SCE Training Curriculum

Siemens Automation Cooperates with Education (SCE) | 09/2015

PA Module P01-07

SIMATIC PCS 7 –
Importing Plant Design Data

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Additional information relating to SCE

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Importing Plant Design Data

Training Objective

The students learn to identify recurrent structures and to design templates. They know the difference between a process tag type and a model. They will be able to create and implement both. This allows the students to implement many similar process tag types or units in ***PCS 7***. They become familiar with the process object view and are able to use it to represent parameters system-wide, and change them if needed.

Theory in Brief

In process engineering plants, objects and structures recur again and again that behave in the same way, that are equally integrated in control engineering, and that are to be visualized in the same way.

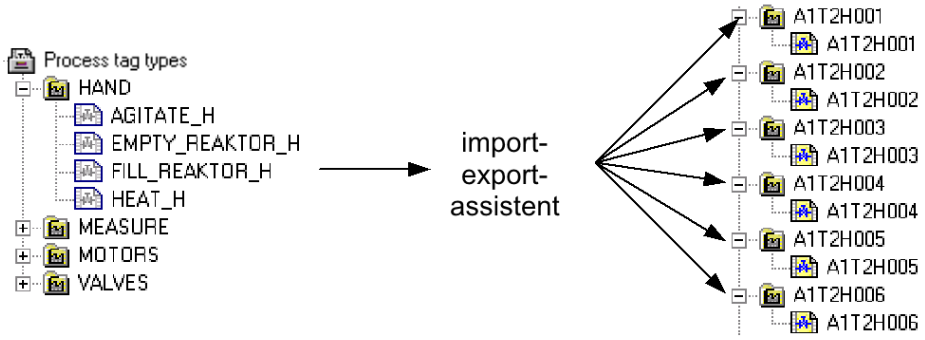


Figure 1: From process tag types to replicas

Such an object can be stored in the project library as ***process tag type***. A process tag type is a single CFC. As shown in Figure 1, a large number of process tags can be generated in one operation as a copy of one process tag type, using the import/export wizard. This process is controlled by an import file. Then, the process tags can be manually adapted and connected correspondingly to specific automation tasks.

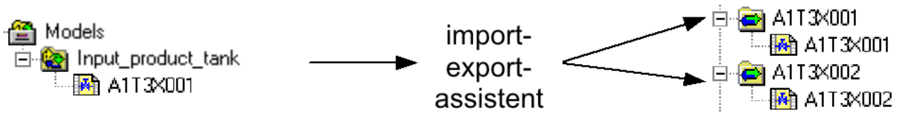
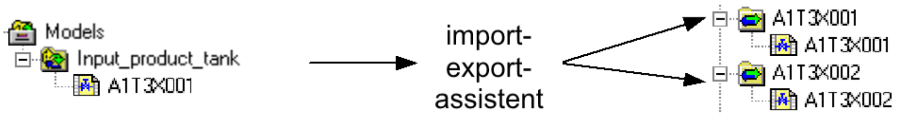


Figure 2: From models to replicas

With ***models*** we define more complex functions than with process tag types (up to complete units). A model consists of hierarchy folders containing CFC/SFCs, pictures, reports and supplementary documents. The entire structure can be stored in the project library as a re-useable template. Based on an import file, a large number of replicas can be generated as copy from a model in one operation using the import/export wizard (refer to Figure 2). Then, the replicas are adapted to the specific requirements of the respective automation task.



The ***PCS 7*** libraries contain extensive templates. If a template is to be used multiple times, it is copied from the ***PCS 7*** library to the project library, adapted if needed and copied by means of the import/export wizard based on an import file.

THEORY

When designing an automation system with ***PCS 7***, we can resort to general design principles for complex systems that have proven themselves again and again [1]. The most important principles are:

- The principle of hierarchical arrangement
- The principle of modularization
- The principle of reuse

The principle of hierarchical arrangement was used previously when we structured the plant in the chapter ‘Plant Hierarchy’. Through structuring into subsystems that can be processed largely independent of each other, a design problem that initially seemed unmanageable is broken down into sub-tasks that are manageable and can be planned.

The principle of modularization implies that a system to be designed is set up with constituent parts (here: blocks, CFCs, SFCs) that have the following characteristics:

- The scope is manageable and can be followed easily
- Largely autonomous functions that can be checked
- As few relationships to other constituent parts as possible
- Defined interfaces to other constituent parts

This results in two rivaling complexity aspects when an automation solution is broken down into its parts:

- Low inner complexity of the parts: The more parts, the smaller and more manageable the individual parts.
- High exterior complexity of the parts: The more parts, the higher the number of connections between the parts.

Hierarchical structuring and modularization depend on each another. While hierarchical structuring is determined more by the process engineering system, modularization is dominated by process control engineering implementation. Based on the countercurrent complexity aspects mentioned above and the high dependency on actual process engineering and automation engineering tasks to be solved, early coordination of both is of advantage.

Through the plant hierarchy, ***PCS 7*** supports the principle of hierarchical structuring. The principle of modularization and reuse is realized in ***PCS 7*** in importing plant design data.

In larger projects or in the case of recurring similar projects, often a large number of identical or at least very similar objects and structures can be observed. To save time and outlay for the configuration, it is advisable to plan the specific search for suitable, recurring objects and structures in the concept phase and the design phase of an automation project. After such objects and structures are identified, first generic solutions are implemented and tested that subsequently can be used for a variety of identical or similar objects and structures. The additional effort that the preparation of the generic solution (here also called types and templates) entails should lead to considerable time and cost savings over the overall duration of the project because of the following factors:

- A type can be implemented multiple times, which means it has several replicas.
- By using a type in several replicas, several tests are performed at the same time.
- If errors should occur or changes are necessary, the generic solution only has to be adapted and all replicas updated.

Moreover, objects and structures that are available from earlier projects and libraries can be reused. Their advantage is that they have been tried and are largely free of errors. By using well-tried parts, the reliability of a new automation solution in general rises.

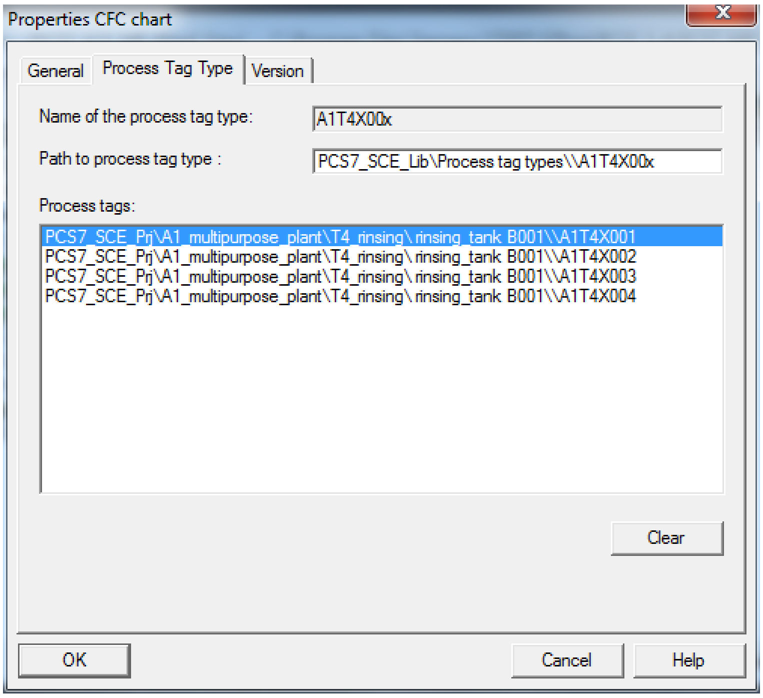
PROCESS TAG TYPE

The process tag type is used as a generic solution when a project contains many process tags of the same kind [2].

First, a CFC is prepared that contains all internal blocks and their interconnections. All input and output parameters are defined uniquely as parameters or signals. This CFC with all generally valid parameters is used to generate a process tag. In a so-called import file, the process tag specific parameters are specified in which the replicas differ.

During the import, the import/export wizard generates the process tag type replicas in the specified hierarchy folders. If there is no hierarchy, it is set up as well. Each replica is an instance of the process tag type and has its properties.

In ***PCS 7***, the process tags (replicas) generated in this way can be specifically adapted in addition by adding, for example, different interlocking mechanisms. Under certain preconditions, these are not overwritten even if they are re-imported.



Name of the process tag type: A1T4X00x

Path to process tag type : PCS7_SCE_Lib\Process tag types\\A1T4X00x

Process tags:

PCS7_SCE_Prj\A1_multipurpose_plant\T4_rinsing\rinsing_tank B001\\A1T4X001
PCS7_SCE_Prj\A1_multipurpose_plant\T4_rinsing\rinsing_tank B001\\A1T4X002
PCS7_SCE_Prj\A1_multipurpose_plant\T4_rinsing\rinsing_tank B001\\A1T4X003
PCS7_SCE_Prj\A1_multipurpose_plant\T4_rinsing\rinsing_tank B001\\A1T4X004

Figure 3: Replica A1T2H003 of FILL_REACTOR_H

The following must not be changed for the process tags that were generated:

- Specific adaptations to the block interconnections that are parameterized by means of the import file. These adaptations are overwritten at the next import with the parameters that are specified in the import file.
- Block name changes.
- Regarding process tag types, subsequent changes can be made easily by performing them at the process tag type and the import file. Then, the modified data is transferred to all process tags with another import. The following changes are conceivable:
- Supplementing a parameter and assigning this parameter via the import file
- Clearing all generated process tags of a process tag type (without manual deletion in the plant hierarchy)
- Supplementing an additional block interconnection and parameterizing it through the import file

MODEL

The model is used as a generic solution when structures of the same kind occur in the project.

As a rule, a plant is structured by breaking it down into smaller functional units whose interfaces, performance and logic can be clearly described; for example, a tank with its instrumentation. Instead of implementing these functional units again each time, an inventory of pre-assembled functional units (models) can be set up.

For a model to be used project wide in only one version, all models should be stored centrally in the master data library and adapted prior to generating replicas.

A model consists of hierarchy folders with the following elements:

- CFCs/SFCs
- OS pictures
- OS reports
- Additional documents

After a model was configured and an import file was assigned to it, replicas can be generated by means of an import. The following steps are performed automatically:

Step 1: The hierarchy path in the ‘Hierarchy’ column of the first data row in the import file is read. A check determines whether this path already exists. Further action depends on the check result.

- If the hierarchy folder exists and it is a replica of the model, the parameter settings are used from the import file for the existing replica.
- If the hierarchy folder exists and is suitable as a replica of the model, it is made into a replica of the model with its CFC and parameterized according to the import file.
- If there is no hierarchy folder, it is set up. A replica of the model is generated and parameterized accordingly.

Step 2: The following elements are inserted in the title block of the charts if the columns exist:

- Function designation
- Location designation
- CFC name
- Chart comment

Step 3: Texts and values of the parameter descriptions and the interconnection descriptions (signals) are written to the corresponding block or chart connections of the replicas.

Note: An interconnection is deleted when the signal name (symbol or textual interconnection) consists of the code word '---' (three dashes).

An interconnection remains unchanged when no connection name (symbol or textual interconnection) is specified.

Step 4: The data types of the connections for signals are determined and assigned to the interconnections.

Note: The following applies to interconnections with global addresses: When the option 'Enter signal also in the symbol table' is set, the names are searched for in the symbol table of the model resource.

For ***PCS 7*** it is recommended not to use this option because these entries are made in ***HW Config*** when the hardware is configured.

Note the following rules:

– The symbol name is present in the symbol table:

  The data type has to be the same, the symbol name must exist only once. The data type is parameterized according to the block/chart connection. The absolute address is overwritten and the symbol comment is entered for the symbol (if provided in the import file). Only what has changed is overwritten; existing attributes are retained.

– The symbol name does not exist in the symbol table:

  The interconnection is set up and the data type parameterized according to the connection. The absolute address and the symbol comment are entered for the symbol (if it exists in the import file).

Step 5: For each message, the message text is imported.

Then, steps 1 to 5 are repeated for each row of the import file.

When a hierarchy folder was highlighted that contains several models, the import files are displayed each with the model in the list. If needed, the list can be edited. Then, the import is performed for all models in the list as described above.

PARAMETERS AND SIGNALS

For process tag types and models to be generated successfully, it is important to define all inputs and outputs of the CFC as parameter or as a signal. Only connections that are defined as parameter or as signal can be included in the column of the import file and parameterized.

PROCESS OBJECT VIEW

With the process object view, all data of the basic automation are represented project wide in a control oriented view. Project wide means that the data of all included projects is recorded in a multi-project.

The process object view is structured similar to the plant hierarchy:

– In the left half of the window, the plant hierarchy is represented as a tree structure (hierarchy window). There, identical operating options are provided. In addition, the CFCs, SFCs, pictures, reports and supplementary documents are displayed in the hierarchy window.

– In the right half, a table of the lower level objects with their attributes is displayed (content window). The content window has the tabs shown in Table 1 and provides different views to the project data.

Table 1: Tabs of the process object view

Tab	Usage
General	This tab displays all lower-level ES objects (process tags, CFCs, SFCs, pictures, reports, or additional documents) and their general information for the plant unit currently selected in the tree view.
Blocks	This tab displays the block properties of the blocks of all lower-level CFCs for the plant unit currently selected in the tree view. In this context, SFC instances are also referred to as blocks.
Parameters	This tab displays the I/O points that were explicitly selected for editing in the process object view (S7_edit = 'para') for all the process tags and CFCs displayed in the "General" tab.
Signals	This tab displays the I/O points that were explicitly selected for editing in the process object view (S7_edit = 'signal') for all the process tags and CFCs displayed in the "General" tab.
Messages	This tab displays the corresponding messages for all the process tags, CFCs and SFCs displayed in the "General" tab.
Picture objects	This tab displays any picture interconnections which may exist in ***WinCC*** (if available) for all the process tags and CFCs displayed in the "General" tab.
Archive tags	This tab displays any existing interconnected ***WinCC*** archive tags with their attributes for all the process tags, CFCs and SFCs displayed in the "General" tab. Only those attributes that are relevant for ***PCS 7*** (subset of all attributes defined in Tag Logging).
Hierarchy folder	This tab displays the hierarchy folders of the plant unit selected in the tree view (one line per hierarchy folder).
Equipment properties	This tab displays the equipment properties for the project selected in the tree view. These equipment properties are instances created by the equipment property types configured in the shared declarations (one line per equipment property. In case of a type change, that attributes are applied at the instance.
Shared Declarations	This tab shows the attributes of the enumerations, units and equipment properties included the multiproject.

LITERATURE

[1] Lauber, R. und Göhner, P. (1999): Prozessautomatisierung 2. Springer Verlag

[2] Online Help for PCS 7. Siemens.

STEP BY STEP INSTRUCTIONS

TASK

PCS 7 is a software that provides users with many tools for programming large plants and duplicating program parts.

In this task, charts and hierarchy structures are created as library objects. They can then be used multiple times. The import/export wizard and the process object view are used to help with the task.

The chart for valve ‘A1T2X001’ is used here as process tag template. All additional valve inlets for the reactors are created using this process tag.

For the model, use educt tank B001 and create from it all additional educt tanks.

TRAINING OBJECTIVE

In this chapter, the student learns the following:

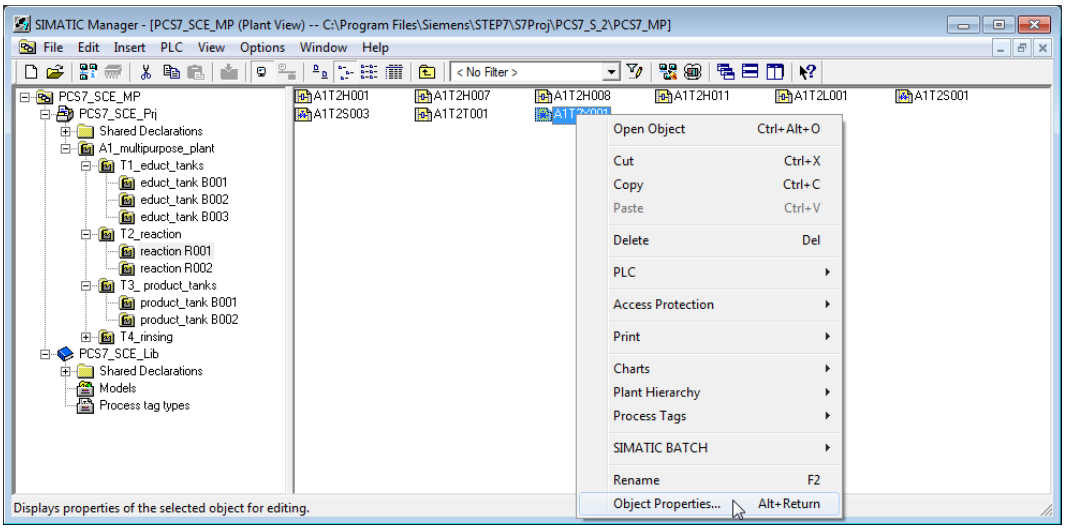
- Importing plant design data using the import/export wizard
- Familiarization with the process object view
- Copying charts by generating process tags
- Copying folder structures by creating models

These instructions are based on the project ‘PCS7_SCE_0107_Ueb_R1505_en.zip‘.

PROGRAMMING

1. To duplicate a chart that is already created and tested, a process tag is generated from it. In this example, we are using valve ‘A1T2X001’. Because this chart is already associated with the process tag type ‘ValveLean‘, we first have to cancel the connection in the object properties.

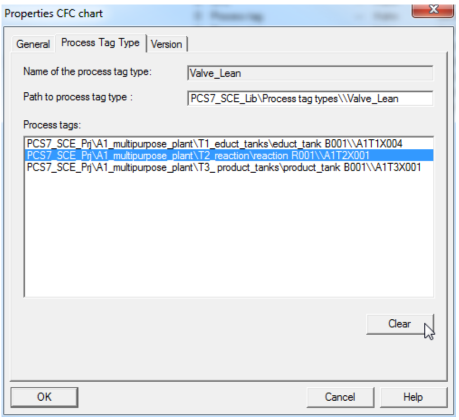
   (→ A1T2X001 → Object Properties)



Displays properties of the selected object for editing.

2. In the ‘Process tag type‘ tab, highlight the row with the valve and then click ‘Cancel‘. The valve is removed from the list.

   (→ Process tag type → A1T2X001 → ‘Cancel‘→ ‘OK‘)

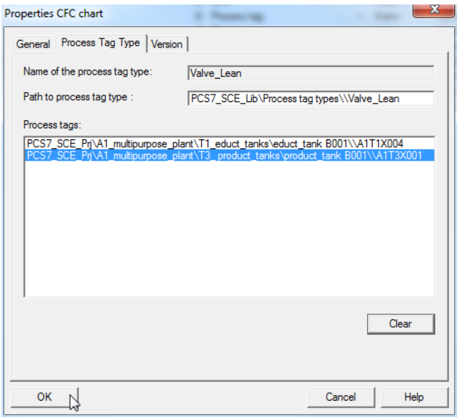

Properties CFC chart

Name of the process tag type: Valve_Lean

Path to process tag type : PCS7_SCE_Lib\Process tag types\\Valve_Lean

Process tags:

PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B001\\A1T1X004
PCS7_SCE_Prj\A1_multipurpose_plant\T2_reaction\reaction R001\\A1T2X001
PCS7_SCE_Prj\A1_multipurpose_plant\T3_product_tanks\product_tank B001\\A1T3X001


Properties CFC chart

Name of the process tag type: Valve_Lean

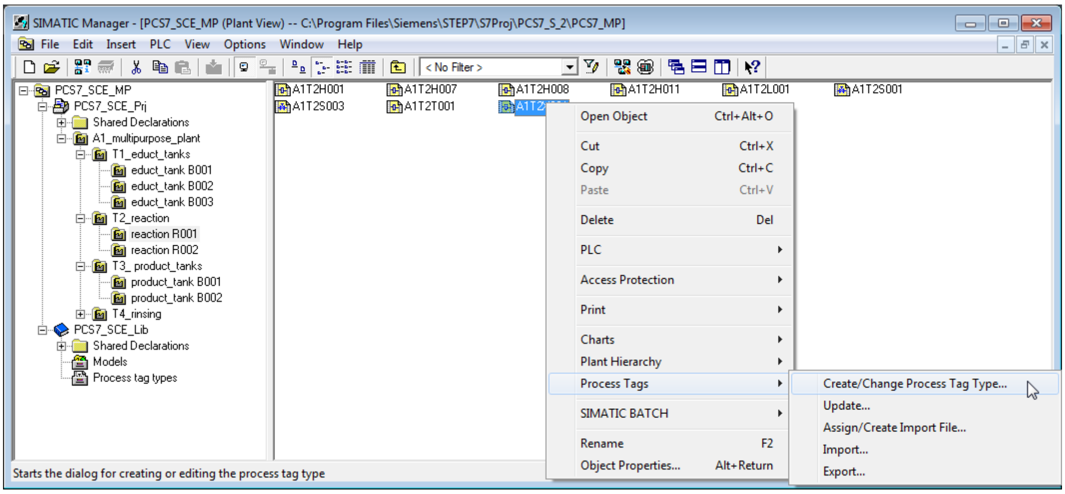
Path to process tag type : PCS7_SCE_Lib\Process tag types\\Valve_Lean

Process tags:

PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B001\\A1T1X004
PCS7_SCE_Prj\A1_multipurpose_plant\T3_product_tanks\product_tank B001\\A1T3X001

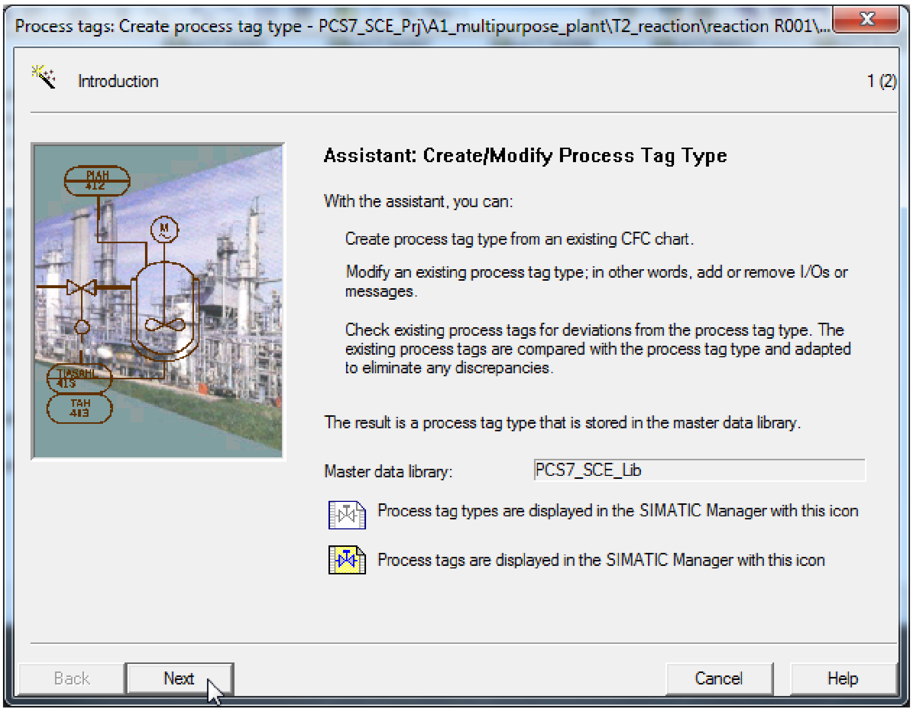
3. Now we can generate a process tag type from ‘A1T2X001‘ by clicking on ‘Process tags’ in the shortcut menu and then on ‘Create/change Process Tag Type…‘.

   (→ A1T2X001 → Process Tags → Create/Change Process Tag Types…)


SIMATIC Manager - [PCS7_SCE_MP (Plant View) -- C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_MP]

Starts the dialog for creating or editing the process tag type

4. The dialog Create/Modify Process Tag Type opens. (→ Next)



Process tags: Create process tag type - PCS7_SCE_Prj\A1_multipurpose_plant\T2_reaction\reaction R001\...

Introduction 1 (2)

Assistant: Create/Modify Process Tag Type

With the assistant, you can:

Create process tag type from an existing CFC chart.

Modify an existing process tag type; in other words, add or remove I/Os or messages.

Check existing process tags for deviations from the process tag type. The existing process tags are compared with the process tag type and adapted to eliminate any discrepancies.

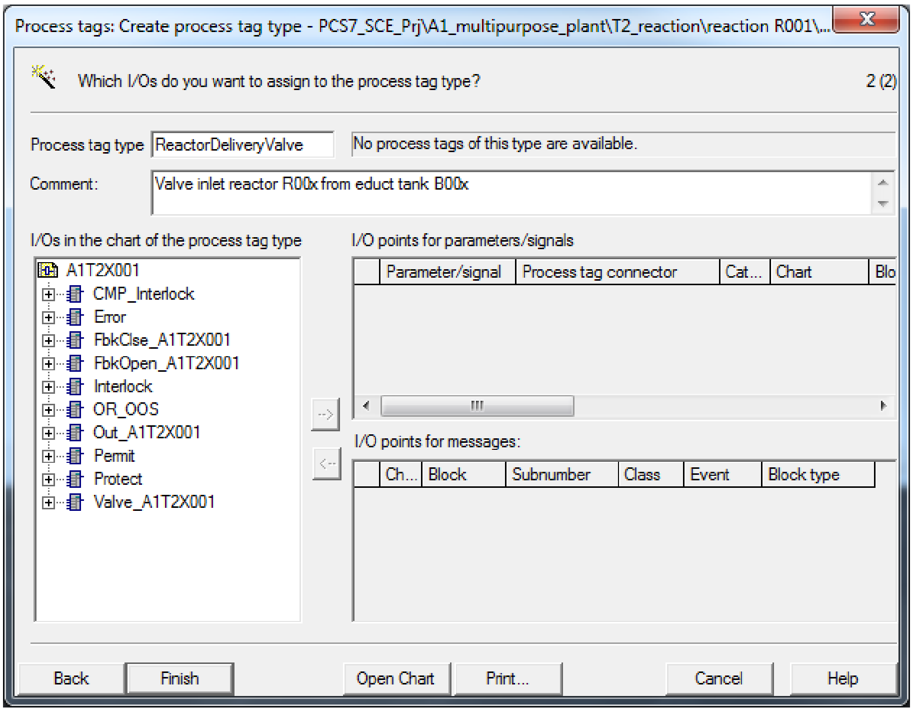
The result is a process tag type that is stored in the master data library.

Master data library: PCS7_SCE_Lib

Process tag types are displayed in the SIMATIC Manager with this icon

Process tags are displayed in the SIMATIC Manager with this icon

5. First, the name of the process tag type is generalized to ‘ReactorDeliveryValve‘ and the comment to ‘Valve inlet reactor R00x from educt tank B00x‘.



Process tags: Create process tag type - PCS7_SCE_Prj\A1_multipurpose_plant\T2_reaction\reaction R001\...

Which I/Os do you want to assign to the process tag type? 2 (2)

Process tag type: ReactorDeliveryValve

No process tags of this type are available.

Comment: Valve inlet reactor R00x from educt tank B00x

I/Os in the chart of the process tag type

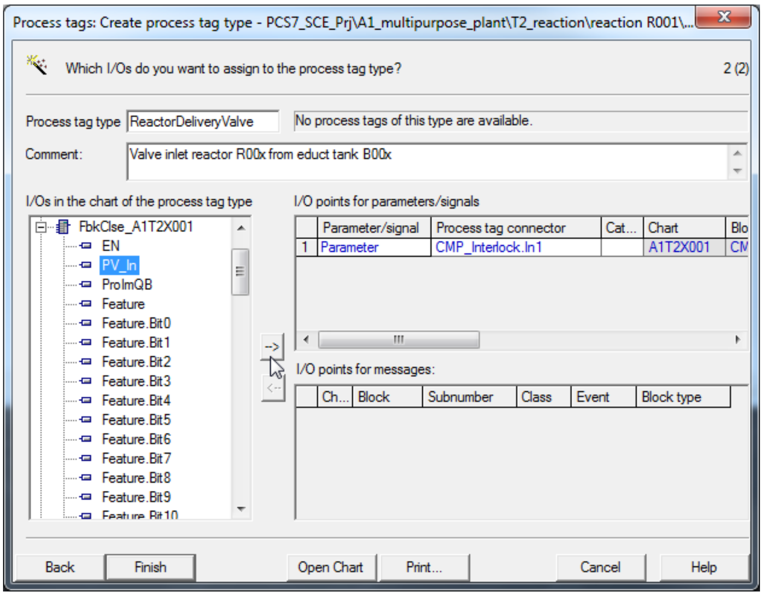
I/O points for parameters/signals

	Parameter/signal	Process tag connector	Cat...	Chart	Blo

I/O points for messages:

Ch...	Block	Subnumber	Class	Event	Block type

6. Next, the parameters and signals that have to be changed between the individual replicas of the process tag type have to be selected on the left side of the window. (FbkClse_A1T2X001 → PV_In → -->)


Process tags: Create process tag type - PCS7_SCE_Prj\A1_multipurpose_plant\T2_reaction\reaction R001\...

Which I/Os do you want to assign to the process tag type? 2 (2)

Process tag type: ReactorDeliveryValve

No process tags of this type are available.

Comment: Valve inlet reactor R00x from educt tank B00x

I/Os in the chart of the process tag type

- FbkClse_A1T2X001
  - EN
  - PV_In
  - ProImQB
  - Feature
  - Feature.Bit0
  - Feature.Bit1
  - Feature.Bit2
  - Feature.Bit3
  - Feature.Bit4
  - Feature.Bit5
  - Feature.Bit6
  - Feature.Bit7
  - Feature.Bit8
  - Feature.Bit9
  - Feature.Bit10

I/O points for parameters/signals

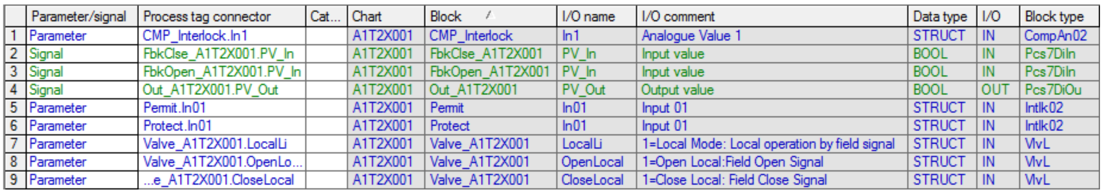
	Parameter/signal	Process tag connector	Cat...	Chart	Blo
1	Parameter	CMP_Interlock.In1		A1T2X001	CM

I/O points for messages:

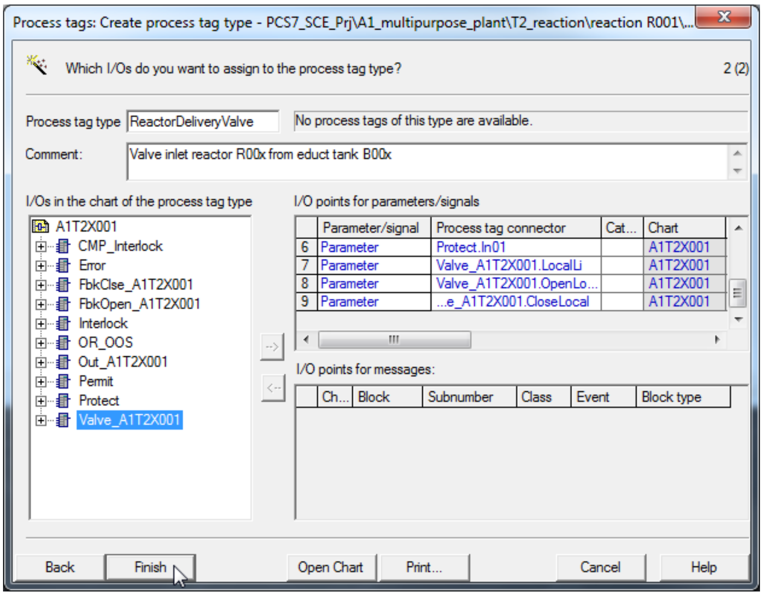
Ch...	Block	Subnumber	Class	Event	Block type

Note: With "Open Chart" the associated CFC is displayed to get a better overview. (→ Open Chart)

7. Now, add all signals and parameters that represent I/O points of the CFC. Signals are input and output signals, and parameters are interconnections between charts. The signals and parameters shown here have to be added for the valve inlets of the reactors. Then the process tag can be finished. (→ Finish)



	Parameter/signal	Process tag connector	Cat...	Chart	Block	I/O name	I/O comment	Data type	I/O	Block type
1	Parameter	CMP_Interlock.In1		A1T2X001	CMP_Interlock	In1	Analogue Value 1	STRUCT	IN	CompAn02
2	Signal	FbkClse_A1T2X001.PV_In		A1T2X001	FbkClse_A1T2X001	PV_In	Input value	BOOL	IN	Pcs7DiIn
3	Signal	FbkOpen_A1T2X001.PV_In		A1T2X001	FbkOpen_A1T2X001	PV_In	Input value	BOOL	IN	Pcs7DiIn
4	Signal	Out_A1T2X001.PV_Out		A1T2X001	Out_A1T2X001	PV_Out	Output value	BOOL	OUT	Pcs7DiOu
5	Parameter	Permit.In01		A1T2X001	Permit	In01	Input 01	STRUCT	IN	Intlk02
6	Parameter	Protect.In01		A1T2X001	Protect	In01	Input 01	STRUCT	IN	Intlk02
7	Parameter	Valve_A1T2X001.LocalLi		A1T2X001	Valve_A1T2X001	LocalLi	1=Local Mode: Local operation by field signal	STRUCT	IN	VlvL
8	Parameter	Valve_A1T2X001.OpenLo...		A1T2X001	Valve_A1T2X001	OpenLocal	1=Open Local:Field Open Signal	STRUCT	IN	VlvL
9	Parameter	...e_A1T2X001.CloseLocal		A1T2X001	Valve_A1T2X001	CloseLocal	1=Close Local: Field Close Signal	STRUCT	IN	VlvL


Process tags: Create process tag type - PCS7_SCE_Prj\A1_multipurpose_plant\T2_reaction\reaction R001\...

Which I/Os do you want to assign to the process tag type? 2 (2)

Process tag type: ReactorDeliveryValve

No process tags of this type are available.

Comment: Valve inlet reactor R00x from educt tank B00x

I/Os in the chart of the process tag type

- A1T2X001
  - CMP_Interlock
  - Error
  - FbkClse_A1T2X001
  - FbkOpen_A1T2X001
  - Interlock
  - OR_OOS
  - Out_A1T2X001
  - Permit
  - Protect
  - Valve_A1T2X001

I/O points for parameters/signals

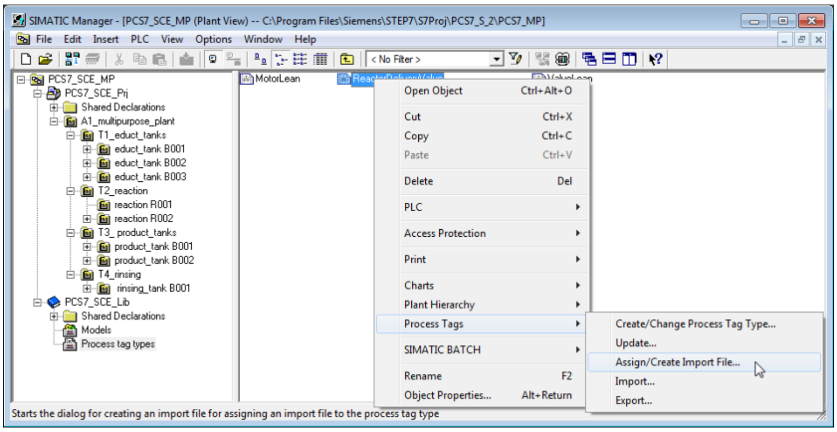
	Parameter/signal	Process tag connector	Cat...	Chart
6	Parameter	Protect.In01		A1T2X001
7	Parameter	Valve_A1T2X001.LocalLi		A1T2X001
8	Parameter	Valve_A1T2X001.OpenLo...		A1T2X001
9	Parameter	...e_A1T2X001.CloseLocal		A1T2X001

I/O points for messages:

Ch...	Block	Subnumber	Class	Event	Block type

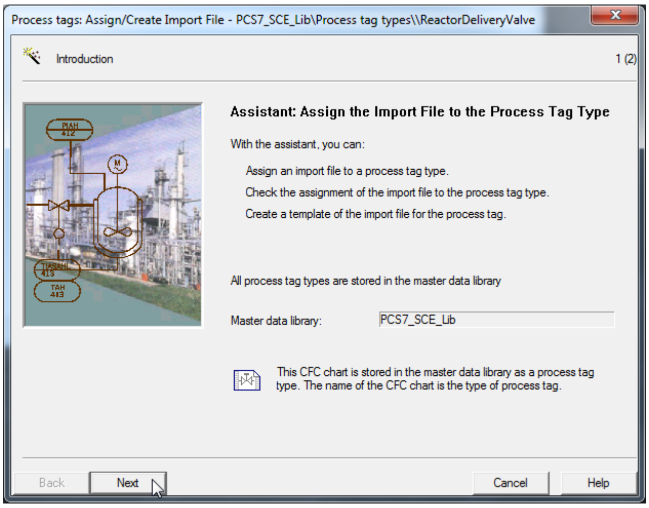
8. After Finish, the process tag type is located in the plant view in the project library under “Project Tag Types“. We now have to create an import file for the project tag type we have just created.

   (→ Project Tag Types → Project Tags→ Assign/Create Import File)



Starts the dialog for creating an import file for assigning an import file to the process tag type

9. The first dialog is confirmed with “Next“. (→ Next)


Process tags: Assign/Create Import File - PCS7_SCE_Lib\Process tag types\\ReactorDeliveryValve
Introduction
1 (2)
PIAH 412
M
TISAHH 415
TAH 413
Back
Next
Cancel
Help

Assistant: Assign the Import File to the Process Tag Type

With the assistant, you can:

Assign an import file to a process tag type.

Check the assignment of the import file to the process tag type.

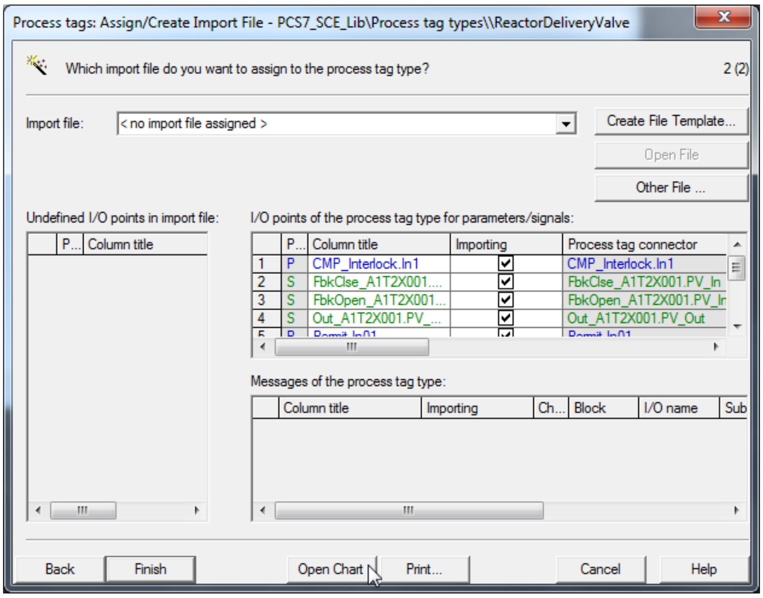
Create a template of the import file for the process tag.

All process tag types are stored in the master data library

Master data library: PCS7_SCE_Lib

This CFC chart is stored in the master data library as a process tag type. The name of the CFC chart is the type of process tag.

10. First you have to open the chart. (→ Open Chart)


Process tags: Assign/Create Import File - PCS7_SCE_Lib\Process tag types\\ReactorDeliveryValve
2 (2)
Create File Template...
Open File
Other File ...
Back
Finish
Open Chart
Print...
Cancel
Help

Which import file do you want to assign to the process tag type?

Import file: < no import file assigned >

Undefined I/O points in import file:

P...	Column title

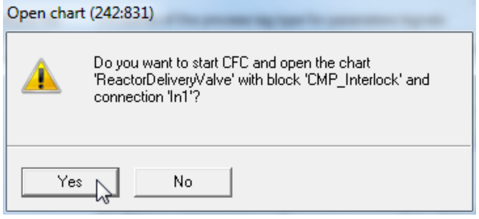
I/O points of the process tag type for parameters/signals:

	P...	Column title	Importing	Process tag connector
1	P	CMP_Interlock.In1	☑	CMP_Interlock.In1
2	S	FbkClse_A1T2X001....	☑	FbkClse_A1T2X001.PV_In
3	S	FbkOpen_A1T2X001....	☑	FbkOpen_A1T2X001.PV_Ir
4	S	Out_A1T2X001.PV_...	☑	Out_A1T2X001.PV_Out
5	P	Permit_In01	☑	Permit_In01

Messages of the process tag type:

Column title	Importing	Ch...	Block	I/O name	Sub

11. Confirm the message that follows. (→ Yes)



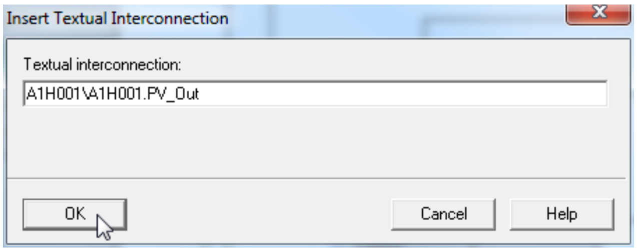
Open chart (242:831)

Do you want to start CFC and open the chart 'ReactorDeliveryValve' with block 'CMP_Interlock' and connection 'In1'?

12. You can see that all cross-chart connections are set up as textual interconnections, and all input and output signals with their symbolic names. The chart can now be closed again. (→ Close)

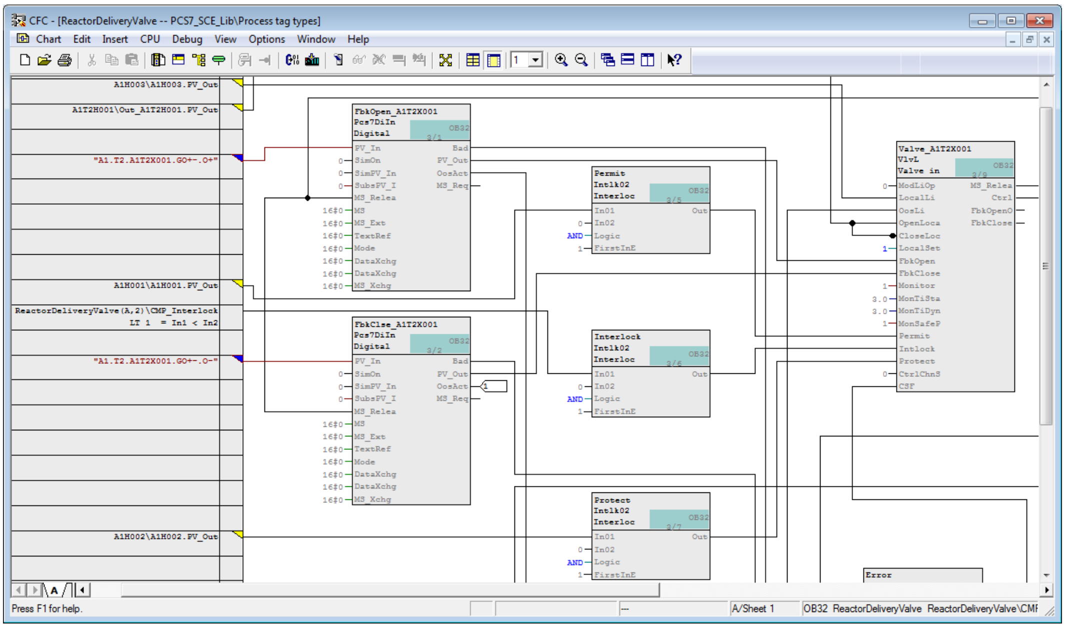
Note: The textual interconnection A1H001\A1H001.PV_Out is structured as follows:

A1H001	Name of CFCs
\	Separator
A1H001	Name of block in the CFC
.	Separator
PV_Out	I/O of the block that is to be connected

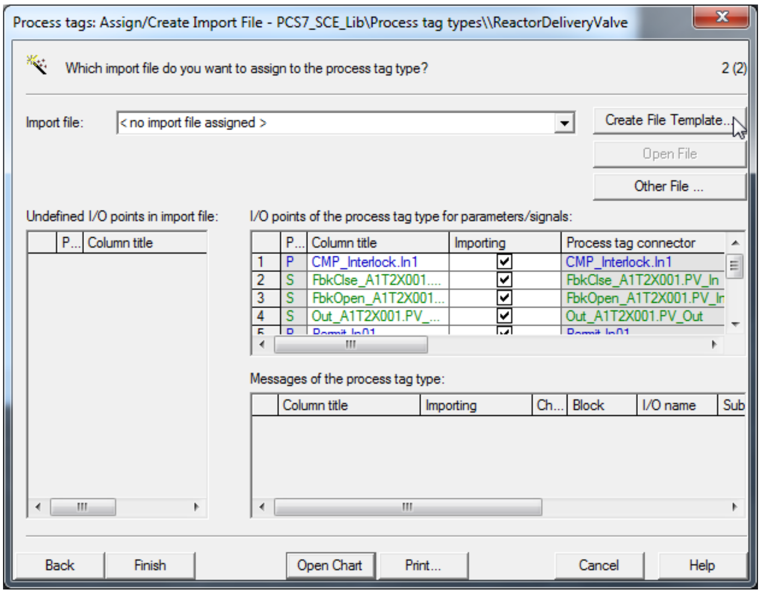


Insert Textual Interconnection

Textual interconnection: A1H001\A1H001.PV_Out



13. Next, create a new file template. (→ Create File Template…)



Process tags: Assign/Create Import File - PCS7_SCE_Lib\Process tag types\\ReactorDeliveryValve

Which import file do you want to assign to the process tag type? 2 (2)

Import file: < no import file assigned >

Undefined I/O points in import file:

P...	Column title

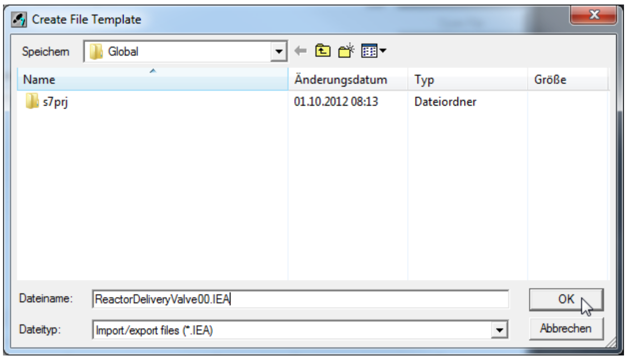
I/O points of the process tag type for parameters/signals:

	P...	Column title	Importing	Process tag connector
1	P	CMP_Interlock.In1	☑	CMP_Interlock.In1
2	S	FbkClse_A1T2X001....	☑	FbkClse_A1T2X001.PV_In
3	S	FbkOpen_A1T2X001...	☑	FbkOpen_A1T2X001.PV_Ir
4	S	Out_A1T2X001.PV_...	☑	Out_A1T2X001.PV_Out
5	P	Permit_In01	☑	Permit_In01

Messages of the process tag type:

Column title	Importing	Ch...	Block	I/O name	Sub

14. To the import file we assign the name ReactorDeliveryValve00.IEA and select a memory location. (→ OK)



Create File Template

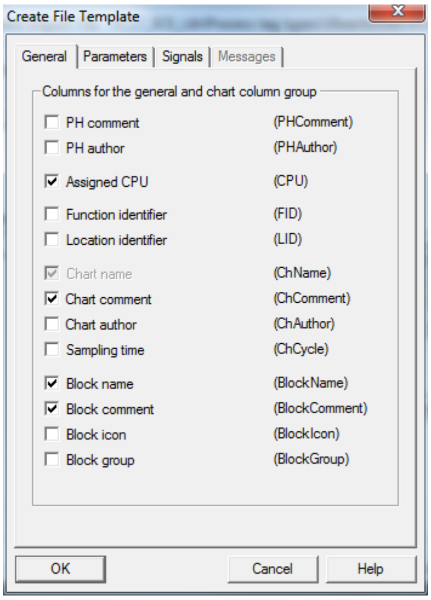
Speichern: Global

Name	Änderungsdatum	Typ	Größe
s7prj	01.10.2012 08:13	Dateiordner	

Dateiname: ReactorDeliveryValve00.IEA

Dateityp: Import/export files (*.IEA)

15. Next we select the general columns that are to be displayed in the import file. (→ General → Assigned CPU → Chart comment → Block name → Block comment)

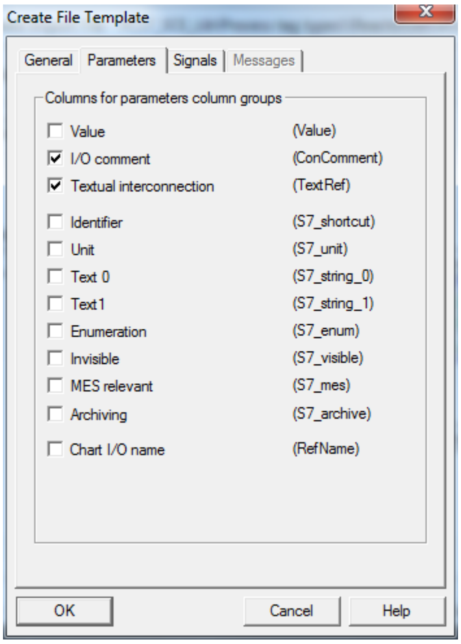


Create File Template

Columns for the general and chart column group

□ PH comment	(PHComment)
□ PH author	(PHAuthor)
☑ Assigned CPU	(CPU)
□ Function identifier	(FID)
□ Location identifier	(LID)
☑ Chart name	(ChName)
☑ Chart comment	(ChComment)
□ Chart author	(ChAuthor)
□ Sampling time	(ChCycle)
☑ Block name	(BlockName)
☑ Block comment	(BlockComment)
□ Block icon	(BlockIcon)
□ Block group	(BlockGroup)

16. Then we select the columns that are to be displayed for the parameters and the signals in the import file. (→ Parameters → I/O comment→ Textual interconnection → Signals → I/O comment→ Symbol name → OK)

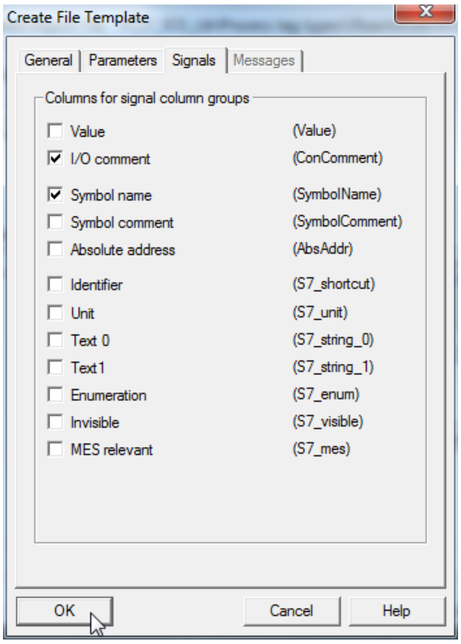


Create File Template

General | Parameters | Signals | Messages

Columns for parameters column groups

□ Value	(Value)
☑ I/O comment	(ConComment)
☑ Textual interconnection	(TextRef)
□ Identifier	(S7_shortcut)
□ Unit	(S7_unit)
□ Text 0	(S7_string_0)
□ Text 1	(S7_string_1)
□ Enumeration	(S7_enum)
□ Invisible	(S7_visible)
□ MES relevant	(S7_mes)
□ Archiving	(S7_archive)
□ Chart I/O name	(RefName)



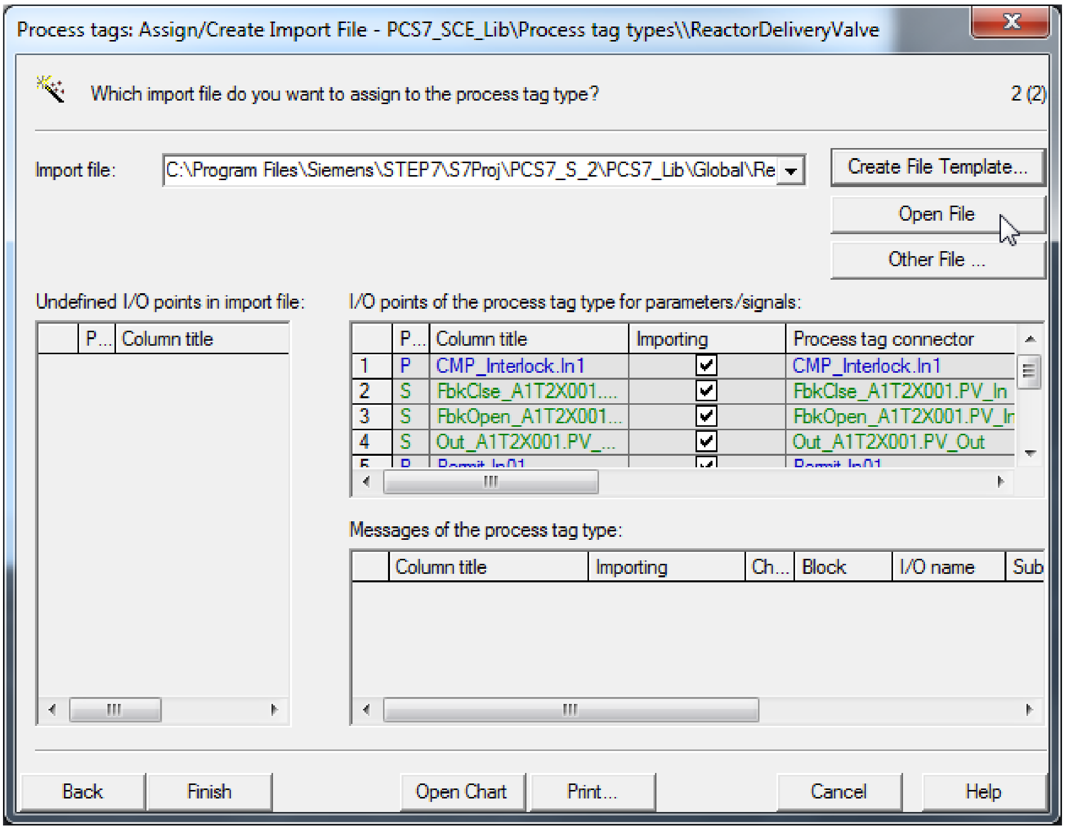
Create File Template

General | Parameters | Signals | Messages

Columns for signal column groups

□ Value	(Value)
☑ I/O comment	(ConComment)
☑ Symbol name	(SymbolName)
□ Symbol comment	(SymbolComment)
□ Absolute address	(AbsAddr)
□ Identifier	(S7_shortcut)
□ Unit	(S7_unit)
□ Text 0	(S7_string_0)
□ Text 1	(S7_string_1)
□ Enumeration	(S7_enum)
□ Invisible	(S7_visible)
□ MES relevant	(S7_mes)

17. The import file created in this way is then opened. (→ Open File…)



Process tags: Assign/Create Import File - PCS7_SCE_Lib\Process tag types\\ReactorDeliveryValve

Which import file do you want to assign to the process tag type? 2 (2)

Import file: C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\Re

Undefined I/O points in import file:

	P...	Column title

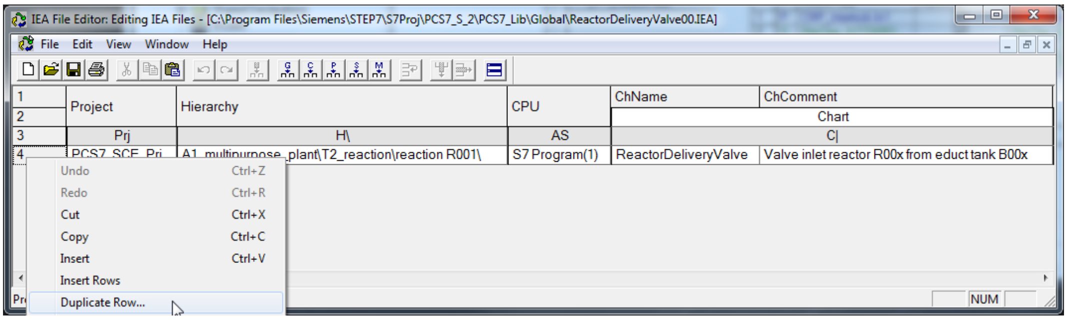
I/O points of the process tag type for parameters/signals:

	P...	Column title	Importing	Process tag connector
1	P	CMP_Interlock.In1	☑	CMP_Interlock.In1
2	S	FbkClse_A1T2X001....	☑	FbkClse_A1T2X001.PV_In
3	S	FbkOpen_A1T2X001...	☑	FbkOpen_A1T2X001.PV_Ir
4	S	Out_A1T2X001.PV_...	☑	Out_A1T2X001.PV_Out
5	P	Permit_In01	☑	Permit_In01

Messages of the process tag type:

	Column title	Importing	Ch...	Block	I/O name	Sub

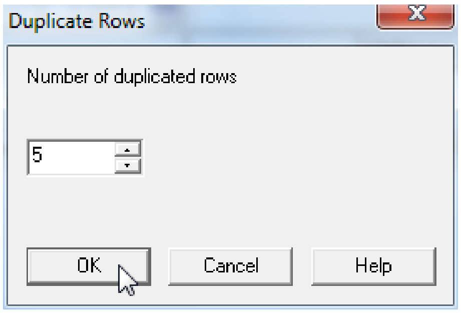
18. Now, duplicate the first row by selecting, after a right click on the first row, the option “Duplicate row…”. (→ Duplicate Row…)



IEA File Editor: Editing IEA Files - [C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\ReactorDeliveryValve00.IEA]

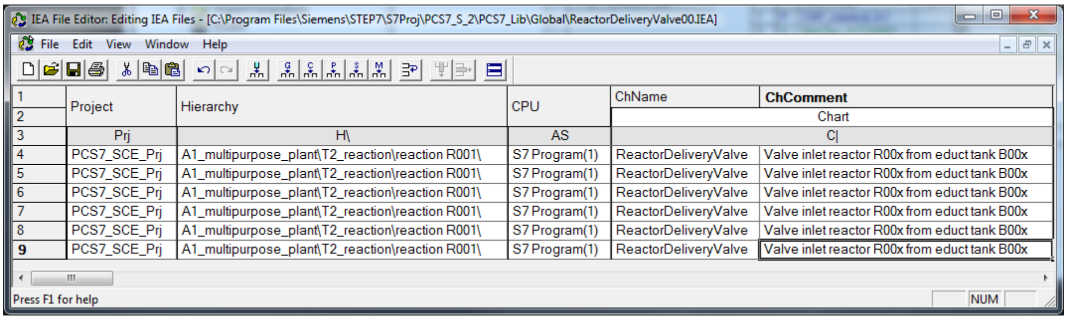
1	Project	Hierarchy	CPU	ChName	ChComment
2				Chart	
3	Prj	H\	AS	C|	
4	PCS7_SCE_Prj	A1_multipurpose_plant\T2_reaction\reaction R001\	S7 Program(1)	ReactorDeliveryValve	Valve inlet reactor R00x from educt tank B00x

19. In the window that now opens, enter the number of rows. In this case there are 5, because a total of 6 valve inlets exist for the reactors that are to be edited/created using this process tag type. (→ 5 → OK)



Duplicate Rows

Number of duplicated rows: 5

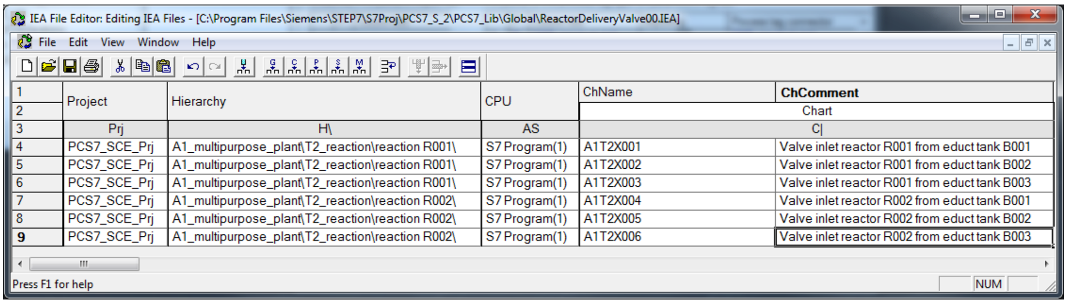


IEA File Editor: Editing IEA Files - [C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\ReactorDeliveryValve00.IEA]

1	Project	Hierarchy	CPU	ChName	**ChComment**
2				Chart	
3	Prj	H\	AS	C|	
4	PCS7_SCE_Prj	A1_multipurpose_plant\T2_reaction\reaction R001\	S7 Program(1)	ReactorDeliveryValve	Valve inlet reactor R00x from educt tank B00x
5	PCS7_SCE_Prj	A1_multipurpose_plant\T2_reaction\reaction R001\	S7 Program(1)	ReactorDeliveryValve	Valve inlet reactor R00x from educt tank B00x
6	PCS7_SCE_Prj	A1_multipurpose_plant\T2_reaction\reaction R001\	S7 Program(1)	ReactorDeliveryValve	Valve inlet reactor R00x from educt tank B00x
7	PCS7_SCE_Prj	A1_multipurpose_plant\T2_reaction\reaction R001\	S7 Program(1)	ReactorDeliveryValve	Valve inlet reactor R00x from educt tank B00x
8	PCS7_SCE_Prj	A1_multipurpose_plant\T2_reaction\reaction R001\	S7 Program(1)	ReactorDeliveryValve	Valve inlet reactor R00x from educt tank B00x
9	PCS7_SCE_Prj	A1_multipurpose_plant\T2_reaction\reaction R001\	S7 Program(1)	ReactorDeliveryValve	Valve inlet reactor R00x from educt tank B00x

Press F1 for help

20. In the duplicated rows, we now enter the specific properties for each valve. Start with the hierarchy, the ChName and ChComment.

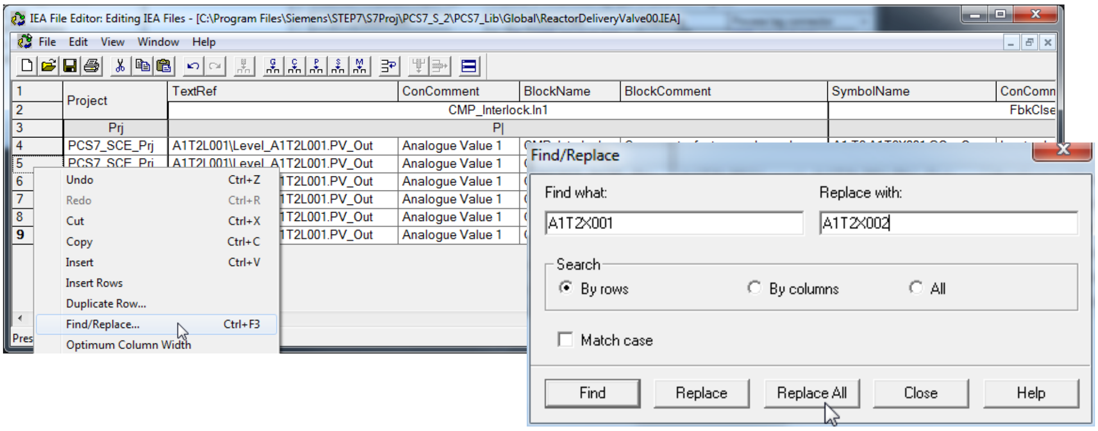


IEA File Editor: Editing IEA Files - [C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\ReactorDeliveryValve00.IEA]

1	Project	Hierarchy	CPU	ChName	**ChComment**
2				Chart	
3	Prj	H\	AS	C|	
4	PCS7_SCE_Prj	A1_multipurpose_plant\T2_reaction\reaction R001\	S7 Program(1)	A1T2X001	Valve inlet reactor R001 from educt tank B001
5	PCS7_SCE_Prj	A1_multipurpose_plant\T2_reaction\reaction R001\	S7 Program(1)	A1T2X002	Valve inlet reactor R001 from educt tank B002
6	PCS7_SCE_Prj	A1_multipurpose_plant\T2_reaction\reaction R001\	S7 Program(1)	A1T2X003	Valve inlet reactor R001 from educt tank B003
7	PCS7_SCE_Prj	A1_multipurpose_plant\T2_reaction\reaction R002\	S7 Program(1)	A1T2X004	Valve inlet reactor R002 from educt tank B001
8	PCS7_SCE_Prj	A1_multipurpose_plant\T2_reaction\reaction R002\	S7 Program(1)	A1T2X005	Valve inlet reactor R002 from educt tank B002
9	PCS7_SCE_Prj	A1_multipurpose_plant\T2_reaction\reaction R002\	S7 Program(1)	A1T2X006	Valve inlet reactor R002 from educt tank B003

Press F1 for help

21. Next, we have to set the correct parameters and signals for each row. This can be speeded up by using the row by row Find/Replace. In row 2, for example, we can replace ‘A1T2X001‘ with ‘A1T2X002‘.



IEA File Editor: Editing IEA Files - [C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\ReactorDeliveryValve00.IEA]

1	Project	TextRef	ConComment	BlockName	BlockComment	SymbolName	ConComm
2		CMP_Interlock.In1				FbkClse	
3	Prj	P|					
4	PCS7_SCE_Prj	A1T2L001\Level_A1T2L001.PV_Out	Analogue Value 1				
5	PCS7_SCE_Prj	A1T2L001\Level_A1T2L001.PV_Out	Analogue Value 1				
6		1T2L001.PV_Out	Analogue Value 1				
7		1T2L001.PV_Out	Analogue Value 1				
8		1T2L001.PV_Out	Analogue Value 1				
9		1T2L001.PV_Out	Analogue Value 1				

Find/Replace

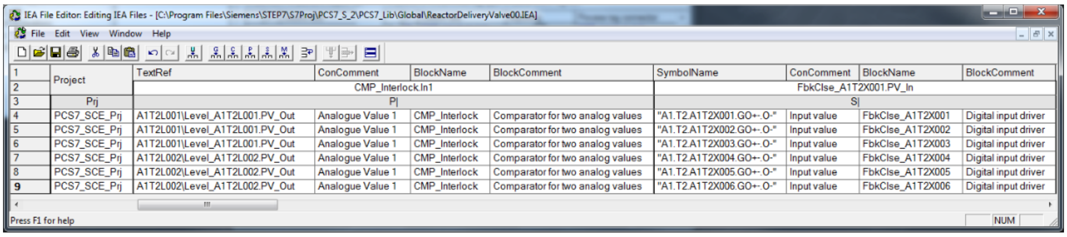
Find what: A1T2X001

Replace with: A1T2X002

Search: ● By rows ○ By columns ○ All

□ Match case

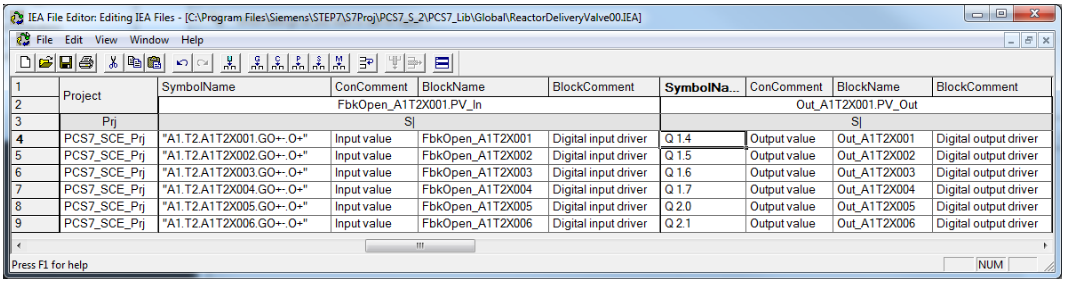
22. Now, edit the rows of the file as shown below. The input signals (SymbolName column) should be placed in quotation marks “”; otherwise, they cannot be located. The output signals (SymbolName column) should be set as absolute address, or the CFCs corrected afterwards.



IEA File Editor: Editing IEA Files - [C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\ReactorDeliveryValve00.IEA]

1	Project	TextRef	ConComment	BlockName	BlockComment	SymbolName	ConComment	BlockName	BlockComment
2		CMP_Interlock.In1				FbkClse_A1T2X001.PV_In			
3	Prj	P|				S|			
4	PCS7_SCE_Prj	A1T2L001\Level_A1T2L001.PV_Out	Analogue Value 1	CMP_Interlock	Comparator for two analog values	"A1.T2.A1T2X001.GO+-.O-"	Input value	FbkClse_A1T2X001	Digital input driver
5	PCS7_SCE_Prj	A1T2L001\Level_A1T2L001.PV_Out	Analogue Value 1	CMP_Interlock	Comparator for two analog values	"A1.T2.A1T2X002.GO+-.O-"	Input value	FbkClse_A1T2X002	Digital input driver
6	PCS7_SCE_Prj	A1T2L001\Level_A1T2L001.PV_Out	Analogue Value 1	CMP_Interlock	Comparator for two analog values	"A1.T2.A1T2X003.GO+-.O-"	Input value	FbkClse_A1T2X003	Digital input driver
7	PCS7_SCE_Prj	A1T2L002\Level_A1T2L002.PV_Out	Analogue Value 1	CMP_Interlock	Comparator for two analog values	"A1.T2.A1T2X004.GO+-.O-"	Input value	FbkClse_A1T2X004	Digital input driver
8	PCS7_SCE_Prj	A1T2L002\Level_A1T2L002.PV_Out	Analogue Value 1	CMP_Interlock	Comparator for two analog values	"A1.T2.A1T2X005.GO+-.O-"	Input value	FbkClse_A1T2X005	Digital input driver
9	PCS7_SCE_Prj	A1T2L002\Level_A1T2L002.PV_Out	Analogue Value 1	CMP_Interlock	Comparator for two analog values	"A1.T2.A1T2X006.GO+-.O-"	Input value	FbkClse_A1T2X006	Digital input driver

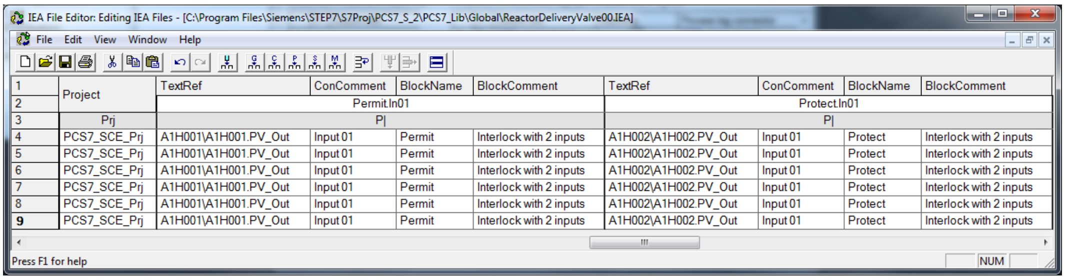
Press F1 for help



IEA File Editor: Editing IEA Files - [C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\ReactorDeliveryValve00.IEA]

1	Project	SymbolName	ConComment	BlockName	BlockComment	SymbolNa...	ConComment	BlockName	BlockComment
2		FbkOpen_A1T2X001.PV_In				Out_A1T2X001.PV_Out			
3	Prj	S|				S|			
4	PCS7_SCE_Prj	"A1.T2.A1T2X001.GO+-.O+"	Input value	FbkOpen_A1T2X001	Digital input driver	Q 1.4	Output value	Out_A1T2X001	Digital output driver
5	PCS7_SCE_Prj	"A1.T2.A1T2X002.GO+-.O+"	Input value	FbkOpen_A1T2X002	Digital input driver	Q 1.5	Output value	Out_A1T2X002	Digital output driver
6	PCS7_SCE_Prj	"A1.T2.A1T2X003.GO+-.O+"	Input value	FbkOpen_A1T2X003	Digital input driver	Q 1.6	Output value	Out_A1T2X003	Digital output driver
7	PCS7_SCE_Prj	"A1.T2.A1T2X004.GO+-.O+"	Input value	FbkOpen_A1T2X004	Digital input driver	Q 1.7	Output value	Out_A1T2X004	Digital output driver
8	PCS7_SCE_Prj	"A1.T2.A1T2X005.GO+-.O+"	Input value	FbkOpen_A1T2X005	Digital input driver	Q 2.0	Output value	Out_A1T2X005	Digital output driver
9	PCS7_SCE_Prj	"A1.T2.A1T2X006.GO+-.O+"	Input value	FbkOpen_A1T2X006	Digital input driver	Q 2.1	Output value	Out_A1T2X006	Digital output driver

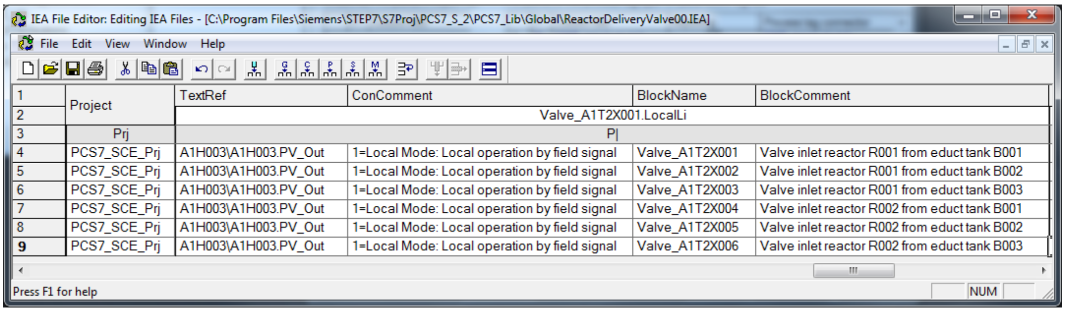
Press F1 for help



IEA File Editor: Editing IEA Files - [C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\ReactorDeliveryValve00.IEA]

1	Project	TextRef	ConComment	BlockName	BlockComment	TextRef	ConComment	BlockName	BlockComment
2		Permit.In01				Protect.In01			
3	Prj	P|				P|			
4	PCS7_SCE_Prj	A1H001\A1H001.PV_Out	Input 01	Permit	Interlock with 2 inputs	A1H002\A1H002.PV_Out	Input 01	Protect	Interlock with 2 inputs
5	PCS7_SCE_Prj	A1H001\A1H001.PV_Out	Input 01	Permit	Interlock with 2 inputs	A1H002\A1H002.PV_Out	Input 01	Protect	Interlock with 2 inputs
6	PCS7_SCE_Prj	A1H001\A1H001.PV_Out	Input 01	Permit	Interlock with 2 inputs	A1H002\A1H002.PV_Out	Input 01	Protect	Interlock with 2 inputs
7	PCS7_SCE_Prj	A1H001\A1H001.PV_Out	Input 01	Permit	Interlock with 2 inputs	A1H002\A1H002.PV_Out	Input 01	Protect	Interlock with 2 inputs
8	PCS7_SCE_Prj	A1H001\A1H001.PV_Out	Input 01	Permit	Interlock with 2 inputs	A1H002\A1H002.PV_Out	Input 01	Protect	Interlock with 2 inputs
9	PCS7_SCE_Prj	A1H001\A1H001.PV_Out	Input 01	Permit	Interlock with 2 inputs	A1H002\A1H002.PV_Out	Input 01	Protect	Interlock with 2 inputs

Press F1 for help

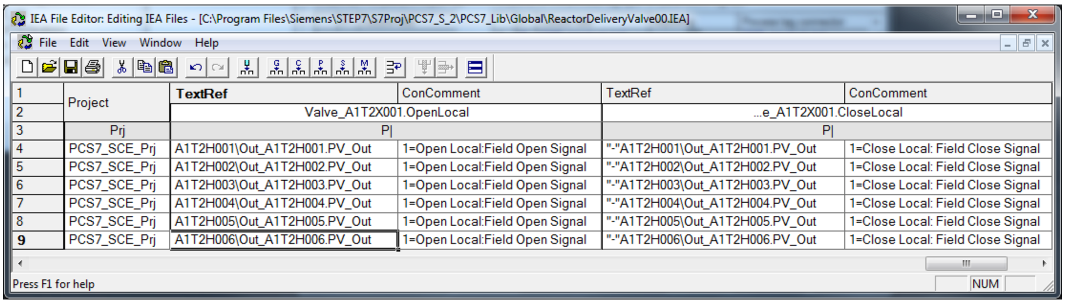


IEA File Editor: Editing IEA Files - [C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\ReactorDeliveryValve00.IEA]

1	Project	TextRef	ConComment	BlockName	BlockComment
2		Valve_A1T2X001.LocalLi			
3	Prj	P|			
4	PCS7_SCE_Prj	A1H003\A1H003.PV_Out	1=Local Mode: Local operation by field signal	Valve_A1T2X001	Valve inlet reactor R001 from educt tank B001
5	PCS7_SCE_Prj	A1H003\A1H003.PV_Out	1=Local Mode: Local operation by field signal	Valve_A1T2X002	Valve inlet reactor R001 from educt tank B002
6	PCS7_SCE_Prj	A1H003\A1H003.PV_Out	1=Local Mode: Local operation by field signal	Valve_A1T2X003	Valve inlet reactor R001 from educt tank B003
7	PCS7_SCE_Prj	A1H003\A1H003.PV_Out	1=Local Mode: Local operation by field signal	Valve_A1T2X004	Valve inlet reactor R002 from educt tank B001
8	PCS7_SCE_Prj	A1H003\A1H003.PV_Out	1=Local Mode: Local operation by field signal	Valve_A1T2X005	Valve inlet reactor R002 from educt tank B002
9	PCS7_SCE_Prj	A1H003\A1H003.PV_Out	1=Local Mode: Local operation by field signal	Valve_A1T2X006	Valve inlet reactor R002 from educt tank B003

Press F1 for help

23. Finally, change the parameter for the manual control as shown here. The character “-“ in front of the textual interconnection means ‘invert‘.



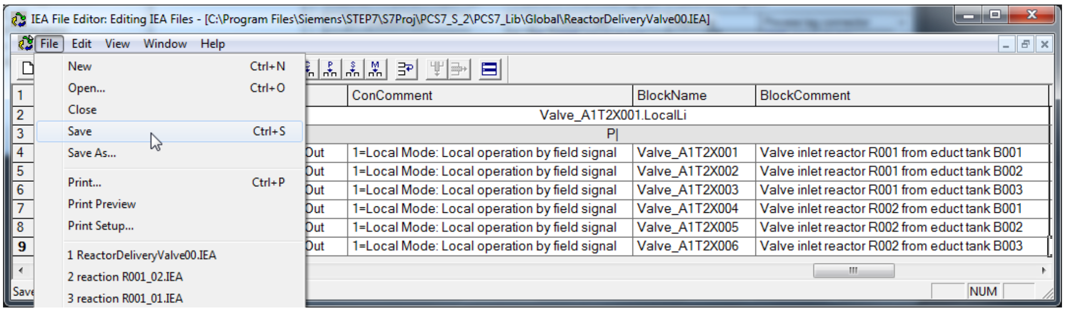
IEA File Editor: Editing IEA Files - [C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\ReactorDeliveryValve00.IEA]

1	Project	**TextRef**	ConComment	TextRef	ConComment
2		Valve_A1T2X001.OpenLocal		...e_A1T2X001.CloseLocal	
3	Prj	P|		P|	
4	PCS7_SCE_Prj	A1T2H001\Out_A1T2H001.PV_Out	1=Open Local:Field Open Signal	"-"A1T2H001\Out_A1T2H001.PV_Out	1=Close Local: Field Close Signal
5	PCS7_SCE_Prj	A1T2H002\Out_A1T2H002.PV_Out	1=Open Local:Field Open Signal	"-"A1T2H002\Out_A1T2H002.PV_Out	1=Close Local: Field Close Signal
6	PCS7_SCE_Prj	A1T2H003\Out_A1T2H003.PV_Out	1=Open Local:Field Open Signal	"-"A1T2H003\Out_A1T2H003.PV_Out	1=Close Local: Field Close Signal
7	PCS7_SCE_Prj	A1T2H004\Out_A1T2H004.PV_Out	1=Open Local:Field Open Signal	"-"A1T2H004\Out_A1T2H004.PV_Out	1=Close Local: Field Close Signal
8	PCS7_SCE_Prj	A1T2H005\Out_A1T2H005.PV_Out	1=Open Local:Field Open Signal	"-"A1T2H005\Out_A1T2H005.PV_Out	1=Close Local: Field Close Signal
9	PCS7_SCE_Prj	A1T2H006\Out_A1T2H006.PV_Out	1=Open Local:Field Open Signal	"-"A1T2H006\Out_A1T2H006.PV_Out	1=Close Local: Field Close Signal

Press F1 for help

NUM

24. After all changes have been made, save the file. (→ File → Save → Close)

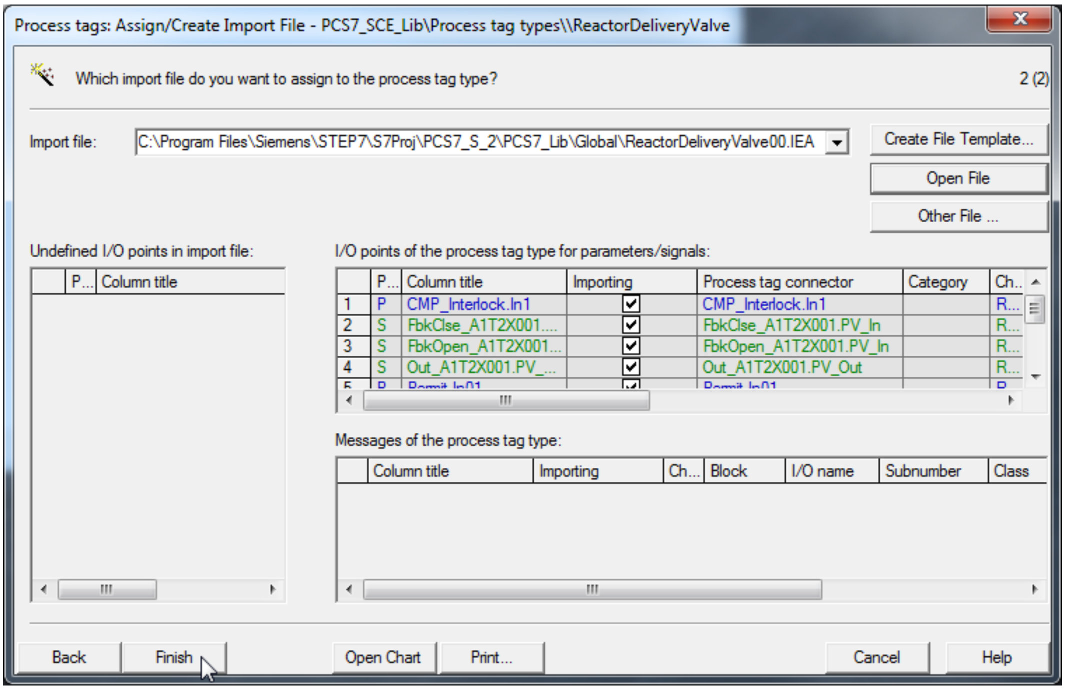


IEA File Editor: Editing IEA Files - [C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\ReactorDeliveryValve00.IEA]

1		ConComment	BlockName	BlockComment
2		Valve_A1T2X001.LocalLi		
3		P|		
4	Out	1=Local Mode: Local operation by field signal	Valve_A1T2X001	Valve inlet reactor R001 from educt tank B001
5	Out	1=Local Mode: Local operation by field signal	Valve_A1T2X002	Valve inlet reactor R001 from educt tank B002
6	Out	1=Local Mode: Local operation by field signal	Valve_A1T2X003	Valve inlet reactor R001 from educt tank B003
7	Out	1=Local Mode: Local operation by field signal	Valve_A1T2X004	Valve inlet reactor R002 from educt tank B001
8	Out	1=Local Mode: Local operation by field signal	Valve_A1T2X005	Valve inlet reactor R002 from educt tank B002
9	Out	1=Local Mode: Local operation by field signal	Valve_A1T2X006	Valve inlet reactor R002 from educt tank B003

25. Creating and assigning the import file is now finished.

(→ Finish)



Process tags: Assign/Create Import File - PCS7_SCE_Lib\Process tag types\\ReactorDeliveryValve

Which import file do you want to assign to the process tag type? 2 (2)

Import file: C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\ReactorDeliveryValve00.IEA

Undefined I/O points in import file:

	P...	Column title

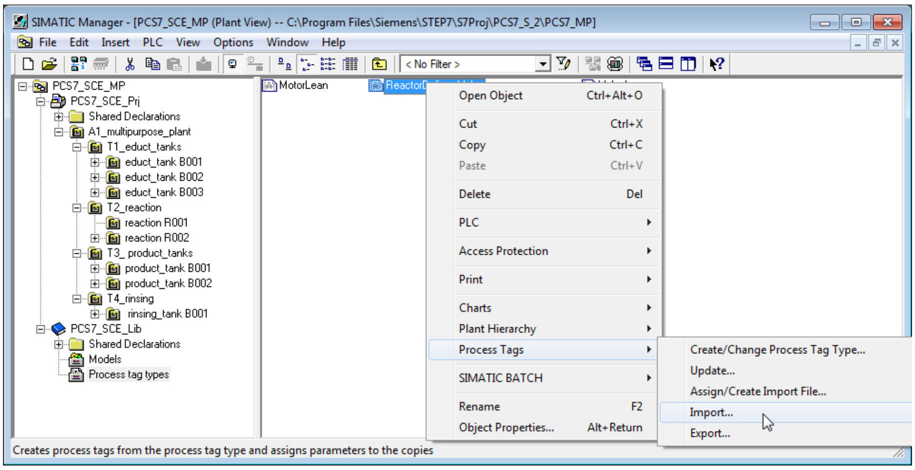
I/O points of the process tag type for parameters/signals:

	P...	Column title	Importing	Process tag connector	Category	Ch..
1	P	CMP_Interlock.In1	☑	CMP_Interlock.In1		R...
2	S	FbkClse_A1T2X001....	☑	FbkClse_A1T2X001.PV_In		R...
3	S	FbkOpen_A1T2X001...	☑	FbkOpen_A1T2X001.PV_In		R...
4	S	Out_A1T2X001.PV_...	☑	Out_A1T2X001.PV_Out		R...

Messages of the process tag type:

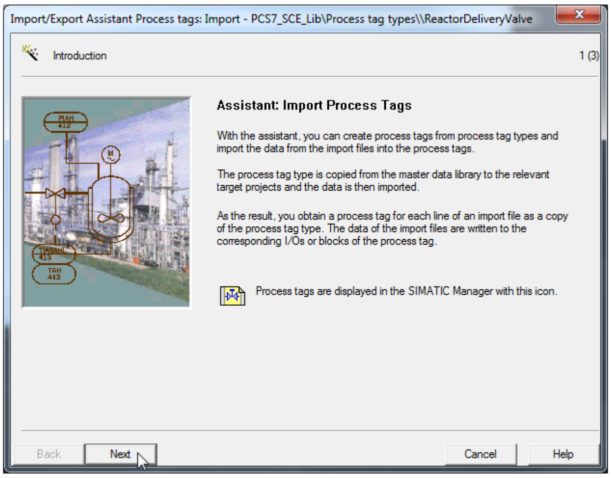
	Column title	Importing	Ch...	Block	I/O name	Subnumber	Class

26. We can now start importing the created process tag type. (→ ReactorDeliveryValve → Process Tags → Import…)



Creates process tags from the process tag type and assigns parameters to the copies

27. The first step of the dialog is confirmed with “Next“. (→ Next)


Import/Export Assistant Process tags: Import - PCS7_SCE_Lib\Process tag types\\ReactorDeliveryValve
Introduction
1 (3)
PIAH 412
M
TIAH 413
TAH 413
Back
Next
Cancel
Help

Assistant: Import Process Tags

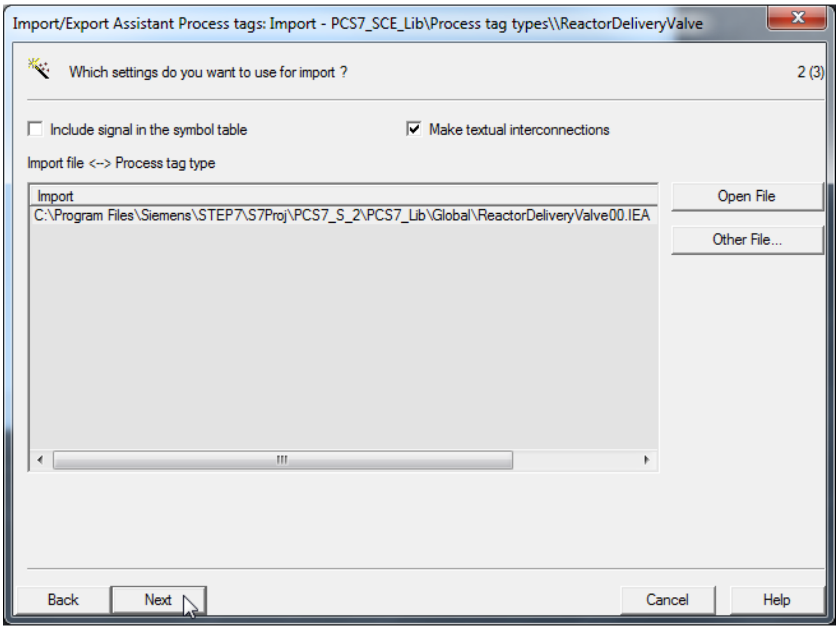
With the assistant, you can create process tags from process tag types and import the data from the import files into the process tags.

The process tag type is copied from the master data library to the relevant target projects and the data is then imported.

As the result, you obtain a process tag for each line of an import file as a copy of the process tag type. The data of the import files are written to the corresponding I/Os or blocks of the process tag.

Process tags are displayed in the SIMATIC Manager with this icon.

28. In the next dialog box, we select the option “Make Textual Interconnections“ and then click on “Next“. (→ Make Textual Interconnections → Next)


Import/Export Assistant Process tags: Import - PCS7_SCE_Lib\Process tag types\\ReactorDeliveryValve
2 (3)
Open File
Other File...
Back
Next
Cancel
Help

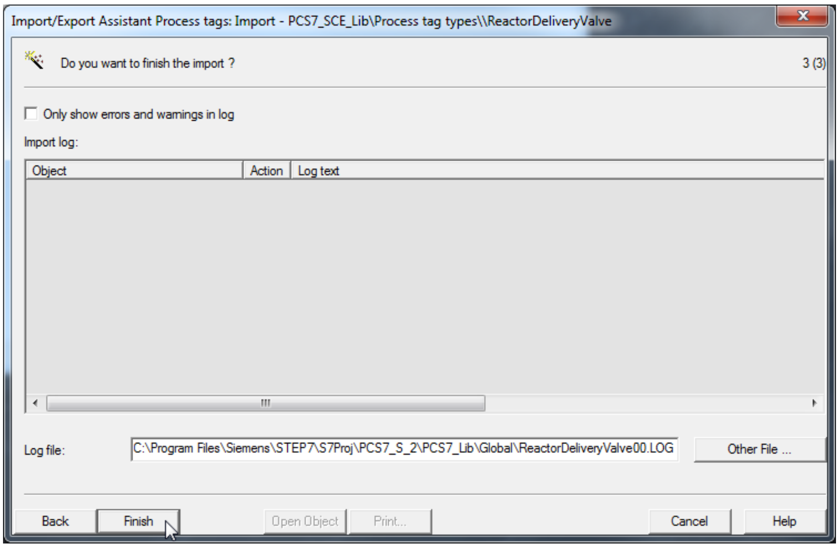
Which settings do you want to use for import ?

☐ Include signal in the symbol table ☑ Make textual interconnections

Import file <--> Process tag type

Import
C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\ReactorDeliveryValve00.IEA

29. We can now start the import by selecting “Finish“. (→ Finish)



Import/Export Assistant Process tags: Import - PCS7_SCE_Lib\Process tag types\\ReactorDeliveryValve

Do you want to finish the import ? 3 (3)

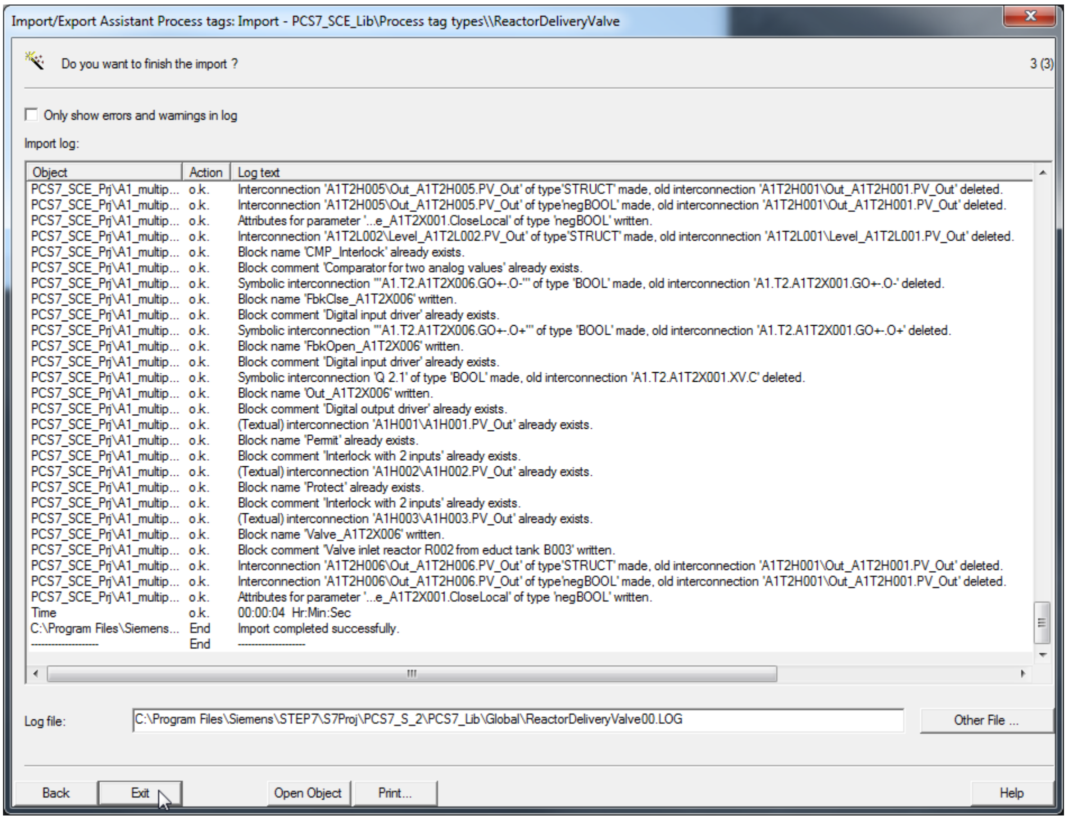
□ Only show errors and warnings in log

Import log:

Log file: C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\ReactorDeliveryValve00.LOG

30. After this process is completed, the log is displayed.

(→ Exit)



Import/Export Assistant Process tags: Import - PCS7_SCE_Lib\Process tag types\\ReactorDeliveryValve

Do you want to finish the import ? 3 (3)

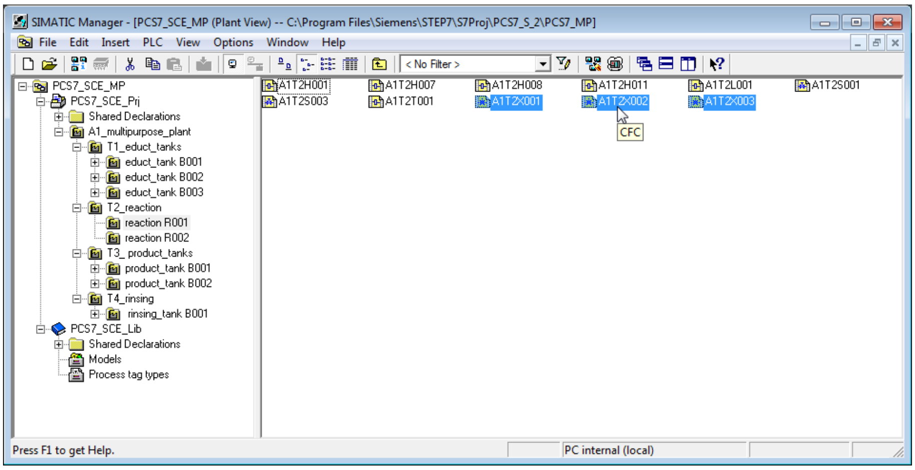
□ Only show errors and warnings in log

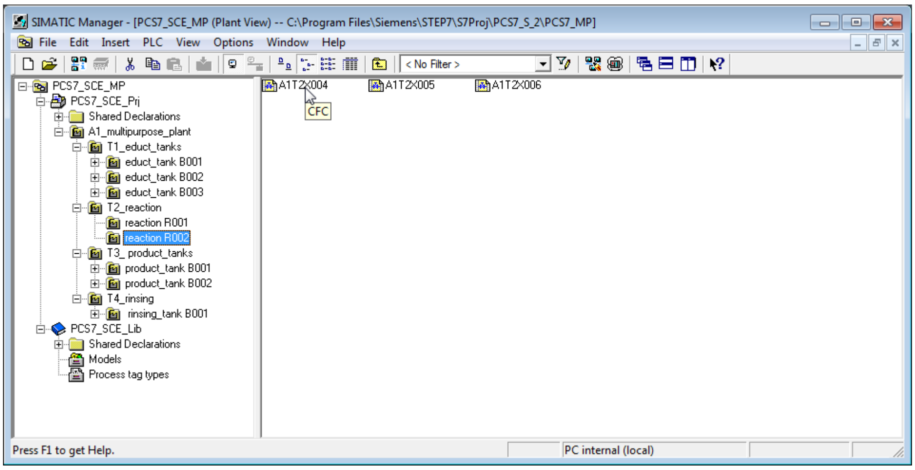
Import log:

```
Object                     Action  Log text
PCS7_SCE_Prj\A1_multip...  o.k.    Interconnection 'A1T2H005\Out_A1T2H005.PV_Out' of type'STRUCT' made, old interconnection 'A1T2H001\Out_A1T2H001.PV_Out' deleted.
PCS7_SCE_Prj\A1_multip...  o.k.    Interconnection 'A1T2H005\Out_A1T2H005.PV_Out' of type'negBOOL' made, old interconnection 'A1T2H001\Out_A1T2H001.PV_Out' deleted.
PCS7_SCE_Prj\A1_multip...  o.k.    Attributes for parameter '...e_A1T2X001.CloseLocal' of type 'negBOOL' written.
PCS7_SCE_Prj\A1_multip...  o.k.    Interconnection 'A1T2L002\Level_A1T2L002.PV_Out' of type'STRUCT' made, old interconnection 'A1T2L001\Level_A1T2L001.PV_Out' deleted.
PCS7_SCE_Prj\A1_multip...  o.k.    Block name 'CMP_Interlock' already exists.
PCS7_SCE_Prj\A1_multip...  o.k.    Block comment 'Comparator for two analog values' already exists.
PCS7_SCE_Prj\A1_multip...  o.k.    Symbolic interconnection '"A1.T2.A1T2X006.GO+-.O-"' of type 'BOOL' made, old interconnection 'A1.T2.A1T2X001.GO+-.O-' deleted.
PCS7_SCE_Prj\A1_multip...  o.k.    Block name 'FbkClse_A1T2X006' written.
PCS7_SCE_Prj\A1_multip...  o.k.    Block comment 'Digital input driver' already exists.
PCS7_SCE_Prj\A1_multip...  o.k.    Symbolic interconnection '"A1.T2.A1T2X006.GO+-.O+"' of type 'BOOL' made, old interconnection 'A1.T2.A1T2X001.GO+-.O+' deleted.
PCS7_SCE_Prj\A1_multip...  o.k.    Block name 'FbkOpen_A1T2X006' written.
PCS7_SCE_Prj\A1_multip...  o.k.    Block comment 'Digital input driver' already exists.
PCS7_SCE_Prj\A1_multip...  o.k.    Symbolic interconnection 'Q 2.1' of type 'BOOL' made, old interconnection 'A1.T2.A1T2X001.XV.C' deleted.
PCS7_SCE_Prj\A1_multip...  o.k.    Block name 'Out_A1T2X006' written.
PCS7_SCE_Prj\A1_multip...  o.k.    Block comment 'Digital output driver' already exists.
PCS7_SCE_Prj\A1_multip...  o.k.    (Textual) interconnection 'A1H001\A1H001.PV_Out' already exists.
PCS7_SCE_Prj\A1_multip...  o.k.    Block name 'Permit' already exists.
PCS7_SCE_Prj\A1_multip...  o.k.    Block comment 'Interlock with 2 inputs' already exists.
PCS7_SCE_Prj\A1_multip...  o.k.    (Textual) interconnection 'A1H002\A1H002.PV_Out' already exists.
PCS7_SCE_Prj\A1_multip...  o.k.    Block name 'Protect' already exists.
PCS7_SCE_Prj\A1_multip...  o.k.    Block comment 'Interlock with 2 inputs' already exists.
PCS7_SCE_Prj\A1_multip...  o.k.    (Textual) interconnection 'A1H003\A1H003.PV_Out' already exists.
PCS7_SCE_Prj\A1_multip...  o.k.    Block name 'Valve_A1T2X006' written.
PCS7_SCE_Prj\A1_multip...  o.k.    Block comment 'Valve inlet reactor R002 from educt tank B003' written.
PCS7_SCE_Prj\A1_multip...  o.k.    Interconnection 'A1T2H006\Out_A1T2H006.PV_Out' of type'STRUCT' made, old interconnection 'A1T2H001\Out_A1T2H001.PV_Out' deleted.
PCS7_SCE_Prj\A1_multip...  o.k.    Interconnection 'A1T2H006\Out_A1T2H006.PV_Out' of type'negBOOL' made, old interconnection 'A1T2H001\Out_A1T2H001.PV_Out' deleted.
PCS7_SCE_Prj\A1_multip...  o.k.    Attributes for parameter '...e_A1T2X001.CloseLocal' of type 'negBOOL' written.
Time                       o.k.    00:00:04  Hr:Min:Sec
C:\Program Files\Siemens...  End   Import completed successfully.
-------------------        End     -------------------
```

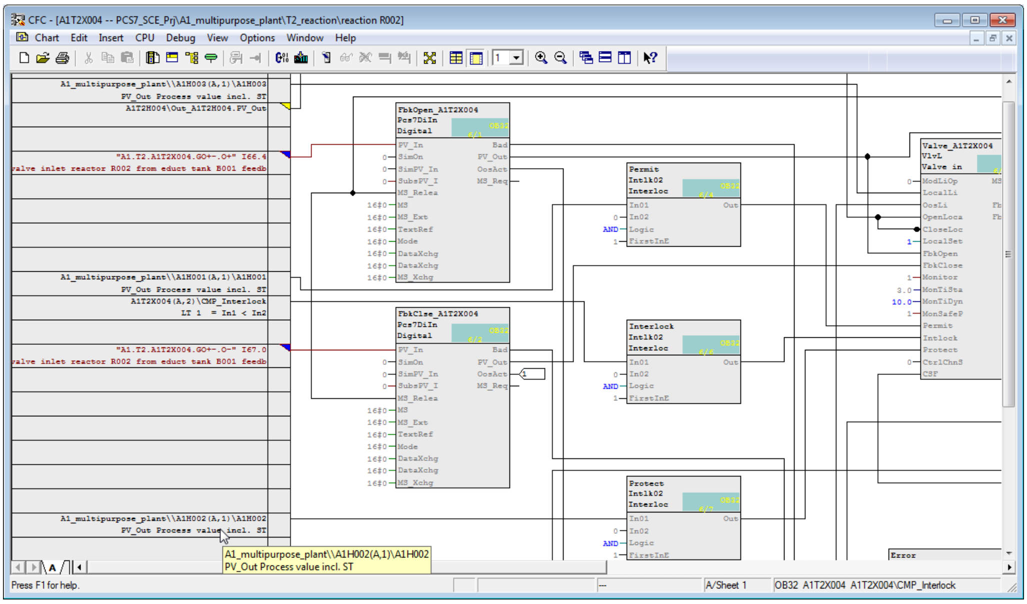
Log file: C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\ReactorDeliveryValve00.LOG

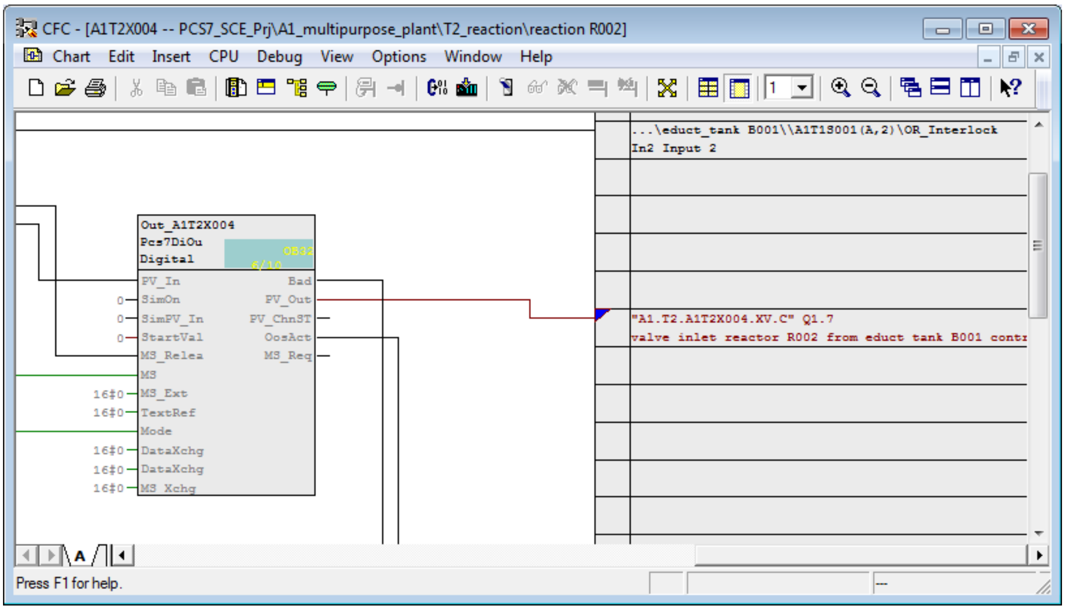
31. The newly imported CFCs are now in the hierarchy level Reactor R001. In this manner, a large number of charts can be set up quickly and effectively. The interesting aspect of this method is that the changes in the charts are not performed individually but by means of the import file in table form. Nevertheless, each individual chart can be viewed with the CFC editor afterwards.

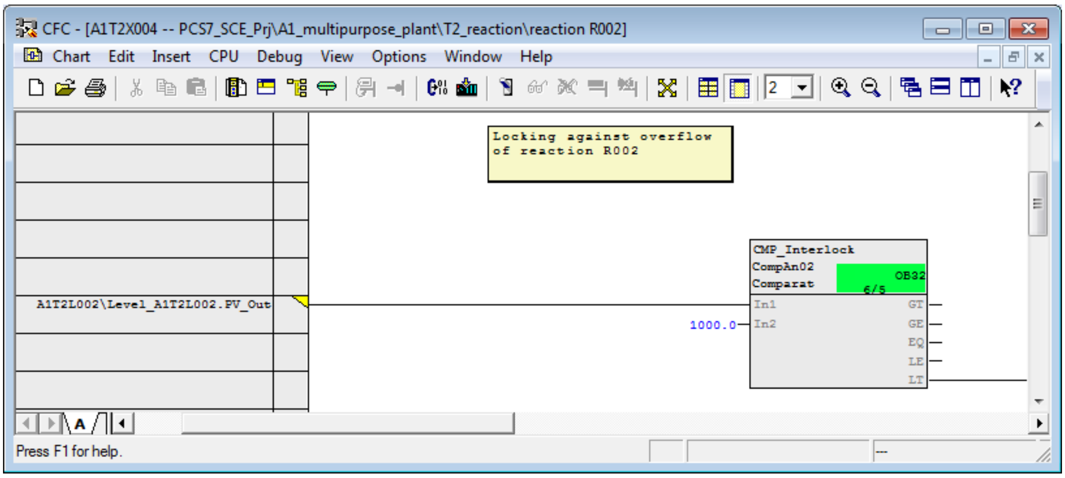




32. Now open the newly created CFCs and check the input signals, the output signals and the block names. Textual interconnections for CFCs that already exist should be closed.

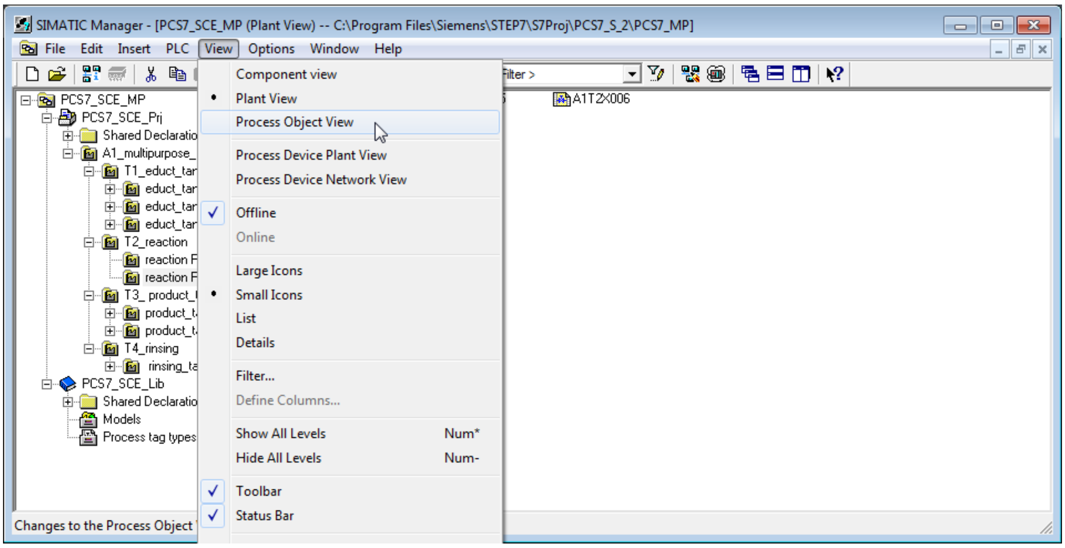

CFC - [A1T2X004 -- PCS7_SCE_Prj\A1_multipurpose_plant\T2_reaction\reaction R002]
Chart Edit Insert CPU Debug View Options Window Help
A1_multipurpose_plant\\A1H003(A,1)\A1H003
PV_Out Process value incl. ST
A1T2H006\Out_A1T2H006.PV_Out
"A1.T2.A1T2X004.GO+-.O+" I66.4
valve inlet reactor R002 from educt tank B001 feedb
A1_multipurpose_plant\\A1H001(A,1)\A1H001
PV_Out Process value incl. ST
A1T2X004(A,2)\CMP_Interlock
LT 1 = In1 < In2
"A1.T2.A1T2X004.GO+-.O-" I67.0
valve inlet reactor R002 from educt tank B001 feedb
A1_multipurpose_plant\\A1H002(A,1)\A1H002
PV_Out Process value incl. ST
FbkOpen_A1T2X004
Pcs7DiIn
Digital
FbkClse_A1T2X004
Pcs7DiIn
Digital
Permit
Intlk02
Interloc
Interlock
Intlk02
Interloc
Protect
Intlk02
Interloc
Valve_A1T2X004
VlvL
Valve in
OB32
A1_multipurpose_plant\\A1H002(A,1)\A1H002
PV_Out Process value incl. ST
Error
Press F1 for help.
A/Sheet 1
OB32 A1T2X004 A1T2X004\CMP_Interlock


CFC - [A1T2X004 -- PCS7_SCE_Prj\A1_multipurpose_plant\T2_reaction\reaction R002]
Chart Edit Insert CPU Debug View Options Window Help
...\educt_tank B001\\A1T1S001(A,2)\OR_Interlock
In2 Input 2
Out_A1T2X004
Pcs7DiOu
Digital
OB32
6/10
PV_In
SimOn
SimPV_In
StartVal
MS_Relea
MS
MS_Ext
TextRef
Mode
DataXchg
DataXchg
MS_Xchg
Bad
PV_Out
PV_ChnST
OosAct
MS_Req
16#0
"A1.T2.A1T2X004.XV.C" Q1.7
valve inlet reactor R002 from educt tank B001 contr
Press F1 for help.

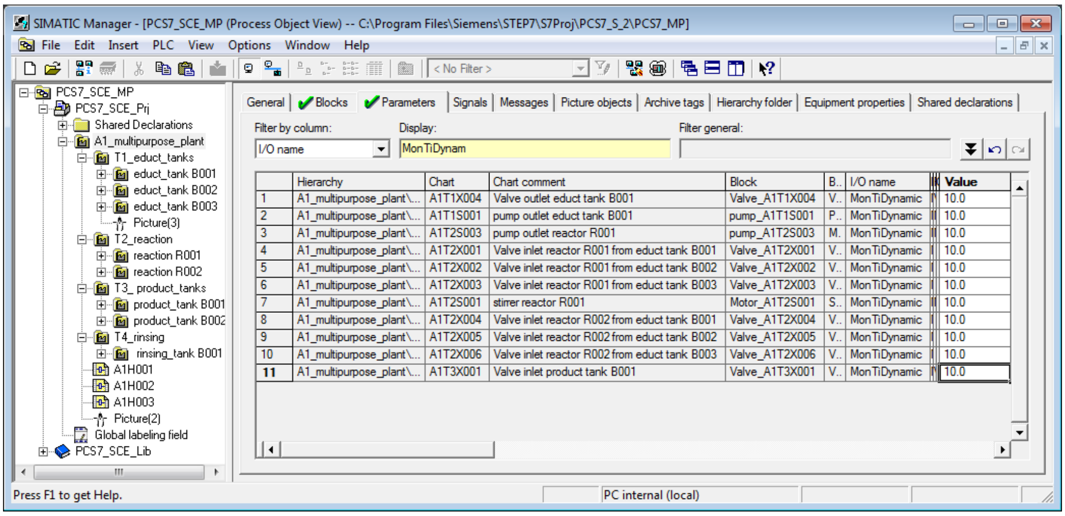

CFC - [A1T2X004 -- PCS7_SCE_Prj\A1_multipurpose_plant\T2_reaction\reaction R002]
Chart Edit Insert CPU Debug View Options Window Help
Locking against overflow of reaction R002
A1T2L002\Level_A1T2L002.PV_Out
CMP_Interlock
CompAn02
Comparat
OB32
6/5
In1
In2
1000.0
GT
GE
EQ
LE
LT
Press F1 for help.

33. Another method for making changes in several charts that are already set up without opening them is the process object view.

(→ View→ Process Object View)



34. By setting a filter for the I/O ‘MonTiDynamic‘ in ‘Parameter‘ tab, the value of a parameter can be changed for several CFCs, for example. Only the elements are always displayed that are located below the hierarchy level selected in the left side of the window and that correspond to the filter criteria. Here, change the value for all displayed I/Os to ‘10.0‘. (→ A1_multi_purpose plant → I/O name → MonTiDynam → Value → 10.0)



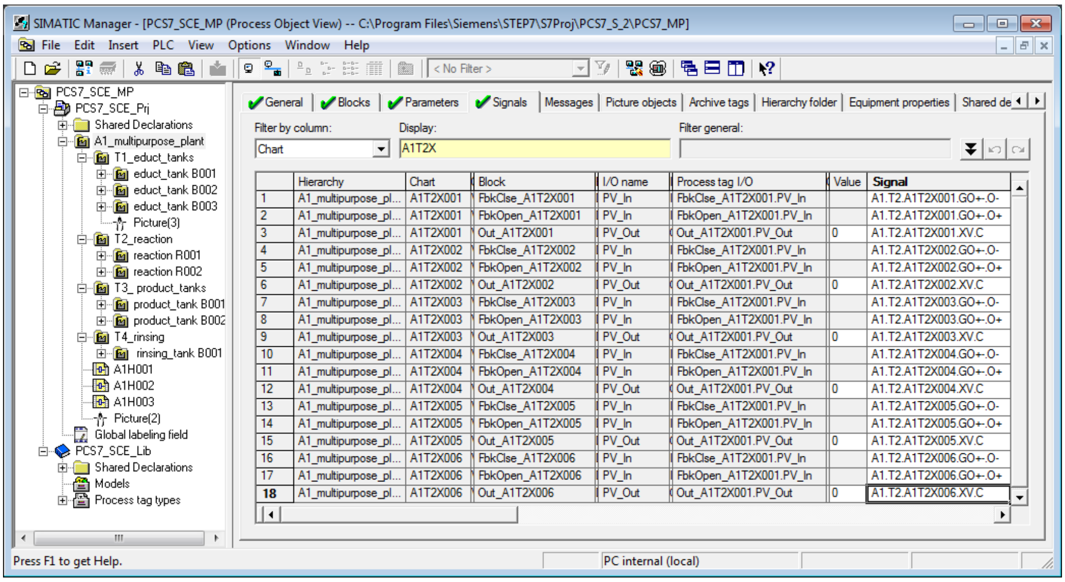
Filter by column: I/O name

Display: MonTiDynam

Filter general:

	Hierarchy	Chart	Chart comment	Block	B..	I/O name	Value
1	A1_multipurpose_plant\...	A1T1X004	Valve outlet educt tank B001	Valve_A1T1X004	V..	MonTiDynamic	10.0
2	A1_multipurpose_plant\...	A1T1S001	pump outlet educt tank B001	pump_A1T1S001	P..	MonTiDynamic	10.0
3	A1_multipurpose_plant\...	A1T2S003	pump outlet reactor R001	pump_A1T2S003	M.	MonTiDynamic	10.0
4	A1_multipurpose_plant\...	A1T2X001	Valve inlet reactor R001 from educt tank B001	Valve_A1T2X001	V..	MonTiDynamic	10.0
5	A1_multipurpose_plant\...	A1T2X002	Valve inlet reactor R001 from educt tank B002	Valve_A1T2X002	V..	MonTiDynamic	10.0
6	A1_multipurpose_plant\...	A1T2X003	Valve inlet reactor R001 from educt tank B003	Valve_A1T2X003	V..	MonTiDynamic	10.0
7	A1_multipurpose_plant\...	A1T2S001	stirrer reactor R001	Motor_A1T2S001	S..	MonTiDynamic	10.0
8	A1_multipurpose_plant\...	A1T2X004	Valve inlet reactor R002 from educt tank B001	Valve_A1T2X004	V..	MonTiDynamic	10.0
9	A1_multipurpose_plant\...	A1T2X005	Valve inlet reactor R002 from educt tank B002	Valve_A1T2X005	V..	MonTiDynamic	10.0
10	A1_multipurpose_plant\...	A1T2X006	Valve inlet reactor R002 from educt tank B003	Valve_A1T2X006	V..	MonTiDynamic	10.0
11	A1_multipurpose_plant\...	A1T3X001	Valve inlet product tank B001	Valve_A1T3X001	V..	MonTiDynamic	10.0

35. By utilizing the ‘Parameters‘ or ‘Signals‘ tabs, extensive changes can be made quickly on the CFCs. In this example, however, everything is to remain unchanged, and we are returning to the plant view. (→ View → Plant View).



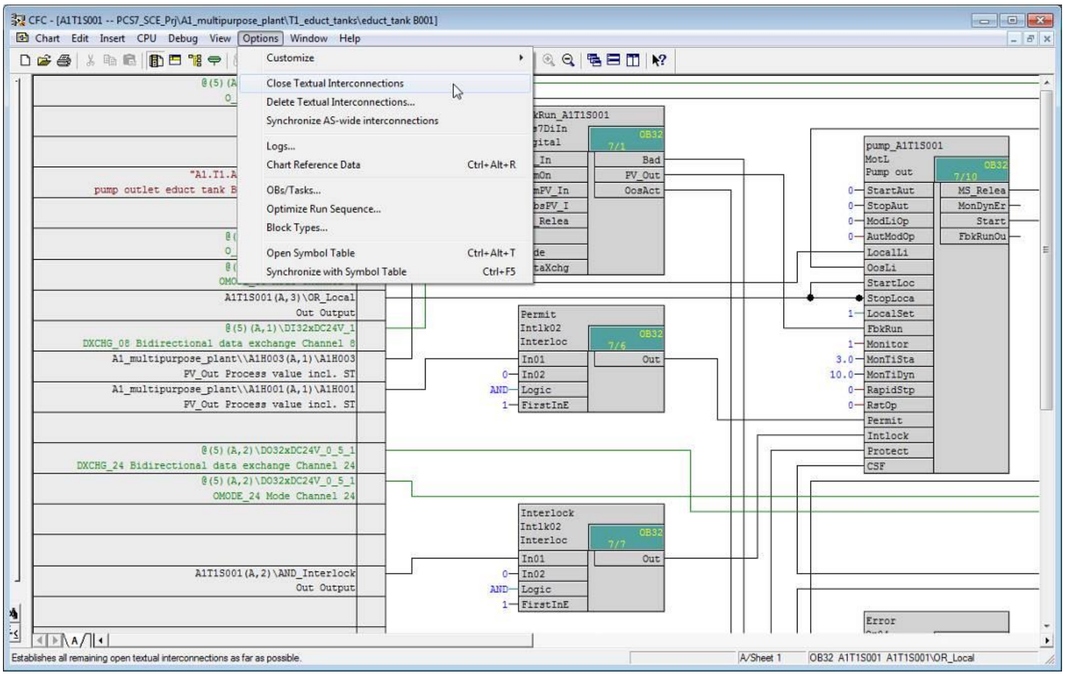
Filter by column: Chart

Display: A1T2X

Filter general:

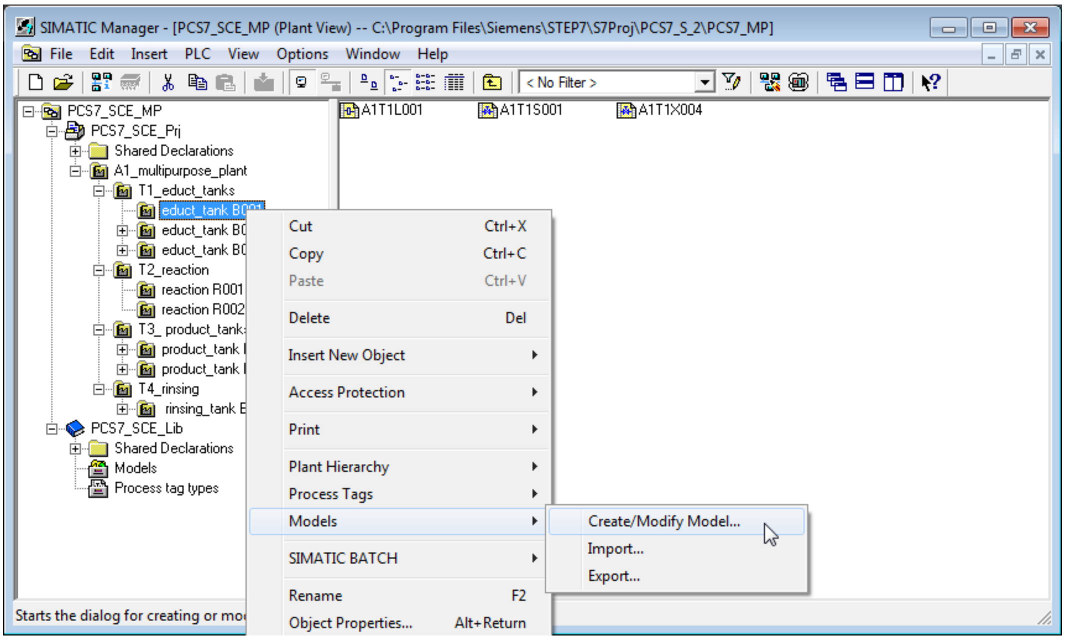
	Hierarchy	Chart	Block	I/O name	Process tag I/O	Value	Signal
1	A1_multipurpose_pl...	A1T2X001	FbkClse_A1T2X001	PV_In	FbkClse_A1T2X001.PV_In		A1.T2.A1T2X001.GO+-O-
2	A1_multipurpose_pl...	A1T2X001	FbkOpen_A1T2X001	PV_In	FbkOpen_A1T2X001.PV_In		A1.T2.A1T2X001.GO+-O+
3	A1_multipurpose_pl...	A1T2X001	Out_A1T2X001	PV_Out	Out_A1T2X001.PV_Out	0	A1.T2.A1T2X001.XV.C
4	A1_multipurpose_pl...	A1T2X002	FbkClse_A1T2X002	PV_In	FbkClse_A1T2X001.PV_In		A1.T2.A1T2X002.GO+-O-
5	A1_multipurpose_pl...	A1T2X002	FbkOpen_A1T2X002	PV_In	FbkOpen_A1T2X001.PV_In		A1.T2.A1T2X002.GO+-O+
6	A1_multipurpose_pl...	A1T2X002	Out_A1T2X002	PV_Out	Out_A1T2X001.PV_Out	0	A1.T2.A1T2X002.XV.C
7	A1_multipurpose_pl...	A1T2X003	FbkClse_A1T2X003	PV_In	FbkClse_A1T2X001.PV_In		A1.T2.A1T2X003.GO+-O-
8	A1_multipurpose_pl...	A1T2X003	FbkOpen_A1T2X003	PV_In	FbkOpen_A1T2X001.PV_In		A1.T2.A1T2X003.GO+-O+
9	A1_multipurpose_pl...	A1T2X003	Out_A1T2X003	PV_Out	Out_A1T2X001.PV_Out	0	A1.T2.A1T2X003.XV.C
10	A1_multipurpose_pl...	A1T2X004	FbkClse_A1T2X004	PV_In	FbkClse_A1T2X001.PV_In		A1.T2.A1T2X004.GO+-O-
11	A1_multipurpose_pl...	A1T2X004	FbkOpen_A1T2X004	PV_In	FbkOpen_A1T2X001.PV_In		A1.T2.A1T2X004.GO+-O+
12	A1_multipurpose_pl...	A1T2X004	Out_A1T2X004	PV_Out	Out_A1T2X001.PV_Out	0	A1.T2.A1T2X004.XV.C
13	A1_multipurpose_pl...	A1T2X005	FbkClse_A1T2X005	PV_In	FbkClse_A1T2X001.PV_In		A1.T2.A1T2X005.GO+-O-
14	A1_multipurpose_pl...	A1T2X005	FbkOpen_A1T2X005	PV_In	FbkOpen_A1T2X001.PV_In		A1.T2.A1T2X005.GO+-O+
15	A1_multipurpose_pl...	A1T2X005	Out_A1T2X005	PV_Out	Out_A1T2X001.PV_Out	0	A1.T2.A1T2X005.XV.C
16	A1_multipurpose_pl...	A1T2X006	FbkClse_A1T2X006	PV_In	FbkClse_A1T2X001.PV_In		A1.T2.A1T2X006.GO+-O-
17	A1_multipurpose_pl...	A1T2X006	FbkOpen_A1T2X006	PV_In	FbkOpen_A1T2X001.PV_In		A1.T2.A1T2X006.GO+-O+
18	A1_multipurpose_pl...	A1T2X006	Out_A1T2X006	PV_Out	Out_A1T2X001.PV_Out	0	A1.T2.A1T2X006.XV.C

36. Before you create a model for the educt tank, complete the interlocking of the pump A1T1S001 with the valve A1T2X004 created from the process tag type (if not already done) as shown below.


CFC - [A1T1S001 -- PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B001]
Chart Edit Insert CPU Debug View Options Window Help
Customize
Close Textual Interconnections
Delete Textual Interconnections...
Synchronize AS-wide interconnections
Logs...
Chart Reference Data Ctrl+Alt+R
OBs/Tasks...
Optimize Run Sequence...
Block Types...
Open Symbol Table Ctrl+Alt+T
Synchronize with Symbol Table Ctrl+F5
pump outlet educt tank B
A1T1S001 (A,3)\OR_Local
Out Output
DXCHG_08 Bidirectional data exchange Channel 8
A1_multipurpose_plant\\A1H003(A,1)\A1H003
PV_Out Process value incl. ST
A1_multipurpose_plant\\A1H001(A,1)\A1H001
PV_Out Process value incl. ST
DXCHG_24 Bidirectional data exchange Channel 24
OMODE_24 Mode Channel 24
A1T1S001(A,2)\AND_Interlock
Out Output
Permit
Intlk02
Interloc
In01
In02
Logic
FirstInE
Out
Interlock
pump_A1T1S001
MotL
Pump out
StartAut
StopAut
ModLiOp
AutModOp
LocalLi
OosLi
StartLoc
StopLoca
LocalSet
FbkRun
Monitor
MonTiSta
MonTiDyn
RapidStp
RstOp
Permit
Intlock
Protect
CSF
MS_Relea
MonDynEr
Start
FbkRunOu
Error
OB32
7/10
7/6
7/7
A/Sheet 1
OB32 A1T1S001 A1T1S001\OR_Local

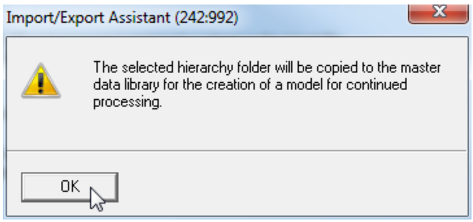
Establishes all remaining open textual interconnections as far as possible.

37. Educt Tank B001 with all its CFCs is used as model. First, delete figure(4) and then create a model. (→ Educt tank B001 → Models → Create/Modify Model…)



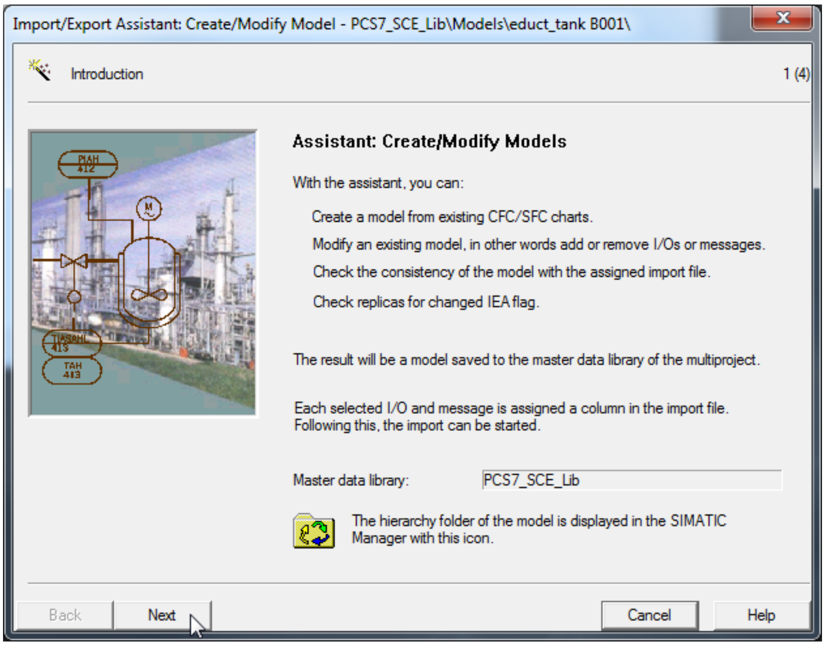
Starts the dialog for creating or mo

38. Confirm the message that follows with “OK“. (→ OK)



The selected hierarchy folder will be copied to the master data library for the creation of a model for continued processing.

39. Confirm the introductory screen of the dialog assistant with “Next“. (→ Next)


Import/Export Assistant: Create/Modify Model - PCS7_SCE_Lib\Models\educt_tank B001\
Introduction
1 (4)
PIAH 412
TAH 413
Back
Next
Cancel
Help

Assistant: Create/Modify Models

With the assistant, you can:

Create a model from existing CFC/SFC charts.

Modify an existing model, in other words add or remove I/Os or messages.

Check the consistency of the model with the assigned import file.

Check replicas for changed IEA flag.

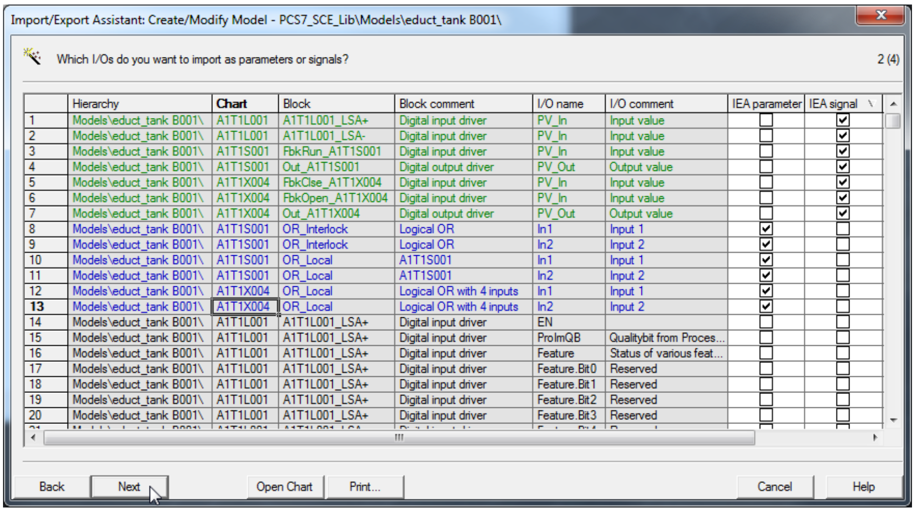
The result will be a model saved to the master data library of the multiproject.

Each selected I/O and message is assigned a column in the import file.
Following this, the import can be started.

Master data library: PCS7_SCE_Lib

The hierarchy folder of the model is displayed in the SIMATIC Manager with this icon.

40. In the next step, specify the parameters (blue) and the signals (green) that the import/export assistant displays. Select the parameters/signals shown in the picture below. (→ IEA parameter → IEA signal → Next)

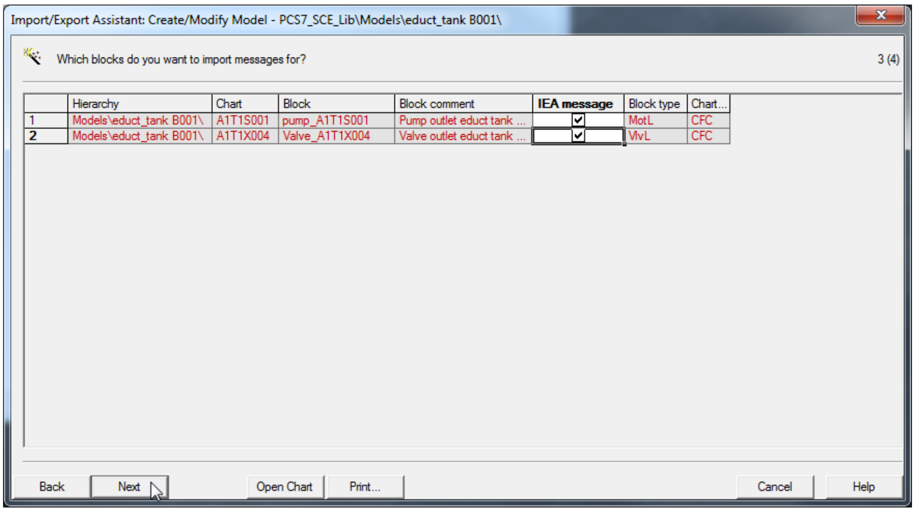

Import/Export Assistant: Create/Modify Model - PCS7_SCE_Lib\Models\educt_tank B001\
2 (4)
Back
Next
Open Chart
Print...
Cancel
Help

Which I/Os do you want to import as parameters or signals?

	Hierarchy	Chart	Block	Block comment	I/O name	I/O comment	IEA parameter	IEA signal
1	Models\educt_tank B001\	A1T1L001	A1T1L001_LSA+	Digital input driver	PV_In	Input value	☐	☑
2	Models\educt_tank B001\	A1T1L001	A1T1L001_LSA-	Digital input driver	PV_In	Input value	☐	☑
3	Models\educt_tank B001\	A1T1S001	FbkRun_A1T1S001	Digital input driver	PV_In	Input value	☐	☑
4	Models\educt_tank B001\	A1T1S001	Out_A1T1S001	Digital output driver	PV_Out	Output value	☐	☑
5	Models\educt_tank B001\	A1T1X004	FbkClse_A1T1X004	Digital input driver	PV_In	Input value	☐	☑
6	Models\educt_tank B001\	A1T1X004	FbkOpen_A1T1X004	Digital input driver	PV_In	Input value	☐	☑
7	Models\educt_tank B001\	A1T1X004	Out_A1T1X004	Digital output driver	PV_Out	Output value	☐	☑
8	Models\educt_tank B001\	A1T1S001	OR_Interlock	Logical OR	In1	Input 1	☑	☐
9	Models\educt_tank B001\	A1T1S001	OR_Interlock	Logical OR	In2	Input 2	☑	☐
10	Models\educt_tank B001\	A1T1S001	OR_Local	A1T1S001	In1	Input 1	☑	☐
11	Models\educt_tank B001\	A1T1S001	OR_Local	A1T1S001	In2	Input 2	☑	☐
12	Models\educt_tank B001\	A1T1X004	OR_Local	Logical OR with 4 inputs	In1	Input 1	☑	☐
13	Models\educt_tank B001\	A1T1X004	OR_Local	Logical OR with 4 inputs	In2	Input 2	☑	☐
14	Models\educt_tank B001\	A1T1L001	A1T1L001_LSA+	Digital input driver	EN		☐	☐
15	Models\educt_tank B001\	A1T1L001	A1T1L001_LSA+	Digital input driver	ProImQB	Qualitybit from Proces...	☐	☐
16	Models\educt_tank B001\	A1T1L001	A1T1L001_LSA+	Digital input driver	Feature	Status of various feat...	☐	☐
17	Models\educt_tank B001\	A1T1L001	A1T1L001_LSA+	Digital input driver	Feature.Bit0	Reserved	☐	☐
18	Models\educt_tank B001\	A1T1L001	A1T1L001_LSA+	Digital input driver	Feature.Bit1	Reserved	☐	☐
19	Models\educt_tank B001\	A1T1L001	A1T1L001_LSA+	Digital input driver	Feature.Bit2	Reserved	☐	☐
20	Models\educt_tank B001\	A1T1L001	A1T1L001_LSA+	Digital input driver	Feature.Bit3	Reserved	☐	☐

41. Next we specify the messages that are displayed in the import/export assistant.

(→ IEA message → Next)

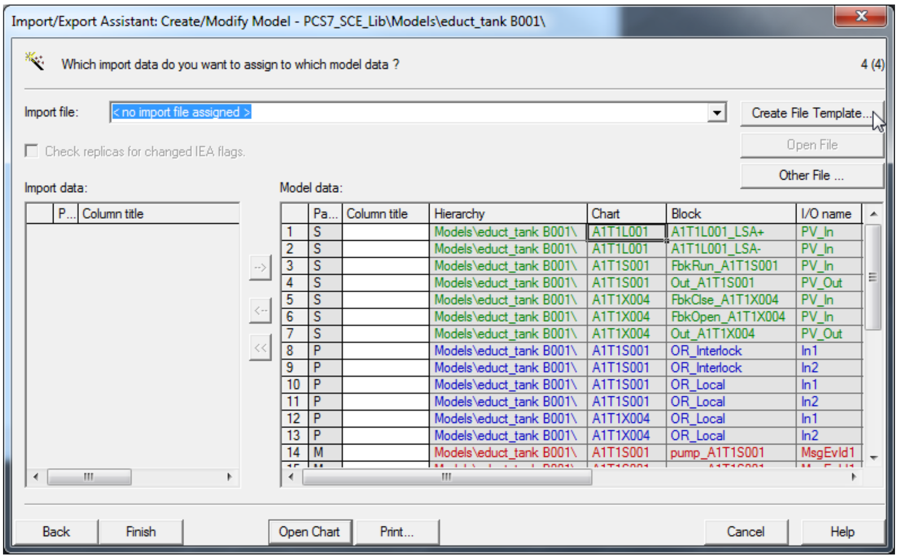


Import/Export Assistant: Create/Modify Model - PCS7_SCE_Lib\Models\educt_tank B001\

Which blocks do you want to import messages for? 3 (4)

	Hierarchy	Chart	Block	Block comment	IEA message	Block type	Chart...
1	Models\educt_tank B001\	A1T1S001	pump_A1T1S001	Pump outlet educt tank ...	☑	MotL	CFC
2	Models\educt_tank B001\	A1T1X004	Valve_A1T1X004	Valve outlet educt tank ...	☑	VlvL	CFC

42. Now create the file template. (→ Create File Template…)



Import/Export Assistant: Create/Modify Model - PCS7_SCE_Lib\Models\educt_tank B001\

Which import data do you want to assign to which model data ? 4 (4)

Import file: < no import file assigned >

□ Check replicas for changed IEA flags.

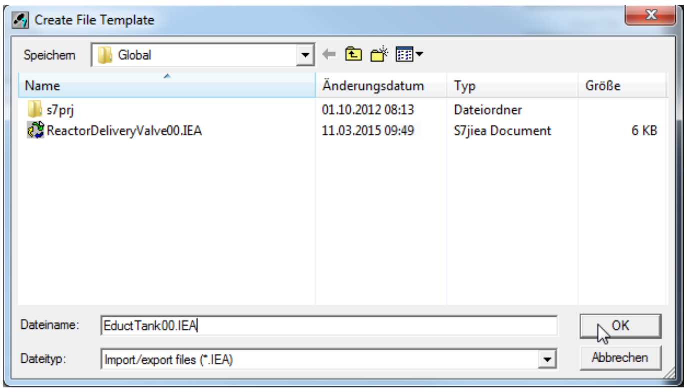
Import data:

	P...	Column title

Model data:

	Pa...	Column title	Hierarchy	Chart	Block	I/O name
1	S		Models\educt_tank B001\	A1T1L001	A1T1L001_LSA+	PV_In
2	S		Models\educt_tank B001\	A1T1L001	A1T1L001_LSA-	PV_In
3	S		Models\educt_tank B001\	A1T1S001	FbkRun_A1T1S001	PV_In
4	S		Models\educt_tank B001\	A1T1S001	Out_A1T1S001	PV_Out
5	S		Models\educt_tank B001\	A1T1X004	FbkClse_A1T1X004	PV_In
6	S		Models\educt_tank B001\	A1T1X004	FbkOpen_A1T1X004	PV_In
7	S		Models\educt_tank B001\	A1T1X004	Out_A1T1X004	PV_Out
8	P		Models\educt_tank B001\	A1T1S001	OR_Interlock	In1
9	P		Models\educt_tank B001\	A1T1S001	OR_Interlock	In2
10	P		Models\educt_tank B001\	A1T1S001	OR_Local	In1
11	P		Models\educt_tank B001\	A1T1S001	OR_Local	In2
12	P		Models\educt_tank B001\	A1T1X004	OR_Local	In1
13	P		Models\educt_tank B001\	A1T1X004	OR_Local	In2
14	M		Models\educt_tank B001\	A1T1S001	pump_A1T1S001	MsgEvId1

43. We are naming the file template “EductTank00.IEA“. (→ OK)



Create File Template

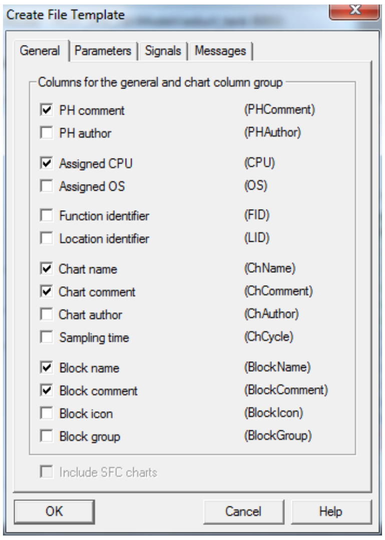
Speichern: Global

Name	Änderungsdatum	Typ	Größe
s7prj	01.10.2012 08:13	Dateiordner	
ReactorDeliveryValve00.IEA	11.03.2015 09:49	S7jiea Document	6 KB

Dateiname: EductTank00.IEA

Dateityp: Import/export files (*.IEA)

44. Next we select the columns that are displayed in general and those that are displayed for the parameters in the import file. (→ General → PH comment → Assigned CPU → Chart name → Chart comment → Block name → Block comment → Parameters → IO comment → Textual interconnection)



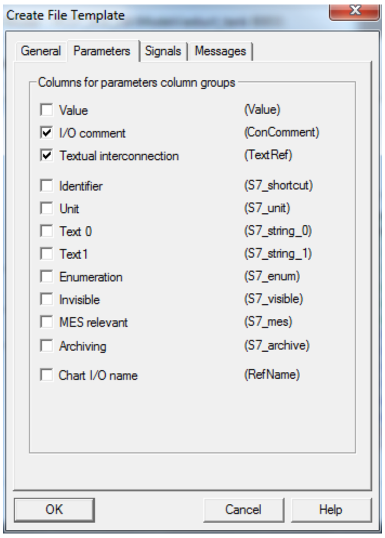
Create File Template

General | Parameters | Signals | Messages

Columns for the general and chart column group

☑ PH comment	(PHComment)
☐ PH author	(PHAuthor)
☑ Assigned CPU	(CPU)
☐ Assigned OS	(OS)
☐ Function identifier	(FID)
☐ Location identifier	(LID)
☑ Chart name	(ChName)
☑ Chart comment	(ChComment)
☐ Chart author	(ChAuthor)
☐ Sampling time	(ChCycle)
☑ Block name	(BlockName)
☑ Block comment	(BlockComment)
☐ Block icon	(BlockIcon)
☐ Block group	(BlockGroup)

☐ Include SFC charts



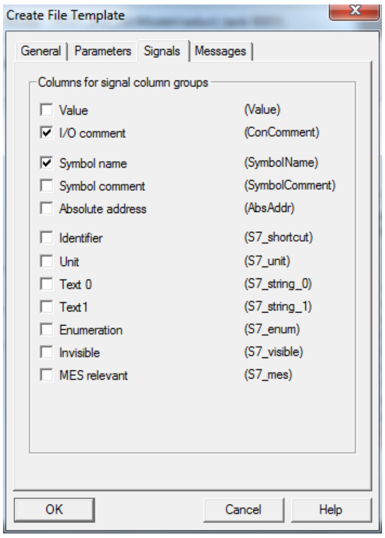
Create File Template

General | Parameters | Signals | Messages

Columns for parameters column groups

☐ Value	(Value)
☑ I/O comment	(ConComment)
☑ Textual interconnection	(TextRef)
☐ Identifier	(S7_shortcut)
☐ Unit	(S7_unit)
☐ Text 0	(S7_string_0)
☐ Text 1	(S7_string_1)
☐ Enumeration	(S7_enum)
☐ Invisible	(S7_visible)
☐ MES relevant	(S7_mes)
☐ Archiving	(S7_archive)
☐ Chart I/O name	(RefName)

45. Here we select the columns that are displayed for the signals and the messages in the import file. (→ Signals → IO comment → Symbol name → Messages → Event → OK)

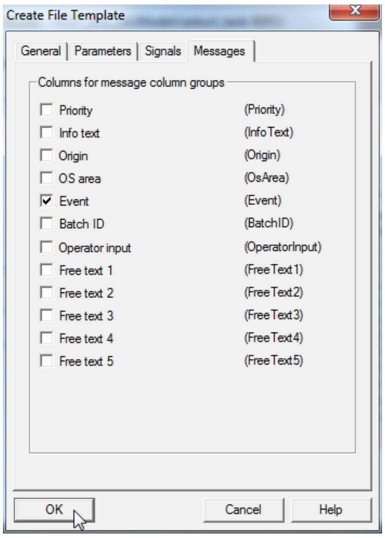


Create File Template

General | Parameters | Signals | Messages

Columns for signal column groups

☐ Value	(Value)
☑ I/O comment	(ConComment)
☑ Symbol name	(SymbolName)
☐ Symbol comment	(SymbolComment)
☐ Absolute address	(AbsAddr)
☐ Identifier	(S7_shortcut)
☐ Unit	(S7_unit)
☐ Text 0	(S7_string_0)
☐ Text 1	(S7_string_1)
☐ Enumeration	(S7_enum)
☐ Invisible	(S7_visible)
☐ MES relevant	(S7_mes)



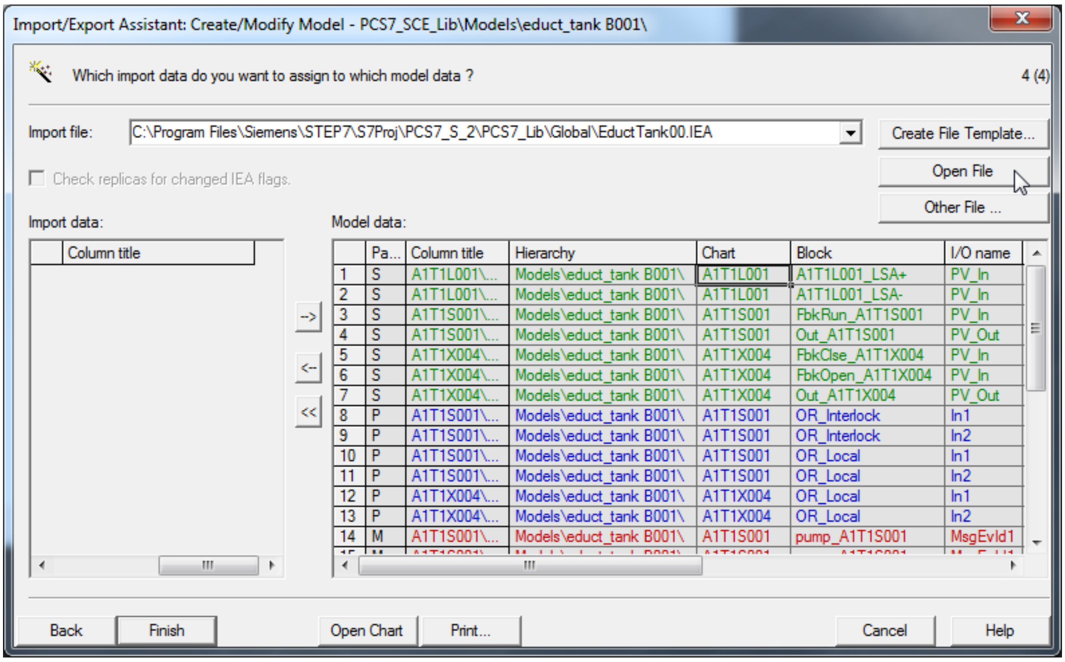
Create File Template

General | Parameters | Signals | Messages

Columns for message column groups

☐ Priority	(Priority)
☐ Info text	(InfoText)
☐ Origin	(Origin)
☐ OS area	(OsArea)
☑ Event	(Event)
☐ Batch ID	(BatchID)
☐ Operator input	(OperatorInput)
☐ Free text 1	(FreeText1)
☐ Free text 2	(FreeText2)
☐ Free text 3	(FreeText3)
☐ Free text 4	(FreeText4)
☐ Free text 5	(FreeText5)

46. Now open the created file. (→ Open file)



Import/Export Assistant: Create/Modify Model - PCS7_SCE_Lib\Models\educt_tank B001\

Which import data do you want to assign to which model data ?

Import file: C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\EductTank00.IEA

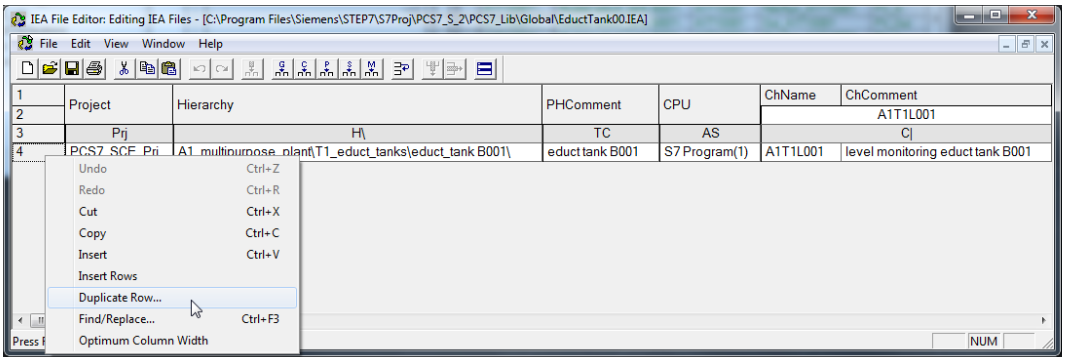
Model data:

	Pa...	Column title	Hierarchy	Chart	Block	I/O name
1	S	A1T1L001\...	Models\educt_tank B001\	A1T1L001	A1T1L001_LSA+	PV_In
2	S	A1T1L001\...	Models\educt_tank B001\	A1T1L001	A1T1L001_LSA-	PV_In
3	S	A1T1S001\...	Models\educt_tank B001\	A1T1S001	FbkRun_A1T1S001	PV_In
4	S	A1T1S001\...	Models\educt_tank B001\	A1T1S001	Out_A1T1S001	PV_Out
5	S	A1T1X004\...	Models\educt_tank B001\	A1T1X004	FbkClse_A1T1X004	PV_In
6	S	A1T1X004\...	Models\educt_tank B001\	A1T1X004	FbkOpen_A1T1X004	PV_In
7	S	A1T1X004\...	Models\educt_tank B001\	A1T1X004	Out_A1T1X004	PV_Out
8	P	A1T1S001\...	Models\educt_tank B001\	A1T1S001	OR_Interlock	In1
9	P	A1T1S001\...	Models\educt_tank B001\	A1T1S001	OR_Interlock	In2
10	P	A1T1S001\...	Models\educt_tank B001\	A1T1S001	OR_Local	In1
11	P	A1T1S001\...	Models\educt_tank B001\	A1T1S001	OR_Local	In2
12	P	A1T1X004\...	Models\educt_tank B001\	A1T1X004	OR_Local	In1
13	P	A1T1X004\...	Models\educt_tank B001\	A1T1X004	OR_Local	In2
14	M	A1T1S001\...	Models\educt_tank B001\	A1T1S001	pump_A1T1S001	MsgEvId1

⚠

Note: As an alternative, the included import file can be utilized. Instead of Open File, select the button 'Other file' and select the file that is included. With that file, the steps below can be skipped. Next step: 51.

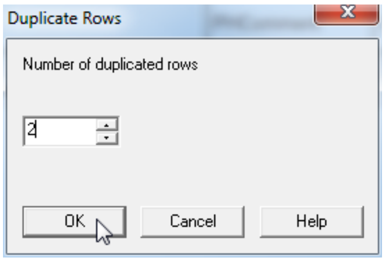
47. The first row is again duplicated as often as models are needed. (→ Duplicate Row)



IEA File Editor: Editing IEA Files - [C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\EductTank00.IEA]

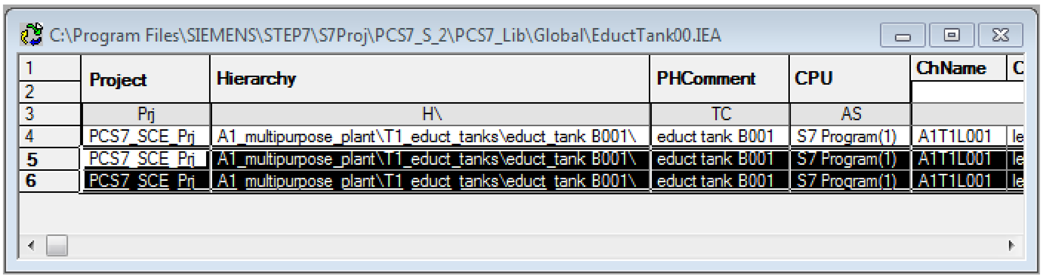
1	Project	Hierarchy	PHComment	CPU	ChName	ChComment
2					A1T1L001	
3	Prj	H\	TC	AS	C|	
4	PCS7_SCE_Prj	A1_multipurpose_plant\T1_educt_tanks\educt_tank B001\	educt tank B001	S7 Program(1)	A1T1L001	level monitoring educt tank B001

48. For Number of duplicated rows we set 2 and confirm with "OK". (→ 2 → OK)



Duplicate Rows

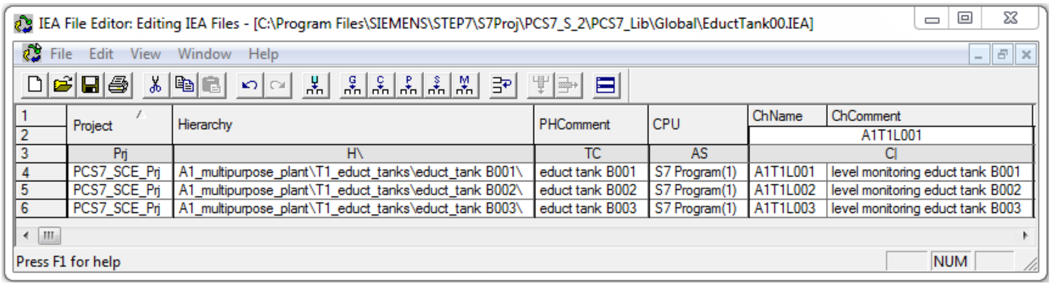
Number of duplicated rows: 2



C:\Program Files\SIEMENS\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\EductTank00.IEA

1	Project	Hierarchy	PHComment	CPU	ChName	C
2						
3	Prj	H\	TC	AS		
4	PCS7_SCE_Prj	A1_multipurpose_plant\T1_educt_tanks\educt_tank B001\	educt tank B001	S7 Program(1)	A1T1L001	le
5	PCS7_SCE_Prj	A1_multipurpose_plant\T1_educt_tanks\educt_tank B001\	educt tank B001	S7 Program(1)	A1T1L001	le
6	PCS7_SCE_Prj	A1_multipurpose_plant\T1_educt_tanks\educt_tank B001\	educt tank B001	S7 Program(1)	A1T1L001	le

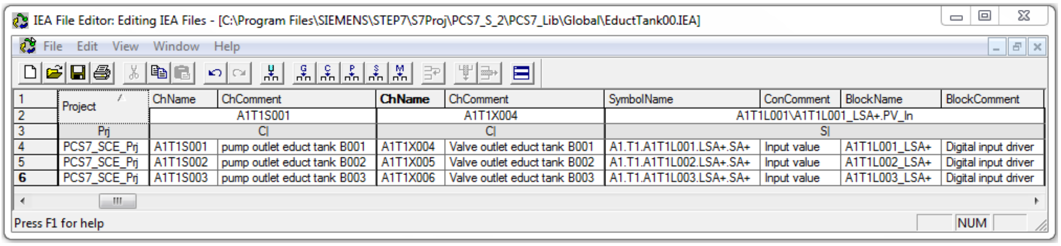
49. First, change the general information in the columns Hierarchy and PHComment. Then change the ChName and the ChComment of the CFCs. For the signals and parameters you have to adapt the SymbolName (in inverted commas for input signals and as absolute address for output signals), the BlockName/BlockComment and TextRef.



IEA File Editor: Editing IEA Files - [C:\Program Files\SIEMENS\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\EductTank00.IEA]

1	Project	Hierarchy	PHComment	CPU	ChName	ChComment
2					A1T1L001	
3	Prj	H\	TC	AS	CI	
4	PCS7_SCE_Prj	A1_multipurpose_plant\T1_educt_tanks\educt_tank B001\	educt tank B001	S7 Program(1)	A1T1L001	level monitoring educt tank B001
5	PCS7_SCE_Prj	A1_multipurpose_plant\T1_educt_tanks\educt_tank B002\	educt tank B002	S7 Program(1)	A1T1L002	level monitoring educt tank B002
6	PCS7_SCE_Prj	A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\	educt tank B003	S7 Program(1)	A1T1L003	level monitoring educt tank B003

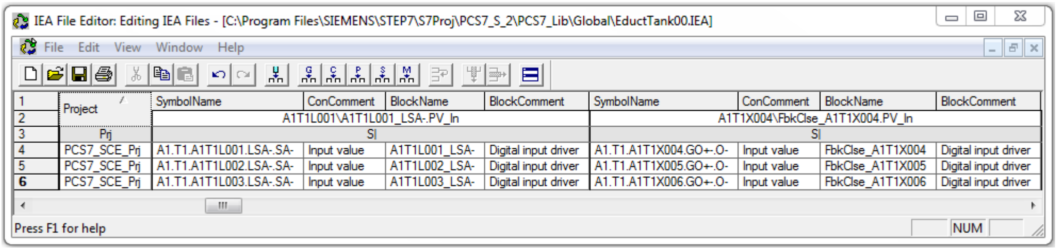
Press F1 for help



IEA File Editor: Editing IEA Files - [C:\Program Files\SIEMENS\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\EductTank00.IEA]

1	Project	ChName	ChComment	ChName	ChComment	SymbolName	ConComment	BlockName	BlockComment
2		A1T1S001		A1T1X004		A1T1L001\A1T1L001_LSA+.PV_In			
3	Prj	CI		CI		SI			
4	PCS7_SCE_Prj	A1T1S001	pump outlet educt tank B001	A1T1X004	Valve outlet educt tank B001	A1.T1.A1T1L001.LSA+.SA+	Input value	A1T1L001_LSA+	Digital input driver
5	PCS7_SCE_Prj	A1T1S002	pump outlet educt tank B002	A1T1X005	Valve outlet educt tank B002	A1.T1.A1T1L002.LSA+.SA+	Input value	A1T1L002_LSA+	Digital input driver
6	PCS7_SCE_Prj	A1T1S003	pump outlet educt tank B003	A1T1X006	Valve outlet educt tank B003	A1.T1.A1T1L003.LSA+.SA+	Input value	A1T1L003_LSA+	Digital input driver

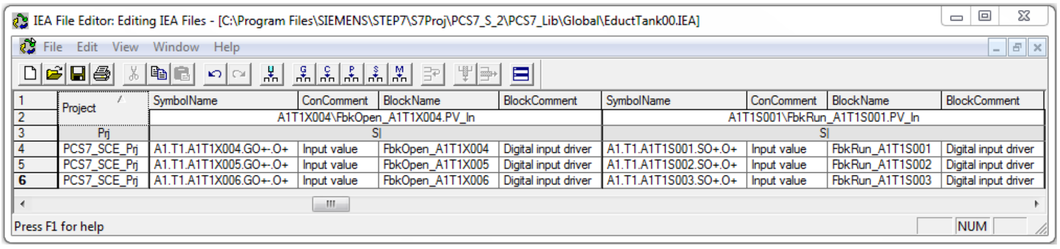
Press F1 for help



IEA File Editor: Editing IEA Files - [C:\Program Files\SIEMENS\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\EductTank00.IEA]

1	Project	SymbolName	ConComment	BlockName	BlockComment	SymbolName	ConComment	BlockName	BlockComment
2		A1T1L001\A1T1L001_LSA-.PV_In				A1T1X004\FbkClse_A1T1X004.PV_In			
3	Prj	SI				SI			
4	PCS7_SCE_Prj	A1.T1.A1T1L001.LSA-.SA-	Input value	A1T1L001_LSA-	Digital input driver	A1.T1.A1T1X004.GO+-.O-	Input value	FbkClse_A1T1X004	Digital input driver
5	PCS7_SCE_Prj	A1.T1.A1T1L002.LSA-.SA-	Input value	A1T1L002_LSA-	Digital input driver	A1.T1.A1T1X005.GO+-.O-	Input value	FbkClse_A1T1X005	Digital input driver
6	PCS7_SCE_Prj	A1.T1.A1T1L003.LSA-.SA-	Input value	A1T1L003_LSA-	Digital input driver	A1.T1.A1T1X006.GO+-.O-	Input value	FbkClse_A1T1X006	Digital input driver

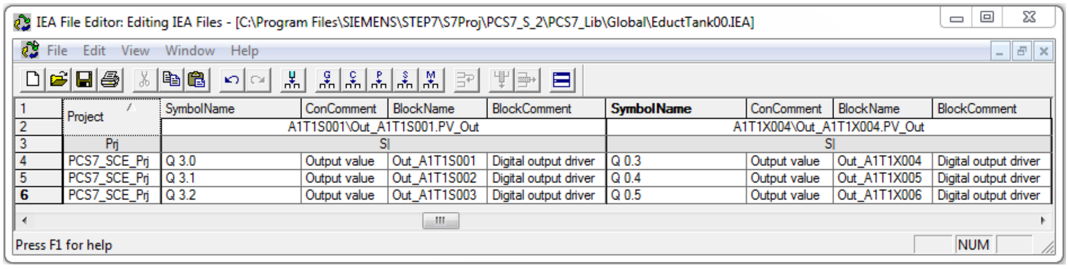
Press F1 for help



IEA File Editor: Editing IEA Files - [C:\Program Files\SIEMENS\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\EductTank00.IEA]

1	Project	SymbolName	ConComment	BlockName	BlockComment	SymbolName	ConComment	BlockName	BlockComment
2		A1T1X004\FbkOpen_A1T1X004.PV_In				A1T1S001\FbkRun_A1T1S001.PV_In			
3	Prj	SI				SI			
4	PCS7_SCE_Prj	A1.T1.A1T1X004.GO+-.O+	Input value	FbkOpen_A1T1X004	Digital input driver	A1.T1.A1T1S001.SO+.O+	Input value	FbkRun_A1T1S001	Digital input driver
5	PCS7_SCE_Prj	A1.T1.A1T1X005.GO+-.O+	Input value	FbkOpen_A1T1X005	Digital input driver	A1.T1.A1T1S002.SO+.O+	Input value	FbkRun_A1T1S002	Digital input driver
6	PCS7_SCE_Prj	A1.T1.A1T1X006.GO+-.O+	Input value	FbkOpen_A1T1X006	Digital input driver	A1.T1.A1T1S003.SO+.O+	Input value	FbkRun_A1T1S003	Digital input driver

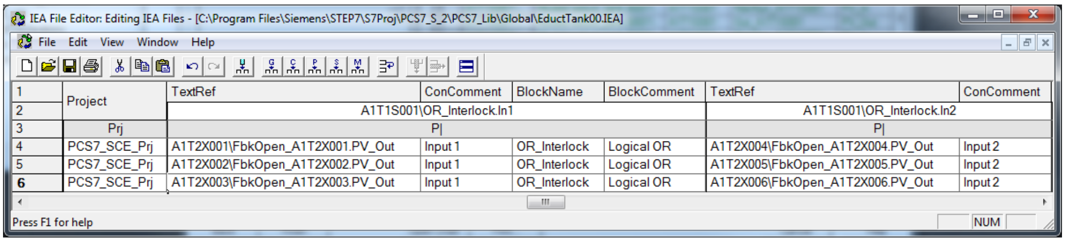
Press F1 for help



IEA File Editor: Editing IEA Files - [C:\Program Files\SIEMENS\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\EductTank00.IEA]

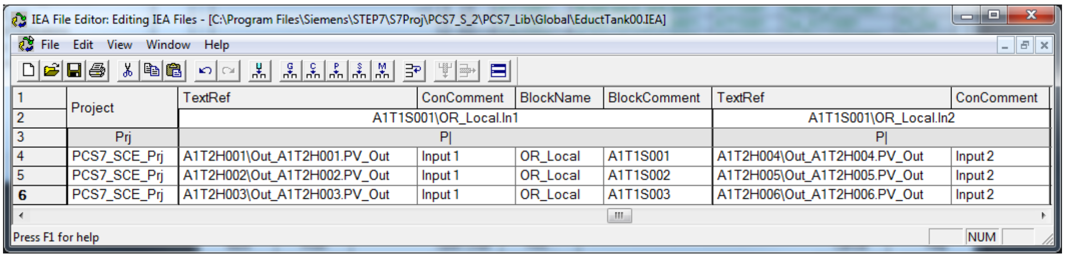
1	Project	SymbolName	ConComment	BlockName	BlockComment	SymbolName	ConComment	BlockName	BlockComment
2		A1T1S001\Out_A1T1S001.PV_Out				A1T1X004\Out_A1T1X004.PV_Out			
3	Prj	SI				SI			
4	PCS7_SCE_Prj	Q 3.0	Output value	Out_A1T1S001	Digital output driver	Q 0.3	Output value	Out_A1T1X004	Digital output driver
5	PCS7_SCE_Prj	Q 3.1	Output value	Out_A1T1S002	Digital output driver	Q 0.4	Output value	Out_A1T1X005	Digital output driver
6	PCS7_SCE_Prj	Q 3.2	Output value	Out_A1T1S003	Digital output driver	Q 0.5	Output value	Out_A1T1X006	Digital output driver

Press F1 for help



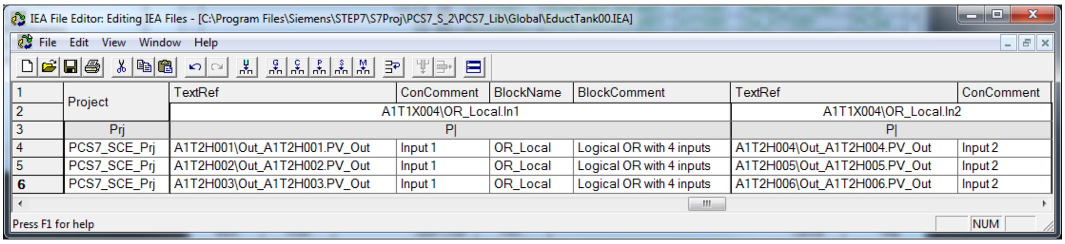
IEA File Editor: Editing IEA Files - [C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\EductTank00.IEA]

1	Project	TextRef	ConComment	BlockName	BlockComment	TextRef	ConComment
2		A1T1S001\OR_Interlock.In1				A1T1S001\OR_Interlock.In2	
3	Prj	P|				P|	
4	PCS7_SCE_Prj	A1T2X001\FbkOpen_A1T2X001.PV_Out	Input 1	OR_Interlock	Logical OR	A1T2X004\FbkOpen_A1T2X004.PV_Out	Input 2
5	PCS7_SCE_Prj	A1T2X002\FbkOpen_A1T2X002.PV_Out	Input 1	OR_Interlock	Logical OR	A1T2X005\FbkOpen_A1T2X005.PV_Out	Input 2
6	PCS7_SCE_Prj	A1T2X003\FbkOpen_A1T2X003.PV_Out	Input 1	OR_Interlock	Logical OR	A1T2X006\FbkOpen_A1T2X006.PV_Out	Input 2



IEA File Editor: Editing IEA Files - [C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\EductTank00.IEA]

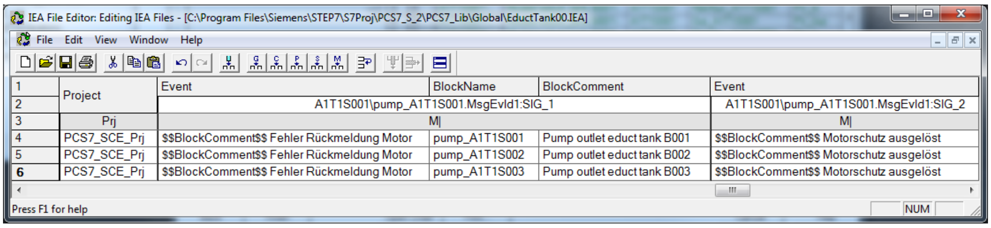
1	Project	TextRef	ConComment	BlockName	BlockComment	TextRef	ConComment
2		A1T1S001\OR_Local.In1				A1T1S001\OR_Local.In2	
3	Prj	P|				P|	
4	PCS7_SCE_Prj	A1T2H001\Out_A1T2H001.PV_Out	Input 1	OR_Local	A1T1S001	A1T2H004\Out_A1T2H004.PV_Out	Input 2
5	PCS7_SCE_Prj	A1T2H002\Out_A1T2H002.PV_Out	Input 1	OR_Local	A1T1S002	A1T2H005\Out_A1T2H005.PV_Out	Input 2
6	PCS7_SCE_Prj	A1T2H003\Out_A1T2H003.PV_Out	Input 1	OR_Local	A1T1S003	A1T2H006\Out_A1T2H006.PV_Out	Input 2



IEA File Editor: Editing IEA Files - [C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\EductTank00.IEA]

1	Project	TextRef	ConComment	BlockName	BlockComment	TextRef	ConComment
2		A1T1X004\OR_Local.In1				A1T1X004\OR_Local.In2	
3	Prj	P|				P|	
4	PCS7_SCE_Prj	A1T2H001\Out_A1T2H001.PV_Out	Input 1	OR_Local	Logical OR with 4 inputs	A1T2H004\Out_A1T2H004.PV_Out	Input 2
5	PCS7_SCE_Prj	A1T2H002\Out_A1T2H002.PV_Out	Input 1	OR_Local	Logical OR with 4 inputs	A1T2H005\Out_A1T2H005.PV_Out	Input 2
6	PCS7_SCE_Prj	A1T2H003\Out_A1T2H003.PV_Out	Input 1	OR_Local	Logical OR with 4 inputs	A1T2H006\Out_A1T2H006.PV_Out	Input 2

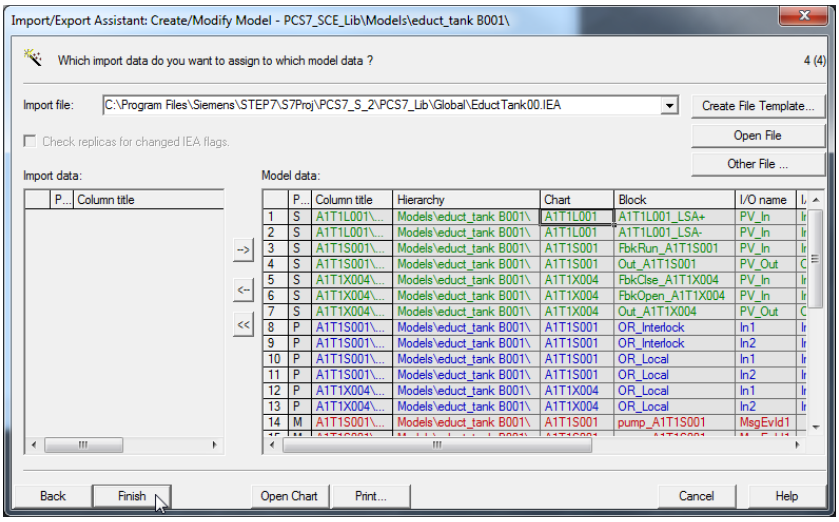
50. The messages come at the end; leave them unchanged, however. Save the file and close the editing. (→ Save → ☒)



IEA File Editor: Editing IEA Files - [C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\EductTank00.IEA]

1	Project	Event	BlockName	BlockComment	Event
2		A1T1S001\pump_A1T1S001.MsgEvId1:SIG_1			A1T1S001\pump_A1T1S001.MsgEvId1:SIG_2
3	Prj	M|			M|
4	PCS7_SCE_Prj	$$BlockComment$$ Fehler Rückmeldung Motor	pump_A1T1S001	Pump outlet educt tank B001	$$BlockComment$$ Motorschutz ausgelöst
5	PCS7_SCE_Prj	$$BlockComment$$ Fehler Rückmeldung Motor	pump_A1T1S002	Pump outlet educt tank B002	$$BlockComment$$ Motorschutz ausgelöst
6	PCS7_SCE_Prj	$$BlockComment$$ Fehler Rückmeldung Motor	pump_A1T1S003	Pump outlet educt tank B003	$$BlockComment$$ Motorschutz ausgelöst

51. The Assistant is exited with “Finish“. (→ Finish)



Import/Export Assistant: Create/Modify Model - PCS7_SCE_Lib\Models\educt_tank B001\

Which import data do you want to assign to which model data ? 4 (4)

Import file: C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\EductTank00.IEA

□ Check replicas for changed IEA flags.

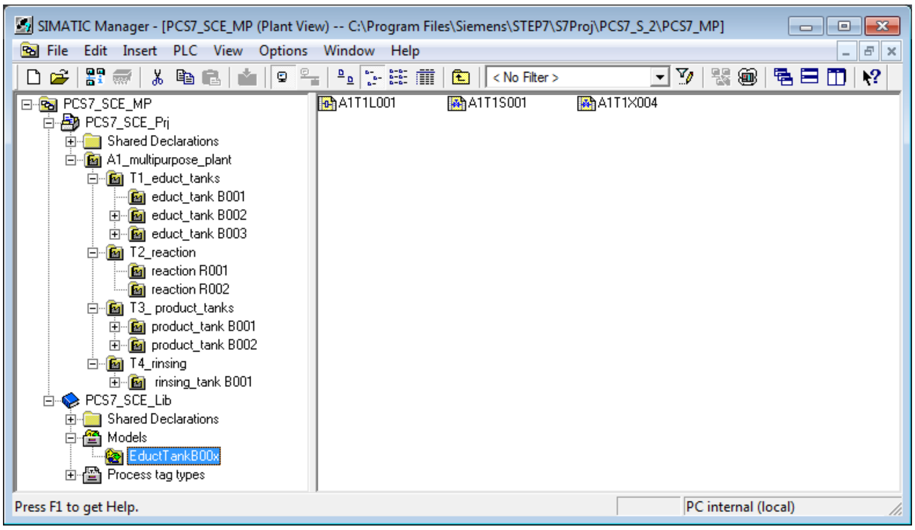
Import data:

P...	Column title

Model data:

	P...	Column title	Hierarchy	Chart	Block	I/O name	I.
1	S	A1T1L001\...	Models\educt_tank B001\	A1T1L001	A1T1L001_LSA+	PV_In	Ir
2	S	A1T1L001\...	Models\educt_tank B001\	A1T1L001	A1T1L001_LSA-	PV_In	Ir
3	S	A1T1S001\...	Models\educt_tank B001\	A1T1S001	FbkRun_A1T1S001	PV_In	Ir
4	S	A1T1S001\...	Models\educt_tank B001\	A1T1S001	Out_A1T1S001	PV_Out	C
5	S	A1T1X004\...	Models\educt_tank B001\	A1T1X004	FbkClse_A1T1X004	PV_In	Ir
6	S	A1T1X004\...	Models\educt_tank B001\	A1T1X004	FbkOpen_A1T1X004	PV_In	Ir
7	S	A1T1X004\...	Models\educt_tank B001\	A1T1X004	Out_A1T1X004	PV_Out	C
8	P	A1T1S001\...	Models\educt_tank B001\	A1T1S001	OR_Interlock	In1	Ir
9	P	A1T1S001\...	Models\educt_tank B001\	A1T1S001	OR_Interlock	In2	Ir
10	P	A1T1S001\...	Models\educt_tank B001\	A1T1S001	OR_Local	In1	Ir
11	P	A1T1S001\...	Models\educt_tank B001\	A1T1S001	OR_Local	In2	Ir
12	P	A1T1X004\...	Models\educt_tank B001\	A1T1X004	OR_Local	In1	Ir
13	P	A1T1X004\...	Models\educt_tank B001\	A1T1X004	OR_Local	In2	Ir
14	M	A1T1S001\...	Models\educt_tank B001\	A1T1S001	pump_A1T1S001	MsgEvId1	

52. The newly created model is located in the project library in the folder Models. Here, the model that was created is renamed to “EductTank”.



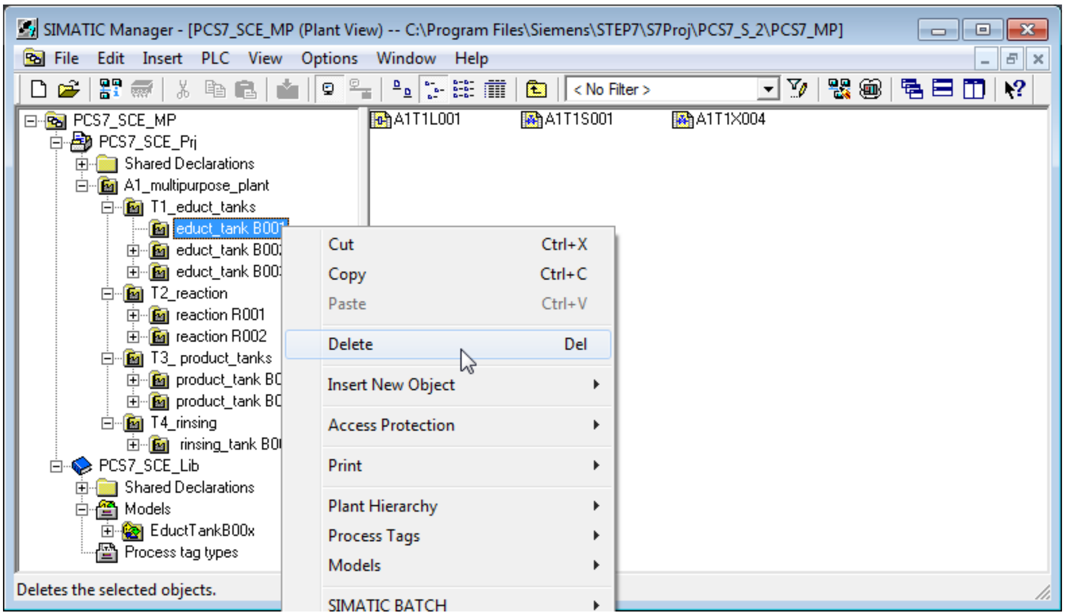
SIMATIC Manager - [PCS7_SCE_MP (Plant View) -- C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_MP]

PCS7_SCE_MP
- PCS7_SCE_Prj
  - Shared Declarations
  - A1_multipurpose_plant
    - T1_educt_tanks
      - educt_tank B001
      - educt_tank B002
      - educt_tank B003
    - T2_reaction
      - reaction R001
      - reaction R002
    - T3_ product_tanks
      - product_tank B001
      - product_tank B002
    - T4_rinsing
      - rinsing_tank B001
- PCS7_SCE_Lib
  - Shared Declarations
  - Models
    - EductTankB00x
  - Process tag types

A1T1L001 A1T1S001 A1T1X004

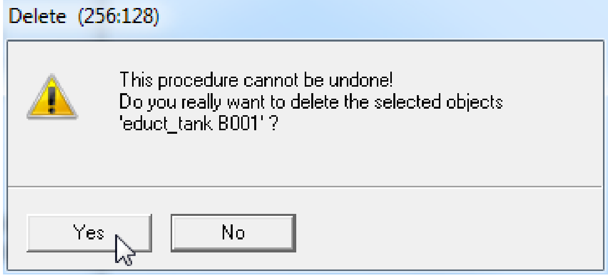
Press F1 to get Help. PC internal (local)

53. Before starting the import, the hierarchy folders B001 to B003 including the CFCs they contain have to be deleted. (→ educt_tank B00x → Delete)



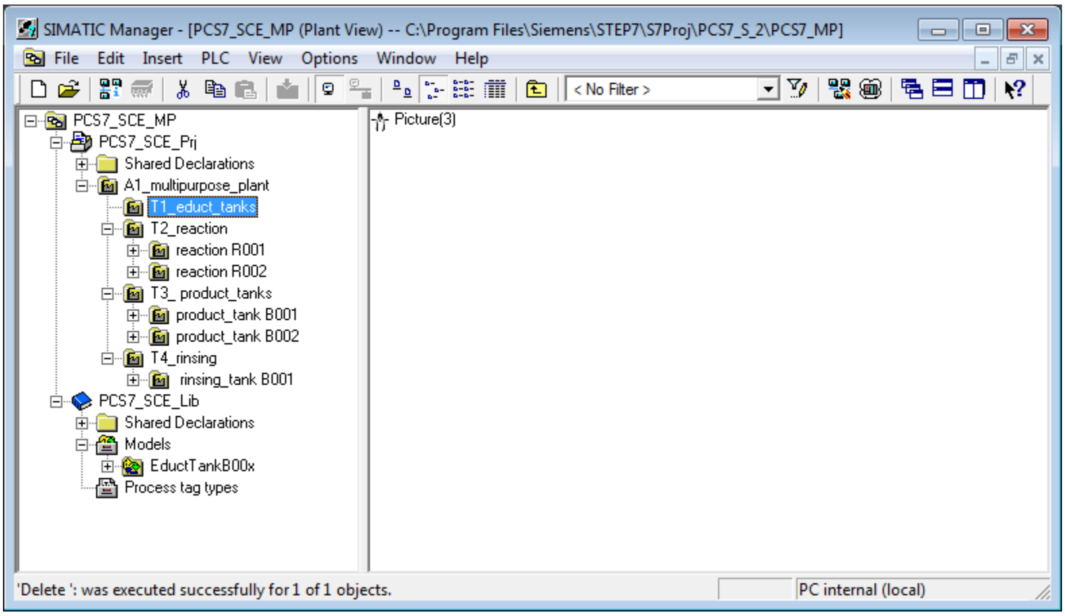
Deletes the selected objects.

54. Confirm the warning with “Yes“. (→ Yes)


Delete (256:128)

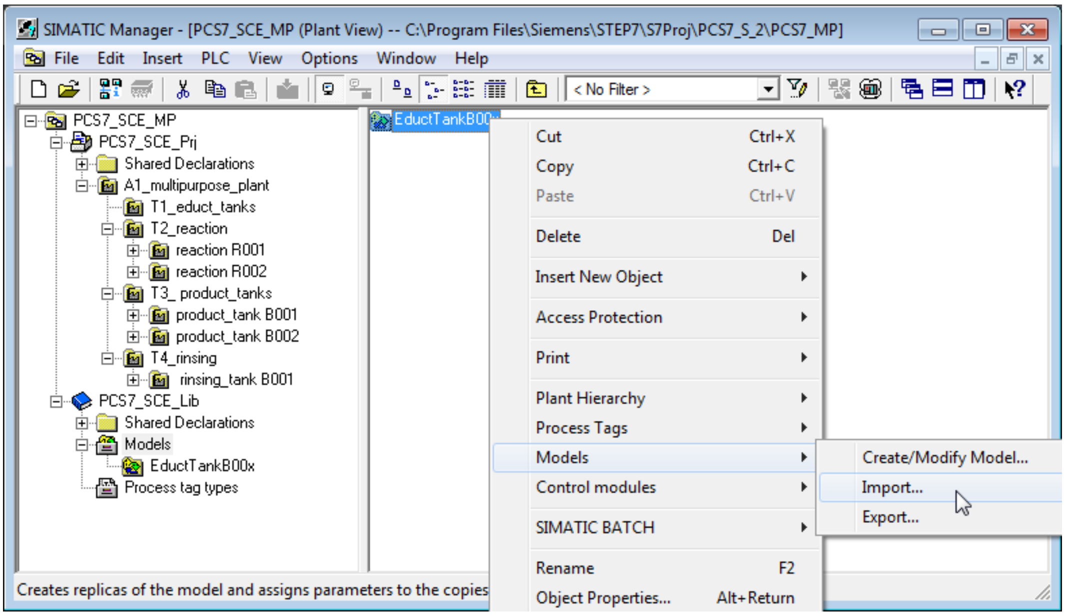
This procedure cannot be undone!
Do you really want to delete the selected objects
'educt_tank B001' ?

55. After the deletion, the plant hierarchy looks like this.



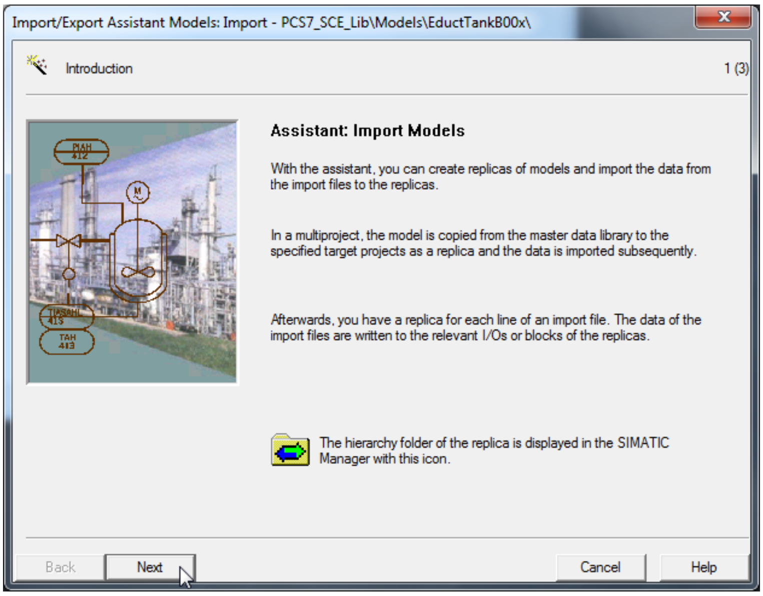
'Delete ': was executed successfully for 1 of 1 objects.

56. Now we can start importing the model. (→ EductTank → Models → Import…)



Creates replicas of the model and assigns parameters to the copies

57. Confirm the start screen of the import/export assistant with “Next“. (→ Next)


Import/Export Assistant Models: Import - PCS7_SCE_Lib\Models\EductTankB00x\
Introduction
1 (3)
PIAH 412
TIASAHL 413
TAH 413
Back
Next
Cancel
Help

Assistant: Import Models

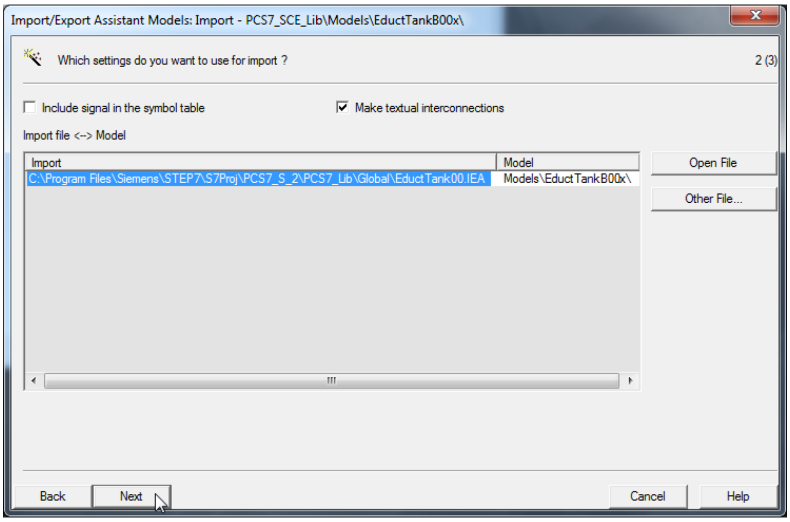
With the assistant, you can create replicas of models and import the data from the import files to the replicas.

In a multiproject, the model is copied from the master data library to the specified target projects as a replica and the data is imported subsequently.

Afterwards, you have a replica for each line of an import file. The data of the import files are written to the relevant I/Os or blocks of the replicas.

The hierarchy folder of the replica is displayed in the SIMATIC Manager with this icon.

58. Check “Make textual interconnections“ and click on “Next“. (→ Make textual interconnections → Next)



Import/Export Assistant Models: Import - PCS7_SCE_Lib\Models\EductTankB00x\

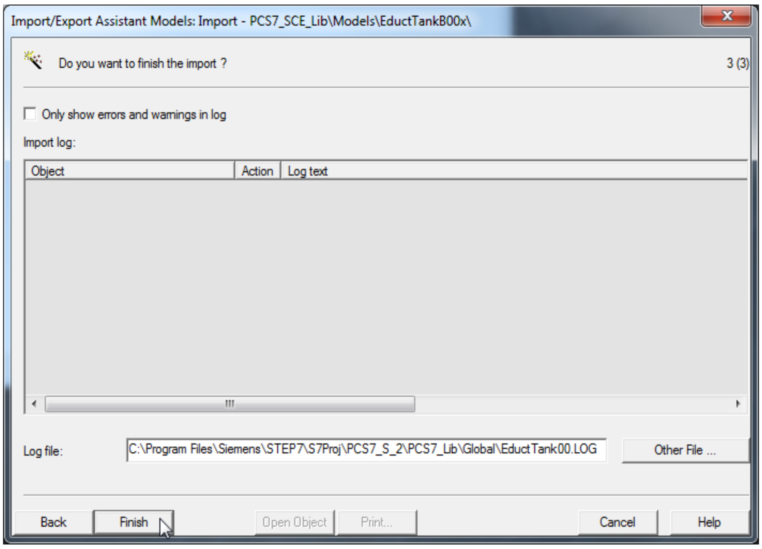
Which settings do you want to use for import ? 2 (3)

☐ Include signal in the symbol table ☑ Make textual interconnections

Import file <--> Model

Import	Model
C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\EductTank00.IEA	Models\EductTankB00x\

59. The assistant is now finished and the import is started. (→ Finish)



Import/Export Assistant Models: Import - PCS7_SCE_Lib\Models\EductTankB00x\

Do you want to finish the import ? 3 (3)

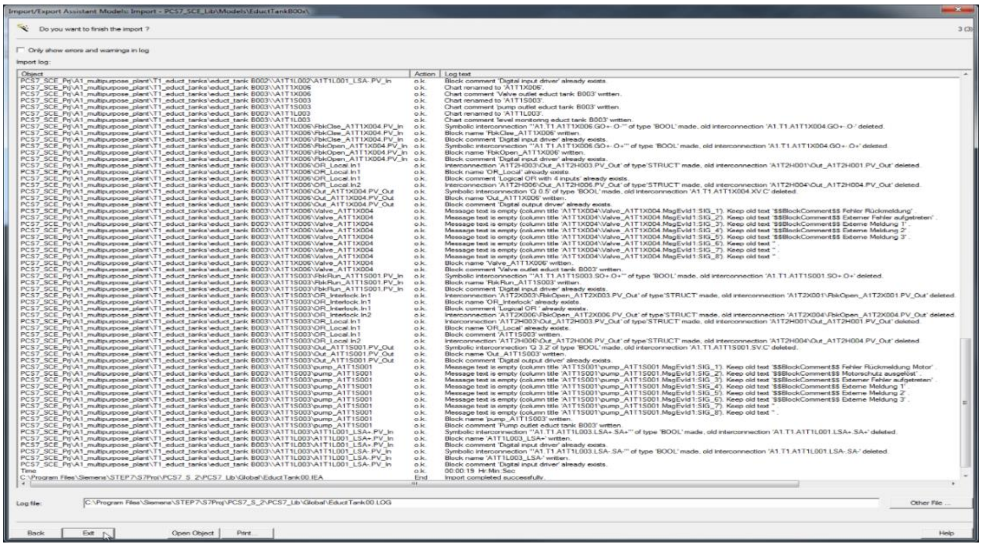
☐ Only show errors and warnings in log

Import log:

Object	Action	Log text

Log file: C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\EductTank00.LOG

60. The import process is logged and the result is displayed. (→ Exit)



Import/Export Assistant Models: Import - PCS7_SCE_Lib\Models\EductTankB00x\

Do you want to finish the import ? 3 (3)

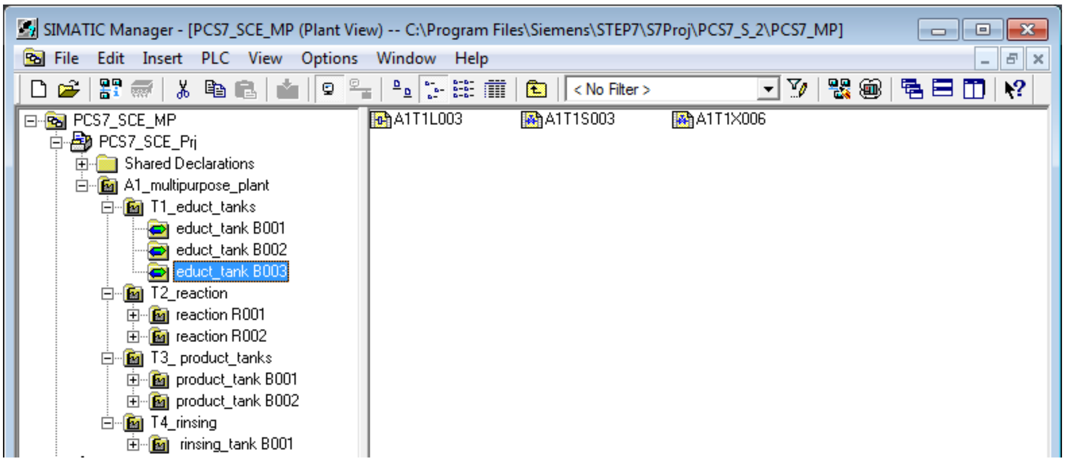
☐ Only show errors and warnings in log

Import log:

Object	Action	Log text
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B002\\A1T1L002\A1T1L001_LSA-.PV_In	o.k.	Block comment 'Digital input driver' already exists.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006	o.k.	Chart renamed to 'A1T1X006'.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006	o.k.	Chart comment 'Valve outlet educt tank B003' written.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003	o.k.	Chart renamed to 'A1T1S003'.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003	o.k.	Chart comment 'pump outlet educt tank B003' written.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1L003	o.k.	Chart renamed to 'A1T1L003'.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1L003	o.k.	Chart comment 'level monitoring educt tank B003' written.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\FbkClse_A1T1X004.PV_In	o.k.	Symbolic interconnection '"A1.T1.A1T1X006.GO+-.O-"' of type 'BOOL' made, old interconnection 'A1.T1.A1T1X004.GO+-.O-' deleted.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\FbkClse_A1T1X004.PV_In	o.k.	Block name 'FbkClse_A1T1X006' written.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\FbkClse_A1T1X004.PV_In	o.k.	Block comment 'Digital input driver' already exists.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\FbkOpen_A1T1X004.PV_In	o.k.	Symbolic interconnection '"A1.T1.A1T1X006.GO+-.O+"' of type 'BOOL' made, old interconnection 'A1.T1.A1T1X004.GO+-.O+' deleted.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\FbkOpen_A1T1X004.PV_In	o.k.	Block name 'FbkOpen_A1T1X006' written.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\FbkOpen_A1T1X004.PV_In	o.k.	Block comment 'Digital input driver' already exists.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\OR_Local.In1	o.k.	Interconnection 'A1T2H003\Out_A1T2H003.PV_Out' of type'STRUCT' made, old interconnection 'A1T2H001\Out_A1T2H001.PV_Out' deleted.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\OR_Local.In1	o.k.	Block name 'OR_Local' already exists.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\OR_Local.In1	o.k.	Block comment 'Logical OR with 4 inputs' already exists.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\OR_Local.In2	o.k.	Interconnection 'A1T2H006\Out_A1T2H006.PV_Out' of type'STRUCT' made, old interconnection 'A1T2H004\Out_A1T2H004.PV_Out' deleted.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\Out_A1T1X004.PV_Out	o.k.	Symbolic interconnection 'Q 0.5' of type 'BOOL' made, old interconnection 'A1.T1.A1T1X004.XV.C' deleted.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\Out_A1T1X004.PV_Out	o.k.	Block name 'Out_A1T1X006' written.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\Out_A1T1X004.PV_Out	o.k.	Block comment 'Digital output driver' already exists.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\Valve_A1T1X004	o.k.	Message text is empty (column title 'A1T1X004\\Valve_A1T1X004.MsgEvId1:SIG_1'). Keep old text '$$BlockComment$$ Fehler Rückmeldung' .
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\Valve_A1T1X004	o.k.	Message text is empty (column title 'A1T1X004\\Valve_A1T1X004.MsgEvId1:SIG_2'). Keep old text '$$BlockComment$$ Externer Fehler aufgetreten' .
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\Valve_A1T1X004	o.k.	Message text is empty (column title 'A1T1X004\\Valve_A1T1X004.MsgEvId1:SIG_3'). Keep old text '$$BlockComment$$ Externe Meldung 1' .
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\Valve_A1T1X004	o.k.	Message text is empty (column title 'A1T1X004\\Valve_A1T1X004.MsgEvId1:SIG_4'). Keep old text '$$BlockComment$$ Externe Meldung 2' .
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\Valve_A1T1X004	o.k.	Message text is empty (column title 'A1T1X004\\Valve_A1T1X004.MsgEvId1:SIG_5'). Keep old text '$$BlockComment$$ Externe Meldung 3' .
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\Valve_A1T1X004	o.k.	Message text is empty (column title 'A1T1X004\\Valve_A1T1X004.MsgEvId1:SIG_6'). Keep old text '' .
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\Valve_A1T1X004	o.k.	Message text is empty (column title 'A1T1X004\\Valve_A1T1X004.MsgEvId1:SIG_7'). Keep old text '' .
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\Valve_A1T1X004	o.k.	Message text is empty (column title 'A1T1X004\\Valve_A1T1X004.MsgEvId1:SIG_8'). Keep old text '' .
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\Valve_A1T1X004	o.k.	Block name 'Valve_A1T1X006' written.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1X006\Valve_A1T1X004	o.k.	Block comment 'Valve outlet educt tank B003' written.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\FbkRun_A1T1S001.PV_In	o.k.	Symbolic interconnection '"A1.T1.A1T1S003.SO+.O+"' of type 'BOOL' made, old interconnection 'A1.T1.A1T1S001.SO+.O+' deleted.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\FbkRun_A1T1S001.PV_In	o.k.	Block name 'FbkRun_A1T1S003' written.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\FbkRun_A1T1S001.PV_In	o.k.	Block comment 'Digital input driver' already exists.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\OR_Interlock.In1	o.k.	Interconnection 'A1T2X003\FbkOpen_A1T2X003.PV_Out' of type'STRUCT' made, old interconnection 'A1T2X001\FbkOpen_A1T2X001.PV_Out' deleted.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\OR_Interlock.In1	o.k.	Block name 'OR_Interlock' already exists.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\OR_Interlock.In1	o.k.	Block comment 'Logical OR ' already exists.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\OR_Interlock.In2	o.k.	Interconnection 'A1T2X006\FbkOpen_A1T2X006.PV_Out' of type'STRUCT' made, old interconnection 'A1T2X004\FbkOpen_A1T2X004.PV_Out' deleted.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\OR_Local.In1	o.k.	Interconnection 'A1T2H003\Out_A1T2H003.PV_Out' of type'STRUCT' made, old interconnection 'A1T2H001\Out_A1T2H001.PV_Out' deleted.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\OR_Local.In1	o.k.	Block name 'OR_Local' already exists.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\OR_Local.In1	o.k.	Block comment 'A1T1S003' written.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\OR_Local.In2	o.k.	Interconnection 'A1T2H006\Out_A1T2H006.PV_Out' of type'STRUCT' made, old interconnection 'A1T2H004\Out_A1T2H004.PV_Out' deleted.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\Out_A1T1S001.PV_Out	o.k.	Symbolic interconnection 'Q 3.2' of type 'BOOL' made, old interconnection 'A1.T1.A1T1S001.SV.C' deleted.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\Out_A1T1S001.PV_Out	o.k.	Block name 'Out_A1T1S003' written.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\Out_A1T1S001.PV_Out	o.k.	Block comment 'Digital output driver' already exists.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\pump_A1T1S001	o.k.	Message text is empty (column title 'A1T1S001\pump_A1T1S001.MsgEvId1:SIG_1'). Keep old text '$$BlockComment$$ Fehler Rückmeldung Motor' .
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\pump_A1T1S001	o.k.	Message text is empty (column title 'A1T1S001\pump_A1T1S001.MsgEvId1:SIG_2'). Keep old text '$$BlockComment$$ Motorschutz ausgelöst' .
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\pump_A1T1S001	o.k.	Message text is empty (column title 'A1T1S001\pump_A1T1S001.MsgEvId1:SIG_3'). Keep old text '$$BlockComment$$ Externer Fehler aufgetreten' .
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\pump_A1T1S001	o.k.	Message text is empty (column title 'A1T1S001\pump_A1T1S001.MsgEvId1:SIG_4'). Keep old text '$$BlockComment$$ Externe Meldung 1' .
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\pump_A1T1S001	o.k.	Message text is empty (column title 'A1T1S001\pump_A1T1S001.MsgEvId1:SIG_5'). Keep old text '$$BlockComment$$ Externe Meldung 2' .
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\pump_A1T1S001	o.k.	Message text is empty (column title 'A1T1S001\pump_A1T1S001.MsgEvId1:SIG_6'). Keep old text '$$BlockComment$$ Externe Meldung 3' .
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\pump_A1T1S001	o.k.	Message text is empty (column title 'A1T1S001\pump_A1T1S001.MsgEvId1:SIG_7'). Keep old text '' .
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\pump_A1T1S001	o.k.	Message text is empty (column title 'A1T1S001\pump_A1T1S001.MsgEvId1:SIG_8'). Keep old text '' .
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\pump_A1T1S001	o.k.	Block name 'pump_A1T1S003' written.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1S003\pump_A1T1S001	o.k.	Block comment 'Pump outlet educt tank B003' written.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1L003\A1T1L001_LSA+.PV_In	o.k.	Symbolic interconnection '"A1.T1.A1T1L003.LSA+.SA+"' of type 'BOOL' made, old interconnection 'A1.T1.A1T1L001.LSA+.SA+' deleted.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1L003\A1T1L001_LSA+.PV_In	o.k.	Block name 'A1T1L003_LSA+' written.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1L003\A1T1L001_LSA+.PV_In	o.k.	Block comment 'Digital input driver' already exists.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1L003\A1T1L001_LSA-.PV_In	o.k.	Symbolic interconnection '"A1.T1.A1T1L003.LSA-.SA-"' of type 'BOOL' made, old interconnection 'A1.T1.A1T1L001.LSA-.SA-' deleted.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1L003\A1T1L001_LSA-.PV_In	o.k.	Block name 'A1T1L003_LSA-' written.
PCS7_SCE_Prj\A1_multipurpose_plant\T1_educt_tanks\educt_tank B003\\A1T1L003\A1T1L001_LSA-.PV_In	o.k.	Block comment 'Digital input driver' already exists.
Time	o.k.	00:00:19 Hr:Min:Sec
C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\EductTank00.IEA	End	Import completed successfully.

Log file: C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_2\PCS7_Lib\Global\EductTank00.LOG

61. The imported models are now present in the plant hierarchy.



62. Check to see if the textual interconnections with the existing CFCs are closed.

Table 1: Textual interconnections in chart ‘A1T1S001’

Input:	Textual interconnection:	Inverted
MotL.Pumpe_A1T1S001 .LocalLi	A1H003\A1H003.PV_Out	No
Intlk02.Permit.In01	A1H001\A1H001.PV_Out	No
Intlk02.Protect.In01	A1H002\A1H002.PV_Out	No
Or04.Or_Interlock.In1	A1T2X001\FbkOpen_A1T2X001.PV_Out	No
Or04.Or_Interlock.In2	A1T2X004\FbkOpen_A1T2X004.PV_Out	No
Or04.Or_Local.In1	A1T2H001\Out_A1T2H001.PV_Out	No

Table 2: Textual interconnections in chart ‘A1T1X004’

Input:	Textual interconnections:	Inverted
VlvL.Pumpe_A1T1X004. LocalLi	A1H003\A1H003.PV_Out	No
Intlk02.Permit.In01	A1H001\A1H001.PV_Out	No
Intlk02.Protect.In01	A1H002\A1H002.PV_Out	No
Or04.Or_Local.In1	A1T2H001\Out_A1T2H001.PV_Out	No

Table 3: Textual interconnections in chart ‘A1T2H001’

Input:	Textual interconnection:	Inverted
Or08.Or_A1T2H001.In7	A1T1L001\A1T1L001_LSA-.PV_Out	Yes

EXERCISES

In the exercises we apply what we learned in the Theory section and in the Step by Step Instructions. The existing multi-project from the step by step instructions (PCS7_SCE_0107_Ueb_R1505_en.zip) will be utilized and expanded.

The tasks in this exercise supplement the plant with all objects not implemented so far. It is up to you where you want to utilize the tools for importing plant design data. Effective utilization of importing plant design data does not only depend on the plant structure, but also on the mapping of this structure in the plant hierarchy. With some practice, you will improve your knowledge regarding meaningful plant designations and the structure of the plant hierarchy.

TASKS

1. Complete the following CFCs in Reactor R001:
   – A1T2H002 and A1T2H003
   – A1T2H013 and A1T2H015
   – A1T2X007.
2. Check open textual interconnections between the manual controls in the reactor and other CFCs in Reactor R001. To this end, you can also utilize the function ‘Close textual interconnections’ under Options in the CFC Editor. In the result, the interconnections that could not yet be closed are displayed. With a double click or by pressing the button “Go to“, select an interconnection that is still open and correct it manually.

   ⚠

   Note: Not all open textual interconnections can be closed here. Most important are the connections within Reactor R001.
3. Now, create a model of Reactor R001. Delete the folder Reactor R002 and import the model. Reactor R001 is omitted automatically because the folder already exists. Should you delete it, it will also be generated from the model.
4. Next, create a model of Product Tank B001. Delete at least the folder Product Tank B002 and import the model.
5. Now set up the missing CFCs for the rinse tank:
   – A1T4L001
   – A1T4S001
   – A1T4X001, A1T4X002, A1T4X003 and A1T4X004.
6. Interconnect the manual control Rinse in a way that the rinsing water flows from the rinse tank into the reactor and right away back into the rinse tank.
7. Check whether textual interconnections are still open.
8. Finally, check all CFCs for correct designations and correct connections. For the first task, it is best to utilize the process object view. Always select one CFC in the left window while checking the name of the blocks in the ‘Blocks’ tab in the right window. To look for errors, however, you should use the simulation.