



zenon
by COPA-DATA

zenon manual

3D Integration

v.8.20



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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.

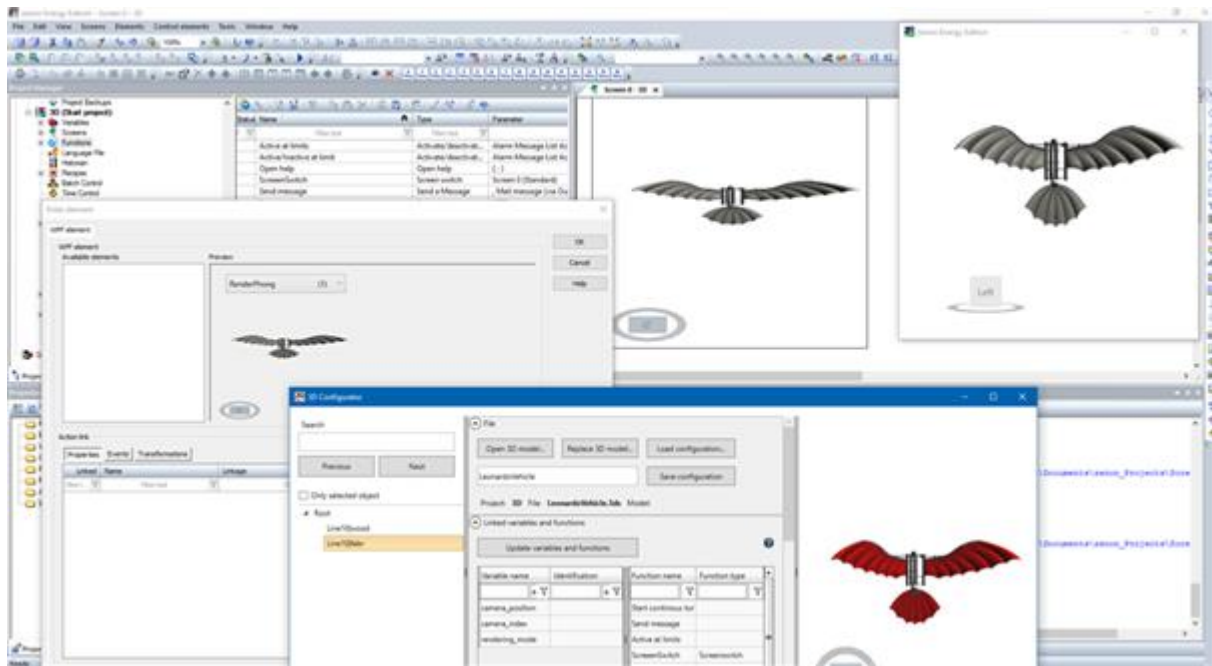
PROJECT SUPPORT

You can receive support for any real project you may have from our customer service team, which you can contact via email at 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.

2 3D Integration



The **3D integration package** from zenon offers an easy and simple possibility to link 3D files from a CAD program to project configurations in zenon.

Included in the **3D integration package**:

► 3D Configurator

3D files are loaded in this project configuration environment. The structure of a 3D model is transferred into the **3D Configurator** and visualized in a preview. In this structure, assembly groups or objects can be selected with the click of a mouse. The preview can be rotated and enlarged or reduced as desired using the mouse. Assembly groups or objects can also be selected in the preview directly, with the click of a mouse.

The selected assembly group or an individual object can be:

- Assigned to one or more variables.
If a variable is linked, the visibility, flashing and color settings are taken from the variable.
- Project configurations of a camera position can be linked to a variable.
If a camera position has been configured, in the event of a limit value violation of the linked variable, the 3D model in zenon is shown with the configured parameters of the **3D Configurator**.
This Runtime visualization takes on, for example, the zoom level, view level, light settings and background color.
- Assigned to one or more function(s).
If a function is linked, the function is triggered by clicking on the object in Runtime. This is visualized in Runtime with a different mouse pointer.

► **zenon WPF screen element**

Display of the 3D project configuration in the Runtime in a zenon screen.

- Free navigation in the 3D model:
The display can be moved, rotated, enlarged or reduced.
- Execution of functions in the 3D model:
A configured function can be executed by clicking on an object or an assembly group.
Example: Opening a linked online help or calling up an information window.
- Calling up the 3D model in a defined perspective:
The 3D model with views of a configured position can be visualized by setting a value of a "camera variable".
- Visualization of a limit value breach:
When a limit value is breached, an object or an assembly group can be shown in color or flashing in the 3D model.
- Objects or assembly groups can be switched to visible or invisible.



Information

All functionalities can also be executed by means of touch gestures.

3 Installation and licensing

INSTALLATION

The 3D **3D Configurator** project configuration tool is included with the standard installation of zenon.

Note in relation to operating systems:

- The **3D Configurator** is only available for 64-bit operating systems.
- Project configuration in the zenon Editor and display in zenon Runtime is also possible with 32-bit operating systems.



Information

Due to the computer performance required for 3D modeling, operation on 64-bit operating systems is strongly recommended.

Note in relation to graphics cards:

A requirement for this is the use of a graphics card with a feature level $\geq 10_0$.

This minimum requirement is applicable for:

- ▶ The graphics card
- ▶ The attendant drivers
- ▶ The DirectX Runtime

LICENSING

The engineering environment (= **3D Configurator**) has to be licensed.

The display in zenon Runtime is included in every zenon license. This includes also the specific **zenon WPF screen element** for engineering in the zenon Editor.

4 General

The package for 3D integration includes:

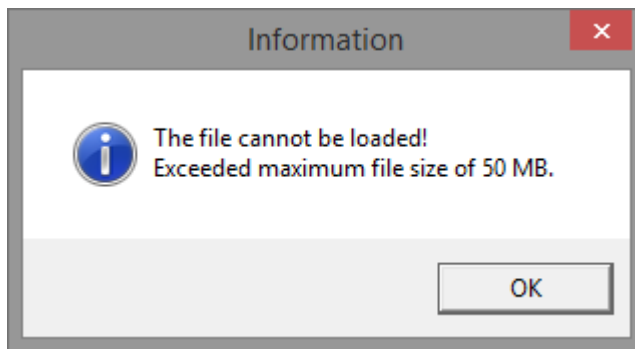
- ▶ **3D Configurator**
Tool for the linking of 3D models to zenon project configurations:
 - ▶ Functions
 - ▶ Variables
 - Limit Values
 - Reaction matrices
- ▶ COPA-DATA WPF screen element
The parameters for the attendant parameter file are set in the **3D Configurator** and automatically applied by clicking a button in the Editor configuration.

SUPPORTED 3D MODEL FILE FORMATS

The following file formats are supported by the **3D Configurator**:

- ▶ *.OBJ
- ▶ *.3DS
- ▶ *.STL
- ▶ *.DWF
- ▶ *.STEP
- ▶ *.STP

▶ *.JT



The maximum file size of a 3D model is limited to 50 MB for performance reasons. This is shown with a warning dialog when a larger file is loaded. The model is not loaded.

SUPPORTED FUNCTIONALITY

The display in zenon Runtime supports:

- ▶ Display of equipment or parts of equipment with freely-configurable camera positions.
- ▶ Execution of linked functions.
- ▶ Selection of the rendering mode for the display.
- ▶ Selection of the background color, light settings and light angle for display.
- ▶ Linking of numerical variables for the display options.

3D CONFIGURATOR - DISPLAY LANGUAGE

The **3D Configurator** starts with the language set for the zenon Editor.

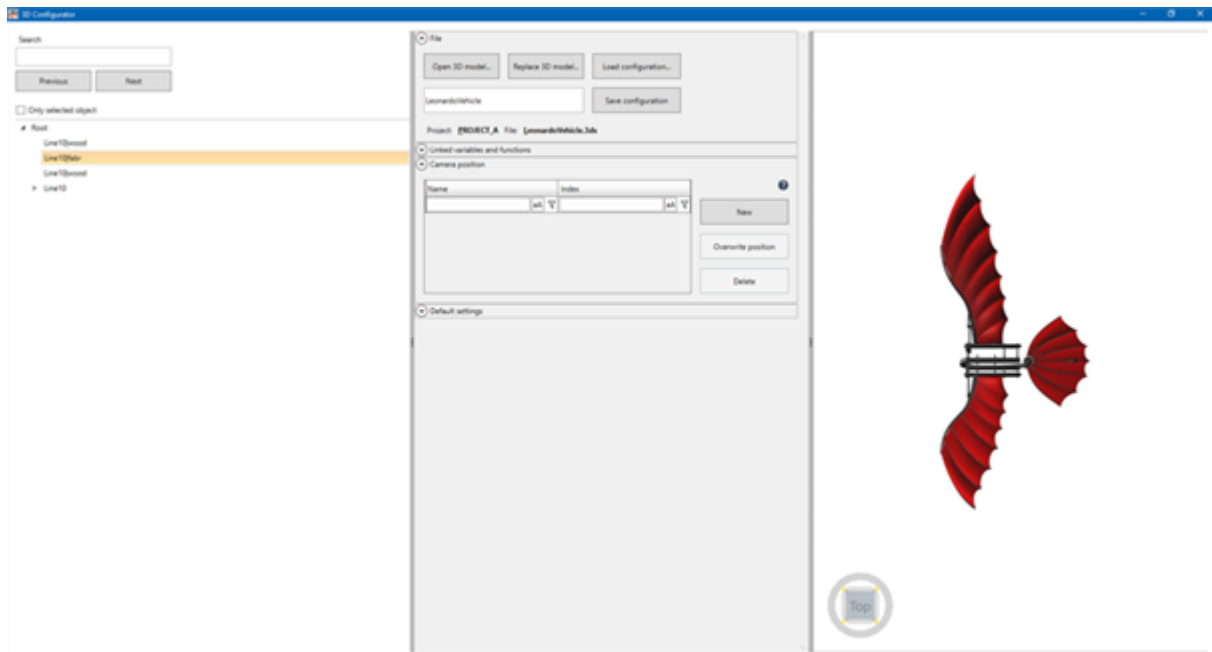
5 Keyboard shortcut and mouse button assignment

The **3D Configurator** and Runtime display use the following keyboard shortcut and mouse button assignments:

Parameter	Description
Ctrl+Q Ctrl+double click on mouse wheel	Centers the 3D model to the preview and sets the zoom factor to 100%. Ensures that the file model that is loaded is completely visible in the preview. Sets to default in the preview.
Ctrl+E	Sets zoom level in the preview to 100%.

Parameter	Description
Ctrl+double click	Centers the 3D model in the preview; the rotation is retained. Ensures that the file model that is loaded is completely visible in the preview. Note: There is no centering if the preview is already at zoom stage 100%.
Mouse wheel forwards	Zooms into the preview = larger display.
Mouse wheel backwards	Reduces zoom stage of the preview.
Mouse wheel pressed + mouse movement (to the left, right, up, down)	Enlarges or reduces the zoom level of the preview: <ul style="list-style-type: none"> ▶ <i>Mouse movement upwards or downwards</i> Enlarge or reduce with large zoom levels ▶ <i>Mouse movement to the left of right</i> Enlarge or reduce in small zoom levels
Left mouse button held down	Moves preview in mouse direction. The display of the mouse pointer switches during this time. The mouse pointer is displayed as the mobile phone symbol.
Right mouse button held down	Rotates the view of the model by one rotation point in accordance with the mouse movement. The rotation point is visualized in the middle of the preview with a gray cross-hair. The display of the mouse pointer switches during this time.
Ctrl + mouse button held down	A selection tool is shown when the mouse button is pressed. The area selected as a result is shown in the preview, enlarged accordingly.
Delete key	Deletes configured camera positions in the 3D Configurator .

6 3D Configurator



In this graphic user interface, variables and functions of an existing zenon project configuration are linked.

START

To launch the **3D Configurator**:

1. Start the zenon Editor.
Also ensure that a project is active in the Editor. If the Editor has not been started or no project is active, the **3D Configurator** does not work properly.
2. Open the **Startup-Tool**.
3. Click the **Tools** button.
4. In the **Available 64-bit applications** section, select the **3D Configurator** entry.
5. Click on the **Start** button.
The 3D configurator starts in the language in which the Editor has also been started.

As an option, start the **3D Configurator** using your computer's Start menu with the *zen3DConfig.exe* entry.

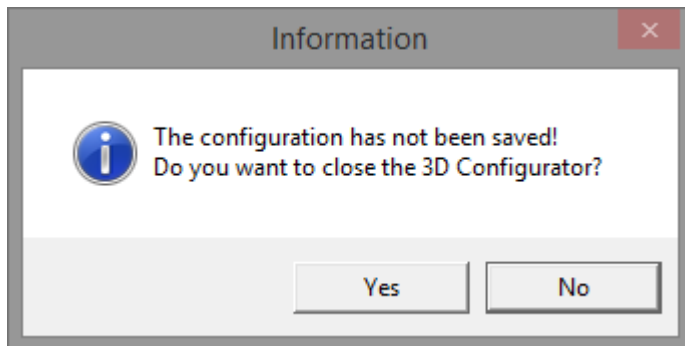
Attention

The **3D Configurator** is only available for 64-bit operating systems.

APPLY 3D PROJECT CONFIGURATIONS

Project configurations that you carry out in the **3D Configurator** are applied in the current project in the zenon Editor by clicking on the **Save configuration** button.

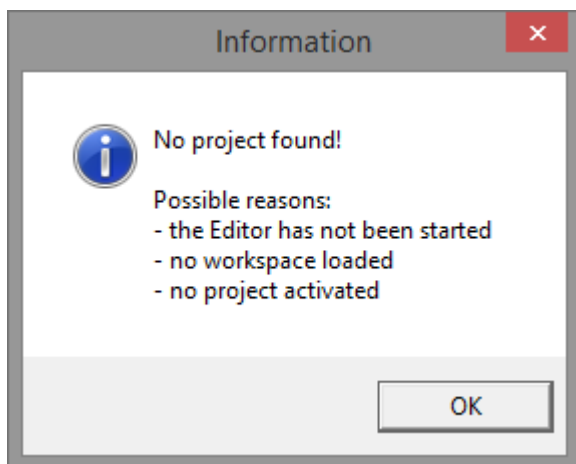
If you close the **3D Configurator** and have not yet applied all project configuration in the Editor, this is visualized in a warning dialog.



ZENON EDITOR

Ensure that you only start the **3D Configurator** if you have activated the correct project in the zenon Editor.

If the **3D Configurator** is started and the zenon Editor has not been started yet, this is shown in a dialog.

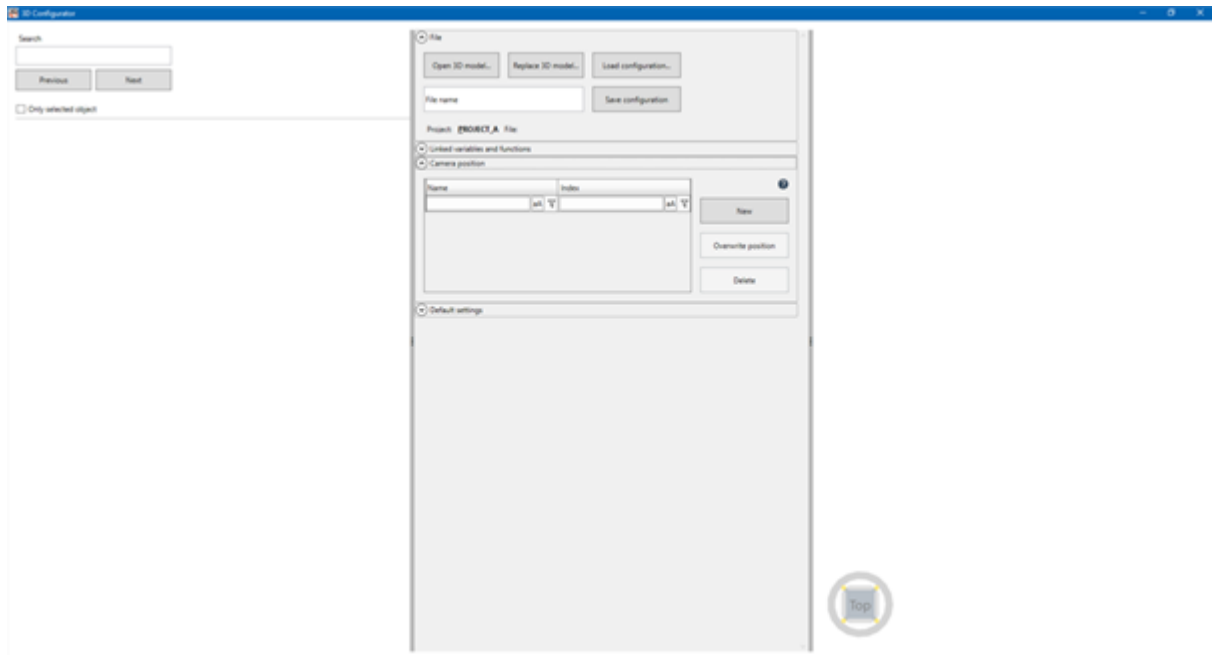


In this case, close the **3D Configurator** and start the Editor first.

6.1 User interface

The **3D Configurator**'s window can be freely scaled. The size of the areas can be moved with the mouse button held down.

The areas in the **Configuration** section can be opened or closed with the **up cursor** or **down cursor**.



The user interface of the **3D Configurator** is divided into three areas:

- ▶ **3D file structure** (on page 13)
Tree view of the loaded 3D model,
- ▶ **Configuration** (on page 14)
 - ▶ Link to zenon project.
 - ▶ Configuration of display options in the Runtime.
- ▶ **Preview** (on page 27)
Preview of the selected assembly area.
In this area, the zoom level and view angle can also be amended.

6.2 3D file structure

The 3D file structure visualizes content of the loaded 3D models.
This content can also be filtered.

Search

Previous

Next

☐ Only selected object

▲ Root

▲ CIP-Plant-1L_2016-09-12.nwd

▶ CIP-TANK 1.nwc

▶ CIP-TANK 2.nwc

▲ CIP-TANK 3.nwc

▲ P---TANKB-----


▲ Insert

Block

▶ XT_Caustic Tank 2000

▶ XT_Caustic Tank 2000 Fundamenta

Parameter	Description
Search	<p>Search field for entry of search terms for the naming of the existing objects in the loaded 3D model.</p> <p>The number of hits found is visualized with a number next to the search field.</p> <p>Note: if the entry does not match a valid hit, the search field is shown with a red background.</p>
Previous	Jumps to the previous hit and selects this entry.
Next	Jumps to the next hit and selects this hit.
Only selected object	<p>Only the selected element is shown in the preview.</p> <p>Default: <i>Not activated</i></p>

 **Information**

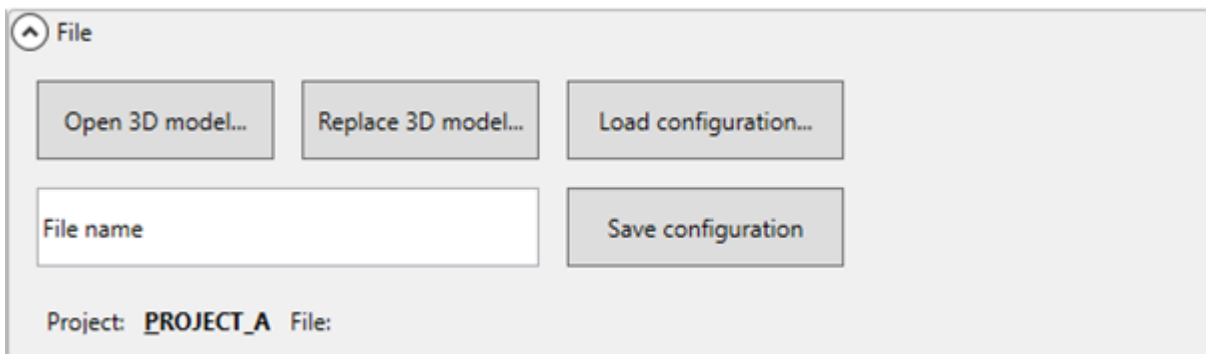
When selecting a new level, the current view, zoom and direction are reset. The newly-selected element is shown as centered in the preview.

6.3 Configuration

The configuration area of the **3D Configurator** is divided into the following areas:

- ▶ **File** (on page 14)
File administration and exchange of the project configuration between **3D Configurator** and zenon Editor.
- ▶ **Linked variables and functions** (on page 17)
Variables and functions of a zenon project configuration and its linking to a 3D model.
- ▶ **Camera positions** (on page 19)
Zoom level and view angle of 3D model content
- ▶ **Default settings** (on page 21)
Settings for the display (Runtime and preview in **3D Configurator**)
- ▶ **DWF attributes**
List of DWF attributes.
This area only becomes visible if the element selected in the 3D file structure contains a corresponding DWF attribute.

6.3.1 File



Parameter	Description
Open 3D model...	<p>Opens the file selection dialog to load a 3D model.</p> <p>This loading process can last longer depending on the scope of the 3D model. A progress bar is shown during this loading and interpretation process.</p> <p>Attention: If there is currently a 3D model open, all project configurations are rejected without</p>

Parameter	Description
	<p>requesting confirmation!</p> <p>You should therefore ensure that your 3D project configurations have already been saved.</p>
Replace 3D model...	<p>Replaces the currently-loaded 3D model with the selected file.</p> <p>Existing 3D project configurations are retained.</p> <p>Ensure that the new 3D model to be loaded contains the corresponding objects.</p>
Load configuration...	<p>Opens selection dialog to select an existing 3D project configuration of the zenon Editor.</p> <p>Applies existing project configuration from the active zenon project.</p> <p>The selection dialog is empty if there is not yet a 3D project configuration saved in the active project.</p>
<i>[Name of the configuration file] =</i> <i>[Name of the loaded 3D model]</i>	<p>File name of the configuration file with the configured 3D linkings.</p> <p>This is also the name of the configuration as it is applied in the zenon Editor - after clicking on the Save configuration button.</p> <p>The entry is validated. Valid characters for this configuration file correspond to the permitted characters for file names. If there is an incorrect character entered, this is shown with red error text in the tool. The Save configuration button is grayed out in the event of an error.</p> <p>Default:</p> <ul style="list-style-type: none"> ▶ <i>[File name]</i> (if no 3D model is loaded) ▶ <i>[Name of the loaded 3D model]</i> (if a 3D model is loaded)
Save configuration	<p>Saves current 3D project configuration in the active project of the zenon Editor.</p> <p>Save location in the Editor:</p>

Parameter	Description
	<ul style="list-style-type: none"> ▶ Project nodes Files => <i>Graphics</i>: - .cdwpf XAML file for linking to the WPF screen element in the zenon Editor. ▶ Project nodes Files -> <i>Other</i> -> <i>ThreeD</i> This folder is automatically created for the active zenon project when the 3D Configurator is started if this folder does not already exist. <p>Note: Please note the <i>Clean up 3D project configuration</i> section in the Project configuration in the zenon Editor (on page 32) chapter.</p>

INFORMATION BAR

Parameter	Description
Project	Name of the project that is currently activated in zenon.
File	File name of the 3D model that is currently loaded.
Model	Not currently used.

Parameter	Description
	<ul style="list-style-type: none"> ► <i>Identification:</i> Configured variable identification in the zenon project. Corresponds to the Identification variable property in the zenon Editor. <p>Note: The list can be updated with the project configuration in the Editor by clicking on the Update variables and functions button.</p>
<i>[List of configured functions]</i>	<p>List of the configured functions from the current zenon project.</p> <ul style="list-style-type: none"> ► <i>Function name</i> Configured function name in the zenon project. Corresponds to the Name function property in the zenon Editor. ► <i>Function type</i> Configured function type in the zenon project. Corresponds to the Type function property in the zenon Editor. <p>Note: The list can be updated with the project configuration in the Editor by clicking on the Update variables and functions button.</p>

ARROW KEYS

Variables or functions can be transferred to the object list or removed with the cursor keys. This is also possible by double clicking on the respective entry. The double-click function is applicable for both the object list as well as for the list of the variables or functions.

Note: There are separate cursors for variables and functions.

OBJECT LIST

The display of this list depends on the level selected in the **3D file structure** (on page 13):

- Linkings must always be linked to a level.
Please note: If no level has been selected in the 3D file structure, no linking is possible.
- Linking to the root node is not permitted.

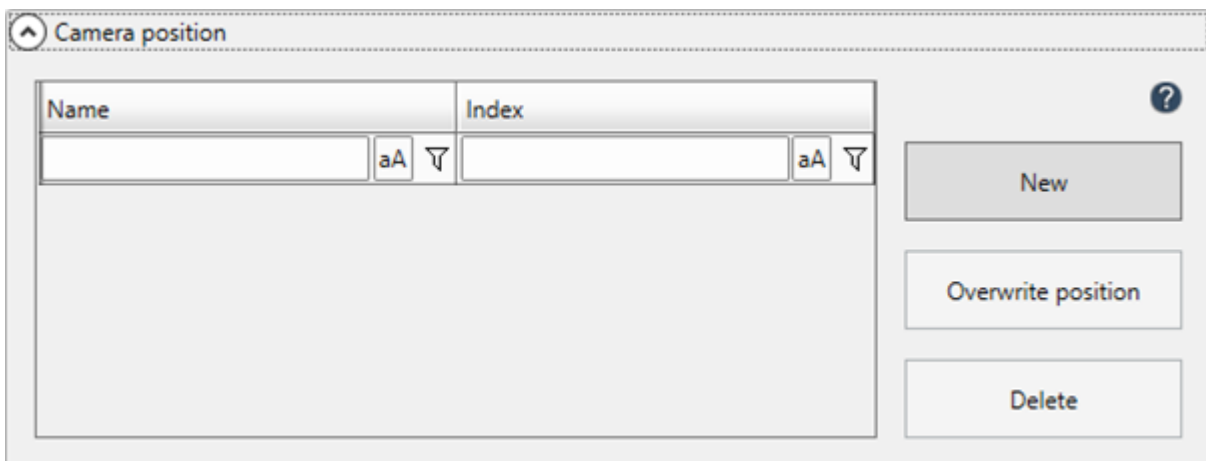
- ▶ If the root node is selected in the 3D file structure, all linkings are shown in the object list, regardless of where they are linked in the file structure.

Click on the cursor key to transfer a variable or a function to the object list.

Column	Description
Object name	Name of the object in the 3D model. This corresponds to the level selected in the 3D file structure.
Name	Name of the variable or function to be linked.
Type of link	Type of list entry: <ul style="list-style-type: none"> ▶ <i>Variable</i> ▶ <i>Function</i>
Camera	Selection from drop-down list. The content of the drop-down list corresponds to the configured camera positions in the camera positions area. If no camera position has been assigned, this is shown with <i>No camera position</i> . Note: if the name of a camera position is amended, this is updated by clicking on the drop-down list.

6.3.3 Camera positions

The camera positions are set up regardless of the level selected in the **3D file structure** (on page 13).



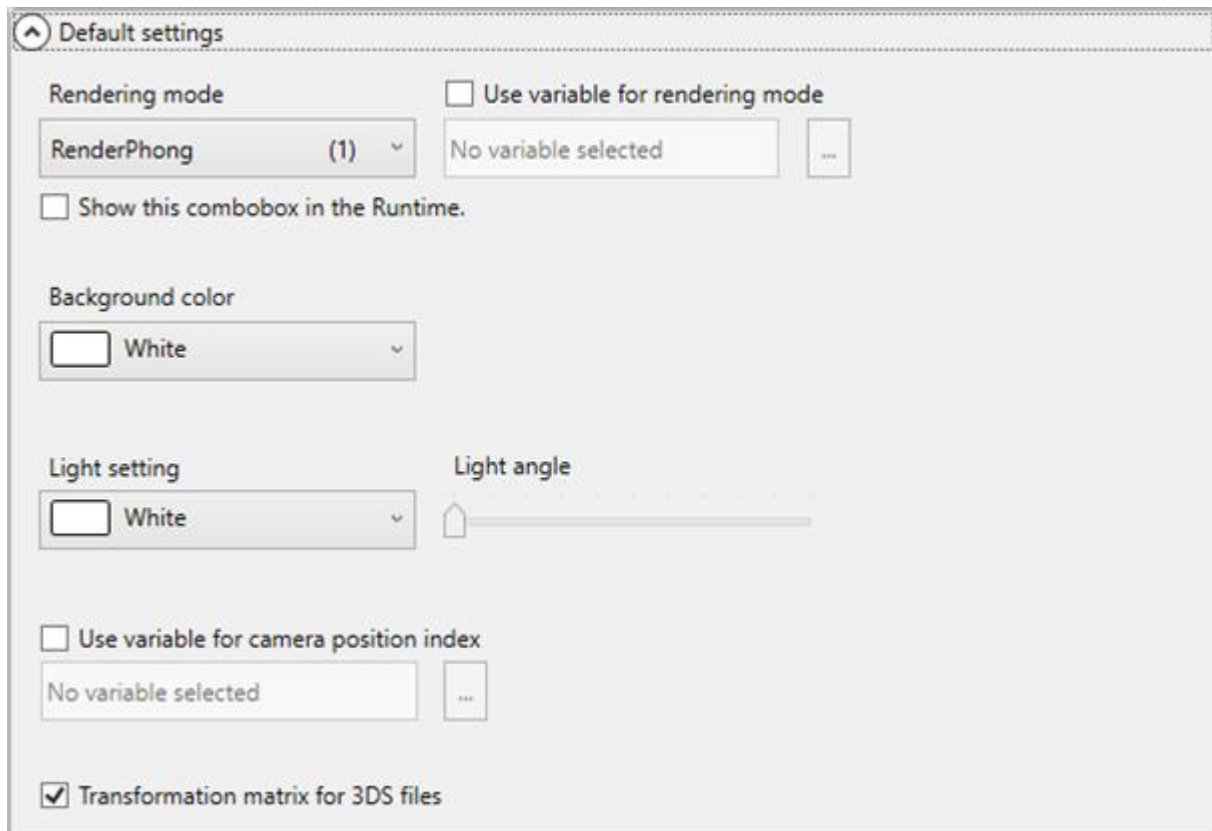
Parameter	Description
<i>[List of configured camera positions]</i>	<p>List of configured camera positions]. The designation and index of the camera position can be freely configured. Manual entry is validated and must be unique.</p> <p>The display can be sorted and filtered (on page 25).</p> <ul style="list-style-type: none"> ▶ <i>Name</i> Name of the camera position: Default: <i>Camera_n</i> n = consecutive number ▶ <i>Index</i> unique number of the camera position. Negative camera indexes are not permitted. <p>Please note the <i>Configure camera position</i> section in the Configuration in the 3D configurator (on page 28) chapter.</p>
New	<p>Creates a new entry in the <i>list of configured camera positions</i>.</p> <p>When clicking on the New button, the current orientation, including zoom level, is saved as seen in the preview.</p>
Overwrite position	Overwrites the settings of the selected camera position with the current position, zoom level, etc. of the 3D model, as set up in the preview.
Delete	Deletes selected camera position from the <i>list of configured camera positions</i> .

Attention

Assign each variable its own camera position. If several camera positions are linked to a variable, it is always the last-configured position that is visualized in zenon Runtime. If this project configuration has the value *no camera position*, there is no repositioning in Runtime.

6.3.4 Default settings

Area for the configuration of view options. The options selected in this area are visualized in real time in the preview window.



Default settings

Rendering mode: RenderPhong (1) v ☐ Use variable for rendering mode
 No variable selected ...

☐ Show this combobox in the Runtime.

Background color: White v

Light setting: White v Light angle: 0 10 20 30 40 50 60 70 80 90 100

☐ Use variable for camera position index
 No variable selected ...

☒ Transformation matrix for 3DS files

Parameter	Description
Rendering mode	<p>Rendering mode for the display of the 3D model in zenon Runtime.</p> <p>Please ensure, when selecting the rendering mode, that this is also supported by the loaded 3D file. Otherwise the model will not be shown.</p> <p>Select from drop-down list.</p>
Use variable for rendering mode	<p>Checkbox for selecting the rendering mode from a variable.</p> <p>Clicking on the ... opens the dialog to select a numerical variable of the zenon Editor configuration.</p> <ul style="list-style-type: none"> ▶ <i>Active:</i> Display is shown with the value of the linked

Parameter	Description
	<p>variable.</p> <p>If the value of the variable is invalid or if the checkbox is active but no variable is linked, the configured rendering mode is applied.</p> <ul style="list-style-type: none"> ▶ <i>Inactive:</i> Rendering mode is taken directly from the project configuration in the 3D Configurator for the display. <p>Note: You can get the numerical value from the numeric value in the brackets next to the mode in the drop-down list of the Rendering mode option.</p>
[Selected variable]	<p>Display of the name of the linked variable for rendering mode.</p> <p>Default: <i>No variable selected</i> (if no variable has been selected)</p>
...	Opens dialog to select variables for the rendering mode .
Show this combobox in the Runtime.	<p>Checkbox to select whether the rendering mode is offered for selection in Runtime.</p> <ul style="list-style-type: none"> ▶ <i>Active:</i> Rendering mode can be selected in Runtime from a drop-down list. ▶ <i>Inactive:</i> No possibility to select rendering mode in the Runtime.
Background color	<p>Background color of the display of the 3D model.</p> <p>Select from drop-down list.</p> <p>Default: <i>White</i></p>
Light setting	<p>Light color of the illumination of the 3D model.</p> <p>Selection from drop-down list</p> <p>Default: <i>White</i></p>
Light angle	Slider to configure the light angle for the light settings .

Parameter	Description
	Selection in clockwise direction (from left to right)
Use variable for camera position index	<p>Checkbox for selection of the camera position from a variable.</p> <p>Clicking on the ... opens the dialog to select a numerical variable of the zenon Editor configuration.</p> <ul style="list-style-type: none"> ▶ <i>Active:</i> The camera position is defined with the value of the linked variable. If the value of the variable is invalid or if the checkbox is active but no variable is linked, the display is not amended. ▶ <i>Inactive:</i> Camera position is taken directly from the project configuration in the 3D configurator for the display. <p>Note: You can find out the numerical value of the camera position from the corresponding entry in the <i>Index</i> column of the Camera positions option.</p> <p>Default: <i>No variable selected</i> (if no variable has been selected)</p> <p>Please note the <i>Configure camera position</i> section in the Configuration in the 3D configurator (on page 28) chapter.</p>
Transformation matrix for 3DS files	<p>Checkbox for improved display of 3DS files. This option is only applied for 3DS files. With all other file formats, this option has no effect.</p> <p>Deactivate this option for 3DS files if the display is shifted in the preview.</p> <ul style="list-style-type: none"> ▶ <i>Active:</i> 3DS file is shown with internal transformation matrix. ▶ <i>Inactive:</i> 3DS transformation matrix is ignored. <p>Default: <i>activated</i></p>

Parameter	Description
	Note: a change to the configuration of this option causes automatic reloading of the corresponding 3DS file in the 3D Configurator . Properties that have already been configured in the tool are retained.

TRANSFORMATION MATRIX FOR 3DS FILES

This property is only applicable for the display of 3DS files.

Example:

Transformation matrix for 3DS files option *deactivated*:



Example:

Transformation matrix for 3DS files option *activated*:



6.3.5 Sorting and filtering lists

SORTING OF LISTS

The sorting is alphabetical by default, which can however be inverted.

To sort:

1. Click on the corresponding header of the column according to which sorting is to take place.
The list is displayed sorted according to this column.

2. A further click inverts the sorting.

FILTERING OF LISTS

Note: To reset a filter, delete the filter text from the header. Upper/lower case is taken into account during the filter process by clicking on the **aA** (match case) button.

Engineering:

1. Click in the desired list, with the left mouse button, in the input field for the corresponding filter symbol.
2. Enter the term according to which filtering is to take place.
3. Click on the corresponding filter symbol in the desired list with the left mouse button.
The context menu is opened.
4. Make your choice by clicking on the desired filter possibility with the left mouse button.

The choices are:

- ▶ **Clear Filter:** Reset filter
- ▶ **Is equal to:**
- ▶ **Is not equal to:**
- ▶ **Starts with:**
- ▶ **Ends with**
- ▶ **Contains**
- ▶ **Does not contain**
- ▶ **Is contained in**
- ▶ **Is not contained in**
- ▶ **Is empty**
- ▶ **Is not empty**
- ▶ **Is less than**
- ▶ **Is less than or equal to**
- ▶ **Is greater than:**
- ▶ **Is greater than or equal to**
- ▶ **Is null**
- ▶ **Is not null**

The list is filtered according to your selection.

Note: The filter is set to "**Contains**" by default.

6.4 Preview

The loaded 3D model is shown for editing in the preview. The view can be orientated and scaled as desired with the mouse. This can also be carried out by means of touch operation instead of the mouse.

The selected element of a 3D model is shown highlighted in red. An element can be selected in the preview directly or in the structure tree of the 3D file structure.



Information

If the **Selected object only** option is activated in the 3D file structure, only the selected object is shown in the preview.

VIEWCUBE

The **ViewCube** tool is a permanently-visible 3D cube. It offers visual feedback of the current orientation of the visualized 3D model in the preview. The **ViewCube** can also be used for orientation in the preview.



ORIENTATION OF THE PREVIEW

With a single click of the left mouse button on a border area of the **ViewCube**, the preview view can be realigned.

The **ViewCube** offers the following functionality:

- ▶ Display of the view in a three-dimensional area
- ▶ Orientation of the preview:
 - ▶ Click on the surface
(for example: View from above when clicking the *Top* section of the **ViewCube**.)
 - ▶ Click on an edge

- ▶ Click on a corner point



Information

The functionality of the **ViewClube** is always executed by simply left-clicking on the **ViewCube**.

If the mouse is in the area of the preview or the right mouse button is held down (including on the **ViewCube** directly), the mouse assignment is as described in the Keyboard shortcut and mouse button assignment (on page 8) chapter.

ROTATION AND ZOOM POINT



The **rotation and zoom point** for the direction can be defined by means a mouse click. The following is applicable in the process:

- ▶ If an assembly group is clicked on in the process, the location of the click is the rotation and zoom point.
- ▶ If a point outside an assembly group is clicked on in the preview, the center point of the preview is the rotation and zoom point.

6.5 Configuration in the 3D configurator

To link a 3D file to your zenon project configuration:

1. Start the zenon Editor.
2. Carry out the configuration in the Editor:
 - ▶ Variables
 - ▶ Functions
 - ▶ ...
3. Start the **3D Configurator**.

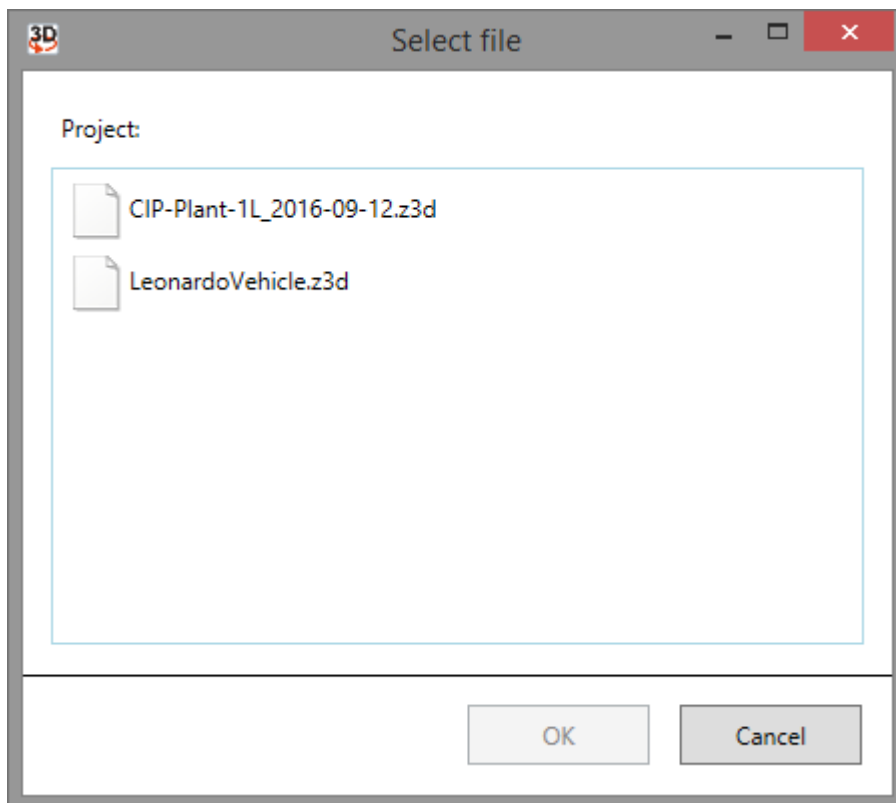
4. Load a 3D model in the **3D Configurator**:
To do this, click on the **Open 3D model ...** button and select the 3D file.
5. Configure the camera positions:
 - a) Select the desired assembly group.
 - b) Select the angle and the zoom level in the preview.
 - c) In the **Camera positions** area, click on the **New** button.
A new entry is created for the camera positions option.
6. Select a level in the 3D file structure.
Note: The linkings are always connected to a level of the 3D file structure.
Please note: if no level is selected, no linkings can be configured.
7. Link a camera position to a function or a variable:
 - a) Select a variable in the **3D Configurator** in the *list of configured variables*.
 - b) Accept the selection by clicking on the **arrow downwards** button in the *object list*.
 - c) In the *Camera* entry in the object list, select a configured *camera position* in the drop-down list.
8. Configure additional linkings.
9. Save your 3D project configurations in the current zenon Editor project:
To do this, click on the **Save configuration** button.
The project configurations of the **3D Configurator** are saved in the active zenon project.

CONFIGURE CAMERA POSITION

1. Configure camera positions in the **3D Configurator**:
 - a) Select the desired assembly group.
 - a) Select the angle and the zoom level in the preview.
 - b) In the **Camera positions** area, click on the **New** button.
A new entry is created for the camera positions option.
2. Link a variable for the camera index:
 - a) In the **Default settings** area, activate the **Use variable for index of the camera position**.
 - b) Click on the ... button.
The variable selection dialog is opened.
 - c) Select a numeric variable.
 - d) By entering the number of the *index of the camera position* for the linked variable, the 3D model can be visualized in Runtime with the configured view - including zoom level, orientation and positioning.

⚠Attention

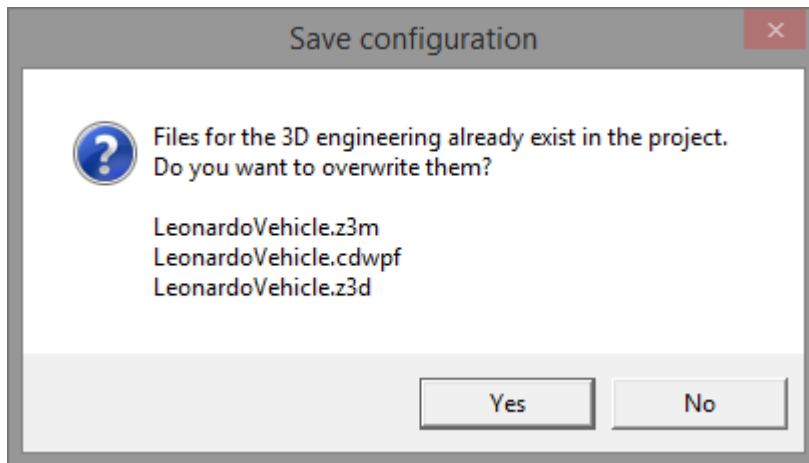
Assign each variable its own camera position. If several camera positions are linked to a variable, it is always the last-configured position that is visualized in zenon Runtime. If this project configuration has the value *no camera position*, there is no repositioning in Runtime.

LOAD CONFIGURATION

If you want to add to or correct pre-existing project configurations, carry out the following steps:

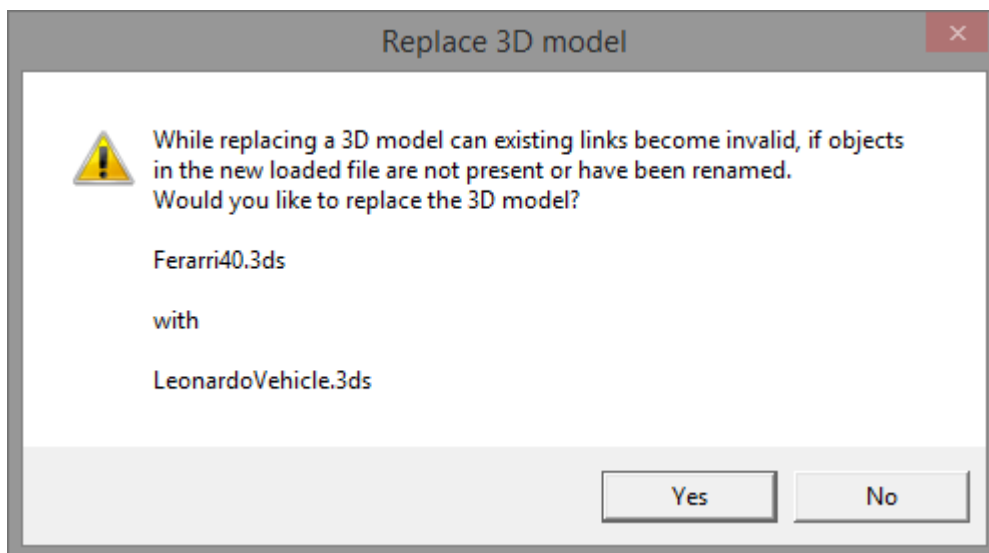
1. Start the zenon Editor.
2. Start the **3D Configurator**.
3. In the **3D Configurator**, click on the **Load configuration ...** button
The selection dialog of the 3D configurations already saved in the zenon project are opened.
4. Select a project configuration.
The project configuration is loaded in the **3D Configurator**.
5. Carry out further configurations in the **3D Configurator**.

6. Save your project configurations by clicking on the **Save configuration** button.
If a 3D configuration is already saved in the current zenon project, this is shown in a notice dialog.



REPLACE 3D MODEL

Click on the **Replace 3D model...** button in the **3D Configurator** to add new file content to existing project configurations. Amended content is shown in a dialog.



Existing configurations of the **3D Configurator** are supplemented with enhancements in the 3D model when 3D models are replaced. This is the case, for example, if 3D models are modified by third-party suppliers (such as architects). Existing content of the model and its linking to zenon is retained in the process. These do not need to be reconfigured.

However, ensure that there are only enhancements to already-used older 3D models in the newly loaded file. Deleted or renamed content of the newly-loaded 3D model in particular can lead to incorrect project configurations (invalid linkings).

Attention

Linkings that cannot be transferred are deleted from the configuration.

7 Engineering in the zenon Editor

Carry out the following steps in zenon to visualize a 3D configuration in zenon Runtime:

1. Start the zenon Editor.
2. Carry out the project configurations in the Editor.
3. Start the **3D Configurator**.
4. Configure the linkings and camera positions in the **3D Configurator**.
5. Transfer the 3D configuration of the **3D Configurator** to the Editor by clicking on the **Save configuration** button.
The project configuration in the 3D configurator is saved in the current zenon project.
6. Configure a zenon screen.

ZENON - CREATE A SCREEN

1. Create a new screen.
To do this, select the **New screen** command in the tool bar or in the context menu of the **Screens** node.
2. Change the properties of the screen:
 - a) Name the screen in the **Name** property.
 - b) Select the desired screen type in the **Screen type** property.
Note: 3D project configurations can be configured for each zenon screen type.
 - c) Select the desired frame in the **Frame** property.
3. Configure the content of the screen:
 - a) to do this, select the **WPF element** screen element.
 - b) Place the **WPF screen element** on your screen.
The file selection dialog to select a 3D project configuration is opened.
 - c) Select the desired 3D configuration.
Note: The parameters of the *.CDWPF file are set in the **3D Configurator** and transferred to the Editor configuration using the **Save configuration** button there.

- d) Ensure that the **WPF screen element** is placed in a corresponding size in the zenon screen.
- e) Place a corresponding screen element in the screen for the display and control of the display in Runtime.

Example: Numeric value screen element for the entry of camera positions.

- 4. Create a screen switch function.

CLEAN UP 3D CONFIGURATION

3D configurations are not deleted automatically in the zenon Editor. The naming of the files corresponds to the respective 3D model that was loaded during project configuration in the **3D Configurator**.

Carry out the following steps to delete an existing 3D project configuration:

1. Close the **3D Configurator**.
2. Switch to the zenon Editor.
3. Delete the 3D project configuration files in the zenon Editor:
 - a) Go to the Files node in the **Workspace**.
 - b) Select the Graphics folder.
 - c) Delete the .cdwpf file.
This file represents the configuration file for the zenon WPF screen element.
 - d) Switch to the *Others* folder.
 - e) Switch to the *ThreeD* folder.
 - f) Delete the .z3m file.
This file represents the internal 3D model for display in zenon Runtime.
 - g) Delete the .png file.
This file represents the preview screen for the zenon Editor.
 - h) Delete the z3d file.
This file represents the configuration file of the **3D Configurator**. This file is loaded if you click on the **Load configuration...** button in the **3D Configurator**.

8 Display in Runtime

The following is applicable for display in the Runtime:

- The **ViewCube** is automatically visualized in Runtime for 3D display.

- ▶ With linkings, in the mouse-over view, the display of the mouse pointer switches to the display of an arrow to display a cross.
- ▶ Free navigation in the 3D model:
The display can be moved, rotated, enlarged or reduced.
- ▶ Execution of functions in the 3D model:
A configured function can be executed by clicking on an object or an assembly group.
Example: Opening a linked online help or calling up an information window.
- ▶ Calling up the 3D model in a defined perspective:
The 3D model with views of a configured position can be visualized by setting a value of a "camera variable".
- ▶ Visualization of a limit value breach:
When a limit value is breached, an object or an assembly group can be shown in color or flashing in the 3D model.
- ▶ Objects or assembly groups can be switched to visible or invisible.
Subordinate objects assume the visibility of the higher-level object.
- ▶ Reaction matrix
If a 3D object contains a linking to a zenon variable with a linked reaction matrix, the coloring of the 3D object is visualized in Runtime according to the reaction matrix.
- ▶ Linked objects assume the same properties as the linked variable for display in Runtime:
Configurations of the **Limit Values** variable properties group
In particular the configurations of the **Additional attributes** properties group:
 - ▶ **Limit value color**
 - ▶ **Invisible**
 - ▶ **Flashing**
 - ▶ **Flash freq. [tenth sec]**
Note: You can find this property in the project properties,
 - ▶ **Visibility**
 - ▶ Function **Switch palette**
- ▶ If several object or function linkings are configured and applicable for a 3D object, the most recent event is visualized.

Example: Three variables are configured with different limit values for a 3D object:

- ▶ Display of the 1st Limit value is configured with red color. (Variable 1)
- ▶ Display of the 2nd Limit value is configured with green color. (Variable 2)
- ▶ Display of the 3rd Limit value is configured with blue color. (Variable 3)

If all 3 limit values occur, the color blue is shown in the Runtime.

8.1 Execution of a zenon function

Functions linked in the 3D configurator are executed in Runtime with a mouse click.

If a 3D object is linked to a function, the mouse pointer changes in Runtime if it is over the object.