



zenon
by COPA-DATA

zenon manual

Cross-references

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 Cross-references

Cross-references gives an overview which modules and functions are linked how. zenon provides two tools for this:

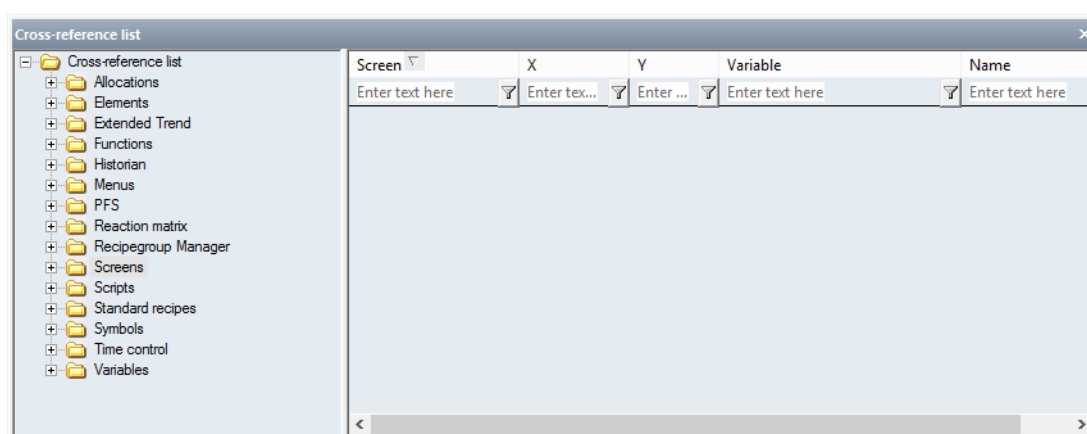
- ▶ Cross-reference list (on page 5): displays links in the project tabular. The cross-reference list always relates to the project that is currently active.
- ▶ Project analysis (on page 14): Analyzes the use of functions, variables, images, scripts, and equipment models. This way both used and unused content can be searched for.

3 Cross-reference list

The cross-reference list creates a project overview in table form for the project that is currently active. All relationships between variables, functions, screens, recipes etc. are displayed for documentation and traceability. For example, it is possible to see which variables are used in what screens in the Cross Reference List.

3.1 General

To display the cross-reference list (CRL), click, in the **View** menu, on the **Cross-reference list** entry. The **cross-reference list** is opened.



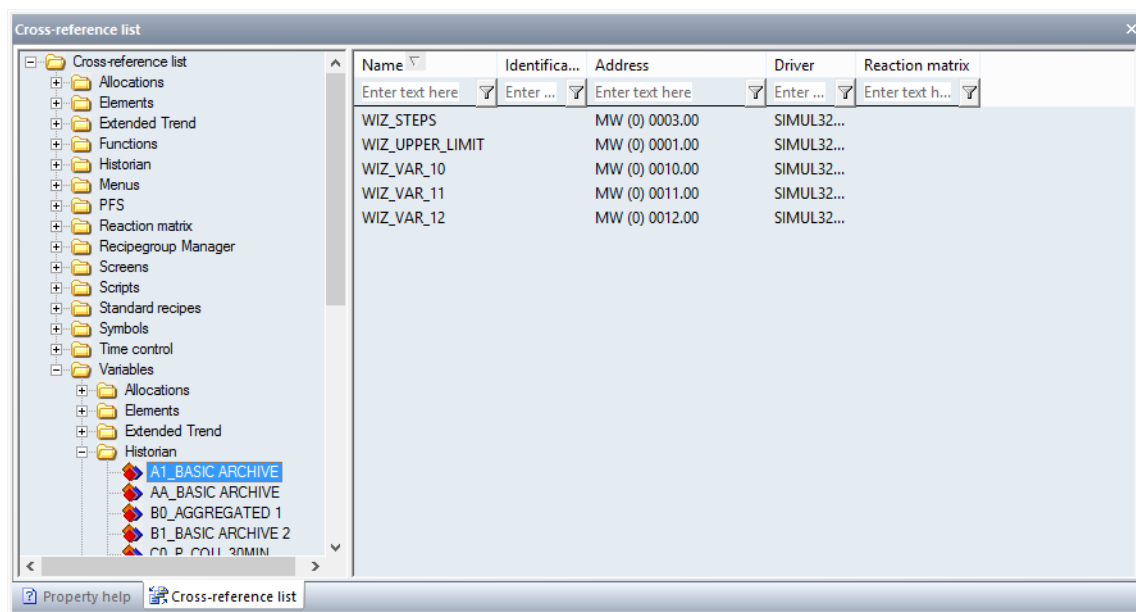
In order to get information about a certain module, simply expand the corresponding node. The following are available:

| Module | Elements that can be displayed |
|----------------|---|
| Historian | <ul style="list-style-type: none"> ▶ Functions ▶ Variables |
| Screens | <ul style="list-style-type: none"> ▶ Elements ▶ Menus ▶ Symbols: There are three different symbol libraries available in zenon. For details, see the symbol library (on page 8) chapter. ▶ Variables |
| Elements | <ul style="list-style-type: none"> ▶ Screens ▶ Variables |
| Extended Trend | <ul style="list-style-type: none"> ▶ Functions |
| Functions | <ul style="list-style-type: none"> ▶ Historian |

| Module | Elements that can be displayed |
|----------------------------|---|
| | <ul style="list-style-type: none"> ▶ Automatic function call ▶ Screens ▶ Bitmap button ▶ Button ▶ Menu ▶ PFS ▶ Reaction matrix ▶ Scripts ▶ Invisible button ▶ Variable limit values ▶ Time Control |
| Menus | <ul style="list-style-type: none"> ▶ Screens ▶ Functions ▶ Variables |
| PFS | <ul style="list-style-type: none"> ▶ Functions ▶ Variables |
| Reaction matrix | <ul style="list-style-type: none"> ▶ Functions ▶ Variables |
| Recipegroup Manager | <ul style="list-style-type: none"> ▶ Recipegroups ▶ Variables |
| SAP Interface | <ul style="list-style-type: none"> ▶ Functions ▶ Variables |
| Scripts | <ul style="list-style-type: none"> ▶ Functions |
| Standard Recipes | <ul style="list-style-type: none"> ▶ Variables |
| Symbols | <ul style="list-style-type: none"> ▶ Screens ▶ Symbols: Symbols: There are three different symbol libraries available in zenon. For details, see the symbol library (on page 8) chapter. |
| Variables | <ul style="list-style-type: none"> ▶ Historian ▶ Screens |

| Module | Elements that can be displayed |
|---------------------|--|
| | <ul style="list-style-type: none"> ▶ Elements ▶ Extended Trend ▶ Mathematics ▶ Menus ▶ PFS ▶ Reaction matrix ▶ Recipegroup Manager ▶ Standard Recipes ▶ Allocations |
| Time Control | <ul style="list-style-type: none"> ▶ Functions |
| Allocations | <ul style="list-style-type: none"> ▶ Variables |

After a click on one of the supported objects information about it is displayed in the list on the right part of the window.



Information about the selected topic is displayed in the list area. The contents can be sorted and filtered.

- ▶ **Sorting:** Clicking on the column header sorts the column; a second click reverses the sorting.
- ▶ **Filter:** Enter the search criteria in the filter box in the column header. Several filters can be linked into a chain.
To remove the filter: Delete the content of the filter box.

3.1.1 Symbol libraries

Note when using symbol libraries that zenon distinguishes between three different symbol libraries:

| Symbol Library | Property |
|--------------------------------------|---|
| General symbol library | <p>Symbols are available in all projects. The general symbol library node is located in the project manager below the currently-loaded projects.</p> <p>Label when linking in the screen: [symbol group]/[symbol name]</p> <p>Rules:</p> <ul style="list-style-type: none"> ▶ The dialog for selecting variables offers all projects of the workspace for linking. ▶ These symbols are saved in the zenon program folder and only updated when the Editor starts. These symbols are not saved during project backup. ▶ Interlocking and aliases for ALC cannot be configured. <p>Attention: If symbols that contain interlocking or aliases are added, these settings are removed.</p> |
| SYMBOL LIBRARY IN THE GLOBAL PROJECT | <p>Symbols are available for all projects of the workspace.</p> <p>Label when linking in the screen: Global project_[Symbol name]</p> <p>Rules:</p> <ul style="list-style-type: none"> ▶ The symbols copied into the symbol library of the global project retain their variable linking without changes. ▶ The variable dialog offers all projects of the workspace for linking. Linked variables are placed in front of the name of the respective project. ▶ The name of the Variable can be amended in the properties window. This way, for example, the prefix can be deleted with the project origin. ▶ The symbols are also backed up when a project is backed up. ▶ Interlocking and aliases for ALC cannot be configured. <p>Attention: If symbols that contain interlocking or aliases are added, these settings are removed.</p> |
| Symbol library in the project | <p>Symbols are only available in the current project.</p> <p>Label when linking in the screen: [Symbol name]</p> <p>Rules:</p> |

| Symbol Library | Property |
|----------------|---|
| | <ul style="list-style-type: none"> ▶ The symbols are saved in the project folder. The project symbol library is in the current project in the Screens node and is backed up together with project backup. ▶ Interlocking and aliases for ALC can be configured. These properties are also retained when symbols are added. |

COPYING OF SYMBOLS BETWEEN LIBRARIES

Symbols can be copied with **Drag&Drop**.

In doing so, the following applies:

- ▶ Only symbols of the first level of the tree can be copied.
- ▶ Groups and folders cannot be copied.
- ▶ If there are already names of symbols in the target library, the added symbols are automatically renamed.
Renaming is carried out by adding an underscore and an ordinal number, for example: **Calibrator_1**.
- ▶ Copying between libraries is only possible to a limited extent.

Overview of copying between symbol libraries using **Drag&Drop**:

| Copying using Drag&Drop possible | General symbol library | Symbol library in the global project | Symbol library in the project |
|--------------------------------------|------------------------|--------------------------------------|-------------------------------|
| General symbol library | -- | + | -- |
| Symbol library in the global project | -- | -- | + |
| Symbol library in the project | -- | + | -- |

Key:

- ▶ +: copying possible
- ▶ --: copying not possible

3.2 The context menu

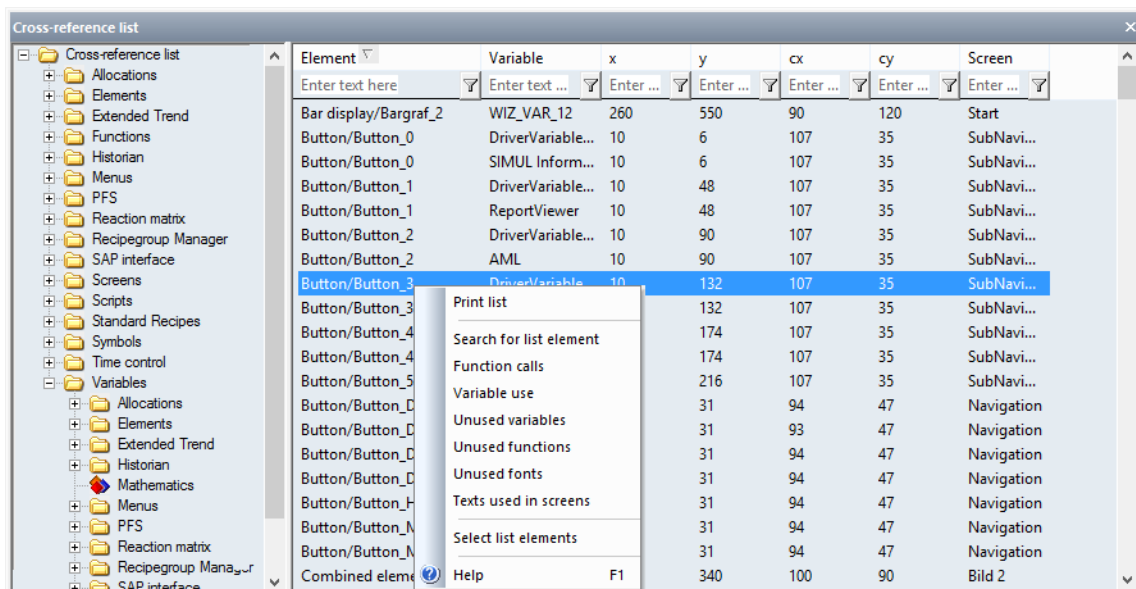
The cross-reference list provides a range of functionality:

- ▶ **Print list** (on page 10): Prints the list area of the Cross Reference List containing selected information.

- ▶ **Search for list element:** (on page 11) Opens a dialog to search for a certain element.
- ▶ **Function calls** (on page 12): Opens a dialog with a list of the defined functions.
- ▶ **Variable use** (on page 12): Opens a dialog with a list of the defined variables.
- ▶ **Unused variables:** (on page 13) Displays all unused variables in the list area.
- ▶ **Unused functions:** (on page 13) Displays all unused functions in the list area.
- ▶ **Unused fonts:** (on page 13) Displays all unused fonts in the list area.
- ▶ **Texts used in screens:** Shows texts used in screens.
- ▶ **Select list elements** (on page 13): Opens a dialogbox for the selection of one or more listed elements.
- ▶ **Help:** Opens online help.
- ▶ **Delete:** Deletes unused elements (variables, functions and fonts).
Is only displayed if there are deletable elements

To execute one of the functions:

1. Set the focus to the list window
2. carry out a right click
3. Select the desired command from the context menu

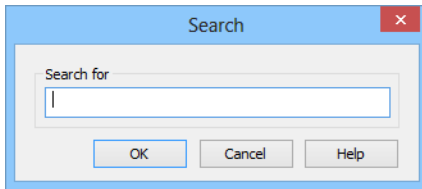


3.2.1 Print list

Selecting the **Print list** command from the context menu opens the standard dialog to select a printer and the options for print-out.

3.2.2 Search for list element

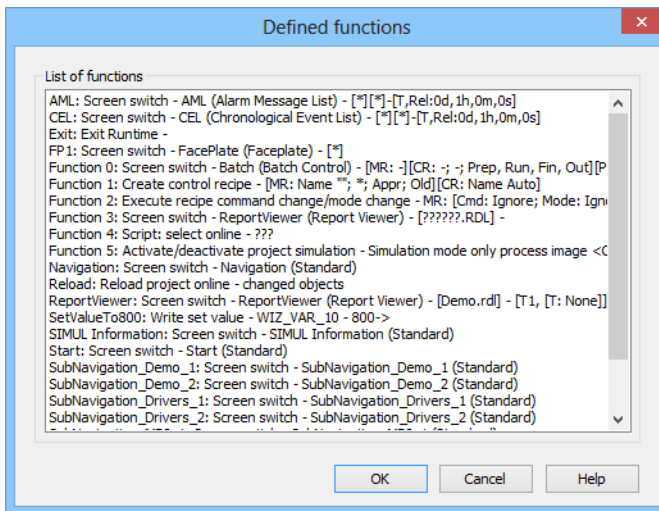
Selection of the **Search for list element** command from the context menu opens the following dialog:



| Parameters | Description |
|-------------------|---|
| Search for | Entry of a character sequence. |
| OK | Applies search parameters and closes the dialog. The first thing that is found in the list that corresponds to the search term is displayed. A match from the first character onwards is looked for. Example: Element name: A search for <i>W</i> finds Wizard_10 . A search for <i>Z</i> does not find the element. |
| Cancel | Discards all changes and closes the dialog. |
| Help | Opens online help. |

3.2.3 Function calls

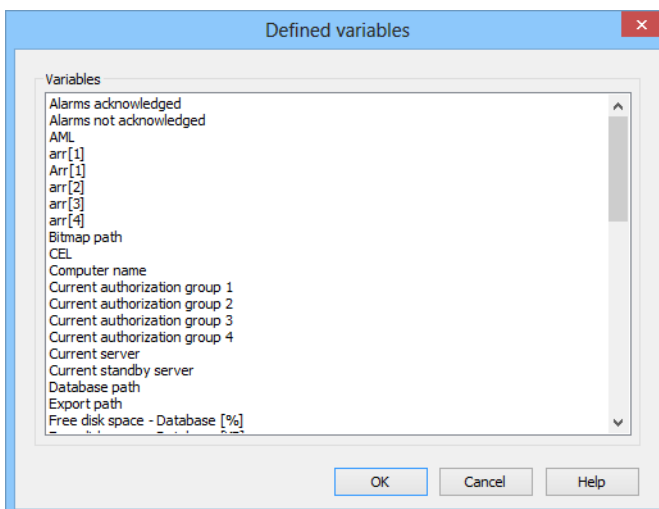
Selecting the command **Function calls** from the context menu opens the following dialogbox, in which all defined functions of the current project are listed:



An element can be selected. Clicking on **OK** displays the element with all its uses in the cross-reference list.

3.2.4 Variable use

Selection of the **Variable use** command from the context menu opens the dialog that contains all used variables.



An element can be selected. Clicking on **OK** displays the element with all its uses in the cross-reference list.

3.2.5 Unused variables / functions / fonts

If elements that are not currently used in the project are shown, the context menu gets an additional **Delete** menu entry. Selected elements can thus be deleted from the list. This is possible for variables, functions and fonts.

Attention

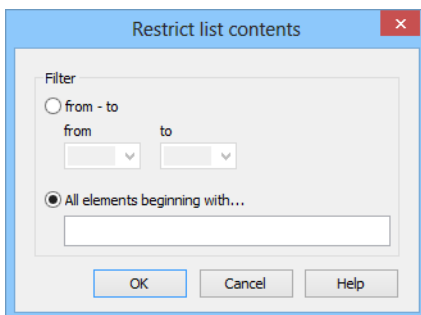
The display of objects that are not used relates to internal relationships. The use in symbols, via the programming interface in the **Process Gateway**, in zenon Logic or other external components is not taken into account.

Always check other possible uses before deleting and create a backup copy!

Note: Variables and functions that are not used can also be listed and administered using the project analysis (on page 14).

3.2.6 Select list elements

Selection of the **Select list elements** command from the context menu opens the dialog to search in the list.

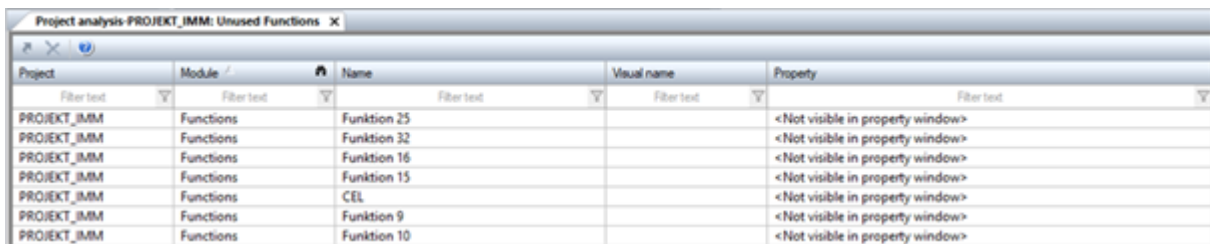


| Parameters | Description |
|--|---|
| from - to | <p><i>Active:</i> A search for elements with certain letters at the start is carried out. Selection of the range of starting letter in the alphabet from drop-down lists:</p> <ul style="list-style-type: none"> ▶ from: first letter of the range ▶ to: last letter of the range <p>All elements that have their first letter in the defined range are found. The search direction is always A->Z.</p> |
| All elements beginning with ... | <p><i>Active:</i> A search for elements that start with a certain character sequence is made.</p> |
| OK | Applies search rules, closes the dialog and highlights the |

| Parameters | Description |
|------------|---|
| | elements found in the list. |
| Cancel | Discards all changes and closes the dialog. |
| Help | Opens online help. |

4 Project analysis

The project analysis analyzes the use of elements in a project and is opened via the context menu of that particular entry in the project tree.



| Project | Module | Name | Visual name | Property |
|-------------|-----------|-------------|-------------|----------------------------------|
| PROJECT_IMM | Functions | Funktion 25 | | <Not visible in property window> |
| PROJECT_IMM | Functions | Funktion 32 | | <Not visible in property window> |
| PROJECT_IMM | Functions | Funktion 16 | | <Not visible in property window> |
| PROJECT_IMM | Functions | Funktion 15 | | <Not visible in property window> |
| PROJECT_IMM | Functions | CEL | | <Not visible in property window> |
| PROJECT_IMM | Functions | Funktion 9 | | <Not visible in property window> |
| PROJECT_IMM | Functions | Funktion 10 | | <Not visible in property window> |

Note: In order to improve the runtime of the project analysis, the checkbox **General symbol library with project analysis taken into account** is deactivated by default. You can manually activate the checkbox in the zenon editor under the menu item **Extras, Settings...** and **Editor Options**. If the checkbox of the property is activated, the **General symbol library** is also searched.

The name of the currently opened project analysis window consists of the following components:

Project analysis-Project name: Search term object name

The result list is displayed as a report.

At this:

- ▶ the link with other elements can be analyzed
- ▶ you can search for unused elements

Currently the project analysis is available for:

- ▶ Functions
- ▶ Screens
- ▶ Symbols
- ▶ Scripts
- ▶ Variables

- ▶ Reaction Matrices
- ▶ Equipment Modeling

The following columns can be displayed in the report:

- ▶ **Project:** Name of the zenon project where the project analysis is performed.
- ▶ **Module:** Scope of the analyzed content.
Example: Functions
- ▶ **Name:** Name of the analyzed content.
Example: Function 1
- ▶ **Display name:** Name that can be assigned without affecting the links of the analyzed content.
Note: The **Visual name** is only shown in the report and must have been previously assigned in the properties of the analyzed content.
- ▶ **Property:** Information about the visibility of the analyzed content in the interface:
 - ▶ visible: **Property group name** and **Property name** are displayed
 - ▶ invisible: Text **Property not visible in interface** is displayed

Special cases:

- ▶ With the function **Indexed screen**, the variable is displayed that was used to set the screen name.
- ▶ The function **Standard recipe** displays the source name, the destination name and the file name of the variable.
- ▶ For variable substitutions, both the source variables and the target variables are displayed.
- ▶ For limit values and REMA texts, you can enter a variable name that will be displayed.
- ▶ REMA-linked variables or variables with a limit used by AML or CEL are displayed.
- ▶ Variables linked to Math / ADP variables are also displayed.

ANALYZE THE USE OF AN ELEMENT

To analyze an element:

1. Select the desired content in the detail view.
Example: Variables
2. Select the appropriate command in the context menu, for example **Variable use**
The result list (on page 16) is displayed as a report in its own window.
3. A single element can be jumped to via the context menu.

FIND NOT USED ELEMENTS

In order to find unused elements (for example, a variable):

1. Select the appropriate node in the project tree.

Example: Variables

2. Select the desired command from the context menu.

Example: Display unused variables

The result list (on page 16) is displayed as a report in its own window.

3. It is possible to jump to an element directly using the context menu. A selected element can also be deleted using the context menu.

⚠ Attention

The following elements cannot be found by the project analysis:

- ▶ Variables which are only used in VBA or VSTA
- ▶ Variables which are used in screens of type *Report Generator* (report function)

Before you delete elements you must check whether variables which should be deleted are used in VBA/VSTA or in report functions.

JUMP TO LINKED ELEMENT

The results of the search for a use or not use of an item are displayed in the project analysis in a list.

Once a list entry has been selected, you can jump to the linked element:

1. Select the desired list entry with one click on the left mouse button.
2. Open the context menu.
3. Click on **Jump to linked element**.
It will jump to the linked item.

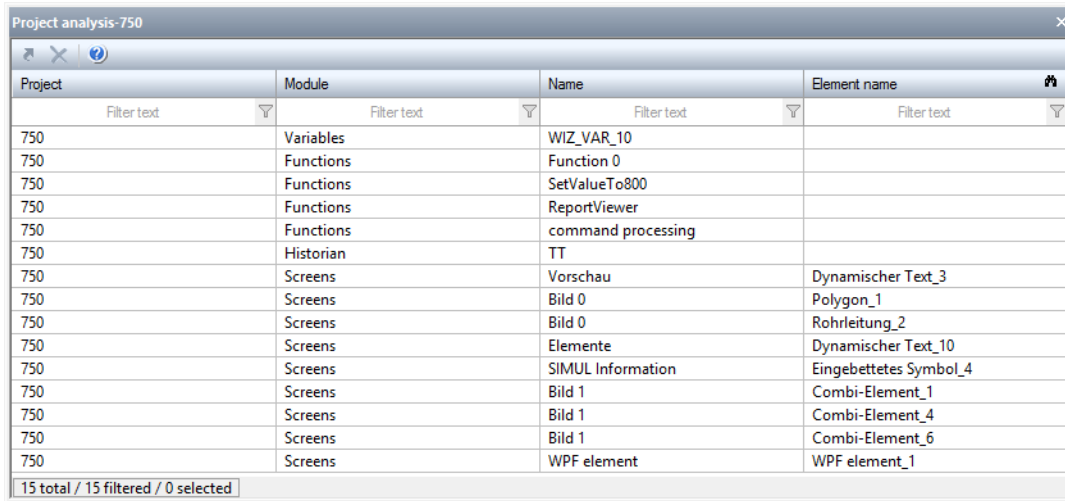
4.1 Result list

The results of the single analysis processes are displayed in a list in an own window in the **project analysis**. This window opens - if it is not active yet - automatically after the analysis process. The results can be used in two ways:

- ▶ Analyse use in the project: jump to linked element
- ▶ find not used elements: jump to displayed element or delete displayed element

ANALYSIS ELEMENT USE

The project analysis displays its results in a list.



| Project | Module | Name | Element name |
|-------------|-------------|--------------------|------------------------|
| Filter text | Filter text | Filter text | Filter text |
| 750 | Variables | WIZ_VAR_10 | |
| 750 | Functions | Function 0 | |
| 750 | Functions | SetValueTo800 | |
| 750 | Functions | ReportViewer | |
| 750 | Functions | command processing | |
| 750 | Historian | TT | |
| 750 | Screens | Vorschau | Dynamischer Text_3 |
| 750 | Screens | Bild 0 | Polygon_1 |
| 750 | Screens | Bild 0 | Rohrleitung_2 |
| 750 | Screens | Elemente | Dynamischer Text_10 |
| 750 | Screens | SIMUL Information | Eingebettetes Symbol_4 |
| 750 | Screens | Bild 1 | Combi-Element_1 |
| 750 | Screens | Bild 1 | Combi-Element_4 |
| 750 | Screens | Bild 1 | Combi-Element_6 |
| 750 | Screens | WPF element | WPF element_1 |

15 total / 15 filtered / 0 selected

It contains:

- ▶ the project name
- ▶ the module
- ▶ the name of the linked elements

To jump to a displayed element:

1. Highlight the element.
2. Select menu item **Jump to linked element** from the context menu.

The linked element is highlighted in the detail view of its module node.

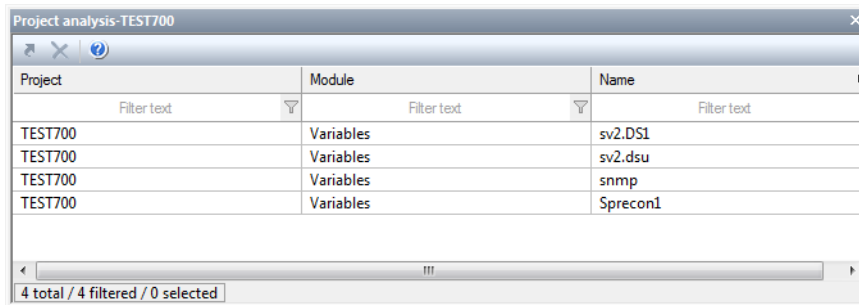
BEHAVIOR ON AGGREGATE INSTANCES IN THE BATCH CONTROL MODULE

Variables that reference aggregate classes for batch control can also be used in aggregate instances. If the variables in the instances are derived from the aggregate class, then they are only included in the result list for the aggregate class. Aggregate instances are not displayed.

If the derivation is disconnected, the variables are also displayed for the respective aggregate instance.

FIND NOT USED ELEMENTS

The search for unused elements returns its results in a list.



| Project | Module | Name |
|---------|-----------|----------|
| TEST700 | Variables | sv2.DS1 |
| TEST700 | Variables | sv2.dsu |
| TEST700 | Variables | snmp |
| TEST700 | Variables | Sprecon1 |

4 total / 4 filtered / 0 selected

It contains:

- ▶ the project name
- ▶ the module
- ▶ the name of the unused elements

JUMP TO ELEMENT

To jump to a displayed element:

1. Highlight the element.
2. Select menu item **Jump to linked element** from the context menu.

The linked element is highlighted in the detail view of its module node.

DELETE ELEMENTS

To delete one or more elements:

1. Highlight the desired elements (multiple selection is possible).
2. Select the command **Delete selected elements** in the context menu.

The elements are deleted from the project after a confirmation message.