zenon manual

Shift Management

v.7.60

Contents

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1. Welcome to COPA-DATA help

ZENON VIDEO-TUTORIALS

You can find practical examples for project configuration with zenon in our YouTube channel (https://www.copadata.com/tutorial_menu). The tutorials are grouped according to topics and give an initial insight into working with different zenon modules. All tutorials are available in English.

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

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2. Shift Management

`Shift Management` is a module in zenon for the modeling and organization of shifts. This module is not available in global projects and CE projects.

> **License information**
>
> *Part of the standard license of the Editor and Runtime.*

You can do the following locally and in the network with the help of Shift Management:

- ▶ Create and apply shift modules
- ▶ Create shifts
- ▶ Enter shift times
- ▶ Administer shift times
- ▶ Export shifts to SQL
- ▶ Inform users who are assigned to a shift via **Message Control**

3. Terminology

Term	Definition
Shift Management	A module in zenon for the modeling and organization of shifts.
Shift	Represents the course of an individual shift. This also contains more in-depth information, such as a free-text name and description, assignment to the equipment model and user administration, as well as breaks.
Break	Shifts can contain breaks to show an interruption to productivity.
Shift model	Represents the mode of a recurring configuration of shifts, such as "2-shift operation" or "3-shift operation". To do this, the shift model combines at least one or more shifts. In addition, the shift model contains more in-depth information, such as a free-text name and description.
Shift calendar	Is a visualization component for selective display in zenon. It allows, among other things, the creation and editing of shift occurrences.
Staff	Is the people selected for a shift.

4. Configure Shift Management

Shift Management is operated in Runtime by means of a `Shift Management` screen.

To be able to display and manage events in Runtime, the following must be configured in the Editor:

▶ A `Shift Management` screen (on page 7).

▶ A screen switch (on page 11) to this screen

This screen is called up and configured in Runtime.

4.1 Creating a screen of the type Shift management

CREATING A SCREEN OF THE TYPE SHIFT MANAGEMENT

ENGINEERING

Steps to create the screen:

1. Create a new screen:

   In the tool bar or the context menu of the **Screens**node, select the **New screen** command. An empty `Standard` screen is created.

2. Change the properties of the screen:

   a) Name the screen in the **Name** property.

   b) Select `Shift management` in the **Screen type** property.

   c) Select the desired frame in the **Frame** property.

3. Configure the content of the screen:

   a) select menu item **Control elements** from the menu bar

   b) Select `Insert template` in the drop-down list.
   The dialog to select pre-defined layouts is opened. Certain control elements are inserted into the screen at predefined positions.

   c) Remove elements that are not required from the screen.

   d) If necessary, select additional elements in the **Elements** drop-down list. Place these at the desired position in the screen.

4. Create a screen switch function.

Navigation

Forwards	Day view	Go to today
Backwards	Week view	
	Month view	

Shift calendar

Calendar content

Calendar
Typ: STATIC
ID: 53504

- New shift...
- Delete shift
- Shift properties
- Open shift calendar
- Save shift model
- Insert shift model...
- Copy shift
- Insert shift

Shift models

Shift models list
Typ: STATIC
ID: 53514

- Column selection
- Format columns
- New shift model...
- Open shift model
- Delete shift model
- Properties...

Filter...

4.2   Control elements

INSERT TEMPLATE

Parameter	Description
Insert template	Opens the dialog for selecting a template for the screen type.
	Templates are shipped together with zenon and can also be created by the user.
	Templates add pre-defined control elements to pre-defined position in the screen. Elements that are not necessary can also be removed individually once they have been created. Additional elements are selected from the drop-down list and placed in the zenon screen. Elements can be moved on the screen and arranged individually.

CONTROL ELEMENTS

Element	Description
Filter	Opens the dialog (on page 11) with the filter settings for screen switching.
Calendar	Calendar module that shows the calendar with the shifts or a shift model in Runtime.
Calendar content	Text element that shows the currently-displayed data range of the shift calendar in Runtime.

SHIFTS

Element	Description
New shift	Opens the dialog (on page 38) to create a new shift.
Delete shift	Deletes the selected shift. Multiple selection possible with the CTRL key.
Shift properties	Opens dialog for editing the selected shift.
Copy shift	Copies the selected shift.
Insert shift	Pastes a copied shift from the clipboard into the selected day.

SHIFT CALENDAR

Element	Description
Open shift calendar	Opens the shift calender. Only available if a shift model is displayed in the calendar.
Insert shift model	Opens the dialog (on page 49) to paste a shift model into the shift calendar.

NAVIGATION

Element	Description
Forwards	Goes one element forward in the calendar according to the entered value (one day, one week or one month).
Backwards	Goes one element back in the calendar according to the entered value (one day, one week or one month).
Day view	Shows the selected day in the calendar.
Week view	Shows the selected week in the calendar.
Month view	Shows the selected month in the calendar.
Go to today	Shows the current day in the calendar.

SHIFT MODELS

Elements	Description
Shift models list	List of existing shift models.
Column selection	Opens the dialog (on page 16) to select the columns to be displayed in the list.
Format columns	Opens a dialog (on page 18) to format the columns.
New shift model	Opens the dialog (on page 54) for creating a shift model.
Open shift model	Changes the calendar view to the display of shift models and opens the selected shift model there.
Save shift model	Saves the shift model opened in the calendar. Only available if a shift model is open in the shift calendar and there are unsaved changes.
Delete shift model	Deletes the selected shift model after a confirmation message.
Properties	Configuration of the properties of the shift model: Name and description

4.3   Amend the appearance of the calendar

You can amend the appearance of the calendar using the properties of the **Calendar** control element.

4.3.1   Calendar properties

COLORS FOR WORKING TIME AND WORK-FREE TIME

To configure the colors for working time and work-free time:

1. Click on the calendar element in the Editor.

2. Select the **Fill** group in properties.

3. Configure the color for work-free time using the **Fill color non-working time** property. Clicking on button **...** opens the dialog for selecting a color.

4. Configure the color for working time using the **Fill color Working Time** property. Clicking on button **...** opens the dialog for selecting a color.

4.4   Configuring screen switching

To open a `Shift management` screen in Runtime:

1. Create a screen of type `Shift management`.

2. Create a `screen switch` function for this screen

CONFIGURE SCREEN SWITCHING

To create a screen switch to a `Shift management` screen:

1. In the context menu of node **function** select command **New function**.

2. Click on **screen switch**.

    The dialog for the screen selection will be opened.

3. Create a **Shift Management** screen.

    The filter dialog is opened.

FILTER DIALOG

Several tabs are available in the dialog for configuration.
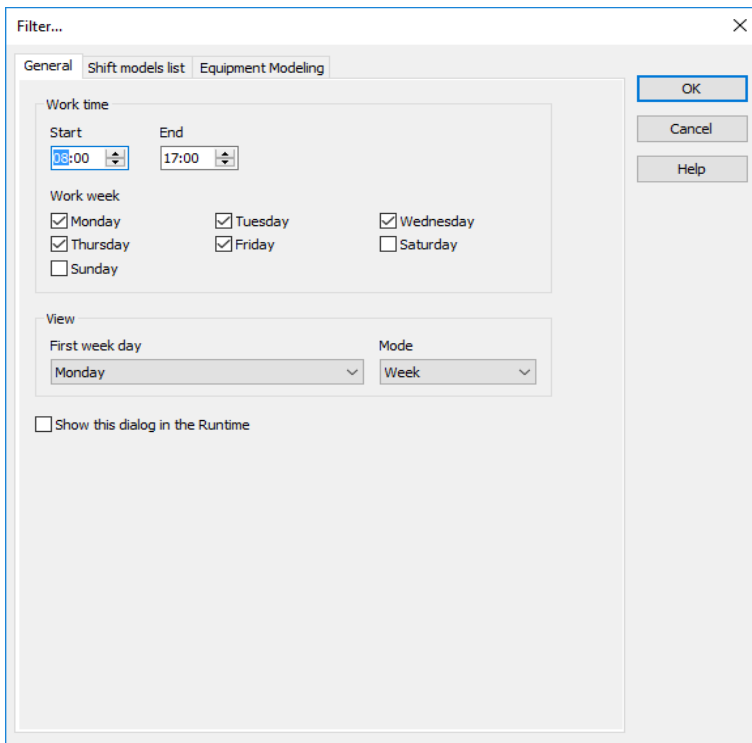
▸ General: (on page 12) Configuration of the calendar.

▸ List of shift models (on page 15): Configuration of the list of the shift models.

▸ Equipment modeling (on page 20): Selection of the equipment model.

When calling up the configuration again, tabs for the replacement of links and indices are also offered.

Note: The dialog can be called up in Runtime using the **Filter** button.

4.4.1 General

The pre-settings for the shift calendar are configured in this tab. The settings made here determine the display and requirements of the calendar in Runtime. The settings can only be modified in Runtime if the **Show this dialog in Runtime** option has been activated.

WORK TIME

Configuration of the working time.

Option	Description
Work time	You use these properties to configure the working time prescribed in the calendar.
Start	Enter the time for the start of the working time here. Input in the field directly or by means of the arrow keys. Default: `8:00 AM`
End	Enter the time for the end of the work time. Entry in the field directly or configuration by means of the arrow keys. Default: `5:00 PM`
Work week	You use this checkbox to stipulate which days constitute a working week. Selection by activating the checkbox beside of the respective weekday. Default: `Monday` to `Friday`.

VIEW

Configuration of the view.

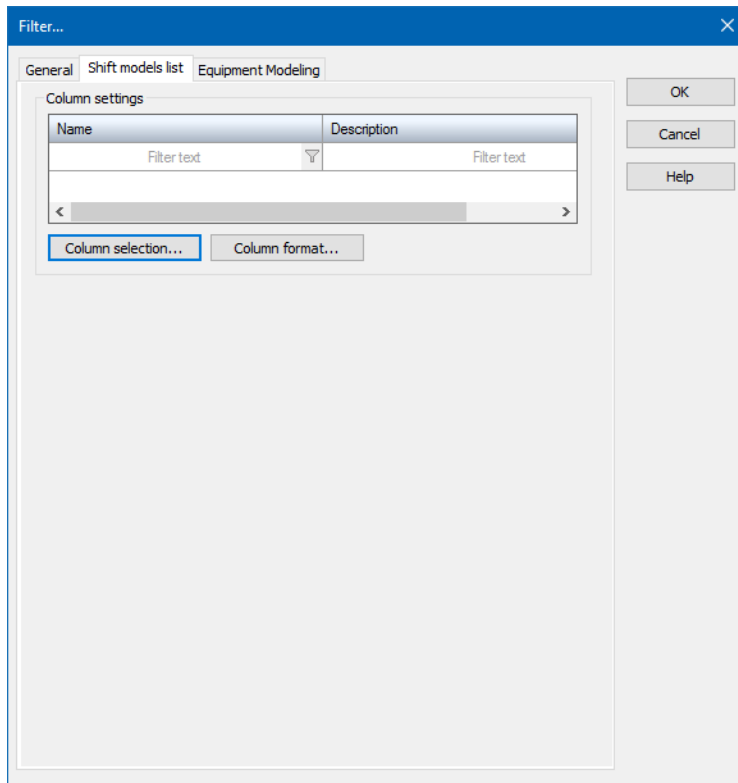| Option	Description
View	Configuration of the standard view of the calendar in Runtime.
First week day	Selection of the week day with which the Calendar starts the working week. Select from drop-down list. Default: `Monday`
Mode	Selection of the default view in which the calendar is opened in Runtime. Select from drop-down list: ▸ `day` ▸ `Week` ▸ `Month` Default: `Week`

GENERAL

Option	Description
Show this dialog in the Runtime	Selection of whether the dialog is offered when the screen is called up in Runtime. ▸ `Active`: The dialog will be shown in the Runtime. Settings can be edited before screen switching. ▸ `Inactive`: Dialog is not offered in Runtime. The settings configured here are applied.

CLOSE DIALOG

Options	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

4.4.2   Shift models list

You configure the columns of the shift model list in this tab. These settings are used for the display of the model list in Runtime. The dialogs to configure the columns can also be called up in Runtime using the corresponding buttons.

Option	Description
List	Shows configured columns.
Column selection	Clicking on button opens the dialog to select (on page 16) the columns to be displayed.
Column format	Clicking on the button opens the dialog to format (on page 18) the columns.

CLOSE DIALOG

Options	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

Column selection

Selection of the columns to be displayed.
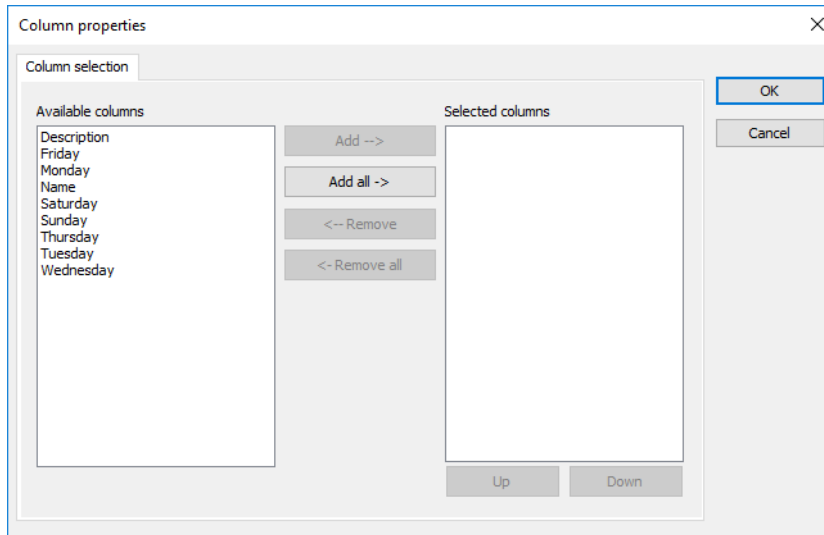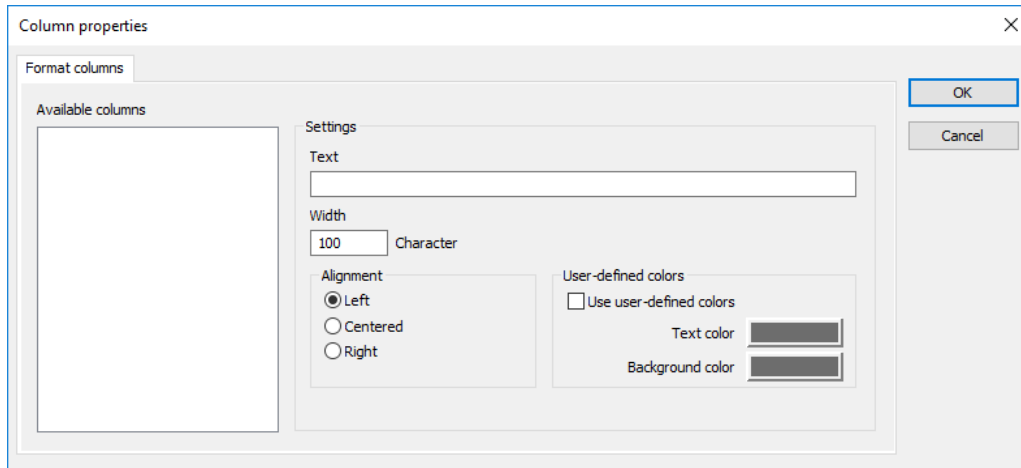
COLUMN SELECTION

Options	Function
Available columns	List of columns that can be displayed in the table.
Selected columns	Columns that are displayed in the table.
Add ->	Moves the selected column from the available ones to the selected items. After you confirm the dialog with OK, they are shown in the detail view.
Add all ->	Moves all available columns to the selected columns.
<- Remove	Removes the marked columns from the selected items and shows them in the list of available columns. After you confirm the dialog with OK, they are removed from the detail view.
<- Remove all	All columns are removed from the list of the selected columns.
Up	Moves the selected entry upward. This function is only available for unique entries, multiple selection is not possible.
Down	Moves the selected entry downward. This function is only available for unique entries, multiple selection is not possible.

CLOSE DIALOG

Option	Description
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.

Column format

Graphical configuration of the column display.

AVAILABLE COLUMNS

Options	Description
Available columns	List of the available columns via **Column selection**. The highlighted column is configured via the options in the **Settings** area.

PARAMÈTRES

Option	Description
Paramètres	Paramètres de la colonne sélectionnée.
Intitulé	Nom de l'intitulé de colonne. Cet intitulé de colonne est compatible avec la fonction de changement de langue en ligne. Pour cela, le caractère @ doit être saisi devant le nom.
Largeur	Largeur de la colonne en caractères. Calcul : nombre de caractères multiplié par la largeur moyenne des caractères de la police sélectionnée.
Alignement	Alignement. La sélection de l'attribution s'effectue au moyen des cases d'option. Paramètres possibles : ▸ **Gauche** : Le texte est justifié contre le bord gauche de la colonne. ▸ **Centré** : Le texte est centré dans la colonne. ▸ **Droite** : Le texte est justifié contre le bord droit de la colonne.
Couleurs définies par l'utilisateur	Propriétés permettant de sélectionner des couleurs définies par l'utilisateur pour le texte et l'arrière-plan. Les paramètres ont une incidence dans Editor et dans le Runtime. **Remarque :** ▸ Ces paramètres sont uniquement disponibles pour les listes configurables. ▸ En outre, le focus correspondant dans la liste peut être indiqué par différentes couleurs de texte et d'arrière-plan dans le Runtime. Celles-ci sont configurées dans les propriétés du projet.
Couleurs définies par l'utilisateur	`Active` : Les couleurs définies par l'utilisateur sont appliquées.
Couleur du texte	Couleur d'affichage du texte. Cliquez sur la couleur pour la palette de sélection de couleurs.

Arrière-plan	Couleur d'affichage de l'arrière-plan de la cellule. Cliquez sur la couleur pour la palette de sélection de couleurs.
Désactiver le filtre de colonnes dans le Runtime	▶ `Active` : Le filtre de cette colonne ne peut pas être modifié dans le Runtime. Remarque : Uniquement disponible pour : ▶ Module Batch Control ▶ Extended Trend ▶ Synoptiques de filtre ▶ Module Message Control ▶ Recipe Group Manager ▶ Gestion d'équipes ▶ Liste contextuelle

CLOSE DIALOG

Options	Description
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.
Help	Opens online help.

4.4.3 Equipment Modeling

Each shift can be linked to as many equipment groups as desired. The shifts are filtered according to equipment groups using the screen switch function. The dialog can be called up in Runtime using the **Filter** button.

All pre-existing equipment models and their equipment groups are displayed in the filter. Via the context menu or via toolbar, you can create new models and groups.

EQUIPMENT MODELING

Option	Description
Toolbar	Symbols to: ▸ Edit local equipment models ▸ Expand or collapse the display ▸ Display of information
List of equipment models	provides models and groups for selection The list separates the display into equipment models from the global project and from local projects. Local equipment models can be created, edited or deleted. Note: Equipment models from the global project cannot be displayed if there are models with the same name from the local project. Affected models are displayed by clicking on the warning symbol (triangle with exclamation mark). For details, see the **Equipment modeling** manual, **Editing local equipment models** chapter.
Add	Adds the selected groups to the filter list.
Remove	Removes all selected groups from the filter list.
Hierarchic filter	Checkbox for the activation of the hierarchical filtering of the equipment model ▸ `Activated`: Variables that are linked to a subhierarchy of the selected equipment group are taken into account when filtering and are contained in the display in Runtime. ▸ `Inactive`: When filtering, only variables that are linked to the selected equipment group are taken into account.Default: `activated`
Filter list	Shows all equipment groups that are to be filtered.

CLOSE DIALOG

Options	Description
OK	Applies settings and closes the dialog.
Cancel	Discards the selection and closes the dialog. Attention: Any changes that have been made to the structure of local equipment models are retained.
Help	Opens online help.

CONFIGURATION

New models and groups can be created for the active project and existing ones can be deleted.

ADD MODEL TO PROJECT

To add a new model:

1. Click on the project.

2. In the toolbar select **New Equipment model**

REMOVE   MODEL

To remove an existing model:

1. Click on the model.

2. Select **Remove** in the toolbar.

ADD GROUPS TO THE MODEL

To add a group to a model:

1. select the desired equipment model
   Attention: If there are naming conflicts between global and local equipment models, the local equipment models are displayed and the global ones are ignored. You can get information on possible conflicts by clicking on the corresponding symbol (triangle with exclamation mark) in the toolbar.

2. Select an equipment group or level.

3. Add the new group to the list in the lower area of the dialog with the **Add** button.

   Note:

   • Subgroups are not automatically added.

   • it is possible to link as many groups as you want.

REMOVE GROUP FROM THE MODEL

To delete a group from a model:

1. Select the desired elements in the list in the lower area of the dialog (multiple selection is possible).

2. Click the **Delete** button

Note: Changes in a tree element remain preserved independent of clicking button **Cancel**. **Cancel** only means that no element was selected.

GROUPS TO ADD FILTERS OR REMOVE THEM

To add groups to the filter:

1. Select the desired element.

2. Click on the **Add** button.

3. Repeat the process until all necessary groups are available in the list
   (Multi-select is not possible)

To remove groups from the filter:

1. Select the desired element
   (multiselect: Hold down the `Ctrl` key or `shift` key and click on the desired element.)

2. Click the **Delete** button.

4.5   Function SQL export

Shifts and breaks can be exported to SQL in Runtime (on page 58). To do this, a corresponding function must be created in the Editor and executed in Runtime.

CREATE THE FUNCTION IN THE EDITOR

Steps to create the function:

1. Create a new function:

   In the toolbar or in the context menu of the Functions node, select **New function**.
   The dialog to select a function is opened.

2. Navigate to node **Batch Control**

3. Select the **SQL export shift calendar**   function.

   The dialog for configuration is opened.

4. Configure:

   - Connection to the SQL database.

   - Time period from which shifts should be exported.

   - Equipment groups for which the shifts are to be exported.

5. Name the function in the **Name** property.
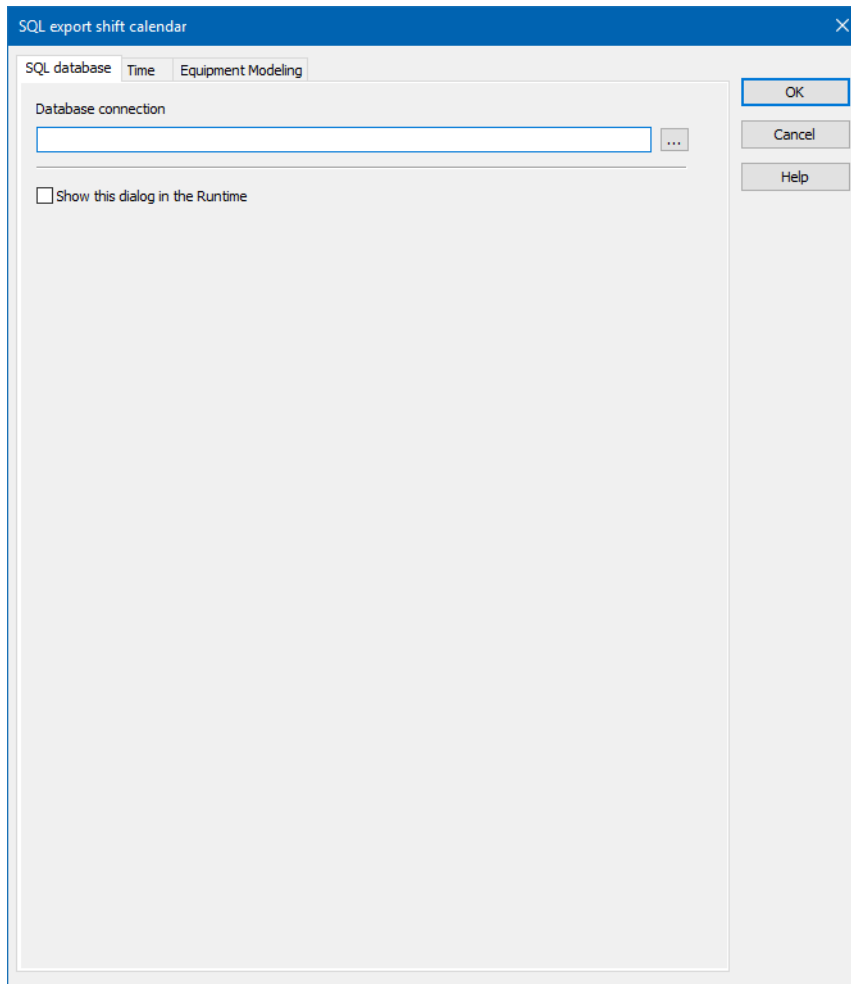

SQL SHIFT CALENDAR DIALOG

SQL export is configured using the following tabs:

▶ SQL database (on page 25): Configuration of the connection to the SQL database.

▶ Time (on page 27): Selection of the time filter.

▶ Equipment modeling (on page 30): Selection of the equipment groups.

4.5.1   SQL database

In this tab, you establish the connection to an SQL database.

SQL DATABASE

| Option	Description
Database connection	Selection of the database connection. Entry in the field or configuration by means of a dialog. Clicking on the **...** button opens the configuration dialog.
Show this dialog in the Runtime	Active: In Runtime, when the function is called up, this dialog to change the configuration is offered before execution.

CLOSE DIALOG

Options	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

CONFIGURE CONNECTION

The dialog for connecting to a database originates from the operating system.

How the database connection is carried out in general, you can see at the folowing example. You can get information about the individual settings for each tab from the Microsoft help funktion by clicking button **Help**.

1. The dialog starts with tab **Conenction**.

2. Open tab **Provider**
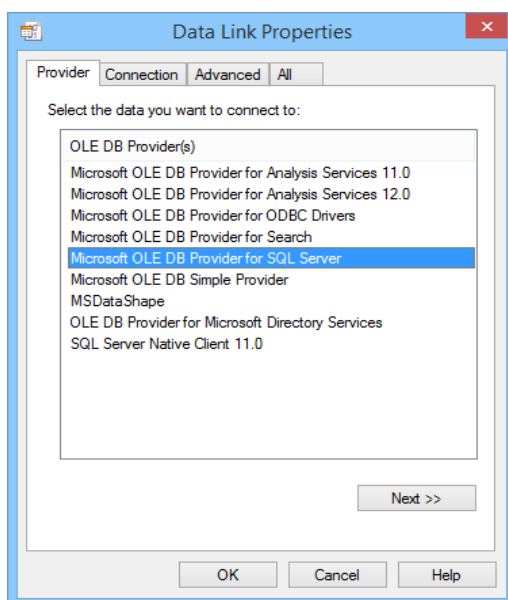
3. Select the provider **Microsoft OLE DB Provider for SQL Server**.

4. Apply this by double clicking or clicking on the entry or the **Continue** button.

   The **Verbindung** tab is opened.
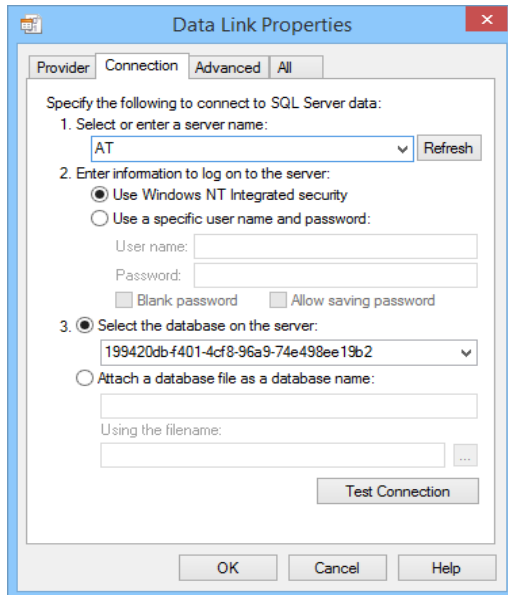
5. Select the required server from the drop-down list.

6. Select the login information.
   Tip: **Integrated security** is generally used.

7. Select the database.

8. Click on **test connection**.
   Optional settings:

   - Tab **Extended**: Configuration of network settings, timeout and access rights (not generally necessary for this connection).

   - **All** tab Configuration of individual details (not generally necessary for this connection).

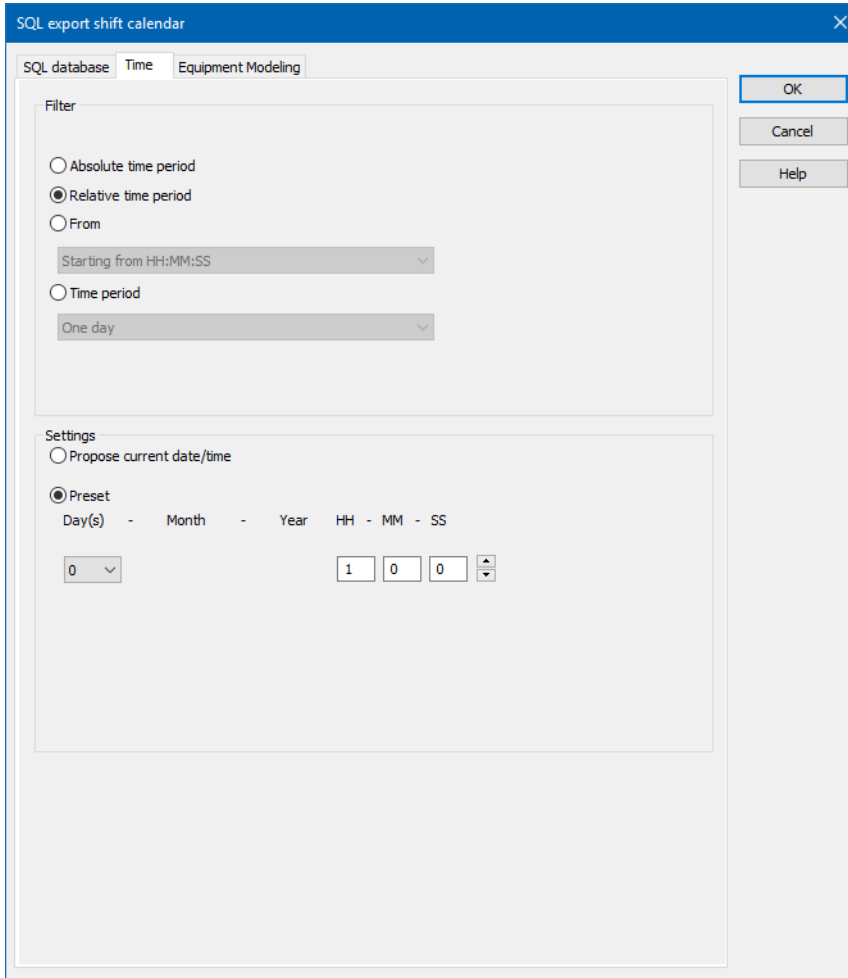9. Confirm your selection by clicking **OK**.

   The connection to the SQl Server is entered.

4.5.2   Time

You configure the time period for the export in this tab.
Note: A time period must be stipulated. Only the completed shifts that are in this time period are exported.

Standard: **Relative time period**, `1 h`

FILTER

Selection of the filter.

Parameter	Description
Absolute filter	`Active`: A fixed period of time is entered in the editor. When the function is executed, the defined absolute time period is exactly used.
	In the settings section, the corresponding options can be shown and configured there.
	Note: Time is saved in UTC. For details see chapter Handling of date and time in chapter Runtime.
Relative time period	`Active`: A relative time period is entered.
	In the settings section, the corresponding options can be shown and configured there.
	Attention: this filter is constantly updated.
From	`Active`: A time from which the filter is effective is stated. If the time is not reached on the current day, filtering takes place from the corresponding time the previous day.
	Selection of the area mode from drop-down list:
	▸ Starting from HH:MM:SS
	▸ Starting from day - HH:MM:SS
	▸ Starting from day, month - at HH:MM:SS
	In the settings section, the corresponding options can be shown and configured there.
	Attention: The start point of this filter is not updated automatically. Only the existing times are used when shown. The end time point is not defined with this filter, it is carried over.
Time period	`Active`: A fixed time period is entered. Selection of the area mode from drop-down list:
	▸ One day
	▸ One week
	▸ Two weeks
	▸ One month
	▸ One Year
	▸ 15 minutes
	▸ 30 minutes
	▸ 60 minutes
	In the settings section, the corresponding options can be shown and configured there.

CLOSE DIALOG

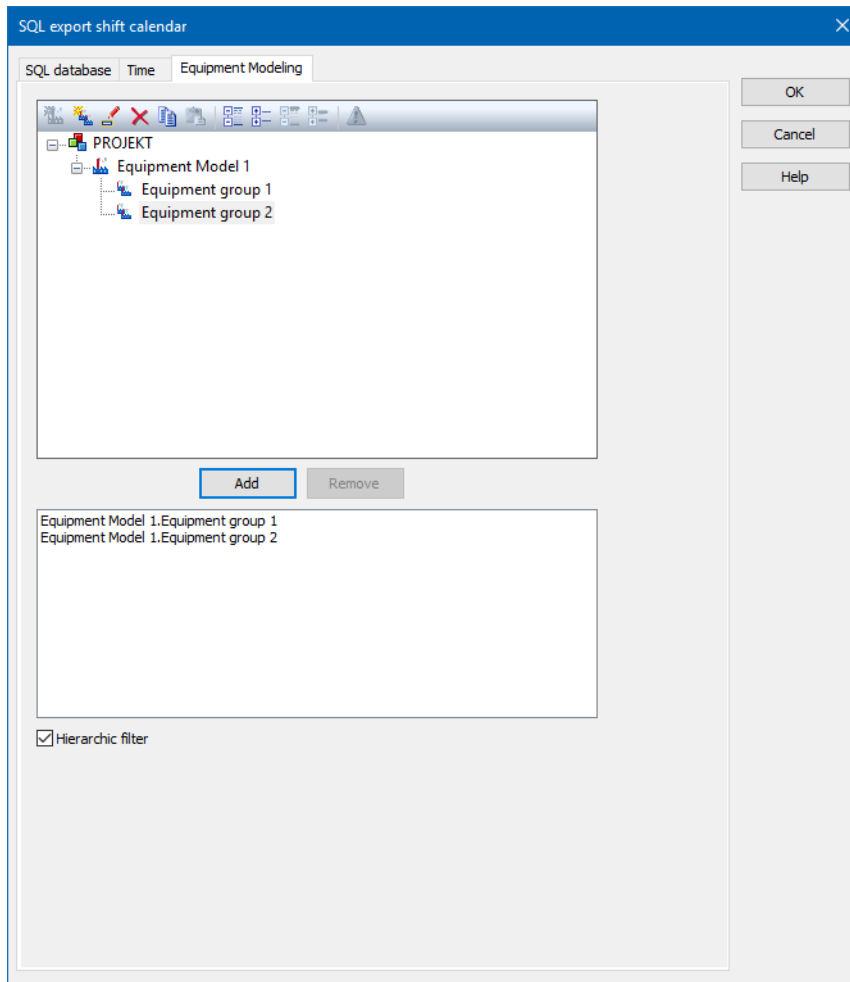| Parameter	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

4.5.3   Equipment Modeling

In this tab you select the desired equipment group.

> ⚠ **Attention**
>
> The following is applicable for SQL export:
>
> ▸ In general, only shifts that are linked to an equipment model are exported.
>
> ▸ If no equipment groups have been selected, all shifts that correspond to the time filter and are linked to an equipment model are exported.

EQUIPMENT MODELING

Option	Description
List of equipment models	provides models and groups for selection The list separates the display into equipment models from the global project and from local projects.
	Local equipment models can be created, edited or deleted.
	Note: Equipment models from the global project cannot be displayed if there are models with the same name from the local project. Affected models are displayed by clicking on the warning symbol (triangle with exclamation mark). For details, see the **Equipment modeling** manual, **Editing local equipment models** chapter.
Add	Adds the selected groups to the filter list.
	The shifts that are linked to one of the selected equipment groups are exported.
Remove	Removes all selected groups from the filter list.
Filter list	Shows all equipment groups that are to be filtered.

CLOSE DIALOG

Options	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.
Help	Opens online help.

SELECT EQUIPMENT GROUPS

To select equipment grousp for the export:

1. Select the desired equipment groups.

2. Click on the **Add** button.

3. Repeat the process until all necessary groups are available in the list (Multi-select is not possible.)

To remove equipment groups:

1. Select the desired equipment group.
   (multiselect: Hold down the `Ctrl` key or `shift` key and click on the desired element)

2. Click the **Delete** button.

ADDING OR DELETING EQUIPMENT GROUPS

Actions in the window of the existing equipment model can be controlled using the toolbar.
Description of the symbols, starting from the left:

Symbol	Description
New Equipment Model	Creates a new Equipment model.
	(for local equipment models only)
New group	Creates a new equipment group below the highlighted entry.
	(for local equipment models only)
Edit	Makes it possible to edit the name.
	(for local equipment models only)
Delete	Deletes the selected entry.
	(for local equipment models only)
Copy	Copies the selected entry.
Paste	Pastes copied entries from the clipboard below the highlighted entry. If a group with the same name already exists, the inserted group receives the prefix **Copy of**
	(for local equipment models only)
	Attention: If equipment models are copied from the global project to the local project and not renamed, there are two models with the same names. Both can be selected, however no linking is created on confirmation.
	Hint: Always rename models copied from the global project to the local project.
Expand all	All nodes are expanded.
Collapse all	All nodes are collapsed.
Expand selection	The selected node is expanded.
Collapse selection	The selected entry is collapsed.
Warnings	Displays warnings.
	For example, equipment models from the global project that are not displayed because models with the same name from the local project are preferred.

> 👍 **Hint**
>
> You can find further information in the **Equipment modeling** manual, in the **Equipment modeling dialog** chapter.

5. Shift management in Runtime

Shift Management makes the following possible in Runtime:

▶ Creation and administration of shifts and shift models

▶ Informing users in a shift by means of Message Control

Shift models (on page 54) provide templates for shifts. Shifts are created in the calendar directly or derived from a shift model.
The calender (on page 37) makes the following possible:

▶ Creating shifts

▶ Editing shifts

▶ Displaying shifts in filtered form

▶ Editing shift models

Note:

▶ In order for shifts and shift models to be administered on a client or zenon Web Client, the **Primary Server** must be available.

▶ In order for users to be able to create, edit and delete shifts and shift models, you must have the corresponding function authorization.

STANDARD VIEW OF SHIFT MANAGEMENT IN RUNTIME

Navigation

Filter...			

Forwards	Day view	Go to today
Backwards	Week view	
	Month view	

Shift calendar

Shift calendar: 09.01.2017 - 15.01.2017

	9 Monday	10 Tuesday	11 Wednesday	12 Thursday	13 Friday	14 Saturday	15 Sunday
00:00							
01:00							
02:00							
03:00							
04:00							
05:00							
06:00							
07:00							
08:00							
09:00							
10:00							
11:00							
12:00							
13:00							
14:00							
15:00							
16:00							
17:00							
18:00							
19:00							
20:00							
21:00							

- New shift...
- Delete shift
- Shift properties
- Open shift calendar
- Save shift model
- Insert shift model...
- Copy shift
- Insert shift

Shift models

Name	Description
Filter text	Filter text

- Column selection
- Format columns
- New shift model...
- Open shift model
- Delete shift model
- Properties...

ELEMENTS

Element	Description
Filter	Opens the dialog (on page 11) with the filter settings for screen switching.
Calendar	Calendar module that shows the calendar with the shifts or a shift model in Runtime.
Calendar content	Text element that shows the currently-displayed data range of the shift calendar in Runtime.

SHIFTS

Element	Description
New shift	Opens the dialog (on page 38) to create a new shift.
Delete shift	Deletes the selected shift. Multiple selection possible with the `CTRL` key.
Shift properties	Opens dialog for editing the selected shift.
Copy shift	Copies the selected shift.
Insert shift	Pastes a copied shift from the clipboard into the selected day.

SHIFT CALENDAR

Element	Description
Open shift calendar	Opens the shift calender. Only available if a shift model is displayed in the calendar.
Insert shift model	Opens the dialog (on page 49) to paste a shift model into the shift calendar.

NAVIGATION

Element	Description
Forwards	Goes one element forward in the calendar according to the entered value (one day, one week or one month).
Backwards	Goes one element back in the calendar according to the entered value (one day, one week or one month).
Day view	Shows the selected day in the calendar.
Week view	Shows the selected week in the calendar.

| Month view | Shows the selected month in the calendar. |
| Go to today | Shows the current day in the calendar. |

SHIFT MODELS

Elements	Description
Shift models list	List of existing shift models.
Column selection	Opens the dialog (on page 16) to select the columns to be displayed in the list.
Format columns	Opens a dialog (on page 18) to format the columns.
New shift model	Opens the dialog (on page 54) for creating a shift model.
Open shift model	Changes the calendar view to the display of shift models and opens the selected shift model there.
Save shift model	Saves the shift model opened in the calendar. Only available if a shift model is open in the shift calendar and there are unsaved changes.
Delete shift model	Deletes the selected shift model after a confirmation message.
Properties	Configuration of the properties of the shift model: Name and description

Hint: Insert the **Calendar content** control element into the calendar. You thus see at a glance which time period from the calendar is currently being displayed.

5.1   Calendar

The calendar shows the shift calendar or shift models, according to the selection. Switching is carried out using the **Open shift model** button or the **Open shift calendar** button.

The view is scaled depending on the selected time range:

  ▶   Day and week view: 1 hour

  ▶   Month view: 1 day

  ▶   Shift models only show one day and are displayed scaled to 1 hour.

Shifts and shift models are configured using the context menu or the respective buttons.

EMPTY CELL CALENDAR CONTEXT MENU

Menu item	Action
New shift	Opens the dialog to create a new shift.
Insert shift model	Opens the dialog (on page 49) for inserting a shift model.
Today	Shows the current day in the calendar.
Day	Shows the selected day in the calendar.
Week	Shows the selected week in the calendar.
Month	Shows the selected month in the calendar.
Forwards	Goes one element forward in the calendar according to the entered value (one day, one week or one month).
Backwards	Goes one element back in the calendar according to the entered value (one day, one week or one month).

CALENDAR SHIFT ENTRY CONTEXT MENU

Menu item	Action
Shift properties	Shows the dialog with the given shift information.
Delete shift	Deletes the selected shift. Multiple selection is also possible with the Ctrl key.

SHIFT MODEL LIST CONTEXT MENU

Menu item	Action
New shift model	Opens the dialog to create a new shift model.
Open shift model	Changes the calendar view to a display of shift models and opens the selected shift model.

5.1.1   Shifts

Create shift

To create a new shift:

1. In the calendar, click in a new time point that has not yet been assigned.

2. Create a new shift:

- Context menu: Click on **New shift** in the context menu.

- Button in the screen: Click on the **New shift** button.

- Keyboard: Press the `Ins` key.

The dialog to create a new shift is opened.

3. Configure the shift with:

- Shift times (General tab)

- Breaks

- Equipment Groups

- User

Note: It is possible to create shifts on any client computer. If Shift Management is used on different client computers at the same time, all newly-created shifts are asvade and updated on all client computers.

General properties

Configuration of the general shift properties.

To configure general properties:

1. Give the shift a name.

2. Configure the start and end time.

3. Enter a description (optional).

4. Configure breaks and equipment groups if necessary.

5. Close the dialog by clicking on **OK**.

Shifts must meet the following rules:

- ▶ A valid name must be given.

- ▶ The start time must not be after the end time.

Attention: If you change shift times, amend the break times in the **Breaks** tab too.

GENERAL DIALOG

Option	Description
Name	Please enter a name for the shift.
	▸ Maximum length: 256 characters
	▸ The following special characters are not permitted: **/\.:*?<>!|'"#%**
Start	Select the start time for the shift:
	▸ Day: Selection from calender element or entry in the field directly.
	▸ Time: Selection by means of arrow keys or entry in the field directly.
End	Select the end time for the shift:
	▸ Day: Selection from calender element or entry in the field directly.
	▸ Time: Selection by means of arrow keys or entry in the field directly.
Description	Optional description of the shift.
	Maximum length: 32.000 characters

CLOSE DIALOG

Options	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.

Breaks

Configuration of the break times.

All breaks are shown in a list and can be edited in the list directly.

To configure breaks:

1. Click on the New button.

   A new break is created.

2. Amend the name.

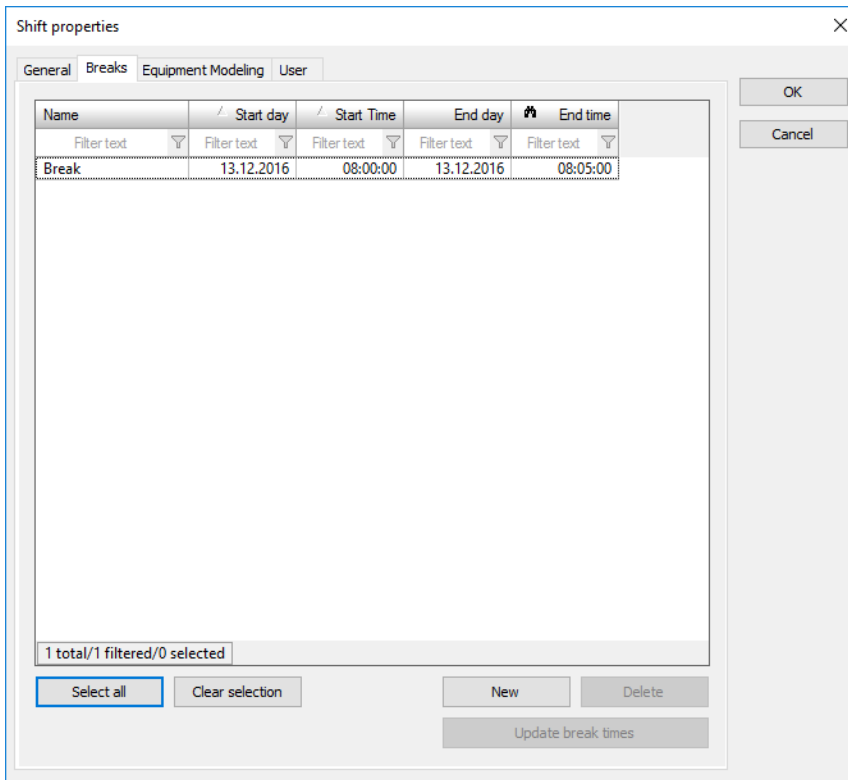3. Issue a date and time for the start and end of the break.

4. Click on **OK**.

Note: If the shift times are amended, you may need to also amend the break times under certain circumstances. You can do that manually or automatically by clicking on the **Update break times** button.

Breaks must meet the following rules:

▶ For names, the same rules as for shift names are applicable.

▶ The start time must not be after the end time.

▶ They must not overlap.

▶ They must be within a shift.

BREAKS DIALOG

Option	Description
Name	Display and configuration of the break name. Default: **Break** To change the name: 1. Click in the cell twice or press the F2 button after selection. 2. Enter the name. The following is applicable for break names: ▶ Maximum length: 256 characters ▶ The following special characters are not permitted: **/\.:*?<>!|'"#%**
Start day	Select the day for the start of the break here. Default: First day of the shift. To change the day: 1. Click in the cell twice or press the F2 button after selection. 2. Select the required day from the drop-down list. The following applies for the start day: ▶ All days configured for the shift are available. ▶ The date must not be higher than the date for the **End day** option.
Start Time	Select the time for the start of the break here. Default: Start time of the shift. To change the time: 1. Click in the cell twice or press the F2 button after selection. 2. Enter the time or configure the time with the arrow keys. The following is applicable for the start time: ▶ All times configured for the shift are available. ▶ The time must not be later than the time configured for the **End time** option.
End day	Select the day for the end of the break here. Default: First day of the shift. To change the day:

	1. Click in the cell twice or press the F2 button after selection. 2. Select the required day from the drop-down list. The following applies for the end day: ▶ All days configured for the shift are available. ▶ The date must not be earlier than the date for the **Start day** option.
End time	Select the time for the end of the break here. Default: Start time of the shift plus 5 minutes. To change the time: 1. Click in the cell twice or press the F2 button after selection. 2. Enter the time or configure the time with the arrow keys. The following is applicable for the end time: ▶ All times configured for the shift are available. ▶ The time must not be later than the time configured for the **Start time** option.
Select all	Selects all configured breaks.
Clear selection	Clears the selection. No more breaks are selected.
New	Adds a new break to the list.
Delete	Deletes all selected entries after requesting confirmation.
Update break times	Clicking on the button automatically amends the break times to the amended shift times. In doing so, all breaks are moved so that their start is at the same length to the shift start as before the change to the shift time. Only available if, in the **General properties** (on page 39) tab, shift times have been amended and the change has an effect on the configured breaks.

CLOSE DIALOG

Options	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.

Equipment Modeling
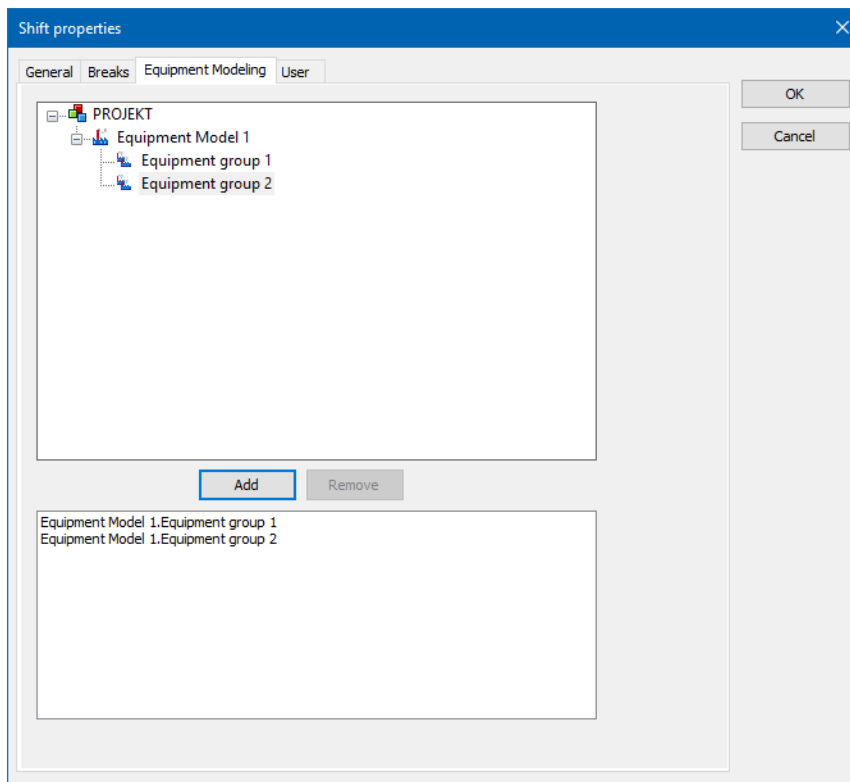
Shifts can be linked to equipment groups.

To assign equipment groups in a created shift:

1. Select the desired element.

2. Click on the **Add** button.

3. Repeat the process until all necessary groups are available in the list (Multi-select is not possible.)

To remove groups from a shift:

1. Select the desired element
   (multiselect: Hold down the `Ctrl` key or `shift` key and click on the desired element)

2. Click the **Delete** button.

EQUIPMENT MODELING DIALOG

Option	Description
List of equipment models	provides models and groups for selection The list separates the display into equipment models from the global project and from local projects. Local equipment models can be created, edited or deleted. Note: Equipment models from the global project cannot be displayed if there are models with the same name from the local project. Affected models are displayed by clicking on the warning symbol (triangle with exclamation mark). For details, see the **Equipment modeling** manual, **Editing local equipment models** chapter.
Add	Adds the selected groups to the filter list.
Remove	Removes all selected groups from the filter list.
Filter list	Shows all equipment groups that are to be filtered.

CLOSE DIALOG

Option	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.

In the Editor, new models and groups can be created for the active project and existing ones can be deleted. It is only possible to work with pre-existing equipment models in Runtime.

Users

You link users to shifts in this tab.
These users can be selected as the recipient of messages by the **Message Control** module.

LINK USERS TO A SHIFT

To link users to a shift:

1. Click on the **Add** button in the dialog.
   Alternatively, you can also use the **Add user** command in the context menu.

   The **user selection** dialog is opened.

2. Highlight the desired users in the list of existing users.

   Note: Users must already be created in order to be able to be selected.

3. Add the selection to the list of selected users with **Add**.

4. Confirm the selection by clicking **OK**.

   The users are added in the **shift properties** dialog.

5. Confirm the settings with **OK**.
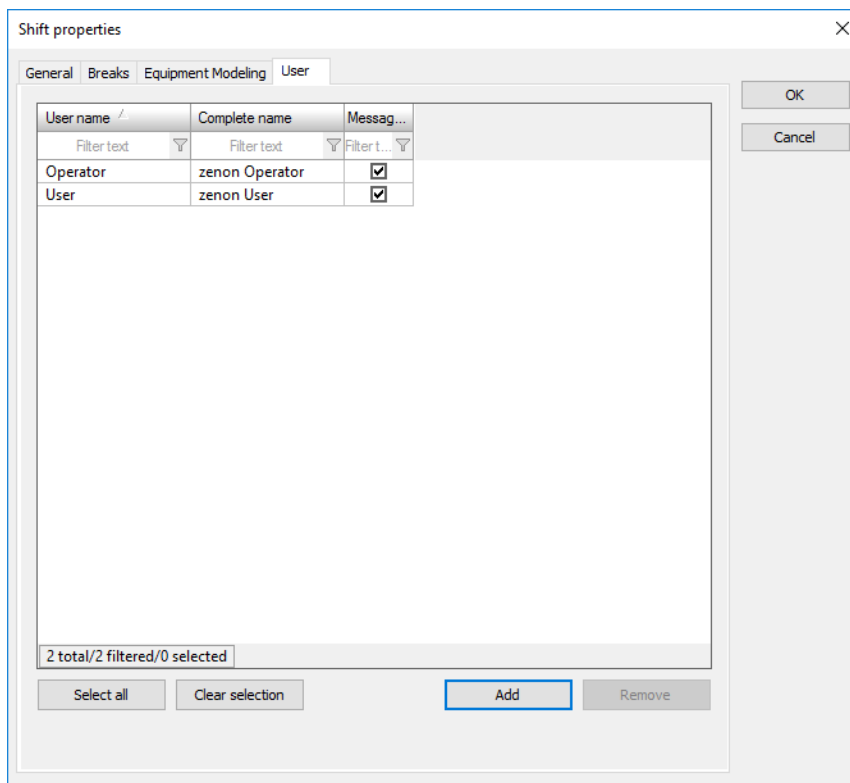
The users are linked to the shift.

NOTIFY USERS

The following conditions must be met in order for users to be notified:

▶ The user must be linked to an active shift at the time of sending the message.

▶ The **Message Control user** property must be activated for the user.
In the user list of the dialog, it shows whether the property is active or inactive.

Note: If the checkbox is not active, it can be activated in the respective user profile.

▶ In the **Send a Message** function, the `User group with shift filter` property must be selected for the **Type** option.

Note: The users are notified in accordance with the settings in the Message Control module. The notification is only carried out if the shift is also active on the corresponding day.

USER DIALOG

Option	Description
User List	Shows the user that is linked to the shift.
	The following is displayed for each user:
	▸ `User name`
	▸ `Complete name`
	▸ `Message Control user`
	The users can be sorted and filtered according to these criteria.
User name	Displays the short name of the user.
Complete name	Displays the complete name of the user.
Message Control user	Shows whether the user has been configured for notification via Message Control.
Select all	Selects all users in the list.
Clear selection	Resets the selection.
Add	Opens the dialog to select users and adds the selected users to the user list.
Remove	Removes all selected users from the user list.
Filter list	Shows all criteria that are to be filtered.

CLOSE DIALOG

Options	Description
OK	Applies all changes in all tabs and closes the dialog.
Cancel	Discards all changes in all tabs and closes the dialog.

Edit shift

In order to edit a shift:

1. Click on a shift that you want to edit in the calender.

    Edit the shift using

    - Double-click Double click on the shift to be edited.

    - Context menu: Click on **Shift properties** in the context menu.

    - Button in the screen: Click on the **Edit shift** button.

    - Keyboard: Press the `Enter` key.

Note: It is possible to edit shifts on any client computer. If Shift Management is used by several client computers at the same time, when editing a shift, the changes that were made last are applied and updated.

Delete shift

To delete a shift:

1. Click on a shift that you want to delete in the calendar.

   Note: Multiple selection with the CTRL key is also possible.

2. You can choose to delete the selected shifts by means of:

   - Context menu: Click on **Delete shift** in the context menu.

   - Button in the screen: Click on the **Delete shift** button.

   - Keyboard: Press the Del key.

   Before deletion, a dialog is opened requesting confirmation.

3. Confirm the dialog with **Yes**, or **Yes to all** with multiple items selected.

Note: It is possible to delete shifts on any client computer. If Shift Management is used by several users on different client computers at the same time, the shifts first deleted on a client computer are also no longer visible on all other client computers.

Filtering shifts

Shifts can be displayed with a filter in Runtime. Filtering is carried out using the linked equipment groups.

To filter the display in the calendar in Runtime:

1. Click on the button **Filter**.

   The dialog for screen switching is opened.

2. Select the equipment groups (on page 20) that are to be used.

3. Confirm the configuration by clicking on the **OK** button.

In the calendar, only shifts that correspond to the equipment model filter are displayed.

EQUIPMENT GROUPS

It is possible to choose configuration of the filter for the equipment group by means of:

▸ Screen switch to a screen of type Shift management.

▸ Screen of type Equipment model

SCREEN SWITCH TO A SCREEN OF TYPE SHIFT MANAGEMENT.

Configuration is carried out in the screen switching or in the filter dialog in the **Equipment modeling** (on page 20) tab.
In order for shifts to be displayed in Runtime:

- ▶ The shift must have at least one equipment group together with the filter
  or

- ▶ The shift must not be linked to an equipment group

Note: If no equipment modeling is configured in the screen filter, all shifts are displayed.

SCREEN OF TYPE EQUIPMENT MODEL

When screen switching, the **Screen to be updated** option is used to select the desired `Shift Management` screen. In Runtime, the filter set in the screen is applied to the selected shift model screen.

Note: If filtering is via the equipment model screen, it replaces the configurations set in the shift model screen.

Highlight time ranges

Time ranges can be highlighted via the configuration of times to be displayed. Time ranges outside the time filter are shown in gray, but can be edited.

To configure time ranges in the calendar:

1. Click on the button **Filter**.

   The dialog for screen switching is opened.

2. Define the desired time range in the **General** (on page 12) tab.

3. Confirm the configuration by clicking on the **OK** button.

Insert shift model

To add a shift model to a calendar:

1. Highlight the day on which the shift calendar is to be added in the shift calendar.

2. Click on the button or the **Insert shift model**.
   Note: When engineering in the network, there must be operating authorizations on the computer.

   The dialog to select a shift model is opened.

3. Select the desired model.

4. Click on **OK**.

The model is inserted into the first day of selection in the calendar.

Note:

▶ When inserting onto the calendar, a check is carried out to see if the respective day is also envisaged for the shift.

▶ The shift model is inserted on the server. The clients are notified by means of the new shift.

▶ The shifts created have no relation or linking to the model.

▶ If the shift model has been added on the wrong day, all shifts created must be deleted manually.

> ⚠ **Attention**
>
> *If a day in the monthly shift is selected in the shift model, this day lasts from* `00:00` *to* `24:00`. *Midnight is also the starting point for the next day. 2 days are therefore selected in practice.*
>
> *The shift is thus inserted for 2 days when inserting a shift model into a calendar.*
>
> *To insert the shift for just one day:*
>
> ▶ Insert the shift model.
>
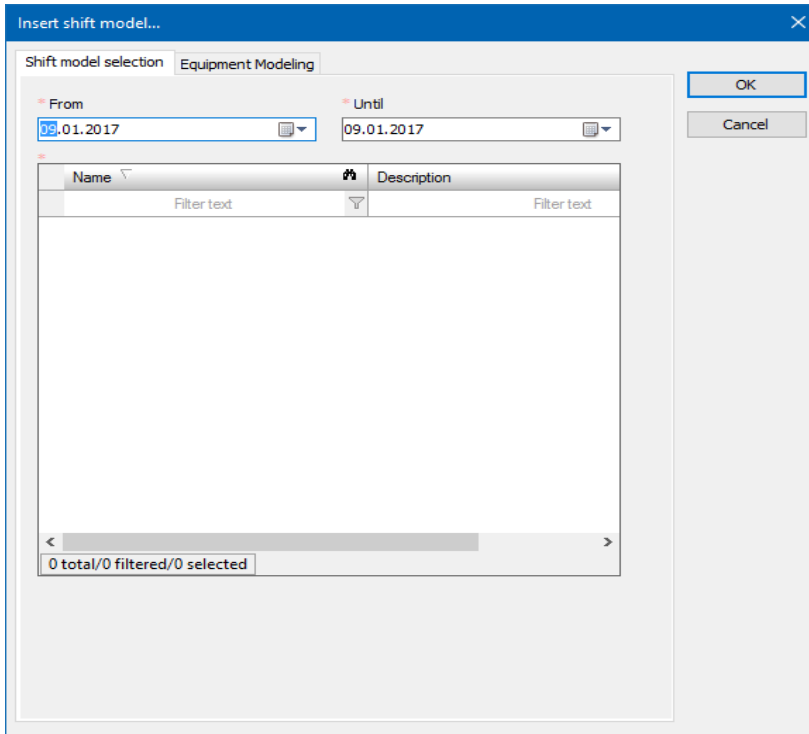> ▶ For the **To** option, stipulate the same date as for **From**.

Example

Object	Start:	End
Shift in the shift model:	3:00 AM	4:00 AM
Selection in the calendar:	03.04.2017, 02:00 AM	03.04.2017, 8:00 AM
Result in the calendar:	03.04.2017, at 3:00	03.04.2017, at 4:00 AM

INSERT NEW SHIFT MODEL

The insertion of a shift model is configured using two tabs:

▶ Shift model selection: Selection of the shift model and the time range.

▶ Selection equipment modeling: Selection of equipment groups

SHIFT MODEL SELECTION

Option	Description
From	Definition of the start date by direct input in the field or selection from a calendar. Clicking on the cursor key opens the calendar.
Until	Definition of the end day by direct entry into the field or selection from the calendar. Clicking on the cursor key opens the calendar.
Shift models list	Lists all configured shift models. Selection by clicking on a shift model. After closing the dialog with OK, the shift model is entered into the calendar on the highlighted day.

CLOSE DIALOG

| Option	Description
OK	Applies settings and closes the dialog.
Cancel	Discards all changes and closes the dialog.

EQUIPMENT MODELING

Equipment modeling is configured in a similar manner to the equipment modeling for shifts (on page 44).

Assign users a shift

Users can be assigned a shift. The Message Control module can use this link to send messages.
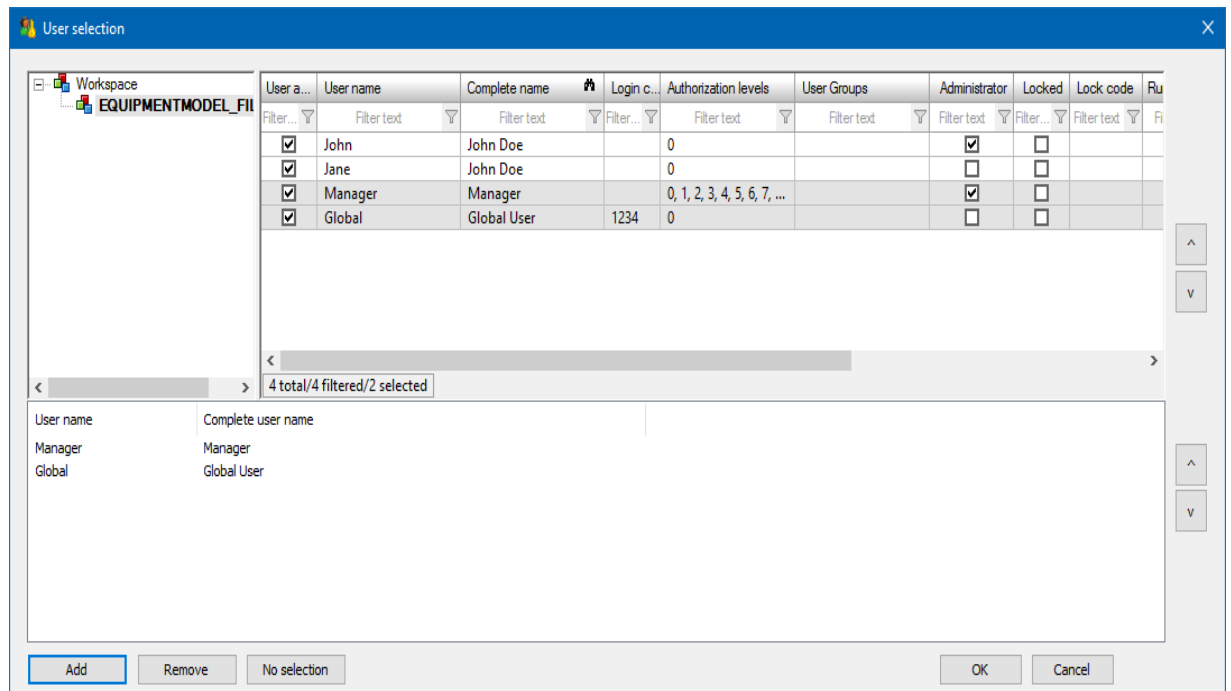
To assign users a shift:

1. Select the shift in the calendar.

2. Open the dialog **Shift properties**.

3. Switch to the **User** tab.
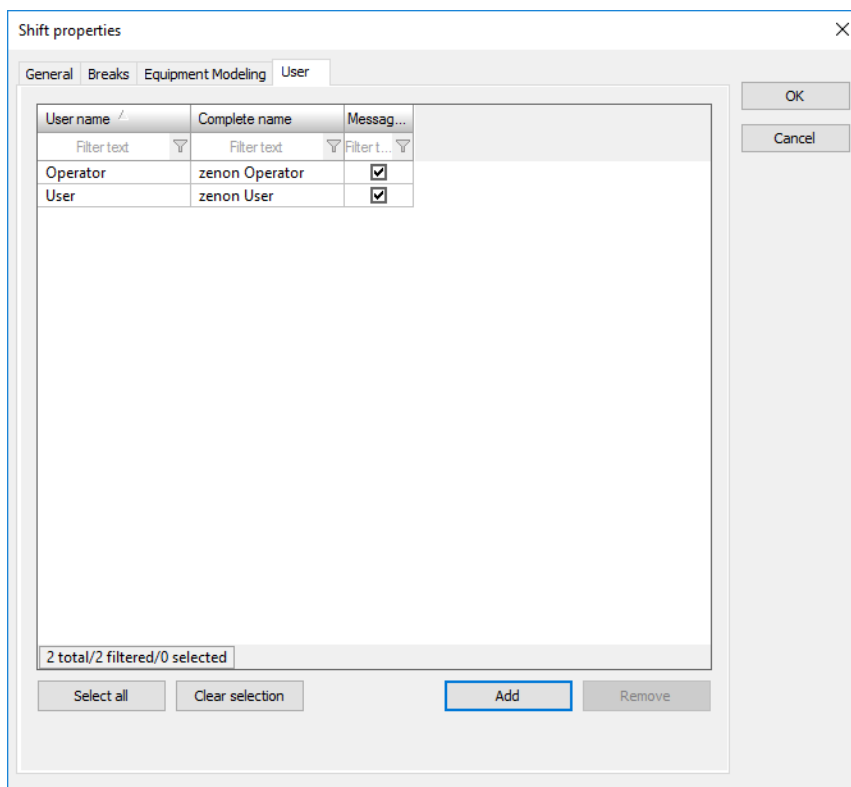
4. Click on the **Add** button or select this entry in the context menu.

The **user selection** dialog is opened. All users in the active project who have been created are shown.
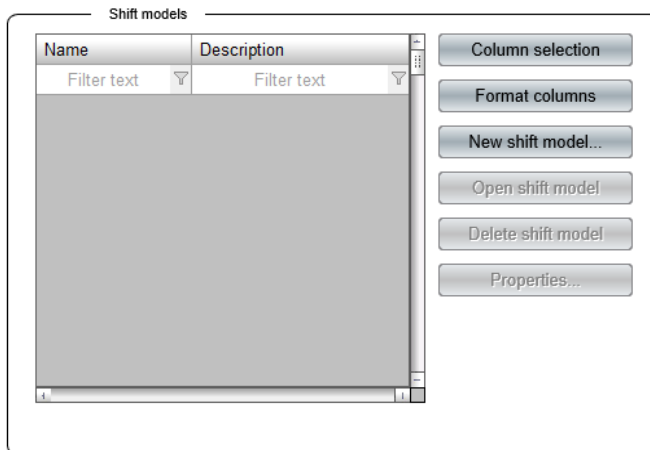

5.   Highlight the desired users.

6.   Click on the **Add** button.

The selected users are added to the list.

7.   Confirm the settings with **OK**.

The users are added in the **Users** tab.

8.   Close the **Shift properties** dialog by clicking on **OK**.
The selected users are now linked to the shift.

Note: To use the users linked here in the **Message Control** module, the users must be assigned to a certain user group. This user group can be defined as a target in the **Send a Message**.

5.1.2   Shift models

Shift models can be created and edited in Runtime. To do this, the corresponding control elements (on page 9) must have been configured in the screen.

SHIFT MODELS

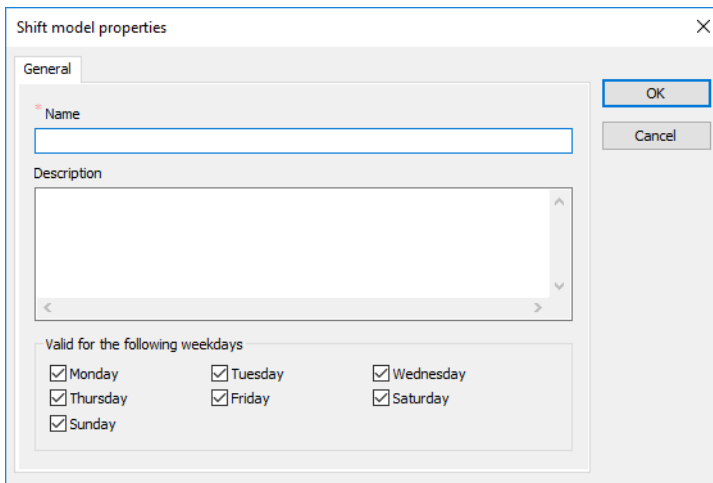| Elements	Description
Shift models list	List of existing shift models.
Column selection	Opens the dialog (on page 16) to select the columns to be displayed in the list.
Format columns	Opens a dialog (on page 18) to format the columns.
New shift model	Opens the dialog (on page 54) for creating a shift model.
Open shift model	Changes the calendar view to the display of shift models and opens the selected shift model there.
Save shift model	Saves the shift model opened in the calendar. Only available if a shift model is open in the shift calendar and there are unsaved changes.
Delete shift model	Deletes the selected shift model after a confirmation message.
Properties	Configuration of the properties of the shift model: Name and description

Creating a shift model

To create a new shift model:

1. In the **Shift models** area, click on the **New shift model** button.
   Alternatively, right-click in the list of the shift models and select **New shift model** in the context menu or press the `Insert` key.

   The dialog to create a new shift model is opened.

2. Give it a name and, optionally, a description.

3. If necessary, configure the weekdays on which the model is to be applied.

Note: If the model is limited to certain week days, when adding the model to the calendar, a shift is only entered for the days that have been selected in the model. When checking whether a model can be inserted on a certain week day in the calendar, the first day of the model is taken into account. If this is not valid, shifts from the second day are not entered into the calendar. If the first day is valid, shifts from the second day are also entered into the calendar, even if this day is invalid.

Example: A shift in the model lasts from 20:00 to 04:00. Thursday is an invalid day. If the model is added on a Wednesday, the shift is entered in full. If the model is added on a Thursday, the shift is not entered.

NEW SHIFT MODEL DIALOG

Option	Description
Name	Entry of the name.
	The following applies for names:
	▸ must be unique
	▸ must not be empty
	▸ must not contain one of the following characters: **/\.:*?<>!|'"#%**
	▸ must not consist of more than 256 characters
Description	Entry of an optional description.
	Maximum length: `32000 characters`
Valid for the following weekdays	Configuration of the week days on which the shift model is applied in the shift calendar.
	Selection by activating the checkbox beside of the respective weekday.
	Default: all

CLOSE DIALOG

OK	Applies settings and closes the dialog.
	If errors are established during validation, the dialog is opened again and a notice of possible causes of errors is shown.
Cancel	Discards all changes and closes the dialog.

Configure shift model

To configure a shift model:

1. Click, in the list of the shift models, on the button or the **Open shift model** context menu entry or double-click on a shift model.

   The shift model is displayed in the calendar.

2. Configure the shift model.

3. Click on **Save shift model**.
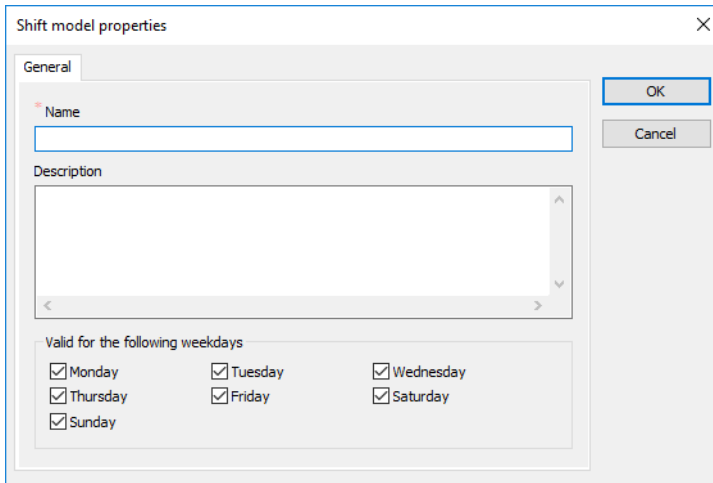
EDIT PROPERTIES

The name and property of a shift model can be edited.

To change a property:

1. Highlight the shift model.

2. Click on the **Properties** button.
   This must have been configured for the screen.
   Alternatively: Select the **Properties** entry in the context menu.

   The dialog with the shift model properties is opened.

3. Edit the desired entries:

   - **Name**: Name of the shift model.
     The name must be unique. For further limitations, see the Create shift model (on page 54) chapter.

   - **Description:** Optional description.
     Maximum length: `32000 characters`

4. Save by clicking on **OK**.

The changes are applied immediately, saved on the server and distributed to all clients. This is also applicable if the model is edited at the same time on another client. The content of the model - the shift configurations - is not changed in the process. These are also saved and distributed. You can find detailed details on this in the **Behavior in the network** (on page 59) chapter.

Delete shift model

To delete a shift model:

1. Select the desired shift model in the **shift models** area.
   Multiple selection is possible.

2. Click on the **Delete shift model** button.
   Alternatively, right click in the list of the shift models and select **Delete shift model** in the context menu or pres the `Del` key.

   The dialog to confirm the deletion process is displayed.

3. Confirm this when requested to do so.

The shift model is deleted.
If the shift model is shown in the calendar, it is switched to the normal calendar view. If the shift model is deleted from another computer, a corresponding message is shown.

Note: The deletion of shift models is documented by means of an entry in the Chronological Event List.

5.2 Copy and paste shifts and shift models

Shifts can be copied and pasted in the calendar.
To copy and paste shifts, use:

- ▶ The **Copy shift** and **Insert shift** buttons

- ▶ The **Copy shift** and **Insert shift** commands in the context menu

- ▶ The keyboard shortcut `Ctrl+C` and `Ctrl+V`

Buttons/commands:

- ▶ **Copy shift**: Copies the selected shift to the clipboard.

- ▶ **Insert shift**: Pastes a copied shift from the clipboard into the selected day.

Insertion is always only possible in the same project and in the same view.
That means: Shifts from shift models can only be inserted into shift models, shifts from the calendar only in the calendar.

5.3 Carry out SQL export

Shifts and breaks can be exported to SQL.

To export shifts and breaks in Runtime:

1. Create a function (**on page 24**)**SQL export shift calendar** .

2. Execute the function in the Runtime.

   The shifts that correspond to the configuration are exported.

The following is applicable for SQL export:

- ▶ Naming of the target tables: **[project GUID]_SHIFT_[GUID of the equipment model group]**.

- ▶ Only connected groups are exported.
  That means: If a shift is in a time filter, but not yet concluded, it is not exported.

- ▶ Each shift is only exported once.
  It is inserted into the respective table once. Subsequent changes to a shift are not applied to the pre-existing table.

▶ Errors are logged.

> ⚠ **Attention**
>
> *If the export fails, the shifts to be exported are not transferred again during the next export. Gaps can thus occur.*
>
> *Recommendation: Configure the export as overlapping. To do this, call up the function every day, for example, and export the shifts for 2 days.*
> *Or activate the **Show this dialog in Runtime** option in order to allow the user to reconfigure the time range in Runtime.*

6. Behavior in the network

FUNCTION AUTHORIZATIONS

In principle, all buttons and context menus are available, regardless of the required rights. The first time it is executed, a check is carried out to see whether the logged-in user is authorized to carry out the action. The properties of the shifts and shift models can always be displayed. This is also applicable if the rights for editing are missing.

Procedure:

▶ A check is carried out to see whether the token for editing is present in the network.

If there is no authorization, the process is canceled with an error message.

▶ A check is carried out to see whether the logged-in user has the necessary rights.

If there is no function authorization, the process is canceled with an error message.
Exception: If a temporary login has been activated, the login dialog is shown. If this login is unsuccessful, the process is ended with an error.

SHIFTS AND SHIFT MODELS

When creating and editing shifts and shift models in the network, the following is applicable:

▶ Editing is not carried out on the server directly, but with a local copy.
All changes are sent to the **Server 1** and to the **Server 2** and updated there.
This concerns the creation, changing and deletion of shifts and shift models, as well as the insertion of shift models into the shift calendar.

> ▶ If several users are editing the same shift or the same shift model, the changes made by the user who has saved last are applied.

> ▶ When the model is saved, only the content is saved, not the name and description.

7. Time zones and date limits

Rules have been defined for the behavior of shift management with regard to time zones, time switch and date limits.

7.1   Display of date limits

When creating a shift, the end of which is the limit of two days, Shift management acts as follows:

> ▶ `24:00` is understood as `00:00` of the following day.

> ▶ This `00:00` is shown as its own day in the shift properties.

> > • This day only permits the time `00:00`.

> > • If an attempt to select another time for this day is made, a corresponding message is shown.

EXAMPLE

> ▶ Configured shift time:

> > • 11. 11. 2017

> > • from 4:00 p.m. - 24:00 p.m.

> ▶ Display:

> > • Start: 11. 11. 09:00 a.m. - 4:00 p.m.

> > • End: 12. 11. 09:00 a.m. - 12:00 p.m.

7.2   Time zones and time switches

Shifts are automatically amended to the switch from daylight saving time to standard time in accordance with certain rules.

When inserting a shift, a dialog is opened in which the start time and end time are shown according to the selection. If an unavailable time point is selected when switching, it is then corrected automatically. The times can be amended in the dialog. Times that are not available are always corrected however.

▶ Switch from standard time to daylight saving time:
A time indication of 02:00 is automatically corrected to 01:00.
Background information: Because there is a switch at 02:00 to 03:00, 02:00 does not exist for the calendar. Entry of 02:00 is not possible.

▶ Switch from daylight saving time to standard time:
A time indication of 3:00 is automatically corrected to 2:00.
The display in the calendar can depend on the time zone in which the calendar is displayed. For example, in the local calendar with a standard time switch, the shift can be shown with a length of 2 hours. In another calendar, the shift - depending on the time zone - can also be shown for 3 hours. In Yakutsk, for example, where there is no time switch.

8. Keyboard shortcuts for Shift Management

The following keyboard shortcuts are available for `Shift Management` in zenon:

RUNTIME

Action	Key
Create new shift or shift model	`Ins`
Edit shift or shift model	`Enter`
Delete shift or shift model	`Del`