

zenon Analyzer manual

zenon Analyzer





©2013 Ing. Punzenberger COPA-DATA GmbH

All rights reserved.

Distribution and/or reproduction of this document or parts thereof in any form are permitted solely with the written permission of the company COPA-DATA. The technical data contained herein has been provided solely for informational purposes and is not legally binding. Subject to change, technical or otherwise.



Contents

1.	Welcome to COPA-DATA help			
2. zenon Analyzer				8
3.	Basic	:s		11
	3.1	Techno	ology	14
	3.2	Archite	ecture	16
	3.3	Time fo	ormats	18
	3.4	Prereq	juisites	20
4.	Insta	llation.		23
	4.1	Licensi	ing	30
	4.2	Uninsta	allation of zenon Analyzer version 1.6 and 2.0	33
		4.2.1	Uninstallation of zenon Analyzer 1.6	34
		4.2.2	Uninstallation of zenon Analyzer 2.0	36
5.	Data	prepara	ation	37
	5.1	Level 1	L: Data abstraction	38
	5.2	Level 2	2: Compression and calculation	38
	5.3	Level 3	3: Report	39
6.	Anal	yzer Wi	zards	39
	6.1	Parame	eterization Wizard	40
		6.1.1	Install and call up wizard	41
		6.1.2	Start window	43
		6.1.3	Configuration	44
	6.2	Analyz	er Export Wizard	60
		6.2.1	Install and call up wizard	61
		6.2.2	Start window	63
		6.2.3	Configuration	64
		6.2.4	Exit wizard	88
7.	Righ	ts mana	agement	88
8.	Anal	vzer Ma	anager: Configuration and operation	88



	8.1	Drop-d	92	
	8.2	Option	S	93
	8.3	Langua	ges and time formats	94
8.4		Parame	eters - input and selection	95
		8.4.1	Default input field	99
		8.4.2	Boolean selection dialog	100
		8.4.3	Input or selection of several values	101
		8.4.4	Single time span input	107
		8.4.5	Date and time	111
		8.4.6	Selection of equipment group	117
		8.4.7	Selection of lot and shift	121
		8.4.8	Filter	124
		8.4.9	Sorting of filter elements	130
	8.5	Site		131
		8.5.1	General	132
	8.6	Data so	ource	133
		8.6.1	Properties	135
	8.7	Folder .		137
		8.7.1	Properties	139
	8.8	Upload	I file	140
9.	Repo	orts		141
	9.1	Create	report	143
		9.1.1	Report Builder	143
		9.1.2	Upload reports	145
	9.2	Call up	report	146
	9.3	Configu	ure and export reports	147
		9.3.1	Tool bar Report	150
	9.4	Downlo	oad report	150
	9.5	Manag	e reports	151
		9.5.1	Properties	152
		9.5.2	Parameters	153
		9.5.3	Data sources	157
		9.5.4	Processing options	157
		9.5.5	Cache Refresh Options	158
		9.5.6	Report history	159



	9.5.7	Snapshot Options	160
10. ZAM	S - zeno	n Analyzer Management Studio	161
10.1	Starting	g ZAMS	162
10.2	Example of configuration		
10.3	Checklis	st for license problems	168
10.4	Main w	rindow	168
	10.4.1	Menus	171
	10.4.2	Toolbar	175
	10.4.3	Report area	177
	10.4.4	Output	178
	10.4.5	Status Line	182
10.5	Actions	j	183
	10.5.1	Creating, opening, saving and closing reports	183
	10.5.2	Deploy reports	188
	10.5.3	Creating color definition for reports	193
	10.5.4	Opening reports in Microsoft Report Builder	235
	10.5.5	Server actions	236
	10.5.6	Automation	245
	10.5.7	Clear cache	269
10.6	Managi	ing SQL Server	271
	10.6.1	Update connector functions	271
	10.6.2	Create SCADA SQL connector	272
	10.6.3	New Analyzer database	291
	10.6.4	Convert databases	294
	10.6.5	Manual database backups	300
	10.6.6	Automated database backups	308
	10.6.7	Manage database backup files	332
	10.6.8	Manage linked servers	336
	10.6.9	Manage metadata indices	341
10.7	Selection	on of folder in the network	347
10.8	Archive	emulation	348
	10.8.1	Editing modes	350
	10.8.2	Creating an emulated archive	351
	10.8.3	Edit emulated archive	377
10.9	0.9 User administration and access rights3		



		10.9.1	Configuration of user search	381
		10.9.2	User selection dialog	383
		10.9.3	Users with dedicated license	384
		10.9.4	Basic principles of user access rights	385
		10.9.5	Access rights to Analyzer applications	386
		10.9.6	Analyzer Manager access rights	390
	10.10	Options.		404
		10.10.1	Connection profiles	405
		10.10.2	Deployment	406
		10.10.3	Output messages	408
		10.10.4	Language settings	409
		10.10.5	Database backups	413
	10.11	Connect	ing the report definition files to the database	417
11	Mata	4040 404	abase editors	420
11.				
	11.1		ta Editor	
		11.1.1	Connect	
		11.1.2	Main window	
		11.1.3	Actions	
		11.1.4	Options	
	11.2		Data Editor	
		11.2.1	Connect	
		11.2.2	Configuring the control in zenon	
		11.2.3	Main window	
		11.2.4	Actions	
		11.2.5	Options	
		11.2.6	Example	476
12.	Suppl	ied repo	ort templates	480
	12.1	Element	s in the report area	486
		12.1.1	Alarm lookback time	
		12.1.2	Alarm prefiltering	
		12.1.3	Equipment model selection	
		12.1.4	Archives	
		12.1.5	Archive variable input	
		12.1.6	Archive variables and production counter	
		12.1.7	Custom formulas	



	12.1.9	Lot archive selection	535
	12.1.10	Connector selection	536
	12.1.11	Drop-down lists, inputs and selection	536
	12.1.12	Iterative data collection	537
	12.1.13	Availability gauge ranges	538
	12.1.14	Decimal places	539
	12.1.15	OEE calculation	540
	12.1.16	Production data filters	542
	12.1.17	Production indicators	545
	12.1.18	RDL file - path	555
	12.1.19	Report templates	559
	12.1.20	Shift data origin	560
	12.1.21	Set values and actual values	561
	12.1.22	Element sort order	563
	12.1.23	Visualizing loss times	563
	12.1.24	Time filter configuration	566
	12.1.25	Operating time assignments	571
	12.1.26	Operating time per power range assignments	576
	12.1.27	Switching cycles assignments	582
	12.1.28	Active and reactive power counter assignments	587
	12.1.29	Power line frequency assignments	592
	12.1.30	Event counter assignments	597
12.2	Report t	emplates	610
	12.2.1	Alarm Analysis	612
	12.2.2	Custom Formula Analysis	641
	12.2.3	Historian Analysis	699
	12.2.4	Extended Historian Analysis	783
	12.2.5	ISO 50001	898
	12.2.6	Production Analysis Machine Based	900
	12.2.7	OEE analysis	956
	12.2.8	Target Actual Analysis	982
	12.2.9	Hydroelectric Power Plant Analysis	999
12 Evam	nle zene	on	10E/
13. EXAIII	pie zeilo	//II	1034



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:

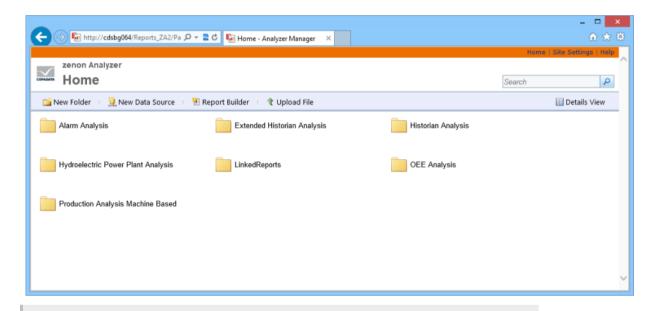
▶ condenses and accounts data from different sources in different formats



- 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 30)



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 additionally 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 23) on the respective Runtime computers. This installation does not affect the running system.



Q

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 11) about architecture, data structure and data preparation
- ▶ Installation (on page 23) of the modules of the zenon Analyzer
- Rights management (on page 88)
- ► Configuration and operation (on page 88) of site, folders and Reports (on page 141)
- ➤ ZAMS zenon Analyzer Management Studio (on page 161): Create and administer reports, administer users, administer servers
- ▶ Manual Data Editor (on page 450): Used for the editing of the tables for price and standard values in a zenon Analyzer metadata database.
- ► Supplied report templates (on page 480): Documentation for the report templates supplied with the zenon Analyzer.
- ► Example project (on page 1054)



Q

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. 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

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 14).

HARDWARE AND SOFTWARE REQUIREMENTS

HARDWARE

Analyzer Server:

Parameters	Recommended	Minimum
СРИ	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:

Parameters	Recommended	Minimum
СРИ	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 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 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 7.0 or higher

DATA PREPARATION

The data preparation (on page 37) 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.

3.1 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 38)) 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 30) 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 60) 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

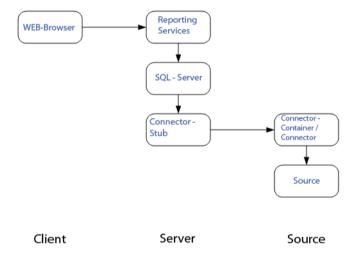
The zenon Analyzer supports the following interfaces:

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

3.2 Architecture

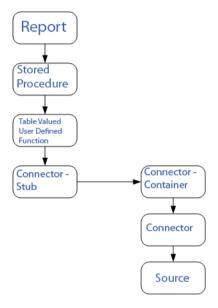
The zenon Analyzer links data from different, heterogeneous sources to valid reports in real time. The reports react dynamically to data base changes.

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 161)
- ▶ 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.

3.3 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 -
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 \mathtt{UTC} +1 the local time 14:00 o' clock. After transferring the files to a Runtime in tiem zone \mathtt{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.

3.4 Prerequisites

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

ANALYZER SERVER HARDWARE AND SOFTWARE

HARDWARE

Analyzer Server:

Parameters	Recommended	Minimum
СРИ	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:



Parameters	Recommended	Minimum
СРИ	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 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 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 7.0 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 7.00 SPO.

4. Installation

The installation of zenon Analyzer consists of up to four steps:

- zenon Analyzer: central SQL server
- zenon Analyzer Management Studio (on page 161): 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.
- Wizard: Analyzer Export Wizard (on page 60) provides data from zenon for the zenon Analyzer database. It must be installed on the engineering computer.

You can find the hardware and software requirements in the Prerequisites (on page 20) chapter.

Note for Remote installation: For remote installations and virtual installations, copy the content of the DVD to a temporary folder on the computer and start the setup



Attention

Ensure that you have the appropriate licenses (on page 30)

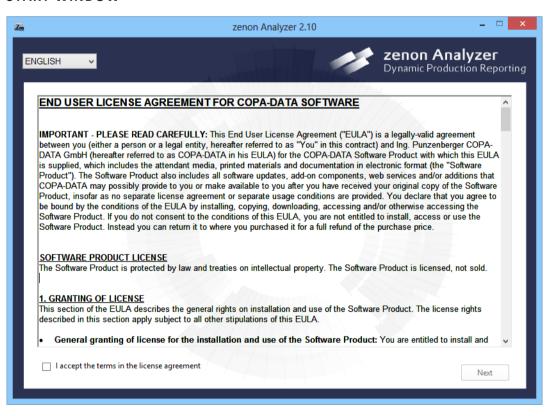
CARRYING OUT THE INSTALLATION

To install zenon Analyzer components:



- Put the DVD in the DVD drive.
 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. Select the desired component
- 6. Click on the Next button
- 7. the installation is started.
- follow the instructions of the installation wizard

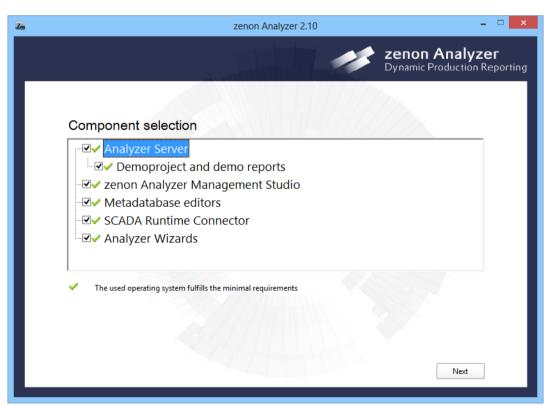
START WINDOW





Parameters	Description
Drop-down list "Language"	Selection of the language for the installation. Available are:
	German
	English
	French
	Italian
	Spanish
License agreements	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.
Next	Switches to the next step of the installation. Only active if the license agreements have been accepted.

MODULE SELECTION





Parameters	Description
Module selection	Selection of the components to be installed by activating the corresponding checkbox.
	zenon Analyzer:
	Central SQL server.
	Requirements: 64-bit operating systems
	DEMO:
	Example database
	Requirements: 64-bit operating system
	zenon Analyzer Management Studio (on page 161):
	Tool to create and administer sever connections and
	reports.
	Pre-requisite: 32-bit or 64-bit operating system.
	Connector:
	Connectors for Runtime and SQL.
	Prerequisite: 32-bit or 64-bit operating system.
	Wizard:
	Analyzer Export Wizard (on page 60) provides data from
	zenon for the zenon Analyzer tables.
	Pre-requisite: zenon 7 Editor or later must be present on
	the system.
Next	Starts the installation. Only active if modules are selected for installation.

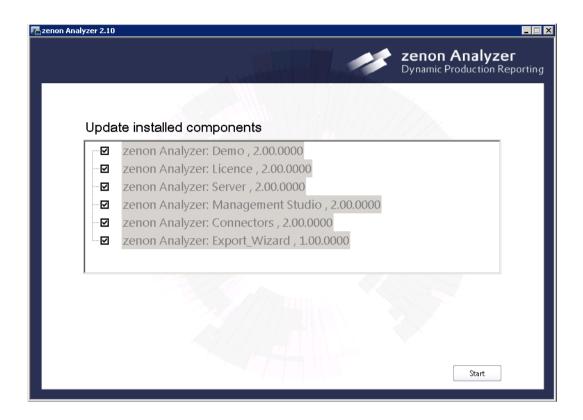
SYMBOLS MODULE SELECTION

Symbol	Meaning	
~	Installation can be carried out	
×	Installation not possible	

UPDATE OF PREVIOUS VERSIONS

If components from previous version are discovered during installation, you are asked if you want to update these.







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 uninstallation of existing components and then installs the selected zenon Analyzer module.	

INSTALLATION PROGRESS

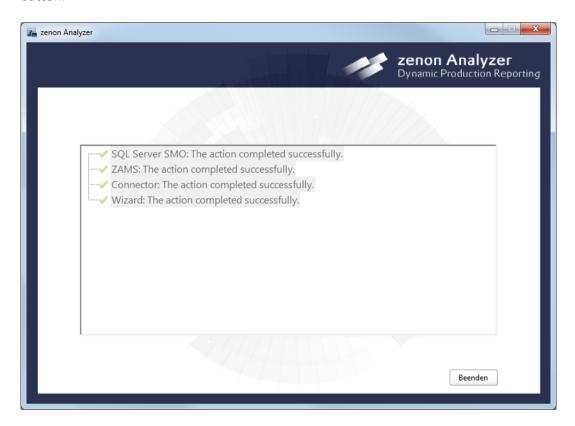


The course of installation is shown in its own window with symbols:



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 88). The language for zenon Analyzer Management Studio (on page 161) is specified in the ZAMS options (on page 409).



4.1 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

The license data is entered either via the zenon Analyzer Management Studio (on page 161) or the zenon licensing.

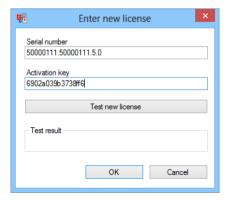
Note: A new zenon Analyzer license is only accepted if you have enough client licenses for all users with a dedicated license (on page 384).

ZAMS - ZENON ANALYZER MANAGEMENT STUDIO

To enter new license data:

- 1. Select, in the Analyzer Server menu or in the Display license (on page 243) 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 ox 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	Clicking on this button tests inputs before they are written to the license server, to see if:
	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
	In order for the test to be started, both serial number and activation key must have been entered.
Test result Displays the test result of Test new license.	
OK	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.
	In order for the license data to be written, both serial number and activation key must have been entered.
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.

ZENON LICENSING.

- 1. open Start -> All programs -> COPA-DATA -> Licensing 7.00
- 2. the dialog for entering license data opens
 - select Analyzer
- 3. enter the serial number and the activation number

You find the data for this:



- on your license certificate
- On the license sticker
- in the license file License.txt

Path Vista/7: %Public%\Public Documents\zenon_Projects\

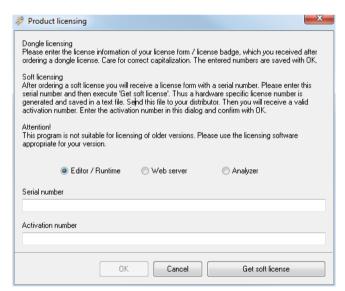
Directory XP: C:\Documents and Settings\All Users\Application
Data\COPA-DATA\zenon711

Note: Pay attention to capital letters and small letters when entering the data!

4. After zenon Analyzer is restarted, use zenon Analyzer with the license entered

Note: Licenses can be checked (on page 243) and set (on page 243) using ZAMS (on page 161).

LICENSING DIALOG





Parameters	Description
Editor/Runtime	Active: License is valid for the zenon Editor and/or the zenon Runtime.
Web Server	Active: License valid for zenon Web Server.
Analyzer	Active: License valid for the zenon Analyzer.
Serial Number	License serial number.
	If there is already a license available, its license number is displayed here.
Activation number:	License activation number.
	If there is already a license available, its activasion number is displayed here.
OK	Import data and start zenon with this license when it is next started.
Cancel	Discard entries and use zenon with the previous license or no license.
Request soft license	Opens the dialog to request a soft license.

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 ${\tt zrsLicSrv}$.

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

4.2 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 34)
- ▶ zenon Analyzer 2.0 (on page 36)

4.2.1 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\Curren tVersion\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\COPADATA\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

4.2.2 Uninstallation of zenon Analyzer 2.0

INSTALLED COMPONENTS

The installation of zenon Analyzer 2.0 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\Curren tVersion\Run]
COPA-DATA Connector=C:\Program Files (x86)\COPA-DATA\zenon
```

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 sub-lines

5. 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 38)
 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 38)

 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 39)

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. formating of local times or similar).

5.1 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.

5.2 Level 2: Compression and calculation

All sorts of compression and calculation of the user data prepared in level 1 (on page 38) 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.

5.3 Level 3: Report

The result data generated in level 2 (on page 38) 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 38). With this the reports are:

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

6. 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:

- ▶ Parameterization Wizard (on page 40): Helps you prepare a zenon project for the processing of variable information in zenon Analyzer.
- ► The Analyzer Export Wizard (on page 60) supports the export of metadata from zenon from version 7.00 SPO for the zenon Analyzer (on page 8).

The wizards must be selected in the module selection during the installation (on page 23) of zenon Analyzer.



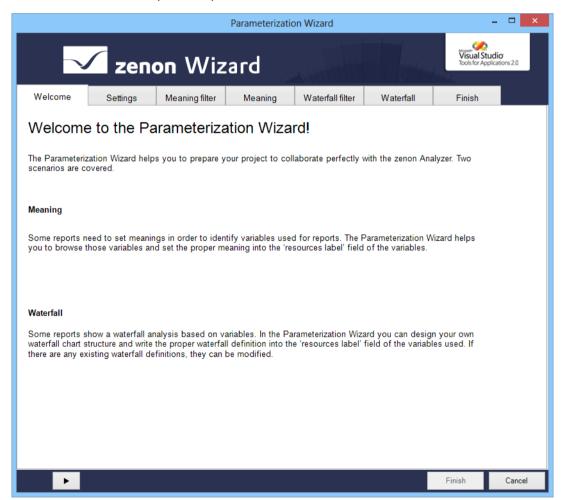
6.1 Parameterization Wizard

The Parameterization 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.

The Parameterization Wizard helps you, when engineering projects in zenon, to configure:

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





6.1.1 Install and call up wizard

The wizard is automatically installed together with zenon.

If a manual installation is necessary:

- 1. Open the workspace in zenon
- 2. select Update wizards command in the File menu
- 3. in area Additional folders for VSTA Wizards click on button ...
- 4. navigate to the installation medium in the file browser
- 5. There, select the folder [Installation medium]\Setup\Wizard\zenon7.11\WizardsVSTA
- 6. Select wizards.ini
- 7. Start the update
- 8. the wizard was added to the folder of the wizards and can be started

Note: If the wizard is not displayed, add the following reference to the workspace add-in: system.core

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

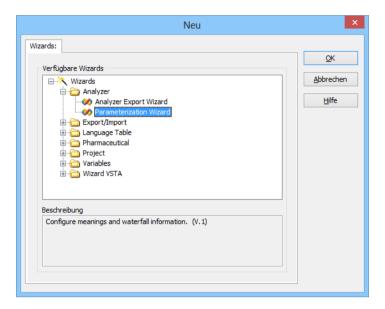
If VSTA wizards are not displayed although the settings are correct, set entry loaded = to 1 in area [VSTA].

To start the wizard:

- 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 Parameterization Wizard

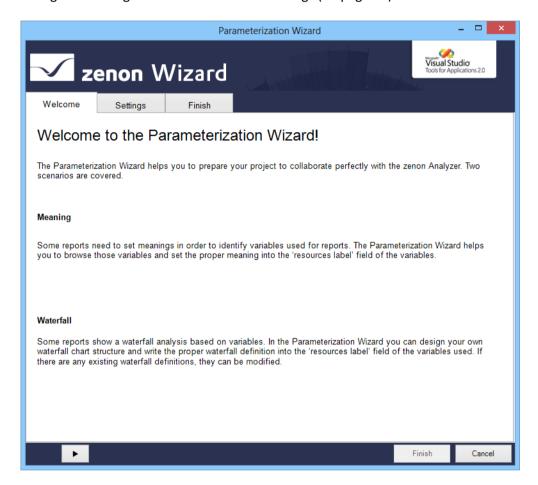


6. Start the wizard by clicking on ox



6.1.2 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 46) 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 with a special prefix in the resource label of the variable. After import into zenon Analyzer, this name is used for reports without the existing variable name needing to be changed.

The prefix for the meanings is created by the wizard automatically. Syntax: ME=Station_1, Station_2;

▶ ME=: Identifies it as a meaning entry



- station x: Meaning name. Other names can also be entered. The separator is a comma (,).
- ;: End of entry.

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 in the resource label of the variable with a special prefix and is available after import of the metadata in the zenon Analyzer database for the display of reports.

The prefix for the waterfall definition is automatically created by the wizard.. Syntax: wF=Name, 0, 0, #FFFF00;

- ▶ wr=: Identifies it as a waterfall definition.
- ▶ Name: Name of the waterfall diagram.
- ▶ 0: Index of the row.
- ▶ 0: Index of the column.
- ▶ #FFFF00: Color of waterfall bar.
- > ;: End of entry.

NAVIGATION

Click on the button with the arrow to navigate (on page 45) through the configuration (on page 44) of the export.

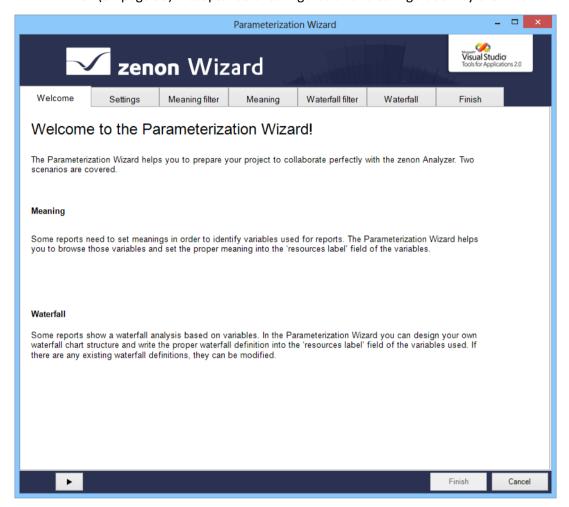
6.1.3 Configuration

The Parameterization Wizard is configured with the following tabs:

- Settings (on page 46): 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 48): Filter settings for meanings.
 - Meaning (on page 50): Selection and assignment of the meanings.



- Waterfall filter (on page 54): Filter settings for waterfall.
- Waterfall (on page 55): Selection of variables for waterfall diagram.
- ▶ Finish (on page 59): 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:



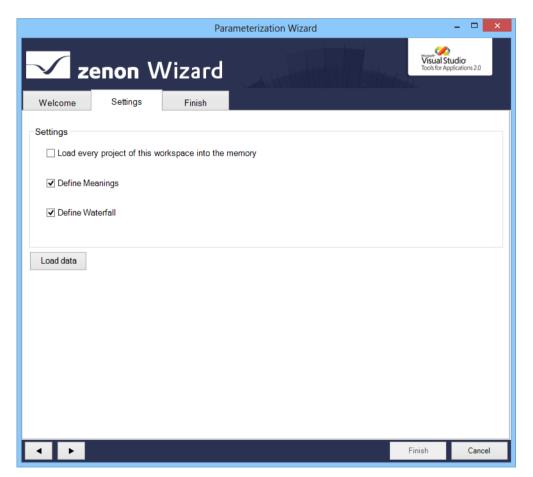


Button	Description
Column left	Goes back one tab in the wizard process.
Column right	Goes forward one tab in the wizard process.
Finish	Writes all changes to the zenon variable in the Editor and closes the wizard.
Cancel	Ends the wizard without making changes.

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

Settings

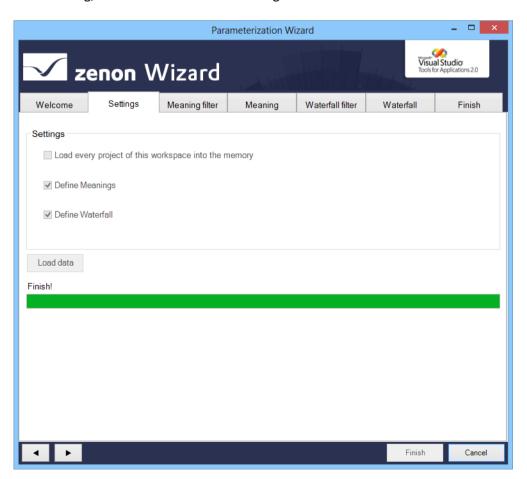
Selection and loading of the tabs to be configured.





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 48) and Meaning (on page 50) tabs are loaded.
Define Waterfall	Active: The Waterfall filter (on page 54) and Waterfall (on page 55) 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.

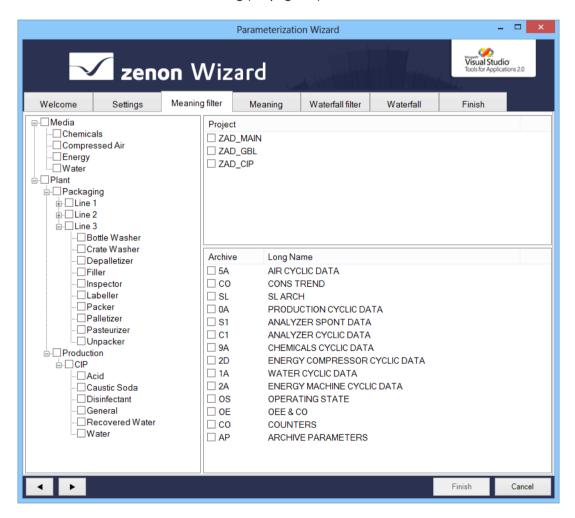
After loading, all tabs are available for configuration.





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 50) tab.



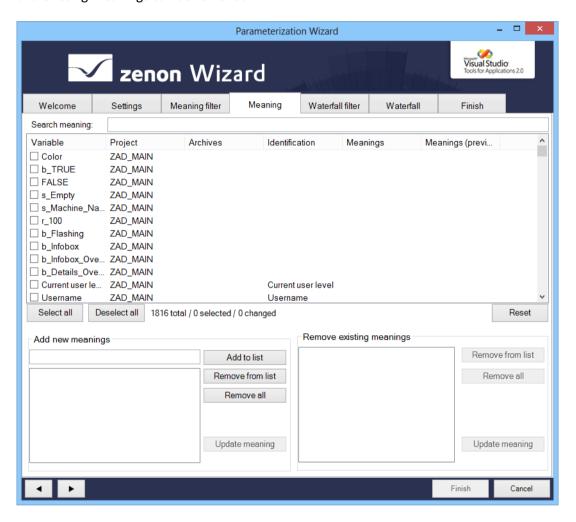


Parameters	Description
List of equipment groups	Filtering for individual models by activating the respective checkboxes.
	No selection: Variables of all equipment models are selected.
List of projects	Filtering for individual checkboxes by activating the respective checkboxes.
	No selection: Variables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





Parameters	Description
Search meaning	Input of a search term lists all variables with their corresponding meanings.
	The list is immediately updated with the entry of a character. Placeholders cannot be used.
List of variables	List of the variables available after filtering.
	Selection of variables for editing: Activation of the checkbox before the variables.
	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.
	The variables can be sorted by clicking on a column label.
Select all	Clicking this selects all variables for editing.
Deselect all	Clicking this deselects all variables.
Display statistics	Display how many variables:
	Are present in the list
	Have been selected
	Have been changed
Reset	Resets all changes that have been made by clicking on Update meaning.
	Note: Changes are only accepted finally after clicking on Finish.
Add new meanings	Allows meanings to be added to variables.
	New meanings are entered in the input field, added to the list and assigned to the selected variables using the Update meaning buttons.
Input field	Entry of a new meaning.
	Maximum length: 50 characters
List of 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.

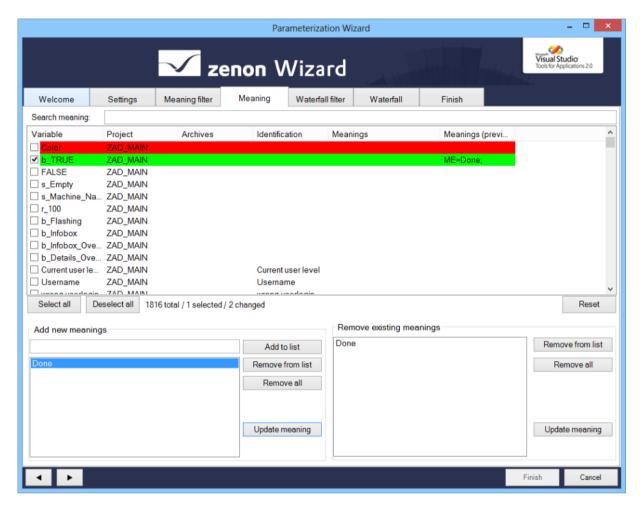


Update meaning	Clicking this assigns all entries in the List of meanings a new meaning. The meanings to be added are displayed in the Meanings (preview) column; the row with the variables has a green background.
Remove existing meanings	Allows meanings to be removed from variables. If a variable is selected, 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 buttons removes the meanings from the selected variables.
List of 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:

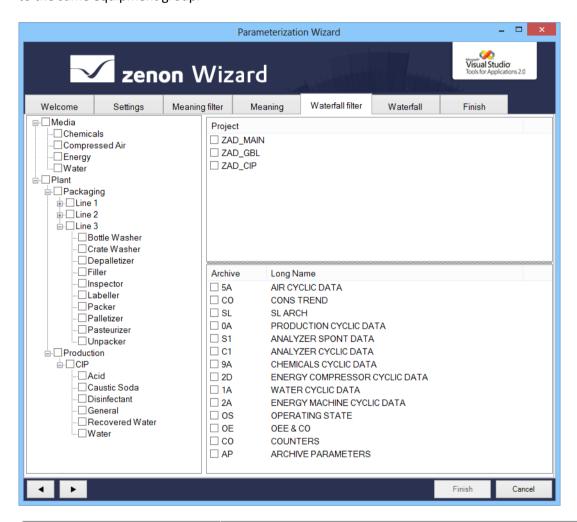


- ▶ Red: All meanings of the variable have been deleted.
- ▶ Green: Variable has received a new meaning.



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 a option, it is also possible to select an archive from the appropriate equipment group.

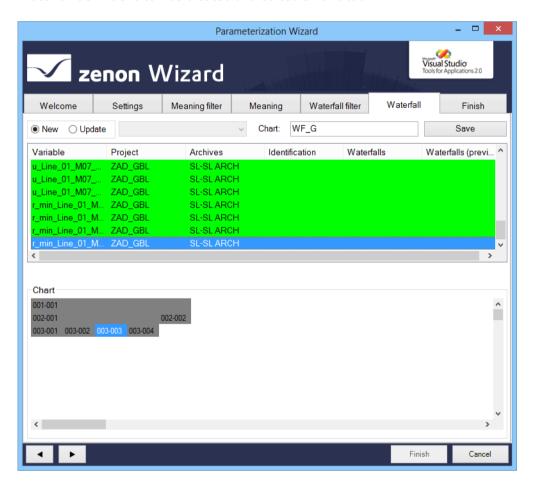
No variables can be displayed in the waterfall (on page 55) tab:



- ▶ 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:





Parameters	Description
New	Active: A new waterfall definition is created.
Update	Active: An existing waterfall definition is edited. Selection 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.
Variable list	Lists all variables that correspond to the configuration on the Waterfall filter (on page 54) 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 dragging & dropping 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 on save
- 6. The configuration is saved in the waterfalls (preview) column
- 7. Switch to the Finish tab
- 8. Click on 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 on ox

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 save button.
- 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 54) tab are offered

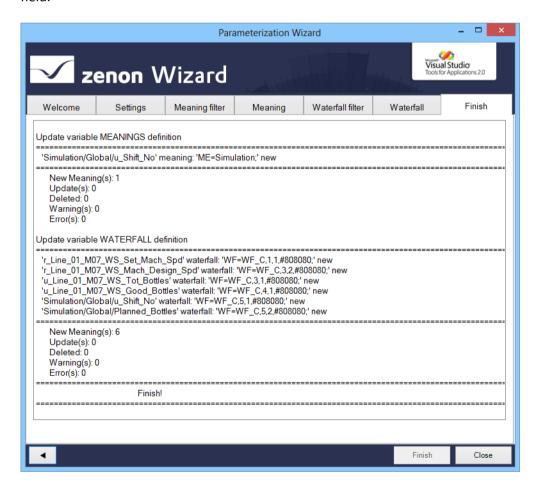
- 3. The waterfall definition is displayed in the Chart area
- 4. Change the definition in accordance with the rules:
 - Adding a bar:
 - Deleting a bar: If a bar is deleted, the variable is highlighted in red in the list.
 - Moving a bar:



- Changing the color:
- click on save
- 6. All changes are displayed in the waterfalls (preview) column
- 7. Switch to the Finish tab
- 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 variable MEANINGS definition: Changes to the variables that are carried out and that concern the meanings.
- ▶ Update variable WATERFALL 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 Betriebsmittelkennung. 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.

6.2 Analyzer Export Wizard

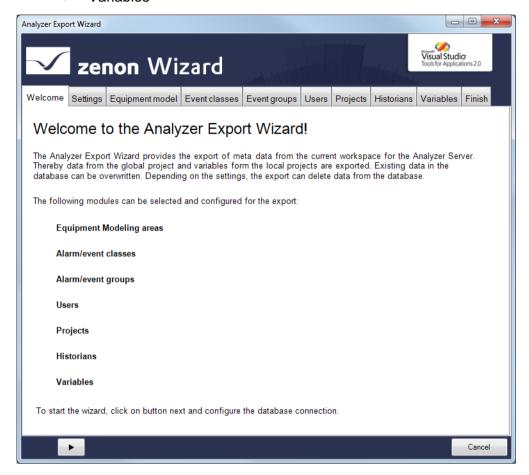
The zenon Analyzer Export Wizard supports the export of metadata from zenon from version 7.0 SPO for the zenon Analyzer (on page 8).

The following can be exported:

- Data from the global project
 - equipment models
 - Alarm/event classes
 - Alarm/event groups
 - Users
- Data from selected projects:
 - Archives



Variables



Note: The wizard is only available in English.

COMPATIBILITY:

The Analyzer Export Wizard works with zenon from version 7.00 SPO.

6.2.1 Install and call up wizard

The wizard is automatically installed together with zenon.

If a manual installation is necessary:

- 1. Open the workspace in zenon
- 2. Select Update wizards command in the File menu



- 3. in area Additional folders for VSTA Wizards click on button ...
- 4. navigate to the installation medium in the file browser
- 5. There, select the folder [Installation medium]\Setup\Wizard\zenon7.11\WizardsVSTA
- 6. Select wizards.ini
- 7. Start the update
- 8. the wizard was added to the folder of the wizards and can be started

Note: If the wizard is not displayed, add the following reference to the workspace add-in: system.core

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

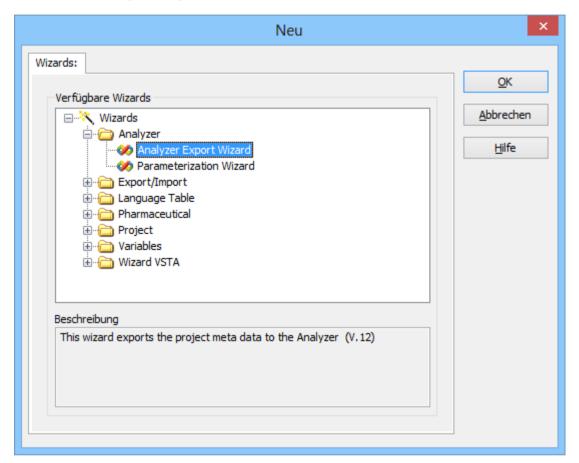
If VSTA wizards are not displayed although the settings are correct, set entry loaded = to 1 in area [VSTA].

To start the wizard:

- 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



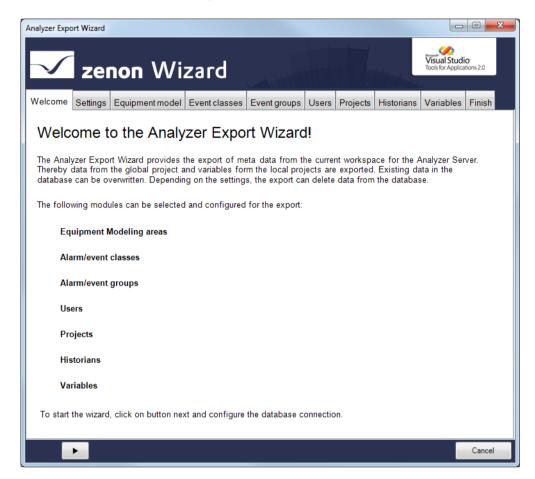
6. Start the wizard by clicking on ox

6.2.2 Start window

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







Click on the button with the arrow to navigate through the configuration (on page 64) of the export.

6.2.3 Configuration

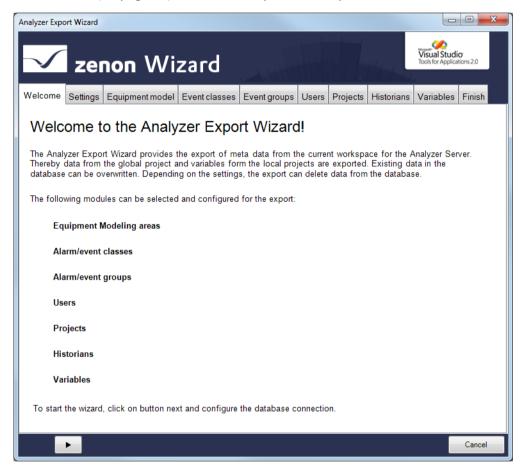
When exporting with the Analyzer Export Wizard, all modules selected in the Settings (on page 66) tab are offered in sequence for detailed configuration. You get to the next level by clicking on the button with the right arrow. You can also select tabs directly by clicking on the title of the tab.

The following tabs are available for configuration of the export:

- Settings (on page 66): Options to collect the metadata
- ▶ Equipment model: (on page 70) Export of the model groups from the global project
- ► Event classes (on page 73): Alarm/Event classes from global project



- ► Event Event groups (on page 75): Alarm/event groups from global project
- ▶ Users (on page 77): User from global project
- ▶ Projects (on page 78): Projects from workspace
- ▶ Historian (on page 81): Archives of the selected projects
- Variables (on page 83): Variables of the selected projects
- ► Finish (on page 85): Start of the export and output of the result

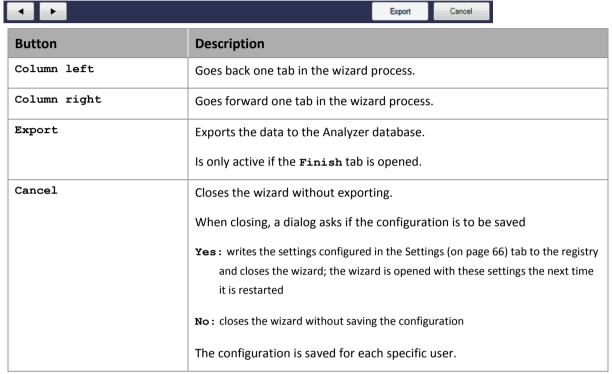


Attention: Only one global project can be exported to the database! Workspaces with projects that are to be exported to the database must include this global project.



Navigation

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



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

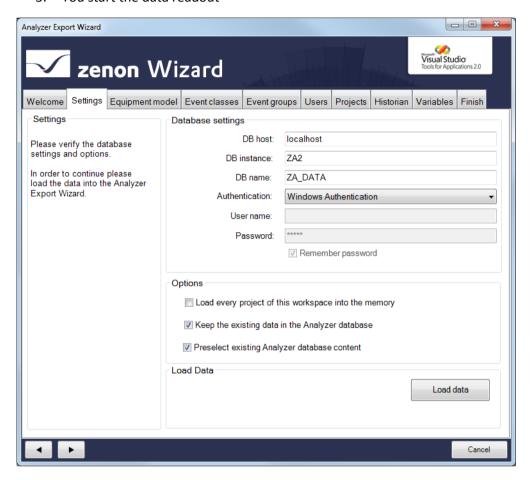
Settings

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





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	Type of authentication:
	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 with 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 for Windows Authentication.
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	Active: Only entries from the workspace are written to the database.
	Inactive: Entries in the database are also updated or deleted. Exception: Projects are not deleted
Preselect existing Analyzer database	Active: Entries already present in the database are preselected in the individual areas.



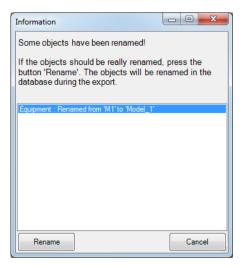
content	
Load Data	
Load Data	Clicking on the button loads, depending on the Load every project of this workspace into the memory parameter - the data from the currently loaded project into the wizard.
	In doing so, a check is made to see if data is present in the Analyzer database. Pre-existing data 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.
	If the loading of data has been successfully concluded, the export can be configured in the following tabs.

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	Contains all objects that were changed. Previous name and new name are displayed. The following renamed objects are displayed in the list:
	Name of the equipment models
	Names of the alarm/event classes
	Names of the alarm/event groups
	Project name
	Variable name
	Exceptions:
	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.

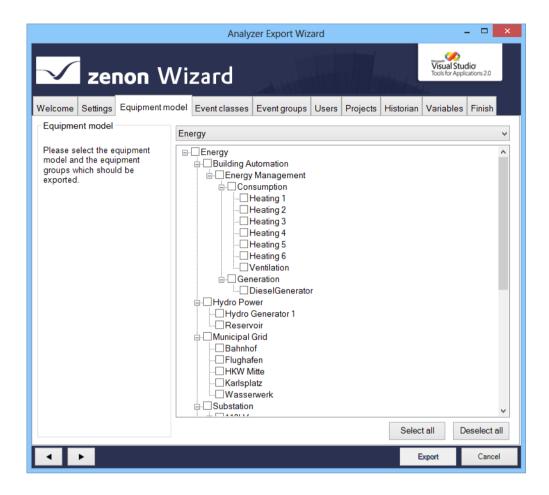


Attention

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.





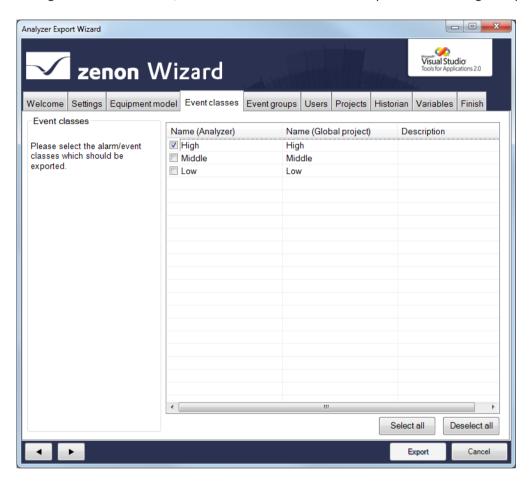


Parameters	Description
Equipment modeling	Information and notes on exporting.
Selection of equipment/medium	Drop-down list to select what is offered in List of equipment models/media for configuration:
	Plant: displays equipment models
	Media: displays media
List of equipment models/media	List field with the possibility to select equipment models and model groups or media. To select an entry, activate the check box in fornt of the entry.
	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.
	Equipment groups that were deleted in the global project are no longer displayed.
	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	Clicking on the button selects all equipment groups
Deselect all	Clicking on the button deselects all equipment groups.



Alarm/event classes

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



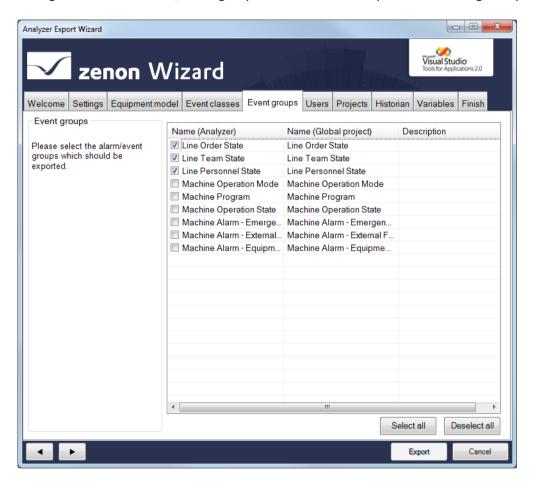


Parameters	Description
Alarm/event classes	Information and notes on exporting.
List of the alarm/event classes	List field with the possibility to select the alarm/event classes. To select an entry, activate the checkbox in front of the entry.
	Sorting : Clicking on the column identifier sorts the entries 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.
	Alarm/event classes that were deleted in the global project are no longer displayed here.
	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.



Event groups

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



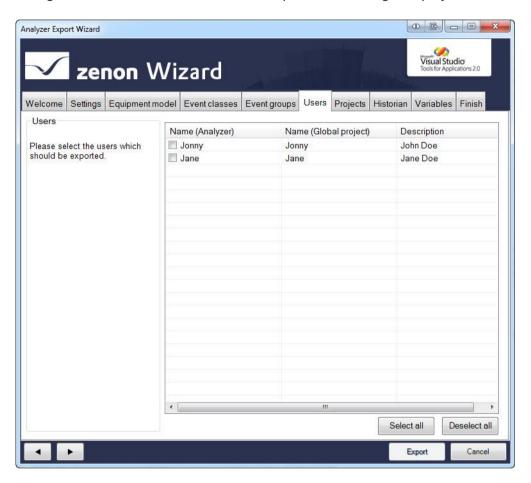


Parameters	Description
Alarm/event groups	Information and notes on exporting.
List of the alarm/event groups	List field in which you can select alarm/event groups. To select an entry, activate the check box in front of the entry.
	Sorting: Clicking on the column identifier sorts the entries after this column upwards or downwards.
	Multiple selection: If several rows are highlighted, a click in the check box sets the options for all selected rows.
	Alarm/event classes that were deleted in the global project are no longer displayed here.
	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.



Users

Configuration of the user which should be exported from the global project.





Parameters	Description
Users	Information and notes on exporting.
List of users	List field with possibility to select users. 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.
	If a user was renamed in zenon they are considered new and recreated in the project. The previous user is deleted.
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.

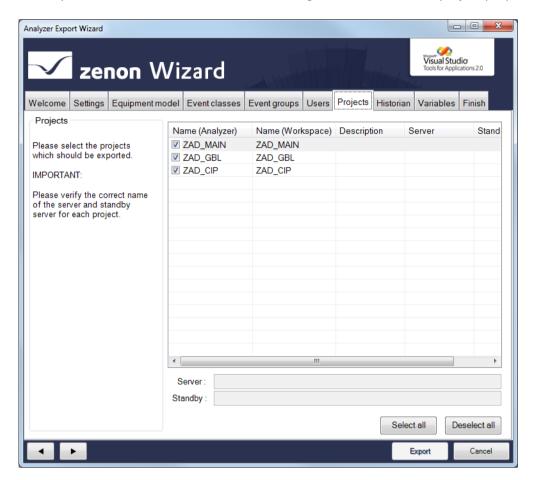
Projects

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



If the name of the server or standby server is changed in the zenon project, then this is only updated in th analyzer database if the Netzwerk aktiv setting was activated in the project properties.



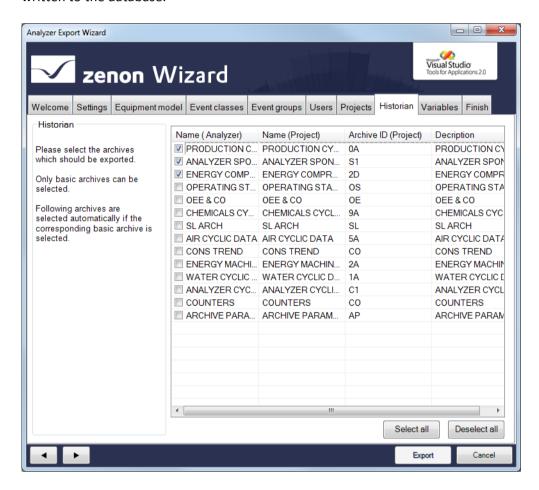


Parameters	Description
Projects	Information and notes on exporting.
Project list	List field with possibility to select for projects. To select an entry, activate the checkbox in front of the entry.
	Sorting: Clicking on the column identifier sorts the entries after this column upwards or downwards.
	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.
Server	Address of the server for the project selected in the list window.
Standby	Address of the standby server for the project displayed 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.



Historian

Selection of the archive from the selected projects (on page 78). 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.



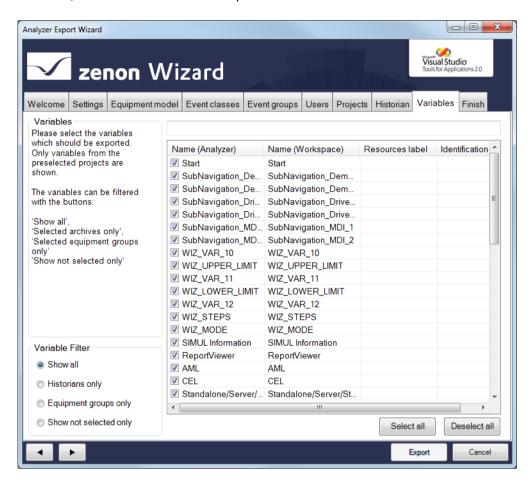


Parameters	Description
Historian	Information and notes on exporting.
Archive list	List field with possibility to select for archives. To select an entry, activate the checkbox in front of the entry.
	Sorting: Clicking on the column identifier sorts the entries after this column upwards or downwards.
	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.



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:
	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 70).
	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:



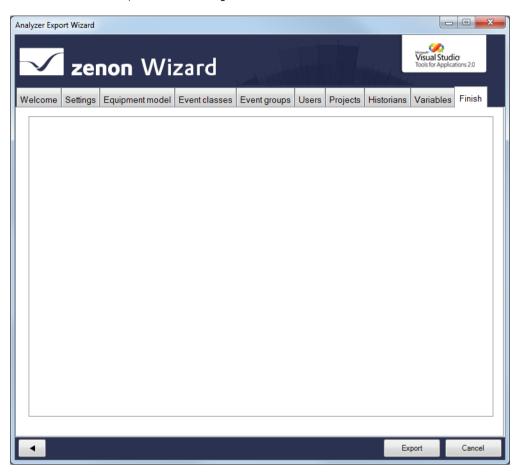
Rema	Rules	
Numerical	The default status is ignored.	
	If several statuses with the same status and limit value condition are set, then only the first status and its status text are exported.	
	Only statuses with a value that is equal to a limit value are exported (limit value condition).	
	The limit value conditions greater than, less than, as desired and range are ignored.	
Multi numeric	Correspond to the rules for numeric.	
	Substatuses are also ignored.	
Binary	Only statuses that have value bits set consistently from right to left in the bit mask (0 or 1) are set. For example:	
Multi binary	Correspond to the rules for Binary.	
	In addition, substatuses and statuses are also ignored with edge definitions in the bit mask.	
String	Are completely ignored and not exported.	

Finish

To export the configured data:



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

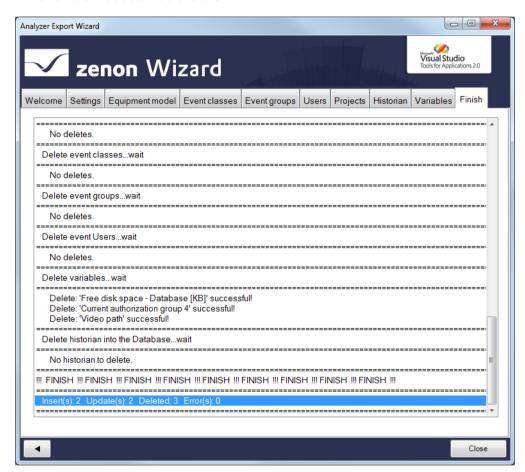


2. the export is started



3. 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.



4. Click on close to close the wizard

RECONFIGURING THE WIZARD

To reconfigure the wizard:

- 1. Open the Settings (on page 66) tab
- 2. click on button Load data
- 3. Configure the tabs



6.2.4 Exit 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 66) 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. 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 380).

8. 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 171)
- Click on the corresponding symbol in the tool bar (on page 175)
- Click on the open report in the Analyzer Manager button in a report in the ZAMS

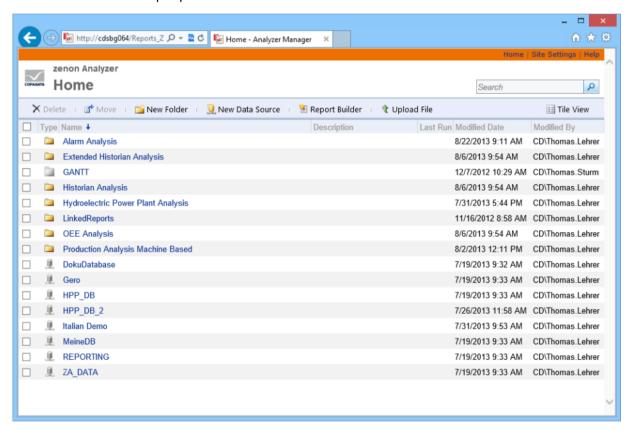


Note: Internet Explorer 8 or 9 (with normal view) or Internet Explorer 10 or higher in compatibility mode can be used as a web browser. For starting from ZAMS, the correct web browser must be set in the operating system as a standard browser.

ANALYZER MANAGER

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

- configure the zenon Analyzer
- create and call up reports





Parameters	Description
Configuration menu (orange header)	
Home	Main view.
Site settings	Administration (on page 131) of site and schedules.
Help	Opens the Microsoft help for Reporting Services.
Main menu (blue bar)	
Delete	Deletes selected reports or folders. The selection takes place by activating the check box in front of the report/folder.
	Only available for detail view.
Move	Moves selected reports or folders. The selection takes place by activating the check box in front of the report/folder.
	Only available for detail view.
New folder	Creates a new folder (on page 137).
New data source	Creates a new data source (on page 135).
Report Generator	Opens the Report Generator (on page 143).
Upload file	Opens the dialog for uploading resources (on page 140) such as reports, models, data sets, etc.



Parameters

Details view - Tile view

Description

Toggles between detail view and side-byside/one-below-the-other view.

Details View: Shows details about the reports and folders and makes it possible to sort after the following criteria:

Type

Name

Last execution

Changed on

Changed by

Tile view: Shows all folder and reports in a compact view. In this view folders can be hidden (on page 137).

Both views provide a drop-down list (on page 92) 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.



Parameters

Description



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.

8.1 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 137) 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 159).
Manage	Opens the dialog for managing the report (on page 152).
Download	Makes it possible to locally save (on page 150) reports. Opens Windows dialog for saving a file.
Editing in the Report Generator	Opens report in the Report Generator (on page 143).

8.2 Options

Data sources and reports are managed and configured via menu bars (on page 88) and drop-down lists (on page 92).

See also:

- ► Configuration and operation (on page 88)
- ► Site (on page 131)
- ► Folder (on page 137)
- ► Reports (on page 151)
- ► Rights management (on page 88)



8.3 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.



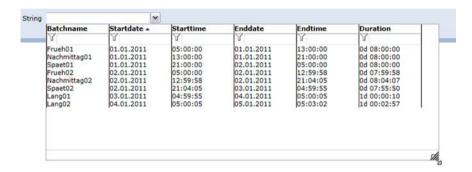
8.4 Parameters - input and selection

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.



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:

- Move the mouse to the touch area in the lower right corner until the mouse pointer becomes a double-arrow
- 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 Text no additional validations are carried out.
Boolean validation	For parameters of data type Bool the value must be either true or false. Capitalization/use of small letters is not checked.
	Comment: The Boolean selection dialog (on page 100) sends valid values but at the direct control of the zenon Analyzer via URLs the validation may be needed.
Integer validation	For parameters of data type Integer the value must not contain another character as the following:
	► 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.
	All included thousands separator are removed at the beginning of the integer validation.
Float validation	For parameters of data type Float the value must not contain another character as the following:
	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. All thousand separators that are included are removed at the beginning of the integer validation.
	Exactly one decimal separator in the culture of the user. If there are no numbers in front of or after the decimal separator, a 0 is assumed.
	Note: No numbers in front of and after the decimal separator is not allowed.
Date and time validation	For parameters of data type date and time the following criteria must be adhered to:
	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. For example, the character string $45.18.2011\ 35:68:99$ is invalid as there is no such date or time.



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 = 1.1.190000:00:00

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 143)) 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.



8.4.1 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.

CREATING AND USING THE DEFAULT INPUT FIELD

- 1. The Report Designer creates a report with a parameter in the Report Builder (on page 143).
- 2. The parameter of the report has one of the following data types:
 - Integer
 - Float
 - Text
- 3. The parameter does not allow entering several values and has no predefined values.
- 4. The Report Designer saves the report in a folder in the zenon Analyzer.
- 5. The user opens the report previously created by the Report Designer in the browser.
- 6. Based on the decision tree, an assessment is made by the zenon Analyzer that a standard input control is needed.
- 7. The control is displayed in the parameter area of the report view.
- 8. The user enters the desired value for the parameter in the input field and starts the creation of the report.
- 9. The value of the control is read, validated and handed over to the report engine as value for the parameter.
- 10. The report engine creates the report and hands it over to the zenon Analyzer for displaying.



11. The report is displayed in HTML by the Analyzer and is presented to the user in the browser.

8.4.2 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.

CREATING AND USING THE BOOLEAN SELECTION DIALOG

- 1. The Report Designer creates a report with a parameter in the Report Builder (on page 143).
- 2. The parameter of the report has data type Bool.
- The parameter prevents entering several values. The Boolean selection control ignores the
 possibility to enter several values and always allows to enter only one value. Thus the change of
 this property of the parameter would not have any effect during engineering and generating the
 report.
- 4. If desired, the Report Designer creates predefined values for True and False in order to label the displayed texts.

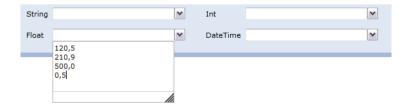


- 5. The Report Designer saves the report in a folder in the zenon Analyzer.
- 6. The user opens the report previously created by the Report Designer in the browser.
- 7. Based on the decision tree, an assessment is made by the Analyzer that a Boolean control is needed.
- 8. The control is displayed in the parameter area of the report view. If predefined values are available, the texts for the radio buttons are overwritten by them.
- 9. The user selects the desired radio button (True or False or the respective labels) and starts generating the report.
- 10. The value of the control (True or False) is read, validated and handed over to the report engine as value for the parameter.
- 11. The report engine creates the report and hands it over to the zenon Analyzer for displaying.
- 12. The report is displayed in HTML by the Analyzer and is presented to the user in the browser.

8.4.3 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.



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



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.

CREATION AND USE OF THE DIALOG FOR ENTERING SEVERAL VALUES

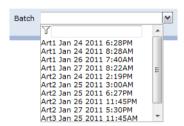
- 1. The Report Designer creates a report with a parameter in the Report Builder (on page 143).
- 2. The parameter of the report has one of the following data types:
 - Date and time
 - Integer
 - Float
 - Text
- 3. The parameter allows entering several values but has no predefined values.
- 4. The Report Designer saves the report in a folder in the zenon Analyzer.
- 5. The user opens the report previously created by the Report Designer in the browser.
- 6. On the basis of the decision tree, a decision is made in zenon Analyzer that a control is needed for entering several values.
- 7. The control is displayed in the parameter area of the report view.
- 8. The user enters the desired values for the parameter in the control and starts the creation of the report.



- 9. The values of the control are read, validated and handed over to the report engine as value for the parameter.
- 10. The report engine creates the report and hands it over to the zenon Analyzer for displaying.
- 11. The report is displayed in HTML by the Analyzer and is presented to the user in the browser.

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:

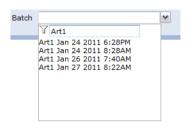
- 1. click on the input field
- 2. the input field is opened
- 3. filter the entries or select a value
- 4. click on the arrow next to the input field
- 5. the input field is closed
- 6. the value is displayed in the input field

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 124).



CREATION AND USE OF THE DIALOG FOR SELECTING A VALUE FROM SEVERAL PREDEFINED VALUES

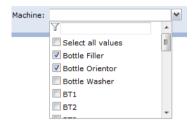
- 1. The Report Designer creates a report with a parameter in the Report Builder (on page 143).
- 2. The parameter of the report has one of the following data types:
 - Date and time
 - Integer
 - Float
 - Text
- 3. The parameter prevents entering several values.
- 4. The report designer adds the necessary predefined values to the parameter.
- 5. The Report Designer saves the report in a folder in the zenon Analyzer.
- 6. The user opens the report previously created by the Report Designer in the browser.
- 7. On the basis of the decision tree, an assessment is made in the zenon Analyzer as to whether a control is needed to make a selection from several predefined values.
- 8. The control is displayed in the parameter area of the report view.
- 9. When required the user enters a filter criterion in the filter box in order for the searched value to be found quicker.
- 10. The user selects the desired value in the drop-down list and starts creating the report.
- 11. The value of the control is read, validated and handed over to the report engine as value for the parameter.
- 12. The report engine creates the report and hands it over to the zenon Analyzer for displaying.



13. The report is displayed in HTML by the Analyzer and is presented to the user in the browser.

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

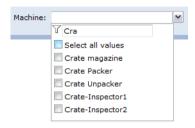
For these parameters the following requirements are true:

- ▶ 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 124).



CREATION AND USE OF THE DIALOG FOR SELECTING SEVERAL PREDEFINED VALUES

- The Report Designer creates a report with a parameter in the Report Builder (on page 143).
- 2. The parameter of the report has one of the following data types:
 - Date and time
 - Integer
 - Float
 - Text
- 3. The parameter allows entering several values.
- 4. The report designer adds the necessary predefined values to the parameter.
- 5. The Report Designer saves the report in a folder in the zenon Analyzer.
- 6. The user opens the report previously created by the Report Designer in the browser.
- 7. On the basis of the decision tree, an assessment is made in zenon Analyzer as to whether a control is needed for selecting several predefined values.
- 8. The control is displayed in the parameter area of the report view.
- 9. When required the user enters a filter criterion in the filter box in order for the searched value to be found quicker.



- 10. The user selects the desired value (possibly by using filters) in the drop-down list and starts creating the report.
- 11. The values of the control are read, validated and handed over to the report engine as values for the parameter.
- 12. The report engine creates the report and hands it over to the zenon Analyzer for displaying.
- 13. The report is displayed in HTML by the Analyzer and is presented to the user in the browser.

8.4.4 Single time span input

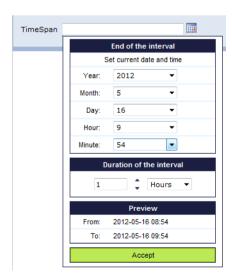
This dialog allows the input of a time range.

The following requirements apply for the time range parameters:

- ▶ The parameter is of data type Text.
- ► The parameter must not have any predefined values.
- ▶ The parameter must not have several values.

A hidden parameter named [parameter name] type exists and its default value is set to 3.

INPUT OF TIME RANGE





Parameters	Description
End of the interval	Definition of the end time. This can be a fixed point in time or the current time stamp.
	The input is made in local 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	Duration of the period of time that is to be analyzed.
	Text input field: Defines quantity.
	Input of a number between 1 and 99999.
	The quantity can be increased or reduced with the arrows.
	The quantity can be increased of reduced with the arrows.
	Drop-down list: Defines granularity. Selection between years, months, days, hours and minutes.
Preview	Display of the current configuration settings in local time.
	Errors are displayed by the corresponding error messages.
From	Start of the interval. Only display.
	Error messages:
	Interval is out of range
	The start time determined by the end time and the interval is
	before 1/1/1900 or in the future (cannot actually be configured).
	Duration input is invalid
	An invalid input was entered into the text input field for the quantity.
	An input is then invalid if it is not a number (subsequent letters are
	separated!) or if the number entered is less than 1.
То	End of the interval. Only display.
	Error message:
	Interval is out of range
	The end time set is before 1/1./1900 (cannot actually be
	configured) or in the future. Errors in the end time lead to the start
	time not being calculated.
7 t	Clinton this houten to account the track of Clinton and the control of the contro
Accept	Click on this button to accept the inputs, if they are valid,



and close the drop-down dialog.
Time stamp is converted to UTC.
To leave the dialog without saving, click on the calendar symbol or in the toolbar with the drop-down dialog.

The size of the drop-down dialog cannot be changed.

DATE FORMAT

The date format consists of: [end time] | [quantity] | [granularity]

In detail:

▶ [end time]:

Current time: Now

otherwise: YYYY-MM-DD hh:mm in UTC

- ▶ [quantity]: A number from 1 to 99999
- [granularity]:
 - Y for years
 - M for months
 - D for days
 - h for hours
 - m for minutes

CREATION AND USE OF THE DIALOG TO ENTER A TIME RANGE

- 1. The Report Designer creates a report with a parameter in the Report Builder (on page 143).
- 2. The parameter of the report has data type Text.
- 3. The parameter allows the selection of several values.
- 4. The Report Designer creates a second parameter named [parameter name]_type, puts its visibility to hidden and assigns the default value 3.
- 5. The Report Designer saves the report in a folder in the zenon Analyzer.



- 6. The user opens the report previously created by the Report Designer in the browser.
- 7. On the basis of the decision tree, a decision is made in zenon Analyzer that a control is needed for entering a time range.
- 8. The control is displayed in the parameter area of the report view.
- 9. The user selects the desired parameters in the drop-down dialog created by the control and has the report generated.
- 10. The value of the control is read, validated and handed over to the report engine as value for the parameter.
- 11. The report engine creates the report and hands it over to the Analyzer for displaying.
- 12. The report is displayed in HTML by the Analyzer and is presented to the user in the browser.

8.4.5 Date and time

The dialog for date and time has several views:

- ▶ Month view: Navigation within a month and selection of the values for the date. The dialog to select the time is offered depending on the selection of the date.
 - In this view, direct selection links are also available:
 - Today
 - Beginning of the week
 - End of the week
 - Beginning of the month
 - End of the month
- ► Year view: Quick navigation across several months.
- ▶ Decade view: Quick navigation across several years.

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 part of 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 23) in the browser.

For these parameters for date and time, the following requirements are true:

- ▶ The parameter is of data type date and time.
- ▶ The parameter prevents entering several values.
- ▶ The parameter has no predefined values.
- ► The date is between 01/ 01. 1900 00:00:00 and the end of the year after next based on the current date (1/1/[current year + 3] 00:00:00).

MONTH VIEW





Parameters	Description
Header	The header can be used for date navigation:
	Click on the arrow to the left in order to switch to the previous month
	Click on the arrow to the right in order to switch to the next month.
	Click on the month in the header to open the year view of the year in which the month falls. Arrow keys move the view by a year each time.
	Click on the year in the year view to open the decade view in order to select a year in the current decade. Arrow keys move the view by a decade each time.
	The arrow keys are only displayed if the view that they call up is available. As such, in the view of the month January in 1900, it is not possible to go to the previous month. In the view of the month December in the year after next based on the current date, it is not possible to navigate to the next month.
Calendar	Click on the entry in the calendar view to accept the selected day as the value for the parameter and to open the dialog to select a time.
	The selected day is displayed in bold. If there is no value, the current day is displayed in bold.
Today	Current day. Click to open the dialog for selecting the time.
Beginning of this week	Monday of the current calendar week with the start of the day (00:00:00) as the time.
End of this week	Sunday of the current calendar week with the end of the day (11:59:59 PM) as the time.
Beginning of this month	First day of the current month with start of day as time.
End of this month	Last day of the current month with end of day as time.

TIME SELECTION

The time is selected according to the setting of the language of the browser in 24-hour time or in 12-hour time.

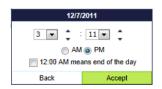


24-hour time format:



Parameters	Description
Header	A click on the header opens the month view to navigate dates.
Entry of time	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): 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 end of the day	Active: 00:00 is interpreted as the end of the day.
Back	Opens month view for navigation of dates.
Accept	Applies settings and closes the drop-down dialog. To cancel the input, click on the calendar symbol next to the input field.

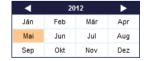
12-hour time format:





Parameters	Description
Header	A click on the header opens the month view to navigate dates.
Entry of time	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):
	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	Applies settings and closes the drop-down dialog. To cancel the input, click on the calendar symbol next to the input field.

YEAR VIEW



The year view is used to navigate across several months:

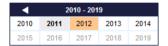
- ▶ Click on the arrow to the left in order to switch to the previous year.
- ► Click on the arrow to the right in order to switch to the next year.



- ► Click on the year in the year view to open the decade view in order to select a year in the current decade.
- ▶ Double click on an entry in the month list in order to open the month view of the selected month.

The selected month is displayed in bold. If there is no value, the current month is displayed in bold.

DECADE VIEW



The decade view is used to navigate across several years: The current year is displayed in bold:

- ▶ Click on the arrow to the left in order to switch to the previous decade.
- ▶ Click on the arrow to the right in order to switch to the next decade.
- ▶ Double click on an entry in the year list in order to open the year view of the selected decade.

The selected year is displayed in bold. If there is no value set, the current year is displayed in bold.

In this view the user has the following possibilities:

- ▶ 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. In view 1900 1910 you cannot navigate to the previous decade. In the view of the decade which contains the year after next starting from the current date (2010 2019 in the example image), you cannot navigate to the next decade.
- ► Click on an entry in the year list in order to open the year view of the selected year.

CREATION AND SUE OF THE DIALOG FOR ENTERING DATE AND TIME.

- 1. The Report Designer creates a report with a parameter in the Report Builder (on page 143).
- 2. The parameter of the report has data type Date and Time.
- 3. The parameter does not allow entering several values and has no predefined values.
- 4. The Report Designer saves the report in a folder in the zenon Analyzer.



- 5. The user opens the report previously created by the Report Designer in the browser.
- 6. Based on the decision tree, a decision is made at the zenon Analyzer that a control is needed for entering the date and time.
- 7. The control is displayed in the parameter area of the report view.
- 8. The user selects the desired date and the desired time in the drop-down list created by the control and generates the report.
- 9. The value of the control is read, validated and handed over to the report engine as value for the parameter.
- 10. The report engine creates the report and hands it over to the Analyzer for displaying.
- 11. The report is displayed in HTML by the Analyzer and is presented to the user in the browser.

8.4.6 Selection of 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.

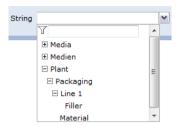
SELECTION OF AN ENTRY FROM THE EQUIPMENT MODEL

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

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 124). At this the filter criterion is only used on entries which do not have any subordinate elements.

CREATION AND USE OF THE DIALOG FOR SELECTING AN ENTRY FROM THE EQUIPMENT MODEL

- 1. The Report Designer creates a report with a parameter in the Report Builder (on page 143).
- 2. The parameter of the report has data type Text.
- 3. The parameter prevents entering several values.
- 4. The Report Designer adds the necessary predefined values static or generated from SQL stored procedure to the parameter. At this the requirements, which the control has to the predefined values, must be fulfilled.



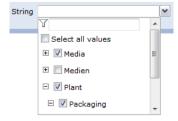
- 5. The Report Designer creates a second parameter named [name of the first parameter] type puts their visibility to hidden and assigns the default value 1.
- 6. The Report Designer saves the report in a folder in the zenon Analyzer.
- 7. The user opens the report previously created by the Report Designer in the browser.
- 8. On the basis of the decision tree, an assessment is made in the zenon Analyzer as to whether a control is needed for selecting an entry from the equipment model.
- 9. The control is displayed in the parameter area of the report view.
- 10. The user selects the desired value for the parameter from the tree view in the drop-down list created from the control (possibly while using filters and expanding and collapsing the branches of the tree) and starts generating the report.
- 11. The value of the control is read, validated and handed over to the report engine as value for the parameter.
- 12. The report engine creates the report and hands it over to the Analyzer for displaying.
- 13. The report is displayed in HTML by the Analyzer and is presented to the user in the browser.

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.





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 124). 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 OF 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 I).

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

CREATION AND USE OF THE DIALOG FOR SELECTING SEVERAL ENTRIES FROM THE EQUIPMENT MODEL

- The Report Designer creates a report with a parameter in the Report Builder (on page 143).
- 2. The parameter of the report has data type Text.
- 3. The parameter allows entering several values.
- 4. The Report Designer adds the necessary predefined values static or generated from SQL stored procedure to the parameter. At this the requirements, which the control has to the predefined values, must be fulfilled.



- 5. The Report Designer creates a second parameter named [name of the first parameter] type puts their visibility to hidden and assigns the default value 1.
- 6. The Report Designer saves the report in a folder in the zenon Analyzer.
- 7. The user opens the report previously created by the Report Designer in the browser.
- 8. On the basis of the decision tree, an assessment is made in the zenon Analyzer as to whether a control is needed for selecting an entry from the equipment model.
- 9. The control is displayed in the parameter area of the report view.
- 10. The user selects the desired values for the parameter from the tree view in the drop-down list created from the control (possibly while using filters and expanding and collapsing the branches of the tree) and starts generating the report.
- 11. The values of the control are read, validated and handed over to the report engine as value for the parameter.
- 12. The report engine creates the report and hands it over to the Analyzer for displaying.
- 13. The report is displayed in HTML by the Analyzer and is presented to the user in the browser.

8.4.7 Selection of lot and shift

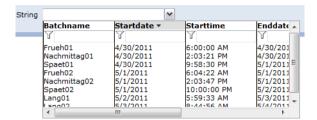
This selection dialog configures the display of lots and shiftdata. Each predefined value corresponds to one line. The user can select a lot by clicking on the respective cell.

The selection dialog contains the following columns:

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



Duration



The dialog can be sorted and filtered. For details, see the Filter lots (on page 125) 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]

CREATION AND USE OF THE DIALOG FOR SELECTING A LOT

- 1. The Report Designer creates a report with a parameter in the Report Builder (on page 143).
- 2. The parameter of the report has data type Text.
- 3. The parameter prevents entering several values.
- 4. The Report Designer adds the necessary predefined values static or generated from SQL stored procedure to the parameter. At this the requirements, which the control has to the predefined values, must be fulfilled.
- 5. The Report Designer creates a second parameter named [name of the first parameter] type puts their visibility to hidden and assigns the default value 2.
- 6. The Report Designer saves the report in a folder in the zenon Analyzer.
- 7. The user opens the report previously created by the Report Designer in the browser.
- 8. On the basis of the decision tree, an assessment is made in the Analyzer as to whether a control is needed for selecting a lot.
- 9. The control is displayed in the parameter area of the report view.
- 10. The user selects the desired value for the parameter from the table in the drop-down list created from the control (possibly while using filters) and starts generating the report.
- 11. The value of the control is read, validated and handed over to the report engine as value for the parameter.



- 12. The report engine creates the report and hands it over to the Analyzer for displaying.
- 13. The report is displayed in HTML by the Analyzer and is presented to the user in the browser.

EVALUATION OF LOT GROUPS

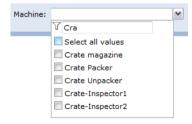
A mechanism for evaluating lot groups is available. This is based on the equipment model:

- 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.

8.4.8 Filter

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

- ▶ Input or selection of several values (on page 101): Filter method see below
- Equipment group selection (on page 117): Filter method see below
- ▶ Lot selection (on page 121): For the filter method, see Lot selection (on page 125)



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 121) can be filtered and sorted.



FILTER VALUES



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:

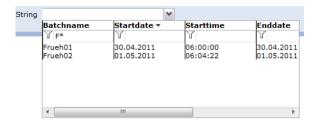
- 1. delete the filter criterion from the input field
- 2. press key Enter
- 3. the list is rebuild and contains all predefined values

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 124) 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



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



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



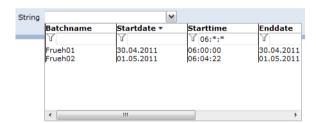
- ► To filter from/up to a special day you may use the following at the beginning:
 - <
 - >
 - <=
 - >=
- * is not allowed.

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:



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.

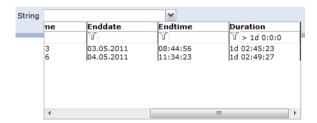
For example:

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



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.

8.4.9 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.

8.5 Site

Via the site settings you configure

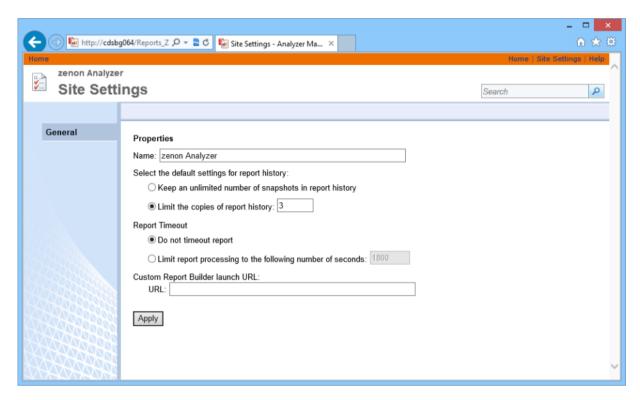
▶ General settings (on page 132) of the zenon Analyzer

User rights are set and administered in the ZAMS (on page 380).



8.5.1 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:
	unlimited number
	define maximum number
Reportimeout	Defines timeout for processing reports. Possible settings:
	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.

8.6 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





Parameters	Description
Move	Opens dialog for moving elements.
Delete	Deletes element.
Generate report model	Opens dialog for creating a new report model (on page 137).
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.

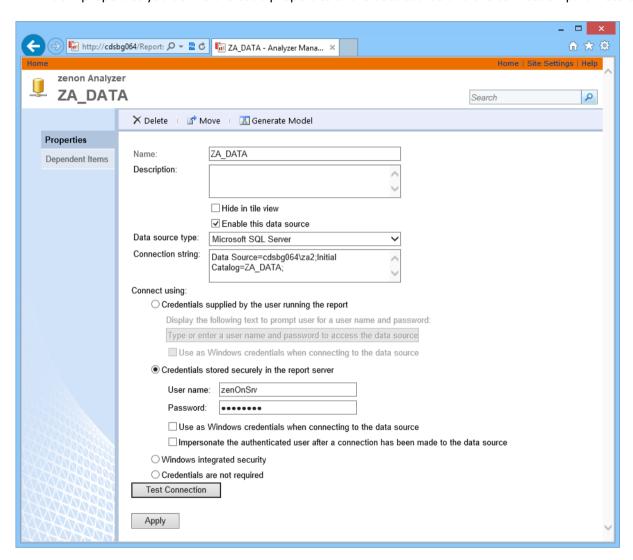
You can find detailed guides for the Microsoft Reporting Services on the Microsoft homepage:

- ► 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)



8.6.1 Properties

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



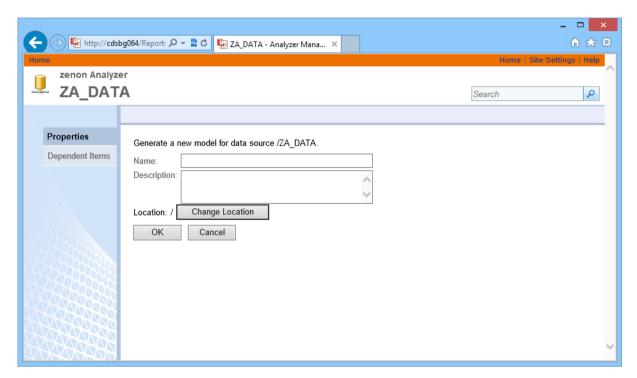


Parameters	Description
Delete	Deletes data source.
Move	Moves data source.
Generate model	Opens dialog for creating a new model.
Name	Name of the data source.
Description	Optional, detailed description
Hide in side-by-side/one- below-the-other view	Active: is hidden in side-by-side/one-below-the-other 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.
ОК	Confirms changes and opens the properties.
Cancel	Discards changes and closes dialog.

8.7 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

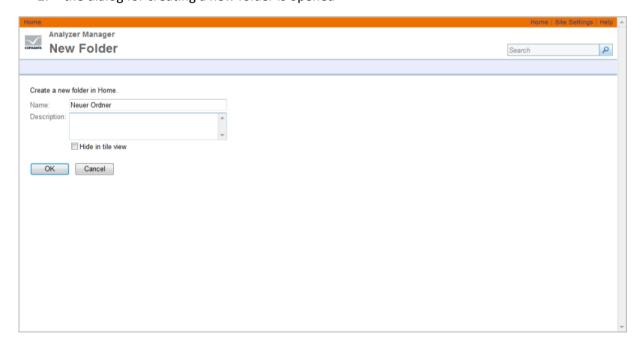


Parameters	Description
Move	Opens menu for selecting the new saving location.
Delete	Deletes selected folder.
Manage	Opens the dialog for managing (on page 137) the folder.

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





Parameters	Description
Name	Name of the folder
	Name:
	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	Optional description of the folder content.
Hide in side-by-side/one- below-the-other view	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 137) in the drop-down list of the folder.
OK	Applies all settings and closes the dialog.
Cancel	Discards all settings and closes the dialog.

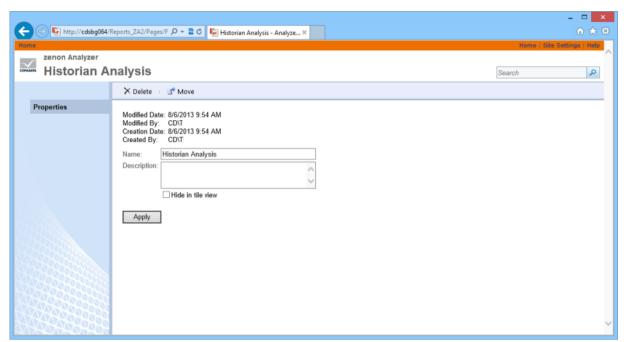
8.7.1 Properties

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

- ▶ move
- ▶ delete
- rename



▶ Show or hide in the symbol view



8.8 Upload file

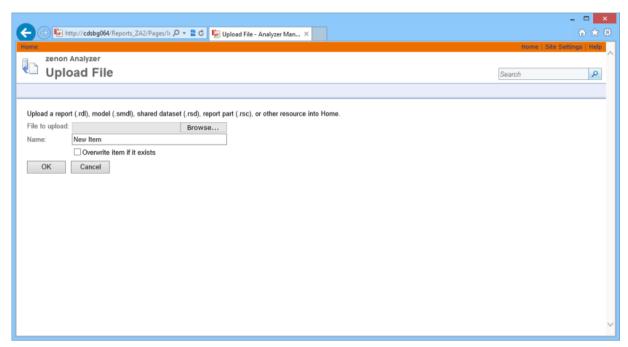
Reports, models and other resources which are edited offline can be uploaded to the Report Server.

To upload resources:

- 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 ox



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.

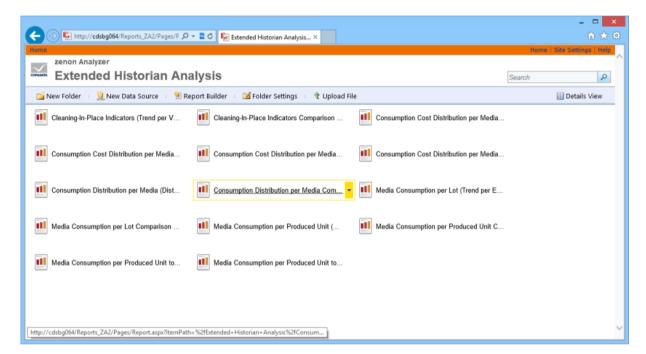
9. Reports

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 11).



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 88) 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:



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 161) 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.

9.1 **Create report**

Reports can be created with:

- ZAMS zenon Analyzer Management Studio (on page 161)
- Microsoft Report Builder (on page 143) 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 60) in section Data abstraction and data inclusion.

9.1.1 Report Builder

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



Information

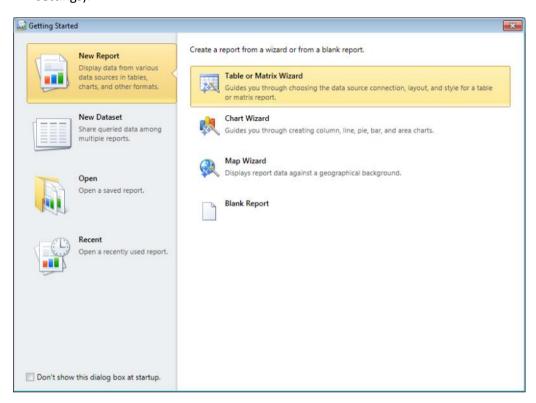
The Report Builder is not suitable as an editor for reports with CRI (Gantt Chart) as it cannot process CRIs.

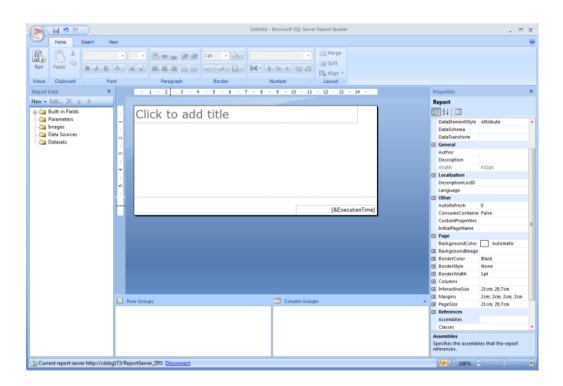
To start the Microsoft Report Builder:

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)

9.1.2 Upload reports

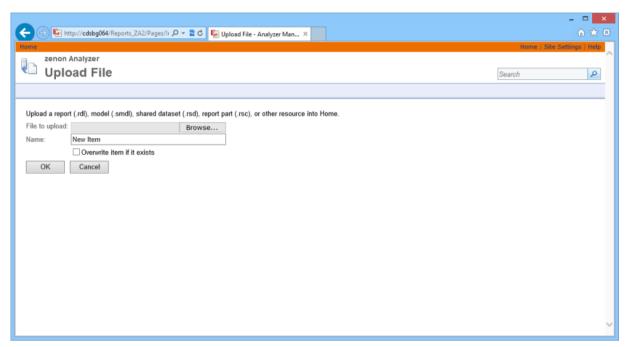
Reports which were created offline can be uploaded to the Server with the help of the zenon Analyzer.

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 ox



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.
ОК	Information is applied, the file is uploaded and the dialog is closed.
Cancel	The information is discarded and the dialog is closed.

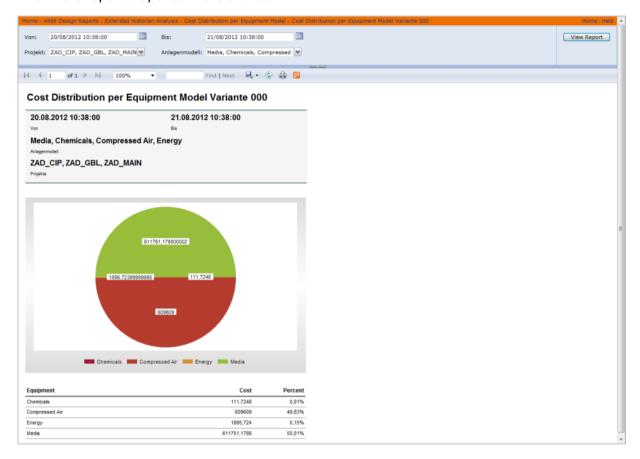
9.2 Call up report

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

To call up a report:



- 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



9.3 Configure and export reports

Different parameters (on page 95) 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:

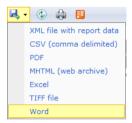
- 1. open the report
- 2. select the desired parameters
- 3. click on display report

EXPORT REPORT

Reports can be exported to different formats.

To export a report:

- 1. click on the symbol (on page 150) 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.



9.3.1 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:
	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.

9.4 Download report

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

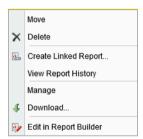
To download a report:



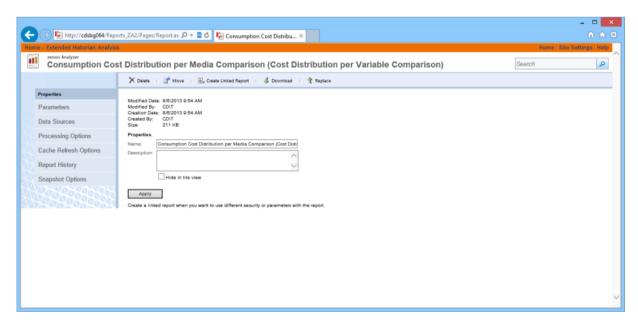
- 1. move the mouse over the report
- 2. click on the displayed drop-down list
- 3. select menu item Download
- 4. select the saving location on the local computer

9.5 Manage reports

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



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

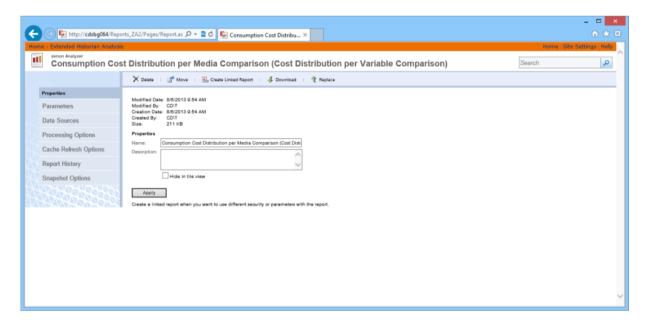




Parameters	Description
Properties (on page 152)	Properties of the report.
Parameters (on page 153)	Configuration of the parameters of the report.
Data source (on page 157)	Selection of data sources.
Processing options (on page 157)	Configuration of the editing of the report.
Cache Refresh Options (on page 158)	Creation and editing of the plans for the cache updating.
Report history (on page 159)	Allows snapshots of reports to be combined into a history.
Snapshot Options (on page 160)	Configuration of snapshots.

9.5.1 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 150) 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:
	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.

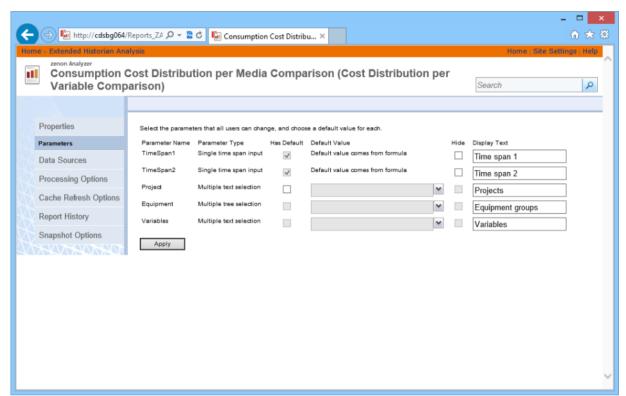
9.5.2 Parameters

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





Parameters	Description
Parameter name	Name of the tag.
	Display only.
Type of the TAG:	Type of the parameter. Only display.
	Displays whether:
	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
	For non-specialized controls, the data type is also shown.
Has default value	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.
	Each change to the check status of this checkbox made by the user is immediately forwarded to the server.
Default value:	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:
	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



Hide	parameters. Entry is possible 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 input field is no longer in focus. Inactive: Parameter is shown. The Display text option must contain a value in order for the configuration to be valid. Active: Parameter is hidden. The Display text option is emptied. A parameter can only be hidden if it has a valid standard value (has standard value option has been selected and standard value has been selected). If a parameter cannot be hidden, the checkbox is not selected and deactivated.
	Each change to the check status is immediately forwarded to the server.
Display text	Enter the text with which the parameter will be displayed in the report. Only active if the Hide option has not been selected. The input field only recognizes changes it it is not in focus.
Apply	Clicking on the button accepts settings if all options have been correctly configured. If there are configuration errors, these are displayed next to the corresponding option. If the configuration has been saved, this is displayed below the button.

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.

9.5.3 Data sources

Assigns a report to the data source.

For details about data source see chapter data source (on page 133) in section configuration and operation (on page 88).

9.5.4 **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

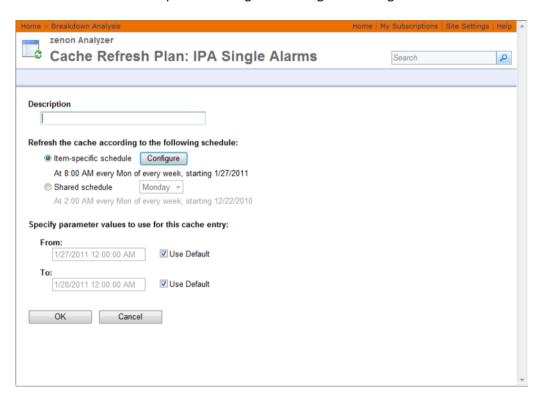
Definition of the time out at the creation of the report



9.5.5 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	Selection of the schedule.
the following 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	Accepts input and closes dialog.
Cancel	Discards inputs and closes dialog.



Information

This cache update function only relates to the Analyzer Manager and in not identical to the update cache (on page 269) action in the ZAMS.

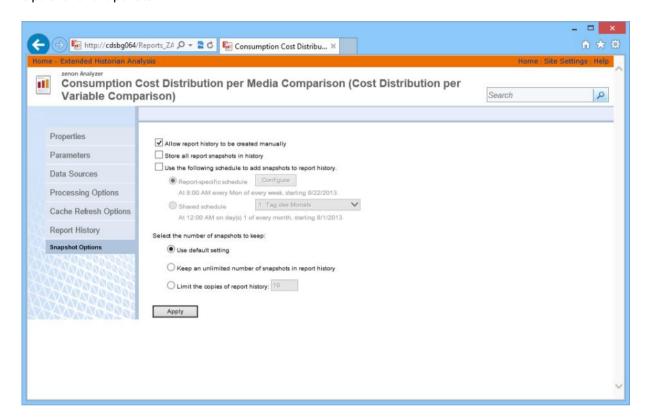
Report history 9.5.6

Assembles snapshots of reports to a history.



9.5.7 Snapshot Options

Options for snapshots.



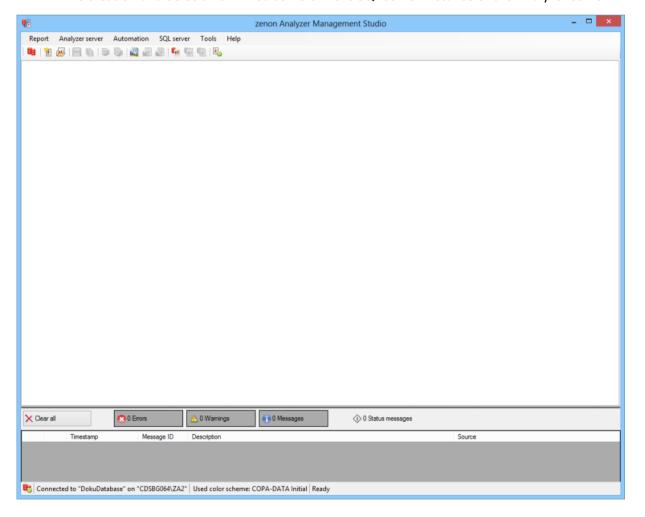
Parameters	Description
Allow report history to be created manually:	Active: Manual snapshots are possible.
Save all report snapshots in the history	Active: each snapshot is also displayed in the report history.
Schedule	Selection of the schedule or creation of a new schedule.
Number of snapshots	Define how many snapshots should be saved. Options: Use default settings all define number



10. 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





Ô

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 409) 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

TROUBLESHOOTING

Error messages, warnings and messages are saved in the output window (on page 178), in accordance with the options (on page 408) that have been set, in LOG files (on page 181).

10.1 Starting ZAMS

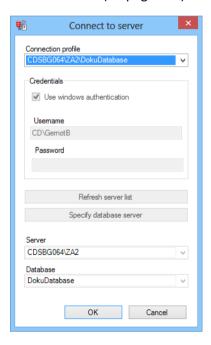
The zenon Analyzer Management Studio (ZAMS) is installed together with zenon Analyzer.

During installation, the user who carries out the setup is entered as a user with dedicated license (on page 384) with authorization level 3 (on page 380).

To start ZAMS:



- In the Windows Start menu, select the COPA-DATA -> ZAMS entry
 or
 double click on a ZAMS report file (.zams_rep)
- 2. The connection dialog is opened, depending on the settings in the options (on page 404),
- select the desired connection by clicking on Connection profile or create a new connection (on page 237)



- 4. 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.
- 5. ZAMS is opened.

Note: if the connection fails because there is no license, you can request (on page 243) the license status in ZAMS and enter (on page 243) new license data. Presettings for connection profiles, deployment of reports and messages in the output window can be set in the options (on page 404) 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 of 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 <code>TestUser</code>. 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
 - $\begin{tabular}{l} $C:\Users\TestUser\AppData\Local\COPA-DATA\zenon\Analyzer\3.0.0\ is $$$$ created automatically. \end{tabular}$
- 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

```
folderC:\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 SPO 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.

10.2 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 384) 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 30) 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
 - Starts the administration of the access rights to the Analyzer applications (on page 386) in ZAMS
 - b) Adds the user TEST\ZamsAdmin
 - c) Assigns the highest possible access right to this
 - d) Confirms the dialog with ox.
- 7. The user TEST\Admin



- Starts the administration of the Analyzer Manager access rights (on page 390) 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 ox.
- 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 392)
- c) Adds the same three users for the object access rights (on page 394) of the root folder
- d) Leaves its access rights there on the browser
- e) Confirms the dialog with ox.

The configuration was carried out successfully.



10.3 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.

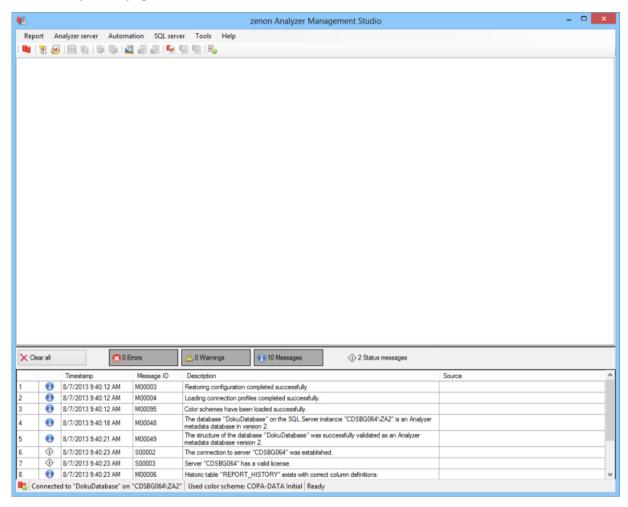
10.4 Main window

The user interface of the ZAMS consists of:

- ► Menus (on page 171)
- ► Tool bar (on page 175)
- ► Report area (on page 177)



► Output (on page 178)





Parameters	Description
Menu line (on page 171)	Contains menus with commands to configure the ZAMS and create and administer reports.
Tool bar (on page 175)	Contains symbols with commands to configure the ZAMS and create and administer reports.
Report area (on page 177)	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 178)	Output of error messages, warnings and information.
Status Line (on page 182)	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.

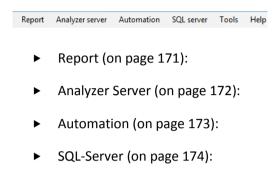
If a function that can change the connection or license status is to be executed, all reports are closed beforehand. The user is notified of this and can cancel closing. The function is not executed if it is not possible to close all reports.

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



10.4.1 Menus

The following menus are available in the main ZAMS window:



- ► Options (on page 174):
- ► Help (on page 175):

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.
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 188) of the active report.
Deploy all	Allows deployment (on page 188) 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 237).
Server: Version information	Opens window with information on:
	Version of the operating system
	Version of zenon Analyzer
Show current license	Opens dialog (on page 243) with:
	Serial Number
	Activation key
	License status
	License properties
	Button to enter a new license
License product	Opens dialog to enter license data (on page 243).
Assigning dedicated licenses to users	Opens dialog to administer the users with a dedicated license (on page 384).
Manage Analyzer Tools access rights	Opens dialog to administer the access rights to the Analyzer applications (on page 386).
Manage Analyzer Manager access rights	Opens dialog to administer the access rights to the objects in the Analyzer Manager (on page 390).

Automation

Commands in the Automation menu

Parameters	Description
Configure archive emulation	Opens the dialog for configuring the archive emulation (on page 348).
Manage Schedules	Opens dialog to manage schedules (on page 246) for the distribution of reports.
Manage subscriptions	Opens dialog to manage report subscriptions (on page 255).



SQL server

Commands in the ${\tt sqL}\ {\tt Server}\ {\tt menu}$

Parameters	Description
Update connector functions	Renews the Connector functions (on page 271). The result is displayed in the output window.
Create SCADA SQL connector	Opens the dialog (on page 272) to create an SQL connector.
New Analyzer database	Opens dialog (on page 291) to create a new Analyzer database.
Convert databases	Starts the conversion (on page 294) of databases, the version number of which is lower than the current version number.
Create database backups	Opens the dialog (on page 301) for creating a project backup.
Restore database backups	Opens the dialog (on page 304) for renaming a profile.
Manage automated database backups	Opens the dialog (on page 308) to administer the automatically-created database backups.
Manage database backup files	Opens the dialog (on page 332) to administer the backup files of the database.
Manage linked servers	Opens dialog (on page 336) to manage the linked servers.
Manage metadata indices	Opens the dialog (on page 341) to manage the metadata indices.

Tools

Commands in the Options menu



Parameters	Description
Metadata Editor	
Manual Data Editor (on page 450)	Allows the editing of tables for price and norm values in a zenon Analyzer metadata database.
Manage color schemes	Opens the dialog (on page 194) to create and edit and administer color schemes.
Export Color Schemes	Opens the dialog (on page 232) for exporting color schemes.
Import Color Schemes	Opens the dialog (on page 233) for importing color schemes.
Clear cache	Updates (on page 269) the ZAMS cache.
Options	Opens the dialog for configuring settings (on page 404) for:
	Connection profiles (on page 405)
	Deployment (on page 406)
	Output messages (on page 408)
	Language settings (on page 409)
	Database backups (on page 413)

Help

Commands in the Help menu

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

10.4.2 Toolbar



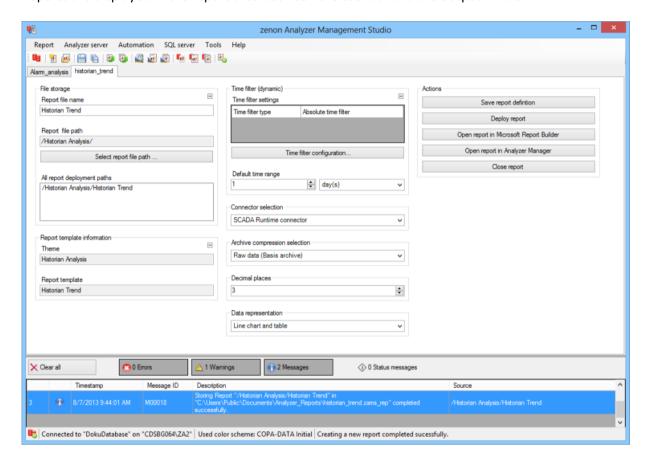


Parameters	Description
Connect to Analyzer server	Opens dialog with connection profiles (on page 237).
New report	Opens the dialog for creating a new report.
Open report	Opens the dialog to select and open an existing report.
Save report	Saves active report.
Saving all reports	Saves all opened reports.
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.
Report Burraer	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.
Nopole Bulluci	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 all reports in Analyzer Manager	Opens all reports currently open in ZAMS in the Analyzer Manager.
Manage subscriptions	Opens dialog to manage report subscriptions (on page 255).



10.4.3 Report area

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



Hints:

- 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 612) and for OEE performance indicator lot archive (on page 967).
 - 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 767).

- ▶ 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 $10 \times 10^{\circ}$ 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

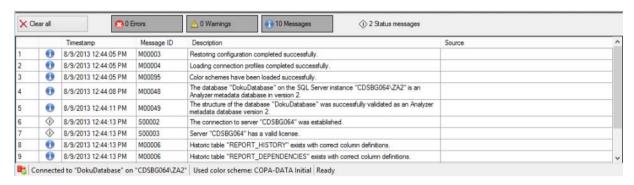
You can find details on the input elements in the report in the Elements in the report area (on page 486) chapter and in the documentation of the Report templates (on page 480) supplied.

10.4.4 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 408). All messages in the output window are logged and saved in the LOG files (on page 181).



DISPLAY IN THE OUTPUT WINDOW





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	Contains error messages, warnings, information and status messages.
	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	Symbol that displays the type of message. The symbols correspond to the symbols on the buttons.
	Sorting sequence ascending:
	Error
	Warning
	Message
	Status message
	Ascendant sorting is carried out in reverse order.



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 <code>zams_rep-</code> 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

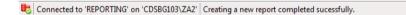
- ► The first message in a LOG file always shows the time stamp denoting when the LOG file was created.
- There is a blank line after the first message.
- ► There then follows all messages that occurred whilst ZAMS was running, regardless of whether these are displayed in the user interface or not, in 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.

10.4.5 Status Line

The status display of the ZAMS consists of several sections



- 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
- 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

10.5 Actions

In ZAMS, you can:

- Create and administer reports (on page 183)
- ▶ Deploy reports
- Automate report handling (on page 245)
- ▶ Display (on page 243) and enter (on page 243) licenses
- ► Manage servers (on page 336)
- ► Automating processes (on page 245)

10.5.1 Creating, opening, saving and closing reports

For all report actions such as opening or saving etc., it is a requirement that there is a connection to an Analyzer server with a valid license.

CREATE NEW REPORT

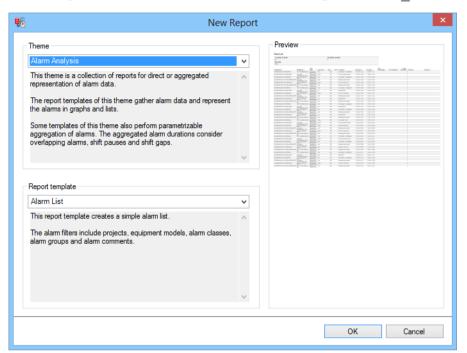
To create a new report:

- 1. Select, in the Report menu, the ${\tt New}$ command or press the key combination ${\tt Ctrl+N}$
- 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%\COPA-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:



- 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 406) 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.

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:

- 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 406):
 - 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 406). 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 406). Files are only resaved if changes have actually been made.

When saving all reports:

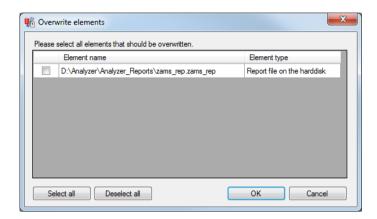
- ► A check is made to see if each report has a valid save path:

 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 406).



Parameters	Description
List of reports	Displays all reports that are overwritten when saved.
	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

10.5.2 Deploy reports

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

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 409) 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
- 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 406). 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.

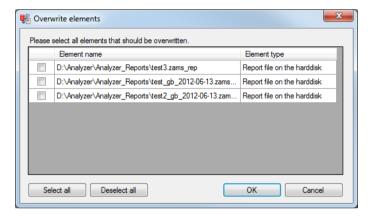
To deploy all reports:

- 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
- 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
- ox: 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 182) 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

10.5.3 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 194)
- export (on page 232)
- ▶ import (on page 233)

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 ox button

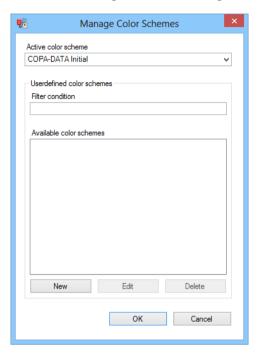
Creating and editing variables

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	Selection of a color scheme from the drop-down list.
	The standard color scheme is always displayed at the top of the list. The individual color scheme is sorted alphabetically.
Userdefined color schemes	Properties for the creation and editing of your own color scheme.
Filter conditions	Entry of a filter text that filters displayed elements in the list of Available color schemes.
	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).
Available color schemes	List of all available individual color schemes for the selection of a color scheme for editing or deleting.
New	Clicking on the button opens the dialog to create a color scheme.
	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.
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	Deletes selected color scheme without requesting confirmation.
	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.
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.

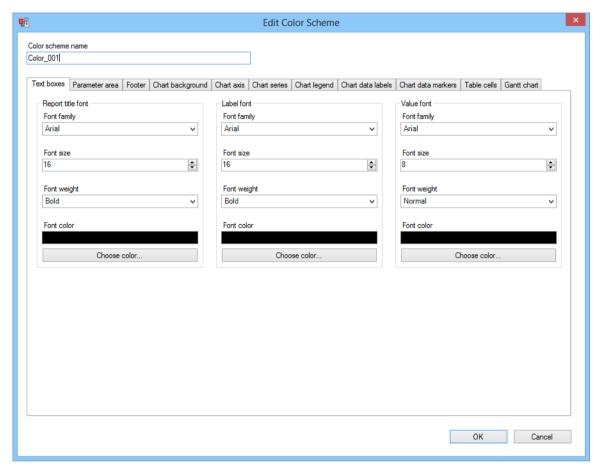
CREATING A COLOR SCHEME

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	Entry of a freely-definable name for the color scheme to be configured.
	A name is valid if it:
	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	A color scheme for reports is configured using the following tabs:
	Text boxes (on page 201)
	Parameter area (on page 203)
	Footer (on page 207)
	Chart background (on page 209)
	Chart axis (on page 213)
	Chart series (on page 218)
	Chart legend (on page 219)
	Chart data labels (on page 221)
	Chart data markers (on page 224)
	Table cells (on page 226)
	Gantt chart (on page 230)
	For details, see the corresponding subchapter.
OK	Accepts all changes in all tabs and closes the dialog.
	Only active if a valid name has been entered.
Cancel	Discards all changes on all tabs and closes the dialog.

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 ${\tt Name}\,$ of $\,{\tt color}\,$ scheme option
- 6. Confirm the change by clicking on the ox button

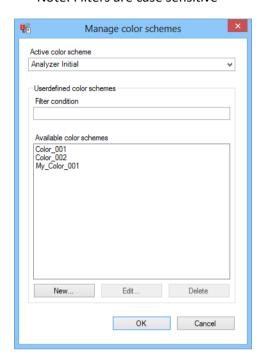
FILTERING THE COLOR SCHEME

The list of individually-created color schemes can also be displayed with filters:

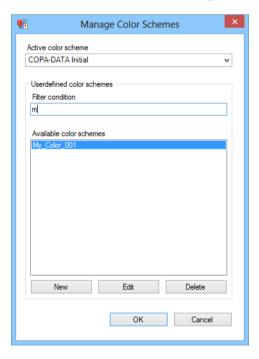
To filter the list:



Enter the filter criteria in the Filter condition option
 Note: Filters are case sensitive



2. The list is shown after filtering

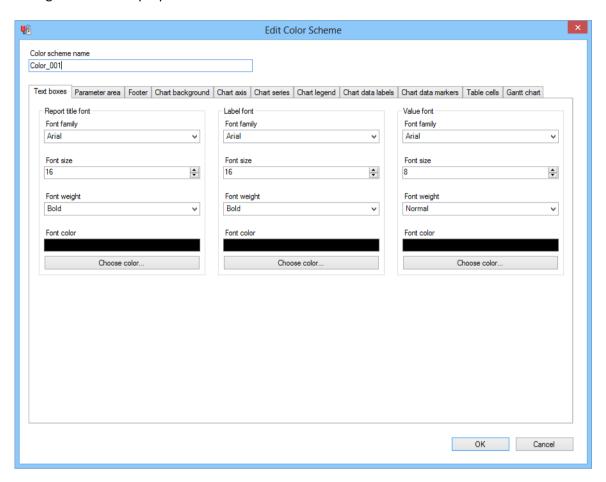


To show the list in full again, delete the filter criteria.



Text boxes

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:

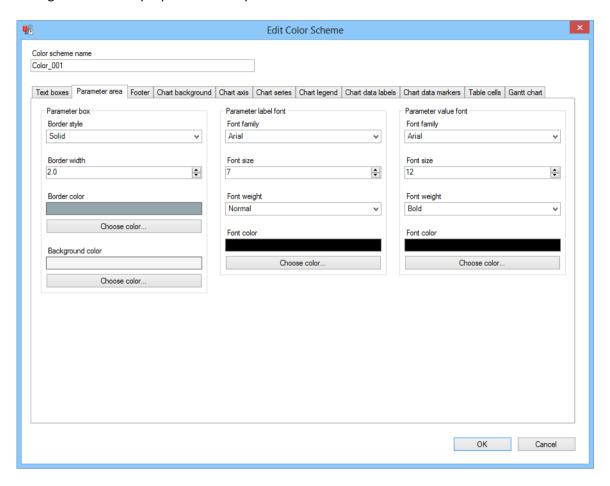


Parameters	Description
Font family	Selection of font type from drop-down list. 256 fonts are currently offered.
Font size	The font size is set using the cursor keys or by entering it in the number field.
	Minimum: 1
	Maximum: 100
Font weight	Selection of font thickness from drop-down list. Available are:
	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 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:
	None
	Solid
	Double
	Dashed
	Dotted
Border width	Setting the border width:
	Input is possible in levels with a precision of 0.5 .
	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.
Parameter label font	Definition of the font properties of the text box for parameter names.
Font family	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.
	Minimum: 1
	Maximum: 100
Font weight	Selection of font thickness from drop-down list. Available are:



Thin
ExtraLight
Light
Normal
Medium
SemiBold
Bold
ExtraBold
Heavy

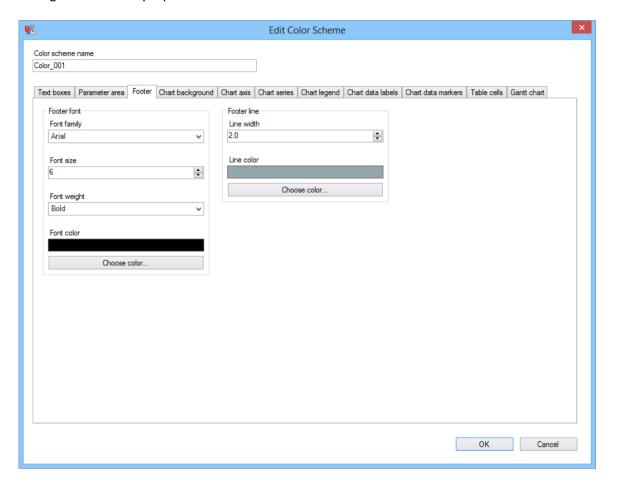


Font color	Display of the selected font color. Setting is carried out using the Select color button below.
Choose color	Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system.
Parameter value font	Definition of the font properties of the text box for parameter values.
Font family	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. Minimum: 1 Maximum: 100
Font weight	Selection of font thickness from drop-down list. Available are: 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

Configuration of the properties of the footer:





Parameters	Description
Footer font	Configuration of the font properties of the text boxes in the footer.
Font family	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.
	Minimum: 1
	Maximum: 100
Font weight	Selection of font thickness from drop-down list. Available are:
	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 of the line width.
	Input is possible in levels with a precision of 0.5 .
	Minimum: 1
	Maximum: 100
Line color	Display of the selected line color. The setting is made using the Select color button below.

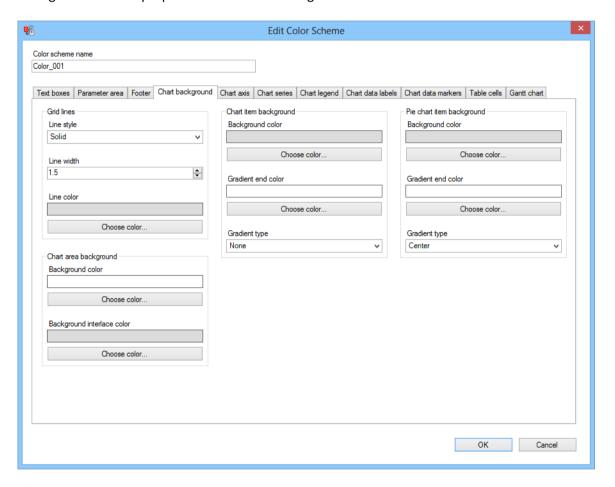


Choose color

Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system.

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:
	None
	Solid
	Dashed
	Dotted
	DashDot
	DashDotDot
Line width	Setting for the line width:
	Input is possible in levels with a precision of 0 . 5.
	Minimum: 1
	Maximum: 100
Line color	Display of the selected line 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.
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.
	The background of the chart area is colored alternately with the base color and the alternative color.
	Pie charts always have a transparent background in this area.
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.
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	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:
	None
	LeftRight
	TopBottom
	Center
	DiagonalLeft
	VerticalCenter
	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> .
Pie chart item background	Configuration of the settings of the object background for pie charts.
	The settings for pie charts are different to other diagrams in this area, because the background color of the chart is transparent.
Background color	Display of the selected background color. The setting is made using the

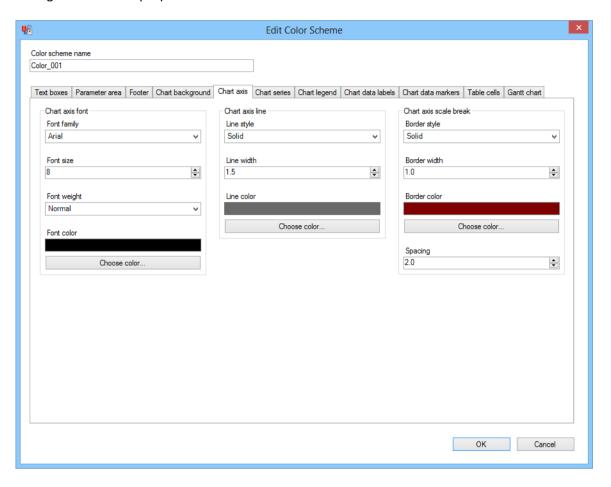


	Select color button below.
Choose color	Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system.
Gradient end color	Display of the end color of the color gradient.
Choose color	Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system.
Gradient type	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:
	None
	LeftRight
	TopBottom
	Center
	DiagonalLeft
	VerticalCenter
	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> .



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 family	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.
	Minimum: 1
	Maximum: 100
Font weight	Selection of font thickness from drop-down list. Available are:
	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.
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:
	None
	Solid
	Dashed



Dotted
DashDot
DashDotDot



Line width	Setting for the line width:
	Input is possible in levels with a precision of 0.5.
	Minimum: 1
	Maximum: 100
Line color	Display of the selected line 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.
Chart axis scale break	Configuration of the settings for the axis breaks
Border style	Selection of the line style from the drop-down list. The following values are available:
	None
	Solid
	Dashed
	Dotted
	DashDot
	DashDotDot
Border width	Setting the border width:
	Input is possible in levels with a precision of 0 . 5.
	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.
Spacing	Setting of the distance between the two lines that mark a break.
	Input is possible in levels with a precision of 0 . 5.
	Minimum: 1



Maximum: 100

NOTE: DISPLAY OF THE VALUES OF THE AXIS BREAKS IN THE PDF

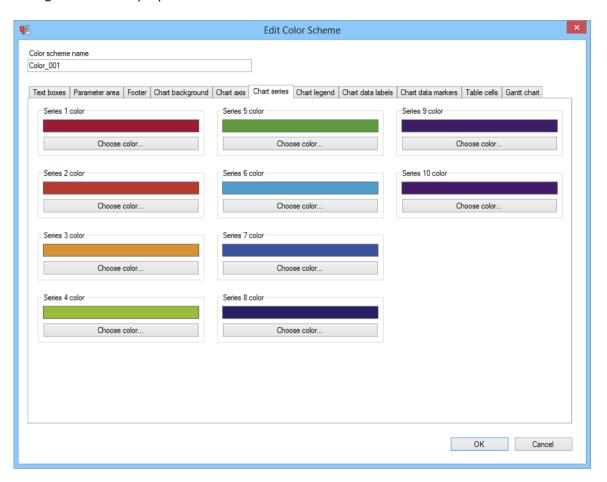
For the PDF rendering engine of the SQL server 2012 reporting services, problems with the validation of values entered have been reported for certain values. If values different to the standard scheme are to be entered, the following procedure is recommended:

- 1. Always change only one value at a time.
- 2. Then confirm the dialog with ox.
- 3. prepare a report with a chart (such as an archive trend (on page 701) 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:

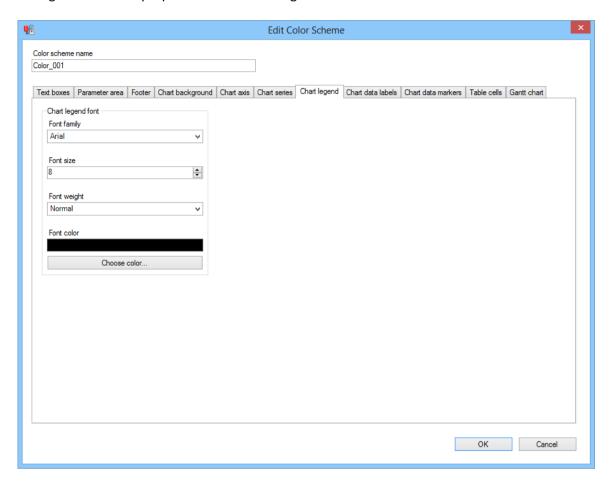


Parameters	Description
Color of chart series X	Display of the selected color of the chart series. x stands for the number of the chart series 1 to 10.
	The settings for the chart series 1 are also applied to the series $11, 21, 31, 41$ etc. This applies in a similar manner to other series $2(12, 22,)$ to $10(20, 30,)$.
	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.



Chart legend

Configuration of the properties of the chart legend:



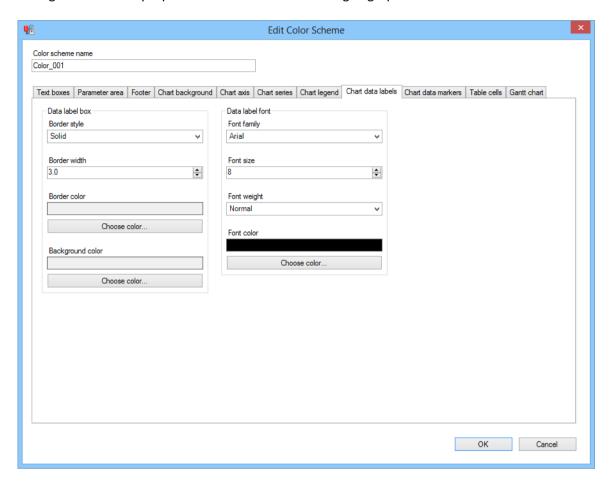


Parameters	Description
Chart legend font	Configuration of the labeling properties for the legend entries.
Font family	Selection of font type from drop-down list. 256 fonts are currently offered.
Font size	The font size is set using the cursor keys or by entering it in the number field.
	Minimum: 1
	Maximum: 100
Font weight	Selection of font thickness from drop-down list. Available are:
	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.



Chart data labels

Configuration of the properties of the database labeling in graphics:





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:
	None
	Solid
	Double
	Dashed
	Dotted
Border width	Setting the border width:
	Input is possible in levels with a precision of 0.5 .
	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	Configuration of the labeling properties for the data labeling.
Font family	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.
	Minimum: 1
	Maximum: 100

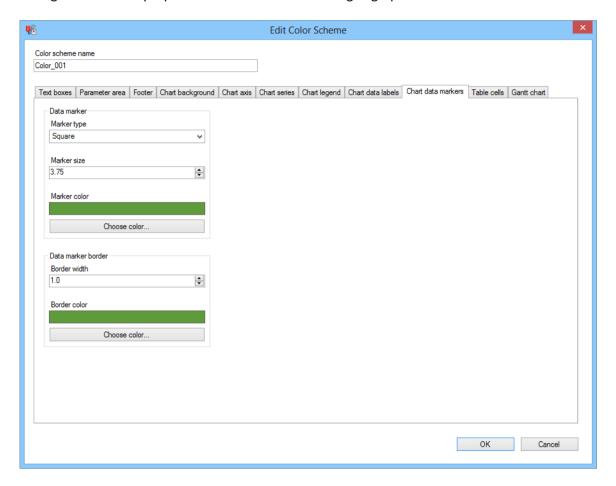


Font weight	Selection of font thickness from drop-down list. Available are:
	Thin
	ExtraLight
	Light
	Normal
	Medium
	SemiBold
	Bold
	ExtraBold
	Heavy
Font color	Display of the selected font color. Setting is carried out using the Select color button below.
Choose color	Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system.



Chart data markers

Configuration of the properties of the database marking in graphics:





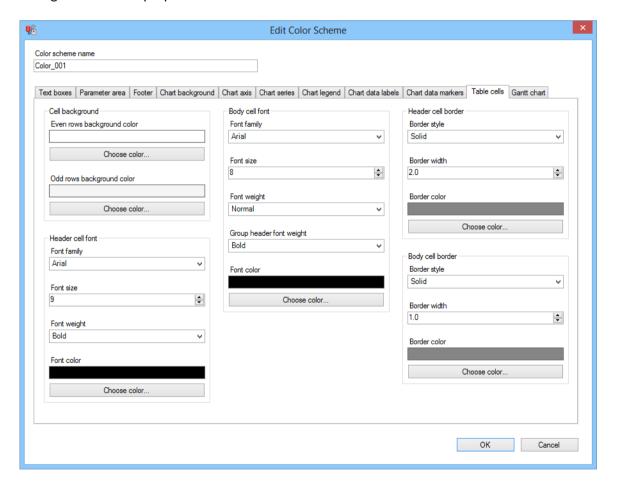
Parameters	Description
Data marker	Configuration of the properties of the data marking symbols.
Marker type	Selection of the data marking symbol. The following values are available:
	Square
	Circle
	Diamond
	Triangle
	Cross
	Star4
	Star5
	Star6
	Star10
	Attention: The value None is not available here, because reports where this property is used must have a marking symbol.
Marker size	Setting of the size of the marking symbol.
	Entry is possible in levels with a precision of 0.25.
	Minimum: 1
	Maximum: 100
Marker color	Display of the selected marking 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 marker border	Configuration of the properties of the border of the data marking.
Border width	Setting the border width:
	Input is possible in levels with a precision of 0 . 5.
	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.

Table cells

Configuration of the properties of the cells in tables:





Parameters	Description
Cell background	Configuration of the settings for the background for data cells in tables.
Background color for even cells	Display of the background color for rows with an even row number (2, 4, 6,).
	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 for odd cells	Display of the background color for rows with an odd row number (1, 3, 5,).
	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.
Header cell font	Configuration of the labeling properties for the heading entries.
Font family	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.
	Minimum: 1
	Maximum: 100
Font weight	Selection of font thickness from drop-down list. Available are:
	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.
Body cell font	Configuration of the labeling properties for the data cells.
Font family	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.
	Minimum: 1
	Maximum: 100
Font weight	Selection of font thickness from drop-down list. Available are:
	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.
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:
	None
	Solid
	I .

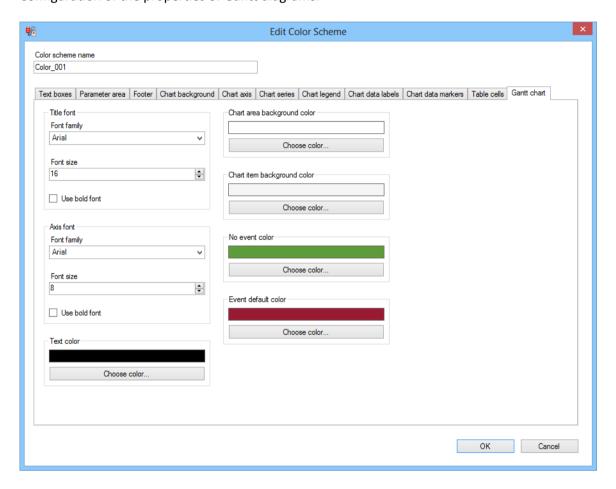


	Double
	Dashed
	Dotted
Border width	Setting the border width:
	Input is possible in levels with a precision of 0 . 5.
	Minimum: 1
	Maximum: 100
Border color	Display of the selected border color. The setting is made using the Select color button below.
Choose color	Selection of the color. Clicking on the button opens the standard selection dialog in the language of the operating system.
Body cell border	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:
	None
	Solid
	Double
	Dashed
	Dotted
Border width	Setting the border width:
	Input is possible in levels with a precision of 0 . 5.
	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.



Gantt chart

Configuration of the properties of Gantt diagrams:





Parameters	Description
Title font	Configuration of the font properties of the diagram title.
Font family	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. Minimum: 1 Maximum: 100
Use bold font	Active: Text is formated in bold.
Axis font	Configuration of the font properties for axis fonts.
Font family	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. Minimum: 1 Maximum: 100
Use bold font	Active: Text is formated in bold.
Text 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.
Chart area background color	Display of the background color selected for the chart area. 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.
Chart item background color	Display of the background color selected for the graphics object. 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.
No event color	Display of the color selected for times without an event. 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.
Event default color	Display of the standard color selected for events. 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.

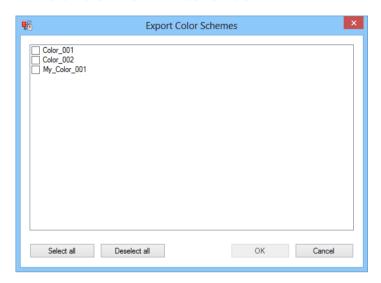
Exporting a color scheme

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 ox
- 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 ox
- 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.
ок	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:

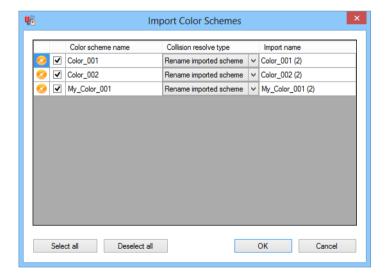
- 1. open the menu Options
- 2. Click On Import color scheme
- The dialog to select an export file is opened
 (this dialog is always displayed in the language of the operating system)
- 4. Select the save location and the desired XML file



- 5. click on ox
- 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 ox
- 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:
	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.
ок	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.

10.5.4 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

10.5.5 Server actions

You can do the following via the Analyzer Server menu:

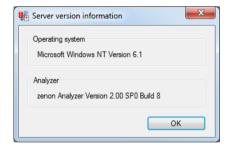


- ▶ Connect ZAMS to the Analyzer server
- ▶ Request information on the Analyzer server
- ▶ Request the license status of the Analyzer server
- Enter new license data

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:





Parameters	Description
Connection profile	Selection of the connection profile from the drop-down list.
	Create new profile creates a new profile.
	The profile consists of a path for server\database.
Credentials	Entry of the access data.
Use windows authentication	Active: Windows authentication is used.
Username	Entry of the user name.
	If Use Windows authentication is active, display only.
Password	Entry of the password. Is not saved and must be reentered each time the connection is made.
	If Use windows authentication is active, no input is necessary; input is also not possible.
Refresh server list	A click starts a search for existing servers to which ZAMS can connect.
	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.
	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.
Specify database	A click opens the dialog to enter a specific server.
server	This is the recommended procedure if the name of the computer and the SQL server instance of the Analyzer server are known.
Server	Selection of the server to which ZAMS should connect from a drop-down list.
	If the desired server is not displayed, it can be added via Connect to specific server or searched for via Refresh server list.
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.

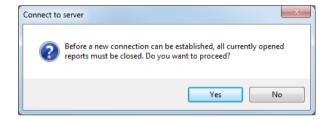


Cancel	Rejects all inputs and closes the dialog without creating a connection.
--------	---

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



- 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 243) is opened.
- 13. Depending on the license status, the possible actions are activated or deactivated.

UPDATE 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)

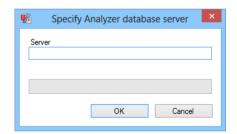


The progress display is closed once the search has been completed. The servers found are shown in the Server drop-down list.

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 Connect to specific server button in the dialog for the connection profile. The dialog to connect to a specific server is opened.



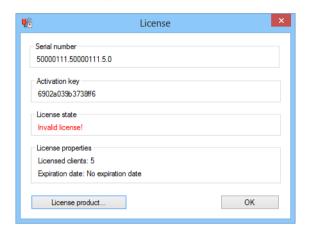
Parameters	Description
Server	Entry of the computer name and the folder in which the server is located.
	Syntax: [computer name or IP address]\[instance name]
	For example: Server999\Reports_ZA2\
Progress bar	Shows the progress of the connection attempt
	If the attempt is not successful, a window with an error message is displayed and an error report is issued in the ZAMS output window.
ок	Applies changes, validates them and closes the dialog.
Cancel	Discards changes and closes 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:
	This license is valid
	Invalid license
License properties	Display of:
	Number of licensed clients
	License expiration date.
License product	Opens the dialog (on page 243) to enter license data.
ОК	Closes the window.

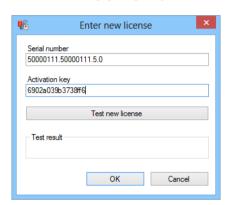
Enter License...

To enter new license data:



- 1. Select, in the Analyzer Server menu or in the Display license (on page 243) 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 ox 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	Clicking on this button tests inputs before they are written to the license server, to see if:
	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
	In order for the test to be started, both serial number and activation key must have been entered.
Test result	Displays the test result of Test new license.
OK	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.
	In order for the license data to be written, both serial number and activation key must have been entered.
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.

10.5.6 Automation

The following actions can be automated in ZAMS:

- Emulation of archives (on page 246)
- Preparation of reports using schedules (on page 246)



▶ Report subscriptions (on page 255)

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 348) section.

Manage Schedules

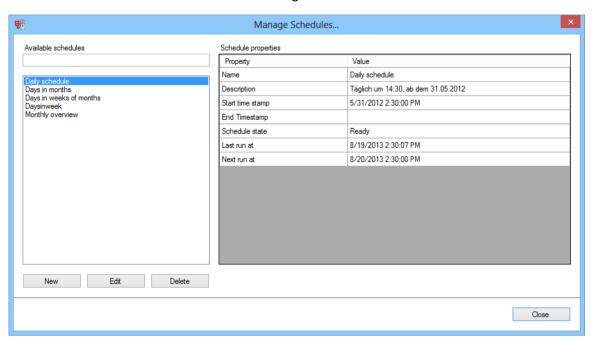
In order for the provision of reports to be automated using schedules, there must be a connection to an Analyzer server with a valid license.

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	Entry of a filter for the List of schedules.
	Only schedules that correspond to the filter criteria are shown in the list.
	Wildcards:
	?: Wildcard for precisely 1 character
	*: Wildcard for 0 or more characters
	If there is no wildcard in the filter expression, a * is automatically added to the end when filtering. For example:
	"" (empty field) becomes *
	test becomes test*
	t?stremains t?st
List of schedules	List of all preconfigured and available schedules.
Schedule properties	Displays the preconfigured properties of the schedule highlighted in the list.
	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
	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.
New	Opens the dialog to create a new schedule.
Edit	Opens the dialog to edit a schedule.



Delete	Deletes the selected schedule from the list and from the Analyzer server.
	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.
	Yes: First the respective subscriptions are deleted, then the schedule.
	No: Neither subscriptions nor the schedule are deleted.
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:

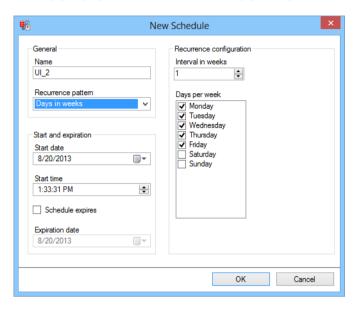
- 1. Highlight the desired schedule in the list
- 2. click on Edit
- 3. The dialog is opened with the values for the selected schedule

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





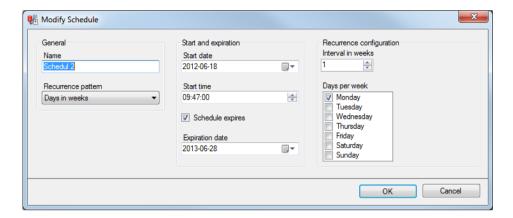
Parameters	Description
General	General settings for the schedule:
	Name
	Recurrence configuration
Name	Name of the schedule.
Recurrence configuration	Recurrence configuration for the time plan. There are the following patterns:
	► Once
	► Minutes and hours
	► Days
	► Days in weeks
	► Days in months
	► Days in weeks of months
	The patterns are configured in the Recurrence configuration section.
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.

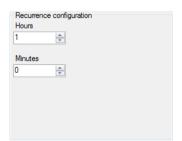
Background: The web service examines the configuration of a schedule and converts it to a simpler pattern, regardless of its configuration.

For example: In weekdays, each day was activated and the week interval is set to 1. The web service makes the simpler pattern ${\it Days}$ 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





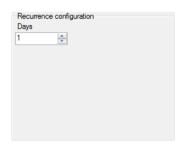
Defines the interval between two executions of the schedule in hours and minutes.

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.

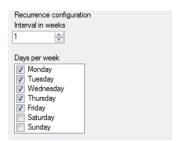


Parameters	Description
Days	number of days between two executions.

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.





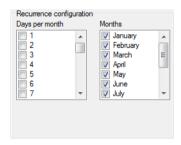
Parameters	Description
Interval in weeks	Interval between the executions in weeks.
Days in weeks	Weekdays on which the schedule is to be executed.

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.



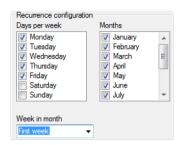
Parameters	Description
Days per month	Activation of the active days via the checkboxes.
	Note: The possible execution dates are orientated to the shortest month, February. They are therefore limited to 28 .
Month	Activation of the active months.

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

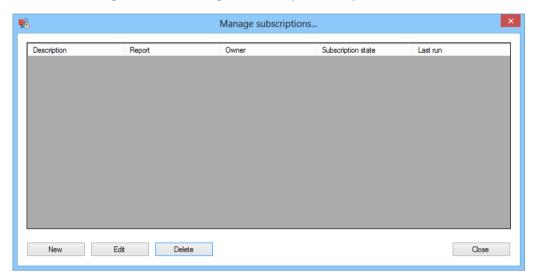
Requirement: In order for reports to be subscribed to, there must be a connection to an Analyzer server with a valid license.

To subscribe to reports:

1. Select the ${\tt Manage}\,$ subscriptions entry in the ${\tt Automation}\,$ 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:
	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. The table with the subscription is updated after the action has been carried out.
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). Theses 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:

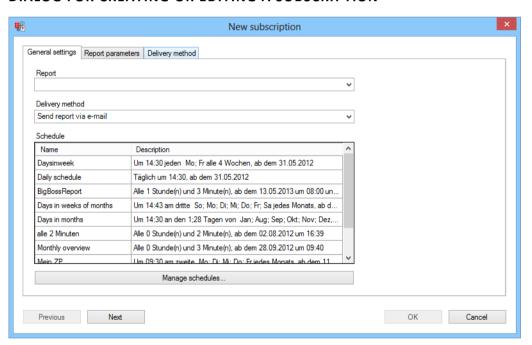


- 1. Highlight the desired subscription in the list
- 2. click on Edit
- 3. The dialog is opened with the values for the selected schedule

To delete a subscription:

- 1. Highlight the desired subscription in the list
- 2. Click on Delete
- 3. The subscription is deleted

DIALOG FOR CREATING OR EDITING A SUBSCRIPTION





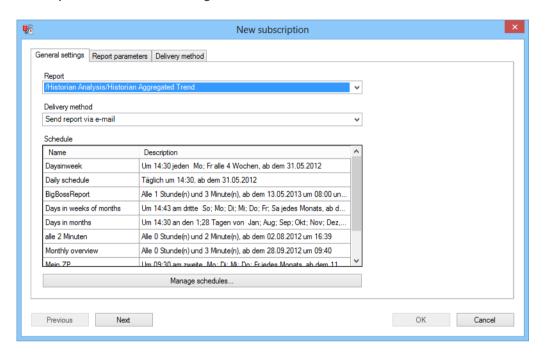
Parameters	Description
General settings (on page 260)	Configuration of the general settings for the subscription.
Report parameters (on page 262)	Configuration of the parameters for the selected report.
Delivery method (on page 263)	Configuration of the delivery method for the report.
Previous	Switches 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 $o\kappa$ 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.



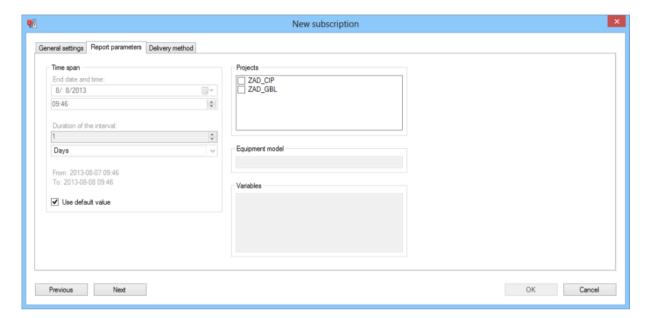


Parameters	Description
General settings	General settings for the subscription:
Report	Selection of a report for the subscription from a drop-down list. This selection determines which properties are offered in the Report parameters group.
Delivery method	Selection of a method with which the report is sent from a drop-down list:
	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.
	This selection determines which properties are offered in the delivery method group.
Schedule	Selection of a schedule for the subscription.
	Note: The schedule for the subscription can be created directly on the Analyzer server and saved with this. This is not supported by ZAMS.
Manage Schedules	Opens the dialog (on page 246) to create ad edit schedules.
	If this is executed, the table with the schedules is updated in the list of schedules.
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.



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 260) 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 previous tab.
Next	Switches to the next tab.
ОК	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.



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 260) tab.

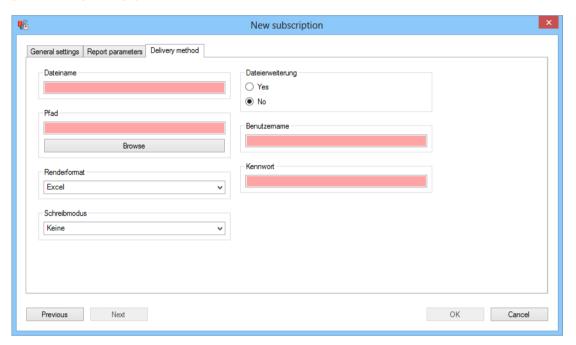
Entries in this tab are validated each time a parameter value is validated.



△ Attention

The language of the parameters for the delivery method corresponds to the language of SQL Server.

SAVE REPORT AS SHARED FILE





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 347) 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:
	None: The file is created, but rejected again. Nothing is written.
	Automatic incrementation: Additional information is written.
	Overwrite: The file is overwritten.
Filename	Configuration of whether an extension is added to the report file:
extension	Yes: The file is supplemented with a file extension appropriate to the render
	format 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.
ок	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.

SEND REPORT VIA E-MAIL

In order for reports to be able to be sent by email, the SQL Server must be configured accordingly.

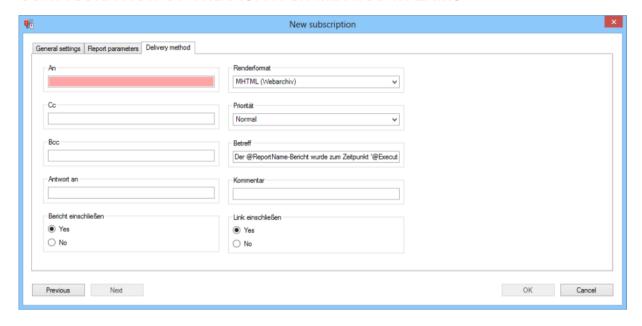
CONFIGURATION OF THE SQL SERVER FOR DISPATCH VIA EMAIL.

To be able to send reports via email, the email settings of the Analyzer service must be configured. To do this:

- ► Start the Reporting Services Configuration Manager of Microsoft SQL Server 2012 from the Start menu.
- ▶ Select zenon Analyzer as the instance.
- ► Click On Email Settings.
- ► Configure the settings for email on the Analyzer service.
- ► Enter, as the address for the Sender, the email address that is to appear as the sender in emails that are generated by the Analyzer.
- ▶ The SMTP server must be able to be addressed from the Analyzer server.
- ▶ Because SMTP does not generally require any login data, this cannot be configured here. The configuration is stored in C:\Program Files\Microsoft SQL Server\MSRS11.ZA2\Reporting Services\ReportServer\rsreportserver.config and can also be edited here.
- ► The Current SMTP Server Delivery Method Setting is automatically set as soon as an SMTP server is entered.



CONFIGURATION OF THE DISPATCH METHOD IN ZAMS





Parameters	Description
То	Address of the recipient.
	Must not be empty and must contain a valid list of email addresses. Requirements for addresses:
	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
	Constraints for local part and domain:
	- must not start with .
	- must not end with .
	- must contain at least 1 valid character
	- must not contain any invalid character
Сс	Address of recipients of copies.
	Can be empty. The content must contain a list of valid email addresses.
Bcc	Address of hidden recipients of copies.
	Can be empty. The content must contain a list of valid email addresses.
Respond to	Address to whom a response is to be sent.
	Can be empty. The content must contain a list of valid email addresses.
Include report	Selection of whether the report is sent.
	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.
	Hint: However a link to the report can be added using the Include link
	option.
Render format	Selection of the data format from drop-down list for saving the report.
Priority	Selection of the priority of the email from the drop-down list:
	Higher



	Normal
	low
Subject	Subject of the email The following text blocks can be replaced automatically:
	@ReportName: Name of the report
	@ExecutionTime: Date and time of report creation.
Comment	Additional text for the email.
Include link	Selection of whether a link to a report is included in the message.
	Yes: A hyperlink to the report is included in the email.
	No: No hyperlink is included.
Previous	Switches to the previous tab.
Next	Switches to the next tab.
	Not active in this tab.
ок	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.

10.5.7 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 158) function in the Analyzer Manager.



10.6 Managing SQL Server

You can get to the tools to manage the SQL connections and the databases via the SQL server menu item:

- ▶ Update connector functions (on page 271)
- ► Create SCADA SQL connector (on page 272)
- New Analyzer database (on page 291)
- ► Convert databases (on page 294)
- Manual database backups (on page 300)
- Automated database backups (on page 308)
- Manage database backup files (on page 332)
- ▶ Manage linked servers (on page 336)
- Manage metadata indices (on page 341)

10.6.1 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.



10.6.2 Create SCADA SQL connector

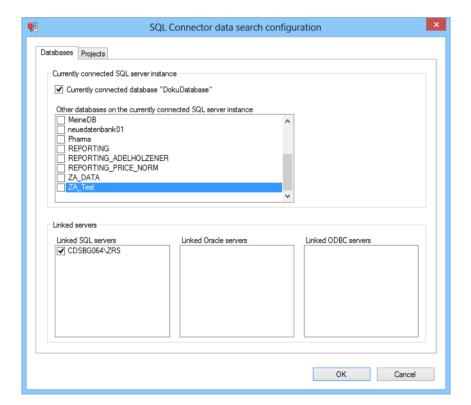
In order to be able to create an SQL connector, there must be a connection to an Analyzer server with a valid license.

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

DATABASES

Selection of databases and linked server where the search for tables is to be made.





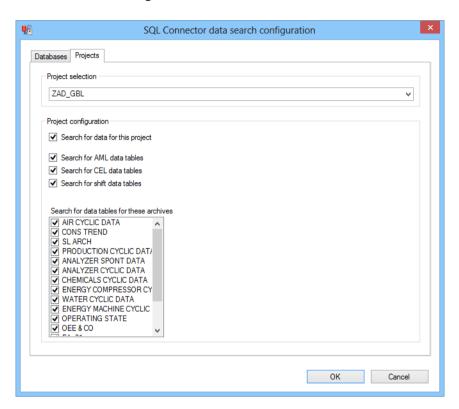
Parameters	Description
Currently-connected SQL server instance	Properties of the SQL server instance to which ZAMS is currently connected.
Currently-connected database "REPORTING2"	Active: A search for tables is to be made in the currently-connected database.
Other databases on the currently connected 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.
SQL	Only contains linked SQL server (provider "SQLNCLI"). The selection is made by activating checkboxes.
Oracle	Only contains linked Oracle servers (provider "OraOLEDB.Oracle"). The selection is made by activating checkboxes.
ODBC	Only contains linked ODBC servers (provider "MSDASQL"). The selection is made by activating checkboxes.
OK	Closes the dialog, saves the configuration of both tabs and opens the dialog to configure the SQL connector (on page 276).
	The parameters are set up via three tabs:
	AML and CEL
	Archive tables
	Shift tables
	For details, see the corresponding sections.
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	Selection of a project.
	If a project is selected, the project configuration group is filled with the project configuration.
Project configuration	Configuration of the selected project.
Search for data for this project	Active: A search for tables is made in this project. Further options are shown.
	Inactive: No search for tables is made in this project.
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	Selection of the projects for which searches for tables are to be made. Three tables are used in the process:
	[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).
ок	Closes the dialog, saves the configuration of both tabs and opens the dialog to configure the SQL connector (on page 276).
	The parameters are set up via three tabs:
	AML and CEL
	Archive tables
	Shift tables
	For details, see the corresponding sections.
Cancel	Cancels the process of creating the SQL connectors and closes the



dialog.
uldiog.

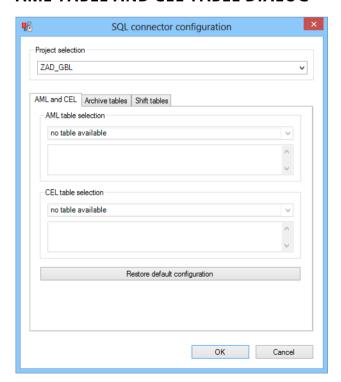
Configuration of the SQL Connector

Click on the ox 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 286) chapter.

The dialog consists of three tabs:

- ► AML and CEL
- Archive tables
- ▶ Shift tables

AML TABLE AND CEL TABLE DIALOG

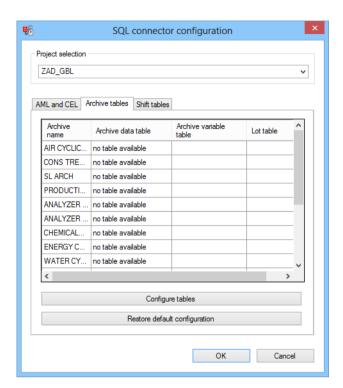




Parameters	Description
Project selection	Selection of the project from the drop-down list makes requirements for the properties to be configured. The selection applies for all three tabs.
Select AML tables	Configuration of the AML table to be used. Selection of the desired AML table from the drop-down list. This contains all AML tables found and an entry for Do not create. The description of the selected table is displayed below the drop-down list.
CEL table selection	Configuration of the CEL table to be used. Selection of the desired CEL table from the drop-down list. This contains all CEL tables found and an entry for Do not create. If no tables are found, the drop-down list displays a corresponding entry and is deactivated.
Restore default configuration	Resets the AML and CEL tables for the project currently being displayed back to the standard configuration (on page 286).
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.

DIALOG ARCHIVE TABLES



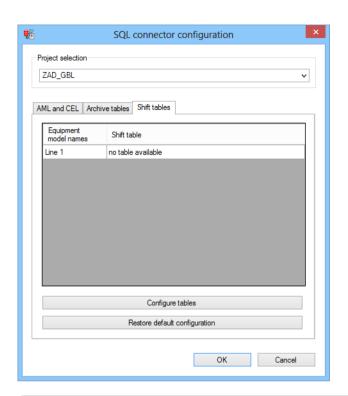




Parameters	Description
Project selection	Selection of the project from the drop-down list makes requirements for the properties to be configured. The selection applies for all three tabs.
List of tables	Displays all archives that are switched to active when configuring the table search and the respective tables found. The following are displayed: Archive name
	Archive data table
	Archive variable table
	Lot table
	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.
Configure tables	Opens the dialog to Configure the archive tables (on page 281) 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 286).
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.

SHIFT TABLES DIALOG

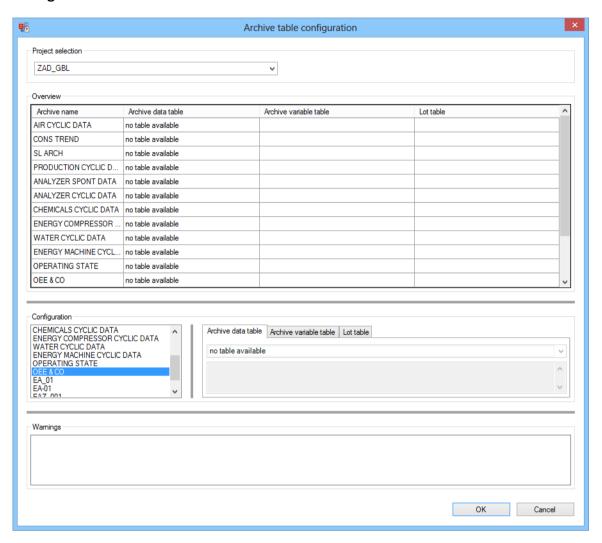




Parameters	Description
Project selection	Selection of the project from the drop-down list makes requirements for the properties to be configured. The selection applies for all three tabs.
List of shifts	Displays the shift tables for all equipment groups selected in the configuration. The following are displayed:
	Equipment group names Shift table
	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.
Configure tables	Opens the dialog to Configure the shift tables (on page 284) 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 286).
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





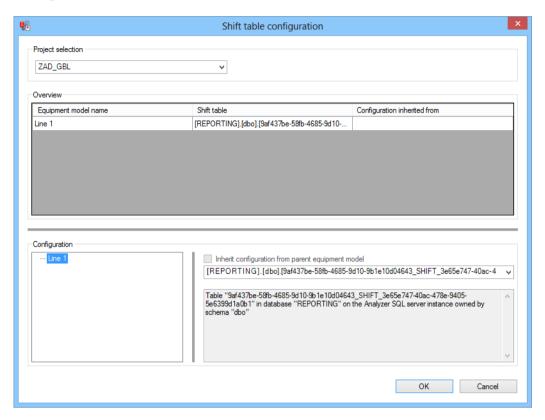
Parameters	Description
Project	Selection of the project from the drop-down list. The project selected in
selection	Configuration of the SQL connector (on page 276) is already selected.
Overview	Displays the configuration of all archives in the project. The following are displayed:
	Archive name
	Data table
	Variable table
	Lot table
	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.
Configuration	Configuration of the tables.
	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.
	Configuration of the tabs:
	Each tab consists of a drop-down list and a text field.
	If there are no tables, this is noted in the drop-down list and it is inactive.
	If tables are present, the drop-down list contains all available tables and an entry to exclude the SQL connector (do not build).
	If a table is selected in the drop-down list, the text field displays the description of the table.
	If the selection in the drop-down list is changed, this has the following effect, depending on the tab:
	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.
	After this, the overview table and the warning list is appared.
	Archive variable table:



	The overview table and the warning list are updated.
	Lot table:
	The overview table and the warning list are updated.
Warnings	List of warnings in relation to the configuration Possible causes:
	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	Checks to see if the maintenance list is empty.
	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	Closes the dialog and discards the changes to the configuration.



Configuration of the shift tables





Parameters	Description
Project selection	Selection of the project from the drop-down list. The project selected in Configuration of the SQL connector (on page 276) is already selected.
Overview	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:
	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 bx under this table.
	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.
Configuration	Consists of:
	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	Active: Configuration is taken on by superordinate element.
configuration from parent equipment model	Can only be activated if it is not a root element in the inheritance hierarchy of the equipment model for the selected project.
Drop-down list for	Configuration of the shift table for the selected equipment model.
shift table	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 all shift tables available for the selected equipment model and an entry to exclude the equipment model from the SQL connector. If a change is made in the drop-down list, this is forwarded to all equipment models that inherit from the selected equipment model.
Text field	Contains the description of the shift table selected in the drop-down list.
ок	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 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:

- ► SOLNCLI 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.



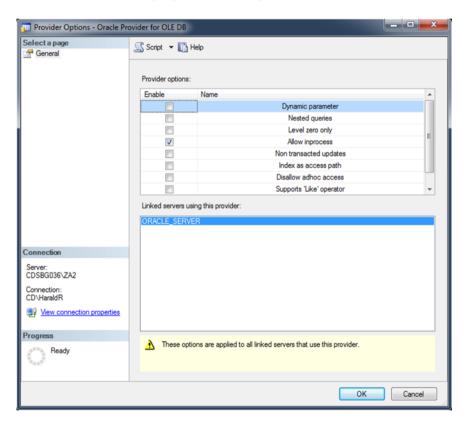
"SQLNCLI" FOR LINKED SQL SERVER

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]

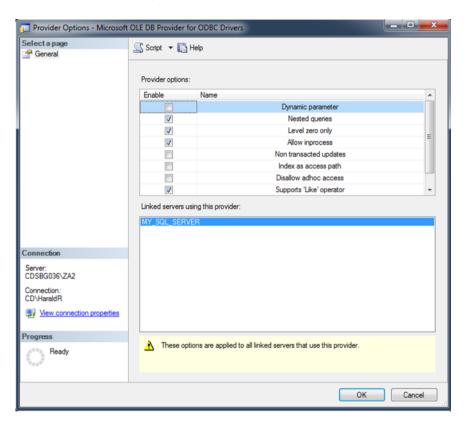
Note: To be able to configure an Oracle provider, the oracle database client software must already be installed.

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]

Note: In addition, the data source (DSN or ODBC connection string) must be set 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.

10.6.3 New Analyzer database

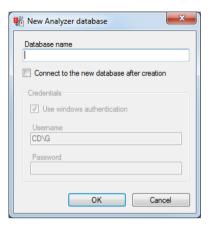
In order for a new Analyzer database to be created, there must be a connection to an Analyzer server with a valid license.

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	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 Connect to the new database after creation option has been activated.
Use windows authentication	Active: Windows authentication is used.
Username	Entry of the user name.
	If Use windows authentication 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 Use windows authentication 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.
- 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.

10.6.4 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.
 - c) Start the conversion by clicking ox
- 5. If no databases that can be converted are found, the search is ended and corresponding messages are displayed in the output window.

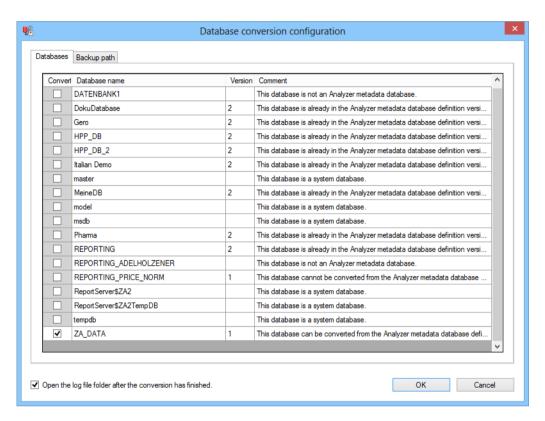
DIALOG FOR CONFIGURATION OF THE DATABASE CONVERSION

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.





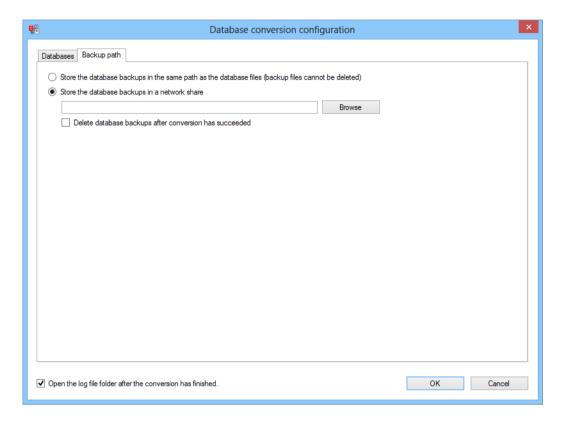
Parameters	Description
List of databases	Lists all existing databases. If a line has a gray background, the database named therein cannot be converted. Details are in the Comments column.
	The following are displayed:
	Checkbox: Selection of database.
	Active: Database for conversion selected.
	Only databases that can be technically converted are selected.
	Default for convertible databases: active
	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.
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	Active: The database backup files are stored locally in the same folder as the database files in the Analyzer server.
	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.
Store the database backups in a network share	Active: The database backup files are stored in a network share.
	Input of the folder in the text field or selection from a dialog after clicking on the Browse button.
	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:
	read
	write:
	overwrite
Browse	Opens the dialog for selecting a network share (on page 347).
Delete database backups after conversion has succeeded	Active: The database backup files are deleted after successful conversion of the database.
	Requirement: The backup files are in a network share.
	The option is executed for each database. If, for example, databases are converted and a conversion is unsuccessful, then:
	► 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.	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.

10.6.5 Manual database backups

Databases can be saved (on page 301) manually. Backup files can be restored (on page 304) and administered (on page 332). Whether a database can be saved or restored depends on its type (on page 300).

Automated backups are described in the Automated data backups (on page 308) chapter.

Database types

A distinction is made between the following types of databases:

Туре	Description	Saving	Restore
System databases	Name is	-	-
	master		
	model		
	msdb		
	tempdb		
Report server databases	Name starts with	+	- *
	ReportServer\$		
Analyzer metadata databases	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.



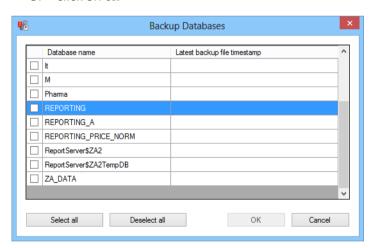
Create database backups

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 300) chapter (on page 300)

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 ox





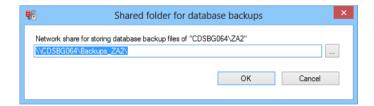
Parameters	Description
List of databases	Displays all databases available
	Checkbox: The checkbox must be activated to back up a database.
	Database name: Displays database name.
	Date and time of the latest backup: Shows date and time of the backup currently available.
	The path and number of backups are defined in the Options (on page 174) menu, in the Database backups (on page 413) tab of the Settings (on page 404).
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 413) tab of the Settings (on page 404).

Note: It is recommended that a path on the Analyzer computer is used for backup.





Parameters	Description
Network share path for storing database backup files of [database]	A valid UNC path must be entered.
	Clicking on the button opens the dialog (on page 347) to select a network share.
	A check is made if:
	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. The configured path is saved individually for each user.
	Attention: The access rights to network shares must be set correctly. For details, see the Set access rights to network share correctly.
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

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 300) chapter (on page 300)

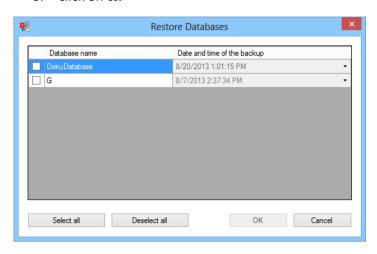
RESTORING DATABASE BACKUPS

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 dropdown list



6. click on ox



Parameters	Description
List of databases	Displays all databases available
	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.
ОК	Accepts selection, closes dialog and restores selected saved database backups. In doing so, note:
	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 lest 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.

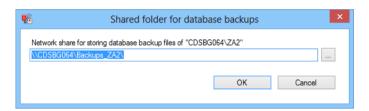
The size and position of the dialog can be changed. These settings are saved as user-dependent.



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 413) tab of the Settings (on page 404).

Note: It is recommended that a path on the Analyzer computer is used for backup.





Parameters	Description
Network share path for	A valid UNC path must be entered.
storing database backup files of [database]	Clicking on the button opens the dialog (on page 347) to select a network share.
	A check is made if:
	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.
	The configured path is saved individually for each user.
	Attention: The access rights to network shares must be set
	correctly. For details, see the Set access rights to
	network share correctly.
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

10.6.6 Automated database backups

Database backups can be made automatically. These backups can be administered in their own dialog (on page 332).

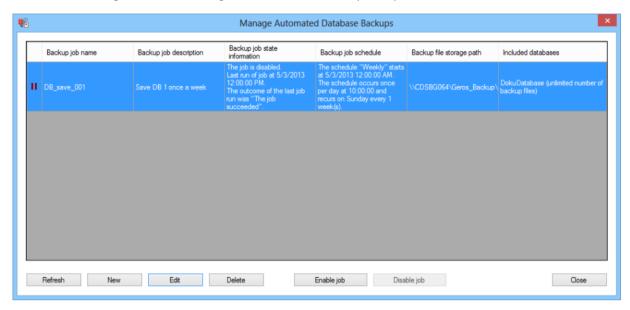
Note: Automated backups should be configured so that they run when the Analyzer server has nothing to do. In doing so, report subscriptions must be taken into account. If, for example, subscriptions are processed every Sunday at 02:00:00, this is not a suitable tome to make a database backup.

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





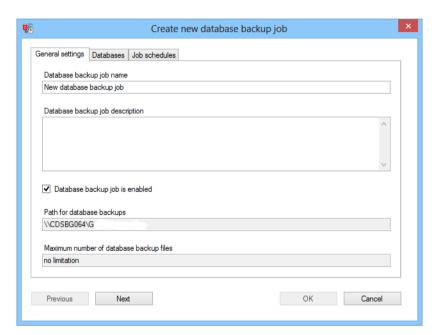
Parameters	Description
Symbol	Displays whether the backup job is active or inactive.
List of backup jobs	Table of all recognized backup jobs. The following are displayed:
	Name: Distinct name of the backup job. Capitalization/use of small letters is not checked.
	Description: Individual description of 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.
	Only one job can be selected at a time.
Refresh	Updates the content of the list.
New	Creates a new backup job.
	To do this, a dialog is opened with the configuration for:
	General settings (on page 314)
	Databases (on page 316)
	Job schedules (on page 318)
Edit	Opens the selected backup job for editing with the dialog for:
	General settings (on page 314)
	Databases (on page 316)
	Job schedules (on page 318)
Clear	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.



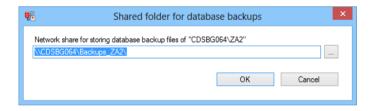


Parameters	Description
General settings (on page 314)	Configuration of the general settings for a database backup.
Databases (on page 316)	Selection of the databases to be backed up.
Job schedules (on page 318)	Schedules for the backup with details of:
	General settings (on page 319)
	Recurrence (on page 321)
	In day recurrence (on page 327)
	Duration (on page 330)
ОК	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 413) tab of the Settings (on page 404).

Note: It is recommended that a path on the Analyzer computer is used for backup.





Parameters	Description
Network share path for	A valid UNC path must be entered.
storing database backup files of [database]	Clicking on the button opens the dialog (on page 347) to select a network share.
	A check is made if:
	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.
	The configured path is saved individually for each user.
	Attention: The access rights to network shares must be set
	correctly. For details, see the Set access rights to
	network share correctly.
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.

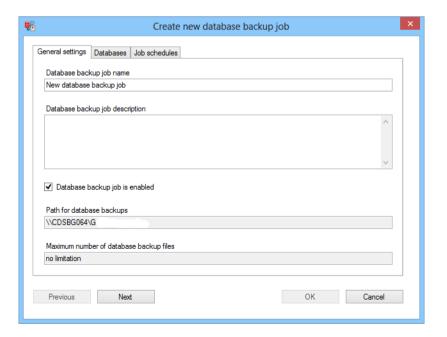
BACKUP FILE NAME

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.



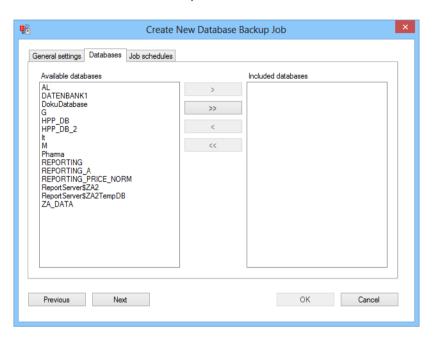


Parameters	Description
Database backup job name	Entry of a unique name for the database backup.
Database backup job description	Entry of a description for the database backup job.
Database backup job is enabled	Active: The job is carried out according to its configuration and your schedule (on page 318).
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 174) menu, in the Database backups (on page 413) tab of the Settings (on page 404).
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 174) menu, in the Database backups (on page 413) tab of the Settings (on page 404).
Previous	Switches to 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.



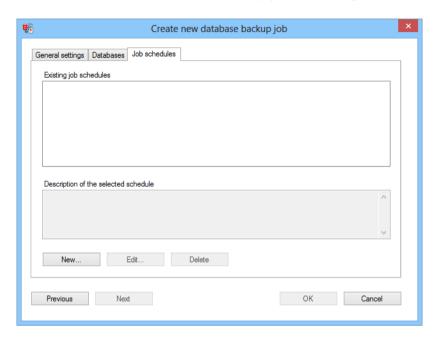


Parameters	Description
Available databases	List of databases that can be selected for the backup job. Already- selected databases are no longer shown in this list.
Buttons for assignment	Buttons to drag databases between lists:
	>: Moves highlighted databases to the Included databases list.
	>>: Moves 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 previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ОК	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.

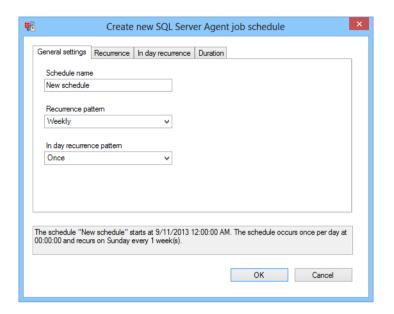


Parameters	Description
Existing job schedules	Lists all schedules created for this job.
Description of the selected schedule	Shows details of the schedule selected in the Existing job schedules list.
New	Opens dialog to create a new schedule.
Edit	Opens dialog to edit the selected schedule.
Delete	Deletes the selected schedule.
Previous	Switches to previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ОК	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:





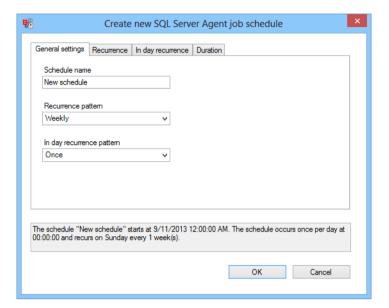
Tabs	Description
General settings (on page 319)	General settings for the schedule.
Recurrence (on page 321)	Configuration of the recurrence for days. The controls available depend on the selection of the recurrence configuration in the General settings tab.
In day recurrence (on page 327)	Configuration 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 330)	Configuration of the time range in which the schedule is active
ок	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.







Parameters	Description
Schedule name	Entry of the name for the schedule.
Recurrence configuration	Selection of the recurrence configuration from drop-down list:
	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.
	Note: Details are configured in the respective Recurrence (on page 321) tab.
In day recurrence pattern	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:
	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 327) 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 327) 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.

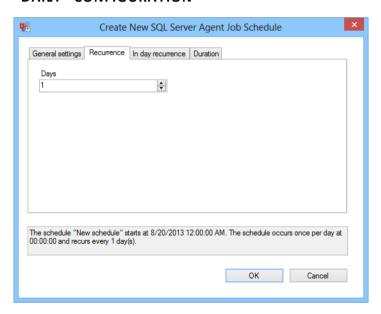
Recurrence

The recurrence configuration is configured in this tab. The options available depend on the configuration in the General settings (on page 319) 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.

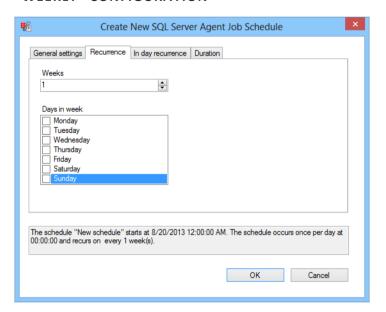
"DAILY" CONFIGURATION





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.
	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.

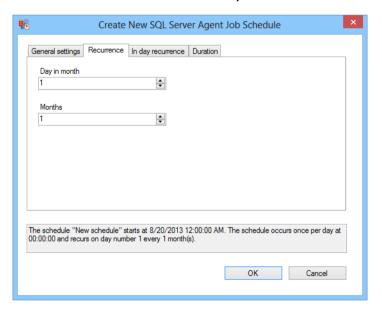
"WEEKLY" CONFIGURATION





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: 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.

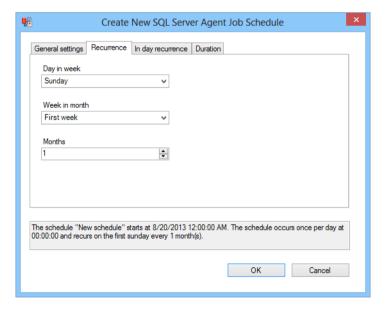
CONFIGURATION OF "MONTHLY, DAY OF MONTH"





Parameters	Description
Day in month	Selection of the active days in the month. Manual entry or selection using the cursor keys:
	Minimum: 1
	Maximum: 31
Months	Selection of the monthly interval between active days. Manual entry or selection using the cursor keys:
	Minimum: 1
	Maximum: 99
Display of the configuration	Displays the current configuration of the schedule.
ОК	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	Selection of the weekday on which the schedule is active, from a drop-down list:
	Monday
	Tuesday
	Wednesday
	Thursday
	Friday
	Saturday
	Sunday
	Daily
	Weekday
	Weekend day
Week in month	Selection of a week in the month in which the previously-selected day is active, from a drop-down list:
	First week
	Second week
	Third week
	Fourth week
	Last week
Months	Selection of the monthly interval between active days. Manual entry or selection using the cursor keys:
	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.
I .	

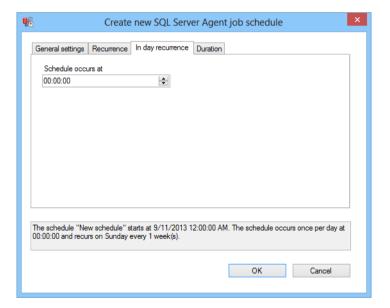
In day recurrence

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 319) 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.

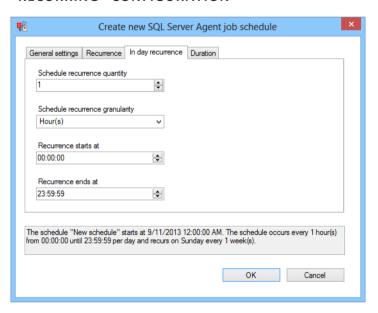
"ONCE" CONFIGURATION





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.
ОК	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.

"RECURRING" CONFIGURATION



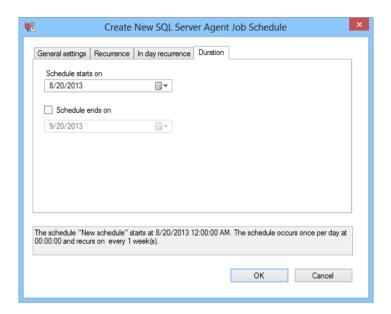


Parameters	Description
Schedule recurrence quantity	Number of recurrences Manual entry or configuration using the cursor controls:
	Minimum: 1
	Maximum: 99
Schedule recurrence granularity	Schedule recurrence period granularity. Selection from drop-down list:
	Second(s)
	Minute(s)
	Hour(s)
Recurrence starts at	Defines the start time of the activity period of the schedule on active days. Manual entry or configuration using the cursor controls.
Recurrence ends at	Defines the end time of the activity period of the schedule on active days. Manual entry or configuration using the cursor controls.
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.



Duration

The period of validity of the schedule is configured in this tab.



Parameters	Description
Schedule starts on	Configuration of the start of the validity for this schedule. Manual input or selection from a drop-down calendar.
	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.
Schedule ends on	Active: An expiration date is stipulated for this schedule. Manual input or selection from a drop-down calendar.
	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.
	The end date must be later than the start date.
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 ox.

10.6.7 Manage database backup files

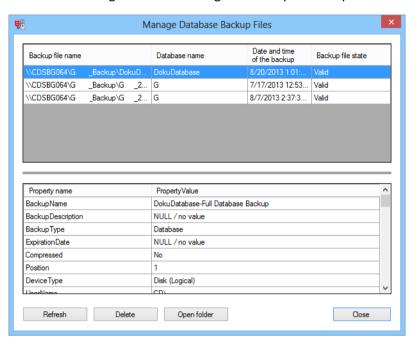
Automated and manually-created backups can be administered in their own dialog.

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	Displays all backup files created with the following information:
	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. Invalid means a corrupted backup file.
	One file can be selected.
Separator	Separates both tables and can be moved with the mouse in order to enlarge the display area of a table.
Table of properties	Shows details on the file that was selected in the upper table. The table contains names and values of the properties.
	You can read details of these properties at:
	http://msdn.microsoft.com/en-us/library/ms178536.aspx (http://msdn.microsoft.com/en-us/library/ms178536.aspx).
Refresh	Refreshes the display.
Clear	Deletes the selected file and updates the view.
Open folder	Opens the folder with the backup files in Windows Explorer.
Close	Closes the dialog.

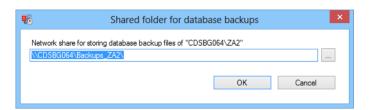
The size and position of the dialog can be changed. These settings are saved as user-dependent.

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 413) tab of the Settings (on page 404).



Note: It is recommended that a path on the Analyzer computer is used for backup.



Parameters	Description
Parameters Network share path for storing database backup files of [database]	A valid UNC path must be entered. Clicking on the button opens the dialog (on page 347) to select a network share. A check is made if: 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. The configured path is saved individually for each user. Attention: The access rights to network shares must be set correctly. For details, see the Set access rights to network share correctly.
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

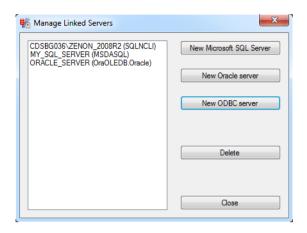
e.g.: za_data_2013_02_12_14_11_35.bak = backup of za_data on 12.2.2013 at 14:11:35

10.6.8 Manage linked servers

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

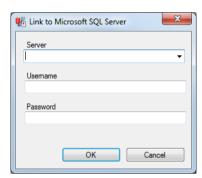
- 1. Depending on the data contained in the dialog, the appropriate script for the creation of a linked server is executed.
- 2. If this is successful, the connection to the linked serer is tested.



- 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





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





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.
User name	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





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.

10.6.9 Manage metadata indices

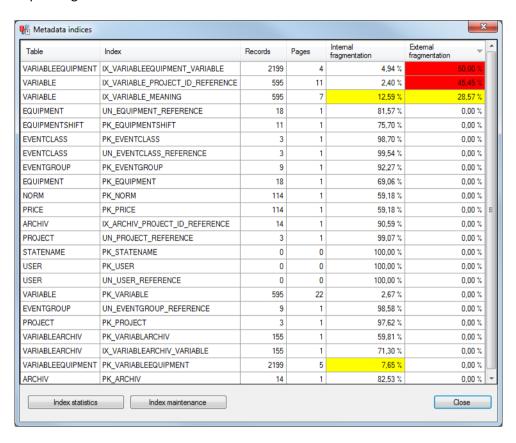
In order for metadata indices to be administered, there must be a connection to an Analyzer server with a valid license.

To administer the metadata indices:

- 1. Select, in the SQL server menu, the $\operatorname{Metadata}$ 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.

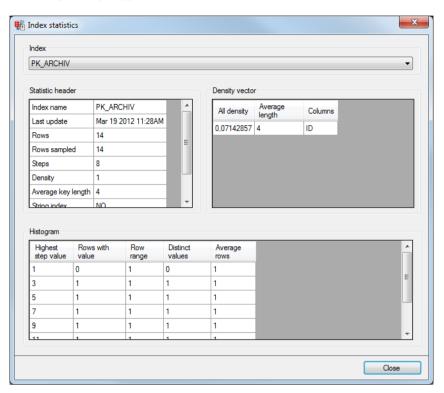




Parameters	Description
Table	Table name.
Index	Index name.
Records	Number of entires in the index.
Pages	Number of pages on which the index is saved.
Internal fragmentation	Value displays how much (in percent of pages on which the index is saved) is unused. A high degree of internal fragmentation increases 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: Yellow: Value greater than 5% Red: Value greater than 30% Indices without entries always have internal fragmentation of 100%.
	Indices that occupy 1 or 0 pages are excluded from highlighting.
External fragmentation	The value states how many of the pages of the index are not saved consecutively. 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. 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. Critical values are accented in color: Yellow: Value greater than 5% Red: Value greater than 30% Indices that occupy 1 or 0 pages always have an external fragmentation of 0%. The table is in descending order according to this column as standard.
Index statistics	Opens the dialog for displaying the index statistics.
Index administration	Opens the dialog for index maintenance.
Close	Closes the dialog.



INDEX STATISTICS



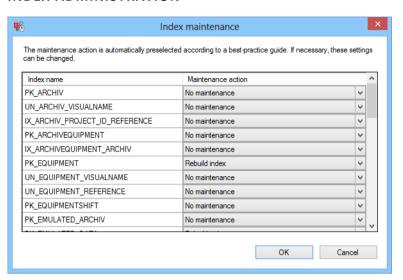
Parameters	Description
Index	Selection of the index from the drop-down list.
	The following tables are filled with data depending on this selection.
Statistic header	Header with metadata.
Density vector	Density vector to measure the correlations between columns.
Histogram	Histogram for distribution of 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)
- ► SQL ServerCentral: http://www.sqlservercentral.com/articles/Stairway+Series/72446/ (http://www.sqlservercentral.com/articles/Stairway+Series/72446/) (registration required)



INDEX ADMINISTRATION





Parameters	Description
Index name	Name of the index.
Maintenance action	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.
	Selection from drop-down list:
	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 people to be carried out, because the SQL server has good.
	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.

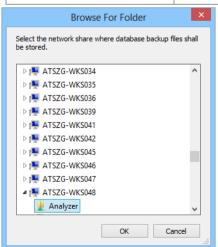


10.7 Selection of folder in the network

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.

10.8 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.

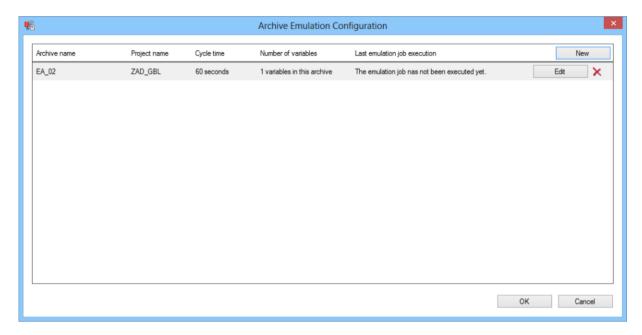
Emulated archives are configured in ZAMS. To configure the archive emulation:

- 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.



CONFIGURATION DIALOG

The configuration dialog shows all existing emulated archives when it is started.





Parameters	Description
List of archives	Displays all configured archives. The list contains:
	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 351).
Edit	Opens the dialog for editing the selected archive (on page 377).
х	Deletes the archive after a request for confirmation.
	Attention: All data is deleted from the archive with the archive configuration.
ОК	Applies settings and closes the dialog.
	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.
Cancel	Discards all changes and closes the dialog.

10.8.1 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.

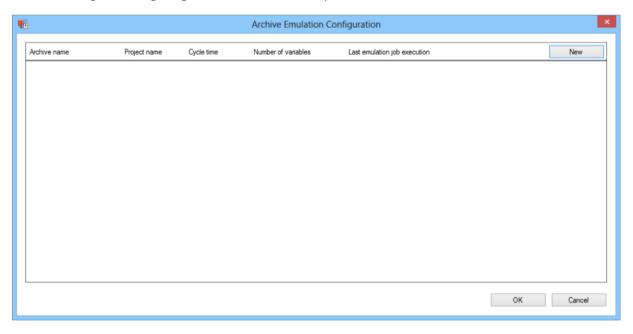


- Archive: All settings can be edited, with the exception of Assigned project and Reference.
- Variables: All settings can be edited.
- ▶ Edit existing Archive: An archive that was created and saved in a previous configuration is edited. This was already written to the database and thus has entries in the metadata tables.
 - Archive: Only the data calculation can be changed.
 - Variables: Only displayed as read-only.

10.8.2 Creating an emulated archive

To create a new emulated archive:

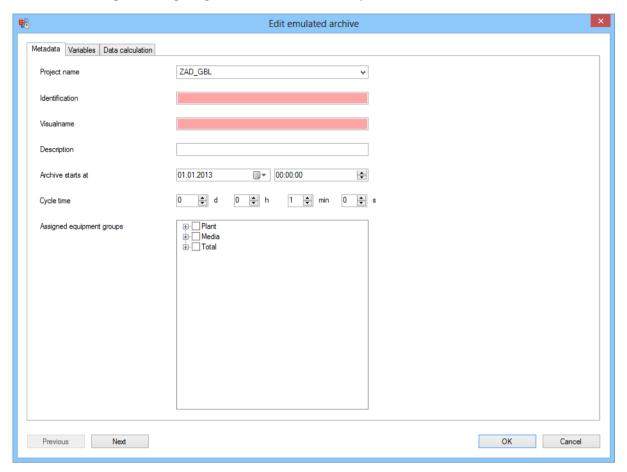
- 1. Select the Configure archive emulation entry in the Automation menu.
- 2. The dialog for configuring emulated archives is opened



3. Click on the **New** button to create a new archive.



4. The dialog for configuring an emulated archive is opened

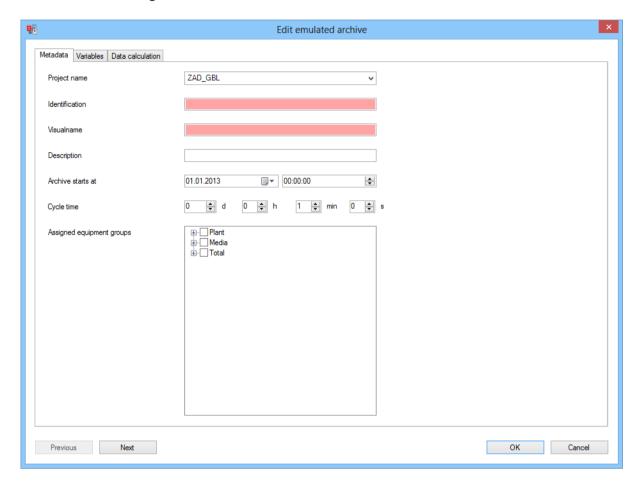


Parameters	Description
Metadata	Configuration of the metadata (on page 353).
Variables	Configuration of the variables (on page 355).
Data calculation	Configuration of the data calculation (on page 373).
Previous	Switches to previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ОК	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.



Metadata

The metadata is configured in this tab.





Parameters	Description
Project name	Selection from the drop-down list with all existing project names.
	The first project entered is selected by default for new projects.
	Attention: If this selection is changed and there are already variables in the variable list, it is emptied!
Reference	Entry of the reference text for the archive.
	Maximum length: 128 characters
	Must not be empty.
	Must not be used by another archive that is assigned to the same project.
Visualname	Entry of the visual name of the archive.
	Maximum length: 128 characters
	Must not be empty.
	Must not be used by another archive that is assigned to the same project.
Detailed	Entry of the description of the archive.
information	Maximum length: 256 characters
Archive starts at	Stipulation of data and time for the start of the archive.
	► Date: Entry of the date or selection from a calendar.
	► Time: Entry of the time or setting by means of cursor keys.
	Entry in UTC.
	Earliest time point: 1/1/2013 00:00:00
Cycle time	Stipulation of the cycle time for the archive. Entry of the interval or setting by means of cursor keys.
	The value must be greater than 1
	Default: 1 minute
Assigned equipment groups	Assignment of equipment group to the archive. Selection by activating the checkbox in front of the respective equipment group.
	Clicking on the + sign expands the group.
	Default: No Allocation.



Previous	Switches to previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ок	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.

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.
- ▶ Reference: 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:

- ▶ All fields: The values that have already been set are displayed instead of the standard values.
- ▶ All input possibilities are deactivated.

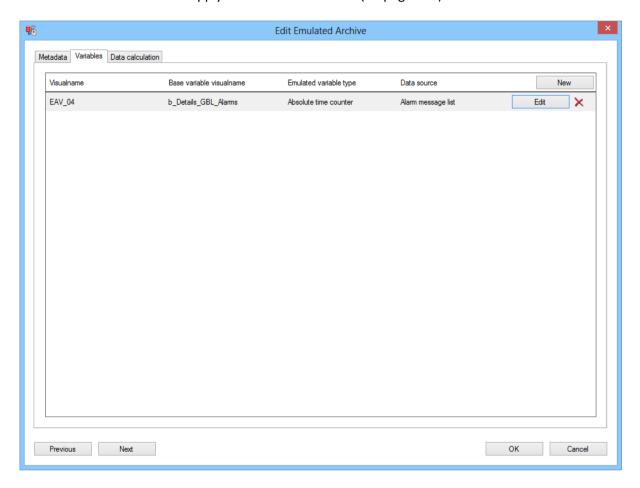
No changes can be made in this tab.

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 368) for absolute counters.



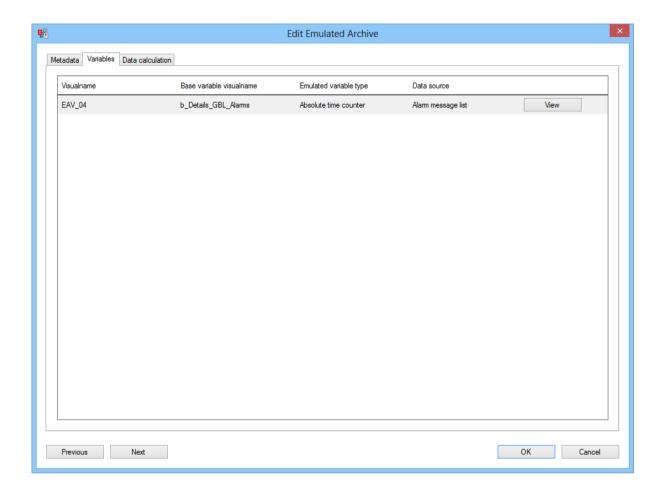


Parameters	Description
Variable list	Displays all configured variables. The list contains:
	Visualname: Name with which the variable is displayed
	Base variable visualname: Name of the variables for the value calculation
	Emulated variable type:
	Data source: Origin of base variables
	This list is empty by default when a new archive is created.
New	Opens the dialog for Creating new variables (on page 359).
Edit	Opens the dialog for editing the selected variables (on page 359).
х	Deletes the selected variable.
Previous	Switches to previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ОК	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.

DIFFERENCES WHEN EDITING SAVED ARCHIVES

If already-saved archives are edited, the dialog exhibits the following differences:



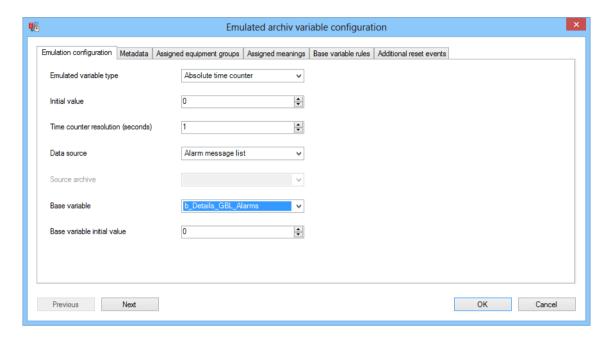


- ▶ No new variables can be created.
- ▶ No variables can be deleted.
- ► No variables can be edited.
- ► The Display buttons allows the configuration of variables to be displayed.



Emulation configuration

The emulated variables are created in this tab.





Parameters	Description
Emulated variable type	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.
	Variable types:
	Absolute time counter All tabs are displayed.
	Relative time counter Settings from Additional reset events (on page 368) are not relevant and are not shown.
	Absolute event counter All tabs are displayed.
	Relative event counter Settings from Additional reset events (on page 368) are not relevant and are not shown.
	Sum Settings from Base variable rules (on page 366) and Addittional reset events (on page 368) are not relevant and are not shown.
	Time-corrected average Settings from Base variable rules (on page 366) and Additional reset events (on page 368) are not relevant and are not shown.
	Minimum Settings from Base variable rules (on page 366) and Additional reset events (on page 368) are not relevant and are not shown.
	Maximum Settings from Base variable rules (on page 366) and Additional reset events (on page 368) are not relevant and are not shown.
Initial value	Entry of the initial value of the variable at the time the archive is started.
	Only available if the type of the emulated variables is an absolute counter (absolute time counter, absolute event counter).
	Minimum: 0
	Maximum: 100000



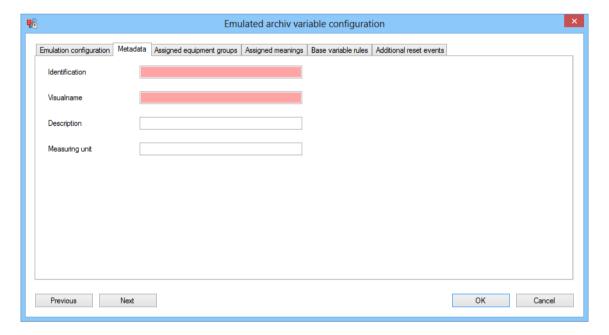
Time counter	Resolution of the time counter in seconds.	
resolution (seconds)	Only available if the type of the emulated variables is a time counter (absolute time counter, relative time counter).	
	Minimum: 1	
	Maximum: 86400 (1 day)	
	Examples:	
	60: Minute counter	
	3600: Hour counter	
	86400: Day counter	
Data source	Selection of a data source for the base variable from drop-down list:	
	Alarm Message List	
	Chronological Event List	
	Archive	
Source archive	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 353) dialog. This also includes emulated archives that were already saved in the metadata.	
	Only available if archive was selected as a data source.	
Base variable	Selection of a base variable from a drop-down list, the value of which is derived from the values of the emulated variables.	
	Depending on the data source, available for:	
	Data source alarm message list or chronological event list: All available variables of the project that was selected in the metadata (on page 353) 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.	
Base variable	Entry of the initial value of the base variables at the time the archive is started.	



initial value	Minimum: 0	
	Maximum: 1000000	
Previous	Switches to 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.	

Metadata

The metadata is configured in this tab.





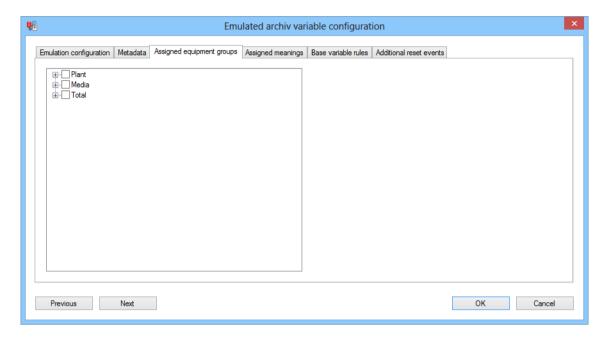
Parameters	Description	
Reference	Entry of the reference text for the variable.	
	Maximum length: 128 characters	
	Must not be empty.	
	Must not be used by another variable that is assigned to the same project.	
Visualname	Entry of the visual name of the variables.	
	Maximum length: 128 characters	
	Must not be empty.	
	Must not be used by another variable that is assigned to the same project.	
Description	Description of the variables.	
	Maximum length: 256 characters	
Measuring unit	Unit of measurement the variables.	
	Maximum length: 50 characters	
Previous	Switches to previous tab. (deactivated in the first tab)	
Next	Switches to the next tab. (deactivated in the last tab)	
ОК	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.	

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.

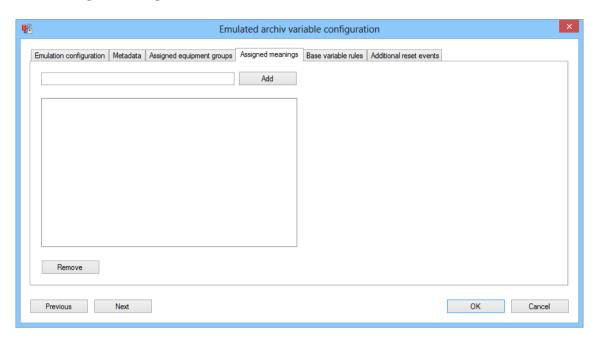


Parameters	Description	
Tree with equipment groups	Selection of the desired equipment group from the tree structure. They are selected by activating the checkboxes in front of the desired groups.	
	Display on new creation: closed tree	
	Display when editing: all activated groups are displayed and their trees are expanded	
Previous	Switches to previous tab. (deactivated in the first tab)	
Next	Switches to the next tab. (deactivated in the last tab)	
ОК	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.	



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 previous tab. (deactivated in the first tab)	
Next	Switches to the next tab. (deactivated in the last tab)	
ок	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.	

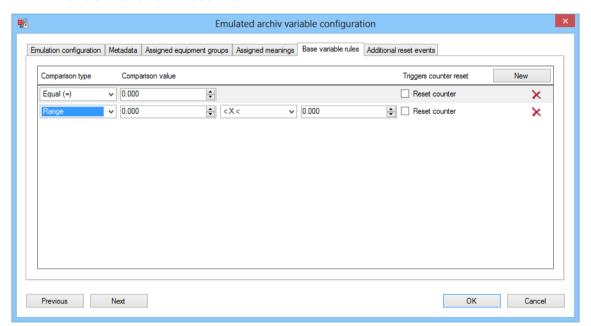


Base variable rules

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





Parameters	Description	
List of rules	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	
	Triggers counter reset	
New	Adds a new rule as a new line in the list of rules.	
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.	
Reset counter	Configuration of whether the counter is reset if the rule is met.	
	Only available if the type of the emulated variables is an absolute counter (absolute time counter, absolute event counter).	
x	Clicking on the button deletes the rule.	
Previous	Switches to 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.	



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

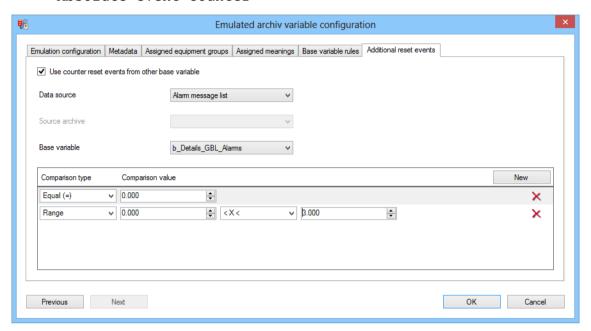
In this tab, events for absolute counters are configured, which lead to defined results, in addition to the events defined in the Base variable rules (on page 366), to reset the base variables.

Only available for the following types of emulated variables:

▶ Absolute time counter



► Absolute event counter





Parameters	Description	
Use additional reset events for the counter of base variables	Active: Events to reset the absolute counter are, in addition to configuration in the Base variable rules (on page 366) tab, set by another base variable. This resets the base variable (on page 359) selected in the Emulation configuration (on page 359) tab for the counter.	
Data source	Selection of a data source list for the variables from which the reset event comes, from a drop-down list:	
	Alarm Message List	
	Chronological Event List	
	Archive	
Source archive	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 353) dialog. This also includes emulated archives that were already saved in the metadata.	
	Only available if archive was selected as a data source.	
Base variable	Selection of base variables from which the additional reset events come, from a drop-down list.	
	Depending on the data source, available for:	
	Data source alarm message list or chronological event list: All available variables of the project that was selected in the metadata (on page 353) 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.	
List of rules	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	
New	Adds a new rule as a new line in the list of rules.	



Parameters	Description	
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.	
x	Clicking on the button deletes the rule.	
Previous	Switches to previous tab. (deactivated in the first tab)	
Next	Switches to the next tab. (deactivated in the last tab)	
ок	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.	



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]</pre>
- [number] < X <= [number]</pre>
- [number] <= X < [number]</pre>



▶ [number] <= X <= [number]</pre>

NOTE ON VALIDATION:

When validating the entries before creating the variables, the legal regulations must not be exceeded.

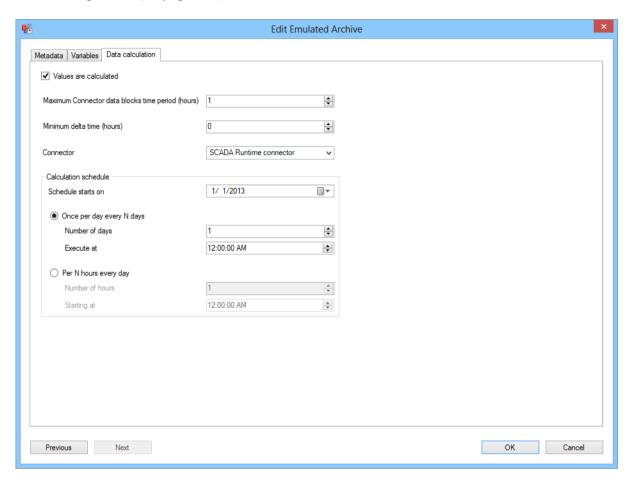
Examples of overlapping:

- ▶ 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 350).





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)	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. Minimum: 1
	Maximum 10000 Default: 1
	If a larger time range is needed in total, several connector calls are carried out after one another.
	Example:
	Connector data from three days is to be obtained.
	The query is to be made in three parts.
	Entry in the field: 24
	Background information: If very large amounts of data are obtained in a query, the working memory may be to 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.
Minimum delta time (hours)	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.
	Minimum: 0
	Maximum: 10000
	Default: 0
	Example:
	Entry: 10
	Current time: 2013-06-06; 4:00 PM



Target: From 00:00:00 on June 6, 2013, one archive capsule per hour is to be written.

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.

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.



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.	
	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.	
	Minimum: 1	
	Maximum: 100	
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.	
	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.	
	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 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.

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: 1/1/2014

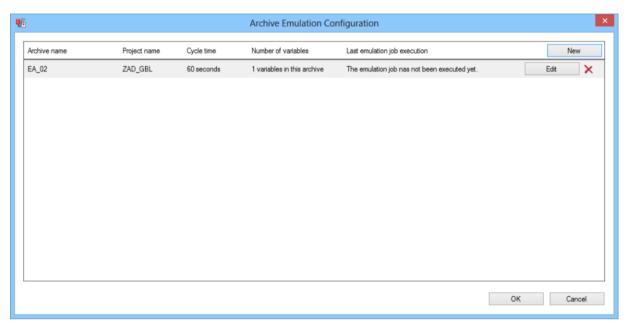
10.8.3 Edit emulated archive

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



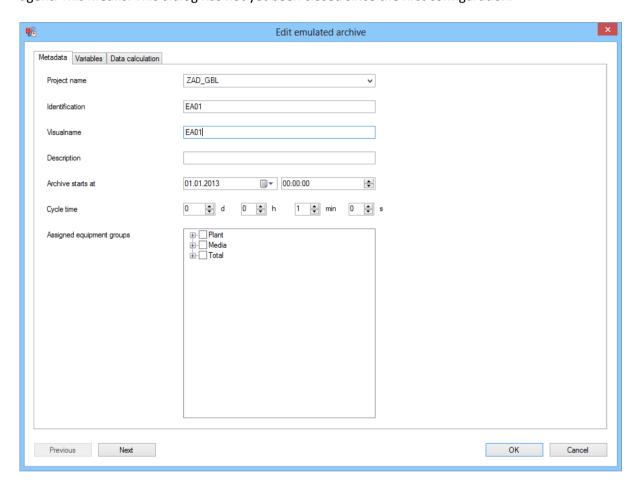
- 3. Highlight the desired archive
- 4. Click on the Edit button to change the configuration
- 5. The dialog for configuring an emulated archive is opened

Note: The settings that can be changed depend on the status of the archive (on page 350).



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.

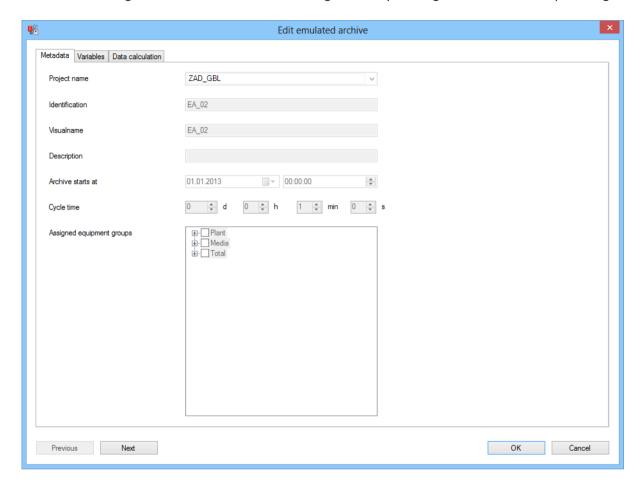


- Archive: All settings (on page 353) can be edited, with the exception of Assigned project and Reference.
- ▶ Variables: All settings (on page 355) can be edited.



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 ox and is now opened again.



- ▶ Archive: Only the data calculation (on page 373) can be changed.
- ▶ Variables: Only displayed as read-only.

10.9 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 384)
- ► Access rights in the Analyzer Manager (on page 390)
- ► Access rights to Analyzer applications (on page 386)



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 ox.

VERIFICATION OF 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

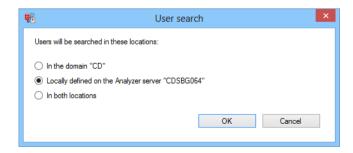
The Analyzer Manager confirms an Analyzer Manager license on the license server every 10 seconds for each user whose last access took place less than 15 minutes ago. On the license server, the client lifetime is 30 seconds since the last activity.

TROUBLESHOOTING

If problems occur with the licensing or the connection, please note the checklist in the event of license problems (on page 168).

10.9.1 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. You define which locations are to be searched for the population of the user list here.





Parameters	Description
Search for users in the "[Domain Name]" domain.	A search for domain users is carried out in the domain of the currently-connected user.
	Detection takes place in three steps:
	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.
Search for defined users locally on the Analyzer server "[Computer Name]".	A search for defined users is carried out locally on the Analyzer server.
Search in both locations for users.	Both searches are carried out and the results are compiled.
OK	Accepts selection, closes the dialog and starts the search.
Cancel	Discards selection 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.

CHANGING THE SELECTION

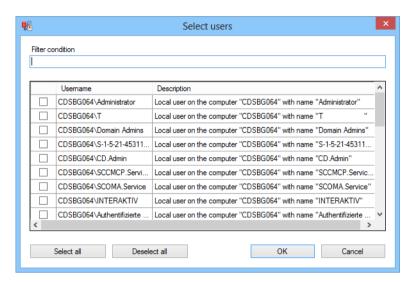
The configuration of the user search is only carried out once per ZAMS session. Once a ZAMS session is closed, the dialog is offered again after a restart when a user search is carried out. If the selection is to be changed during a ZAMS session:

- 1. open the menu Options (on page 174)
- 2. Select the Delete cache (on page 269) command
- 3. The configuration of the user selection is 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



10.9.2 User selection dialog

If new user users are added in a configuration dialog for user rights, the following dialog is called up.



Parameters	Description
Filter conditions	Input of filter conditions. 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 (log-on name, first name, last name etc.) are displayed. Already-selected users are not hidden.
Checkboxes	Active: User is selected for adding.
User list	Display of the users available for selection. This list is compiled according to the settings in the configuration of user search (on page 381). It contains: User name: Display of the user name. 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.



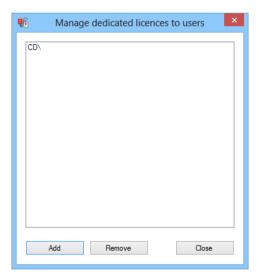
10.9.3 Users with dedicated license

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 30), 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
List of users	Displays all configured users with a dedicated license.
	Multiple selection is possible:
	Ctrl key + mouse click: selects an additional user with each click
	Ctrl key + mouse click: selects all users who are between two clicks, from
Add	Opens the dialog (on page 383) for selecting variables.
	Users can only be added if there are sufficient licenses available. Note the corresponding message in the output window.
Remove	Deletes selected users from the list without requesting confirmation.
	The successful removal of a user is documented in the output window, as is unsuccessful removal.
Close	Closes the dialog.

The size and position of the dialog can be changed. These settings are saved as user-dependent.

10.9.4 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.

10.9.5 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.



Ô

Information

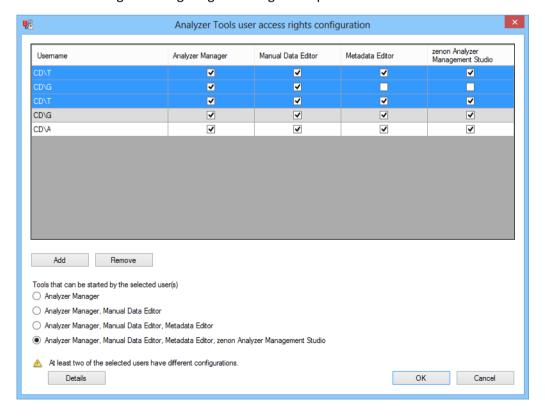
Access right, in the context of Analyzer applications, means that a user can connect to the Analyzer server with the tool.

This means: A user can be a user with authorization level β on Analyzer Server A and at the same time be a user with authorization level β 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





Parameters	Description
List of users	Display of all configured users.
	For each user, the Analyzer applications for which they are entitled is shown. For details, see also the Basics of user access rights (on page 385) section. Authorizations can be changed by selecting the option fields in the Applications that can be used by the currently-highlighted users area.
	Users with authorization levels 0 (Analyzer Manager) are not displayed, because the license server grants this to all level 0 users anyway.
	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.
Add	Opens the dialog (on page 383) for adding new users.
Remove	Deletes the selected users from the list without requesting confirmation.
	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.
Tools that can be started by the selected user(s)	Selection of the authorization levels for the users selected in the list. Multiple selection is possible. The levels are arranged in a hierarchy. Level 0 elements are also included in level 1 :
	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.
	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.
	For details on the access levels, see also the Basics of user access



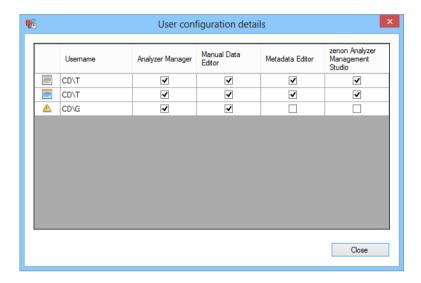
	rights (on page 385) section.
	Attention: If several users are highlighted, the amended
	configuration is set for all highlighted users in the event of a
	configuration change, regardless of whether it currently has different configurations.
Warnings	Only visible if errors are present. Consists of: Warning symbol, text with warning notice and button to display the details.
	Condition for display of warnings:
	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 390) 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.
ОК	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 387). The details are shown in a separate window. No inputs can be made in this dialog:



Parameters	Description
List of users	Display of all configured users.
	The first column shows the type of warning:
	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 385).
Close	Closes the window.

The size and position of the dialog can be changed. These settings are saved as user-dependent.

10.9.6 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.

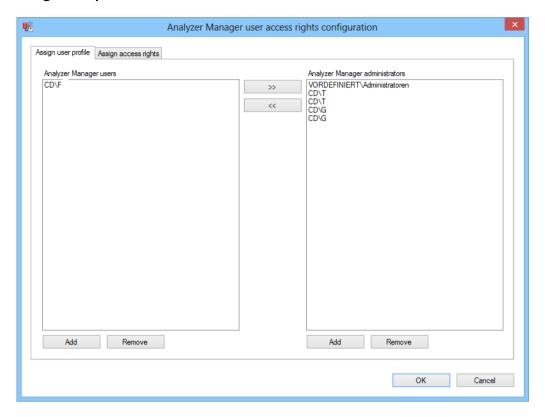
Attention: The object access rights are only then applicable if the accessing user has system access rights as a user or administrator.

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 392)
 - Assign access rights (on page 394)



Assign user profile

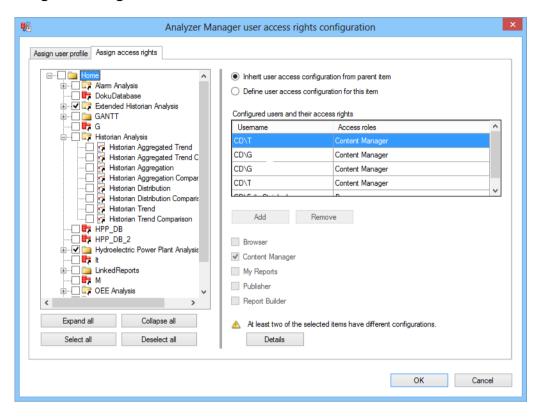




Parameters	Description
List of Analyzer Manager users	Contains the currently-defined users of the SQL server reporting services on the Analyzer server.
	Users can be added or removed using the Add and Remove button. The >> and << buttons are used to drag users to the list Analyzer Manager administrators or to add them from there.
	Multiple selection is possible.
	The rights of the currently logged-on user cannot be changed.
Add	Opens the dialog (on page 383) to add new users, to add users to the List of Analyzer Manager users.
	Users who are already entered as Analyzer Manager administrators cannot be added using this dialog. These can be dragged using the << button.
Remove	Deletes the selected users from the list without requesting confirmation.
List of Analyzer Manager administrators	Contains the currently-defined administrators of the SQL server reporting services on the Analyzer server.
	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.
	Multiple selection is possible.
Add	Opens the dialog (on page 383) to add new users, in order to add users to the List of Analyzer Manager administrators.
	Users who are already entered as Analyzer Manager users cannot be added using this dialog. These can be dragged using the >> button.
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	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:
	Folder
	Data source
	Report or linked report
	Different type
	There is also a symbol for each object, which shows that the object inherits its configuration.
	Editing:
	If an object is marked, it is unlocked for editing in the right part of the dialog.
	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.
	If objects with different configurations are selected together, a warning is shown.
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	Active: The rights of the user are defined for the selected objects with the following configuration elements.
	The properties for the Home object, the uppermost object, must always be defined.
Inherit user access configuration from parent item	Active: The selected elements inherit their properties from the superordinate object.
	If the configuration is inherited, the user rights can be displayed, but not changed.
	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.
Configured users and their access rights	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.
	The following are displayed:
	User names
	Roles assigned to the user; several roles are displayed separately by means of a comma
	Scroll
	The roles of the users are stipulated using the checkboxes below the list. Each user can have several roles at the same time.
	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.
	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:
	Browser



Content manager

My reports

Publisher

Report Builder

Only available if Define access rights for this object has been activated.



Add	Opens the dialog (on page 383) for adding users.
	Only available if Define access rights for this object has been activated.
Remove	Deletes all selected users from the list.
	Only available if Define access rights for this object has been activated.
Browser	Active: The role is assigned to selected users.
	The user can see the folder and reports and subscribe to reports.
Content manager	Active: The role is assigned to selected users.
	The user can manage content on the report server. This includes folder, reports and sources.
My reports	Active: The role is assigned to selected users.
	The user can:
	Publish reports and linked reports
	Manage folders, reports and sources in a user's My reports folder
Publisher	Active: The role is assigned to selected users.
	The user can publish reports and linked reports on the report server.
Report Builder	Active: The role is assigned to selected users.
	The user can see report definitions and start the Report Builder.
Warnings	Only visible if errors are present. Consists of: Warning symbol, text with warning notice and button to display the details.
	Condition for display of warnings:
	Two or more objects are highlighted in the tree structure, the configurations of which are different The warning notice is displayed. Clicking on the <code>Details</code> button opens a window with details (on page 399) on the warning.
	All objects highlighted in the tree structure have the same configuration, but 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 399) 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.	
ОК	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

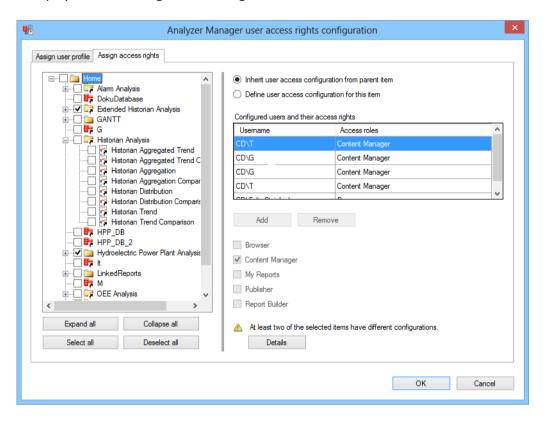
If configurations are selected that are in conflict and could lead to the loss of previously-established configurations, a warning is shown in the configuration dialog. Warnings are shown if:

- Two or more objects were highlighted in the tree structure, the configurations of which are different
- Two or more highlighted users have different configurations



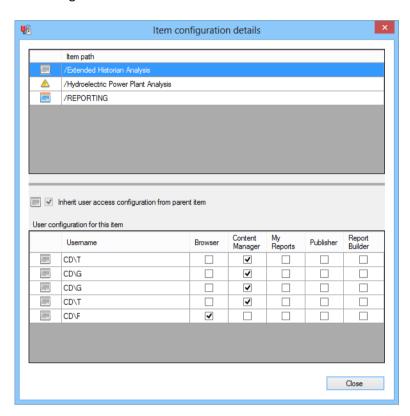
THERE ARE DIFFERENT ACCESS RIGHTS TO OBJECTS ON THE REPORT SERVER

If several objects that have different settings are selected for configuration at the same time, a warning is displayed in the configuration dialog:





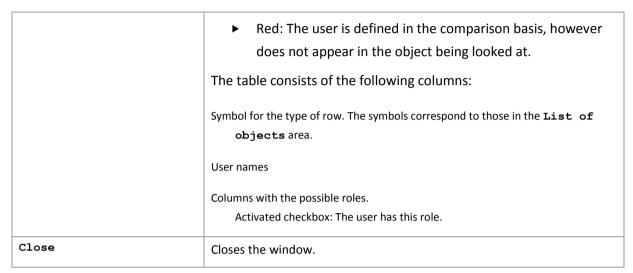
Clicking on the Details button opens a window with details on the warning. No inputs can be made in this dialog:





Parameters	Description
List of objects	Display of all selected objects.
	The first column shows the type of warning:
	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.
	The second column shows the object path.
	One line each can be selected in this list. The configuration details for the selected object are displayed in the lower area.
Separator	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.
Inherit user access configuration from parent item	The symbol shows whether the assignment of the configuration mode:
	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)
	The checkbox shows the configuration mode:
	active: Object inherits configuration from superordinate object
	inactive: Object is configured individually
List of users and their roles	Each row of this table constitutes a user and has one of the three following background colors:
	▶ 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.

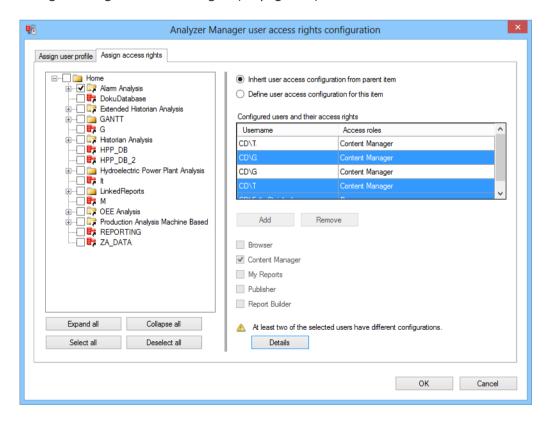




The size and position of the dialog can be changed. These settings are saved as user-dependent.

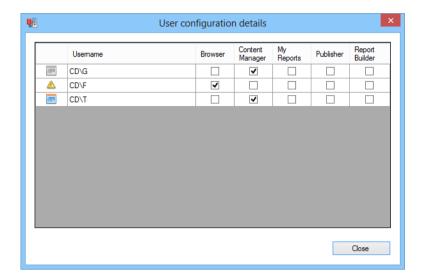
ROLES FOR USERS

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 387):





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	Display of all configured users.
	The first column shows the type of warning:
	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.
	The other columns contain the user names and the display of the respective 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.

10.10 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.



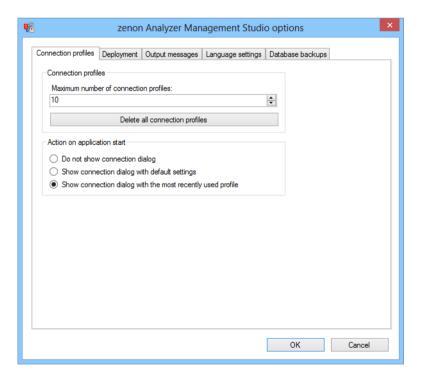
The options are deactivated if one of the following actions is executed: Open, Deploy, Deploy all, Open in Microsoft Report Builder or Open all in Microsoft Report Builder.

The following are configured in the options:

- ► Connection profiles (on page 405)
- ▶ Deployment of reports (on page 406)
- ▶ Messages in the output window (on page 408)
- ► Language settings (on page 409)
- ▶ Database backups (on page 413)

10.10.1 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	Number of connection profiles that are saved.
	If this number is not exceeded by the creation of a new connection profile, then the profile that has not been used the longest is deleted.
Delete all connection profiles	Deletes all connection profiles irretrievably.
	Attention: This action cannot be undone by clicking on the Cancel button!
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.

10.10.2 Deployment

In this tab, you define which actions happen automatically when a report is prepared or saved.

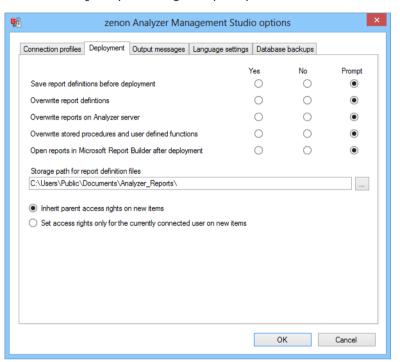
Three methods are available for all actions:

► Yes: carries out action automatically

▶ No: does not carry action out



▶ Prompt: open dialog with prompt for the user to decide



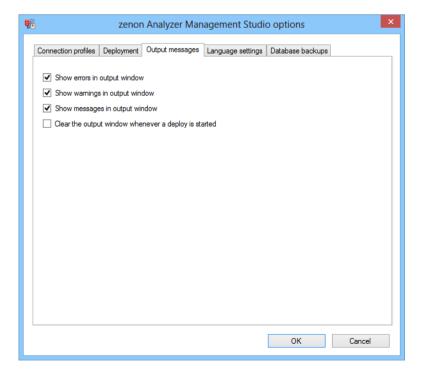
Parameters	Description
Save report definitions before deployment	Decision on whether reports are saved on the hard drive before being deployed.
	Default: Prompt
Overwrite report defintions	Decision on whether reports are to be overwritten on the hard drive when saving.
	Default: Prompt
Overwrite reports 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.
delined functions	Default: Prompt
Open reports in Microsoft Report Builder after	Decision on whether reports can be opened in Microsoft Report Builder after they have been deployed.
deployment	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.zams_rep. 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 390) 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 390).
ОК	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.

10.10.3 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.
ОК	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 181), regardless of whether they are displayed or not.

10.10.4 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.

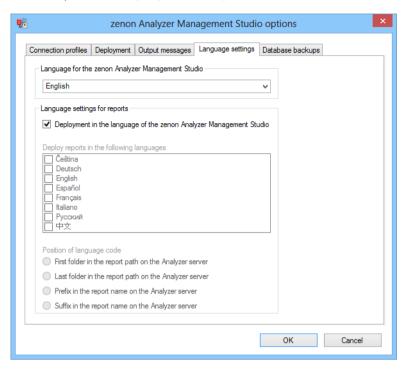
CONFIGURING THE LANGUAGE

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	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.
	The language is immediately switched after the change is set and ox is clicked on.
Language settings for reports	Configuration of the languages for the preparation of reports.
Deployment in the language of the zenon Analyzer Management Studio	Active: Reports are always created in the language that was selected in the Language for the zenon Analyzer Management Studio option.
	Inactive: Reports are prepared in languages for which the checkboxes have been activated in the Deploy reports in the following languages.
	Default: active
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	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 555). The following options are available:
	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
	(for further information, see the following options.)

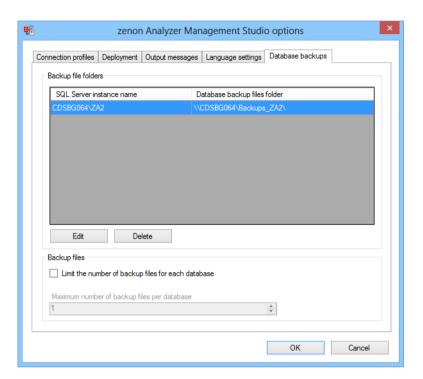


First folder in the report path on the Analyzer server	Active: An independent folder system is created for each language. To do this, in the path for the report, a folder with the respective language designation is created, and below this there are the folders for the themes. The reports are stored in the folders assigned to them. For example: /DE/Alarm analysis/Alarm list /EN/Alarm analysis/Alarm list
Last folder in the report path on the Analyzer server	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. For example: /Alarm analysis/DE/Alarm list /Alarm analysis/EN/Alarm list
Prefix in the report name on the Analyzer server	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 For example: /Alarm analysis/DE_Alarm list /Alarm analysis/EN_Alarm list
Suffix in the report name on the Analyzer server	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. For example: /Alarm analysis/Alarm list_DE /Alarm analysis/Alarm list_DE
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.



10.10.5 Database backups

The path for the database backup and the number of the backup files to be created is configured in this tab.





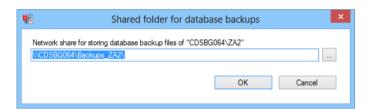
Parameters	Description
List of the existing database backup paths	Lists all configured database backup paths:
Patric	Name of the SQL server instance: Instance that is to be backed up.
	Backup file folders: Folder in which the backup is to be created
	Precisely one row can be highlighted in the table. The highlighted row can be edited or deleted.
	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.
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	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. Attention: Note the amount of memory available. If the
	limit of the storage medium is exceeded, no more backup files are created.
Number of backup files per database	Setting for the maximum number of backup files to be created.
	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 413) tab of the Settings (on page 404).

Note: It is recommended that a path on the Analyzer computer is used for backup.





Parameters	Description
Network share path for	A valid UNC path must be entered.
storing database backup files of [database]	Clicking on the button opens the dialog (on page 347) to select a network share.
	A check is made if:
	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.
	The configured path is saved individually for each user.
	Attention: The access rights to network shares must be set
	correctly. For details, see the Set access rights to
	network share correctly.
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

10.11 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 woo129 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 woo130 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 woo131 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 <code>zams_rep</code> 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 178).

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.

11. Metadata database editors

There are editors available to edit metadata in zenon Analyzer:

- ▶ Manual Data Editor (on page 450): Used for the editing of the tables for price and standard values in a zenon Analyzer metadata database.
- ► Metadata Editor (on page 421): Allows the editing of die labels and descriptions of various objects.

The applications can be 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 453) chapter.

START ZENON IN RUNTIME

To open one of the Editors in zenon Runtime:

- 1. Integrate the .NET control (on page 453) in the respective zenon project
- 2. Open the control when Runtime in running
- 3. The Editor is opened

Note: There is no menu line available in the control in zenon Runtime.



11.1 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 60) 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 422) 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.

11.1.1 Connect

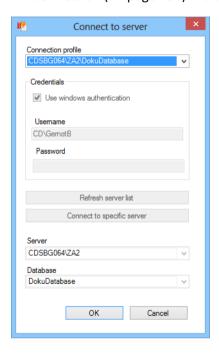
The Metadata Data Editor administers its own connection profile. The ZAMS connection profiles are also read on startup. If there are profiles in the Metadata Editor and in ZAMS with the same name, this dominates the connection profile of the Manual Data Editor.

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.



4. select the desired connection by clicking on Connection profile or create a new connection (on page 237) in a similar manner to that of ZAMS.



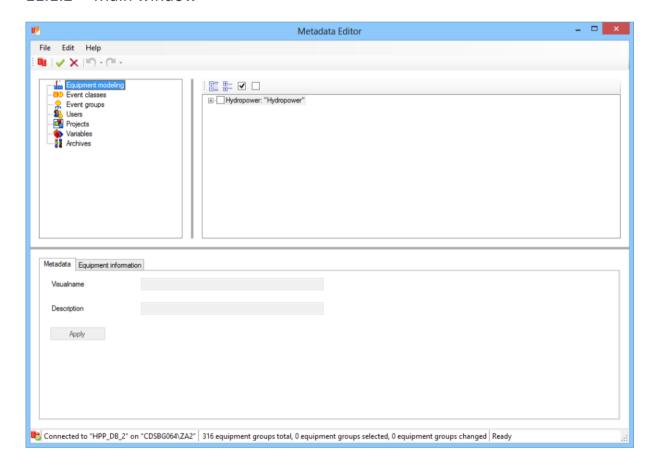
- 5. click on OK
- 6. the connection will be created
- 7. The user authorization is queried by the license server
- 8. The database is checked to see that it is correct

 Note: No connection is established if there are incorrect structures or versions. Conversion (on page 294) is only possible with ZAMS.
- 9. Data is loaded
- 10. The license is obtained
- 11. The Editor is opened

Note: Unsaved changes are lost without warning when the connection is established.



11.1.2 Main window





Range	Description
Menu bar	Menus (on page 425) to edit and save the objects.
Toolbar	Symbols (on page 425) to edit and save the objects.
Object type window	Selection of the object type to be edited. Available are:
	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 425) 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 451) 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 449) 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.

TOOLBAR





Symbol	Description
Connect	Opens the dialog (on page 451) to create a connection.
	Note: If the dialog to create a connection is confirmed by clicking on ox, 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.
Discard Changes	Discards all changes made since the last save after requesting confirmation.
Undo	Clicking on the symbol undoes the last action.
	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.
Redo	Clicking on the symbol restores the last undone action.
	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.

STATUS LINE

Connected to "DokuDatabase" on "CDSBG064\ZA2" | 20 archives total, 20 archives filtered, 1 archives selected, 0 archives changed Ready



Element	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

11.1.3 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 430)
- ► Event classes (on page 431)
- ► Event groups (on page 434)
- ▶ Users (on page 437)
- ► Projects (on page 440)
- ► Variables (on page 443)
- ► Archives (on page 446)

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.

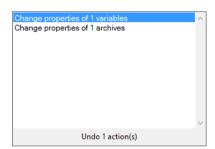
UNDO - RESTORE

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.

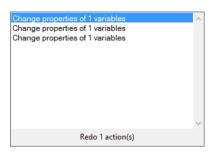
RESTORE

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.

Equipment modeling

Metadata and equipment information can be changed for equipment models. Two tabs are available for the configuration:

- Metadata
- ▶ Equipment information

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.

TOOLBAR





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 nodes	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 node and all child nodes	Deactivates the checkboxes for the selected entry and all subordinate entries.

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.

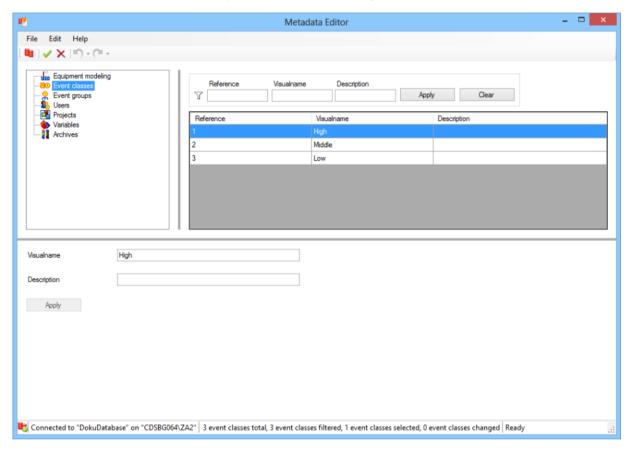
Highlight the desired entry.

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 visual name 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	Selection of the event classes to be changed.
	The objects:
	► 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	Entry of filter criteria for the list of the event classes.
	It is possible to filter according to:
	Identification
	Visualname
	Description
	Wildcards can be used:
	*: any desired number of any desired characters
	?: precisely 1 desired character.
	If a filter text does not contain a wild card, a * is automatically added.
Apply	Applies filter to list.
Delete	Resets filter
Editing area	Entry and acceptance of changes.
Visual name	Entry to change the visual name of an event class.
	Only available if precisely 1 element has been selected. The following rules apply to the display names:
	must not be empty
	Must be unique to the whole database



Description	Entry to change the description of event classes.
	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.
Apply	Clicking on the button accepts the changes. These are only written by clicking on the command or the Save changes symbol in the database.
	Only available if a change has been made and no rules have been broken.

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.

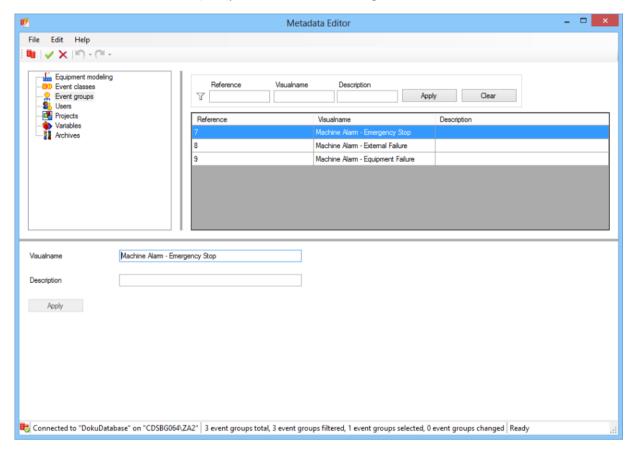
Highlight the desired entry.

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 visual name 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	Selection of the event groups to be changed. The objects: 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	Entry of filter criteria for the list of the event classes. It is possible to filter according to: Identification Visualname Description Wildcards can be used: *: any desired number of any desired characters ?: precisely 1 desired character. If a filter text does not contain a wild card, a * is automatically added.
Apply	Applies filter to list.
Delete	Resets filter
Editing area	Entry and acceptance of changes.
Visual name	Entry to change the visual name of an event group. Only available if precisely 1 element has been selected. The following rules apply to the display names: must not be empty Must be unique to the whole database



Description	Entry to change the description of event groups.
	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.
Apply	Clicking on the button accepts the changes. These are only written by clicking on the command or the Save changes symbol in the database.
	Only available if a change has been made and no rules have been broken.

Users

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.

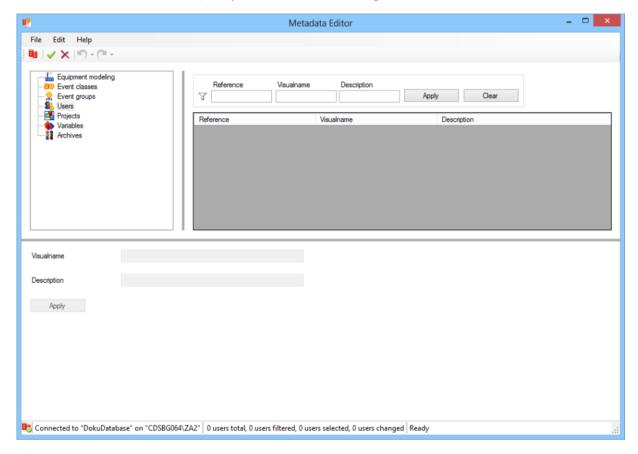
Highlight the desired entry.

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 visual name 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	Selection of the users to be changed.
	The objects:
	► 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	Entry of filter criteria for the list of users.
	It is possible to filter according to:
	Identification
	Visualname
	Description
	Wildcards can be used:
	*: any desired number of any desired characters
	?: precisely 1 desired character.
	If a filter text does not contain a wild card, a * is automatically added.
Apply	Applies filter to list.
Delete	Resets filter
Editing area	Entry and acceptance of changes.
Visual name	Entry to change the visual name of a user.
	Only available if precisely 1 element has been selected. The following rules apply to the display names:
	must not be empty
	Must be unique to the whole database



Description	Entry to change the description of users.
	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.
Apply	Clicking on the button accepts the changes. These are only written by clicking on the command or the Save changes symbol in the database.
	Only available if a change has been made and no rules have been broken.

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.

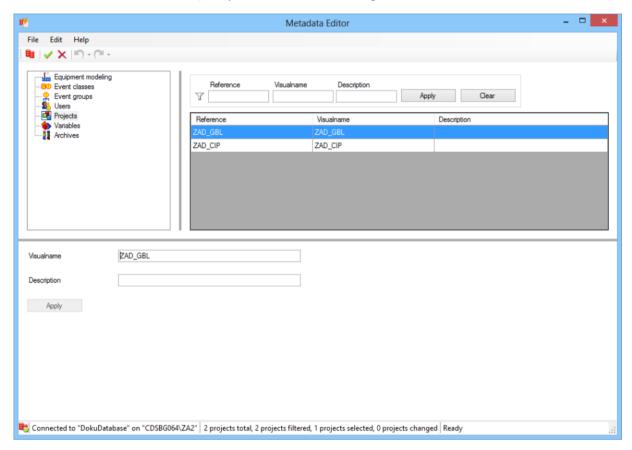
Highlight the desired entry.

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 visual name 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	 Selection of the projects to be changed. The objects: ► 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	Entry of filter criteria for the list of projects. It is possible to filter according to: Identification Visualname Description Wildcards can be used: *: any desired number of any desired characters ?: precisely 1 desired character. If a filter text does not contain a wild card, a * is automatically added.
Apply	Applies filter to list.
Delete	Resets filter
Editing area	Entry and acceptance of changes.
Visual name	Entry to change the visual name of a project. Only available if precisely 1 element has been selected. The following rules apply to the display names: must not be empty Must be unique to the whole database



Description	Entry to change the description of projects.
	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.
Apply	Clicking on the button accepts the changes. These are only written by clicking on the command or the Save changes symbol in the database.
	Only available if a change has been made and no rules have been broken.

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.

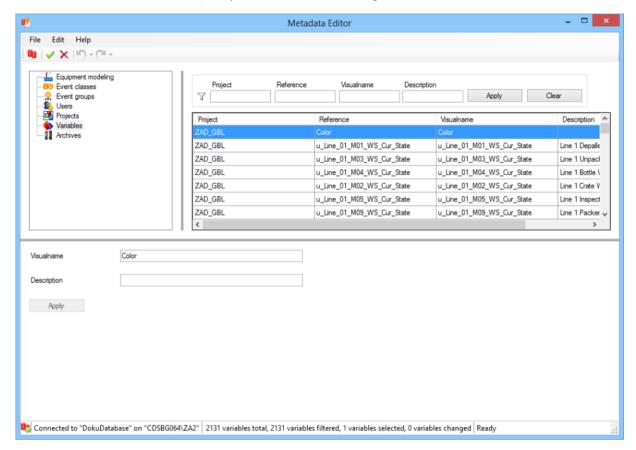
Highlight the desired entry.

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 visual name 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	Selection of the variables to be changed. The objects: 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	Entry of filter criteria for the list of variables. It is possible to filter according to: Project Identification Visualname Description Wildcards can be used: *: any desired number of any desired characters ?: precisely 1 desired character. If a filter text does not contain a wild card, a * is automatically added.
Apply	Applies filter to list.
Delete	Resets filter
Editing area	Entry and acceptance of changes.
Visual name	Entry to change the visual name of a variable. Only available if precisely 1 element has been selected. The following rules apply to the display names: must not be empty



	Must be unique within a project
Description	Entry to change the description of variables.
	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.
Apply	Clicking on the button accepts the changes. These are only written by clicking on the command or the Save changes symbol in the database.
	Only available if a change has been made and no rules have been broken.

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.

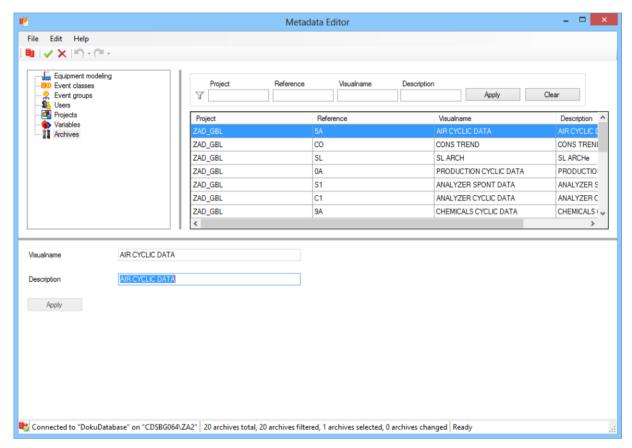
Highlight the desired entry.

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 visual name 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	Selection of the archives to be changed. The objects: 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	Entry of filter criteria for the list of the event classes. It is possible to filter according to: Project Identification Visualname Description Wildcards can be used: *: any desired number of any desired characters ?: precisely 1 desired character. If a filter text does not contain a wild card, a * is automatically added.
Apply	Applies filter to list.
Delete	Resets filter
Editing area	Entry and acceptance of changes.
Visual name	Entry to change the visual name of an archive. Only available if precisely 1 element has been selected. The following rules apply to the display names: must not be empty



	Must be unique within a project
Description	Entry to change the description of archives.
	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.
Apply	Clicking on the button accepts the changes. These are only written by clicking on the command or the Save changes symbol in the database.
	Only available if a change has been made and no rules have been broken.

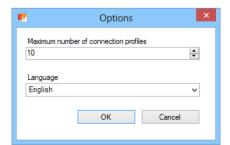
11.1.4 Options

Selection:

- ▶ How many connection profiles can be created
- ▶ The language in which the user interface of the Editor is displayed

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	Defines how many connection profiles can be created as a maximum for the Editor: Minimum: 1
	Maximum: 255
	Default: 1 Configuration by manual entry or by clicking on arrows.
	Note: Because the ZAMS connection profile can also be displayed in the dialog for establishing a connection (on page 451), more than the permitted amount of connection profiles can be displayed in the drop-down list to select a profile.
Language	Selection of the desired language for the user interface of the Editor from a drop-down list.
ок	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.

11.2 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 451) 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.

11.2.1 Connect

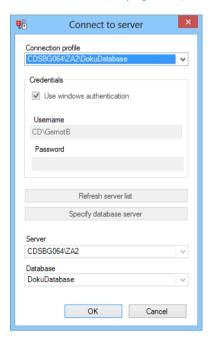
The Manual Data Editor manages its own connection profile. The ZAMS connection profiles are also read on startup. If there are profiles in the Manual Data Editor and in ZAMS with the same name, this dominates the connection profile of the Manual Data Editor.

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.



4. select the desired connection by clicking on Connection profile or create a new connection (on page 237) in a similar manner to that of ZAMS.



- 5. click on OK
- 6. the connection will be created
- 7. 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 294) is only possible with ZAMS.
- 9. Data is loaded
- 10. The license is obtained
- 11. The Manual Data Editor is opened

Note: Unsaved changes are lost without warning when the connection is established.



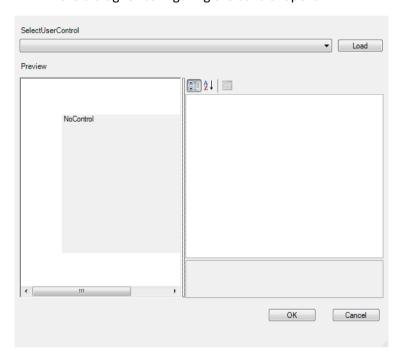
11.2.2 Configuring the control in zenon

The ActiveX control cp_potNetControlContainer.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
- 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.

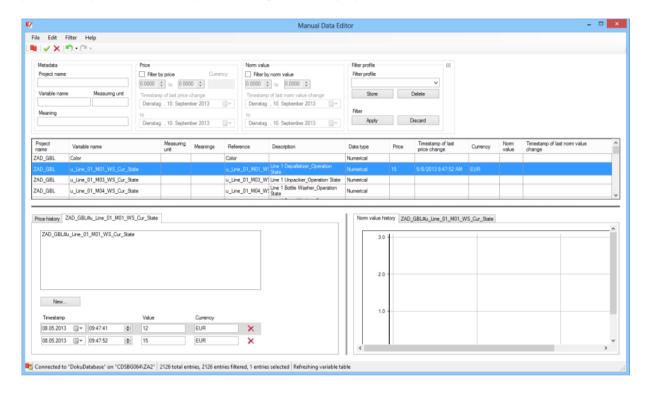
You can find details on the project configuration of .NET Control in zenon in the zenon manual in the following chapters:

- ► Screens/Screen element/.NET controls
- ► Controls



11.2.3 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.





Range	Description						
Menu line (on page 457)	Menu items for:						
	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.						
Toolbar (on page 457)	Allows the following actions:						
	Connect Opens the dialog (on page 451) 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 461)	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 465)	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 466)	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 466) and Norm history (on page 470).						
Norm history (on page 470)	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.						
	Symbol: Shows the connection status.						
	Text: Provides connection status including linked server and linked database.						



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 451) to create a connection.					
	Note: If the dialog to create a connection is confirmed by clicking on ox, 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 473) 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 461) to the variable table.					
Discard filter	Deletes all filter conditions and displays the variable table without filters.					
Store 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.					

TOOLBAR





Symbol	Description
Connect	Opens the dialog (on page 451) to create a connection. Note: If the dialog to create a connection is confirmed by clicking on
	ок, 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 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	Clicking on the symbol undoes the last action.
	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.
Redo	Clicking on the symbol restores the last undone action.
	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.

11.2.4 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 461) the variable table (on page 465)
- Displaying data entry for price history (on page 466) and trend diagram
- Displaying data entry for norm history (on page 470) 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.

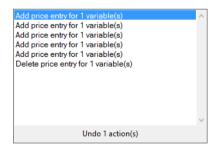
UNDO - RESTORE

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.

- The status line shows how many actions are being undone. 5.
- Clicking on the selected action undoes it.



RESTORE

To restore actions:

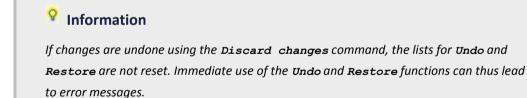
- 1. Select the Restore command in the tool bar.
- 2. Clicking on the symbol directly restores the last action that has been undone.
- 3. Clicking on the button opens a window with the available actions that were undone:



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.



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 465) according to:

- ▶ Project name
- Variable names



- **▶** Units
- Meaning
- Price
- ▶ Norm

CONFIGURING THE FILTER





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.					
	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	Entry of a time range in which prices were changed.					
price change	Both date elements define the time period from which the current price is applicable.					
	Entry of the area in both date fields.					
	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					



	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	Entry of a time range in which norms were changed. Entry of the area in both date fields.
	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	Combobox for: 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 461).

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	Nom	Timestamp of last nom value change	^
ZAD_GBL	Color			Color		Numerisch	14	8/21/2013 10:25:10 AM	EUR			
ZAD_GBL	u_Line_01_M01_WS_Cur_S			u_Line_01_M01_W	Line 1 Depalletizer_Operation State	Numerisch						
ZAD_GBL	u_Line_01_M03_WS_Cur_S			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_S			u_Line_01_M04_W	Line 1 Bottle Washer_Operation State	Numerisch						
ZAD_GBL	u_Line_01_M02_WS_Cur_S			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_S			u_Line_01_M05_W	Line 1 Inspector_Operation State	Numerisch						
ZAD_GBL	u_Line_01_M09_WS_Cur_St			u_Line_01_M09_W	Line 1 Packer_Operation State	Numerisch						
ZAD_GBL	u_Line_01_M10_WS_Cur_S			u_Line_01_M10_W	Line 1 Palletizer_Operation State	Numerisch						
ZAD_GBL	u_Line_01_M07_WS_Cur_S			u_Line_01_M07_W	Line 1 Filler_Operation State	Numerisch						
ZAD_GBL	u_Line_01_M06_WS_Cur_S			u_Line_01_M06_W	Line 1 Pasteurizer_Operation State	Numerisch						
ZAD_GBL	u_Line_01_M08_WS_Cur_S			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.

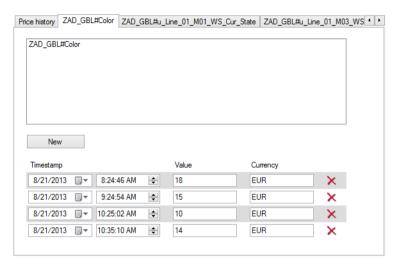


For the creation of trends, all selected variables are divided into groups with the same price history. For each group, a separate trend is drawn and a key entry is created. The key entry below the trend window shows the name of the first variables in a group and the number of other variables in the group. The lookback time of the trend can be defined in the Settings (on page 473).



EDITING PRICES

A separate tab to edit the price history is created for each group.

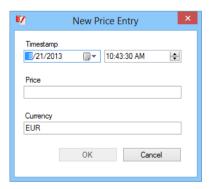




Parameters	Description					
List of variables	Contains the names of all variables of this price group.					
New	Opens the dialog for adding a new price.					
Table of price history	Shows the complete price history, including the entries that are not displayed in the trend due to the settings for Trend lookback time. The values can be edited directly:					
	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.					
	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.					

DIALOG TO ADD A PRICE

Clicking on the $\ensuremath{\mathtt{New}}$ in the tab of a price group opens the dialog to add a new price:





Parameters	Description
Timestamp	Entry of the time point from when the new price entry is valid. This time can also be in the past.
	Input is in:
	Date field: Direct input without selection from a calendar. Clicking on the button opens the calendar.
	Time field: Direct entry or configuration using the cursor keys.
	A time point is only valid if it does not trigger a time stamp clash within the group.
Price	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.
Currency	Entry of the currency for this price. Input errors are not approved and displayed by means of a tooltip.
ок	Only active if all inputs are valid. Clicking closes the dialog and adds the new price entry.
Cancel	Closes the dialog without generating a new price entry.



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.

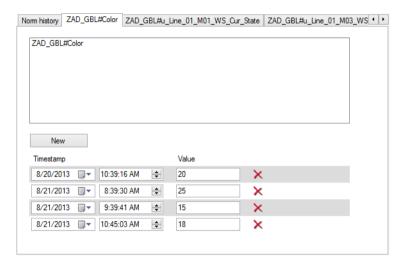


For the creation of trends, all selected variables are divided into groups with the same norm history. For each group, a separate trend is drawn and a key entry is created. The key entry below the trend window shows the name of the first variables in a group and the number of other variables in the group. The lookback time of the trend can be defined in the Settings (on page 473).



EDITING NORM VALUES

A separate tab to edit the norm history is created for each group.

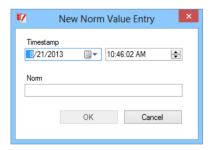




Parameters	Description
List of variables	Contains the names of all variables of this norm group.
New	Opens the dialog for adding a new norm value.
Table of price history	Shows the complete norm history, including the entries that are not displayed in the trend due to the settings for Trend lookback time.
	The values can be edited directly:
	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.
	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.

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	Entry of the time point from when the new price entry is valid. This time can also be in the past.
	Input is in:
	Date field: Direct input without selection from a calendar. Clicking on the button opens the calendar.
	Time field: Direct entry or configuration using the cursor keys.
	A time point is only valid if it does not trigger a time stamp clash within the group.
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.

11.2.5 Options

You configure the following in the settings:

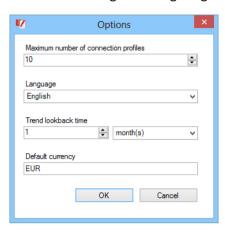
- ► Number of permitted connections
- ► User interface language,
- Lookback time for trend curves

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	Defines how many connection profiles can be created as a maximum for the Editor:
	Minimum: 1
	Maximum: 255
	Default: 1
	Configuration by manual entry or by clicking on arrows.
	Note: Because the ZAMS connection profile can also be displayed in the dialog for establishing a connection (on page 451), more than the permitted amount of connection profiles can be displayed in the dropdown list to select a profile.
Language	Selection of the desired language for the user interface of the Editor from a drop-down list.
Trend lookback time	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.
	Entry of the numeric value:
	Minimum: 1
	Maximum: 100
	Default: 1
	Configuration by manual entry or by clicking on arrows.
	Selection of the unit from the drop-down list:
	Hours
	Days
	Months
	Years
	Default: 1 year
	If non-permitted values are entered manually, the standard value of 1 year is configured when the dialog is closed.



Default currency	Input of a character sequence for the standard currency.
ОК	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.

11.2.6 Example

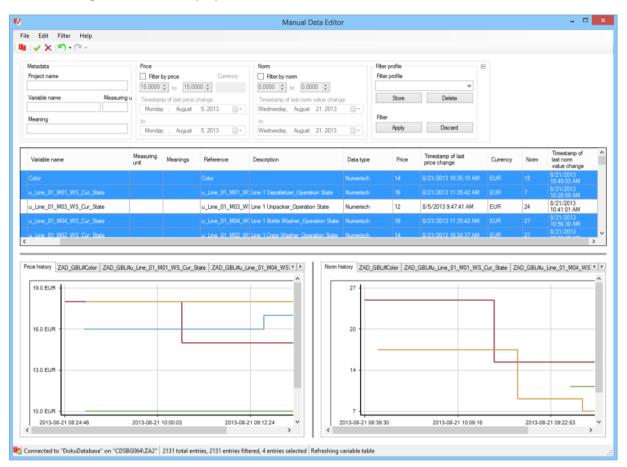
In an Analyzer metadata database, there are variables that are kilowatt hour meters for electricity consumption. These, and only these, are measured in kWh. These variables should be assigned a price of 1.50 EUR per kWh from January 1, 2013 and a norm value of 0.6 kWh.

To carry out this command:

1. Start the Manual Data Editor and connect it to the database.



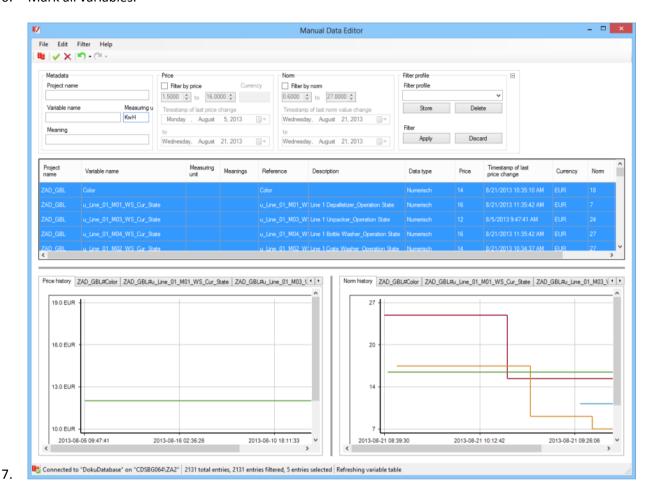
2. All existing variables are displayed unfiltered in the Manual Data Editor.



- 3. Set the filter for the unit of measurement to kWh.
- 4. click on Apply.
- 5. The variables are shown as filtered.



6. Mark all variables.



8. Open the dialog to enter a new price for each tab.

Set the following values:

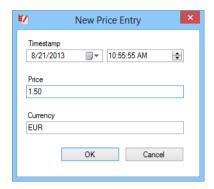
• Date: 1/1/2013

• Time: 12:00:00 AM

• Price: 1,50 or 1.50, depending on the language of the user interface



Currency: EUR



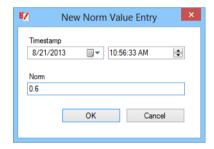
- 9. Click on ox.
- 10. Open the dialog to enter a new norm value for each tab.

Set the following values:

• Date: 1/1/2013

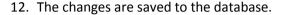
• Time: 12:00:00 AM

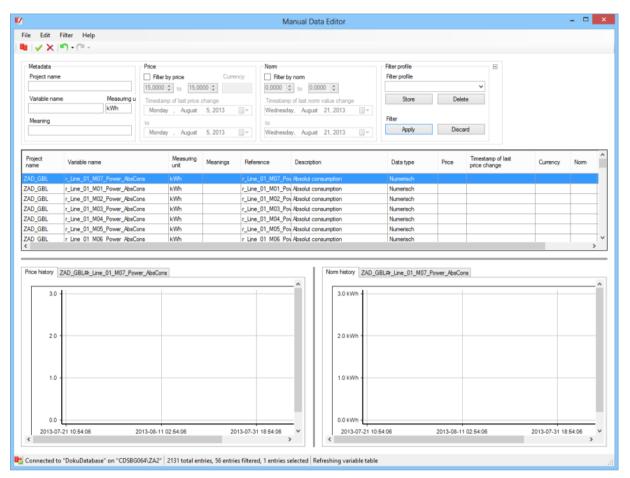
• Norm: 0,6 or 0.6, depending on the language of the user interface



11. Click on ox.







13. Close the Manual Data Editor.

12. Supplied report templates

With zenon Analyzer, pre-configured report templates (on page 610) 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 486) chapter.

Note for developers of reports: These reports use stored procedures and user-defined function blocks, that are described in the documentation for developers.

REPORT TEMPLATES

The following report templates are available:



ALARM ANALYSIS

Report templates for the evaluation of alarms.

- ► Alarm list (on page 614): Alarm list for a time range
- ► Top N Alarms (on page 622): defined number (N) of alarms that occur most frequently in a time range or have been active for the longest
- ▶ Alarm Aggregation (on page 631): Sum of all alarms that have occurred in a time range

CUSTOM FORMULA ANALYSIS

Report templates for custom formulas.

- ► Custom Formula Trend: (on page 643) Trend display of user-defined formulas for a time range.
- ► Custom Formula Trend Comparison (on page 650): Trend display of user-defined formulas for two time ranges.
- ► Custom Formula Aggregated Trend (on page 657): Trend display of aggregated user-defined formulas for a time range.
- Custom Formula Aggregated Trend Comparison (on page 664): Trend display of aggregated userdefined formulas for two time ranges.
- ► Custom Formula Aggregation (on page 671): Trend display of aggregated, user-defined formulas for a time range.
- ► Custom Formula Aggregation Comparison (on page 678): 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 701): Archive data without aggregation for a time range
- ► Historian Trend Comparison (on page 709): Archive data without aggregation for two time ranges
- Historian Aggregated Trend (on page 718): Aggregated archive data for a time range



- ► Historian Aggregated Trend Comparison (on page 727): Aggregated archive data for two time ranges
- ► Historian Aggregated Trend with online variable selection (on page 735): 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 743): Gets archive data for two time ranges, aggregates this in intervals in the time range and displays these aggregations as a trend for comparison.
- ► Historian Aggregation (on page 751): aggregated archive data for a time period, displayed separately
- ► Historian Aggregation Comparison (on page 759): Aggregated archive data for two time ranges, displayed separately
- ► Historian Distribution (on page 767): Distribution and the aggregations of archive data for a variable and a time range
- ► Historian Distribution Comparison (on page 775): Distribution and aggregations of archive data for a variable and two time ranges

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 786): Creates an aggregated trend analysis for a time period with a trend for each variable.
- ► Trend per Variable Comparison (on page 793): Creates an aggregated trend analysis for two time periods with a trend for each variable.
- ► Trend per Equipment Model (on page 802): Creates an aggregated trend analysis for a time period with a trend for each equipment model.
- ► Trend per Equipment Model Comparison (on page 811): Creates an aggregated trend analysis for two time periods with a trend for each equipment model.
- ▶ Relative Trend per Variable (on page 819): Creates a relative aggregated trend analysis for a time period with a trend for each variable.



- ▶ Relative Trend per Variable Comparison (on page 826): Creates a relative aggregated trend analysis for two time periods with a trend for each variable.
- ▶ Relative Trend to Standard (on page 834): 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 841): Creates a relative aggregated trend analysis for two time periods for a variable with a comparison with standard values.
- ▶ Distribution per Variable (on page 848): Calculates the aggregated cost distributions for a time period that is based on variables.
- ▶ Distribution per Variable Comparison (on page 857): Calculates the aggregated cost distributions for two time periods that are based on variables.
- ► Cost Distribution per Variable: (on page 866)Calculates the aggregated cost distributions for a time period that is based on variables.
- ► Cost Distribution per Variable Comparison (on page 874): Calculates the aggregated cost distributions for two time periods that are based on variables.
- ► Cost Distribution per Equipment Model: (on page 882)Calculates the aggregated cost distributions for a time period that is based on equipment models.
- ► Cost Distribution per Equipment Model Comparison (on page 890): Calculates the aggregated cost distributions for two time periods that are based on equipment models.

ISO 50001

Report templates with the Historian Distribution Comparison (On page 783) and Custom Formula Analysis (On page 641) themes.

PRODUCTION ANALYSIS MACHINE BASED

Report templates for the analysis of loss times and productivity, based on standards.

- ► Losses Analysis (on page 902): 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 911): Analyze archive data and calculate aggregated productivity indicators for a time period, based on an equipment group.



- ► Comprehensive Productivity Analysis (on page 918): Combines the Losses Analysis (on page 902) and Produktivity indicators Analysis (on page 911) report templates.
- ▶ Losses Lot History (on page 927): Analyze archive data and calculate aggregated loss times for each lot, based on an equipment group.
- ▶ Productivity Indicators Lot History (on page 936): 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 943): Combines the Losses Lot History (on page 927) and Productivity Indicators Lot History (on page 936) templates.

OEE ANALYSIS

Report templates available that calculate and display OEE indicators.

- ▶ OEE Indicator (on page 958): OEE performance figures for a selected equipment model in a time period
- ▶ OEE Indicator Lot History (on page 967): OEE performance figures for a selected equipment model for each lot in a time period

TARGET ACTUAL ANALYSIS

Reports for the comparison of any desired machine-related measured sizes.

- ► Target Actual Aggregated Trend (absolute) (on page 983): 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 991): 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 1001): Calculates operating times for the individual operating modes of a machine and machine components.
- ▶ Operating Time per Power Range (on page 1010): Calculates operating times for a machine per power range.



- ► Circuit Breaker Switching Cycles (on page 1019): Calculates switching cycles for circuit breakers.
- ► Active and Reactive Power Counters (on page 1027): Calculates counter values for active and reactive power.
- ▶ Power Line Frequency (on page 1036): Calculates time counters for different frequency bands of the network frequency of a machine.
- Machine Event Counters (on page 1045): 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.

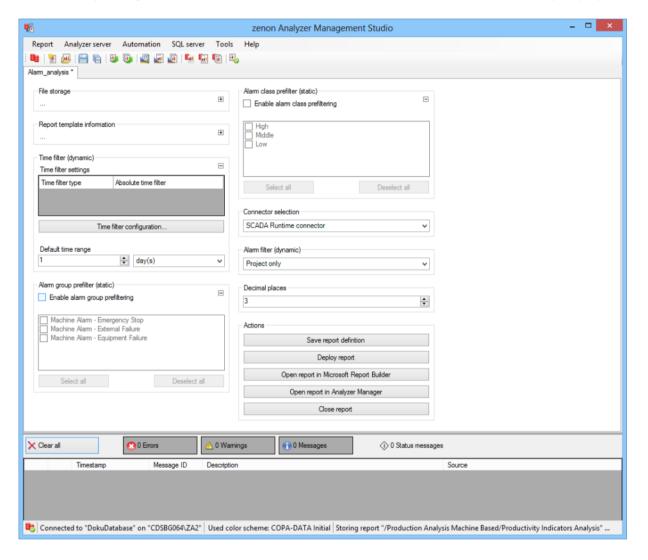
Recommendation: Do not execute any reports whilst actions are being carried out with ZAMS that relate to these reports. Most of all if ZAMS:

- is deploying reports
- ▶ is updating the connector functions in the database
- ▶ is creating the SQL connector



12.1 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:



ALARMS

Alarm prefiltering	Alarms can be prefiltered:
	Prefiltering alarm groups: Filtering of the alarm groups by means of activation/deactivation of checkboxes
	Prefiltering of alarm classes: Filtering of the alarm classes by means of activation/deactivation of checkboxes For further details see chapter Alarm prefiltering (on page 492)
	For further details see chapter Alarm premitering (on page 452)
Alarm lookback time	Time range, which should be taken into account from the start of the time filter retrospectively.
	For details, see the Alarm Lookback time (on page 491) chapter.

ARCHIVES

Archives	Aggregation and configuration of the archive. For details, see the Configure archives (on page 494) section.
Lot archive selection	Select a lot archive (on page 535).
Archive compression selection	The following types of archive aggregation are available:
	Raw data (Basis archive)
	added up data (aggregated archive)
	average data (aggregated archive)
	minimum data (aggregated archive)
	maximum data (aggregated archive)
	Select from drop-down list.

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 555) section.

INFORMATION ON REPORT TEMPLATES

Information on Report templates	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)

TIME FILTER

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:
	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.
	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.
Configure time filter	Clicking on the button opens the dialog to configure the time filter.
settings	For details, see the Configuring the time filter (on page 566) section.



Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years

MISCELLANEOUS

Action	Possible actions for the report:
	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.
Selection equipment model	Selection of an Equipment model (on page 494).
Input fields and drop-down lists	Various input fields and drop-down lists for the input of data and selection of parameters:



	Single selection: Selection of a value from drop-down list:
	Text input: Input of free text
	Numerical input: Input of numerical values
	For details, see Inputs and selection from drop-down list (on page 536).
Chart data selection	Selection of the value type to be displayed from drop-down list:
	Absolute values
	Relative values

12.1.1 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.



Parameters	Description
Alarm lookback time	Time range, which should be taken into account from the start of the time filter retrospectively.
Time input	Numerical input for the quantity. It is also possible to make changes using the spin control.
Selecting the granularity	Select from drop-down list: Minutes
	Hours
	Days Months
	Years



12.1.2 Alarm prefiltering

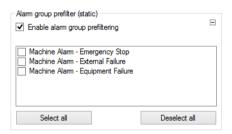
Alarms can be prefiltered. The filtering includes:

- ▶ Alarm groups
- ▶ Alarm Classes

Both filters are connected to one another.

PREFILTERING ALARM GROUPS

Activation via option: Alarm groups prefiltering

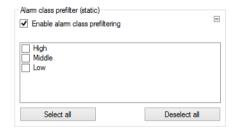




Parameters	Description
Alarm groups prefiltering	Filtering of the alarm groups by means of activation/deactivation of checkboxes.
List of alarm groups	This list is for prefiltering alarm groups. It contains a checkbox for each EVENTGROUP metadata table entry, with the entries being displayed in the VISUALNAME column.
	Alarm group prefiltering is inactive if nothing is selected. If something is selected, only alarms of the active alarm groups are allowed through.
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	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.
	Alarm class prefiltering is inactive if nothing is selected. If something is selected, only alarms of the active alarm classes are allowed through.
Select all	Activates all checkboxes, selection of alarm classes.
Deselect all	Deactivates all checkboxes, deselection of all alarm classes.



12.1.3 Equipment model selection

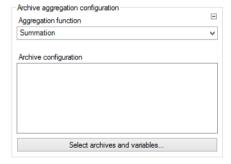


Selection of a root element of the equipment model from drop-down list. The equipment model is read form the metadata. An independent entry in the drop-down list allows the use of all models present in the list.

12.1.4 Archives

The archives to be aggregated and pivoted are configured using the following elements:

- ▶ Aggregation function
- Archive configuration



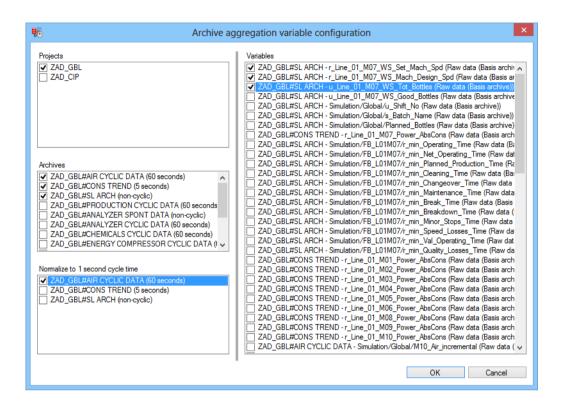


Parameters	Description
Archive aggregation configuration	Archive aggregation configuration
Aggregation function	The following are available for aggregation:
	Summation
	Calculate average values
	Determine minimum values
	Determine maximum values
	Select from drop-down list.
Configuration of the archive	Display of the archive variables in a tree structure. This structure is constructed as follows:
	Project name
	Archive name
	Variable name
	Aggregation type of the variables in the archive
	Selection by clicking on the desired object.
	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.
Configure archives	Clicking on the button opens the dialog to select the archives and variables. For details, see the Configure archives (on page 494) section.

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.





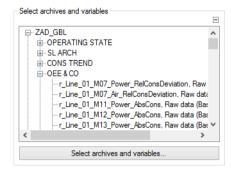


Parameters	Description
Projects	Selection from the list of available projects. These are taken from the metadata.
	If the report is tied to a project (see Configuring time filter (on page 566) section) only the tied project can be seen.
	Activation or deactivation of checkboxes influences the display of objects in other lists.
Archives	Display of all archives that are available in the projects selected in Projects.
	Syntax: [project name] #[archive name] ([cycle time])
	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.
Normalize to	Lists all archives activated in the previous list with the same display syntax.
1 second cycle time	Checkbox activated: The archive is accepted into the list, which is to be converted to a 1-second cycle.
	Note: Activation only makes sense if time-corrected average values for variables from a spontaneous archive are to be displayed!
Variables	Lists all variables that are present in variables that have been activated in the Archives list.
	Syntax: [project name] # [archive name] - [variable name] ([compression of the variables in the archive])
	Checkbox activated: The archive variables are accepted into the Archive configuration (on page 486) list in the report area.
OK	Applies changes and closes the dialog.
Cancel	Discards changes and closes the dialog.



12.1.5 Archive variable input

The archive variables for Extended Historian Analysis reports are entered using a display and a configuration dialog.



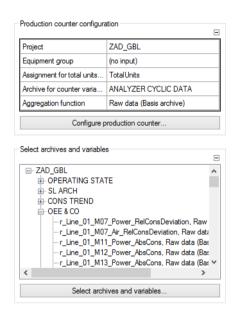
Parameters	Description
Select archives and variables.	Display and configuration of the archive variables.
List field	Shows the current configuration.
	Display schematic:
	Project
	Archive
	Variable and data aggregation
Archive aggregation variable configuration	Clicking on the button opens the dialog (on page 503) 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.



12.1.6 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.



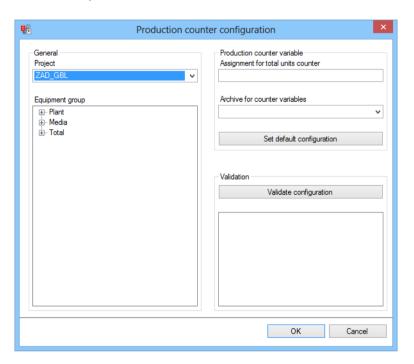


Parameters	Description
Production counter configuration	Settings for production counter.
List field	Overview table with information on:
	Selected project
	Selected equipment model
	Assignment for the total production counter
	Archive for counter variables
	Compression function of the counter variables in the archive
Configure production counter	Clicking on the button opens the dialog for configuration (on page 501) of the product counter for Extended Historian reports.
	If the report is tied to a project using the time filter settings, the project is accepted here.
Archive variables configuration	Settings for archive variables.
List field	Displays current configuration
	Display schematic:
	Project
	Archive
	Variable and data aggregation
Archive aggregation variable configuration	Clicking on the button opens the dialog (on page 503) to configure the archive variables for Extended Historian Reports.
	The button is only active if the report was tied to a project via the upper grouping or the time filter settings.



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:



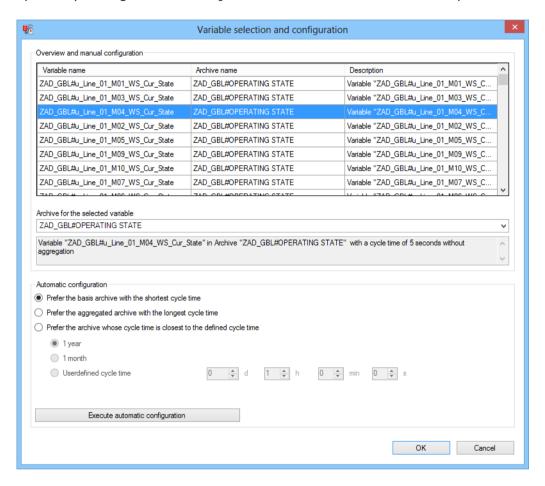


Parameters	Description
General	Selection of project and equipment model for the overall production counter.
Project	Selection of the project from the drop-down list.
	Deactivated if the report is tied to a project.
Equipment group	Selection of the equipment model.
Production counter variable	Settings 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	Sets the values automatically:
configuration	Meaning: TotalUnits
	Archive: Short description C1, if present in project
	Aggregation function: Raw value
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	Overview table of the current configuration with a display of:
configuration	Variable name
	Archive name
	Description
	If a variable is selected in the overview table, the drop-down list with all archives in which the variable is kept are filled.
Archive for the selected variable	Selection of the archive configuration for the variables selected in the list.
	The field below the drop-down list shows the description of the variables and the selected archive.
Automatic configuration	Settings for the automated configuration of all variables. There are different algorithms available for this:
	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	For maximum resolution.
with the shortest cycle time	Base archive with the lowest cycle time
Prefer the aggregated	For a minimum amount of data.
archive with the longest cycle time	Aggregated archive with the longest cycle time.
	Attention: Only the SUM compression type is used for the configuration in aggregated archives.
Prefer the archive whose	User defined.
cycle time is closest to the defined cycle time	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.
Userdefined cycle time	Only available if the Prefer the archive whose

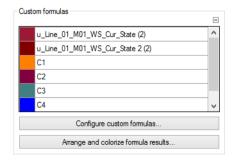


Cancel	Clicking on the button discards the changes and closes the dialog.
OK	Clicking on the button accepts changes and closes the dialog.
Execute automatic configuration	Clicking on the button starts the automated configuration.
	maximum: 1000 days
	seconds
	minutes
	hours
	days
	User defined:
	1 month
	1 year
	There are three possibilities available to determine this:
	Definition of cycle time.
	cycle time is closest to the defined cycle time option has been activated.
	avalo timo is alogost to the defined

12.1.7 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	Display all configured user-defined formulas. If individual colors are configured, these are displayed. Standard colors from the ZAMS color scheme are represented. Attention: If the configuration of a formula is changed, the individual sorting is lost.
Configure custom formulas	Opens the dialog to configure user-defined formulas (on page 506). The dialog is different for: Reports without aggregation over the time range Reports with aggregation over the time range
Arrange and colorize formula results	Opens the dialog to sort and color (on page 533) user-defined formulas.

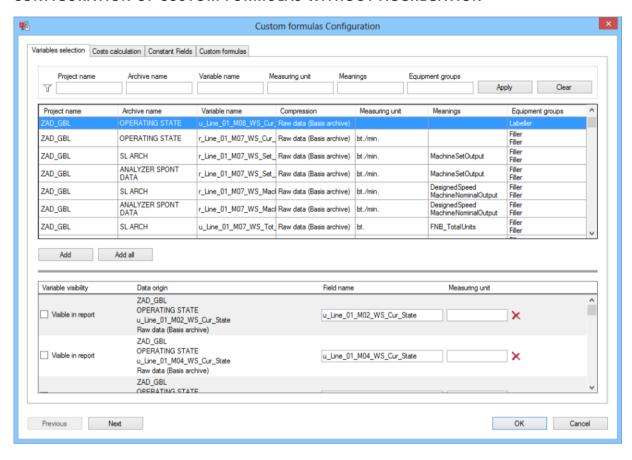
Configure custom formulas

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



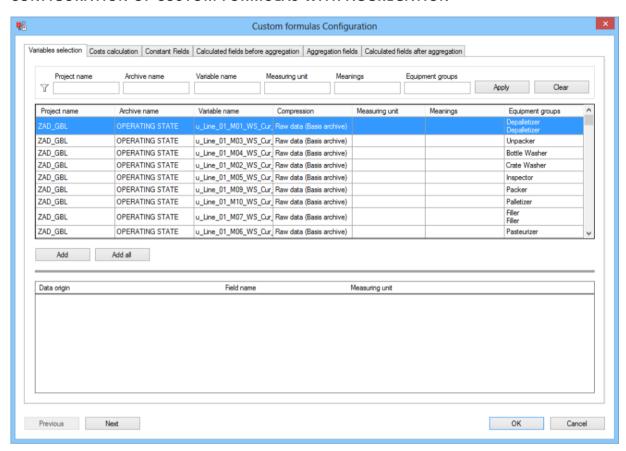


Parameters	Description
Variables selection (on page 510)	Selection of which fields are to be read with which variable values from which archives.
Cost calculation (on page 514)	Selection of which variable raw data fields should have cost fields.
Constant Fields (on page 516)	Definition of constant values.
Custom formulas (on page 518)	Configuration of formulas with fields from the other tabs.
Previous	Switches to previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ОК	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.

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 510)	Selection of which fields are to be read with which variable values from which archives.
Cost calculation (on page 514)	Selection of which variable raw data fields should have cost fields.
Constant Fields (on page 516)	Definition of constant values.
Calculated fields before aggregation (on page 520)	Configuration of formulas with fields from the other tabs.
Aggregation fields (On page 522)	Configuration of aggregation from all fields of the previous tabs.
Calculated fields before aggregation (on page 525)	Configuration of formulas with fields from the Configuration fields (on page 522) tab.



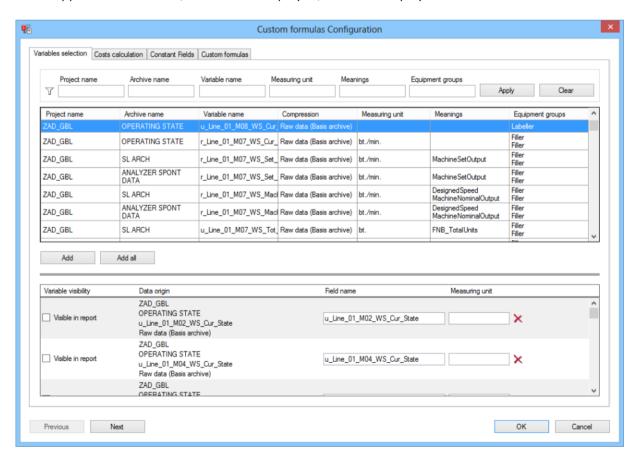
Previous	Switches to previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ок	Applies all changes in all tabs and closes the dialog.
	Only available if all necessary configuration has been carried out.
Cancel	Discards all changes in all tabs and closes the dialog.

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.





Parameters	Description
Metadata area	Filtering and selecting the metadata.
Filter	Selection of the filters to be applied on the Metadata table. The following is available:
	Project name
	Archive name
	Variable name
	Measuring unit
	Meanings
	Equipment groups
	The filtering is carried out by entering a sequence of characters in the desired input fields. Clicking on the Apply button updates the list.
	You can use wild cards here:
	?: precisely 1 desired character.
	*: any desired number of any desired characters
	If no wildcard is used, a * is automatically attached to the filter text.
	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.
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	Lists all existing metadata. These can be shown with filtering and added to the Field area.
	Rows of the table can be highlighted for selection. Multiple-selection is possible using the key combination Ctrl+mouse click or shift+mouse click.
Add	Clicking adds a field in the field area for each row highlighted in the table. Variables can also be added by double clicking.
	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.	



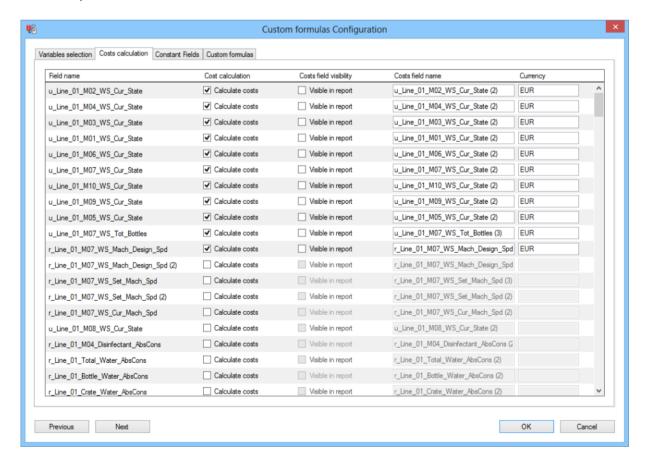
Add all	Clicking adds a field in the field area for each row visible in the table.
	in doing so, a combination of variables, archive and aggregation of variables in the archive can always only occur once as a field.
	Attempts to add an existing combination again are ignored.
	Invisible rows, which are suppressed by the filter, are ignored.
Field area	Contains a row for each field.
	The following parameters are displayed:
	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	Active: This field is visible in the report.
	Default: inactive
	Is not available for Formulas with aggregation, because variable raw data fields cannot be visible with aggregation in the report.
Field name	Is used for the display of the field in other areas of this dialog and in the report.
	Must be unique.
	Must not be empty.
	Maximum: 256 characters
	Default: Variable name from the metadata. 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 previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ОК	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.

Cost calculation

In this tab, the variable raw data fields for which there are to be cost fields are defined.



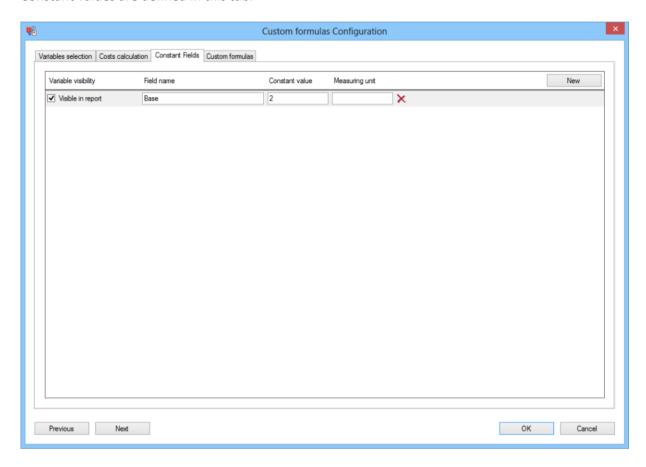


Parameters	Description
Table of fields	Table with fields to calculate costs.
Field name	Display of the field name from the variable selection (on page 510).
Cost calculation	Active: There is a cost field for this variable raw data field.
	If another field relates to this cost field and an attempt is 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.
	Default: inactive
	The availability of the other fields depends on the status of the checkbox.
Costs field	Active: Cost field is visible in the report.
visibility	Default. inactive
	Is not available for Formulas with aggregation, because cost fields cannot be visible in the report.
Costs field name	Is used for the display of the field in other areas of this dialog and in the report.
	Must be unique.
	Must not be empty.
	Maximum: 256 characters
	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.
Currency	Stipulation of the unit (currency) of the cost field.
	Maximum: 256 characters
	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.
Previous	Switches to previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ок	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.



Constant Fields

Constant values are defined in this tab.





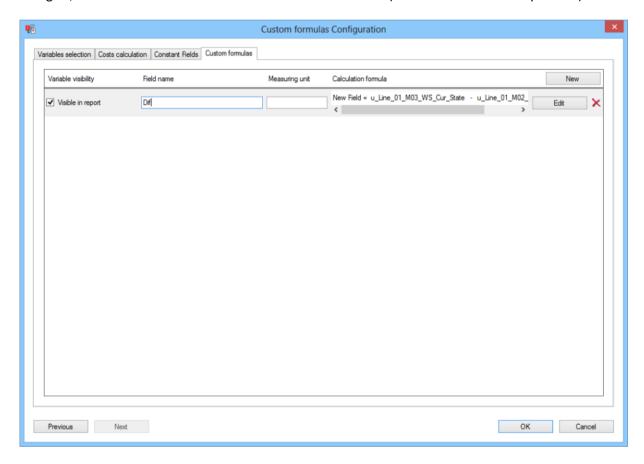
Parameters	Description
List of fields	Lists all configured fields with constant values.
New	Clicking on the button adds a new line with a new constant.
Variable visibility	Active: This field is visible in the report.
	Default: inactive
	Is not available for Formulas with aggregation, because constant fields cannot be visible in the report.
Field name	Is used for the display of the field in other areas of this dialog and in the report.
	Must be unique.
	Must not be empty.
	Maximum: 256 characters
	Default: Variable name from the metadata. However if this would lead to a clash, a counter is added to the name.
Constant value	Input of the constant value.
	Must not be empty.
	Must contain a valid floating point number (whole numbers are valid floating point numbers).
	Default: 1
Measuring unit	Determining the unit of the field.
	Maximum: 256 characters
	Default: empty
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 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.

Custom formulas

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).





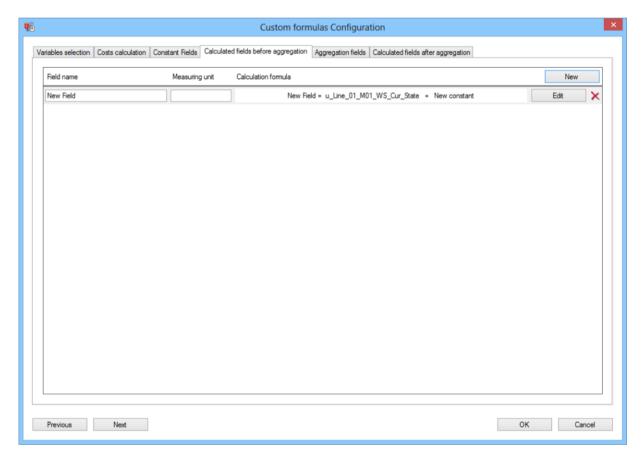
Parameters	Description	
List of formulas	Lists all configured formulas.	
New	Click on button opens the formula editor (on page 527).	
	The formula is inserted at the bottom end of the list as a new line when the Editor is closed.	
	Default name: New Field. If this name clashes with an existing one, a counter is added, for example New Field 1.	
Variable visibility	Displays visibility in the report.	
Visible in report	Active: Formula is visible in the report.	
	Default. inactive	
	Not available for Formulas with aggregation, because base data formula fields cannot be visible with aggregation in the report.	
Field name	Is used for the display of the field in other areas of this dialog and in the report.	
	Must be unique.	
	Must not be empty.	
	Maximum: 256 characters	
Measuring unit	Determining the unit of the field.	
	Maximum: 256 characters	
Calculation formula	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.	
Edit	Clicking on the button opens the formula editor to edit the formula.	
х	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 previous tab. (deactivated in the first tab)	
Next	Switches to the next tab. (deactivated in the last tab)	
ОК	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.

Calculated fields before 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).





Parameters	Description	
List of formulas	Lists all configured formulas.	
New	Click on button opens the formula editor (on page 527).	
	The formula is inserted at the bottom end of the list as a new line when the Editor is closed.	
	Default name: New Field. If this name clashes with an existing one, a counter is added, for example New Field 1.	
Field name	Is used for the display of the field in other areas of this dialog and in the report.	
	Must be unique.	
	Must not be empty.	
	Maximum: 256 characters	
Measuring unit	Determining the unit of the field.	
	Maximum: 256 characters	
Calculation formula	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.	
Edit	Clicking on the button opens the formula editor to edit the formula.	
х	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 previous tab. (deactivated in the first tab)	
Next	Switches to the next tab. (deactivated in the last tab)	
ок	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.	

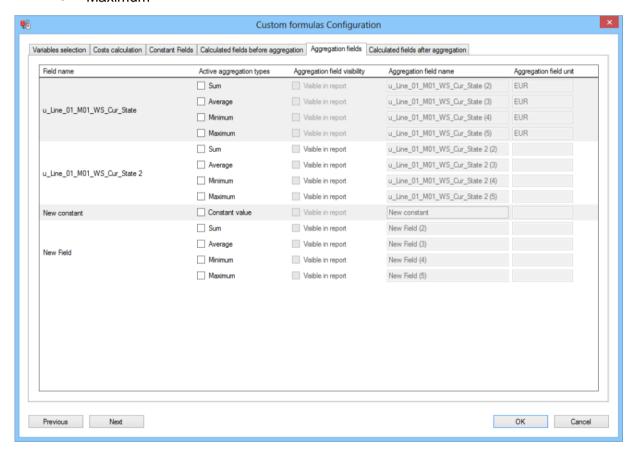


Aggregation fields

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





Parameters	Description
List of aggregations	Lists all configured aggregations.
Field name	Display of the field name of the aggregated field.
Active aggregation types	Display of the status of the aggregation types. Checkbox in front of the active aggregation type: There is an aggregation field with this type of compression for this base data field
	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.
	Default: Checkbox inactive
	The status of the checkbox determines whether the other input fields are active or not.
Aggregation field visibility	Shows if this aggregation field is visible in the report.
	Active: Aggregation field is visible in the report.
	Default: inactive

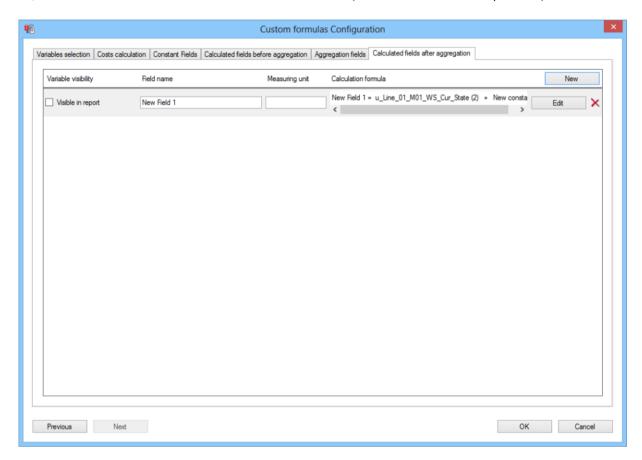


Aggregation field name	Is used for the display of the field in other areas of this dialog and in the report.
	Must be unique.
	Must not be empty.
	Maximum: 256 characters
	Default: Name of the base data field that is assigned to the archive If this would lead to a clash, a counter is added.
Aggregation field unit	Stipulation of the unit of the aggregation field.
	Maximum: 256 characters
	Default: Unit of the base data field.
Previous	Switches to previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ОК	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.



Calculated fields after aggregation

In this tab, formulas with fields from the Aggregation fields (on page 522) tab are configured. In doing so, each formula can address all fields defined before it (lines above the line in question).





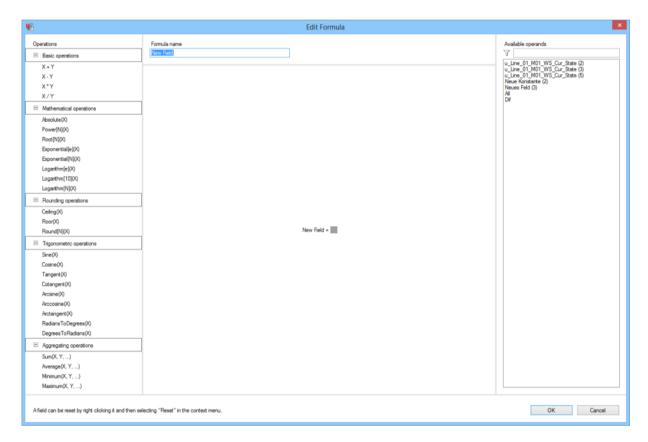
Parameters	Description	
List of formulas	Lists all configured formulas.	
New	Click on button opens the formula editor (on page 527).	
	The formula is inserted at the bottom end of the list as a new line when the Editor is closed.	
	Default name: New Field. If this name clashes with an existing one, a counter is added, for example New Field 1.	
Variable visibility	Displays visibility in the report.	
Visible in report	Active: Formula is visible in the report.	
	Default.inactive	
	Not available for Formulas with aggregation, because base data formula fields cannot be visible with aggregation in the report.	
Field name	Is used for the display of the field in other areas of this dialog and in the report.	
	Must be unique.	
	Must not be empty.	
	Maximum: 256 characters	
Measuring unit	Determining the unit of the field.	
	Maximum: 256 characters	
Calculation formula	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.	
Edit	Clicking on the button opens the formula editor to edit the formula.	
х	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 previous tab. (deactivated in the first tab)	
Next	Switches to the next tab. (deactivated in the last tab)	
ОК	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.	

Formula editor

The formula editor allows the creation of a formula.





Parameters	Description
Operations	Available operations. These can be moved by dragging & dropping into the Formula area.
	Five groups of operations are available.
	Basic operations
	Mathematical operations
	Rounding operations
	Trigonometric operations
	Aggregating operations
	Details on the operations are shown hereafter.
Formula name	Name of the formula that is currently being created.
	Must not be empty.
	Must not be used by another formula.
	Name is displayed in the Formula area.
Available operands	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.
	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.
	You can use wild cards here:
	?: 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	Contains the Formula name and input fields for operations and operands. These input fields are populated by dragging & dropping.
	Creation of a formula:
	If an operation is placed by dragging & dropping on the input field in the Formula area, this is replaced by the operation identified and the input fields of the operation.



	If an operand is placed on an input field in the Formula area , the field name replaces the input field.
	A formula is valid if at least one operation is present and each operation has a sufficient number of assigned fields.
ОК	Applies settings and closes the dialog.
	To do this, the following criteria must be met:
	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.

- 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 =
$$\left(\begin{array}{c} + \\ \end{array}\right) \times \text{Root} \left[\begin{array}{c} 2 \\ \end{array}\right] \left(\begin{array}{c} \end{array}\right)$$

- · Desired operands
- 4. Add further operations and/or operands until your formula is completed.

EXAMPLE:

New Field =
$$\left(u_Line_01_M05_WS_Cur_State \right. \\ \left. + \frac{u_Line_01_M09_WS_Cur_State}{u_Line_01_M08_WS_Cur_State} \right) x \\ \left. - Root \left[\begin{array}{c|c} 2 & \clubsuit \end{array} \right] \left(r_Line_01_M07_Air_AbsCons (2) \end{array} \right)$$

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.

RESETTING INPUTS

An input field can be reset to remove operations or operands.

To do this:

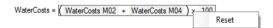
- 1. Right click on the object (input field, operation, operand, operations sign).
- 2. All elements affected that become an individual input field after resetting are displayed with a surrounding border.
- 3. A context menu is displayed.
- 4. click on Reset.
- 5. The elements with a surrounding border are replaced by an empty input field.

EXAMPLES:

Resetting the Multiplier input field:

▶ Resetting the Multiplicandinput field, consisting of an addition operation:

▶ Resetting the complete multiplication operation:



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 (x).
- Division/Fraction: Input field is replaced by two new input fields, separated by a fraction bar
 (-).

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.

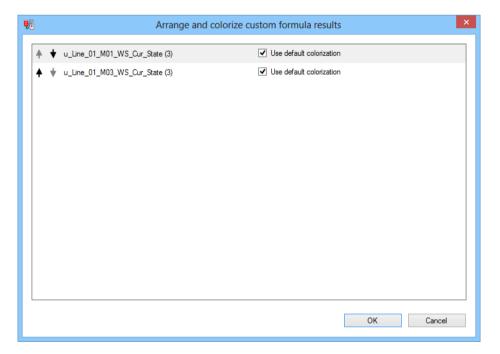
Arrange and colorize formula results

In this dialog, you can color custom formulas (on page 505) and sort their sequence.

To open the dialog:

- 1. In the Custom formulas (on page 505) 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
Arrow keys	Clicking on a button changes the sequence of the corresponding formula.
	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.
	Attention: If the configuration of a formula is changed, the individual sorting is lost.
Formula names	Name of the formula.
Standard coloring	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.
	Active: Standard colors from the ZAMS color scheme are used.
	Inactive: Individual colors are used.
	The Color and Color preview buttons are shown for configuration purposes.
Color preview	Display of the color defined individually for this formula.
	Initial value: White
Color	Click on the color to open the standard color palette for selecting a color.
	In the dialog, the 10 standard colors from the active ZAMS color scheme are offered as Userdefined color schemes.
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.

12.1.8 Labels for operating modes

This grouping is for the selection of the labeling for operating modes.





Parameters	Description
Operation mode labels	Selection of the marking for operating modes from drop-down list:
	Variable visual name
	► Descriptive text for the variables

12.1.9 Lot archive selection

Selection of the lot archive from the drop-down list for the comparison of OEE indicators.

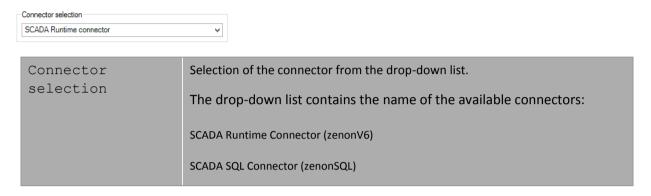


Parameters	Description
Lot archive selection	Configuration of the lot archive.
Project	Selection of the project that is to be linked to a project from a drop-down list.
	If a project is selected, this project is forwarded to all other groupings in the report that offer project selection. If this grouping 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.
Lot archive	Selection of a lot archive for the selected project from the drop-down list.



12.1.10 Connector selection

Selection of a connector from the drop-down list.



12.1.11 Drop-down lists, inputs and selection

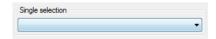
Input fields and drop-down lists allow input of text, numerical values and given elements:

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

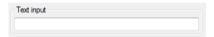


- Column chart
- Pivot table
- ▶ Archive compression selection:

Selection of the type of aggregation for the variables stored in the archive:

- Raw value
- Sum
- Average
- Minimum
- Maximum

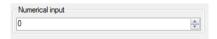
TEXT INPUT



Free input of text in the text field.

NUMERIC INPUT

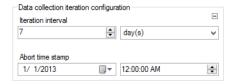
Input of numeric values.



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.

12.1.12 Iterative data collection

Allows the configuration of an interval and the abort time stamp for the iterative data collation by stored procedures.

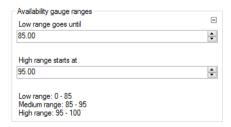




Parameters	Description
Data collection iteration configuration	Configuration for iteration interval and cancel time.
Iteration interval	Configuration of the iteration interval in:
	Minutes
	Hours
	Days
	Minimum: 1
	Maximum: 1000
	Default: 1 day
Abort time stamp	Timestamp cancel with
	Date
	Time
	Default: 01.01.2013 00:00:00

12.1.13 Availability gauge ranges

Configuration and display for measurement device color areas. The elements can be used in a report for different areas.





Parameters	Description
Availability gauge ranges	Configuration of the color ranges:
	Low range
	Medium range
	High range
	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.
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.

12.1.14 Decimal places

Stipulation of the decimal places for the counters of a report.

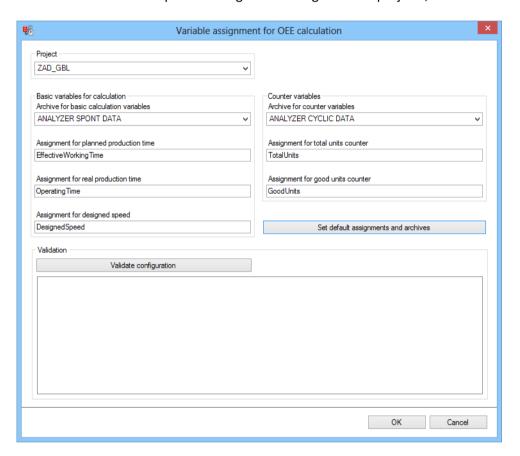


Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	Minimum: 0
	Maximum: 10
	If the maximum is exceeded using the cursor keys, it jumps back to the minimum; if the minimum is gone below, it jumps to the maximum.



12.1.15 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:





Parameters	Description
Project	Selection of a project from the drop-down list.
	The corresponding archives are available, depending on the project.
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	Assignment of the variables for the planned production time.
	Default: EffectiveWorkingTime
Assignment for real production time	Assignment of the variables for the actual production time.
	Default: Operating Time
Assignment for designed speed	Assignment of the variables for the planned equipment speed.
	Default: DesignedSpeed
Counter variables	Configuration of the counter variables.
Archive for counter variables	Selection of a cyclical archive.
Assignment for total units counter	Assignment of the variables for the total production quantity.
	Default: TotalUnits
Assignment for good units counter	Assignment of the variables for the total quantity of good units produced.
	Default: GoodUnits
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	Clicking on the button checks:
	Are all input fields populated?



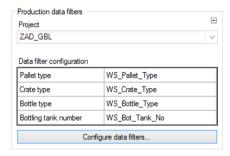
	For how many and which equipment models is it possible to calculate the OEE key figures with the given configuration?
	The result of checking is shown in the input field.
OK	Accepts all inputs and closes dialog.
Cancel	Discards all changes and closes dialog.

Hints:

- ▶ The term Assignment corresponds to the Meaning table column.
- ▶ OEE calculations require the corresponding configuration in zenon (on page 977).

12.1.16 Production data filters

Configuration and display of the optional data filtering.



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.
	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.
Data Filter configuration	Table with the current settings for data filtering.
Configure data filters	Clicking on the button opens the dialog (on page 543) for configuring the data filters.

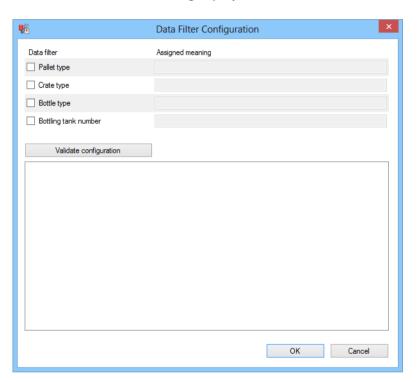


Configuration of data filter

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.





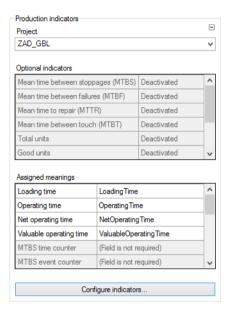
Parameters	Description
Data filter type	Activation and deactivation of the data filter types.
Meaning for data filter variable	Enter the meaning for data filter variables.
	The input field is only active if the checkbox in front of it is active. If the input field is empty when the checkbox is activated, it is populated with the standard value for the meaning.
Pallet type	Active: It is filtered according to the pallet type.
	The input field next to the checkbox is for entering the meaning (Meaning) for the addressing of the variables for this filter.
Crate type	Active: It is filtered according to the crate type.
	The input field next to the checkbox is for entering the meaning (Meaning) for the addressing of the variables for this filter.
Bottle type	Active: It is filtered according to the bottle type.
	The input field next to the checkbox is for entering the meaning (Meaning) for the addressing of the variables for this filter.
Bottling tank number	Active: It is filtered according to the bottling tank number.
	The input field next to the checkbox is for entering the meaning (Meaning) for the addressing of the variables for this filter.
Validate configuration	Clicking on the button validates the inputs and provides the results in the list field.
	The following is checked during validation:
	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.
--

12.1.17 Production indicators

Configuration and display of the indicators and the initial variables for their calculation.





Parameters	Description
Production indicators	Configuration and display of the production indicators.
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.
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 546) for configuring the indicators.

Configuration indicators

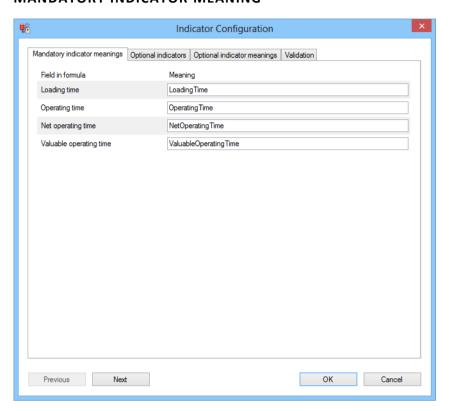
The indicators are configured in four tabs:

- ► 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





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 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

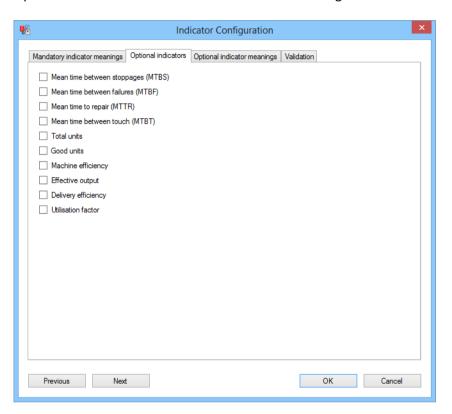
The four main indicators are calculated according to these formulas:

```
Availability = @OperatingTime @LoadingTime |
Performance = @NetOperatingTime |
Quality = @ValuableOperatingTime @NetOperatingTime
@NetOperatingTime
OEE = Availability * Performance * Quality
```



OPTIONAL INDICATORS

Optional indicators are activated and deactivated using this tab.

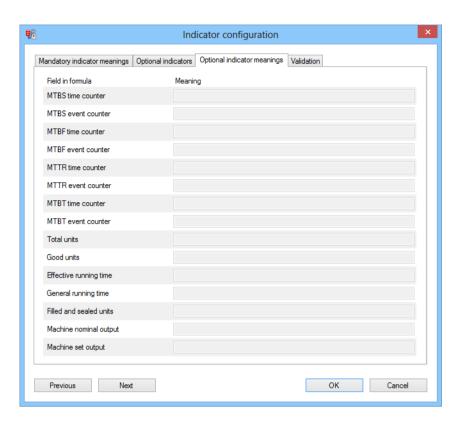




Parameters	Description
Activation of the optional indicators	The following indicators can be activated or deactivated as required by activating the checkboxes:
	Mean time between stoppages (MTBS)
	Mean time between failures (MTBF)
	Mean time to repair (MTTR)
	Mean time between touch (MTBT)
	Total units
	Good units
	Machine efficiency
	Effective output
	Delivery efficiency
	Utilisation factor
Previous	Switches to 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.

OPTIONAL INDICATOR MEANING







Parameters	Description
Field in formula	Fields for the formula. Meanings must be set for these if the indicators are to be used.
	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	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.
	If one of the input fields is empty when the dialog is called up, it is filled with the standard value.
Field	Used by
MTBS time counter	Mean Time Between Stoppage
MTBS event counter	Mean Time Between Stoppage
MTBF time counter	Mean Time Between Failures



Mean Time Between Failures
Mean Time To Repair
Mean Time To Repair
Mean Time Between Touches
Mean Time Between Touches
Total Units
Good Units
Machine Efficiency
Machine Efficiency, Effective Output and Delivery Efficiency
Effective Output and Delivery Efficiency
Delivery Efficiency and Utilization Factor
Utilization Factor
Switches to previous tab. (deactivated in the first tab)
Switches to the next tab. (deactivated in the last tab)
Applies all changes in all tabs and closes the dialog.
If one of the necessary input fields is empty, the button is deactivated.
Discards all changes in all tabs and closes the dialog.

CALCULATION OF THE OPTIONAL INDICATORS

The optional indicators are calculated according to these formulas:



```
MTBS (Mean Time Between Stoppages) = @MTBS_TimeCounter @MTBS_EventCounter

MTBF (Mean Time Between Failures) = @MTBF_TimeCounter @MTBF_EventCounter

MTTR (Mean Time To Repair) = @MTTR_TimeCounter @MTBT_EventCounter

MTBT (Mean Time Between Touch) = @MTBT_TimeCounter

MTBT (Mean Time Between Touch) = @MTBT_TimeCounter

Total Units = @TotalUnits

Good Units = @TotalUnits

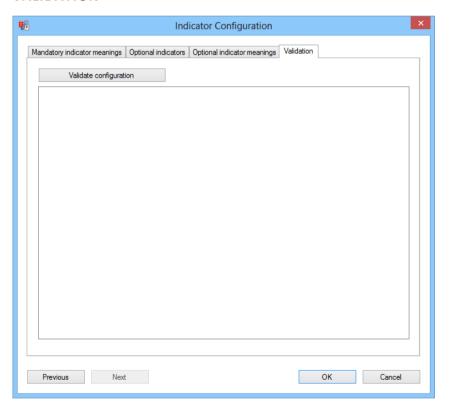
Machine efficiency q E = @EffectiveRuntime @Generalruntime

Effective Output Qeff E = @FilledAndSealedBottles @Generalruntime

Delivery efficiency \( \lambda \) E = @MachineSfectiveOutput = @FilledAndSealedBottles @Generalruntime = @Generalruntime = @Generalruntime = @MachineSfectiveOutput @Generalruntime = @MachineShominalOutput

Utilisation factor \( \phi \) E = @MachineShominalOutput
```

VALIDATION

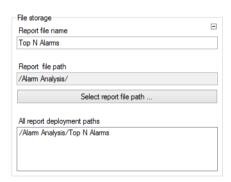




Parameters	Description
Validate configuration	Clicking on the button validates the inputs and provides the results in the list field.
	The following is checked during validation:
	Whether the report is linked to a project and/or an equipment model
	For which equipment groups precisely one variable each per active filter can be addressed with the meanings entered
Previous	Switches to previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ок	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.

12.1.18 RDL file - path

The RDL file path is displayed and configured using four elements:





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 409).

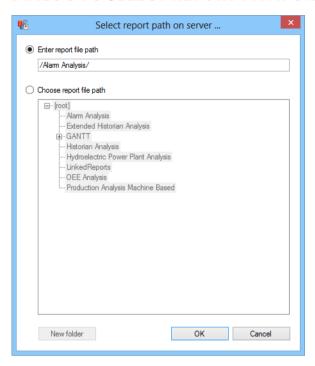
CONFIGURING THE PATH

To configure the path for the RDL file:

- 1. Click on the ${\tt Select}$ ${\tt RDL}$ folder ${\tt path}$ 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 ox



DIALOG TO SELECT REPORT PATH ON SERVER





Parameters	Description
Enter report	Active: The file path is entered into the field manually.
file path	The following applies for the input of the name:
	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: $;?:@\&=+$, *<> "/$
Choose report	Active: The file path is selected from the list.
file path	The list contains the current folder structure, whereby language folders (on page 409) are not shown. For example:
	Folder EN/folder 1 or folder1/EN are always displayed as folder1.
List field	Displays the folder structure of the Analyzer server. The currently-selected folder is highlighted.
	A folder can be selected in the list.
New folder	Opens dialog to add a new folder.
	Only active if Select report file path has been activated.
	For details, see the Creating a new folder section.
OK	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.
Cancel	Closes the dialog without changing the path.

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:
	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: ;?:@&=+\$,*<> "/
ок	Accepts settings and creates new folder. This is displayed in the list.
Cancel	Rejects all inputs and closes the dialog without creating a folder.

12.1.19 Report templates

Information on the report templates:

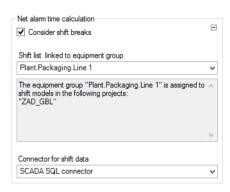




Parameters	Description
Information on report templates	Information on the report template, consisting of:
	Theme
	Report template
	Both localized names are read from the RTC at the time of the creation
	of the zams_rep file and then saved in the zams_rep file. Changes in the RTC file are thus not implemented here!
Theme	Localized name of the report template class from which the report
	template for the report comes.
	Only display.
Report template	Localized name of the report template used.
	Only display.

12.1.20 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.





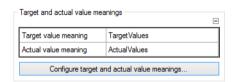
Parameters	Description	
Net alarm time calculation	Properties to calculate the net time.	
Consider shift breaks	Active: Shift breaks are taken into account.	
Shift list linked to equipment group	ID of the equipment model for which the shift data is to be obtained from drop-down list	
List field	Shows 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.

12.1.21 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.

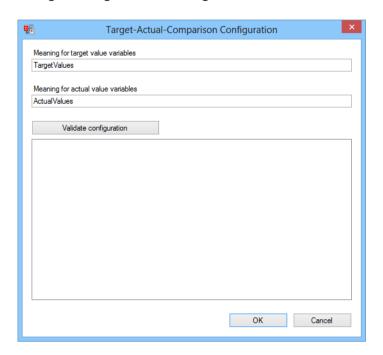


Parameters	Description
Target and actual value meanings	Display and configuration of the meanings for set points and actual values.
List of meanings	Table with the current settings for the meanings for the set points and actual values.
Configure target and actual value meanings	Clicking on the button opens the dialog for configuring the meanings (on page 562).



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	Clicking on the button checks the entries in both input fields.
	The following is checked:
	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	Applies settings and closes the dialog.
	Button is only available if both input fields are filled.
Cancel	Discards all changes and closes the dialog.



12.1.22 Element sort order

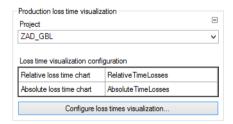
Configuration of the sorting of the modes of operation and the components.



Parameters	Description
Element sort order	Selection of the sorting criteria from the drop-down list:
	Element ID ascending (same order as metadata table)
	Element ID descending (inverse order as metadata table)
	Element label alphabetically ascending
	Element label alphabetically descending

12.1.23 Visualizing loss times

Configuration and display of the meanings for the loss times.





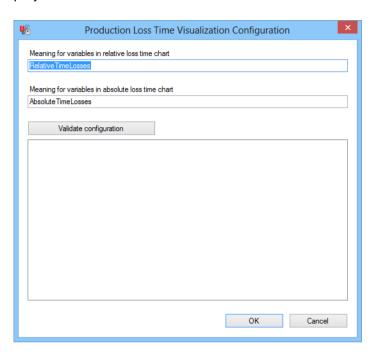
Parameters	Description
Production loss time visualization	Configuration and display of the meanings for the loss times.
Project	Selection of the project that is to be linked to a project from a drop-down list.
	If a project is selected, this project is forwarded to all other groupings in the report that 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 564) 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.

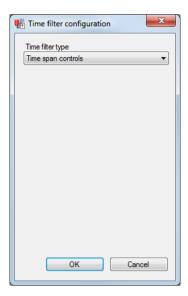


Parameters	Description
Meaning for variables in relative loss time chart	Input of the meaning, which leads to the variable being included in the relative loss time diagram.
Meaning for variables in absolute loss time chart	Input of the meaning, which leads to the variable being included in the absolute loss time diagram.
Validate configuration	Clicking on the button validates the inputs and provides the results in the list field.
	The following is checked during validation:
	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.
	The button is not shown If one of the input fields is empty.
Cancel	Discards all changes and closes the dialog.



12.1.24 Time filter configuration

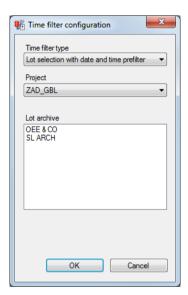
The dialog to configure the time filter consists of the basic Time filter type element. Further elements are shown, depending on the selection of the type.





Parameters	Description
Time filter	Selection of the type of time filtering from the drop-down list:
type	Date and time check: Date and time per time range
	Time range check: Time span per time range
	Lot selection with date and time prefilter: Selection of the lot with date and time per time range; for details, see the Lot chapter
	Lot selection with time range prefilter: Selection of the lot with time span per time range; for details, see the Lot chapter
	Shift selection with date and time prefilter: Selection of the shift data with date and time per time range; for details, see the Shift chapter
	Shift selection with time range prefilter: Selection of the shift data with time span per time range; for details, see the Shift chapter
ок	Saves configuration in the report area in the Time filter configuration list field and closes dialog.
Cancel	Discards changes and closes the dialog.

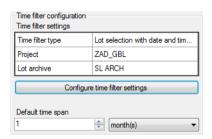
LOTS





Parameters	Description
Time filter type	Selection of the type of time filtering from the drop-down list. The following are available for lots:
	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
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.
ок	Saves configuration in the report area in the Time filter settings list field and closes dialog.
Cancel	Discards changes and closes the dialog.

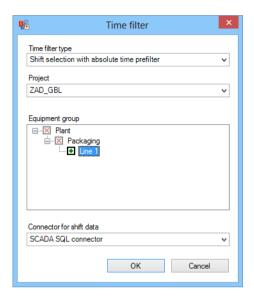
Possible result in the report area:





SHIFT

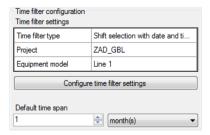
If the combobox is set to "Shift selection with datetime prefilter" or "Shift selection with timespan prefilter", additional controls are shown and the dialog will look as follows:





Parameters	Description
Time filter type	Selection of the type of time filtering from the drop-down list; the following are available for shift data:
	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
Project	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.
Equipment model	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:
	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	Selection of the connector to get shift data from drop-down list
shift data	A connector must be selected.
	Attention: The SCADA runtime connector cannot get any shift data.
ок	Saves configuration in the report area in the Time filter settings list field and closes dialog.
Cancel	Discards changes and closes the dialog.

Possible result in the report area:





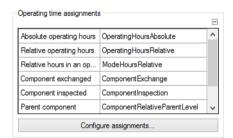
Attention

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.

12.1.25 Operating time assignments

Display and configuration of the assignments for power station operating times per machine component and operating mode.

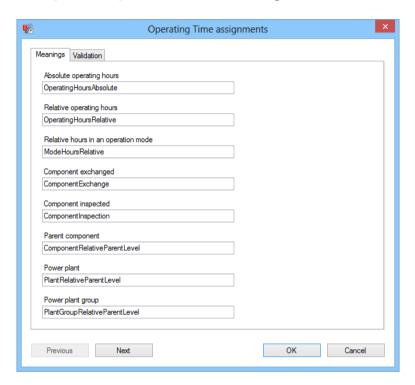


Parameters	Description
Operating time assignments	Display and configuration of the assignments for power station operating times per machine component and operating mode.
List of assignments	Display of the configured assignments.
Configure assignments	Clicking on the button opens the dialog for configuring the archives (on page 572).



Configure assignments

Dialog to configure the Operating time assignments (on page 571). Dialog is started by clicking on the Configure assignments button. The dialog consists of two tabs:

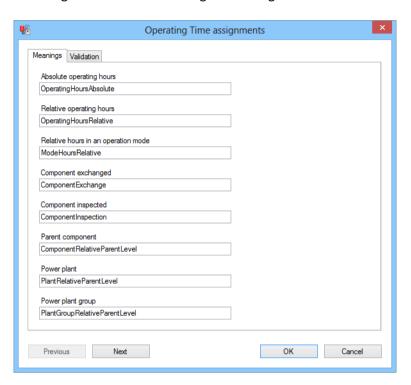


Parameters	Description
Meanings	Configuration (on page 573) of the meanings.
Validation	Validation (on page 575) of the configuration.
Previous	Switches to previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ок	Applies all changes in all tabs and 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.





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	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.
	Note for developer: ID for field in EQUIPMENTINFO table.
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 previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ок	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:

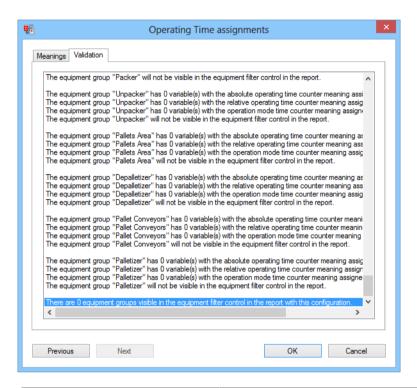
- ▶ If an input field is empty, this input field is marked with a color. The ox button is deactivated.
- ▶ If an input field was left empty when a dialog was called up, because the configuration of the report does not have any content for it, then this is filled with the standard value.



Validation

The assignments are validated in this tab.

In order for the validation to start, each entry field in the Meanings (on page 573) 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 previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ОК	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:



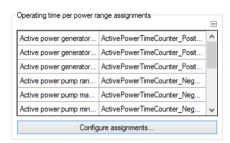
- Precisely 1 absolute operating time counter
- Precisely 1 relative operating time counter
- At least 1 operating mode relative counter.

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.

12.1.26 Operating time per power range assignments

Display and configuration of the assignments for power station operating times per load area.

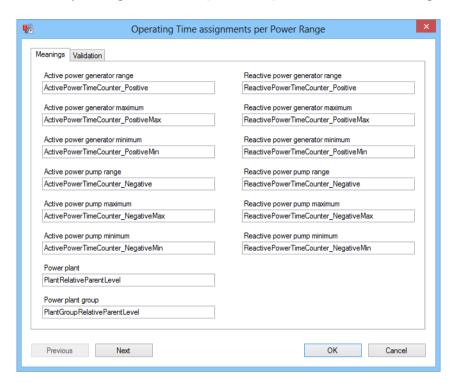


Parameters	Description
Operating time per power range assignments	Display and configuration of the assignments for power station operating times per load area.
List of assignments	Display of the configured assignments.
Configure assignments	Clicking on the button opens the dialog for configuring the archives (on page 577).



Configure assignments

Dialog to configure the operating time per power range assignments (on page 576). Dialog is started by clicking on the configure assignments button. The dialog consists of two tabs:

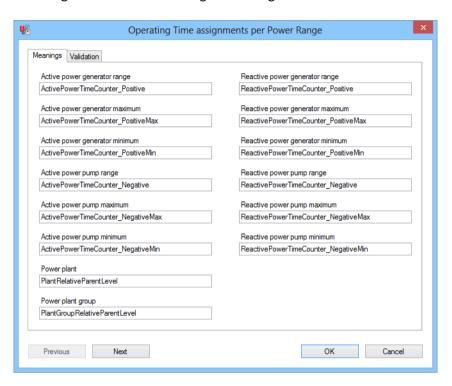


Parameters	Description
Meanings	Configuration (on page 578) of the meanings.
Validation	Validation (on page 580) of the configuration.
Previous	Switches to previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ок	Applies all changes in all tabs and 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.





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	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 previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ОК	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:

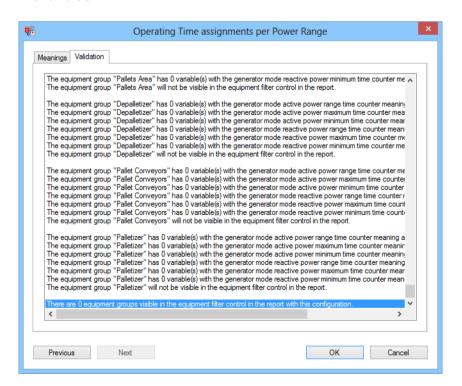
If an input field is empty, this input field is marked with a color. The οκ button is deactivated.

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 578) 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 previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ОК	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.

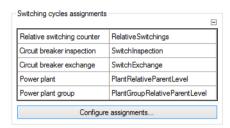
If this is not the case, the equipment group cannot be used and the procedure is ended for this equipment group.

- 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



12.1.27 Switching cycles assignments

Display and configuration of the assignment for power switching cycles.

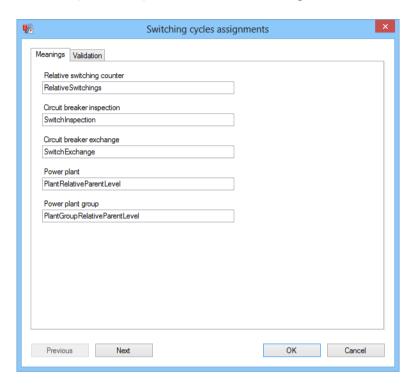


Parameters	Description
Switching cycles assignments	Display and configuration of the assignment for power switching cycles.
List of assignments	Display of the configured assignments.
Configure assignments	Clicking on the button opens the dialog for configuring the archives (on page 583).



Configure assignments

Dialog to configure the switching Cycles assignments. (on page 582) Dialog is started by clicking on the Configure assignments button. The dialog consists of two tabs:

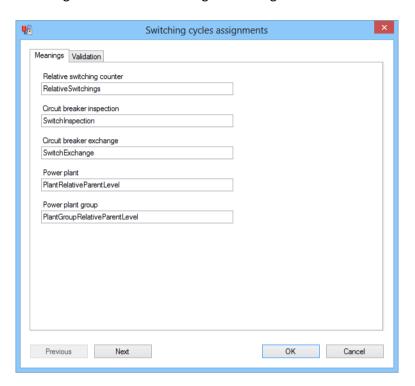


Parameters	Description
Meanings	Configuration (on page 584) of the meanings.
Validation	Validation (on page 585) of the configuration.
Previous	Switches to previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ок	Applies all changes in all tabs and 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.





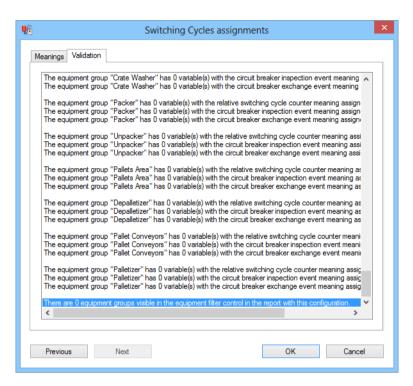
Parameters	Description
Relative switching counter	Enter the meaning for the relative switching counter.
Circuit breaker inspection	Enter the meaning for the circuit breaker inspection event variable.
Circuit breaker exchange	Enter the meaning for the circuit breaker exchange variable.
Power plant	Input 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 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 584) 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 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



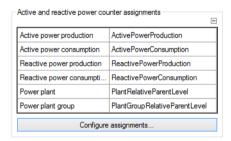
• Precisely 1 circuit breaker inspection variable

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.

12.1.28 Active and reactive power counter assignments

Display and configuration of the assignments for power station real and wattless power.

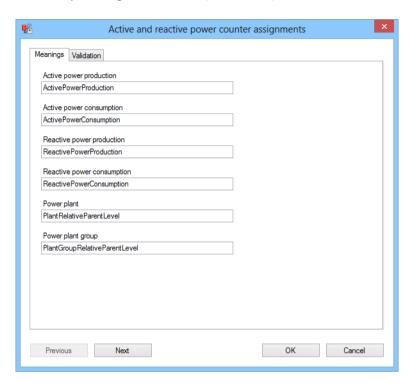


Parameters	Description
Active and reactive power counter assignments	Display and configuration of the assignments for power station real and wattless power.
List of assignments	Display of the configured assignments.
Configure assignments	Clicking on the button opens the dialog for configuring the archives (on page 588).



Configure assignments

Dialog to configure the Active and reactive power counter assignments (on page 587). Dialog is started by clicking on the Configure assignments button. The dialog consists of two tabs:

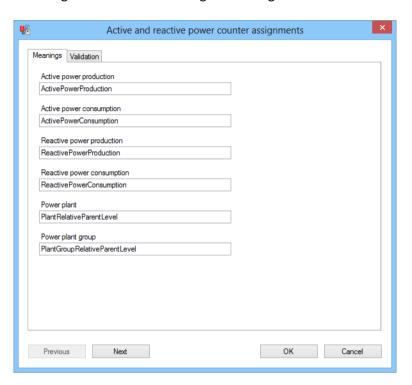


Parameters	Description
Meanings	Configuration (on page 589) of the meanings.
Validation	Validation (on page 590) of the configuration.
Previous	Switches to previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ок	Applies all changes in all tabs and 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.





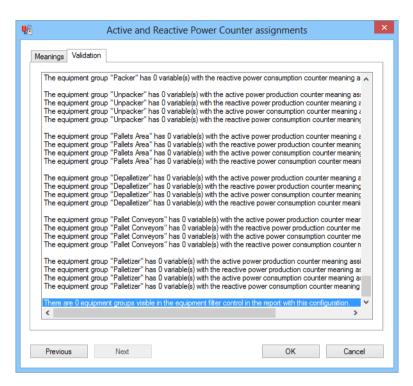
Parameters	Description
Active power production	Input of the meaning for the active power production.
Active power consumption	Input of the meaning for the active power consumption.
Reactive power production	Input of the meaning for the reactive power production.
Power plant	Input of the identification 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 previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ок	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 589) 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 previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ок	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 active power counter for production
 - Precisely 1 reactive power counter for production



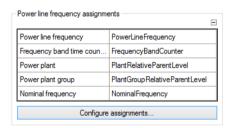
- At most 1 active power counter for consumption
- At most 1 reactive power counter for consumption

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.

12.1.29 Power line frequency assignments

Display and configuration of the assignment for power line frequency.

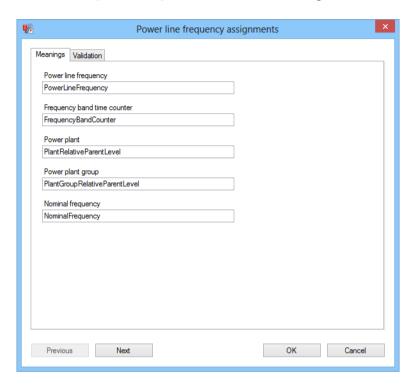


Parameters	Description
Power line frequency assignments	Display and configuration of the assignment for power line frequency.
List of assignments	Display of the configured assignments.
Configure assignments	Clicking on the button opens the dialog for configuring the archives (on page 593).



Configure assignments

Dialog to configure the Power line frequency assignments (on page 592). Dialog is started by clicking on the Configure assignments button. The dialog consists of two tabs:

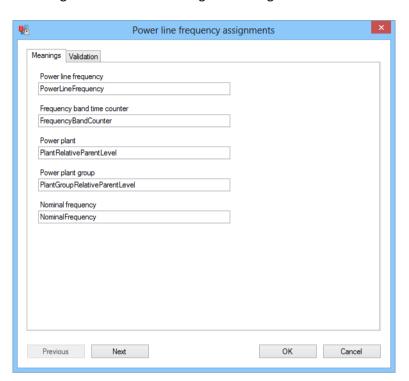


Parameters	Description
Meanings	Configuration (on page 594) of the meanings.
Validation	Validation (on page 595) of the configuration.
Previous	Switches to previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ок	Applies all changes in all tabs and 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.





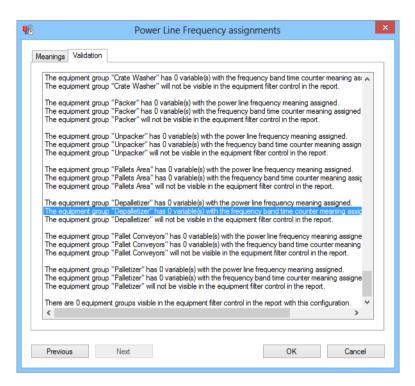
Parameters	Description
Power Line Frequency	Entry of the meaning for the power line frequency of a machine.
Frequency band time counter	Entry of the meaning for the relative time counter for a frequency band of a machine.
	All variables that are assigned to the equipment group and whose meaning starts precisely with the text entered here (and possible a suffix), are included in the report.
	Meaning of the variables either correspond precisely with the meaning entered or must start with the meaning entered.
	Attention: The suffix of the meaning of the variables must be numerical, because it might lead to a conversion error otherwise.
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.
Nominal frequency	Input of the identification for the field in the metadata table that defines the nominal frequency for the machine.
	Note for developer: ID for field in EQUIPMENTINFO table.
Previous	Switches to 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 594) 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 previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ок	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



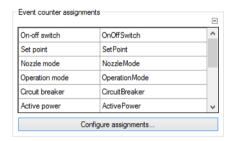
With the frequency band, the meaning of the variables must either correspond precisely with the meaning entered or the meaning of the variables must start with the meaning entered.

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.

12.1.30 Event counter assignments

Display and configuration of the assignment for power station event counters.

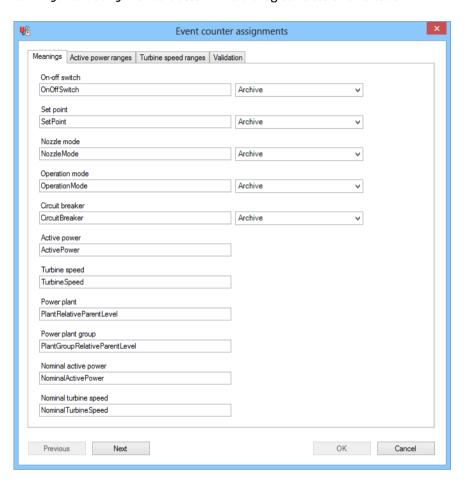


Parameters	Description
Event counter assignments	Display and configuration of the assignment for power station event counters.
List of assignments	Display of the configured assignments.
Configure assignments	Clicking on the button opens the dialog for configuring the archives (on page 598).



Configure assignments

Dialog to configure the Event counter assignments (on page 597). Dialog is started by clicking on the Configure assignments button. The dialog consists of two tabs:



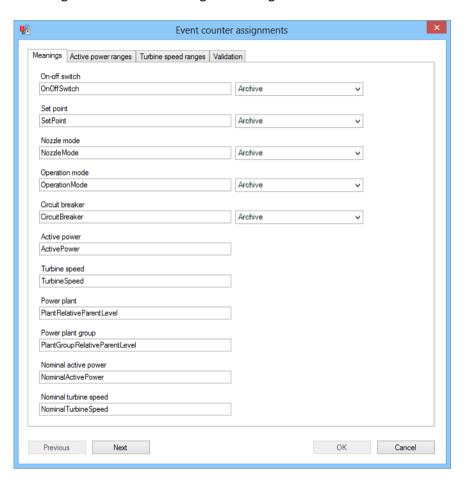


Parameters	Description
Meanings	Configuration (on page 600) of the meanings.
Active power ranges	Configuration (on page 603) of the active power ranges.
Turbine speed ranges	Configuration (on page 606) of the turbine speed ranges.
Validation	Validation (on page 608) of the configuration.
Previous	Switches to previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ОК	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.





Parameters	Description
On-off switch	Entry of the meaning for the machine's on/off switch.
	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:
	Alarm Message List
	Archive
	Chronological event list and selection.
	Default: Archive
Set point	Input of the meaning for the set value for the machine power.
	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:
	Alarm Message List
	Archive
	Chronological event list and selection.
	Default: Archive
Nozzle mode	Enter the meaning for the nozzle mode.
	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:
	Alarm Message List
	Archive
	Chronological event list and selection.
	Default: Archive
Operation mode	Enter the meaning for the operation mode.
	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:
	Alarm Message List
	Archive



	Chronological event list and selection.
	Default: Archive
Circuit breaker	Enter the meaning for the circuit breaker.
	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:
	Alarm Message List
	Archive
	Chronological event list and selection.
	Default: Archive
Active power	Enter the meaning for the active power.
Turbine speed	Enter the meaning for the turbine speed.
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.
Nominal active power	Input of the identification for the field in the metadata table that defined the nominal active power.
	Note for developer: ID for field in EQUIPMENTINFO table.
Nominal turbine speed	Input of the identification for the field in the metadata table that defines the nominal turbine speed.
	Note for developer: ID for field in EQUIPMENTINFO table.

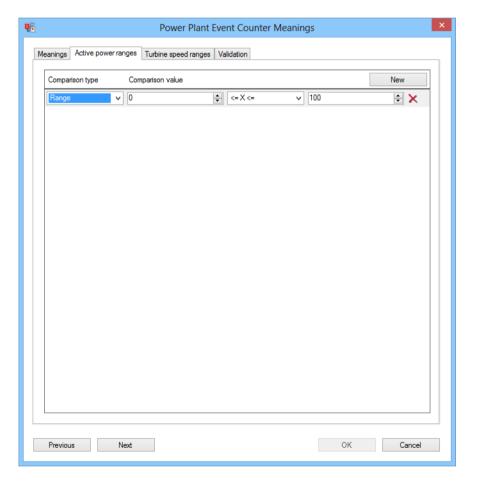
Previous	Switches to previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ОК	Applies all changes in all tabs and closes the dialog.



	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:
	Comparison type
	Comparison value
Comparison type	Selection of the comparison type from the drop-down list. Available are:
	Less (<)
	Less or equal (<=)
	Greater (>)
	Greater or equal (>=)
	Area: Compares two values to one another and shows further input fields for
	Comparison type and Comparison value.
Comparison value	Entry of the comparison value.
	Numerical value
	Maximum: 2147483647
New	Click on button
	Creates a new area
	Initializes this with $0 <= X <= 100$
	Inserts it as a new row at the bottom end of the list
х	Clicking on the button removes the attendant area from the list.
Previous	Switches to 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 < [number]
- ► Lower or equal: X <= [number]
- ► Greater than: X > [number]
- ► Greater than or equal to: X >= [number]
- Areas

AREAS

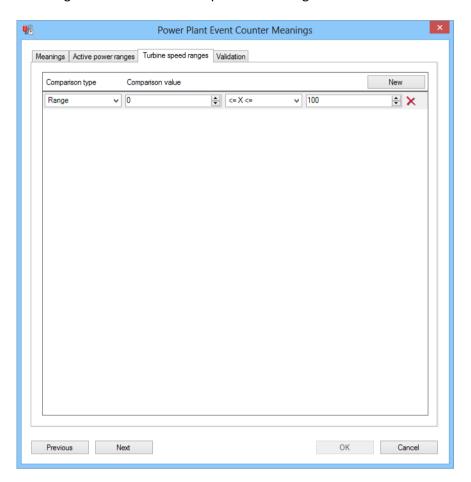
The 'areas' comparison type defines a range between two values. The following rules are available:

- ▶ [number] < X < [number]
- ▶ [number] < X <= [number]
- ▶ [number] <= X < [number]
- ▶ [number] <= X <= [number]



Turbine speed ranges

The assignments of the turbine speeds are configured in this tab.





Parameters	Description
Area list	The area list shows previously-configured performance areas. The pre- existing areas are displayed:
	Comparison type
	Comparison value
Comparison type	Selection of the comparison type from the drop-down list. Available are:
	Less (<)
	Less or equal (<=)
	Greater (>)
	Greater or equal (>=)
	Area: Compares two values to one another and shows further input fields for
	Comparison type and Comparison value.
Comparison value	Entry of the comparison value.
	Numerical value
	Maximum: 2147483647
New	Click on button
	Creates a new area
	Initializes this with $0 <= X <= 100$
	Inserts it as a new row at the bottom end of the list
х	Clicking on the button removes the attendant area from the list.
Previous	Switches to 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 < [number]
```

► Lower or equal: X <= [number]

► Greater than: X > [number]

► Greater than or equal to: X >= [number]

Areas

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]

Validation

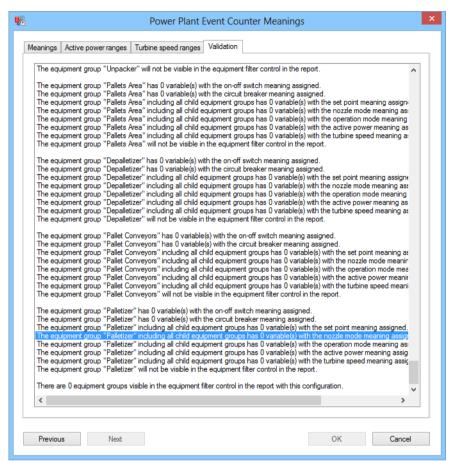
The assignments are validated in this tab.

The following must be the case in order for the validation to start:

- ▶ Each entry in the Meanings (on page 600) tab is filled with a value
- ► There is at least one Active power range (on page 603)







Parameters	Description
List of results of the verification	Lists all results of the validation of the assignments.
Previous	Switches to previous tab. (deactivated in the first tab)
Next	Switches to the next tab. (deactivated in the last tab)
ок	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 $100 \le X \le 100$ is feasible.

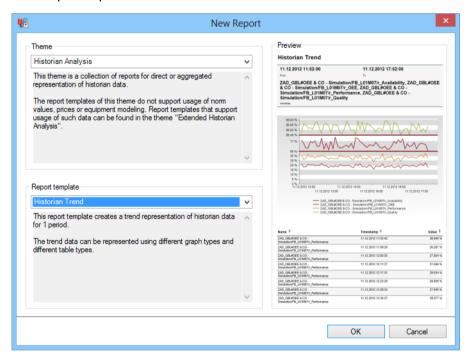
12.2 Report templates

The following pre-configured report templates are available for zenon Analyzer:

- ► Alarm analysis (on page 612): Evaluation of alarms
- Custom Formula Analysis (on page 641): Evaluations with custom formulas
- ► Archive analysis (on page 699): Evaluation of archives
- ▶ Extended Historian Analysis (on page 783). Extended evaluation of archives



- ▶ I (on page 898)SO 50001: Report templates with the theme custom Formula Analysis (on page 641) and Extended Historian Analysis (on page 783)
- ▶ Production Analysis Machine Based (on page 900): 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 956): Evaluation of OEE performance indicators
- ► Target Actual Analysis (on page 982): Calculates absolute or relative counters from set values or actual values for selected equipment groups.
- ► Hydroelectric Power Plant Analysis (on page 999). Determines various counters for hydroelectric power plants.



SYNTAX FOR MEANINGS IN ZENON RESOURCE LABEL

Meanings correspond to the entries in the zenon Betriebsmittelkennung property in some cases. These can contain meanings for several categories.

The following is applicable to entries in the Betriebsmittelkennung 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],...;
```

• wr=: Identifies a variable for the waterfall display.

```
Syntax: wF=[model name text],[line index INT],[index in line INT],[color code as text #XXXXXX];
```

Every other entry is also understood as a meaning

Attention: The Betriebsmittelkennung property is limited to 256 characters in the zenon Editor.

12.2.1 Alarm Analysis

Reports with this theme provide a range of report templates that assist in the evaluation of alarms:

- Alarm Message List (on page 614): creates a list of alarms in table form for a time range
- ► First N alarms (on page 622): gets a defined number (N) of alarms that occur most frequently or have been active the longest
- ▶ Alarm aggregation (on page 631): gets the sum of all alarms triggered in a time range and adds up the duration of the different alarms

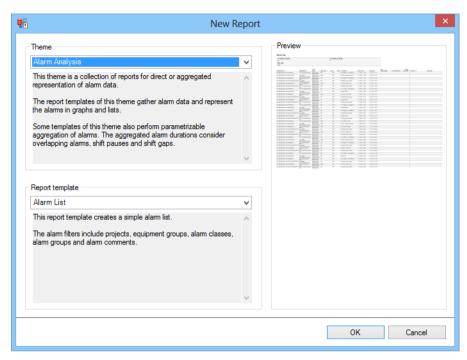
REPORT TEMPLATE SELECTION

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



- 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.
Users	+	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



APPLICATION EXAMPLES

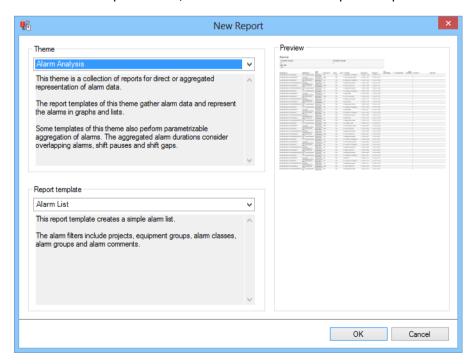
For example, alarm list reports are suitable for:

Alarm analysis	Filter
A machine in a certain time period	Equipment groups
The most urgent alarms	Alarm Classes
Specific alarm groups, such as emergency stops, machine problems, external faults, etc.	Alarm groups
For a production lot	Lots
A shift	Shift
The alarms with specific alarm comments	Alarm comment

CREATE REPORT

To create an alarm list report:

- 1. In the Theme drop-down list, select Alarm Analysis
- 2. from the drop-down list, select Alarm list as a report template



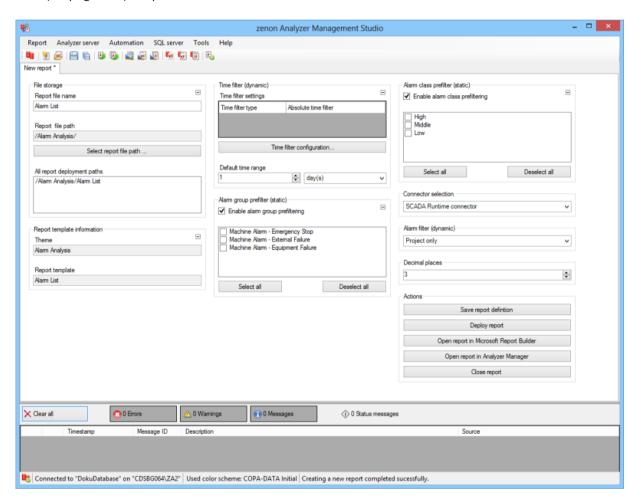
3. Click on the ox button



- 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 486) chapter.





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
complate	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
	If information is only displayed in part due to its length, move

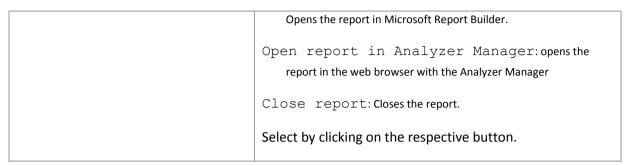


	the mouse over the corresponding element. The complete information is then displayed in a tooltip.
Time filter (dynamic)	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
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	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.
	For details, see the Alarm prefiltering (on page 492) chapter.
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	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.
	For details, see the Alarm prefiltering (on page 492) chapter.
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Alarm filter (dynamic)	Selection of alarm filtering:
	Project only
	Project and alarm class
	Project and alarm group
	Project and equipment group
	Project and alarm comment
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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	Possible actions for the report:
	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:





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 prefilitering 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

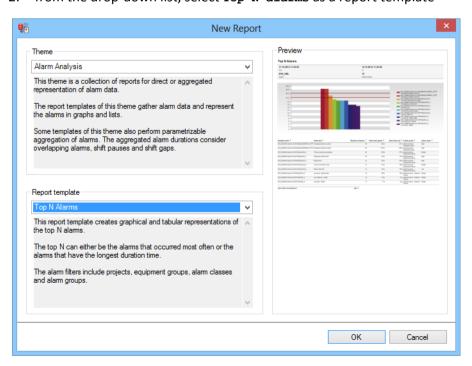


The most frequent urgent alarms	Alarm Classes
The most frequent alarms that have led to emergency stops, machine errors, etc.	Alarm groups
The most frequent alarms during a production lot	Lots
The most frequent alarms during a shift	Shift
The alarms for a machine that were active the longest in a certain 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
- 2. from the drop-down list, select Top N alarms as a report template

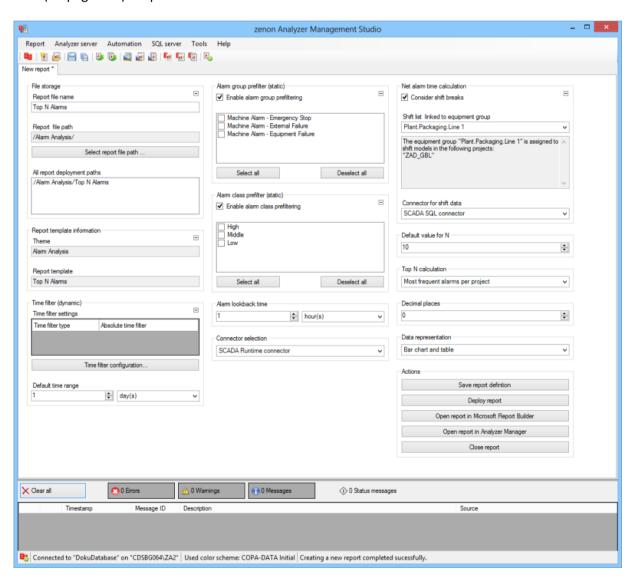




- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report

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 486) chapter.





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
cempiace	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
	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.
Time filter (dynamic)	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
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	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.
	For details, see the Alarm prefiltering (on page 492) chapter.
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	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. For details, see the Alarm prefiltering (on page 492) chapter.
Alarm lookback time	Time range, which should be taken into account from the start of the time filter retrospectively.
	For details, see the Alarm Lookback time (on page 491) chapter.
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
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	Selection of an equipment group for the shift model from the drop-down list.
	For details, see the Origin of shift data (on page 560) chapter.
Connector for shift data	Selection of a connector for the shift data from a drop-down list.
	For details, see the Origin of shift data (on page 560) chapter.
Standard value for N	Definition of the standard value for N.
	Minimum: 1
	Maximum: 100
	Default: 10
	Input directly into the field in whole numbers between 1 and 100 or using the Spincontrol arrow (granularity= 1).



Top N calculation	Selection of the calculation method:
	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	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	Column chart and table
	Pie Chart and table
	Column chart
	Pie Chart
	Table
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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	Possible actions for the report:
	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.

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 prefilitering 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:

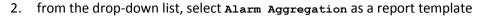
Alarm analysis	Filter
The complete duration of a machine fault during a shift	Shift and equipment groups
The complete duration of a machine fault during a production lot	Lot and equipment groups
The complete down times of an item of equipment in a time period	Equipment groups
The complete duration of an emergency stop, machine fault, external fault, etc. in a time period	Alarm groups

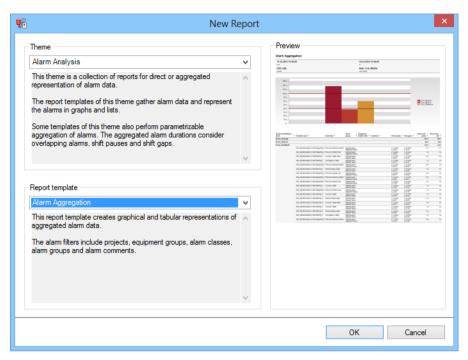
CREATE REPORT

To create an Alarm Aggregation report:

1. In the Theme drop-down list, select Alarm Analysis





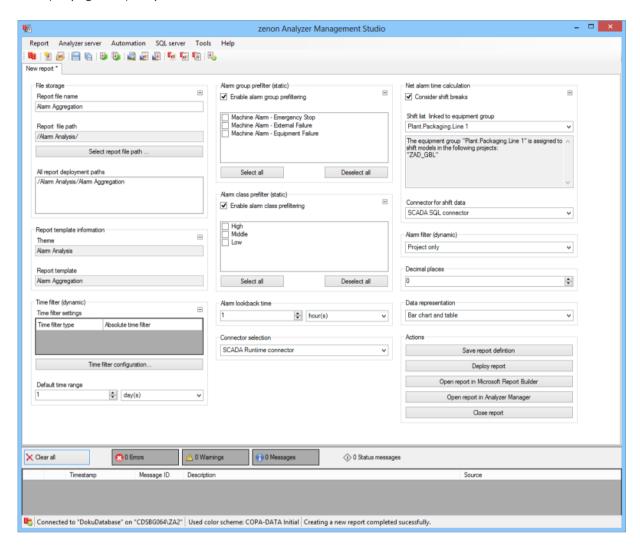


- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report



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 486) chapter.





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
cemplate	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
	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.
Time filter (dynamic)	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Alarm group prefilter (static)	Properties for prefiltering the alarm groups.
Prefiltering	Active: The list of the alarm group prefilters can be configured and used.
List of alarm group filters	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.
	For details, see the Alarm prefiltering (on page 492) chapter.
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	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.
	For details, see the Alarm prefiltering (on page 492) chapter.
Alarm lookback time	Time range, which should be taken into account from the start of the time filter retrospectively.
	For details, see the Alarm Lookback time (on page 491) chapter.
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
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	Selection of an equipment group for the shift model from the drop-down list.
	For details, see the Origin of shift data (on page 560) chapter.
Connector for shift data	Selection of a connector for the shift data from a drop-down list.
	For details, see the Origin of shift data (on page 560) chapter.
Alarm filter (dynamic)	Selection of alarm filtering:
	Project only
	Project and alarm class
	Project and alarm group
	Project and equipment group
	Project and alarm comment
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	Column chart and table
	Pie Chart and table
	Column chart
	Pie Chart
	Table
Actions	Possible actions for the report:
	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.

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 prefilitering 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

12.2.2 Custom Formula Analysis

Reports for this theme provide report templates for user-defined formulas:

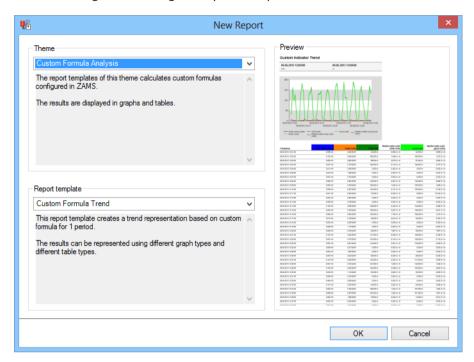
- ► Custom Formula Trend: (on page 643) Trend display of user-defined formulas for a time range.
- Custom Formula Trend Comparison (on page 650): Trend display of user-defined formulas for two time ranges.
- Custom Formula Aggregated Trend (on page 657): Trend display of aggregated user-defined formulas for a time range.
- Custom Formula Aggregated Trend Comparison (on page 664): Trend display of aggregated userdefined formulas for two time ranges.
- Custom Formula Aggregation (on page 671): Trend display of aggregated, user-defined formulas for a time range.
- Custom Formula Aggregation Comparison (on page 678): Trend display of aggregated, userdefined 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 506) 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 ox.
- 12. Open the Arrange and colorize formula results (on page 533) dialog
- 13. Sort the formulas
- 14. Define, if desired, individual colors
- 15. Confirm the configuration by clicking on ox.

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.

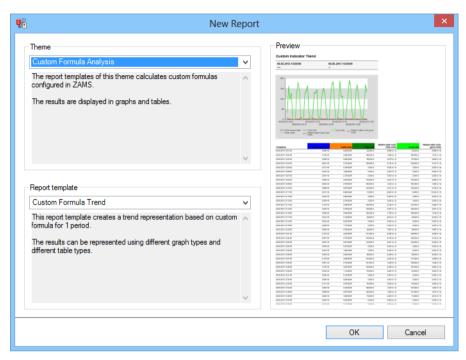
CREATE REPORT

To create a Custom Formula Trendreport:

1. In the Theme drop-down list, Select Custom Formula Analysis





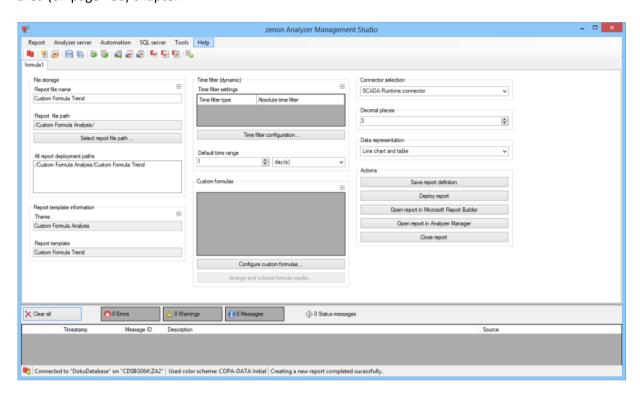


- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report



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 486) chapter.





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
Cemprate	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
	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.
Time filter (dynamic)	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Custom formulas	List and buttons to display and configure user-defined formulas.
Configure custom formulas	Opens the dialog to configure user-defined formulas (on page 506).
	The dialog is different for:
	Reports without aggregation over the time range
	Reports with aggregation over the time range
Arrange and colorize formula results	Opens the dialog to sort and color (on page 533) user-defined formulas.



Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	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	Possible actions for the report:
	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.

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 prefilitering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

DATA REPRESENTATION

- ▶ 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

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.

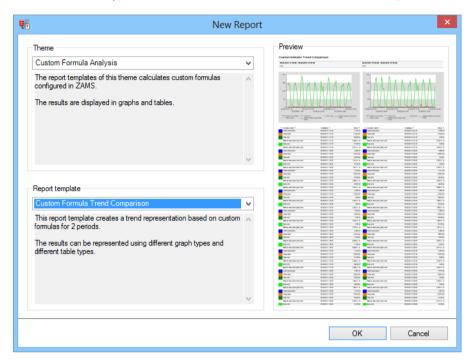
CREATE REPORT

To create a Custom Formula Trend Comparison report:

1. In the Theme drop-down list, Select Custom Formula Analysis

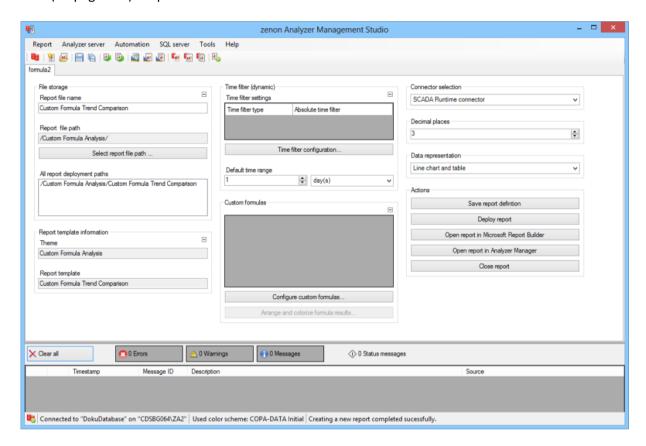






- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
cemp1a ce	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
	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.
Time filter (dynamic)	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Custom formulas	List and buttons to display and configure user-defined formulas.
Configure custom formulas	Opens the dialog to configure user-defined formulas (on page 506).
	The dialog is different for:
	Reports without aggregation over the time range
	Reports with aggregation over the time range
Arrange and colorize formula results	Opens the dialog to sort and color (on page 533) user-defined formulas.



Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available
	connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by
Parent Parent	means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	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	Possible actions for the report:
	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.

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 prefilitering of the shifts
- ▶ 1 x shift selection with 1 x time range selection for prefiltering of the shifts

DATA REPRESENTATION

- ▶ 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

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.

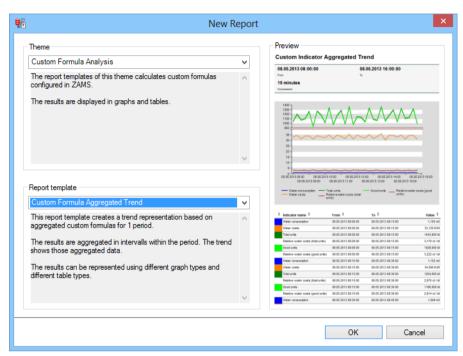
CREATE REPORT

To create a Custom Formula Aggregated Trend report:

1. In the Theme drop-down list, select Custom Formula Analysis

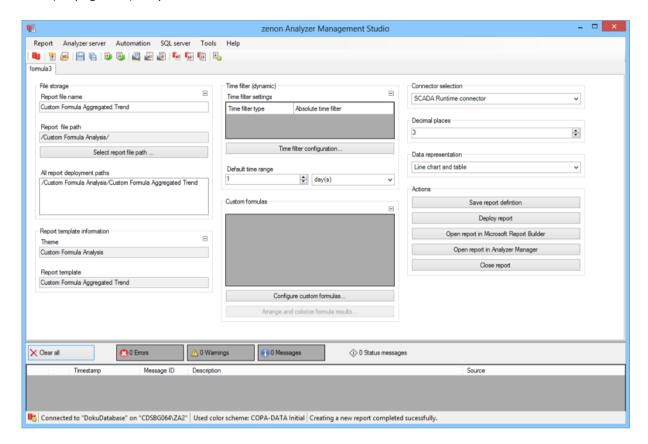






- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
	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. Time filter (dynamic) Clicking on the button opens the dialog to configure the time filter. For details, see the Configuring the time filter (on page 566) section. Default time range Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity. Numerical input field: Minimum: 1 Maximum: 1000 Drop-down list for selection of the granularity: Minutes Hour Days Months Years Custom formulas List and buttons to display and configure user-defined formulas. Configure custom formulas Opens the dialog to configure user-defined formulas (on page 506). The dialog is different for: Reports without aggregation over the time range Reports with aggregation over the time range Arrange and colorize formula results Opens the dialog to sort and color (on page 533) user-defined formulas Opens the dialog to sort and color (on page 533) user-defined formulas		
filter. For details, see the Configuring the time filter (on page 566) section. Default time range Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity. Numerical input field: Minimum: 1 Maximum: 1000 Drop-down list for selection of the granularity: Minutes Hour Days Months Years Custom formulas List and buttons to display and configure user-defined formulas. Configure custom formulas Opens the dialog to configure user-defined formulas (on page 506). The dialog is different for: Reports without aggregation over the time range Reports with aggregation over the time range Arrange and colorize Opens the dialog to sort and color (on page 533) user-		
Default time range Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity. Numerical input field: Minimum: 1 Maximum: 1000 Drop-down list for selection of the granularity: Minutes Hour Days Months Years Custom formulas List and buttons to display and configure user-defined formulas. Configure custom formulas Opens the dialog to configure user-defined formulas (on page 506). The dialog is different for: Reports without aggregation over the time range Reports with aggregation over the time range Reports with aggregation over the time range Opens the dialog to sort and color (on page 533) user-	Time filter (dynamic)	
Consists of numerical input field and drop-down list to define the granularity. Numerical input field: Minimum: 1 Maximum: 1000 Drop-down list for selection of the granularity: Minutes Hour Days Months Years Custom formulas List and buttons to display and configure user-defined formulas. Configure custom formulas Opens the dialog to configure user-defined formulas (on page 506). The dialog is different for: Reports without aggregation over the time range Reports with aggregation over the time range Opens the dialog to sort and color (on page 533) user-		
Minimum: 1 Maximum: 1000 Drop-down list for selection of the granularity: Minutes Hour Days Months Years Custom formulas List and buttons to display and configure user-defined formulas. Configure custom formulas Opens the dialog to configure user-defined formulas (on page 506). The dialog is different for: Reports without aggregation over the time range Reports with aggregation over the time range Opens the dialog to sort and color (on page 533) user-	Default time range	Consists of numerical input field and drop-down list to define
Maximum: 1000 Drop-down list for selection of the granularity: Minutes Hour Days Months Years Custom formulas List and buttons to display and configure user-defined formulas. Configure custom formulas Opens the dialog to configure user-defined formulas (on page 506). The dialog is different for: Reports without aggregation over the time range Reports with aggregation over the time range Opens the dialog to sort and color (on page 533) user-		Numerical input field:
Drop-down list for selection of the granularity: Minutes Hour Days Months Years List and buttons to display and configure user-defined formulas. Configure custom formulas Opens the dialog to configure user-defined formulas (on page 506). The dialog is different for: Reports without aggregation over the time range Reports with aggregation over the time range Arrange and colorize Opens the dialog to sort and color (on page 533) user-		Minimum: 1
Minutes Hour Days Months Years Custom formulas List and buttons to display and configure user-defined formulas. Configure custom formulas Opens the dialog to configure user-defined formulas (on page 506). The dialog is different for: Reports without aggregation over the time range Reports with aggregation over the time range Opens the dialog to sort and color (on page 533) user-		Maximum: 1000
Hour Days Months Years Custom formulas List and buttons to display and configure user-defined formulas. Configure custom formulas Opens the dialog to configure user-defined formulas (on page 506). The dialog is different for: Reports without aggregation over the time range Reports with aggregation over the time range Opens the dialog to sort and color (on page 533) user-		Drop-down list for selection of the granularity:
Days Months Years Custom formulas List and buttons to display and configure user-defined formulas. Configure custom formulas Opens the dialog to configure user-defined formulas (on page 506). The dialog is different for: Reports without aggregation over the time range Reports with aggregation over the time range Arrange and colorize Opens the dialog to sort and color (on page 533) user-		Minutes
Months Years Custom formulas List and buttons to display and configure user-defined formulas. Configure custom formulas Opens the dialog to configure user-defined formulas (on page 506). The dialog is different for: Reports without aggregation over the time range Reports with aggregation over the time range Opens the dialog to sort and color (on page 533) user-		Hour
Custom formulas List and buttons to display and configure user-defined formulas. Configure custom formulas Opens the dialog to configure user-defined formulas (on page 506). The dialog is different for: Reports without aggregation over the time range Reports with aggregation over the time range Opens the dialog to sort and color (on page 533) user-		Days
Custom formulas List and buttons to display and configure user-defined formulas. Configure custom formulas Opens the dialog to configure user-defined formulas (on page 506). The dialog is different for: Reports without aggregation over the time range Reports with aggregation over the time range Opens the dialog to sort and color (on page 533) user-		Months
formulas. Configure custom formulas Opens the dialog to configure user-defined formulas (on page 506). The dialog is different for: Reports without aggregation over the time range Reports with aggregation over the time range Opens the dialog to sort and color (on page 533) user-		Years
The dialog is different for: Reports without aggregation over the time range Reports with aggregation over the time range Opens the dialog to sort and color (on page 533) user-	Custom formulas	
Reports without aggregation over the time range Reports with aggregation over the time range Arrange and colorize Opens the dialog to sort and color (on page 533) user-	Configure custom formulas	
Reports with aggregation over the time range Arrange and colorize Opens the dialog to sort and color (on page 533) user-		The dialog is different for:
Arrange and colorize Opens the dialog to sort and color (on page 533) user-		Reports without aggregation over the time range
		Reports with aggregation over the time range
defined formulas.	Arrange and colorize formula results	Opens the dialog to sort and color (on page 533) user-defined formulas.



Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	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	Possible actions for the report:
	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.

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 prefilitering 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

- ▶ 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

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.

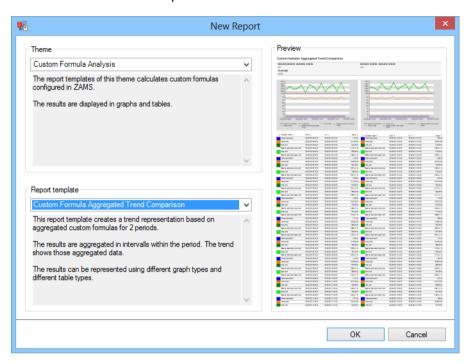
CREATE REPORT

To create an archive aggregation trend comparison with user-defined formulas report:

1. In the Theme drop-down list, Select Custom Formula Analysis

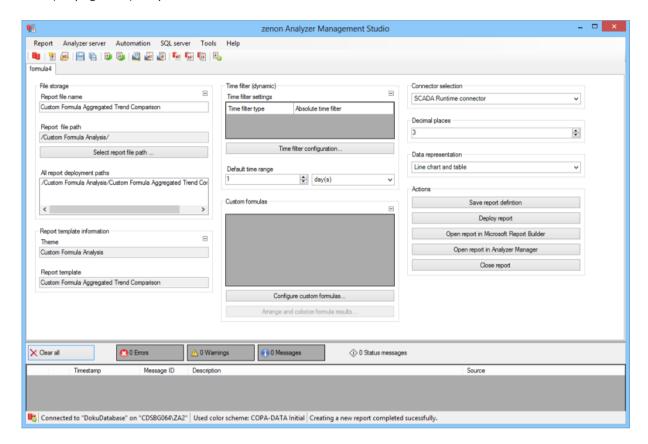


2. Select, as a report template, Archive aggregation trend comparison with user-defined formulas from the drop-down list



- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
ocmp1a oc	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
	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.
Time filter (dynamic)	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Custom formulas	List and buttons to display and configure user-defined formulas.
Configure custom formulas	Opens the dialog to configure user-defined formulas (on page 506).
	The dialog is different for:
	Reports without aggregation over the time range
	Reports with aggregation over the time range
Arrange and colorize formula results	Opens the dialog to sort and color (on page 533) user-defined formulas.



Connector selection	Selection of the connector from the drop-down list.
Connector Selection	
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	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	Possible actions for the report:
	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.

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 prefilitering 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

- ▶ 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

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

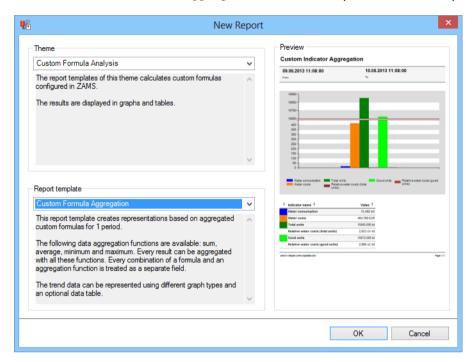
Each formula can be aggregated with all functions. Each combination of a formula and an aggregation function is treated as a separate field. The data can be displayed as graphics and an optional table.

CREATE REPORT

To create an custom Formula Aggregation report:

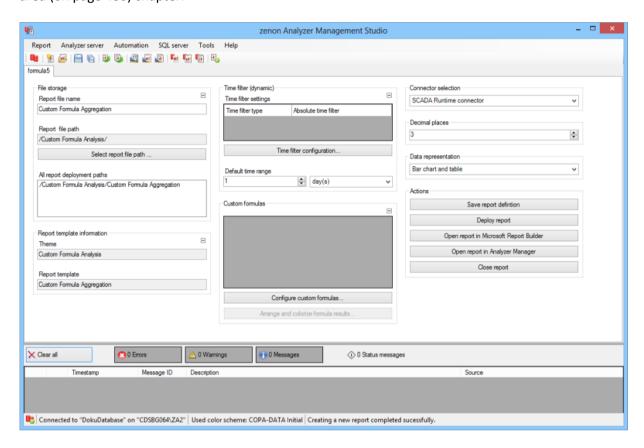


- 1. In the Theme drop-down list, select Custom Formula Analysis
- 2. Select custom Formula Aggregation from the drop-down list as a report template



- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
ocmp1a oc	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
	If information is only displayed in part due to its length, move



the mouse over the corresponding information is then displayed in a Time filter (dynamic) Clicking on the button opens the filter. For details, see the Configuring 566) section. Default time range Requirements for standard value Consists of numerical input field at the granularity. Numerical input field: Minimum: 1 Maximum: 1000 Drop-down list for selection of the Minutes Hour Days	dialog to configure the time The time filter (on page of the report time range.
filter. For details, see the Configuring 566) section. Default time range Requirements for standard value Consists of numerical input field at the granularity. Numerical input field: Minimum: 1 Maximum: 1000 Drop-down list for selection of the Minutes Hour Days	the time filter (on page of the report time range.
Default time range Requirements for standard value Consists of numerical input field at the granularity. Numerical input field: Minimum: 1 Maximum: 1000 Drop-down list for selection of the Minutes Hour Days	of the report time range.
Consists of numerical input field at the granularity. Numerical input field: Minimum: 1 Maximum: 1000 Drop-down list for selection of the Minutes Hour Days	
Minimum: 1 Maximum: 1000 Drop-down list for selection of the Minutes Hour Days	
Maximum: 1000 Drop-down list for selection of the Minutes Hour Days	
Drop-down list for selection of the Minutes Hour Days	
Minutes Hour Days	
Hour Days	granularity:
Days	
Months	
Years	
Custom formulas List and buttons to display and formulas.	configure user-defined
Configure custom formulas Opens the dialog to configure use 506).	r-defined formulas (on page
The dialog is different for:	
Reports without aggregation over the	
Reports with aggregation over the tir	time range
Arrange and colorize Opens the dialog to sort and colorimula results defined formulas.	-



Th	election of the connector from the drop-down list.
	he drap down list contains the name of the available
	he drop-down list contains the name of the available onnectors:
SC	CADA Runtime Connector (zenonV6)
sc	CADA SQL Connector (zenonSQL)
_	election of the decimal places to be displayed. Selection by leans of cursor keys or direct input in the field.
Mi	linimum: 0
M	laximum: 10
lf t	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.
	onfiguration of the data display. Select from drop-down list.
Co	olumn chart and table
Pie	e Chart and table
Co	olumn chart
Pie	e Chart
Та	able
Actions	ossible actions for the report:
Sa	ave 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.
De	eploy report: Instigates preparation of the report. If existing elements are overwritten in the process, you will be asked to confirm this.
Oł	pen report in Microsoft Report Builder: Opens the report in Microsoft Report Builder.
Ol	pen 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.

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 prefilitering 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

- ▶ 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)



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.

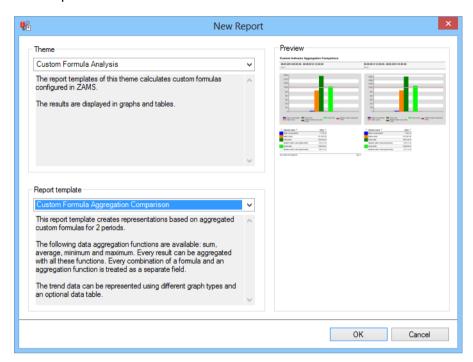
CREATE REPORT

To create a Custom Formula Aggregation Comparison report:

1. In the Theme drop-down list, Select Custom Formula Analysis

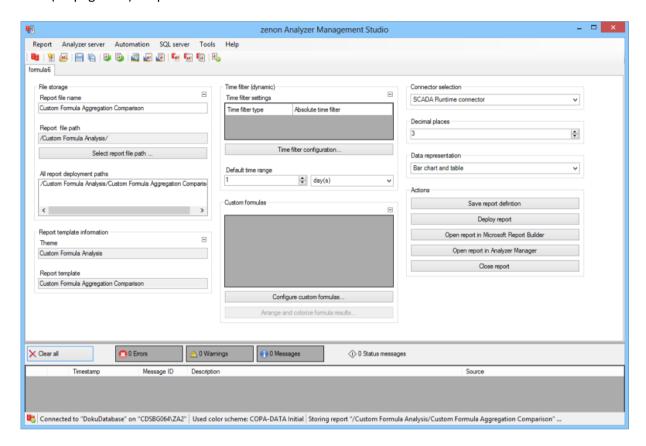


2. from the drop-down list, select Custom Formula Aggregation Comparison as a report template



- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
ocmp1a oc	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
	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.
Time filter (dynamic)	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Custom formulas	List and buttons to display and configure user-defined formulas.
Configure custom formulas	Opens the dialog to configure user-defined formulas (on page 506).
	The dialog is different for:
	Reports without aggregation over the time range
	Reports with aggregation over the time range
Arrange and colorize	Opens the dialog to sort and color (on page 533) user-
formula results	defined formulas.



Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	Column chart and table
	Pie Chart and table
	Column chart
	Pie Chart
	Table
Actions	Possible actions for the report:
	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
	report in the web blowser with the Analyzer Manager



Close report: Closes the report.
Select by clicking on the respective button.

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 prefilitering 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

- ▶ 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

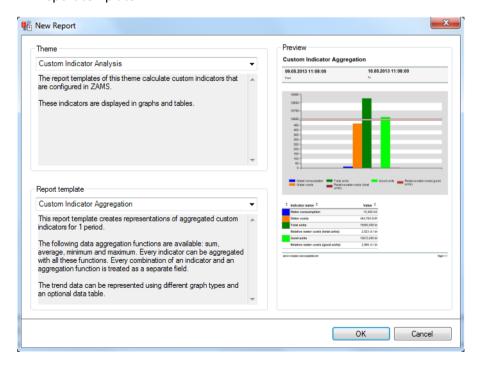
In a report:

- ▶ 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.

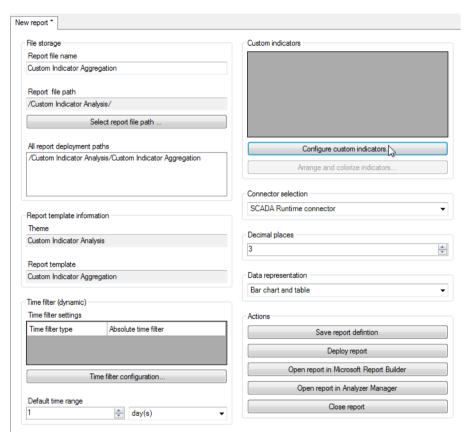
To create this report:

1. Create a report based on the Archive aggregation with user-defined formulas (on page 671) report template.





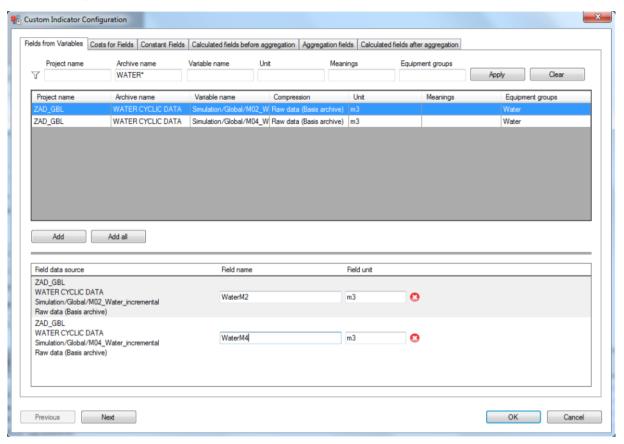
2. In the report, click on the 'Configure user-defined formulas' button.



- 3. Configure the water meter:
 - a) These are logged in an archive called water cyclic data. Set a filter for the archive name accordingly.
 - b) Click on Add all.

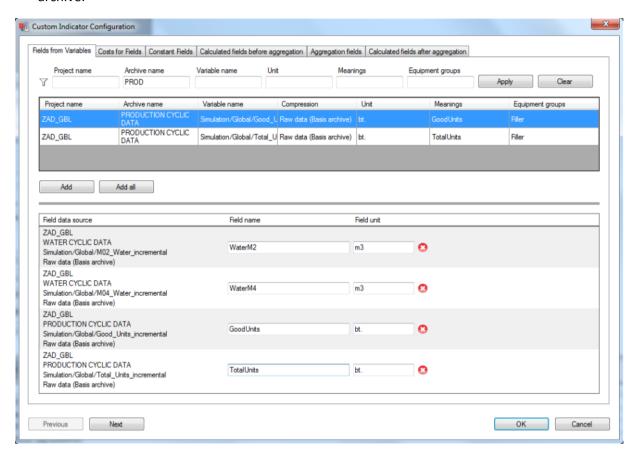


c) Assign a suitable name



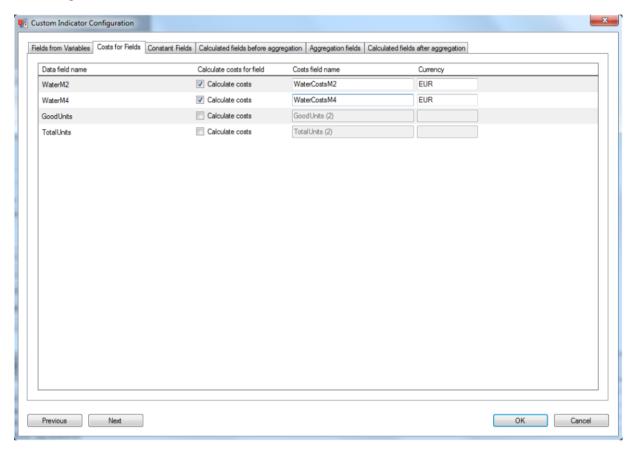


4. Carry out the same step for the production counters from the PRODUCTION CYCLIC DATA archive:



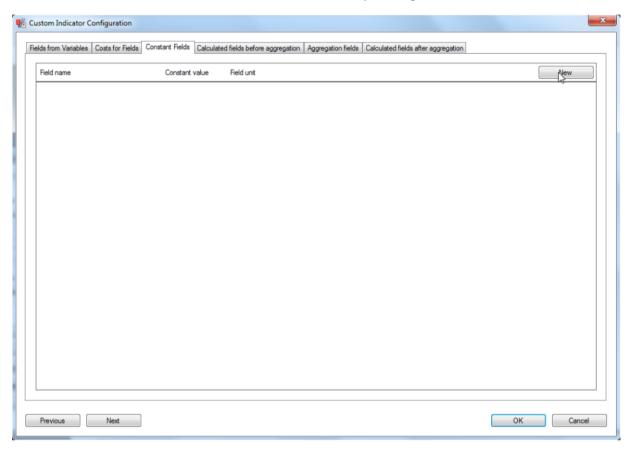


5. Configure the Cost calculation for both water meters:



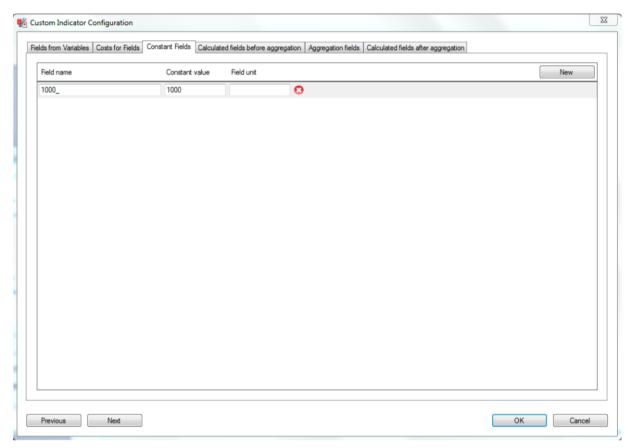


6. Switch to the constant fields tab and create a row by clicking on New:





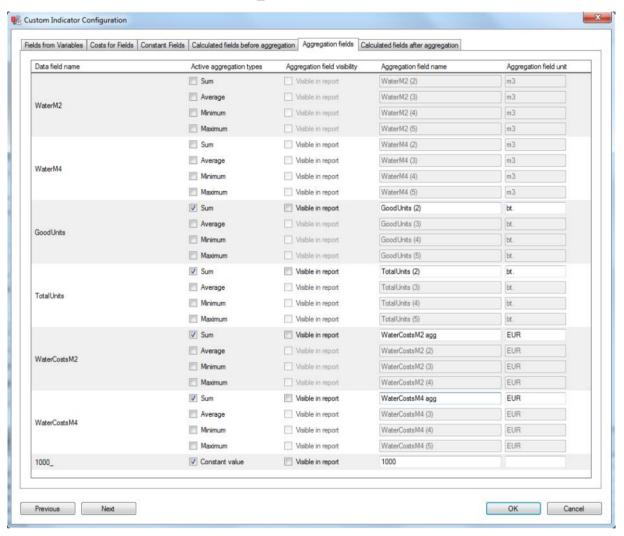
7. Set the parameters for the constants:



- 8. Configure the aggregation fields: Activate the checkboxes for:
 - a) Sum of Water M4
 - b) Sum of Good Units
 - C) Sum of Total Units
 - d) Sum of WaterCostsM2



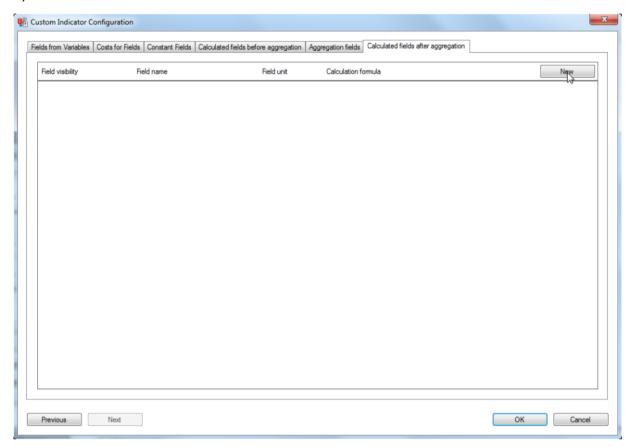
e) And for the constant value 1000_



9. Switch to the tab of calculated fields after aggregation:



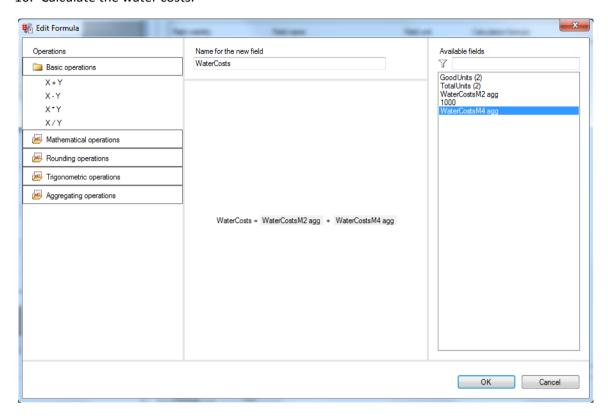
a) click on the button New.



b) The formula editor is opened.

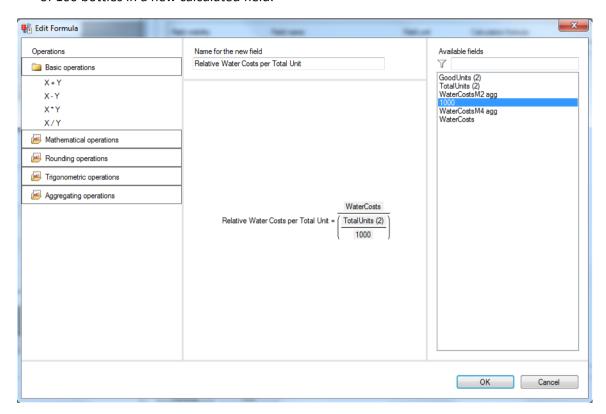


10. Calculate the water costs:



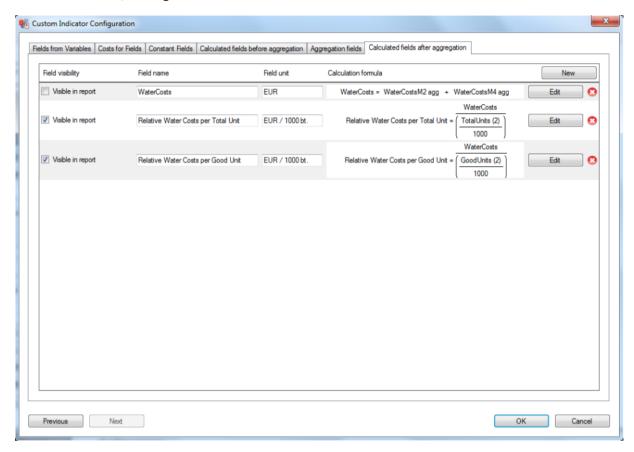


11. These are then used to calculate the first desired formula for the water costs for a total amount of 100 bottles in a new calculated field:





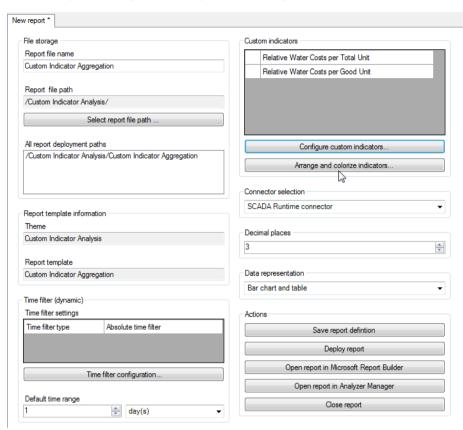
12. With the calculation of the two formulas and the configuration of visibility and units of measurement, editing in the formula editor is concluded.



13. In the ZAMS, click on the Arrange and color formula results button.





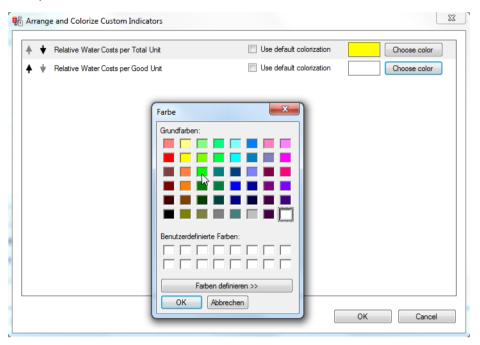


14. Define the coloring. To do this:

- a) Set the checkboxes in front of Standard coloring to inactive.
- b) The color preview and the button for the color configuration are displayed.
- c) Click on color.

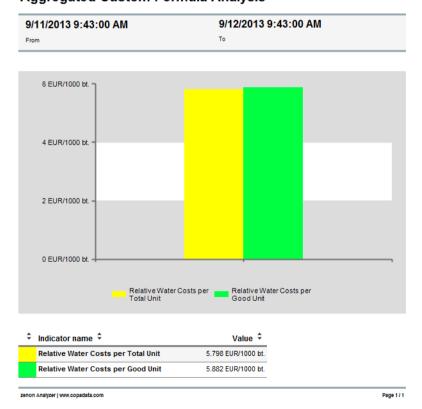


d) Select the desired color



Result in the Analyzer Manager:

Aggregated Custom Formula Analysis





12.2.3 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 701): gets archive data for a time range and displays this without aggregation in a trend
- ► Historian trend comparison (on page 709): gets archive data for two time ranges and provides this without aggregation of each trend for comparison.
- ► Historian Aggregated Trend (on page 718): 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 727): gets archive data for two time ranges, aggregates this in intervals in the time range and displays it as a trend for comparison.
- ▶ Hisotrian Aggregated Trend with online variable selection (on page 735): gets archive data for a time range, aggregates this in intervals in the time range and displays these aggregations as a trend for comparison.
- ► Historian Aggregated Trend Comparison with online variable selection (on page 743): 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 751): gets archive data for a time range, aggregates this and displays each of the aggregation results separately
- ► Historian Aggregation Comparison (on page 759): 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 767): 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.

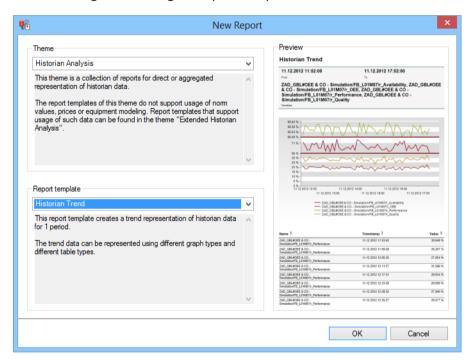


► Historian Distribution Comparison (on page 775): gets archive data for a variable from two time ranges, rounds this up to a configurable rounding factor and displays the distribution of the values. In addition, the types of aggregation are calculated and displayed with markers.

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	-	
Users	-	
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.

Historian 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

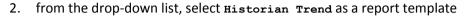
Historian Trend reports are suitable for the display of the course of all types of measurement values (such as pressures, temperatures etc.) within a freely-selectable time period, lot or shift.

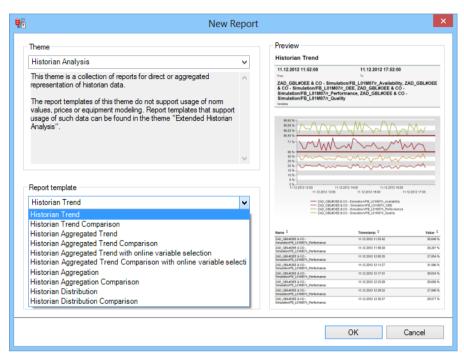
CREATE REPORT

To create a Historian Trend report:

1. In the Theme drop-down list, select Historian Analysis





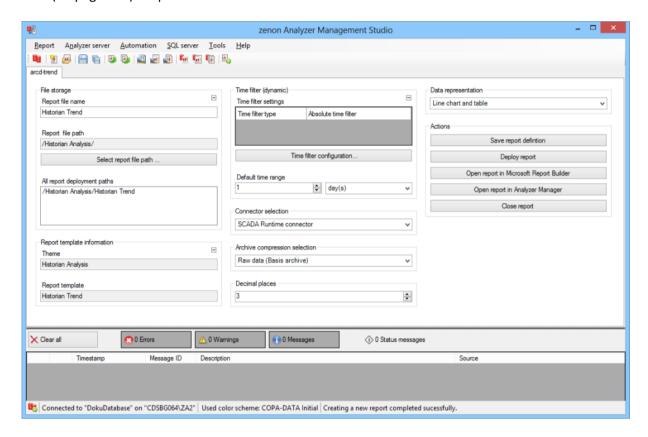


- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report



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 486) chapter.





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Archive compression selection	The following types of archive aggregation are available:
	Raw data (Basis archive)
	added up data (aggregated archive)
	average data (aggregated archive)
	minimum data (aggregated archive)
	maximum data (aggregated archive)
	Select from drop-down list.



Decimal places	Selection of the decimal places to be displayed. Selection
	by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	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
Report actions	Possible actions for the report:
	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 prefilitering 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.

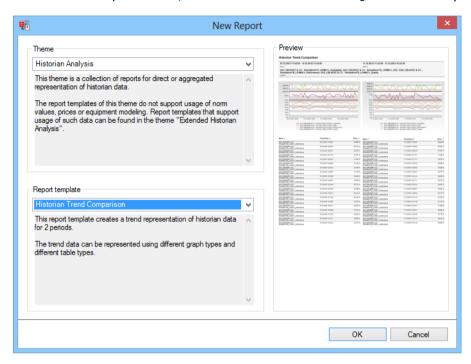
CREATE REPORT

To create a Historian Trend Comparison report:

1. In the Theme drop-down list, select Historian Analysis



2. from the drop-down list, select Historian Trend Comparison as a report template

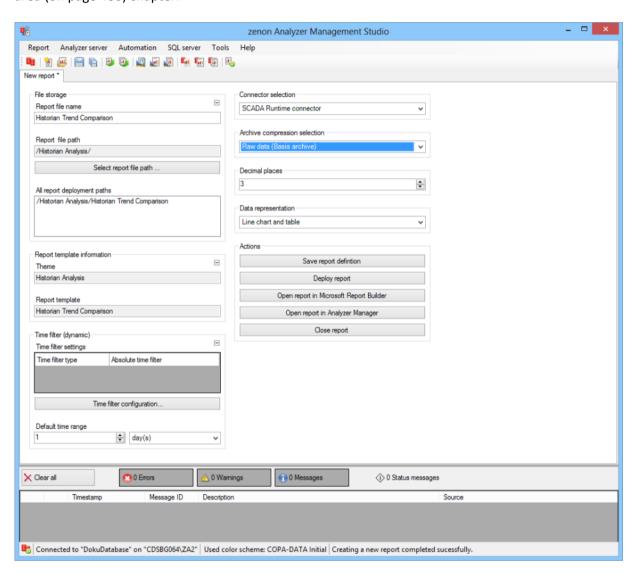


- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report



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 486) chapter.





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Archive compression selection	The following types of archive aggregation are available:
	Raw data (Basis archive)
	added up data (aggregated archive)
	average data (aggregated archive)
	minimum data (aggregated archive)
	maximum data (aggregated archive)



	Select from drop-down list.
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field. 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.



D / 1' 7	
Data display	Configuration of the data display. Select from drop-down
	list. Possible settings:
	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	Possible actions for the report:
	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 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 prefilitering 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.

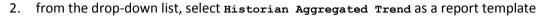
CREATE REPORT

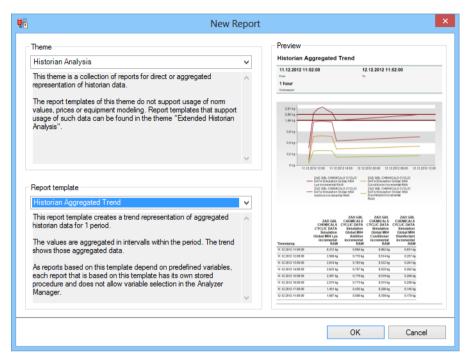
Reports that are based on this template get archive data for a time range, aggregate this into intervals in the time range and display it as a trend.

To create a Historian Aggregated Trendreport:

1. In the Theme drop-down list, select Historian Analysis





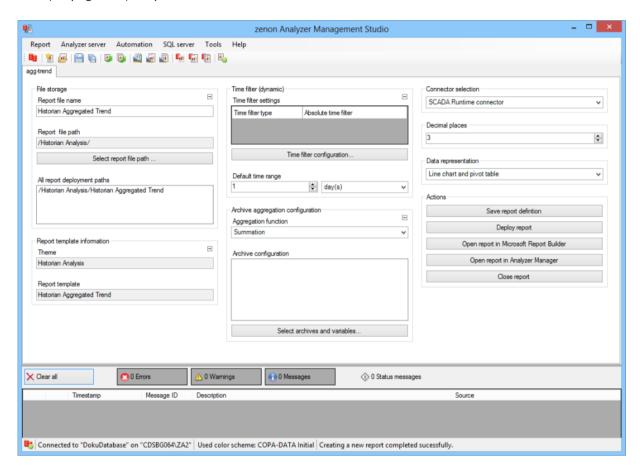


- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report



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 486) chapter.





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



	T. C.
Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Archive aggregation configuration	Archive aggregation configuration
Aggregation function	The following are available for aggregation:
	Summation
	Calculate average values
	Determine minimum values
	Determine maximum values
	Select from drop-down list.
Archive configuration	Display of the archive variables in a tree structure. This structure is constructed as follows:
	Project name
	Archive name
	Variable name



Aggregation type of the variables in the archive
Selection by clicking on the desired object.
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.



Archive aggregation variable configuration	Clicking on the button opens the dialog to select the archives and variables. For details, see the Configure archives (on page 494) section.
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field. 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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	Line chart and pivot table
	Column chart and pivot table
	Line chart
	Column chart
	Pivot table
Actions	Possible actions for the report:
	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.

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 prefilitering 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.



Reports that are based on this template use the following SPs and UDFs:

- Archive_ConvertToOneSecondCycle (UDF)
- ListLots
- ListShifts
- Archive_GetAggregatedTrendData

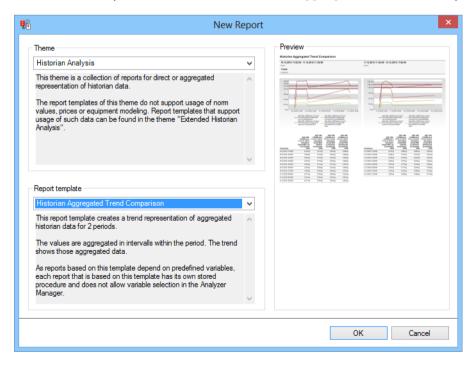
Historian Aggregated Trend Comparison

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

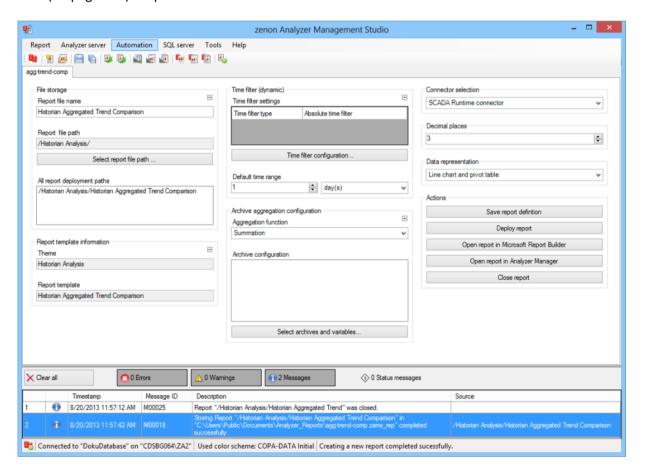
To create a Historian Aggregated Trendreport:

- 1. In the Theme drop-down list, select Historian Analysis
- 2. from the drop-down list, select Historian Aggregated Trend as a report template





- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



	1
Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Archive aggregation configuration	Archive aggregation configuration
Aggregation function	The following are available for aggregation:
	Summation
	Calculate average values
	Determine minimum values
	Determine maximum values
	Select from drop-down list.
Archive configuration	Display of the archive variables in a tree structure. This structure is constructed as follows:
	Project name
	Archive name
	Variable name



Aggregation type of the variables in the archive
Selection by clicking on the desired object.
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.



Archive aggregation variable configuration	Clicking on the button opens the dialog to select the archives and variables. For details, see the Configure archives (on page 494) section.
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	Line chart and pivot table
	Column chart and pivot table
	Line chart
	Column chart
	Pivot table
Actions	Possible actions for the report:
	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.

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 prefilitering 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.



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 718): All reports with this template use a common main stored procedure and the variables are selected in the Analyzer Manager.

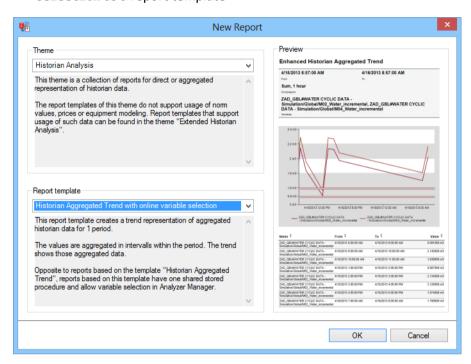
CREATE REPORT

To create an Hisotrian Aggregated Trend with online variable selection report:

1. In the Theme drop-down list, Select Historian Analysis

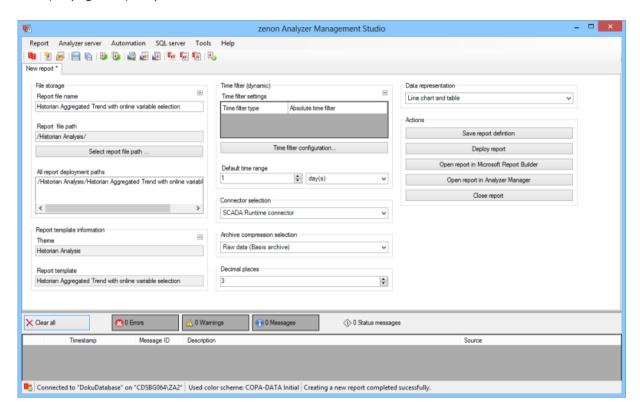


2. from the drop-down list, select Hisotrian Aggregated Trend with online variable selection as a report template



- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter. For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Archive compression selection	The following types of archive aggregation are available:
	Raw data (Basis archive)
	added up data (aggregated archive)
	average data (aggregated archive)
	minimum data (aggregated archive)
	maximum data (aggregated archive)
	Select from drop-down list.



Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	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	Possible actions for the report:
	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.	
--	--

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 prefilitering 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)

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

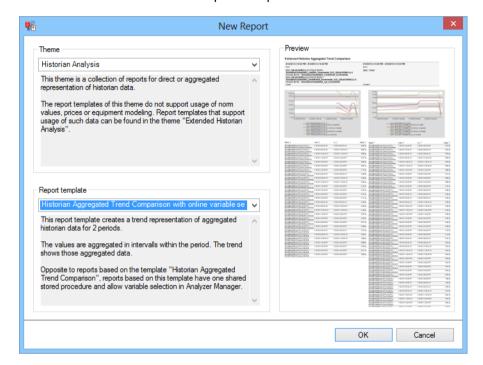
The difference to Historian Aggregated Trend Comparison (on page 727): All reports with this template use a common main stored procedure and the variables are selected in the Analyzer Manager.



CREATE REPORT

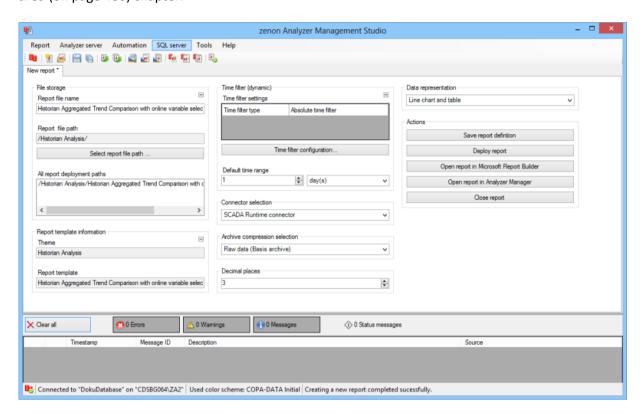
To create an Historian Aggregated Trend Comparison with online variable selection report:

- 1. In the Theme drop-down list, select Historian Analysis
- 2. from the drop-down list, select Historian Aggregated Trend Comparison with online variable selection as a report template



- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Archive compression selection	The following types of archive aggregation are available:
	Raw data (Basis archive)
	added up data (aggregated archive)
	average data (aggregated archive)
	minimum data (aggregated archive)
	maximum data (aggregated archive)
	Select from drop-down list.



Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	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	Possible actions for the report:
	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.	
--	--

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 prefilitering 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)

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:

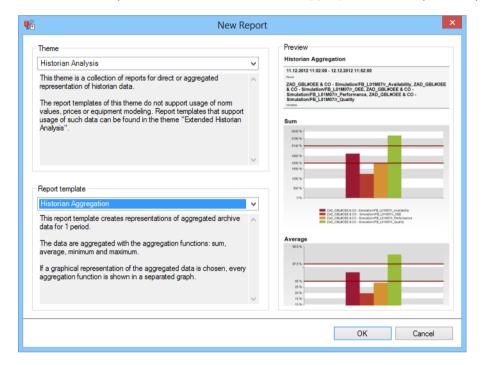
- ▶ Sum
- Average
- Minimum
- ▶ Maximum



CREATE REPORT

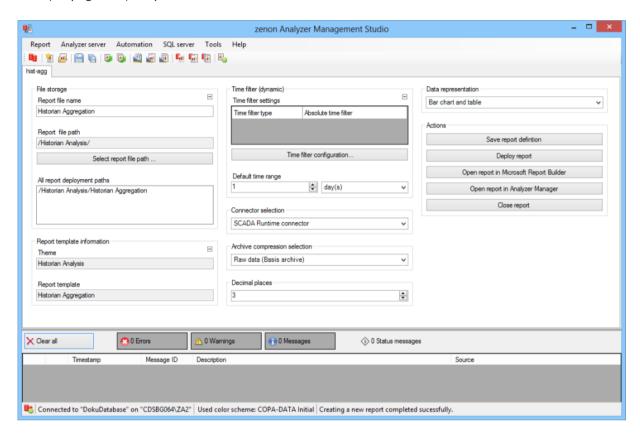
To create a Historian Aggregation report:

- 1. In the Theme drop-down list, select Historian Analysis
- 2. from the drop-down list, select Historian Aggregation as a report template



- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Archive compression selection	The following types of archive aggregation are available:
	Raw data (Basis archive)
	added up data (aggregated archive)
	average data (aggregated archive)
	minimum data (aggregated archive)
	maximum data (aggregated archive)
	Select from drop-down list.



Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field. 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 display	Configuration of the data display. Select from drop-down list. Possible settings: Column chart and table Pie Chart and table Column chart Pie Chart Table
Actions	Possible actions for the report: 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.



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 prefilitering 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:

- ► 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)



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

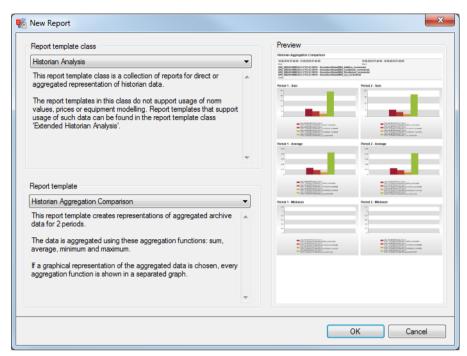
CREATE REPORT

To create a Historian Aggregation report:

1. In the Theme drop-down list, Select Historian Analysis

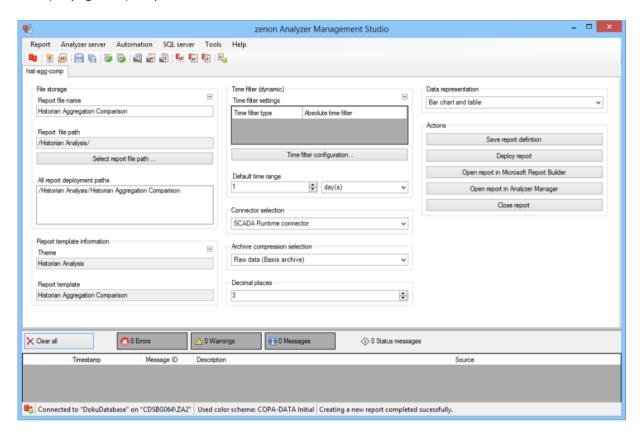






- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the
	time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Archive compression selection	The following types of archive aggregation are available:
	Raw data (Basis archive)
	added up data (aggregated archive)
	average data (aggregated archive)
	minimum data (aggregated archive)
	maximum data (aggregated archive)
	Select from drop-down list.



Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field. 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 display	Configuration of the data display. Select from drop-down list. Possible settings: Column chart and table Pie Chart and table Column chart Pie Chart Table
Actions	Possible actions for the report: 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.



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 prefilitering 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:

- ► 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)



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.

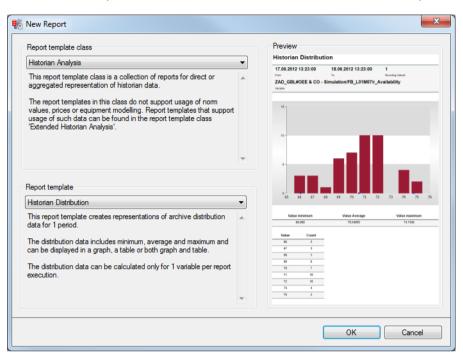
CREATE REPORT

To create a Historian Distribution report:

1. In the Theme drop-down list, select Historian Analysis

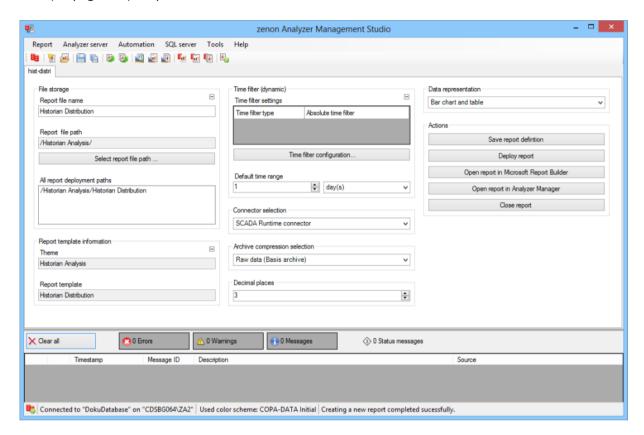






- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Archive compression selection	The following types of archive aggregation are available:
	Raw data (Basis archive)
	added up data (aggregated archive)
	average data (aggregated archive)
	minimum data (aggregated archive)
	maximum data (aggregated archive)
	Select from drop-down list.



Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field. 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 display	Configuration of the data display. Select from drop-down list. Possible settings: Column chart and table Column chart Table
Actions	Possible actions for the report: 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.

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 prefilitering 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 DISPLAY

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.



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

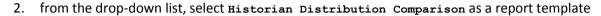
Historian Trend reports are suitable for the graphic display of the distribution of measured values between two lots.

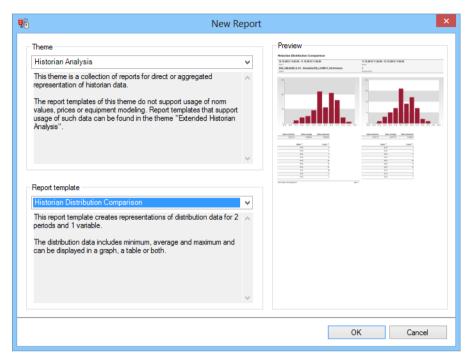
CREATE REPORT

To create a Historian Distribution Comparison report:

1. In the Theme drop-down list, select Historian Analysis

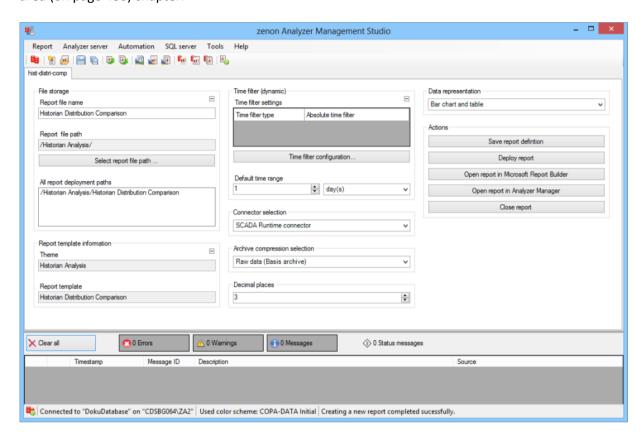






- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter. For details, see the Configuring the time filter
	(on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Archive compression selection	The following types of archive aggregation are available:
	Raw data (Basis archive)
	added up data (aggregated archive)
	average data (aggregated archive)
	minimum data (aggregated archive)
	maximum data (aggregated archive)
	Select from drop-down list.



Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field. 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 display	Configuration of the data display. Select from drop-down list. Possible settings: Column chart and table Column chart Table
Actions	Possible actions for the report: 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.

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 prefilitering 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 DISPLAY

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.



Reports that are based on this template use the following SPs and UDFs:

- ListProjects
- ▶ ListArchivesForProjects
- ListVariablesForArchives
- ► Archive GetAggregatedData
- Archive GetDistributionData
- ▶ ListLots
- ListShifts

12.2.4 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 786): Creates an aggregated trend analysis for a time period with a trend for each variable.
- ► Trend per Variable Comparison (on page 793): Creates an aggregated trend analysis for two time periods with a trend for each variable.
- ► Trend per Equipment Model (on page 802): Creates an aggregated trend analysis for a time period with a trend for each equipment model.
- ► Trend per Equipment Model Comparison (on page 811): Creates an aggregated trend analysis for two time periods with a trend for each equipment model.
- ▶ Relative Trend per Variable (on page 819): Creates a relative aggregated trend analysis for a time period with a trend for each variable.
- ▶ Relative Trend per Variable Comparison (on page 826): Creates a relative aggregated trend analysis for two time periods with a trend for each variable.



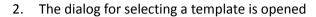
- ▶ Relative Trend to Standard (on page 834): Creates a relative aggregated trend analysis for a time period for a variable with a comparison with standard values.
- ▶ Relative Trend to Standard Comparison (on page 841): Creates a relative aggregated trend analysis for two time periods for a variable with a comparison with standard values.
- ▶ Distribution per Variable (on page 848): Calculates the aggregated cost distributions for a time period that is based on variables.
- ▶ Distribution per Variable Comparison (on page 857): Calculates the aggregated cost distributions for two time periods that are based on variables.
- ► Cost Distribution per Variable: (on page 866)Calculates the aggregated cost distributions for a time period that is based on variables.
- ► Cost Distribution per Variable Comparison (on page 874): Calculates the aggregated cost distributions for two time periods that are based on variables.
- ► Cost Distribution per Equipment Model: (on page 882)Calculates the aggregated cost distributions for a time period that is based on equipment models.
- ► Cost Distribution per Equipment Model Comparison (on page 890): Calculates the aggregated cost distributions for two time periods that are based on equipment models.

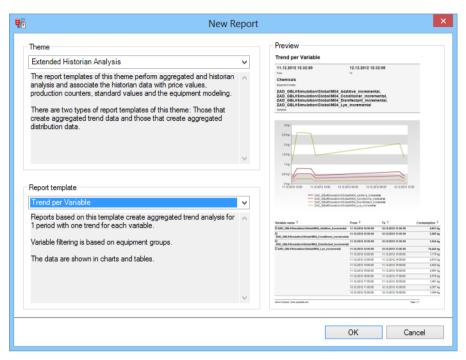
REPORT TEMPLATE SELECTION

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







- 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	-	
Users	-	
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.

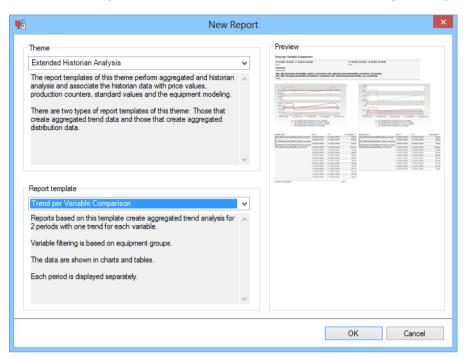
CREATE REPORT

To create a Trend per Variable report:

1. In the Theme drop-down list, Select Extended Historian Analysis

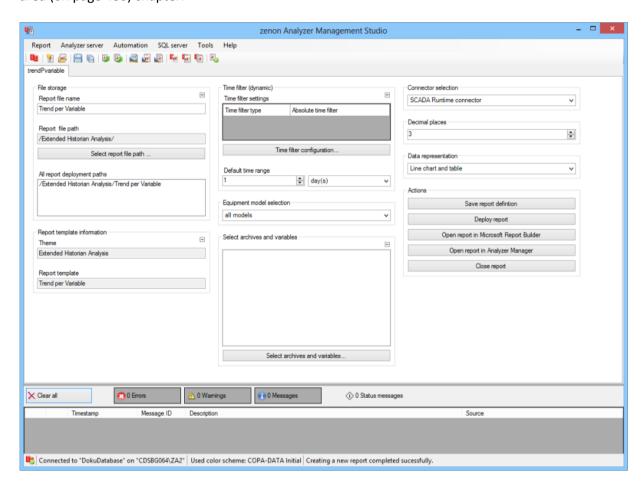


2. from the drop-down list, select Trend per Variable as a report template



- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
Compadition	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
	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.
Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
Select archives and variables	Display of the archive variables in a tree structure. This structure is constructed as follows:
	Project name
	Archive name
	Variable name with aggregation type
	Selection by clicking on the desired object.
	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.
Archive aggregation variable configuration	Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable



	configuration (on page 503)
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	Line chart and table
	Column chart and table
	Line chart
	Column chart
	Table
Actions	Possible actions for the report:
	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.

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 prefilitering 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 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

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 Variable Comparison

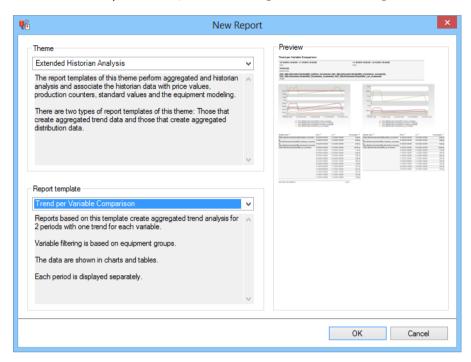
Reports that are based on this template get consumption data for variables over two time ranges, add this up into intervals within the time range and display the data as a trend and in a table. Both time ranges are displayed separately.

CREATE REPORT

To create a Trend per Variable Comparsion report:

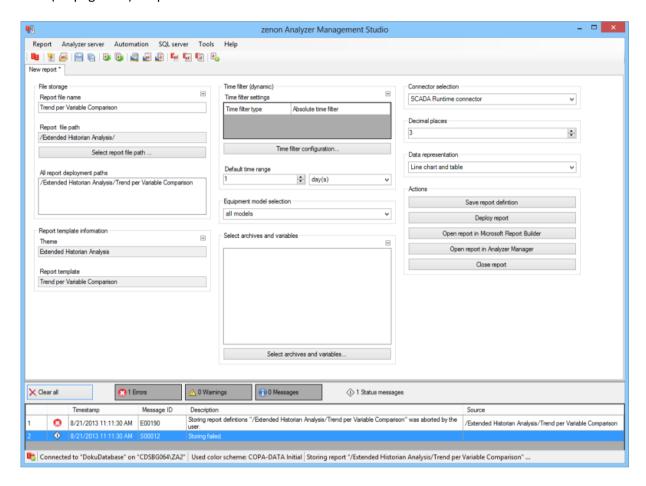


- 1. In the Theme drop-down list, select Extended Historian Analysis
- 2. from the drop-down list, select Trend per Variable Comparison as a report template



- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
Select archives and variables	Display of the archive variables in a tree structure. This structure is constructed as follows:
	Project name
	Archive name
	Variable name with aggregation type
	Selection by clicking on the desired object.
	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.
Archive aggregation variable configuration	Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable configuration (on page 503)
Connector selection	Selection of the connector from the drop-down list.



The drop-down list contains the name of the available connectors:
SCADA Runtime Connector (zenonV6)
SCADA SQL Connector (zenonSQL)



Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field. 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 display	Configuration of the data display. Select from drop-down list. Possible settings: Line chart and table Column chart and table Line chart Column chart
Actions	Possible actions for the report: 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.

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 prefilitering 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 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

- ▶ 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



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

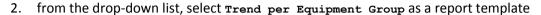
Reports that are based on this template get consumption data for all variables from the selected equipment groups over a time range, add this up into intervals within the time range and display the data as a trend and in a table.

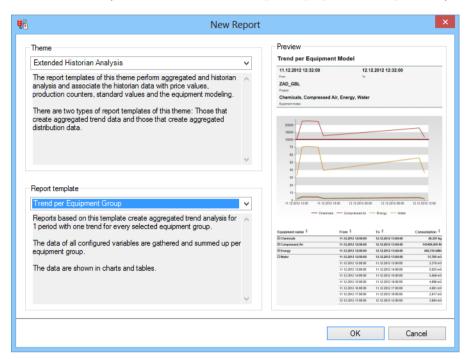
CREATE REPORT

To create a Trend per Equipment Group report:

1. In the Theme drop-down list, select Extended Historian Analysis

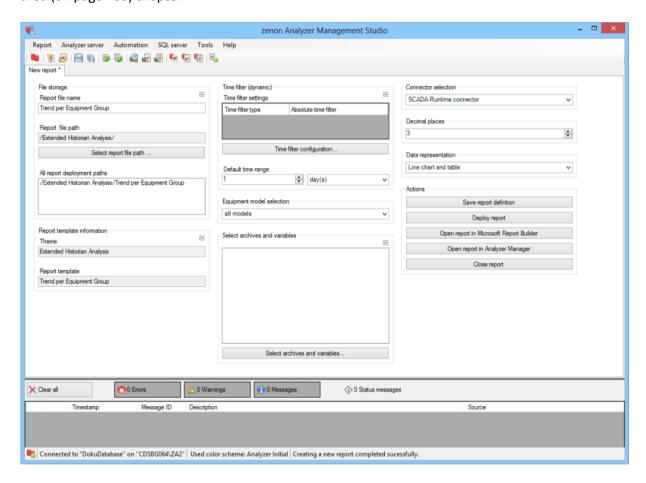






- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
Archive variables configuration	Display of the archive variables in a tree structure. This structure is constructed as follows:
	Project name
	Archive name
	Variable name with aggregation type
	Selection by clicking on the desired object.
	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.
Archive aggregation variable configuration	Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable configuration (on page 503)
Connector selection	Selection of the connector from the drop-down list.



The drop-down list contains the name of the available connectors:
SCADA Runtime Connector (zenonV6)
SCADA SQL Connector (zenonSQL)



Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field. 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 display	Configuration of the data display. Select from drop-down list. Possible settings: Line chart and table Column chart and table Line chart Column chart
Actions	Possible actions for the report: 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.

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 prefilitering 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 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

- ▶ 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



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

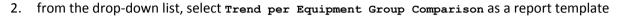
Reports that are based on this template get consumption data for variables over two time ranges, add this up into intervals within the time range and display the data as a trend and in a table. Both time ranges are displayed separately.

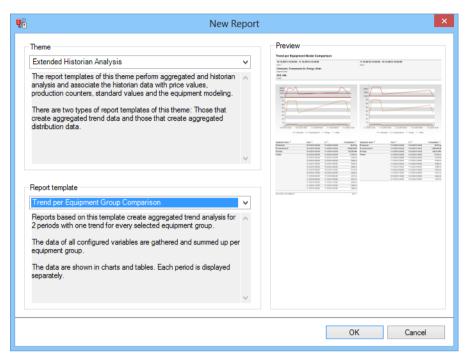
CREATE REPORT

To create a Trend per Equipment Group Comparison report:

1. In the Theme drop-down list, select Extended Historian Analysis

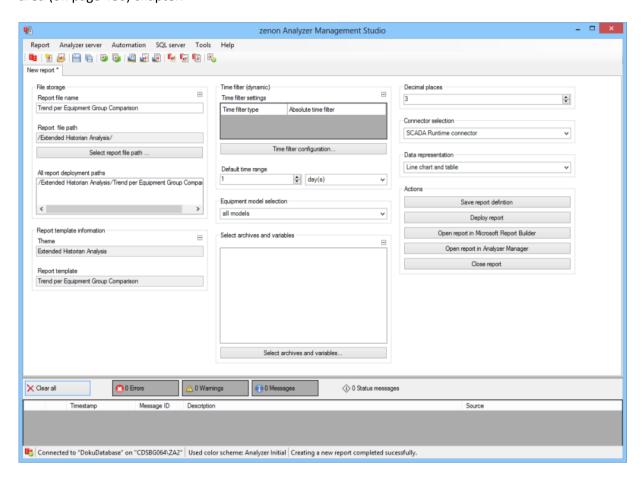






- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
Select archives and variables	Display of the archive variables in a tree structure. This structure is constructed as follows:
	Project name
	Archive name
l l	Variable name with aggregation type
	Variable name with aggregation type Selection by clicking on the desired object.
Archive aggregation variable configuration	Selection by clicking on the desired object. 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



	h
	by means of cursor keys or direct input in the field.
	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	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Data display	Configuration of the data display. Select from drop-down list. Possible settings:
	Line chart and table
	Column chart and table
	Line chart
	Column chart
	Table
Actions	Possible actions for the report:
	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.

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 prefilitering 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 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



- ▶ 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

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

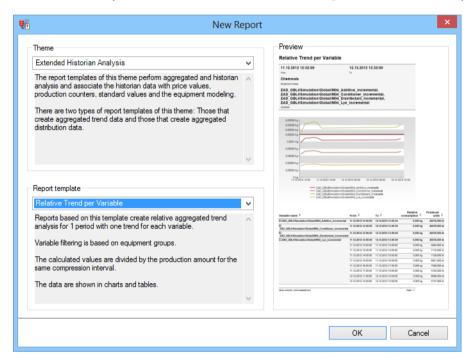


display the data as a trend and as a table.

CREATE REPORT

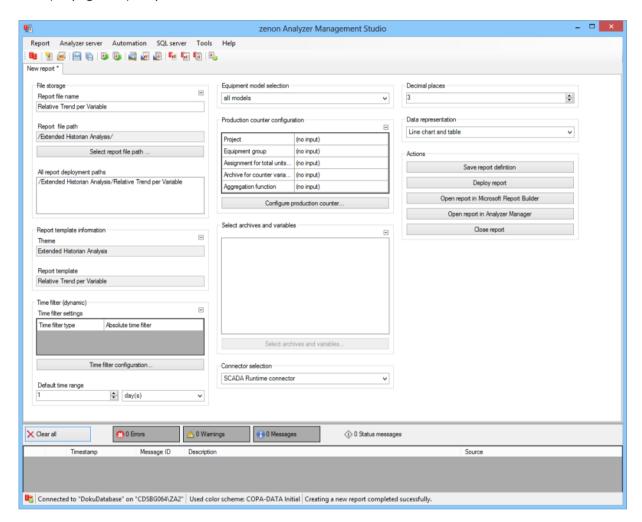
To create a Relative Trend per Variable report:

- 1. In the Theme drop-down list, Select Extended Historian Analysis
- 2. from the drop-down list, select Relative Trend per Variable as a report template



- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
Company Company	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
	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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
Production counter configuration	Display of the configuration of the production counter.
Configure production counter	Opens the dialog (on page 501) for configuring the production counter.
Archive variables configuration	Display of the archive variables in a tree structure. This structure is constructed as follows:
	Project name
	Archive name
	Variable name with aggregation type
	Selection by clicking on the desired object.
	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.
Archive aggregation variable configuration	Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable



	configuration (on page 503)
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	Line chart and table
	Column chart and table
	Line chart
	Column chart
	Table
Actions	Possible actions for the report:
	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.

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 prefilitering 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 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



- 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

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.

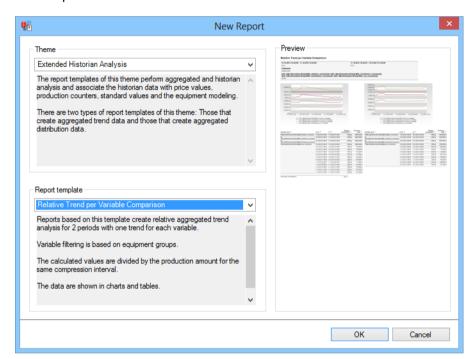


Both time ranges are displayed separately.

CREATE REPORT

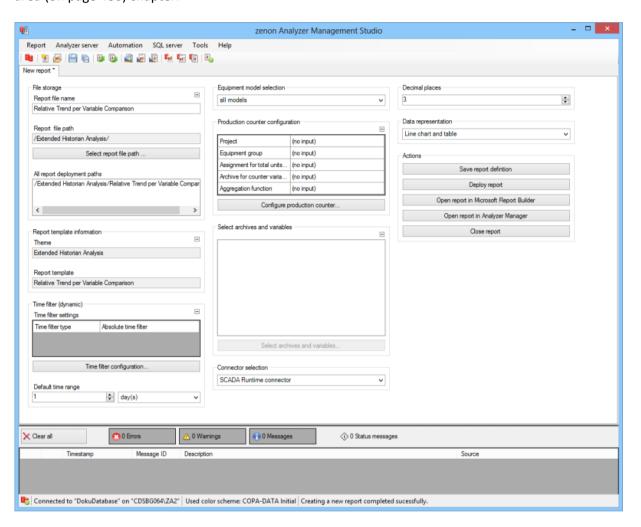
To create a Relative Trend per Variable Comparison report:

- 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 ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
Production counter configuration	Display of the configuration of the production counter.
Configure production counter	Opens the dialog (on page 501) for configuring the production counter.
Archive variables configuration	Display of the archive variables in a tree structure. This structure is constructed as follows:
	Project name
	Archive name
	Variable name with aggregation type
	Selection by clicking on the desired object.
	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.
Archive aggregation variable	Click on button opens dialog for configuring the archives



configuration	and variables. For details, see the chapter on archive variable configuration (on page 503)
Connector selection	Selection of the connector from the drop-down list. The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6) SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field. 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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	Line chart and table
	Column chart and table
	Line chart
	Column chart
	Table
Actions	Possible actions for the report:
	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.

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 prefilitering 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 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



- 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

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

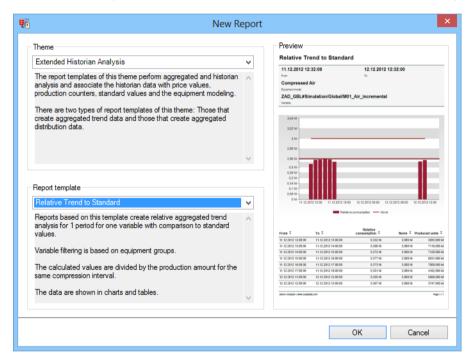


▶ get a norm value for comparison purposes for the value from the NORM table and include this in the display of data.

CREATE REPORT

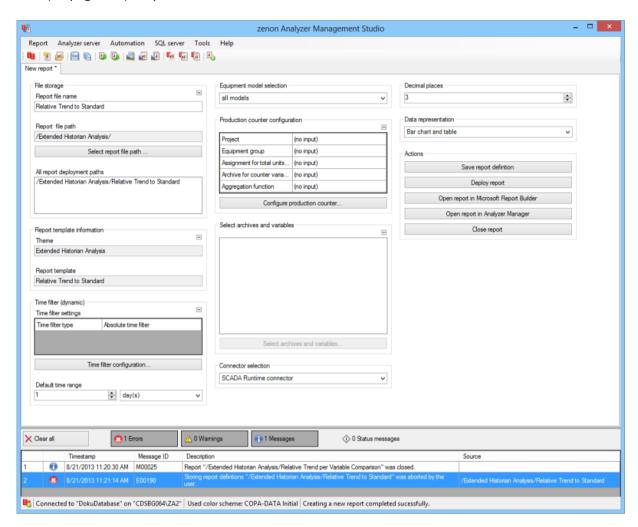
To create a Relative Trend to Standard report:

- 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 ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
Complaint	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
	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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
Production counter configuration	Display of the configuration of the production counter.
Configure production counter	Opens the dialog (on page 501) for configuring the production counter.
Archive variables configuration	Display of the archive variables in a tree structure. This structure is constructed as follows:
	Project name
	Archive name
	Variable name with aggregation type
	Selection by clicking on the desired object.
	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.
Archive aggregation variable configuration	Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable



	6 (550)
	configuration (on page 503)
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	Column chart and table
	Column chart
	Table
Actions	Possible actions for the report:
	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.

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 prefilitering 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



- ▶ 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

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



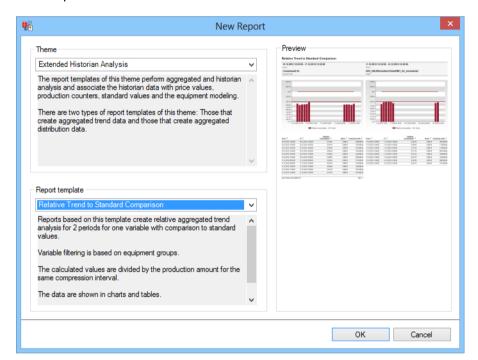
▶ get a norm value for comparison purposes for the value from the NORM table and include this in the display of data.

Both time ranges are displayed separately.

CREATE REPORT

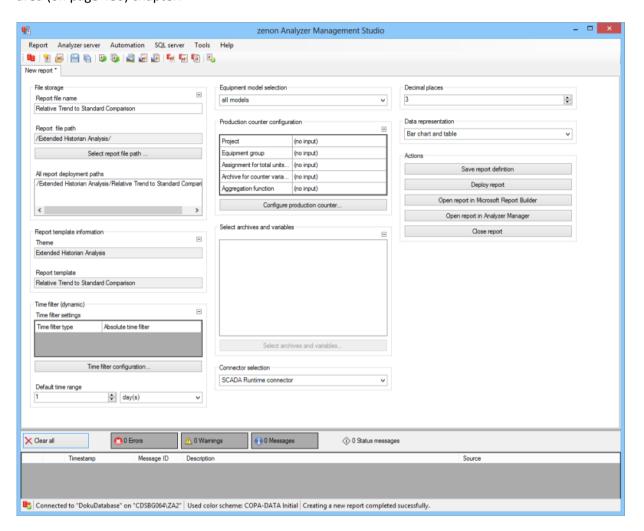
To create a Relative Trend to Standard Comparison report:

- 1. In the Theme drop-down list, select Extended Historian Analysis
- 2. from the drop-down list, select Relative Trend to Standard Comparsion as a report template



- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report	Information on the report template, consisting of:
template	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
	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.
Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
Production counter configuration	Display of the configuration of the production counter.
Configure production counter	Opens the dialog (on page 501) for configuring the production counter.
Archive variables configuration	Display of the archive variables in a tree structure. This structure is constructed as follows:
	Project name
	Archive name
	Variable name with aggregation type
	Selection by clicking on the desired object.
	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.
Archive aggregation	Click on button opens dialog for configuring the archives and



variable configuration	variables. For details, see the chapter on archive variable configuration (on page 503)
Connector selection	Selection of the connector from the drop-down list. The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6) SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	Column chart and table
	Column chart
	Table
Actions	Possible actions for the report:
	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.

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 prefilitering 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 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



- ▶ 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

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

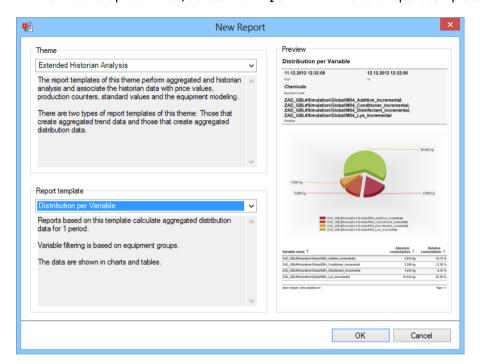
Trend per variable reports are suited, for example, to the comparison of the deviation of the measured value distribution between two lots.



CREATE REPORT

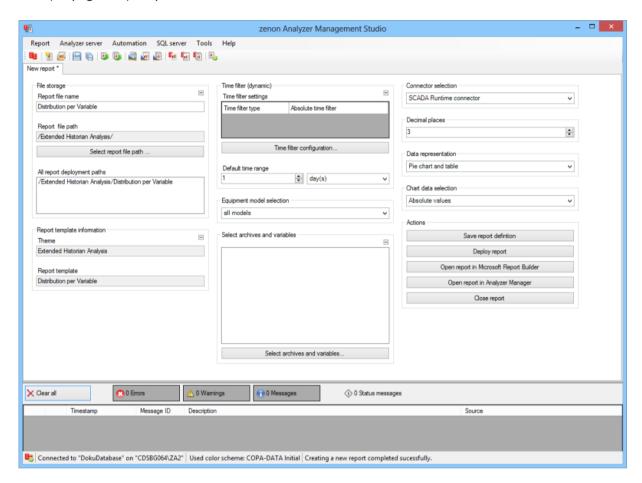
To create a Trend per Variable report:

- 1. In the Theme drop-down list, select Extended Historian Analysis
- 2. from the drop-down list, select Trend per Variable as a report template



- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



_	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
	Years Selection of a equipment model from the drop-down list.
Equipment model selection Select archives and variables	
Equipment model selection Select archives and variables	Selection of a equipment model from the drop-down list. Display of the archive variables in a tree structure. This
Equipment model selection Select archives and variables	Selection of a equipment model from the drop-down list. Display of the archive variables in a tree structure. This structure is constructed as follows:
Equipment model selection Select archives and variables	Selection of a equipment model from the drop-down list. Display of the archive variables in a tree structure. This structure is constructed as follows: Project name
Equipment model selection Select archives and variables	Selection of a equipment model from the drop-down list. Display of the archive variables in a tree structure. This structure is constructed as follows: Project name Archive name
Equipment model selection Select archives and variables	Selection of a equipment model from the drop-down list. Display of the archive variables in a tree structure. This structure is constructed as follows: Project name Archive name Variable name with aggregation type
Equipment model selection Select archives and variables Archive aggregation variable configuration	Selection of a equipment model from the drop-down list. Display of the archive variables in a tree structure. This structure is constructed as follows: Project name Archive name Variable name with aggregation type Selection by clicking on the desired object. 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



The drop-down list contains the name of the available connectors:
SCADA Runtime Connector (zenonV6)
SCADA SQL Connector (zenonSQL)



Decimal places	Selection of the decimal places to be displayed. Selection
	by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	Column chart and table
	Pie Chart and table
	Column chart
	Pie Chart
	Table
Chart data selection	Selection of the value type to be displayed from drop- down list:
	Absolute values
	Relative values
Actions	Possible actions for the report:
	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.

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 prefilitering 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 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

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.



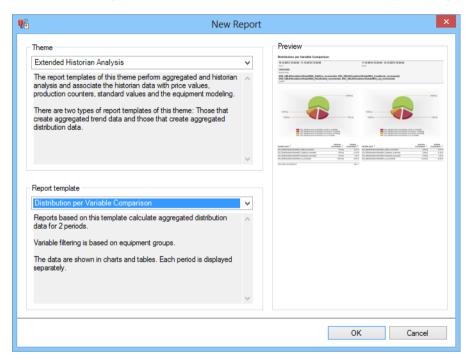
APPLICATION EXAMPLES

Trend per variable reports are suited, for example, to the comparison of the deviation of the measured value distribution between two lots.

CREATE REPORT

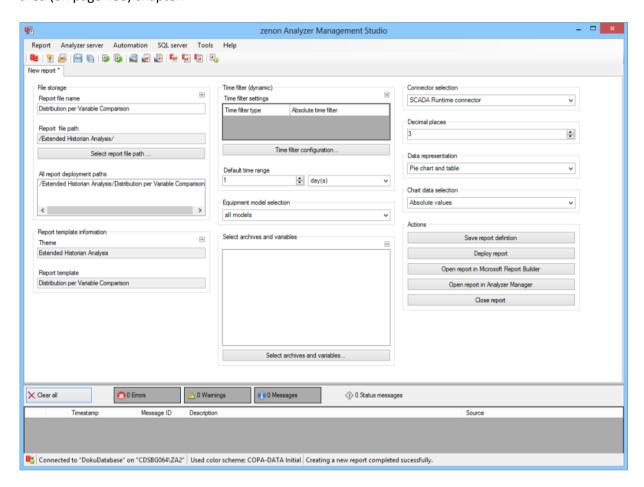
To create a Trend per Variable report:

- 1. In the Theme drop-down list, Select Extended Historian Analysis
- 2. from the drop-down list, select Trend per Variable as a report template



- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
Equipment model selection Archive variables configuration	Display of the archive variables in a tree structure. This structure is constructed as follows:
Archive variables	Display of the archive variables in a tree structure. This
Archive variables	Display of the archive variables in a tree structure. This structure is constructed as follows:
Archive variables	Display of the archive variables in a tree structure. This structure is constructed as follows: Project name
Archive variables	Display of the archive variables in a tree structure. This structure is constructed as follows: Project name Archive name
Archive variables	Display of the archive variables in a tree structure. This structure is constructed as follows: Project name Archive name Variable name with aggregation type
Archive variables	Display of the archive variables in a tree structure. This structure is constructed as follows: Project name Archive name Variable name with aggregation type Selection by clicking on the desired object. 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



The drop-down list contains the name of the available connectors:
SCADA Runtime Connector (zenonV6)
SCADA SQL Connector (zenonSQL)



Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	Column chart and table
	Pie Chart and table
	Column chart
	Pie Chart
	Table
Display of value in the diagram	Selection of the value type to be displayed from drop-down list:
	Absolute values
	Relative values
Actions	Possible actions for the report:
	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.

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 prefilitering 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 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

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,

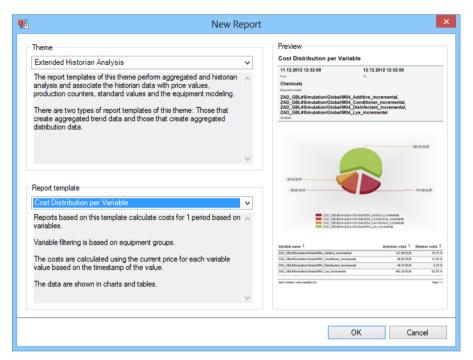


- ▶ add up the costs and
- display the cost sums graphically and in a table for comparison.

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

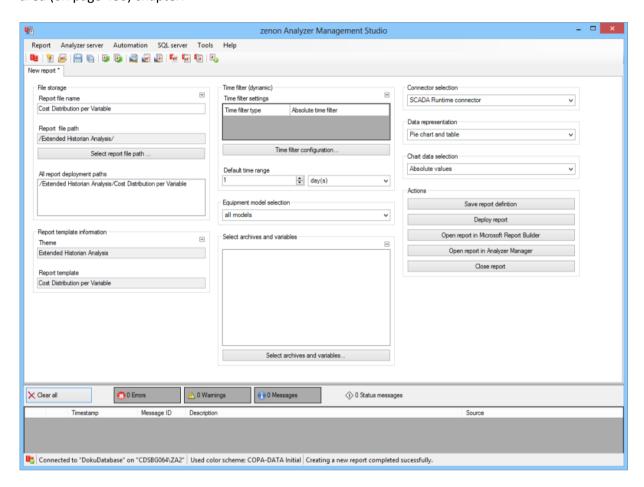


- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report



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 486) chapter.





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
Equipment model selection Archive variables configuration	Selection of a equipment model from the drop-down list. Display of the archive variables in a tree structure. This structure is constructed as follows:
Archive variables	Display of the archive variables in a tree structure. This
Archive variables	Display of the archive variables in a tree structure. This structure is constructed as follows:
Archive variables	Display of the archive variables in a tree structure. This structure is constructed as follows: Project name
Archive variables	Display of the archive variables in a tree structure. This structure is constructed as follows: Project name Archive name
Archive variables	Display of the archive variables in a tree structure. This structure is constructed as follows: Project name Archive name Variable name with aggregation type
Archive variables	Display of the archive variables in a tree structure. This structure is constructed as follows: Project name Archive name Variable name with aggregation type Selection by clicking on the desired object. 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



	The drop-down list contains the name of the
	available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Data display	Configuration of the data display. Select from drop-down list. Possible settings:
	Column chart and table
	Pie Chart and table
	Column chart
	Pie Chart
	Table
Chart data selection	Selection of the value type to be displayed from drop-down list:
	Absolute values
	Relative values
Actions	Possible actions for the report:
	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.



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 prefilitering 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 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



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.

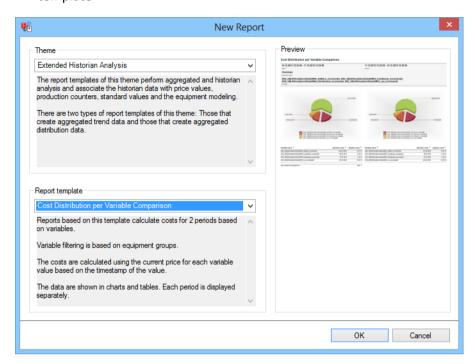
CREATE REPORT

To create a Cost Distribution per Variable Comparison report:

1. In the Theme drop-down list, select Extended Historian Analysis



2. from the drop-down list, select Cost Distribution per Variable Comparison as a report template

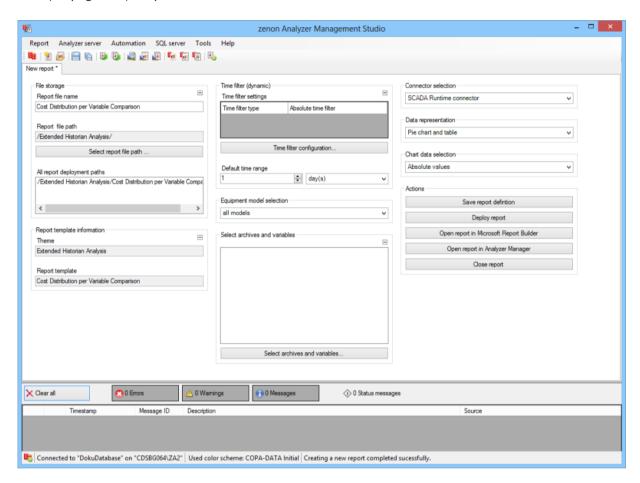


- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report



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 486) chapter.





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
Select archives and variables	Display of the archive variables in a tree structure. This structure is constructed as follows:
	Project name
	Archive name
	Variable name with aggregation type
	Selection by clicking on the desired object.
	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.
Archive aggregation variable configuration	Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable configuration (on page 503)
Connector selection	Selection of the connector from the drop-down list.



	,
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Data display	Configuration of the data display. Select from drop-down list. Possible settings:
	Column chart and table
	Pie Chart and table
	Column chart
	Pie Chart
	Table
Chart data selection	Selection of the value type to be displayed from drop- down list:
	Absolute values
	Relative values
Actions	Possible actions for the report:
	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.



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 prefilitering 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 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



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.

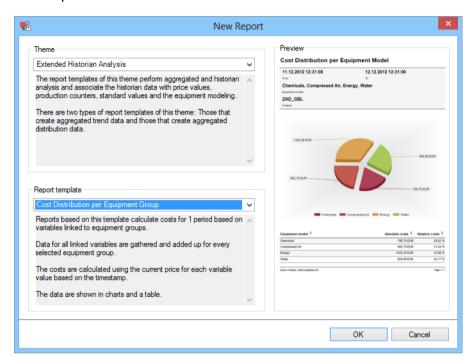
CREATE REPORT

To create a Cost Distribution per Equipment Model report:

1. In the Theme drop-down list, Select Extended Historian Analysis



2. from the drop-down list, select cost Distribution per Equipment Model as a report template

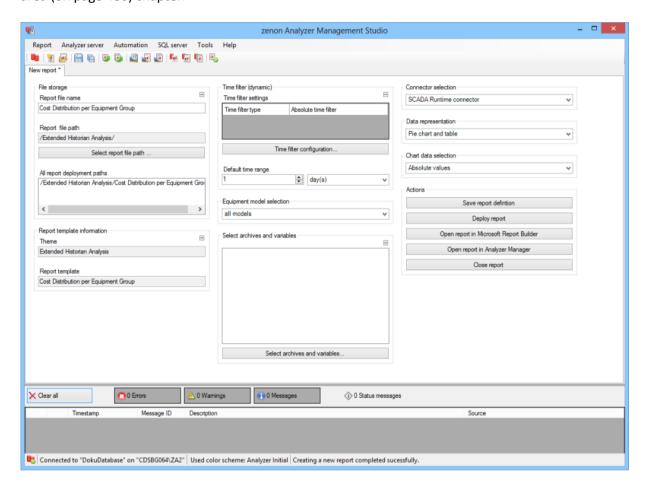


- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report



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 486) chapter.





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
Equipment model selection Archive variables configuration	Selection of a equipment model from the drop-down list. Display of the archive variables in a tree structure. This structure is constructed as follows:
Archive variables	Display of the archive variables in a tree structure. This
Archive variables	Display of the archive variables in a tree structure. This structure is constructed as follows:
Archive variables	Display of the archive variables in a tree structure. This structure is constructed as follows: Project name
Archive variables	Display of the archive variables in a tree structure. This structure is constructed as follows: Project name Archive name
Archive variables	Display of the archive variables in a tree structure. This structure is constructed as follows: Project name Archive name Variable name with aggregation type
Archive variables	Display of the archive variables in a tree structure. This structure is constructed as follows: Project name Archive name Variable name with aggregation type Selection by clicking on the desired object. 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



	T
	The drop-down list contains the name of the available connectors:
	available connectors.
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Data display	Configuration of the data display. Select from drop-down list. Possible settings:
	Column chart and table
	Pie Chart and table
	Column chart
	Pie Chart
	Table
Chart data selection	Selection of the value type to be displayed from drop-down list:
	Absolute values
	Relative values
Actions	Possible actions for the report:
	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.



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 prefilitering 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

- ▶ 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



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.

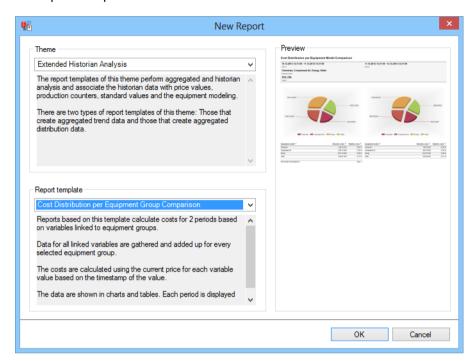
CREATE REPORT

To create a Cost Distribution per Equipment Model Comparison report:

1. In the Theme drop-down list, Select Extended Historian Analysis



2. from the drop-down list, select Cost Distribution per Equipment Model Comparison as a report template

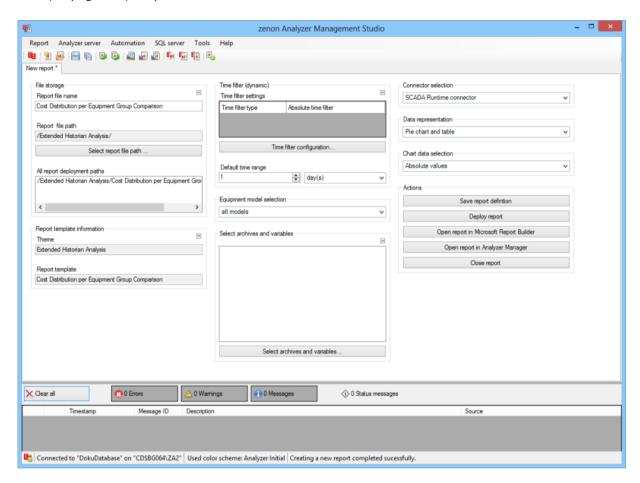


- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report



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 486) chapter.





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
Archive variables configuration	Display of the archive variables in a tree structure. This structure is constructed as follows:
	Project name
	Archive name
	Variable name with aggregation type
	Selection by clicking on the desired object.
	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.
Archive aggregation variable configuration	Click on button opens dialog for configuring the archives and variables. For details, see the chapter on archive variable configuration (on page 503)
Connector selection	Selection of the connector from the drop-down list.



	The drop-down list contains the name of the available connectors: SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Data display	Configuration of the data display. Select from drop-down list. Possible settings:
	Column chart and table
	Pie Chart and table
	Column chart
	Pie Chart
	Table
Chart data selection	Selection of the value type to be displayed from drop-down list:
	Absolute values
	Relative values
Actions	Possible actions for the report:
	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.



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 prefilitering 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

- ▶ 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



Reports that are based on this template use the following SPs and UDFs:

- ▶ ListProjects
- ListLots
- ListShifts
- ▶ ListEquipmentTree
- ▶ ListVariablesArchiveEx
- ► ArchiveEx GetRelevantMetaData
- ArchiveEx GetConnectorInputData
- ArchiveEx_GetAggregatedEquipmentCostData

12.2.5 ISO 50001

Reports with this theme provide report templates from the Extended Historian Analysis (on page 783) and Custom Formula Analysis (on page 641) themes:

- ► Trend per Variable (on page 786): Creates an aggregated trend analysis for a time period with a trend for each variable.
- ► Trend per Variable Comparison (on page 793): Creates an aggregated trend analysis for two time periods with a trend for each variable.
- ► Trend per Equipment Model (on page 802): Creates an aggregated trend analysis for a time period with a trend for each equipment model.
- ► Trend per Equipment Model Comparison (on page 811): Creates an aggregated trend analysis for two time periods with a trend for each equipment model.
- ▶ Relative Trend per Variable (on page 819): Creates a relative aggregated trend analysis for a time period with a trend for each variable.
- ▶ Relative Trend per Variable Comparison (on page 826): Creates a relative aggregated trend analysis for two time periods with a trend for each variable.



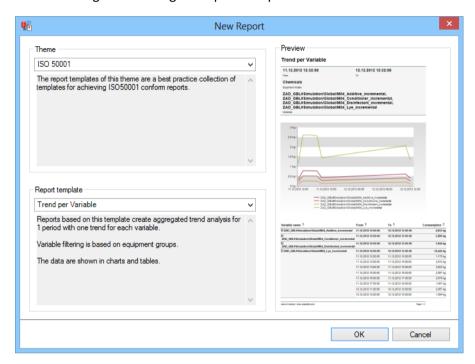
- ▶ Relative Trend to Standard (on page 834): Creates a relative aggregated trend analysis for a time period for a variable with a comparison with standard values.
- ▶ Relative Trend to Standard Comparison (on page 841): Creates a relative aggregated trend analysis for two time periods for a variable with a comparison with standard values.
- ▶ Distribution per Variable (on page 848): Calculates the aggregated cost distributions for a time period that is based on variables.
- ▶ Distribution per Variable Comparison (on page 857): Calculates the aggregated cost distributions for two time periods that are based on variables.
- ► Cost Distribution per Variable: (on page 866)Calculates the aggregated cost distributions for a time period that is based on variables.
- ► Cost Distribution per Variable Comparison (on page 874): Calculates the aggregated cost distributions for two time periods that are based on variables.
- ► Cost Distribution per Equipment Model: (on page 882)Calculates the aggregated cost distributions for a time period that is based on equipment models.
- ► Cost Distribution per Equipment Model Comparison (on page 890): Calculates the aggregated cost distributions for two time periods that are based on equipment models.
- ▶ Custom Formula Trend: (on page 643) Trend display of user-defined formulas for a time range.
- ► Custom Formula Trend Comparison (on page 650): Trend display of user-defined formulas for two time ranges.
- ► Custom Formula Aggregated Trend (on page 657): Trend display of aggregated user-defined formulas for a time range.
- ► Custom Formula Aggregated Trend Comparison (on page 664): Trend display of aggregated user-defined formulas for two time ranges.
- Custom Formula Aggregation (on page 671): Trend display of aggregated, user-defined formulas for a time range.
- Custom Formula Aggregation Comparison (on page 678): Trend display of aggregated, userdefined 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 ISO 50001
- 4. Select the template you want to use as a report template from the drop-down list

CONFIGURATION OF THE REPORTS:

You can find the description of the configuration for the individual report templates in the documentation on the topics:

- Custom Formula Analysis (On page 641)
- Extended Historian Analysis (On page 783).

12.2.6 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 902): 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 911): Analyze archive data and calculate aggregated productivity indicators for a time period, based on an equipment group.
- ► Comprehensive Productivity Analysis (on page 918): Combines the Losses Analysis (on page 902) and Produktivity indicators Analysis (on page 911) report templates.
- ▶ Losses Lot History (on page 927): Analyze archive data and calculate aggregated loss times for each lot, based on an equipment group.
- ▶ Productivity Indicators Lot History (on page 936): 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 943): Combines the Losses Lot History (on page 927) and Productivity Indicators Lot History (on page 936) 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 a unique name.

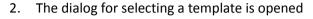
The report templates are in ZAMS in the Production Analysis Machine Based theme.

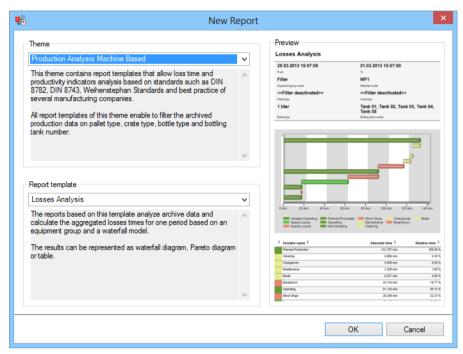
REPORT TEMPLATE SELECTION

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







- 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.

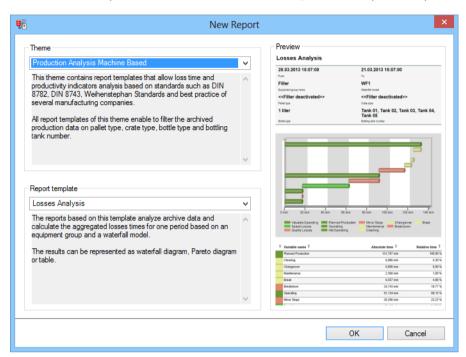
CREATE REPORT

To create a Losses Analysis report:

 Select Production Analysis Machine Based in the drop-down list in the dialog to create new reports as a theme



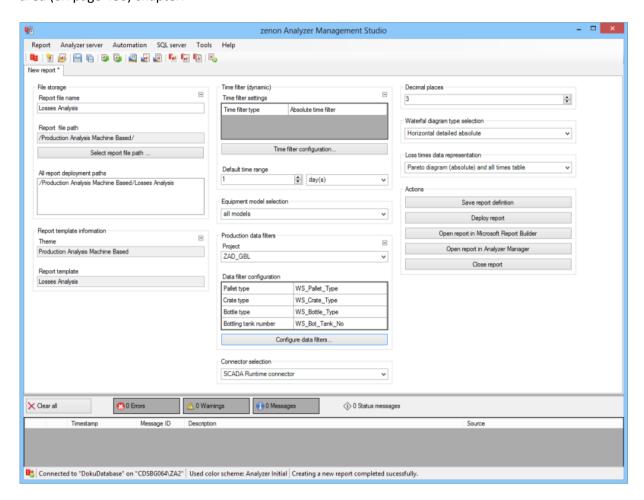




- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report



CONFIGURING THE REPORT





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
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 543) for configuring the data filters.
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the
	available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)



Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field. 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.
Waterfal diagram type selection	Selection of the waterfall diagram from the drop-down list: Horizontal compact absolute Horizontal detailed absolute Horizontal detailed relative Vertical compact absolute Vertical detailed absolute Vertical detailed absolute Vertical detailed absolute Vertical detailed absolute No waterfall diagram
Loss times data representation	Selection of the display type for the time distribution from the drop-down list. Pareto diagram (absolute) and all times table Pareto diagram (relative) and loss times table Pareto diagram (absolute) and loss times table Pareto diagram (relative) and loss times table Pareto diagram (absolute) Pareto diagram (relative) All times table Table with the loss times



Actions	Possible actions for the report:
	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.

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 prefilitering 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:

- ▶ 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

- ▶ ListLots
- ListShifts
- ► ListFilterValueForEquipment
- ► ListWaterfallModelsForEquipment
- ► FNB_GetMetaDataEntries



► FNB_WaterfallData

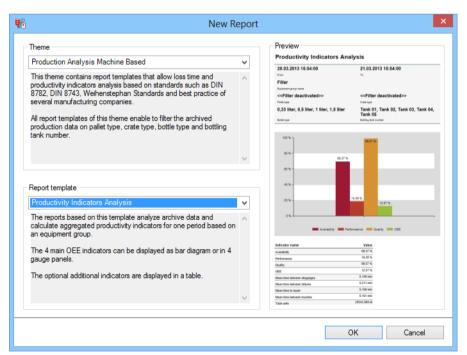
Productivity Indicators Analysis

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:

- 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

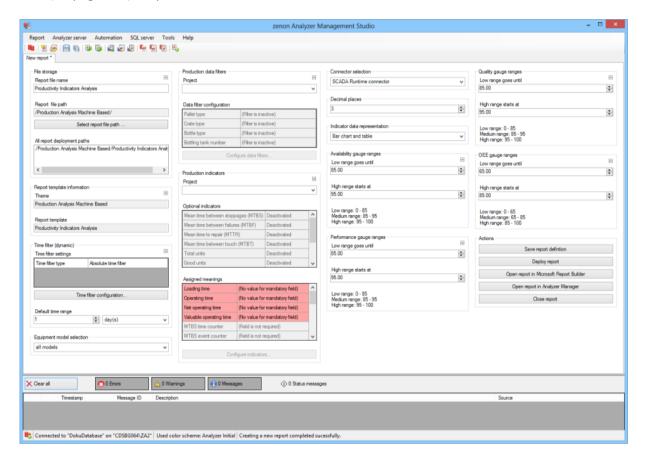


- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name



6. Configure the report

CONFIGURING THE REPORT





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
Company Company	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
	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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
00.111941401011	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
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 543) for configuring the data filters.
Production indicators	Configuration and display of the production indicators.
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.
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 546) for configuring the indicators.
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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	Selection of the display type for the indicators from the drop-down list:
	Bar chart and table
	Measuring devices and table
	Table
Availability gauge ranges	Availability color ranges.
	Configuration of the color ranges:
	Low range
	Medium range
	High range
	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.
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	Possible actions for the report:
	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.

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 prefilitering 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

- ListLots
- ListShifts
- ListFilterValueForEquipment



- ► FNB_GetMetaDataEntries
- ▶ FNB OeeData

Comprehensive Productivity Analysis

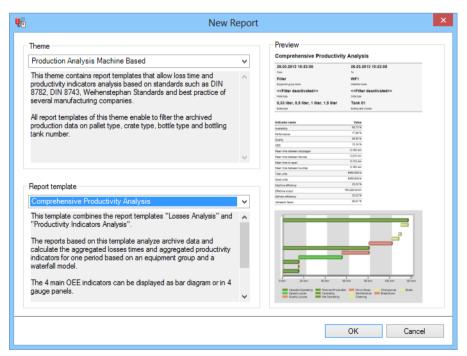
This template combines the Losses Analysis (on page 902) and Productivity Indicators Analysis (on page 911) report templates.

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:

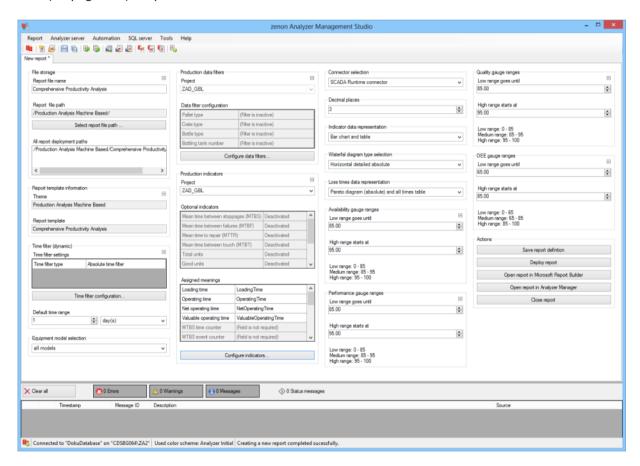
- Select Production Analysis Machine Based in the drop-down list in the dialog to create new reports as a theme
- 2. from the drop-down list, select Comprehensive Productivity Analysis as a report template





- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report

CONFIGURING THE REPORT





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
Cemptace	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
	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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter. For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity. Numerical input field: Minimum: 1 Maximum: 1000 Drop-down list for selection of the granularity: Minutes Hour Days Months Years
Equipment model selection	Selection of a equipment model from the drop-down list.
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 543) for configuring the data filters.
Production indicators	Configuration and display of the production indicators.
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.
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 546) for configuring the indicators.
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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	Selection of the display type for the indicators from the drop-down list:
	Bar chart and table
	Measuring devices and table
	Table
Waterfal diagram type	Selection of the waterfall diagram from the drop-down list:
selection	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	Selection of the display type for the time distribution from the drop-down list. Pareto diagram (absolute) and all times table Pareto diagram (relative) and loss times table Pareto diagram (relative) and loss times table Pareto diagram (relative) and loss times table Pareto diagram (absolute) Pareto diagram (relative) All times table Table with the loss times
Availability gauge ranges	Availability color ranges. Configuration of the color ranges: Low range
	Medium range High range
	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.
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	Possible actions for the report:
	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.

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 prefilitering 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



- ▶ 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.

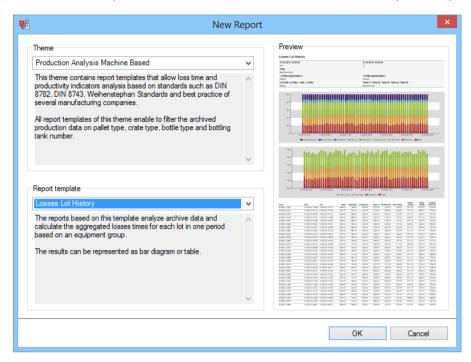
CREATE REPORT

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



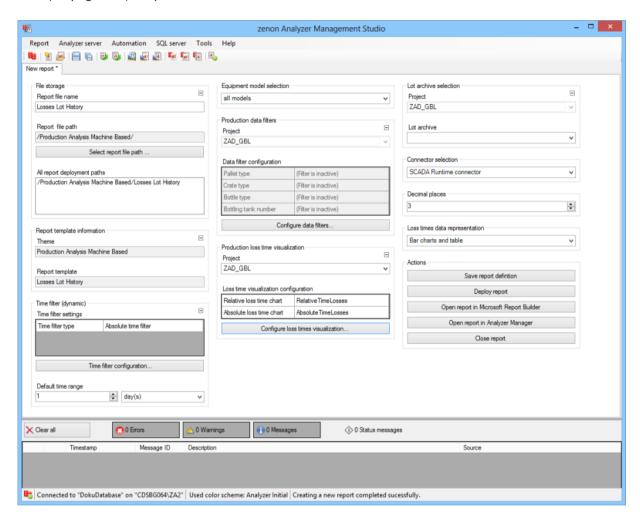




- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report



CONFIGURING THE REPORT





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
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 543) for configuring the data filters.
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 dropdown list and the drop-down list is deactivated.
Loss time visualization configuration	Table with the current settings for the meanings for the loss times.
Loss time visualization configuration	Clicking on the button opens the dialog (on page 564) to configure the visualization of the loss times.
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.
	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 dropdown 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	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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	Selection of the display type for the time distribution from the drop-down list.
	Pareto diagram (absolute) and all times table
	Pareto diagram (relative) and all times table



	- · · · · · · · · · · · · · · · · · · ·
	Pareto diagram (absolute) and loss times table
	Pareto diagram (relative) and loss times table
	Pareto diagram (absolute)
	Pareto diagram (relative)
	All times table
	Table with the loss times
Actions	Possible actions for the report:
	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.

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 prefilitering 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

- ▶ ListLots
- **▶** ListShifts
- ListFilterValueForEquipment
- FNB_GetMetaDataEntries
- FNB_LossTimesLotHistory



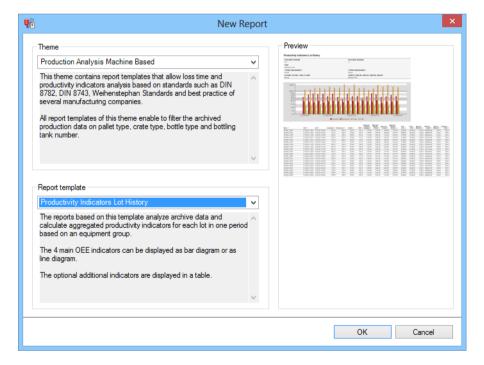
Productivity Indicators Lot History

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

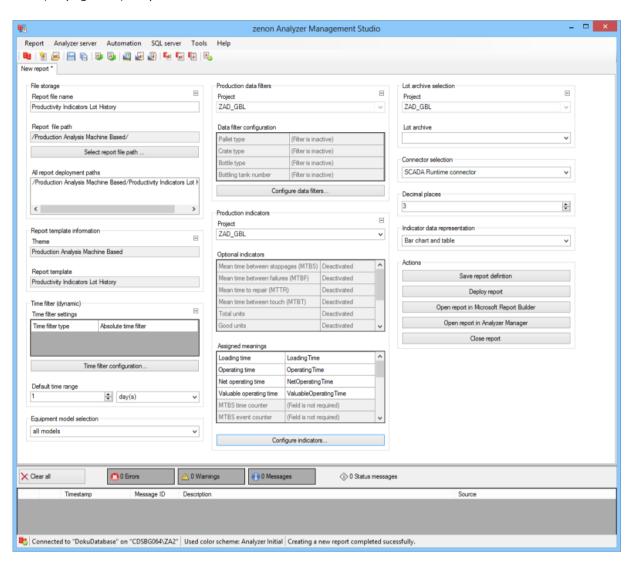
To create a Productivity Indicators Lot History report:

- 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 ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
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 543) for configuring the data filters.
Production indicators	Configuration and display of the production indicators.
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.
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 546) for configuring the indicators.
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.
	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 dropdown 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	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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	Selection of the display type for the indicators from the drop-down list:
	Bar chart and table



	Measuring devices and table
	Table
Actions	Possible actions for the report:
	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 prefilitering 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 927) and Productivity Indicators Lot History (on page 936).

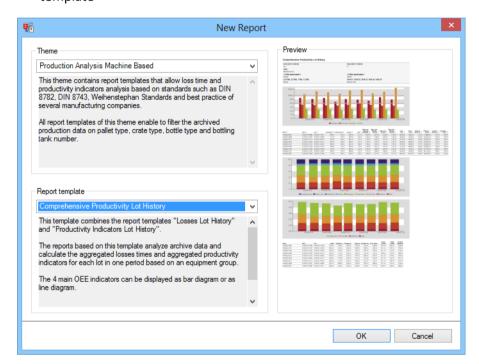
The reports that are based on this template analyze archive data and calculate compressed loss times and productivity indicators for each lot in a time period, based on an equipment group. The four central OEE indicators can be displayed as a bar chart or as a line chart. The additional optional indicators are displayed in a table. The losses can be displayed as a bar chart or as a table.



CREATE REPORT

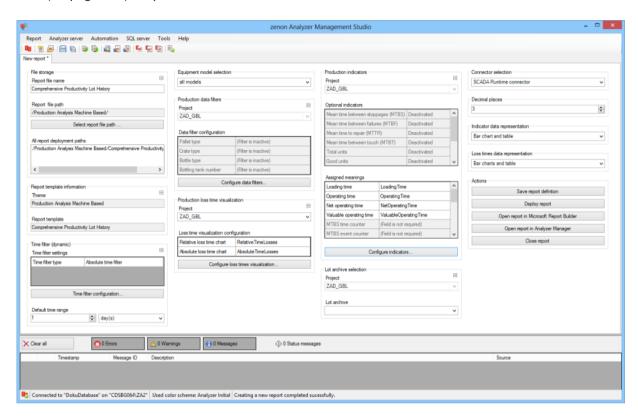
To create a Comprehensive Productivity Lot History report:

- 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 ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
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 543) for configuring the data filters.
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 dropdown 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 564) to configure the visualization of the loss times.
Production indicators	Configuration and display of the production indicators.
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 dropdown list and 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 546) for configuring the indicators.
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.
	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 dropdown 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	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)



SCADA SQL Connector (zenonSQL)



Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field. 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
Indicator data representation	the maximum. Selection of the display type for the indicators from the drop-down list: Bar chart and table Measuring devices and table Table
Loss times data representation	Selection of the display type for the time distribution from the drop-down list. Pareto diagram (absolute) and all times table Pareto diagram (relative) and loss times table Pareto diagram (relative) and loss times table Pareto diagram (relative) and loss times table Pareto diagram (absolute) Pareto diagram (relative) All times table Table with the loss times
Actions	Possible actions for the report: 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 prefilitering 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			
	Stan- dard	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 (@).

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

OE <u>E</u> – 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	*	

Hints:

* 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 in the Betriebsmittelkennung with ME=... (for example: ME=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	*	

Hints:

- * 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 in the resource label with ME=... (for example: ME=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/ <u>zenon</u> 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

Hints:

- ▶ * 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 in the resource label with wF=... (for example: wF=01,01,#FFAD5B; ...).

ARCHIVES

Archives							
Identification	Archive name	Type of scan	Description				
(user- <u>defined</u>)	(user- <u>defined</u>)	event triggered	Lot archive, started and stopped with zenon functions. It contains the following data: - 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.

12.2.7 OEE analysis

Reports with this theme provide report templates that calculate and display OEE indicators:

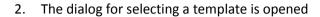
- ▶ OEE Indicator (on page 958): Calculates the OEE performance figures for a selected equipment model in a time period and displays the performance figures in graphic form
- ▶ OEE Indicator Lot History (on page 967): calculates the OEE indicators for a selected equipment model for each lot in a period of time and displays the performance figures in graphic form and table form

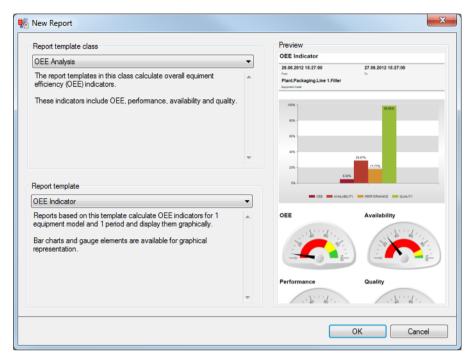
REPORT TEMPLATE SELECTION

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







- 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	-				
Users	-				
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:

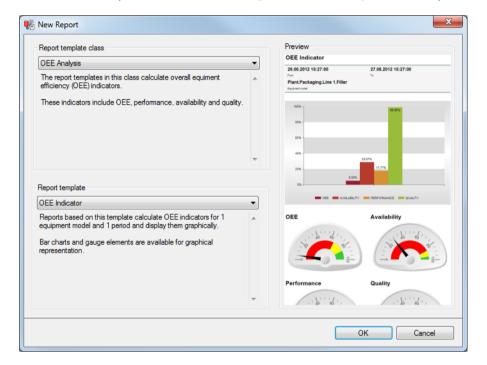
- ► A critical machine in the production process
- ► A production line
- ► A complete factory



CREATE REPORT

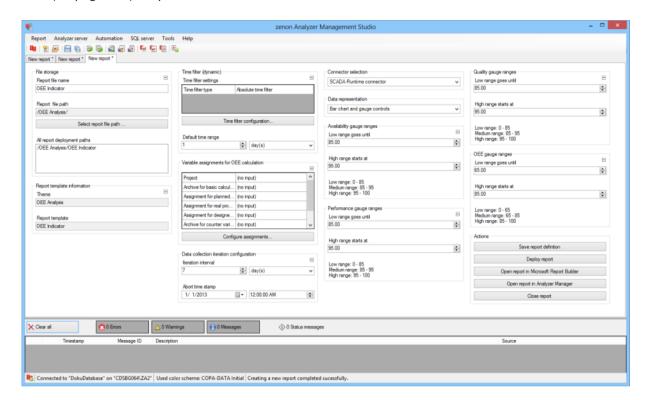
To create an OEE performance figure report:

- 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 ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Variable assignment for OEE calculation	Assignment of the project, the archive and the variables.
	Field shows the current configuration.
Configure assignments	Clicking on the button opens the dialog for configuring (on page 540) the assignments.
Data collection iteration configuration	Configuration for iteration interval and cancel time.
Iteration interval	Configuration of the iteration interval in:
	Minutes
	Hours
	Days
	Minimum: 1
	Maximum: 1000



T
Default: 1 day
Timestamp cancel with
Date
Time
Default: 01.01.2013 00:00:00
Selection of the connector from the drop-down list.
The drop-down list contains the name of the available connectors:
SCADA Runtime Connector (zenonV6)
SCADA SQL Connector (zenonSQL)
Configuration of the data display. Select from drop-down list. Possible settings:
Column chart and pointer instruments
Column chart
Gauge controls
Color range availability.
Configuration of the color ranges:
Low range
Medium range
High range
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.
Defines the limit between the low (red) and medium (yellow) range in the measuring device.
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	Power color range.
	Configuration similar to Availability gauge ranges.
Quality gauge ranges	Quality color range.
	Configuration similar to Availability gauge ranges.
OEE gauge ranges	OEE color range.
	Configuration similar to Availability gauge ranges.
Actions	Possible actions for the report:
	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.

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 prefilitering 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 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 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

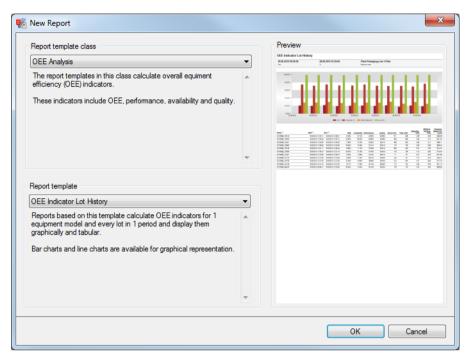
CREATE REPORT

To create an OEE performance figure lot archive report:

1. In the Theme drop-down list, select OEE Analysis

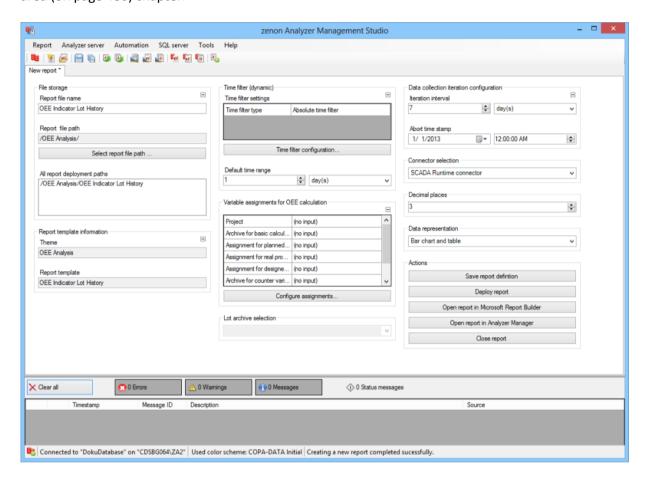






- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report







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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter. For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Variable assignment for OEE calculation	Assignment of the project, the archive and the variables.
	Field shows the current configuration.
Configure assignments	Clicking on the button opens the dialog for configuring (on page 540) the assignments.
Lot archive selection	Selection of a lot archive from a drop-down list if required by the report template.
	The following must be the case in order for this input to be displayed:
	A project must be selected
	This project must have one or more lot archives in the metadata
Data collection iteration configuration	Configuration for iteration interval and cancel time.
Iteration interval	Configuration of the iteration interval in:

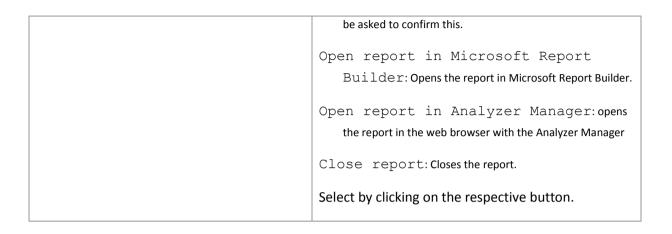


Minutes
Hours
Days
Minimum: 1
Maximum: 1000
Default: 1 day



Abort time stamp	Timostama cancol with
Abort time stamp	Timestamp cancel with
	Date
	Time
	Default: 01.01.2013 00:00:00
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	Column chart and table
	Line chart and table
	Column chart
	Line chart
	Table
Actions	Possible actions for the report:
	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





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 prefilitering 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 DISPLAY

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.			Standardiza	tion Properties			Properties of SCADA v	ariable	
	Stan- dard	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 (@).
- ► The use of individual variables is optional. Only the variables that are needed for the filter need to be configured.

VARIABLES FOR OEE CALCULATION:

	OE <u>E</u> – 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	*	

Hints:

- * 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 in the Betriebsmittelkennung with ME=... (for example: ME=OperatingTime, ...).

VARIABLES FOR PERFORMANCE FIGURE CALCULATION:

	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- <u>defined</u>)	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	*	

Hints:

* 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 in the resource label with ME=... (for example: ME=MTBS_TimeCounter, ...).

VARIABLES FOR RELATIVE LOSS TIMES

Origin for <u>rela</u> tive los <u>s</u> es analysis						
Name	Meaning	Data type	Unit	Origin	Connector	
[L][M]_[Index]_CD_WF_Time_Batch*	RelativeTimeLosses	REAL	min or h	archive A	SQL/zenon V6	
Examples:						
L01M03_0101_CD_WF_EffArbZeit	RelativeTimeLosses	REAL	min or h	WF	SQL	
L01M03_0201_CD_WF_TatsProdZeit	RelativeTimeLosses	REAL	min or h	WF	SQL	

Hints:

- ▶ * Proposed name in zenon. Not relevant to zenon Analyzer.
- ► These variables must be defined in zenon in the Betriebsmittelkennung with ME=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

Hints:

- ▶ * Proposed name in zenon. Not relevant to zenon Analyzer.
- ► These variables must be defined in zenon in the Betriebsmittelkennung with ME=AbsoluteTimeLosses

ARCHIVES:

Archives				
Identification	Archive name	Type of scan	Description	
(user- <u>defined</u>)	(user- <u>defined</u>)	event triggered	Lot archive, started and stopped with zenon functions. It contains the following data: - 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.	SQL/zenonV6
Freely selectable*.	Freely selectable. Default: EffectiveWorkingTime	BOOL**	three variables.	SQL/zenonV6
Freely selectable*.	Freely selectable. Default: DesignedSpeed	REAL	Delault. S1	SQL/zenonV6
Freely selectable*.	Freely selectable. Default: GoodUnits	UDINT	Freely selectable. Identical for	SQL/zenonV6
Freely selectable*.	Freely selectable. Default: TotalUnits	UDINT	both variables. Default: C1	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	Recording type	Connector
Freely selectable. e.g.: S1	Freely selectable.	On-change.	SQL/zenonV6
Freely selectable. e.g.:	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	SQL/zenonV6
Freely selectable*.	Freely selectable. Default: EffectiveWorkingTime	BOOL**	three variables. Default: \$1	SQL/zenonV6
Freely selectable*.	Freely selectable. Default: DesignedSpeed	REAL		SQL/zenonV6
Freely selectable*.	Freely selectable. Default: GoodUnits	UDINT	Freely selectable.	SQL/zenonV6
Freely selectable*.	Freely selectable. Default: TotalUnits	UDINT	both variables. Default: C1	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

Archiv e	Archive name	Recording type	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 one 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.

12.2.8 Target Actual Analysis

Reports with this theme provide report templates that allow the comparison of nay 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.

The following report templates are available:

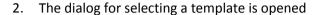
- ► Target Actual Aggregated Trend (absolute) (on page 983): Gets the target and actual values for the set meanings and the selected equipment group and calculates absolute counters from this.
- ► Target Actual Aggregated Trend (relative) (on page 991): Gets the target and actual values for the set meanings and the selected equipment group and calculates relative counters from this.

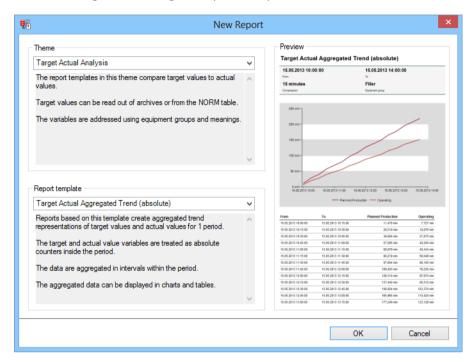
REPORT TEMPLATE SELECTION

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







- 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

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.

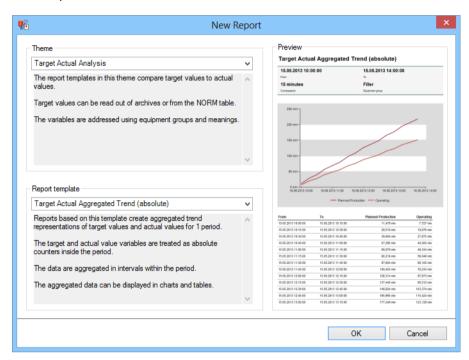
CREATE REPORT

To create a Target Actual Aggregated Trend (absolute) report:

1. In the Theme drop-down list, select Target Actual Analysis



2. from the drop-down list, select Target Actual Aggregated Trend (absolute) as a report template

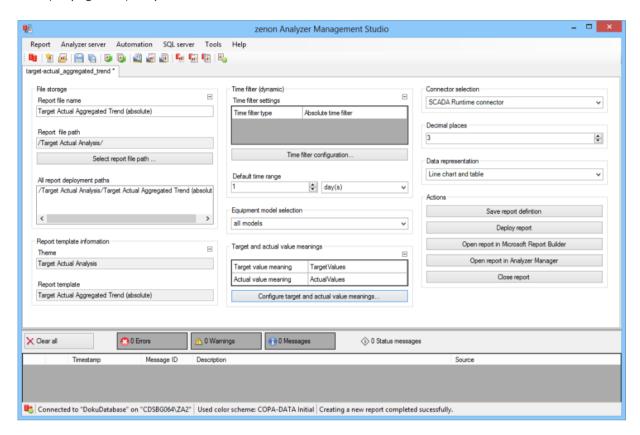


- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report



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 486) chapter.





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Clicking on the button opens the dialog to configure the time filter.
For details, see the Configuring the time filter (on page 566) section.
Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
Numerical input field:
Minimum: 1
Maximum: 1000
Drop-down list for selection of the granularity:
Minutes
Hour
Days
Months
Years
Selection of a equipment model from the drop-down list.
Display and configuration of the meanings for set points and actual values.
Table with the current settings for the meanings for the set points and actual values.
Clicking on the button opens the dialog for configuring the meanings (on page 562).
Selection of the connector from the drop-down list.
The drop-down list contains the name of the available connectors:
SCADA Runtime Connector (zenonV6)
SCADA SQL Connector (zenonSQL)



	I
	Line chart and table
	Column chart and table
	Line chart
	Column chart
	Table
Actions	Possible actions for the report:
	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 prefilitering 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

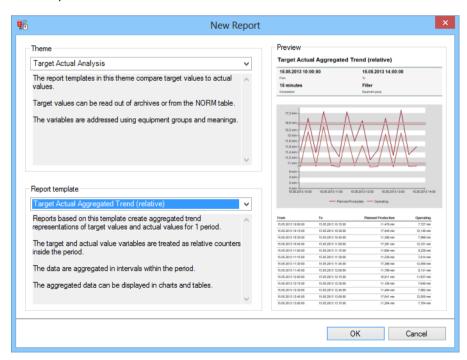
Target Actual Aggregated Trend (relative)

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



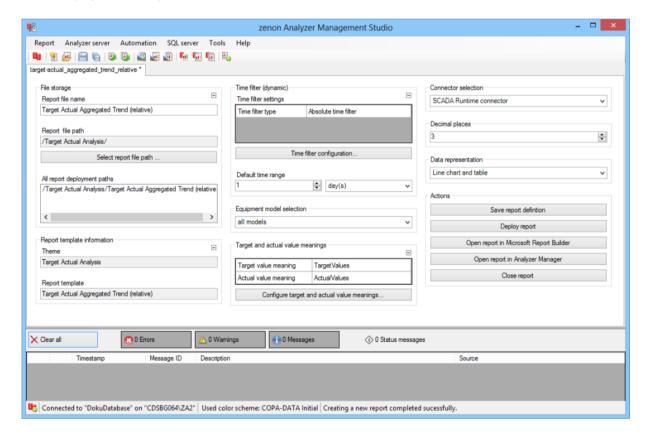
3. Click on the ox button



- 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 486) chapter.





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
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 562).
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Data display	Configuration of the data display. Select from drop-down list. Possible settings:



	Line chart and table
	Column chart and table
	Line chart
	Column chart
	Table
Actions	Possible actions for the report:
	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 prefilitering 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	ProdTarget ProdActual	Target-actual comparison for production quantity for all five machines.
Target Actual Analysis -	PowerTarget	Target-actual comparison for electricity
rower	PowerActual	consumption for all five machines.
Target Actual Analysis - Temperature	TempTarget	Target-actual comparison for operating
Temperacure	TempActual	temperature for all five machines.

12.2.9 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 1001): Calculates operating times for the individual operating modes of a machine and machine components.
- Operating Time per Power Range (on page 1010): Calculates operating times for a machine per power range.

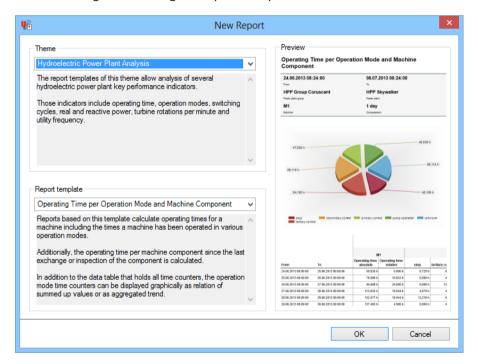


- ▶ Circuit Breaker Switching Cycles (on page 1019): Calculates switching cycles for circuit breakers.
- ► Active and Reactive Power Counters (on page 1027): Calculates counter values for active and reactive power.
- ▶ Power Line Frequency (on page 1036): Calculates time counters for different frequency bands of the network frequency of a machine.
- Machine Event Counters (on page 1045): 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

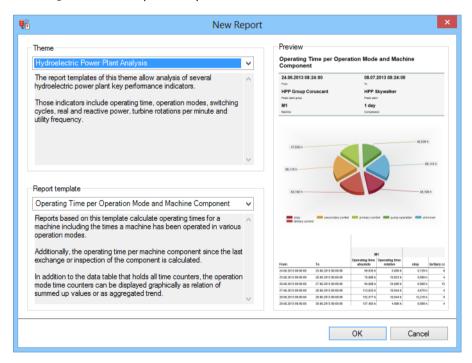
Reports that are based on this template calculate operating times for the individual operating modes of a machine. In addition, the operating times per machine component since the last inspection of the components are calculated.

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

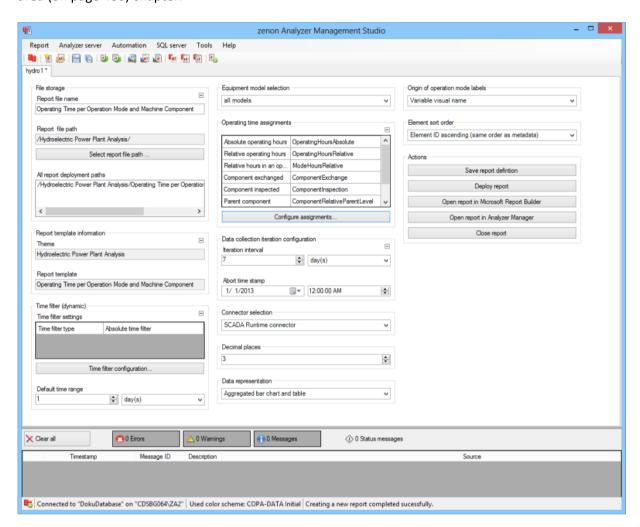


- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report



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 486) chapter.





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter. For details, see the Configuring the time filter
	(on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
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 572).
Data collection iteration configuration	Configuration for iteration interval and cancel time.
Iteration interval	Configuration of the iteration interval in:
	Minutes
	Hours
	Days
	Minimum: 1
	Maximum: 1000



	Default: 1 day
Abort time stamp	Timestamp cancel with
	Date
	Time
	Default: 01.01.2013 00:00:00
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	aggregated column chart and table
	aggregated pie chart and table
	Aggregated trend bar chart and table
	Aggregated trend line chart and table
	Table
Operation mode labels	Selection of the marking for operating modes from drop-down list:
	Variable visual name
	Descriptive text for the variables
Element sort order	Selection of the sorting criteria from the drop-down list:



	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	Possible actions for the report:
	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 prefilitering 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

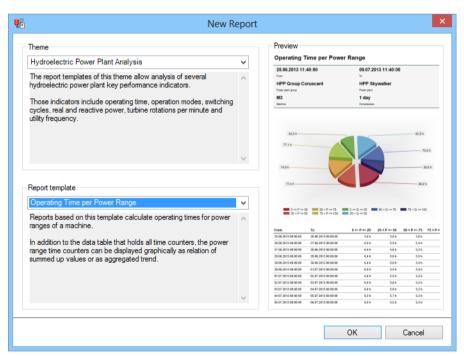
Reports that are based on this template calculate operating times for a machine per power range.

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:

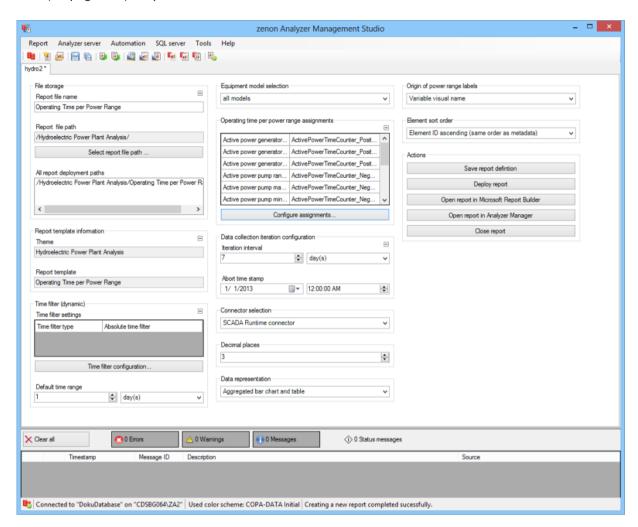
- 1. In the Theme drop-down list, Select Hydroelectric Power Plant Analysis
- 2. from the drop-down list, select Operating Time per Power Range as a report template



- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report



CONFIGURING THE REPORT





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
Assignments for power station operating time per power range	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 577).
Data collection iteration configuration	Configuration for iteration interval and cancel time.
Iteration interval	Configuration of the iteration interval in:
	Minutes
	Hours
	Days
	Minimum: 1
	Maximum: 1000
	Default: 1 day



Abort time stamp	Timestamp cancel with
	Date
	Time
	Default: 01.01.2013 00:00:00
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	aggregated column chart and table
	aggregated pie chart and table
	Aggregated trend bar chart and table
	Aggregated trend line chart and table
	Table
Operation mode labels	Selection of the marking for operating modes from drop-down list:
	Variable visual name
	Descriptive text for the variables
Element sort order	Selection of the sorting criteria from the drop-down list:
	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	Possible actions for the report:
	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.

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 prefilitering 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

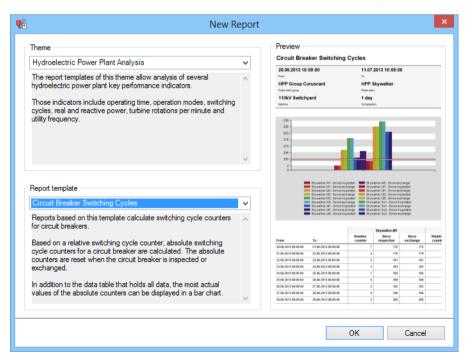
Reports that are based on this template calculate switching cycles for circuit breakers. Based on a relative switching cycle counter, absolute switching cycle counters for a circuit breaker are calculated. These absolute counters are reset if the circuit breaker is inspected or replaced.

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

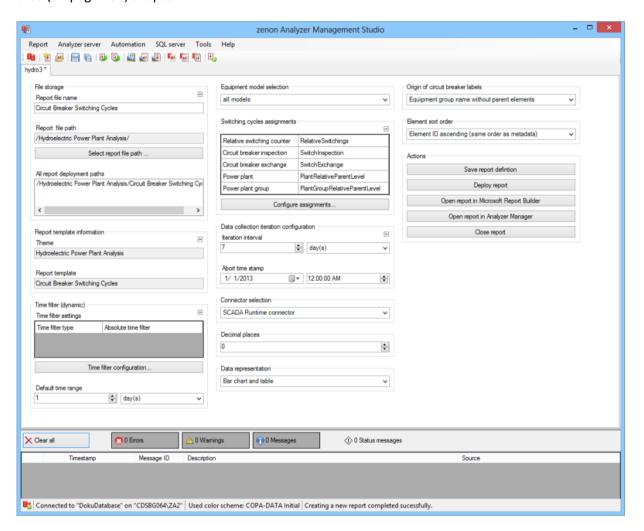


- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name



6. Configure the report

CONFIGURING THE REPORT





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter. For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity. Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
Assignments for	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 583).
Data collection iteration configuration	Configuration for iteration interval and cancel time.
Iteration interval	Configuration of the iteration interval in:
	Minutes
	Hours
	Days
	Minimum: 1
	Maximum: 1000
	Default: 1 day



Abort time stamp	Timestamp cancel with
	Date
	Time
	Default: 01.01.2013 00:00:00
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	Column chart and table
	Table
Operation mode labels	Selection of the marking for operating modes from drop- down list:
	Variable visual name
	Descriptive text for the variables
Element sort order	Selection of the sorting criteria from the drop-down list:
	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	Possible actions for the report:
	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.

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 prefilitering 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.

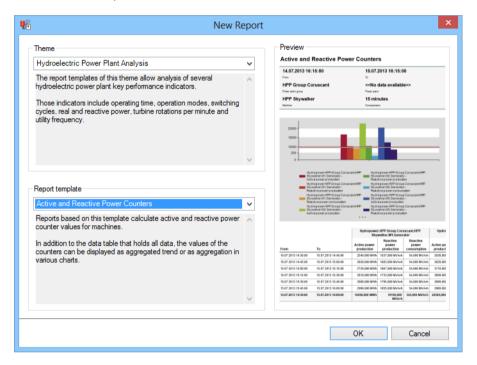
The display is a data table that contains all data. In addition, the counter values can be displayed as an aggregation or aggregation trend in various diagrams.



CREATE REPORT

To create an Active and Reactive Power Counters report:

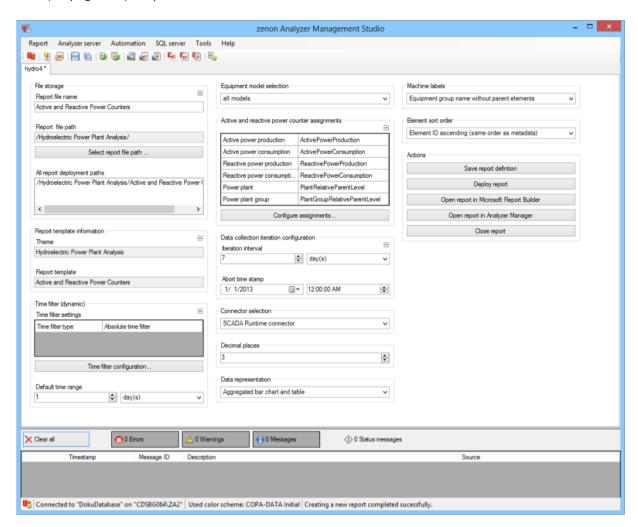
- 1. In the Theme drop-down list, select Hydroelectric Power Plant Analysis
- 2. from the drop-down list, select Active and Reactive Power Counters as a report template



- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report



CONFIGURING THE REPORT





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
Assignments for	Display and configuration of the assignments for power station real and wattless power.
Configure assignments	Clicking on the button opens the dialog for configuring the archives (on page 588).
Data collection iteration configuration	Configuration for iteration interval and cancel time.
Iteration interval	Configuration of the iteration interval in:
	Minutes
	Hours
	Days
	Minimum: 1
	Maximum: 1000
	Default: 1 day
	I



Abort time stamp	Timestamp cancel with
	Date
	Time
	Default: 01.01.2013 00:00:00
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	aggregated column chart and table
	aggregated pie chart and table
	Aggregated trend bar chart and table
	Aggregated trend line chart and table
	Table
Operation mode labels	Selection of the marking for operating modes from drop-down list:
	Variable visual name
	Descriptive text for the variables
Element sort order	Selection of the sorting criteria from the drop-down list:
	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	Possible actions for the report:
	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.

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 prefilitering 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.

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

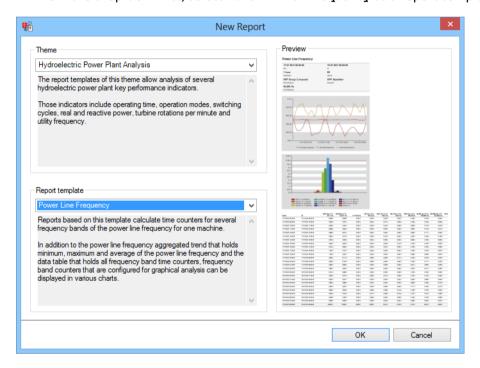


▶ Diagrams with the configured time counters for frequency counters

CREATE REPORT

To create a Power Line Frequency report:

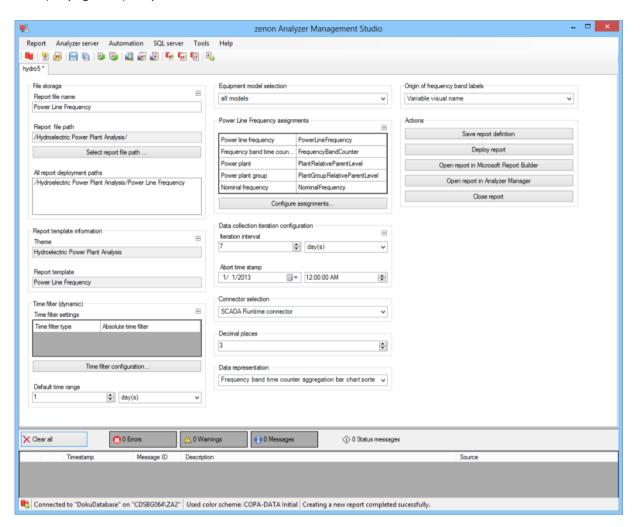
- 1. In the Theme drop-down list, select Hydroelectric Power Plant Analysis
- 2. from the drop-down list, select Power Line Frequency as a report template



- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report



CONFIGURING THE REPORT





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter. For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity. Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
Assignments for	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 593).
Data collection iteration configuration	Configuration for iteration interval and cancel time.
Iteration interval	Configuration of the iteration interval in:
	Minutes
	Hours
	Days
	Minimum: 1
	Maximum: 1000
	Default: 1 day



Abort time stamp	Timestamp cancel with
	Date
	Time
	Default: 01.01.2013 00:00:00
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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 display	Configuration of the data display. Select from drop-down list. Possible settings:
	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
Operation mode labels	Selection of the marking for operating modes from drop-down list:
	Variable visual name
	Descriptive text for the variables
Element sort order	Selection of the sorting criteria from the drop-down list:
	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	Possible actions for the report:
	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.

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 prefilitering 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 HppFrequencyCounters 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
- ListHppStructureNamesWithFrequency
- HppFrequencyTrend
- ▶ 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:



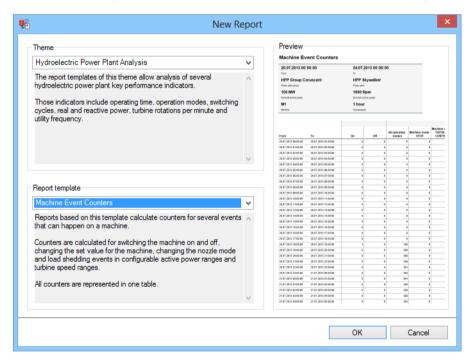
- Switching the machine on and off
- ► Changes to the target value for the machine
- ► Changes to nozzle mode
- ▶ Load shedding events in configurable active power ranges and turbine speed ranges

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

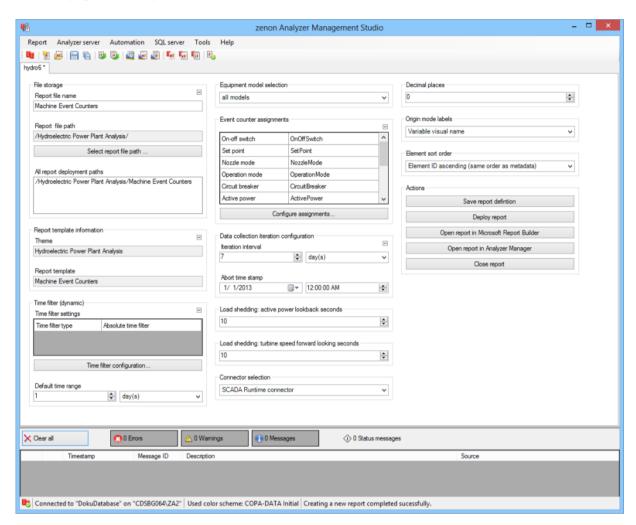


- 3. Click on the ox button
- 4. The report template is opened
- 5. Save the report with the desired name
- 6. Configure the report



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 486) chapter.





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 555) section.
All report deployment paths	List of the language-dependent paths (on page 409) defined in the options for distribution of the reports.
Information on the report template	Information on the report template, consisting of:
	Theme: selected superordinate theme of the report template
	Report template: selected report template
	For further details see chapter Report templates (on page 559)
Theme	Selected theme for report templates.
	Display only.
Report template	Selected report template.
	Only display.
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:
	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.
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.



Time filter configuration	Clicking on the button opens the dialog to configure the time filter.
	For details, see the Configuring the time filter (on page 566) section.
Default time range	Requirements for standard value of the report time range. Consists of numerical input field and drop-down list to define the granularity.
	Numerical input field:
	Minimum: 1
	Maximum: 1000
	Drop-down list for selection of the granularity:
	Minutes
	Hour
	Days
	Months
	Years
Equipment model selection	Selection of a equipment model from the drop-down list.
Assignments for	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 598).
Data collection iteration configuration	Configuration for iteration interval and cancel time.
Iteration interval	Configuration of the iteration interval in:
	Minutes
	Hours
	Days
	Minimum: 1
	Maximum: 1000
	Default: 1 day



Abort time stamp	Timestamp cancel with
	Date
	Time
	Default: 01.01.2013 00:00:00
Load shedding: Active power lookback seconds	Display and configuration of the assignment for power station event counters.
Load shedding: Turbine speed lookfront seconds	Clicking on the button opens the dialog for configuring the archives (on page 598).
Connector selection	Selection of the connector from the drop-down list.
	The drop-down list contains the name of the available connectors:
	SCADA Runtime Connector (zenonV6)
	SCADA SQL Connector (zenonSQL)
Decimal places	Selection of the decimal places to be displayed. Selection by means of cursor keys or direct input in the field.
	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.
Operation mode labels	Selection of the marking for operating modes from drop-down list:
	Variable visual name
	Descriptive text for the variables
Element sort order	Selection of the sorting criteria from the drop-down list:
	Element ID ascending (same order as metadata table)
	Element ID descending (inverse order as metadata table)
	Element label alphabetically ascending
	Element label alphabetically descending



Possible actions for the report:
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 prefilitering 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
- List Hpp Structure Names With Nominal Power And Rpm
- GetChildEquipments
- **HppEventCounters**

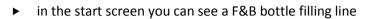
13. Example zenon

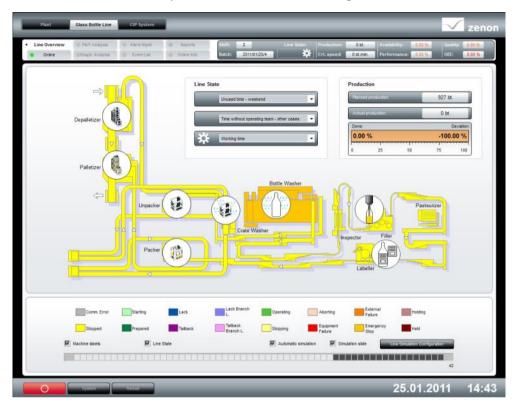
On the installation medium you can find a zenon example project and reports which are used by this project as data source.

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







- ▶ switch to the Line Overview Via
 - Online status
 - Graphic analysis



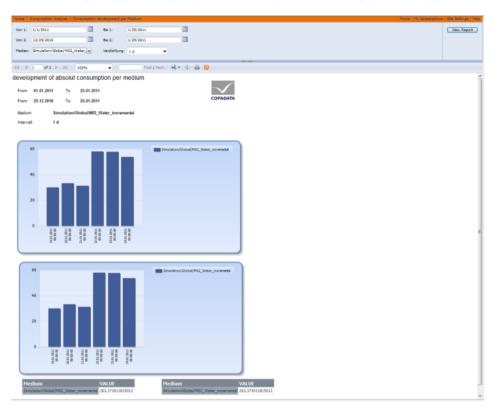
Counter



The data from screen counter are directly processed in the reports.



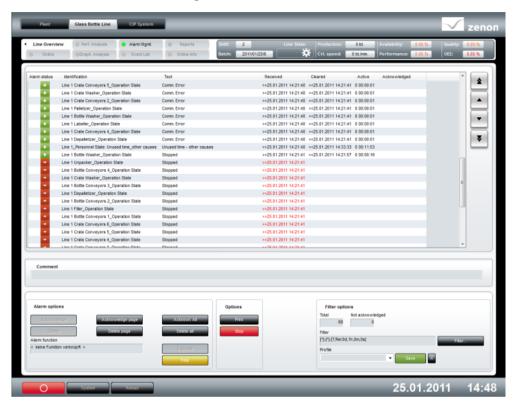
EXAMPLE CONSUMPTION OF A MEDIUM IN TIME COMPARISON

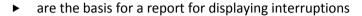


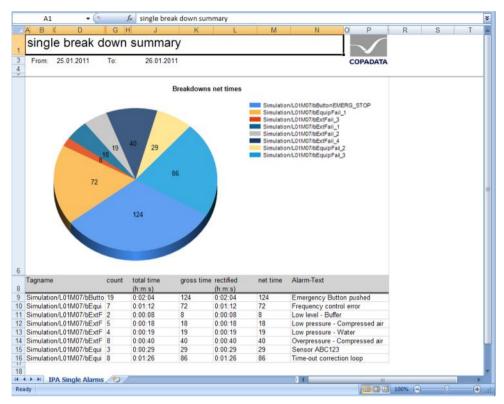


TOPIC ALARMING

► Entries in Alarm Message List







You can adapt the project and the reports according to your needs and set the reports to your own data sources.