginRequest: User=[Benutzername], HTTP Method=[HTTP-Methode], URL=[URL] | DEEPDEBUG | An HTTP query was received. |
| Application_EndRequest: User=[Benutzername], HTTP Method=[HTTP-Methode], URL=[URL] | DEEPDEBUG | An HTTP query was handled. |
| TRACE for [Komponente]: [Meldung] | Depending on the trace level: ▶ ALL ▶ ERRORS ▶ WARNINGS ▶ DEBUG ▶ DEEPDebu | A trace message was received. |

| | | |
|---|--|---|
| | g | |
| WebService method „[Methode]" called with [Parameterliste] | DEEPDEBUG | A WebService method of the Reporting Services Web Service end points is being called up. |
| WebService method „[Methode]" returned [Rückgabewert] | DEEPDEBUG | A WebService method of the Reporting Services Web Service end points has provided a return value. |
| WebService method „[Methode]" returned [Rückgabewert] and set [Output-Parameterliste] | DEEPDEBUG | A WebService method of the Reporting Services Web Service end points has provided a return value and set an output parameter. |
| Eventlog entry for [Eventlog-ID]: [Meldung] | Depending on the event log type: <ul style="list-style-type: none"> ▶ ERRORS ▶ WARNINGS ▶ DEBUG ▶ DEEPDebug | An event log message was received. |
| Exception caught in method „[Methodenname]" of type „[Klassenname inklusive Namespace]": [Exception-Dump] | ERRORS | An exception was caught. |

ZAMS

All messages of the output window are sent to the zenLogSrv.

CONNECTOR CONTAINER

All message box messages that lead to the zrsConnector.exe process being ended are logged as ERRORS. In addition, the following messages are saved:

| Entry | Level | Description |
|---|--------|--|
| The logging connection could not be established! | ERRORS | Log connection could not be established. |
| The logging functions could not be loaded! | ERRORS | The necessary functions could not be loaded from the DLLs. |
| The logging helper DLL could not be loaded! | ERRORS | The necessary DLLs could not be loaded. |
| Client [IP-Adresse & Port] [accepted/processed] | DEBUG | Client connection was accepted and handled. |
| Using connector version [Version] | DEBUG | Version number was set for a query. |
| The required connector „[Connector]“ could not be loaded. Errorcode=[HEX-Fehlercode], Errortext=[Fehlertext] | ERRORS | The requested connector could not be loaded. |
| The required connector „[Connector]“ has been loaded. | DEBUG | The requested connector was loaded. |
| zenonV6: Query for [Anfragetyp] received | DEBUG | Receive query. |
| zenonV6: Query for [Anfragetyp] resulted in error. Errorcode=[HEX-Fehlercode], Errortext=[Fehlertext] | ERRORS | Query has triggered an error. |
| zenonV6: Query for [Anfragetyp] processed | DEBUG | Query has been handled successfully. |
| zenonV6: Query shift is not supported | ERRORS | Query not supported. |
| zenonV6: Query type is not supported | ERRORS | Query not supported. |

ZRSLICSRV

All entries that were previously sent to EventLog are logged. ERRORS are only sent to EventLog, unless EXTENDEDLOG is set in `zenAnalyzer.ini`. This flag has no effect on the sending of messages to the `zenLogSrv`.

| Entry | Level | Description |
|--|--------|---|
| Client [IP-Adresse & Port] [accepted/processed] | DEBUG | Client connection was accepted and handled. |
| The logging connection could not be established! | ERRORS | Log connection could not be established |
| The logging functions could not be loaded! | ERRORS | The necessary functions could not be loaded from the DLLs. |
| The logging helper DLL could not be loaded! | ERRORS | The necessary DLLs could not be loaded. |
| Command [Kommando mit Parametern] has been processed. | DEBUG | A query was processed. (this message is written by every query type) |
| Deprecated command [Kommando mit Parametern] has been processed. | DEBUG | An obsolete inquiry was received and responded to with "negative" (always negative, because it is an obsolete inquiry). |

ZRSPROVIDER

The following new log messages have been added:

| Entry | Level | Description |
|--|--------|---|
| The cryptographic service provider could not be initialized! | ERRORS | Provider for hash could not be initialized |
| Reading the hash data failed! | ERRORS | Reading of hash data failed. |
| The data could not be hashed! | ERRORS | Data hashing failed. |
| The hash object could not be created! | ERRORS | Hash object could not be created. |
| The cryptographic service provider is not usable! | ERRORS | Provider for hash cannot be used. |
| Domain [Name] released. | DEBUG | Domain approved |
| Reading data for [domain/project] [Name]. | DEBUG | Start of loading of data for the domain or project |
| Datasource could not be opened. Errorcode=[HEX-Fehlercode] | ERRORS | Data source could not be opened. |
| Session not be opened. Errorcode=[HEX-Fehlercode] | ERRORS | Session could not be opened. |
| [Anzahl] [Objektyp] read. | DEBUG | Read object data from database. |
| [Objekttype] data could not be read. Errorcode=[HEX-Fehlercode] | ERRORS | Object data could not be read from the database. |
| Reading data for [domain/project] [Name] completed. | DEBUG | Loading of data for domain or project completed. |
| The logging connection could not be established! | ERRORS | Log connection could not be established |
| The logging functions could not be loaded! | ERRORS | The necessary functions could not be loaded from the DLLs. |
| The logging helper DLL could not be loaded! | ERRORS | The necessary DLLs could not be loaded. |
| Socket could not be created. Errorcode=[Fehlercode] | ERRORS | The network connection could not be opened. |
| Both server and standby server for the project could not be reached. | ERRORS | A connection could not be established to either the Server or the Standby (if defined). |
| Connecting to [IP-Adresse & Port] | DEBUG | Establishment of connection |
| Connecting to [IP-Adresse & Port] failed | ERRORS | Connection Failed |
| There was no response to the initialization | ERRORS | Initialization query remained unanswered. |

| | | |
|--|--------|--|
| request. | | |
| Using connector version [Version] | DEBUG | Connection version handled. |
| There was no response to the query. | ERRORS | Query remained unanswered. |
| Query [Anfragetyp]: [Parameterliste] | DEBUG | Receive query. |
| Invalid call: [Fehlerinformation] | ERRORS | Invalid query. |
| Connector error: [Fehlerinformation] | ERRORS | Error during communication with the connector container or the connector container has reported an error when editing the query. |
| Unexpected connector error: [Fehlerinformation] | ERRORS | An exception has occurred. |
| Query [Anfragetyp] processed: [Anzahl] result rows returned. | DEBUG | Query completed successfully and data restored. |