



HOME

User Manual

DELMIA Process Engineer[®]

System Library - Application



Foreword

This manual provides an introduction to the Process Engineer System Library operations and functions.

While developing these functions we have made every effort to create a clearly organized, easy-to-understand program structure.

A user-friendly interface as well as a clear menu guide will enable you to quickly learn how to operate the program and to get familiar with its functions so that you can carry out your planning tasks in a quick and reliable way.

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1. Introduction

This manual explains how to use the Process Engineer System Library for your planning purposes.

The system library provides general data which do not belong to one particular project alone. On the system library level, you can create and manage data which you can use later for your planning. In the Process Engineer, the system library is used globally for most of the applications of the program modules.

1.1 How to Use this Manual

This manual enables you to get familiar with the operation and functions of the System Library. This manual briefly describes:

- Main menus available in the system library.
- How to generate your own system items.



Note

When handling the System Library functions, please remember that there is a general introduction to the Process Engineer in the Basic Manual.



Click [General Introduction](#) to access the manual.

1.2 Documentation Conventions and Symbols

The symbols used in this manual are intended to provide you with keys to the contents in an immediately understandable manner.



This symbol is used to introduce key concepts that are covered in the sections immediately following this symbol. As a result, this symbol most frequently appears at the beginning of chapters or sections.



Note

*This symbol is used to mark notes, which provide you with additional information you need to have for further work. You will either find the Note sign at the beginning of a chapter or in a particular text passage in the chapter. Texts bearing this sign are additionally marked with **Note**. The text is always in italics.*




Caution

*This symbol indicates that the text that follows describes particular circumstances that you must avoid to avoid potential errors with the operation of the program or harm to data. You will either find the Caution sign at the beginning of a chapter or near a particular text passage in the chapter. Texts that are introduced by this sign are additionally marked with **Caution**. The text is always in italics.*

Example

This symbol marks examples which serve to illustrate a certain situation.

- 1) This symbol marks the individual operational steps involved in a particular operating instruction. Operating instructions describe operational steps, for example, how to open a menu or execute a function.
- This symbol marks listed subjects. The symbol for listed subjects can be either used to structure a continuous text or to list main subject keywords.
- This symbol marks list inside a bulleted or numbered list.
-  This symbol marks cross reference information that is available in another manual.

1.3 New Functions in System Library

No new functionality has been added for this release.

2. Starting the System Library

The system library provides general data which do not belong to a particular project. It may be considered a direct access to the database. On the system library level, you can create and manage data which you can use at a later point for your planning.



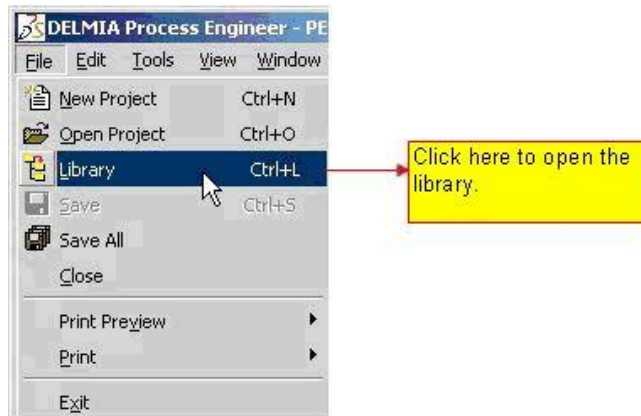
Use the corresponding icon in the main tool bar to open the system library.



Open the system library

Figure 1: Standard Tool Bar Icon to Open the System Library

- 1) You can use the **File < Library** menu as well to open the general library.
 - The system library dialog opens in both cases.



Click here to open the library.

Figure 2: File Menu to Open the System Library

The library consists of an object structure and a display area.

If you mark a library entry in the object structure, the object properties corresponding to this entry is displayed in the display area. To enter new resources in the database, *Please refer to the [Creating Own System Items](#).*

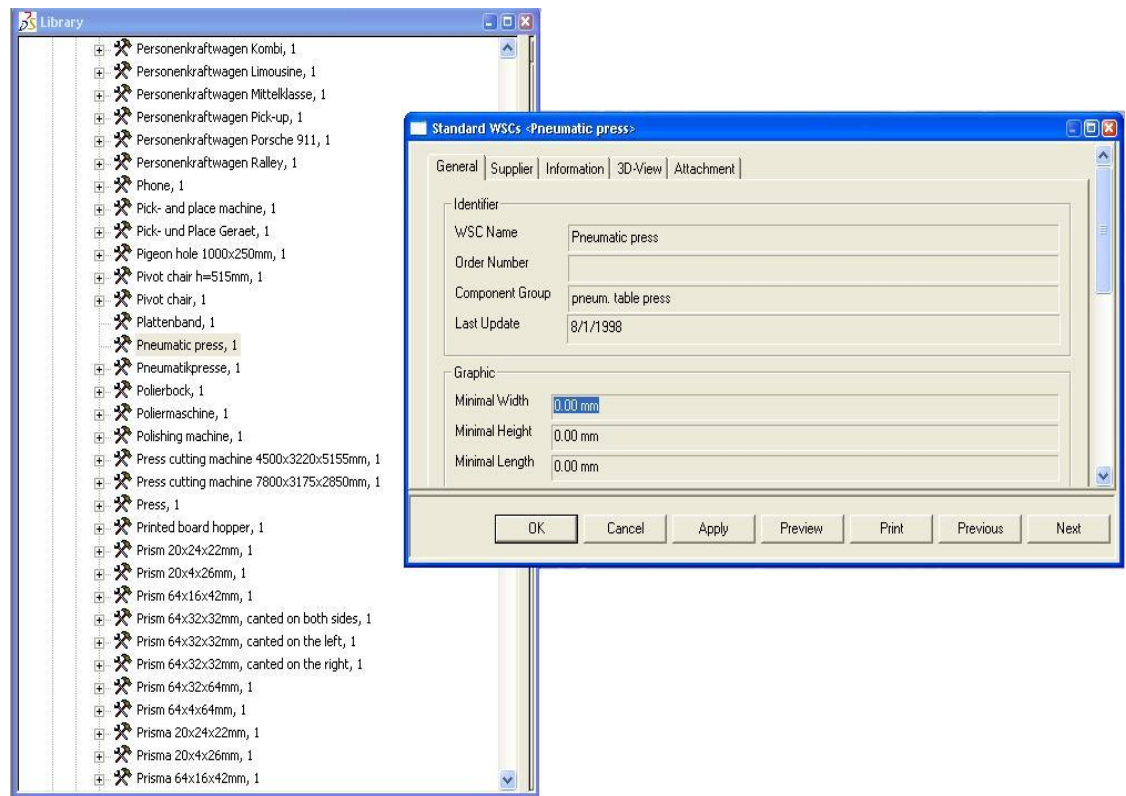


Figure 3: System Item in the System Library

Datacards

Datacards like **MTM**, **AUS** or **MEK** contain the most important time data for defining motion sequences – example taking parts or putting parts into an appliance.

Datacards can only be used if a **license** for either **Industrial Engineer** or **ERGOTime** is available.

If datacards are created in the system library and the respective license is not available these datacards can be created but not used.

2.1 System Library Contents

The system library offers direct access to all database resources. The resources are subdivided into specified categories. If, at any time, you wish to update the library with new components, you may do so. The following items are managed in system library.

- Datacards
- Plantypesets (PTS)
- Planning States
- Raw Materials
- Global Regular Types
- Scripts
- Work System Components

- V5 Scripts

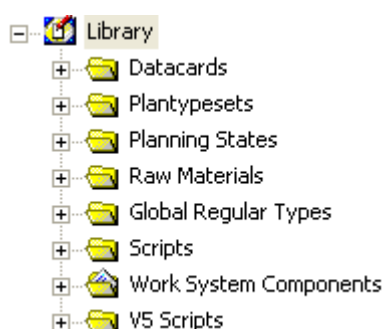


Figure 4: System Library Items

2.1.1 Advancements in the System Library

2.1.1.1 Plantype Pool

In version PE 5.10 and subsequent versions, plantype sets are no longer managed in the project library but just in the system library. In the system library, all generated plantype sets are combined in a so-called plantype pool. They are generated and edited in the plantype set folder. This procedure guarantees that the plantype sets can be used for all projects.

2.1.1.2 Template

The introduction of the plantype pools enables patterns or templates to be generated.

2.1.1.3 Scripts

In version PE 5.10 and subsequent versions, general scripts are available in the system library. The section [Scripts](#) explains how to export and import scripts. This function is available as of version PE 5.16.



For more information on creating and using scripts, *Please refer to the [Scripting Manual](#).*

2.1.1.4 Value Added

As of version PE 5.15, value added groups and value added entries are located under a plantype set of the system library.



For more information on creating and editing value added groups and value added entries, *Please refer to the [PPR Navigator Manual](#).*

2.1.1.5 Work Instruction Library and Item

Work Instruction Library and Work Instruction Library Item are new elements of a plantype set. A Work Instruction Library contains many Work Instruction Library Items, whereby a library item is contained by only one library.

A Work Instruction Library Item can reference one V5 Script.

For Work Instruction Library and Work Instruction Library Items own user access rights can be specified.

It is possible to create a Work Instruction Library and Work Instruction Library Items using the DPE Scripting engine.

3. Plantype Sets

You can find and manage all plantype sets in the system library. In the **Plantype set** folder, you find all of the self-created **plantype sets** and those installed by default. You find the system item plantype set which has a special position in the **System items** folder.



For more information on plantype sets, *Please refer to the [PPR Navigator Manual](#).*



For more information on how to create plantype sets, *Please refer to the [Administration Manual](#).*

All of the **plantype sets** included in the system library are structured in the same way. Each **plan type set** contains the plantypes for the resource, process, and product view. The **plantypes** used when creating the project structures are specified in these three views. In addition, each **plantype set** contains folders for script actions and templates.

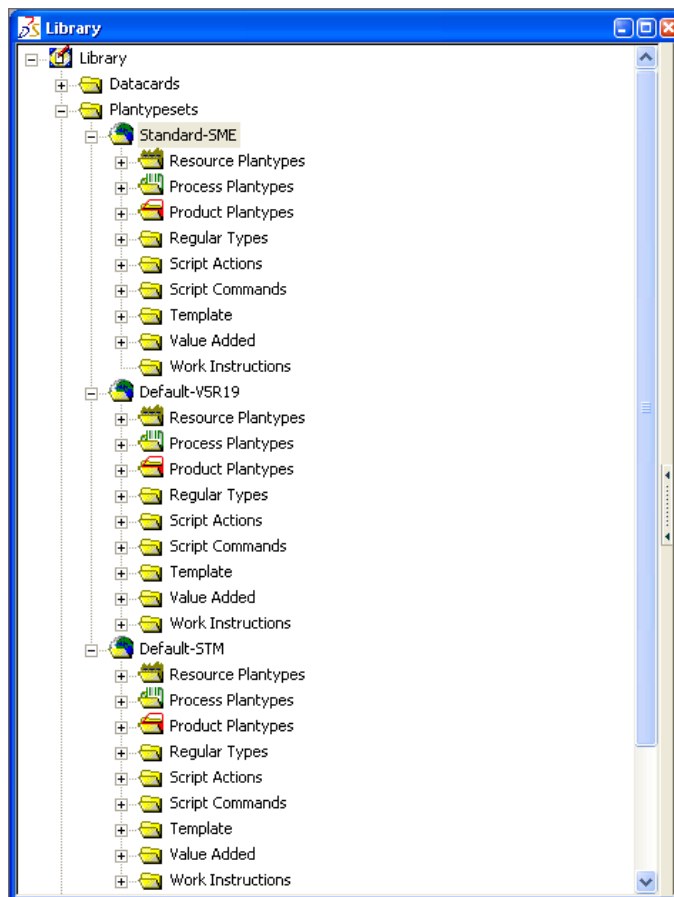


Figure 5: Plantype Set in the System Library

3.1 Exporting Plantype Sets

You can also export the **plantype sets** from the system library.

You can import and export plantype sets only for the same release or service pack.

The following data are transferred when importing and exporting:

- Plantypes with their properties
- Configuration of the plantypes
- Print forms of the plantypes
- Script actions, script assignments, and linked scripts
- The value added (value added groups and value added entries)

The following data are not transferred when importing and exporting:

- Template
- Permissions (Permissions are not taken into account when importing and exporting the plantypeset)

Exporting Plantype Set

A plantype set is exported from the system library.



Note

*If print forms were assigned to a plantype, the forms are also exported upon export. The forms can be found in a directory with the same name as the created ...ini file. If you transfer the exported plantype set to another computer, you must **always** transfer the directory and the ...ini file.*

To Export Plantype Set



- 1) Open the system library in order to export a PTS.
- 2) Select the PTS in the directory **Plantype sets**.
- 3) Start the export using the context menu.
- 4) Click **Export Plantypeset**. Set the directory and the names. The directory for the scripts and print forms and the ...ini file are in this directory after the export; both of them have the same name.



Figure 6: Exporting Plantype Sets



Caution

*The script name must conform with Windows' requirements, because for each script an export file is created and named after the script, i.e. special characters such as *, ?, /, \, |, :, <, > or spaces are not allowed. The export cannot be executed if special characters are used for the script name and the following error message appears:*



Figure 7: Error Message

Only scripts connected to the plantype set in the system library with a script action or a script assignment are exported.

Follow the directions in the section [Scripts](#) to export other or all scripts.

3.2 Importing Plantype Set

A plantype set can be imported via the menu Tools or directly via the context menu of a plantype set in the system library. A plantype set is always imported into the system library.



Note

*If you rename the **...ini file** when importing, you must also rename the directory with the print forms and the scripts to the same name. If you do not do this, the import can not be executed.*

3.2.1 Import via the Menu

- 1) In order to import a plantype set, select **Tools < Import < Plantype Set**.

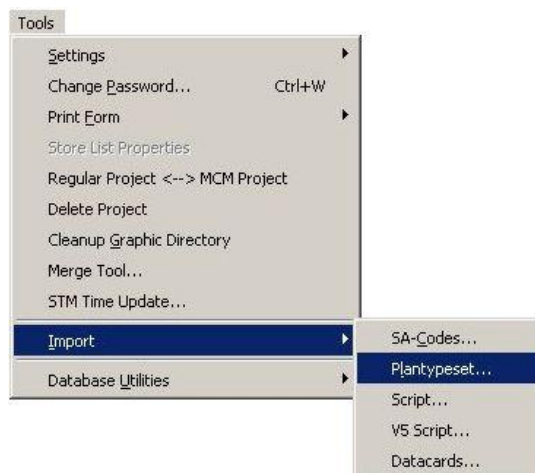


Figure 8: Importing a Plantype Set – via the Menu

3.2.2 Import from the System Library

- 2) To import a plantype set from the system library, select the plantype set and open the context menu.



Figure 9: Importing a Plantype Set – from the System Library

3.2.2.1 Select Import File

The standard import files can be found in the directory:
 \DELMIA\PPRClient\program\bin

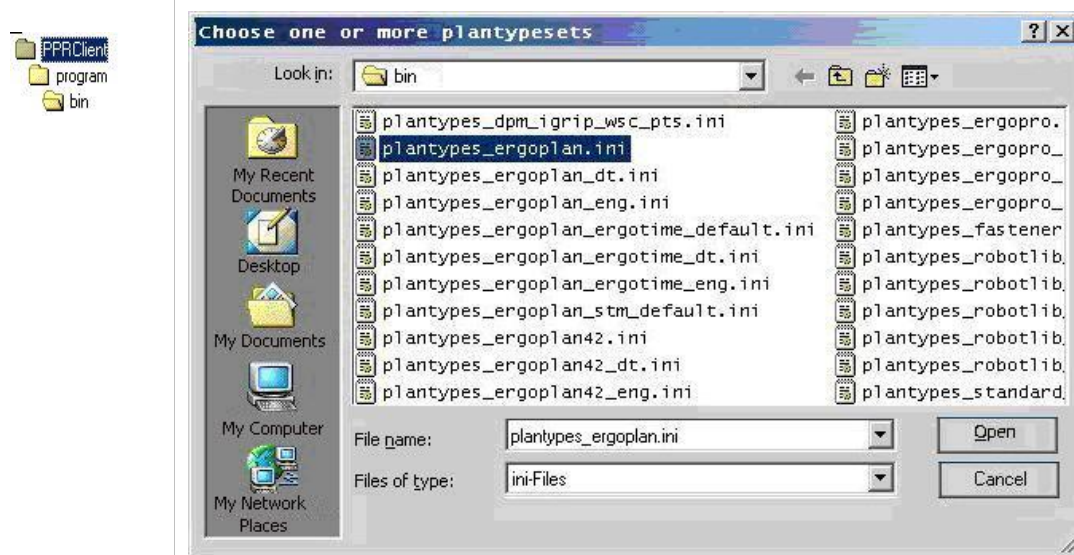


Figure 10: Directory Bin of PPRClients

3.2.2.2 Import Failed

This message indicates that the import was faulty. The possible sources of the Error are:

- The import was interrupted.
- The import file does not have the correct format.
- The plantype set already exists and the name and the abbreviation do not agree during import.
- The script name must conform with Windows' requirements, because the export file is named after the script, i.e. special characters such as *, ?, /, \, |, :, <, > or spaces are not allowed. The export cannot be executed if special characters appear in the script name. Import of a faulty exported PTS can lead to further errors.

If an error occurs, the import is not completed and the system is in the same state as it was before the import was attempted.



Figure 11: Message - Import Failed

3.2.2.3 Dialog for Import of a Plantype Set

If a plantype set with the same abbreviation is already available when the import is started, it gets overwritten, for example **EP-DEF**.

A message brings this to your attention before it is overwritten. The message always appears when the import of a plantype set is started from the system library. If the import is started from the **Tools** menu, the message appears if the same plantype set already exists in the system library.

- Whenever a plantype set is overwritten, all projects and templates created on the basis of this plantype set are affected.
- After the import, a message indicates whether the import was successful.

Four cases need to be differentiated for import of a plantype set. *Please refer to the [Table 1](#).*



Figure 12: Message during Import from the Menu



Figure 13: Message during Import from the System Library

3.2.2.4 Four Cases for Importing a Plantype Set

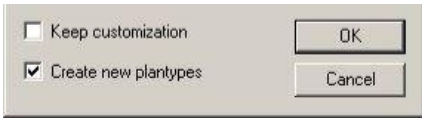
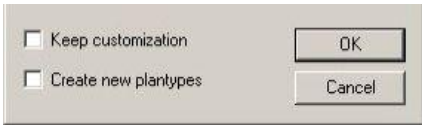


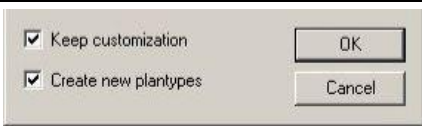
The following applies to all four cases: attributes, pages, groups etc., which have not been defined by DELMIA are overwritten or deleted.



Note

If the field **Keep customization** is not activated for import, you should activate the field **Create new Plantypes**. This allows new plantypes to be created that may be available in the import file and which may be required to structure the plantype set.

Table 1: Four Cases for Import of a Plantype Set

Possible Cases	Description
	The attributes, pages, groups etc. defined by the customer are deleted in this case. New plantypes are created.
	The attributes, pages, groups etc. defined by the customer are deleted in this case. No new plantypes are created.
	<p>The attributes, pages, groups etc. defined by the customer are preserved. No new plantypes are created.</p> <p> Note:</p> <p><i>In this case the structure defined by the customer is to remain completely as it is. New plantypes are only created by the customer and not during the import.</i></p>
	The attributes, pages, groups etc. defined by the customer are preserved. New plantypes are created.

Besides the plantype set, script actions, script assignments, scripts, value added groups, and value added entries are imported into the system library.

Any existing scripts with identical names are overwritten in the system library.

Depending on whether the setting **Keep customization** is activated or not, script actions, script assignments, value added groups, and value added entries with identical names are overwritten (deactivated) or the existing entries are kept (activated).

Export and import is not possible with script actions, script assignments, value added groups, and value added entries of a projects plantype set.

The script size is limited to 380KB. Exporting and importing bigger scripts is not possible.

3.2.2.5 Copying Rights of a Plantype Set

Projects are always created with a specific plantype set. Rights of a plantype set that are only valid for this project can be changed in the project.

Only the rights in the **plantype** set of the project are relevant for a project. The **plantype** set rights in the system library are not accessed. They only serve as default specifications.

Plantype sets are usually created and administered in the system library.

Changed rights in the plantype set of a project can be overwritten by using the **Copy Rights To Slave PTS** context function on any plantype set in the system library.

Such a case could occur, for instance, if it were decided that each project with the same plantype set should have the same rights or if fundamental changes should be performed in the plantype set that have positive effects on all projects.



Figure 14: Activate Copy Rights to Slave PTS Context

To Activate Copy Rights to Slave PTS Context

- 1) In the system library open the **plantype sets** and select a plantype.
- 2) Select **Copy Rights To Slave PTS** from the context menu. In the **Copy Rights to PTS** dialog, all projects are shown which have been created with this plantype set. *Please refer to the [Figure 15](#).*
- 3) In the **Copy rights to PTS** dialog you can determine for which project the rights should be overwritten.

Projects for which the rights should be overwritten are shown in the right display window (Selected projects). Two buttons are provided for this.

- 4) If you want to show all projects at once in the right display window, you do not have to select any project, but simply click button with the double arrow. Single projects are shown in the right display window using the button with the single arrow; to do this you have to select the project first (left display window).

Projects can also be removed from this display window in the same way by using the two buttons with the arrows pointing in the opposite direction.

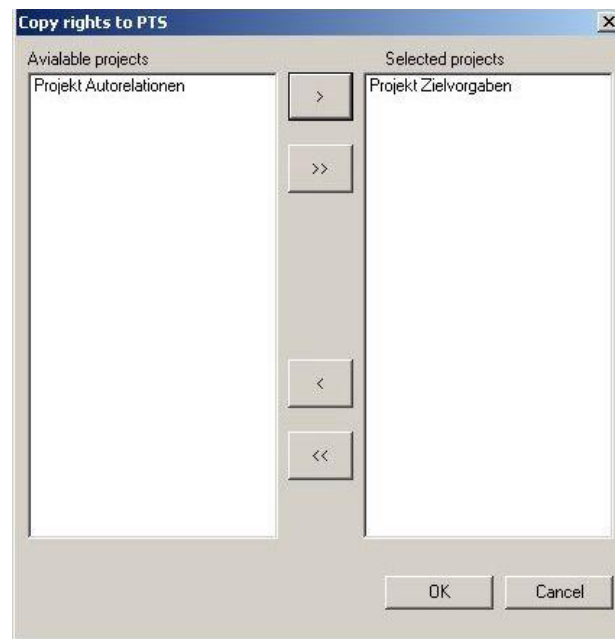


Figure 15: Select Project Dialog

- 5) Confirm the entry with **OK**
The rights of the selected projects are overwritten according to the plantype set you have selected.

4. Raw Materials

In the system library, you can create raw materials for general project work. These materials can be further edited in a project. The basic data of the raw materials created in the system library are retained and are available for all further projects.

4.1 Creating New Raw Materials

- 1) Open **Library < Raw Materials < New < Raw Material**. A **Raw Material** dialog opens where you can define the new raw material details.

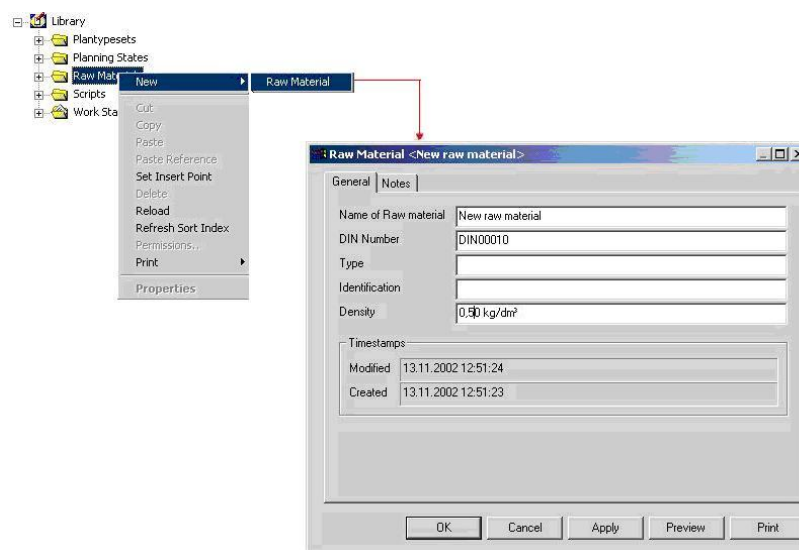


Figure 16: Creating New Raw Material

- 2) Click **General** tab to enter the name (Name) of the raw material, its DIN number (DIN Number), the type (Type), the identification (ID), and the density (Density).
- 3) Click **Notes** tab to enter further information on the raw material.

You can use the Raw Materials in the DELMIA Process Engineer in the product structure. Materials are assigned to products in the product structure.

5. Global Regular Types

In the directory **Global Regular Types**, security-related data objects like companies, countries, or contracts may be created.



For more information on creating and editing security-related data objects, *Please refer to the [Security Manual](#) and [User Management Manual](#).*

6. Template

Introduction - Templates

The introduction of the plantype pools, where each project plantype set is referenced to a plantype set of the system library, enables the creation of templates or patterns. As you already know from text processing, you can create and edit a pattern (known as template) and reassign it to your project. The created templates are saved in the system library together with the corresponding plantype set. In the following, this location is referred to as a **Template Library**.

This section describes:

- How to create a template from a project or in the system library, *Please refer to the [Creating Templates](#).*
- How to edit templates, *Please refer to the [Editing the Template](#).*
- How to use templates, *Please refer to the [Assigning a Template to a Project](#).*
- How to delete templates, *Please refer to the [Template – Deleting usage in a Project](#).*

6.1 Creating Templates

There are two ways to create a template:

- You can either mark components in an existing project, which are to be transferred together with their relations to a new template.
- You can create a new project template and edit it in the same way as a normal project, i.e. create components and relations.

6.1.1 Creating Templates from One Project

save as template

In a project, you can select a part of the project or the entire project and save it as a template in the template library.

To Create Templates from one Project

- 1) Open the context menu by clicking a PPR-Navigator node and select the **save as template** entry. The dialog has the same structure as the **Properties** dialog of a project.
- 2) You can enter, for example, the designation of a new template and organisational data in the dialog.
- 3) Click **OK** to save the template and to close the dialog.
All of the direct subsequent nodes of the selected node are saved. In this mode, relations between further nodes in the project and the system library are ignored.

- The newly created template is saved in the system library in the corresponding plantype set of the project.

6.1.2 Creating Templates in the System Library

The created templates are saved in the Template folder of the corresponding selected plantype set. The templates can be used for the project work. Templates are created to be used for similarly structured projects.

Example

A template with the **Standard-PRO** plantype set is to be used for several projects.

- All of the projects have the same structure (product, process, and resource structure), which is only to be distinguished in the product structure.
- You do not have to create these structures each time there is a new project, but you can use templates that contain these structures and can be edited in the project later on.

To edit a template, you can use all those functions that are available for a new project. In the template, you can create structures and relations between the objects of the structures. The structures can only be edited on the basis of the selected **plantype set**. The actual **plantype set**, however, cannot be edited in the template.

In the system library, you can create as many templates for each **plantype set** as you like.

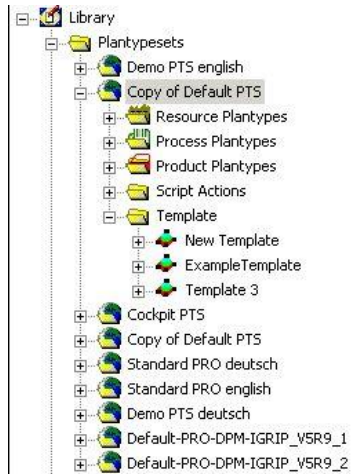


Figure 17: Template in the System Library

6.1.2.1 Creating a Template

To create a template in the system library, proceed as follows:

- 1) Open the **Template** folder in the context menu of the **plantype set** where you want to create the template and select the **New < Template** entry. Please refer to the [Figure 18](#).

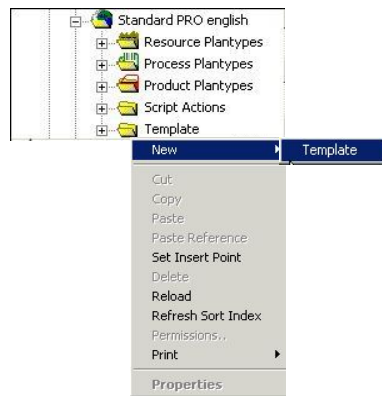


Figure 18: Creating a Template in the System Library

- 2) The **Template** dialog opens. This dialog corresponds to the **Properties** dialog of a project. The specific template data are to be specified in the **Properties** dialog as for example the template name, the specification of code rules, or employees' data. This Properties dialog contains user-defined entries.
- 3) After all properties have been specified and the entries confirmed by **OK**, the **Properties** dialog is closed. After closing the **Properties** dialog, another view (template creation mode!) opens. In this view, you can edit the template. This view provides you with the **planttype set** and a project library which is made up of just a few components. Using these two, you can edit the template.
- 4) This view provides you with the same edit options as the PPR-Navigator: To create structures (views), you can either use the context menu or drag entire tree structures or parts of your existing project into the template using the drag and drop function.

6.1.3 Prerequisites for Creating Templates

Templates in the System Library

Relations that are defined between the objects of the structures are retained with templates that are created in the system library.

Templates in the Project

- If you save parts of a structure in the project as a template, you do not create relations at the same time. If you want the relations to be part of your template as well, you have to create a template on the superior node which is the project node. You can save all relations in the template with this.
- Templates created in a project are copied into the system library and saved in the Template folder of the corresponding **planttype set**. **Ergoitem type** is not copied. These types are premises, PoT curves, or allowance sets which can only be found in the project library.

Templates as Self-Contained Projects

- Templates display components of the process, product, and resource structure. Templates are treated and displayed as self-contained projects. Thus, on the one hand there is a clearly defined relation between the components and the relations of a template; on the other hand, there is a template which you can edit and create like a normal project by using existing

tools. Templates, as well as a project refer to a **planttype set** in the planttype pool of the system library.

- You can only use those templates in a project which refer to the same **planttype set** that is used in the project.
- Template components as well as components of normal projects can refer to master data objects (master data are all data which can be created in the system library). They can refer to system items in the project library.

6.2 Editing the Template

A small rectangular icon with a blue background and white text that reads "open template as project".

- 1) To edit a template, open the context menu in the system library and select **Open Template as Project**. The display of the opening project depends on the template created.
 - If you create a template on a toplevel node (the product view is defined toplevel as can be seen in the [Figure 19](#)), this node is displayed in the planning view where it can be edited. *Please refer to the [Figure 19](#) and [Figure 20](#).*
 - If you create a template on a node which has not been defined a toplevel node, this node is displayed in the project library where it can be edited. The subcomponents of the template can only be found in the corresponding plantypes of the project library.
- 2) You can also use the edit options from the PPR-Navigator.

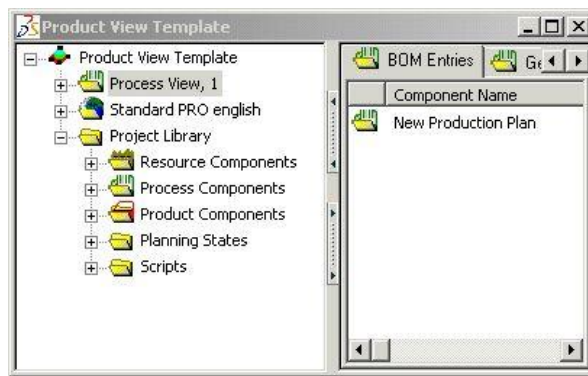


Figure 19: Open Template as Project; Toplevel Node

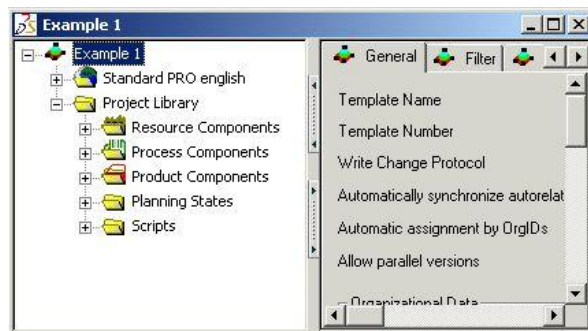


Figure 20: Open Template as Project; no Toplevel Node

6.3 Assigning a Template to a Project

You can use a template from the template library by means of the **COPY** function, i.e. the template including components, relations, bills of material, etc. is copied into the project. The components inserted in the project (except for the history) lose their connection to the template in the system library as a result of copying, i.e. subsequent changes of templates in the template library do not affect the templates already used in the projects.

There are two ways to assign a template:

- You can copy the template using the context menu or the menu bar and insert it in an existing project by means of the **COPY** function.
- You can use the drag and drop function to drag the template to your project.

Effects of Copying Template in the Project

- After copying a template into an existing project or to any node (insert node) by drag and drop, the copy algorithm tries to include the contents of the template in the structure from the selected insert node. If the DELMIA Process Engineer is able to include the template directly in the tree structure, a new structure gets immediately created.
- If the template contains single components or structures which are not direct successors of the hierarchy structure below the insert node, these components or structures are saved in the **Template-TO-DO** folder. In general, these parts are components which are not automatically linked to the contents of the template, example relations. These components from

the Template-TO-DO folder can be edited in the project. They can be linked to the suitable project components.

As a template is always COPIED within a project, the entire contents of the template project (this may also be partial structures of a template) are copied into the target project. A TemplateUsage object is created for a project each time a template is used in a project. This TemplateUsage points to the used template and is saved in a project list. Each component which has been created by copying a template into a project, is given a pointer to the corresponding TemplateUsage object.

The components which have been included in the project by means of usage, are put in the TO DO-folder.

6.3.1 Template-TO DO folder in the Project Library

In the Template-TO-DO folder of the project library all those template components which could not be transferred to the project structure (product, resource, and process structure) are saved. This failure may be due to a missing hierarchical level in the project structure or due to already existing similar components.

You can assign these components from the Template-TO-DO folder either by scripts or by using the drag and drop functions.

To Assign Components from the Template-TO-DO Folder

- 1) Create a new component in your project structure. This component has to be a node that is on a superior level to the template level (there is one hierarchical level between them).
- 2) Move the root node of the template to this item using the drag and drop function.
- 3) Suppose you have a resource structure consisting of location < plant < system < hall, etc. You create a template on the plant level. To be able to use the template you have just created, you must create a **Location** structure item first.

Example

The **Template TO DO** folder gets immediately updated in the DELMIA Process Engineer. If you want to use your template several times, you have to link it several times in your template structure. The Template-TO-DO folder is not updated unless you explicitly activate the **Reload** function.

6.3.2 Access Rights for Template in Projects

Access Rights for Templates

Prior to version PE 5.15 access rights were not copied when using a template in a project.

As of version PE5.15 the copying of rights depends on the setting **Browser and Menu Items < Copy Objects with Rights**, which were generally considered so far when copying objects.

Now this setting is considered both when copying a whole template into a project and when referencing (single reference usage).

To further edit and change components which have been created in the project by **REFERENCING**, it is necessary to have the required rights. Changes of these components and relations do not affect the referenced templates in the template library.

Access rights are needed to open a template as a project and to create, edit, and copy components. As with regular projects, access rights can be assigned to template projects.

6.3.2.1 Usage by Referencing

It has already been explained how to **Copy** a template. In the following section, it is shown how to create a relation.

By assigning single objects of your template to a project you can create a **reference**.



Figure 21: Creating a Reference

References which have been created in a template are retained when copied in the project. This applies to templates which were created in the system library as well as to templates which were created in a project on the project node. References are not copied automatically for templates created in a project on a lower hierarchical level.

6.3.2.2 Copying between Templates

One can also copy items between individual templates. For copying between templates, the access right **Add Children** is required in both projects.

If the linked resources shall be **copied** together with the processes, you need to have the function permission **copy associated resources**.

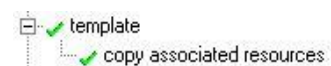


Figure 22: Function Permission Copy Associated Resources

There are two ways to copy between the templates:

- You can **copy** the components via the context menu or the menu bar and insert them into an existing template by using **Insert**.
- You can **move** the components by drag and drop from one template project to the other.

6.3.2.3 Copying Processes with Linked Resources

Only resources linked to the relation `proc_uses_plant` or `proc_runningon_plant` can be copied.

- For the new process and resource components, the planning status is set to **Edit**.

6.4 Template – Deleting usage in a Project

You can delete templates either in the library or in the Template-TO-DO folder. To do this, you can select one of the following options:



Figure 23: Delete Options

- **Normal:** Only the templates get deleted.
- **Deep:** The template and the relations to other components or bill of material entries get deleted.

A library template cannot be deleted if there is a reference in the system library.

7. Scripts

7.1 Exporting Scripts

As of version PE 5.16 exporting and importing individual or multiple scripts from the system library is possible.

To Export Individual Scripts

- 1) To export an individual script, in the browser or the list view select the corresponding script and then select **Export script** from the context. Please refer to the [Figure 24](#).



Note

This function is available in the system library only.

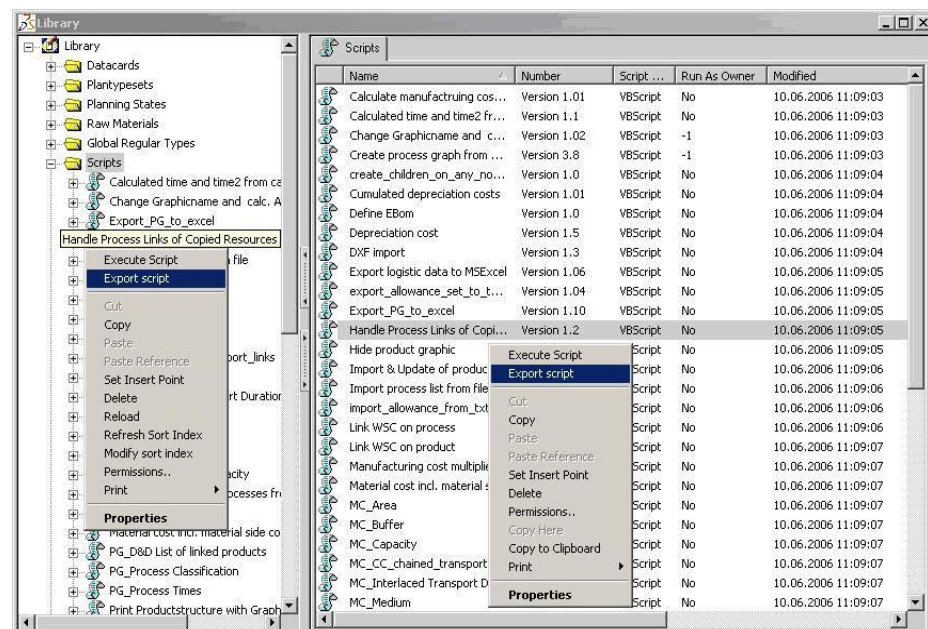


Figure 24: Exporting an Individual Script

- 2) In the dialog that opens select the path and the file for the storage location of the script. The export file and the script have identical names (even if a different name was entered).

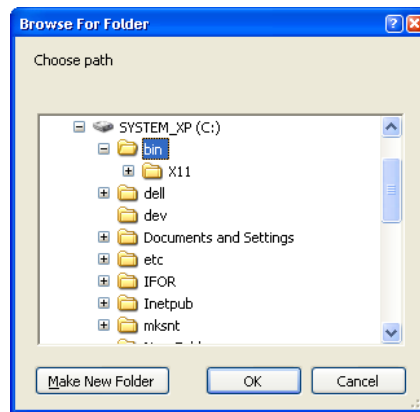


Figure 25: Setting the Saving Path and File for Export of an Individual Script

- 3) After the path has been selected and the dialog closed by clicking **OK**, the export format must be set.



Figure 26: Export Formats

Two export formats are available: **ANSI** and **Unicode**:

- **ANSI**: The ANSI format is used for standard installations.
 - **Unicode**: The Unicode format is used when additional characters are needed; example if Japanese or Chinese characters are needed.
- When the format setting is complete, the script is saved in the selected path with the script name and the file extension **.ini**.



Figure 27: Script Export Successful



Caution

*The script name must be compatible with Windows' requirements, because the export file is named after the script, i.e. special characters such as *, ?, /, \, |, :, <, > or spaces are not allowed. The export cannot be executed if special characters appear in the script name and an error message appears.*

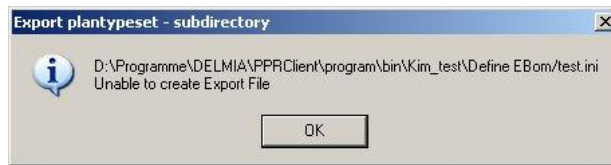


Figure 28: Error Message

This applies especially to a multiple script export.

Exporting Multiple Scripts

- 1) For a multiple script export, select all corresponding scripts and click **Export script** in the context menu.

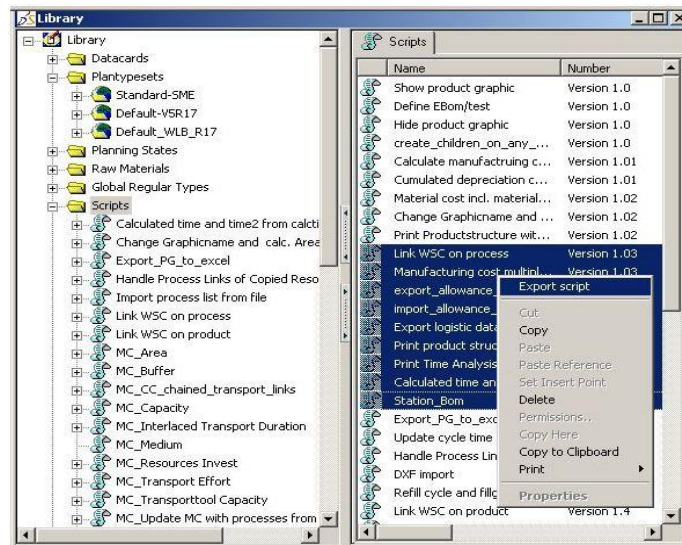


Figure 29: Multiple Script Export

- 2) From here the process is the same as for individual script export. *Please refer to the [How to Export Individual Scripts](#).*

The script size is limited to 380KB. Exporting and importing bigger scripts is not possible.

7.2 Importing Scripts

Follow these directions to import a script:

- 1) Open the menu **Tools** and select **Import < Script**.

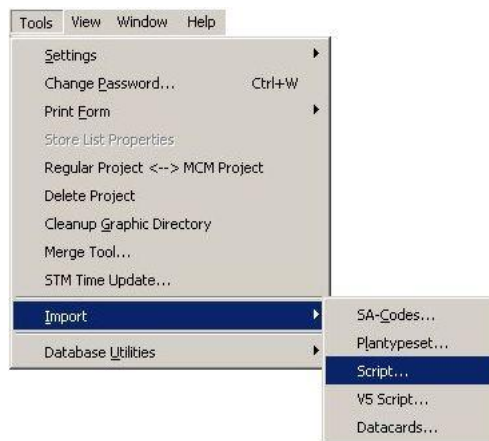


Figure 30: Importing Scripts

- 2) A dialog for script selection opens. Only previously exported scripts with the file extension *.ini* are offered for selection.
 - 3) Select one or multiple scripts and click **Open**.
- A message confirms if the import was successful.

Error Message

An error message appears if the import file is not a script. The most common cause of confusion is plantype sets, since they also have the extension *.ini*.

What is Important when Importing?

- Any scripts with identical names in the system library get overwritten.
- A script that was renamed after the export need not be changed by the import. Instead a new script with the old name gets created.

8. System Items

System items are used to display the resources as three-dimensional symbols in the layout. In the Process Engineer, bills of material are used to clearly display graphic objects (system items) which are used for the layout in the Resource View.

8.1 Using Resource Bills of Material

Resource Bills of Material

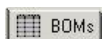
A layout is created and edited by a graphic. In the Process Engineer, graphical objects are included in a layout. The layout is created by a resource structure. The display of a layout and hence the number of graphical objects in the layout depends on the hierarchical level of the resource structure the layout is to be created for. A layout, for instance, can be created for a single workstation as well as for larger assembly lines with shelves. The number of graphical objects in the layout depends on the selected option. You can either insert graphical objects directly into the layout or you can insert them by means of the bill of materials. In the Process Engineer, graphical objects are created as system items in the system library which are then used for the layout creation in projects.



This section describes:

- How to create a bill of material structure, *Please refer to the [Creating Bills of Materials](#).*
- How to govern bills of materials, *Please refer to the [Editing Bills of Materials](#).*
- How to insert system items in the bill of materials, *Please refer to the [Inserting System Items](#).*

8.2 Creating Bills of Materials



Bills of materials and bill of materials structures are created in the main bill of materials. You can create as many bill of materials structures on each bill of materials level as you like. You can neither delete the main bill of materials level nor edit its properties.

After a bill of materials has been created, the **Bill of materials** tab is added to the display area. You can use this tab to display all bills of materials. The bills of materials belonging to the selected bill of materials level are displayed.

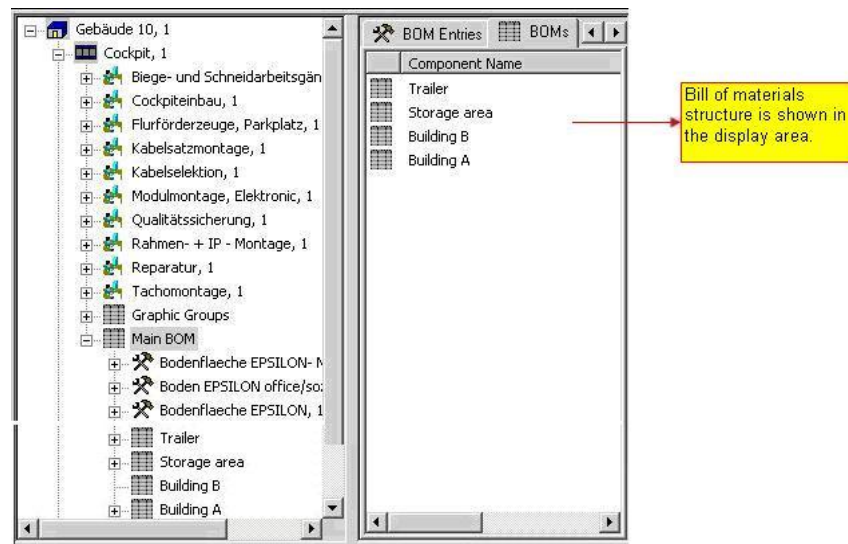


Figure 31: Bill of Materials Structure in the Display Area

Bills of materials are either created directly in the main bill of materials or in a bill of materials that has already been created. To create a bill of materials, you always have to use the right mouse button context menu.

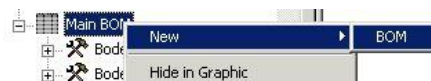


Figure 32: Creating a Bill of Materials in the Context Menu

You can create bill of materials structures for each bill of materials level. Every level is created in the same way.

To Create a Bill of Materials

- 1) Select the bill of materials level – this is the main bill of materials in the [Figure 31](#) – and press the right mouse button.
- 2) Click **Bill of Materials**.
- 3) Enter the name and abbreviation in the **Properties** dialog. System items created by the customer can also be assigned to a bill of materials i.e. items that are not provided as standard in the Process Engineer system library. An administrator or a colleague with the same administrative rights can make entries for these user-specific system items in the **Manufacturer** tab.
- 4) After you have entered data in the **Component name** and **Abbreviation** field, the **Apply** button is active. Use the **Apply** button to check the result. Although the new bill of materials is displayed in the bill of materials tree, it is not created.
- 5) Use the **Preview** function to display data entered in the **Properties** dialog before printing.

Supplier

Figure 33: BOM – Properties Dialog

- 6) Click **OK** to finish creating the bill of materials.
- 7) The **Properties** dialog can be edited for every bill of materials created with just one **exception**: the main bill of materials properties cannot be edited. Either double-click or use the right mouse button context menu to open the **Properties** dialog.

8.3 Editing Bills of Materials



Edit bill of materials
in the Resource
View.

Bills of materials are edited in the Resource View. Bill of materials structures are created in the **Main bill of materials** tree.

To Change Resource View

- 1) Open the PPR-Navigator Resource view.
- 2) Select the corresponding hierarchical level in the resource structure (For example, assembly line and assembly station).
- 3) Click **Open this application** in the right mouse button context menu.

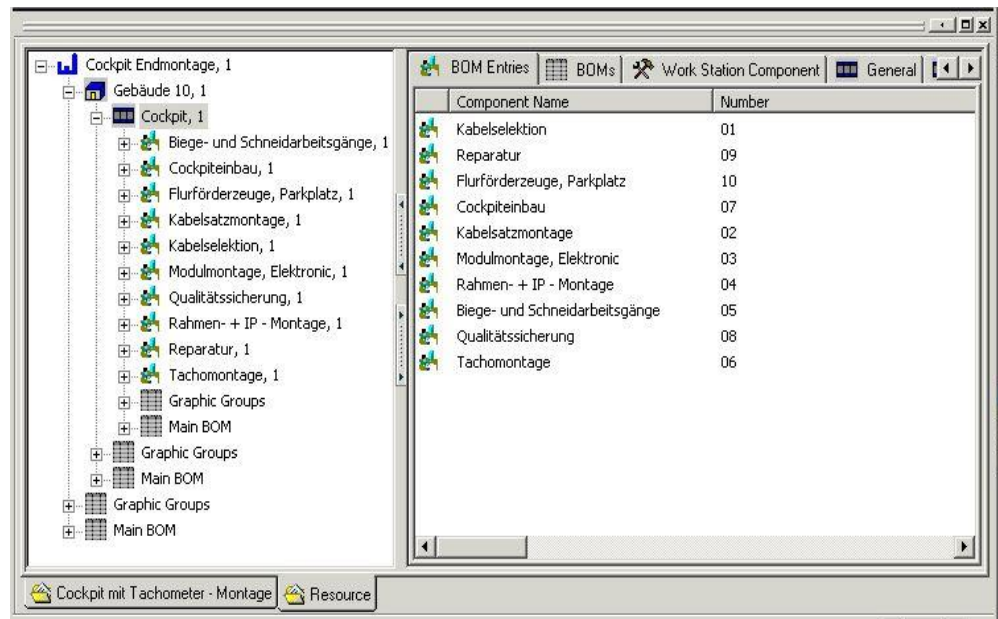


Figure 34: Example of an Open Resource View – with Bill of Materials Structure

Example

Suppose you want to create an assembly line layout. The assembly line is supposed to include several shelves for material supply, means of transport, work benches, etc. The assembly line structure is created and displayed in the Resource View.

The graphical display of the individual layout resource items as example the assembly line and the shelves are created by the assigned system items.

To get a clear display of the graphic objects to be used, you have to create a bill of materials structure which is similar to the resource structure in the main bill of materials. The graphic objects are taken from the system library and inserted in the bill of materials structure according to their usage.

Conclusion

This procedure shows the particular system items which graphically display particular resource items; for example in the event of a change, system items can be exchanged in a target-oriented way.

8.4 Deleting Bills of Materials

You can delete bills of materials created in the main bill of materials. Either uses the context menu or the keyboard (**DEL** key) to delete bills of materials. If additional bill of materials levels are assigned to a bill of materials, all of the assigned bill of materials levels are deleted as well.

To Delete a Bill of Material

- 1) Select the bill of materials. Then press the right mouse button and click **Delete**.

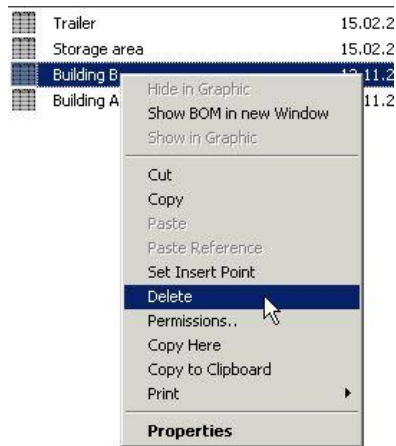


Figure 35: Deleting a Bill of Materials Using the Context Menu

2) Confirm the message with **Yes** to delete the bill of materials.



Figure 36: Message during Deletion of Bills of Materials



Note

The main bill of materials cannot be deleted.

8.5 Inserting System Items

You can insert system items of the system library directly in a bill of materials or in an open layout using the drag and drop function. Inserted system items of the system library are referenced objects only.

You can sort all columns of the **system item** directory display area in ascending or descending order.



For more information on how to use the General Finder to search for specific system items. *Please refer to the [Finder Manual](#).*

To Insert System Items



- 1) Use the **File < Library** menu item or the **Library** icon to open the system library.
- 2) Open the **System items** directory. The system item directory contains all system items available in the Process Engineer.
- 3) The individual folders in the system item directory are sorted according to system item usage – i.e. the **Standard WSCs** folder consists of system items for general usage, the **Worktables** folder contains all kinds of worktables.

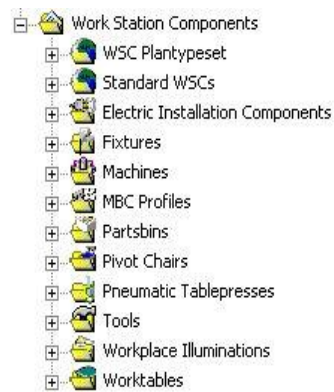


Figure 37: System Items Directory

- 4) Select the folder which contains the system item you want to insert in the bill of materials or in the layout.
- 5) In many cases it is advisable to display the properties and the system item graphic first.

You can use the right mouse button context menu to display the properties of the system item selected.



Note

In the Process Engineer, you can only edit those system items which were created by the user. All other system items delivered with the Process Engineer cannot be edited. Hence, the Properties dialog fields of these system items are greyed out.

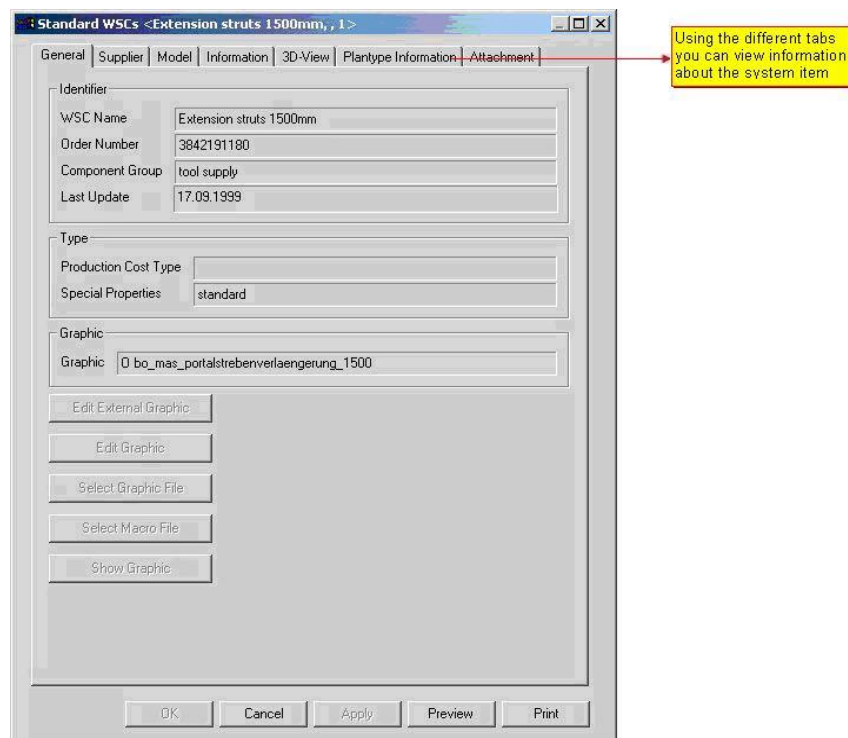


Figure 38: System Item Properties Dialog

- 6) Graphics assigned to a system item can be displayed by the **Display graphic** context menu or by the **3D View** tab in the **Properties** dialog.

Example

Example for showing a graphic of a system item using the context menu

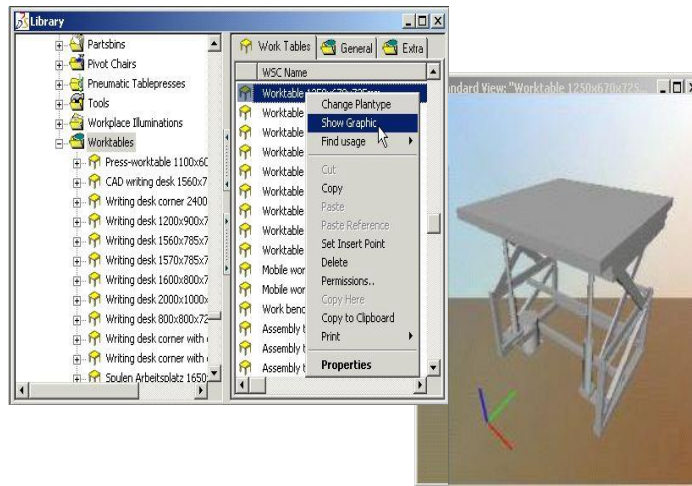


Figure 39: Example of a Graphic Display – Context Menu

To Insert a System Item in the Bill of Materials or in the Layout

- 1) Drag the selected system item to the bill of materials in the Resource View or to the open layout using the drag and drop function. The system item which has directly been inserted in the layout is also transferred to the bill of materials.
- 2) Click **Yes** in the message window to confirm this link. *Please refer to the Figure 40.*

8.5.1 Marginal Notes



- System items which have been inserted in a bill of materials can also be displayed in the display area of the Resource View. Click **BOM Entries** to display all of the inserted system items of the selected bill of materials level. You can also display the existing bills of materials of the selected bill of materials level in the **Bill of materials area**.
- Items which have directly been transferred to the layout have the selection color and are automatically positioned in the bill of materials.

To Insert System Items using the Bill of Materials

- If you have inserted one or several system items in the bill of materials, you are able to display the graphic in the context menu (**Show Graphic, Edit Graphic**).
- You can see all of the inserted system items in the graphic. All you have to do now is to arrange the system items so that a real workstation is created. You can edit a graphic in the **Edit Graphic** mode only.
- System items which have directly been inserted in the bill of materials appear in the graphic at the starting point of the coordinate system. The coordinate system of the body and the coordinate system of the scene are congruent.
- The bill of materials and the graphic reflect the actual state of the graphic. If you insert a new item into the bill of materials, it automatically gets displayed in the graphic.

- If you delete an item in the bill of materials, this item is no longer represented graphically. If you delete an item in the graphic, this item also gets removed from the bill of materials.

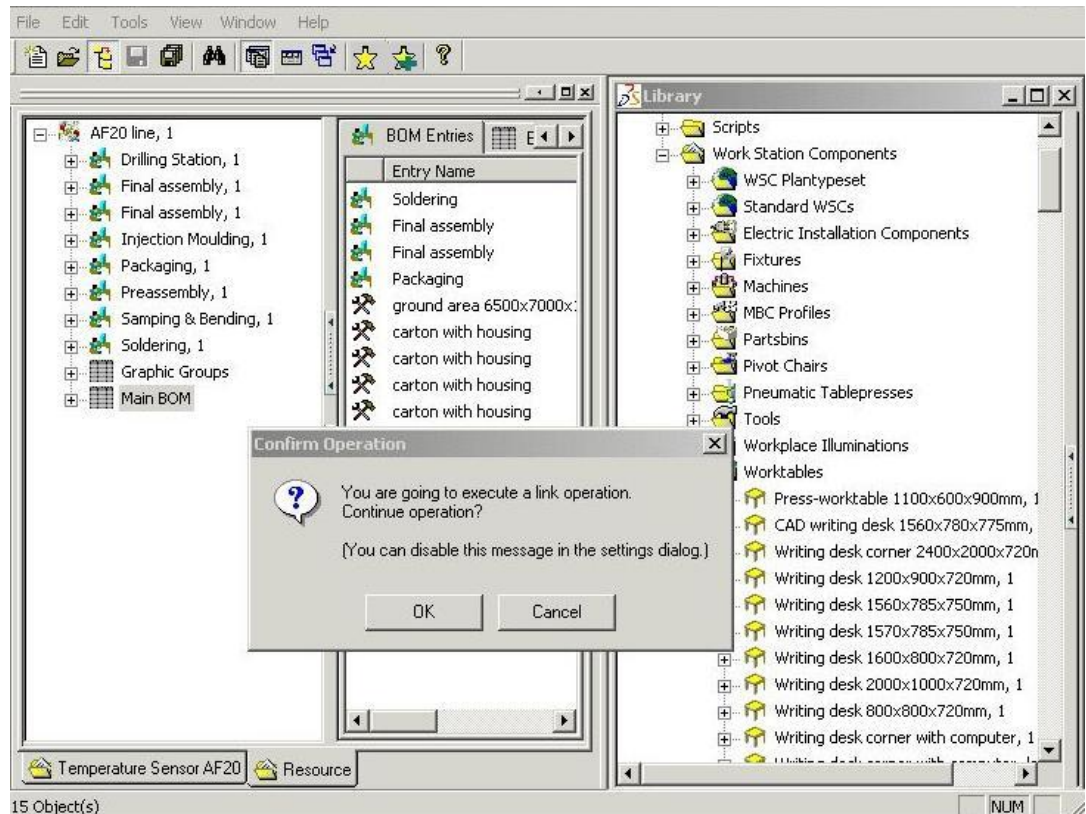


Figure 40: Inserting System Item – Confirming Message

To Insert System Item using the Finder

- 1) The system items found are displayed in the list part of the Finder. You can insert the system items using the drag and drop function.

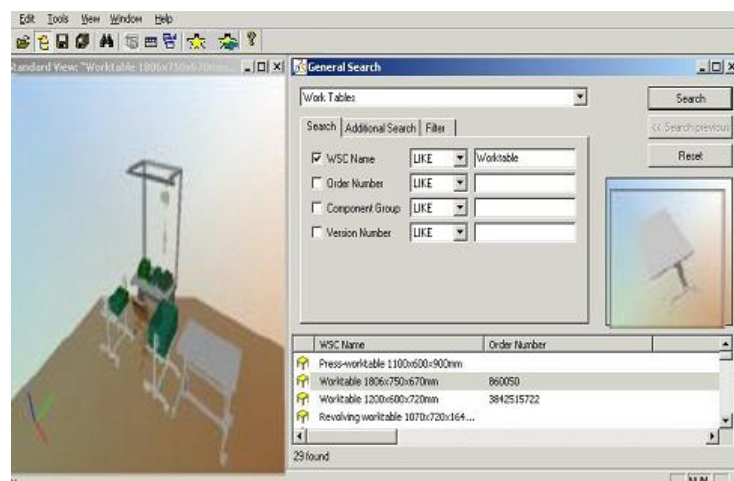


Figure 41: Inserting System Item using the Finder

- 2) Display system items in the Resource view and in the display area.

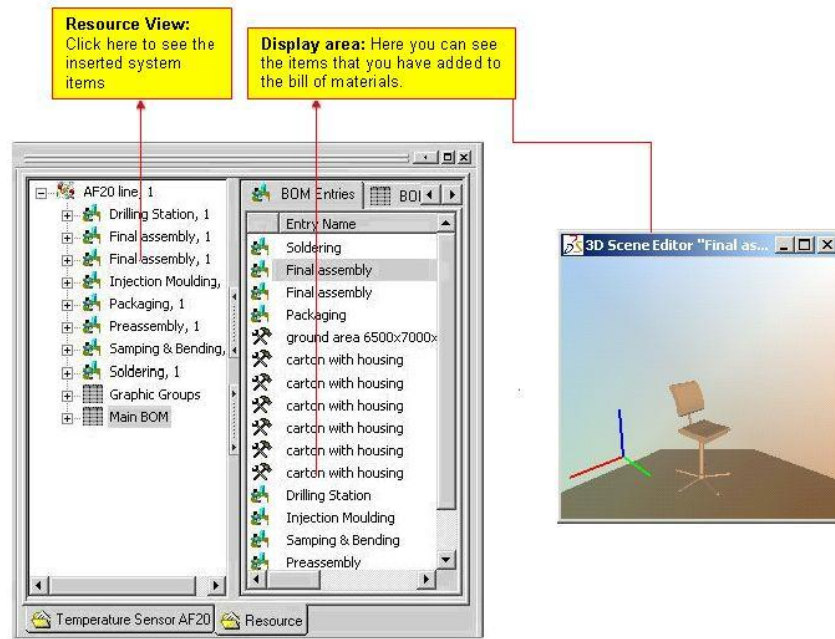


Figure 42: Displaying System Items

8.5.2 Moving System Items

To move system items materials in the Resource view, proceed as follows:

- 1) Open the object structure until you can see the bills of materials between which the system items are to be moved. You can also move several system items simultaneously (Multiple selection with **Ctrl** button held down). Multiple selection is restricted to the display area.
- 2) Select the bill of materials which contains the items to be moved. You can either move system items in the display area or directly in the bill of materials structure.
- 3) Select system items i.e. in the display area. Drag the selected items onto the target bill of materials using the drag and drop function.
- 4) Confirm the movement by clicking **Yes** in the Confirm Operation window.

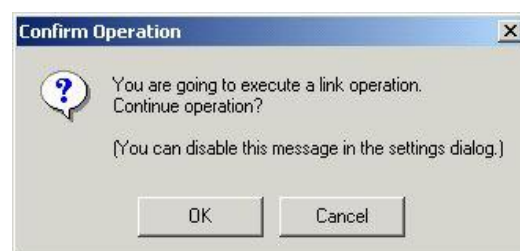


Figure 43: Confirmation Message to Move the Bill of Materials

8.5.3 Deleting System Items from a Bill of Materials

You can delete system items:

- Directly in the system library, if the system item is not used in the project, i.e. if it is not referenced.
- Directly in the Resource View, from the bill of materials structure or from the display area.

To Delete System Item

You can delete system items using the context menu or the **Delete** button on the keyboard.

- 1) Select the system item.
- 2) Open the right mouse button context menu and click **Delete**.
- 3) Press the **Delete** button on the keyboard.

8.5.4 Displaying System Items

You can easily manage system items by structuring them. With the **Show All Components** context function, you can easily display all of the system items used in the layout.

To Display System Items

- 1) Open the context menu at the hierarchical level, the layout is created for the Resource View.



Figure 44: Show All Components Context Function

- 2) Click **Show All Components**. All of the components are listed in the dialog display area.

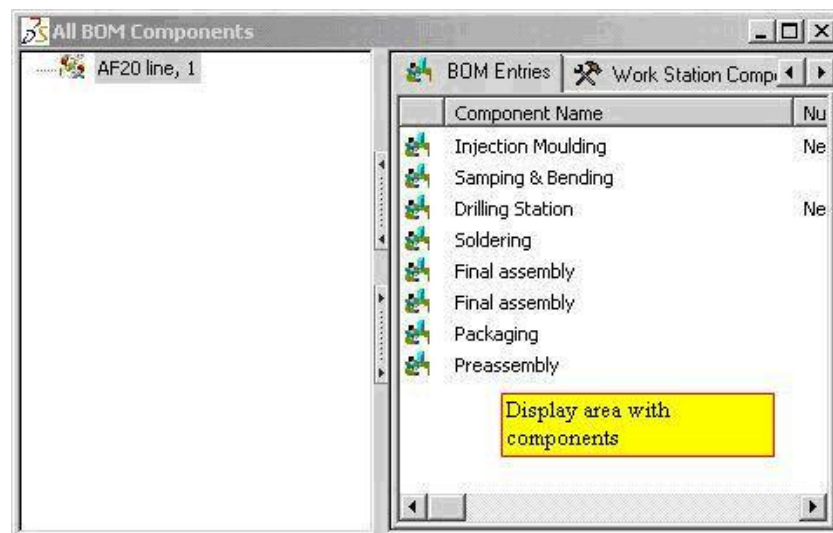


Figure 45: Displaying all System Items

9. Creating Own System Items

9.1 Introduction

In the system library of the Process Engineer, the user can create his own system items. With these items, he can efficiently create and optimize manual and partly automated work systems.

Due to the great variety of 3D system components in the system library, the time required for creating detailed and meaningful 2D and 3D manufacturing system layouts in the Process Engineer is only half of that required with usual manual or CAD layout methods.

You do not necessarily need a CAD-system to create your own system items in the Process Engineer. The system items are created as models representing the basic functionality. The created graphic in turn can be used, for instance, to demonstrate the functionality or the acceptance for a product and can thus serve as a basis for a discussion with a resource engineer.

The graphic as well as detailed written information related to the new system items can be saved in the database. You can use the General Finder to include system items in the bills of materials. There are different search criteria as the designation, the manufacturer, or the purchase price. You can use these search criteria as well when searching for your own system items.

If you work on one database with several users, the descriptive information for your own system items is used to speed up the system item search so that the system items can be utilized for planning.

System items are created in the system library.

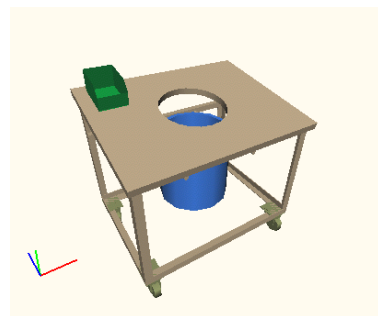


Figure 46: Example of System Items

9.2 Defining Own System Items

You can insert different parameterizable primitives in the graphic and arrange them using the graphic tools to design new system items.



For more information on how to use the graphic tools, *Please refer to the [Graphics Tools Manual](#).*

To Create a New System Item

- 1) Open the system library.

System items are created in the system item directory. You can create system items for every folder (**with the exception of the WSC Plantypeset folder**).

Each folder of the system item directory corresponds to the system item usage.

All of the system items are created in the same way.

This procedure is explained based on the example of standard WSCs (work system components).

Example

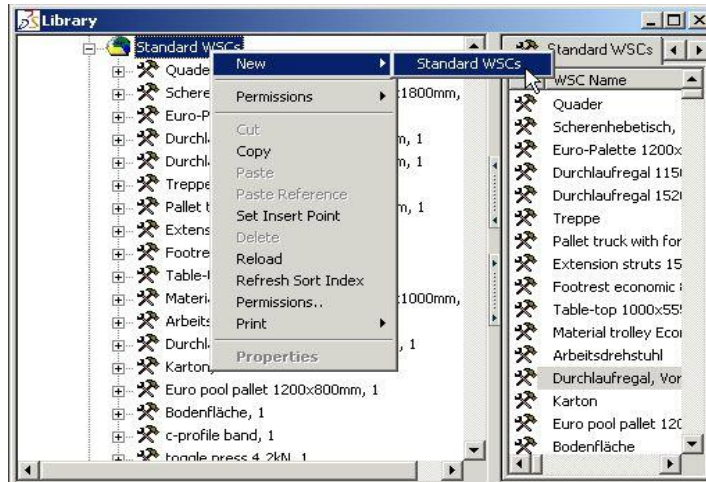


Figure 47: Example – Creating own System Items

- 2) Select the **Standard WSCs** folder in the system library/system items.
- 3) Open the context menu and click **Standard WSCs**. Please refer to the [Figure 47](#).



Note

When making your entries, please remember that the system item is also used by other colleagues for planning. For this reason, you should provide clear information. Properties dialog that enables others to quickly find the system item and to identify it clearly.

- 4) Enter specific data for the new system item in the **Properties** dialog as the designation, manufacturer's data, or the order number.
- 5) You can make specific entries for each tab in the **Properties** dialog. To get the entry fields, click the corresponding tab (General, Manufacturer, etc.).

Standard WSCs <toggle press 4.2kN, 1>

General | Supplier | Model | Information | 3D-View | Plantype Information | Attachment

Identifier

WSC Name: toggle press 4.2kN

Order Number: 13

Component Group: pneum. table press

Last Update: 06.09.2000

Type

Production Cost Type:

Special Properties: standard

Graphic

Graphic: 0 delta1080944

Edit External Graphic

Edit Graphic

Select Graphic File

Select Macro File

Show Graphic

Figure 48: New System Item Properties Dialog – Input Fields Active
Manufacturers' Instructions (Supplier Information)

Supplier

Standard WSCs <toggle press 4.2kN, 1>

General | Supplier | Model | Information | 3D-View | Plantype Information | Attachment

Supplier Information

Supplier: Schmidt Feintechnik

Catalogue: Press

Page Number: 22

Price: 306,78 Euro

Figure 49: Supplier Information

These manufacturers' instructions are actual data relating to the resource to be supplied as:

- The resource is produced and supplied by manufacturer **A**.
- It was found in the catalogue dating from **year 20.....** on page **XY**.
- The price amounted to **XY-Euros** at that time.

Model Data

Figure 50: Model Data

These model data are actual data relating to the resource to be supplied such as:

- The resource corresponds to the model from the **XY...series** dating from the year 20.
 - This Model series is equipped in such and such a way. The basic data are in length, width, and height.
- 6) Confirm the entries with **OK**. The system item is created and then saved in the **Standard WSCs** directory of the system library.
- 7) Double-click to open the **Properties** dialog for editing purposes.

9.2.1 Defining Graphics

You can define graphics for new system items in the system library according to the criteria. When defining a new system item, you have to specify the definition criteria for the system item. You can only define graphics for a system item according to **one** of these criteria:

9.2.1.1 Criteria's

Edit Graphic

Select Macro File

Select Graphic File

- **Edit Graphic button:** You can use this button to create the graphic for the new system item with primitives and system items that have already been created. *Please refer to the [Creating Own System Items](#).*
- **Select Macro File button:** You can use the **Select Macro File** button to assign macros to a system item. You use this function if just the macro alone is to be used as a system item. In the Process Engineer, macros are supplied as standard in a graphic directory. You can use the **Select Macro File** button to select a macro from the graphic directory and use it for a system item.
 - If you use this function to assign a macro to a system item, existing macros gets possibly removed; for example if the macro has been changed and it is to be assigned to the same system item. *Please refer to the [System Items as Macro](#).*
- **Select Graphic File button:** You can use the **Select Graphic File** button to assign a CAD file to a system item. You use this function if just the CAD

Edit External Graphic

- **Editing external CATIA graphics:** Use this button to edit CAD files created in **CATIA**, as long as these graphic files were saved with the file type **...CADProduct. Graphic** files from CATIA are provided exclusively with the file type **...cgr** to other applications, for example the Process Engineer, and are used for the visualization of the system element.
- A graphic file which has been assigned to a system element can be edited only if it is available in CATIA with the file type **...CADProduct**. In order to use it with other systems you have to save the edited graphic file with the file type **... cgr**. The changes made in CATIA are immediately displayed via the link to the system element.



Note

*CATIA is started using the register entry **v5_command** ...with the path specification for the CATIA starting file **CNEXT.exe**. The register entry **v5_command** can be found under **Tools < Settings < Maintenance Tool... < Local Machine < Graphic**.*

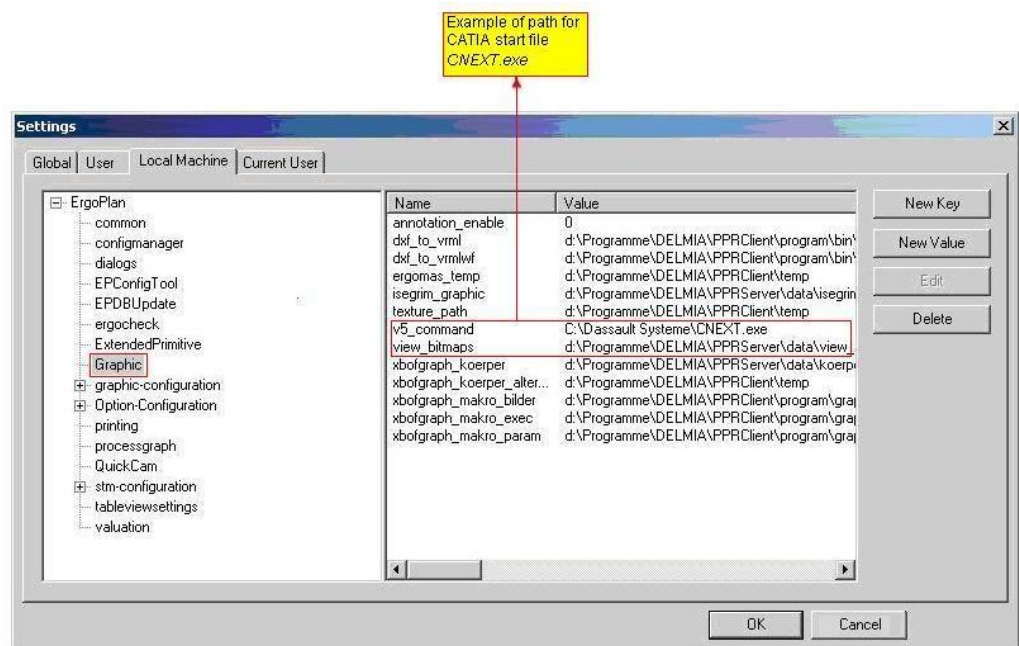


Figure 51: Register Entry v5_Command

If the register entry **v5_command** is not available, set the path to CATIA **CNEXT.exe** via the dialog Path to the external graphic editor.

After the path has been set, the registry entry **v5_command** is set and CATIA is started directly on the next call-up without the dialog being opened again.

9.3 Creating Graphics for own System Items

You can graphically display resources by using system items; these resources can then be used in a layout. A graphic is created and edited by the graphic tools.

To Create Graphics for Own System Items

- 1) Select the created system item (it is the Normenkastenroller in the example). You can select the system item either in the **Display area** or in the **directory** in the corresponding folder.
- 2) For your **search**, you can either use the **General Finder** or the alphabetical sorting of columns function in the display area. You can also click any system item in the directory and enter the first letter of the system item you are searching for; in the example, **N** is the initial letter.

Example

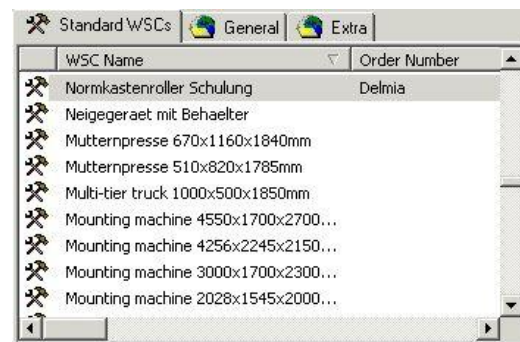


Figure 52: Selection in the Display Area

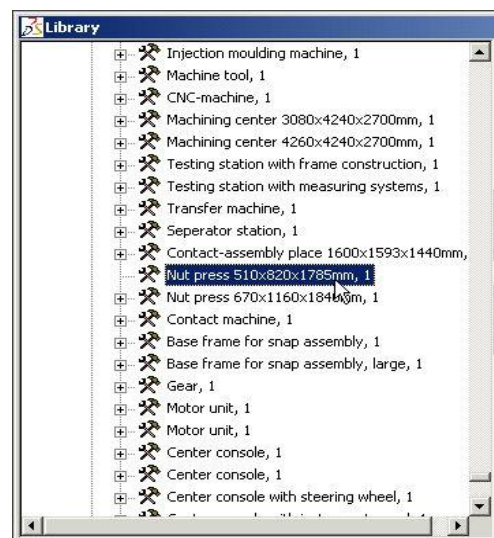


Figure 53: Selection in the Directory

- 3) Double-click the **Properties** dialog to open it for the selected system item.
- 4) Click **Edit Graphic** button in the **Properties** dialog to start the graphic tools. The graphic tools are then available.

The graphical display of a new system item can be modeled from:

- System items that have already been created.

Edit Graphic

- From so-called primitives. Primitives are simple standards which can be used to create a large scale model.
- From a combination of primitives and system items.

Use these three graphic tools from the toolbar to graphically display system items. You can use all the other graphic tools to edit the graphic in addition to these three.

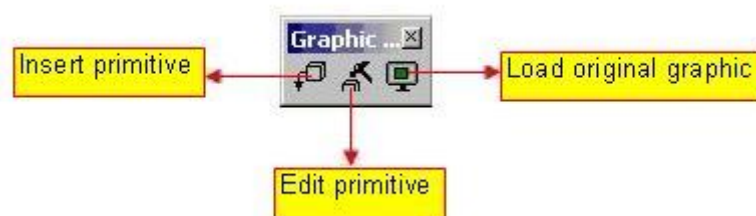


Figure 54: Three Tools in the Toolbar

Example for a graphic with an inserted system item

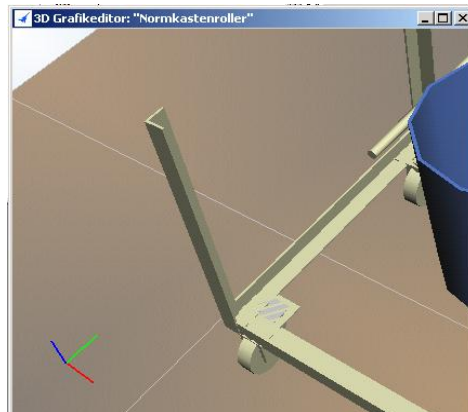


Figure 55: Example – System Item Modeled with Primitive L-Profile

9.3.1 Inserting Primitives

The particular size of primitives used in the graphic can be specified exactly by parameters. Parameters designate sizes such as height, diameter, or width of a selected primitive.

To Open Insert Dialog



- 1) Click **Insert primitive** icon in the toolbar. The dialog contains the **Primitive** and **Components** tab. If you select the open graphic, the icon for the insert tool is active.
- The **Primitive** directory contains all primitives available in the Process Engineer. In addition, you can use external graphics from this directory to create a system item.
 - System items previously created are made available from the Components directory.

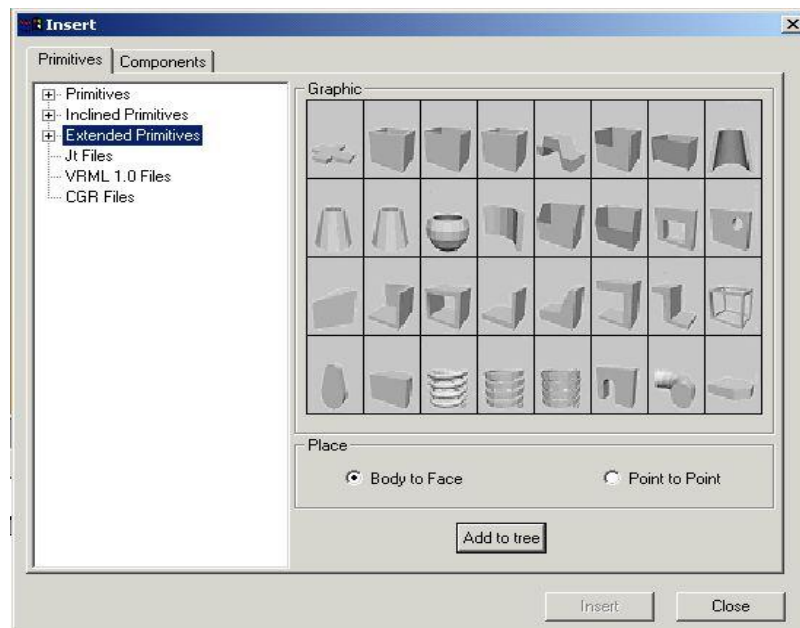


Figure 56: Insert Dialog



Note

When graphically editing system items, make sure you save them regularly.

To Insert Primitives in a Graphic

- 1) The procedure for inserting a primitive into a graphic is the same for all primitive types. Primitive types are **Primitives**, **Inclined Primitives**, and **Extended Primitives**, which are available in the corresponding directory. Please refer to the [Figure 56](#).
- 2) You can insert primitives either from the directory or using the graphic display. You do not necessarily have to open a directory to insert a primitive from the graphic display in the graphic.

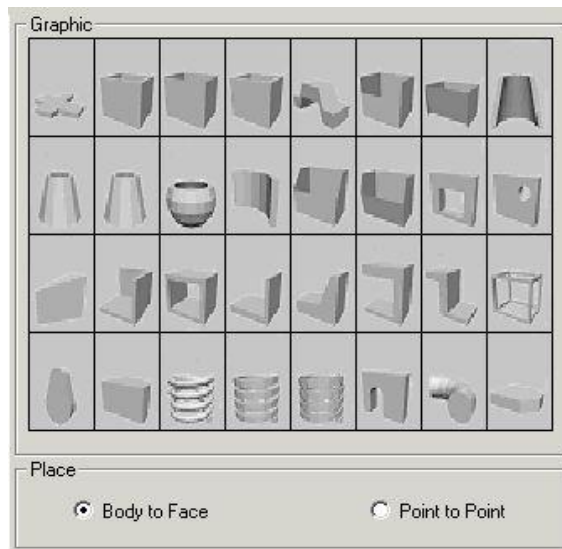


Figure 57: Example of a Graphic Display of Primitives

- 3) The Place function can only be used if a primitive has already been inserted in the graphic and if you want to exactly place further primitives. You can select between:
 - Activate **Body to Face** if you want to place the additional primitive on an area.
 - Activate **Point to Point** if you want to place the primitive on a particular point.
- 4) Select one of the three directories to get a graphical display.
- 5) Double-click one of the graphical icons for the primitives to open the dialog for the parameters. You can also open one of the three directories and double-click one of the primitives in the directory.

Editing Dialog for Parameters **To Insert a Primitive in a Graphic**

- 1) Specify the parameters for the corresponding primitive in the dialog. The entries to be made in the dialog always correspond to the selected primitive.

Dialog for editing parameters. The parameters to be determined for editing in the dialog always correspond to the selected primitive

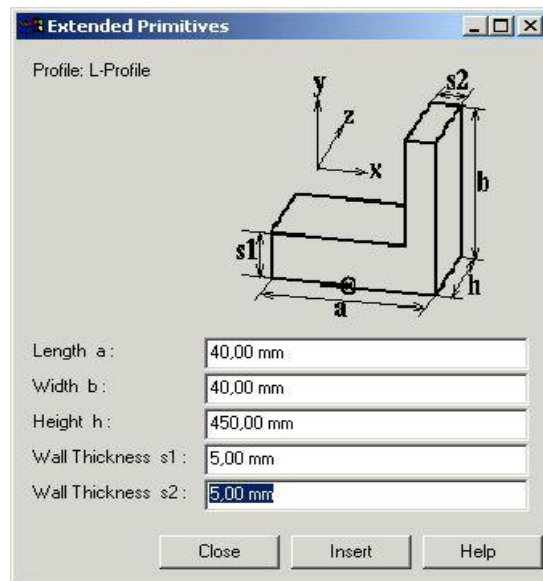


Figure 58: Dialog Example – Inserting Parameters

- 2) Insert the selected primitive in the graphic.

There are two ways to insert a primitive in a graphic: either by using the **Insert** button in the dialog or by using the **Insert tool**. As long as the dialog is open, any number of primitives of the selected primitive can be inserted in a graphic.

- 3) Click **Insert** button in the parameter settings dialog to insert the primitive at the zero-point. Please refer to the [Figure 58](#).

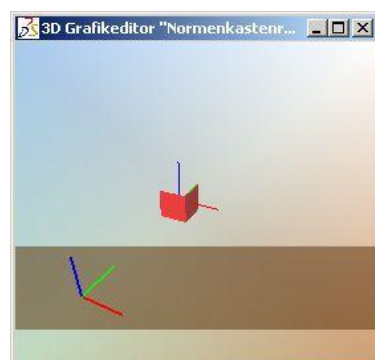


Figure 59: Primitive Inserted at the Zero-Point



- 4) Use the insert tool to click the graphic to place the primitive at the point where you have placed the insert tool. You can use the insert tool as well to insert further primitives in the graphic. Please refer to the [Figure 57](#).

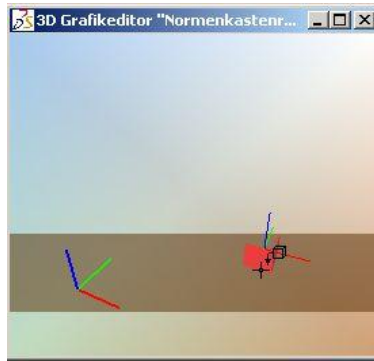


Figure 60: Exactly Placing Primitive using the Insert Tool

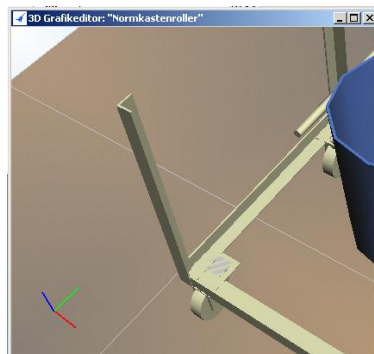


Figure 61: Example – System Items with Inserted Primitive L-Profile

5) Close the dialog after inserting the primitives.

9.3.2 Changing Primitives

Example

You can quickly change the parameters of the inserted primitives in a graphic.

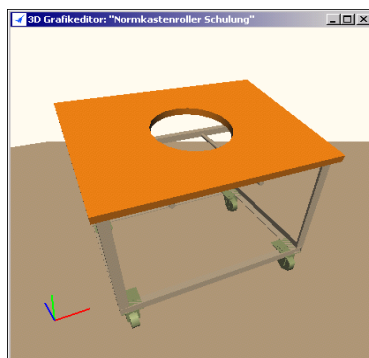


Figure 62: Example – Changing Plate with Bore

To Change the Parameters of the Inserted Primitives in a Graphic

- 1) In the graphic, select the primitive of which you want to change the parameter. You can only select one primitive to be changed. *Please refer to the [Figure 62](#).*



Note

Always the last saved status of the set parameters of a primitive in the Edit dialog is made available.

You can also use the **Load original graphic** tool to change a system item. Changes that were made to the parameter settings of a primitive after the last data backup are not considered in this usage. The last parameters to be saved are always the ones displayed in the dialog.



- 2) Click **Load original graphic** icon in the toolbar. Confirm this message with **Yes**.

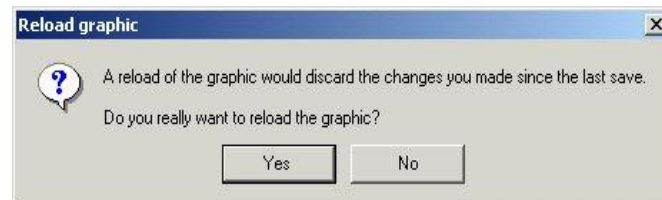


Figure 63: Message – Usage of Load Original Graphic



- 3) Click **Modify Primitive** icon in the toolbar to open the **Change parameter** dialog.
- 4) Change the parameters in the dialog.

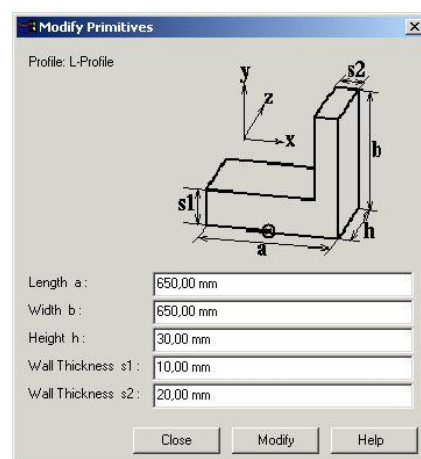


Figure 64: Example – Change Parameter Dialog – Primitive (Modify Primitives)



- 5) Click **Modify** to display the changes in the graphic.
- 6) Click **Close** to save the changes. *Please refer to the [Figure 64](#).*

To Select the Color of a Primitive

- 7) Use the **Context menu < object color** to change the color of a primitive. To do this, you have to select the primitive in the graphic. *Please refer to the [Editing Self-Created System Items](#).*



Note

You can use the **Edit Graphic** mode to change the color of a primitive. In the actual layout, another color can only be assigned to the whole system item. You can access the Edit Graphic mode via the system item Properties dialog.



For more information, *Please refer to the [Graphics Tools Manual](#).*

9.3.3 Using Context Menu for Editing Primitives

Insert
Modify

In addition to the general graphic tool functions such as Placing, Saving, or Copying of graphic objects, you can also use the three edit tools for editing primitives – Inserting primitives, changing primitives, and loading original graphic – in the context menu.

To Edit Primitives via Context Menu

- 1) You can open a context menu with a selected primitive or open it on a free space in the graphic. The two context menus provide you with a range of various functions for editing a primitive.

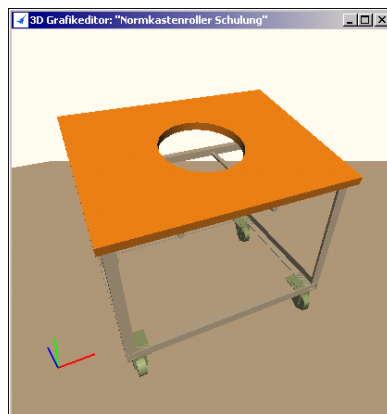


Figure 65: Context Menu Functions – Selected Primitive

- 2) You can use the **Insert** and **Modify** functions with a selected primitive. For the **Modify Primitives** function: *Please refer to the [Changing Primitives](#).*
- 3) You can use the **Insert primitive** function with or without a selected primitive. The Insert function with a selected primitive corresponds to the inserting process using the insert tool. *Please refer to the [How to Insert Primitives in a Graphic](#).*
- 4) You are able to use the **Load Original Graphic** function in the context menu if you have not selected a primitive. If you activate this function, all parameters of primitives in the graphic are reset so that they have the values of the last saving process. *Please refer to the [Changing Primitives](#).*

Insert
Reload

9.3.4 Inserting Components

You can use system items that have already been created to display a new system item graphically.

To Insert a New System Item Graphically

- 1) Click **Components** tab in the dialog. *Please refer to the [Figure 56](#).* The dialog that opens provide you with the search functions for the system items.



For more information on how to use the Finder, *Please refer to the [Finder Manual](#).*

Search

- 2) Specify the system item search criteria in the dialog. Click **Search** button.

Insert

Close

- 3) The system items found are displayed in the list part of the dialog.
- 4) In the list part, select the system item to be inserted in the graphic. Then click **Insert** button. The system item is inserted in the graphic. You can insert as many system items in a graphic as you like in this way.
- 5) Click **Close** button to close the dialog.

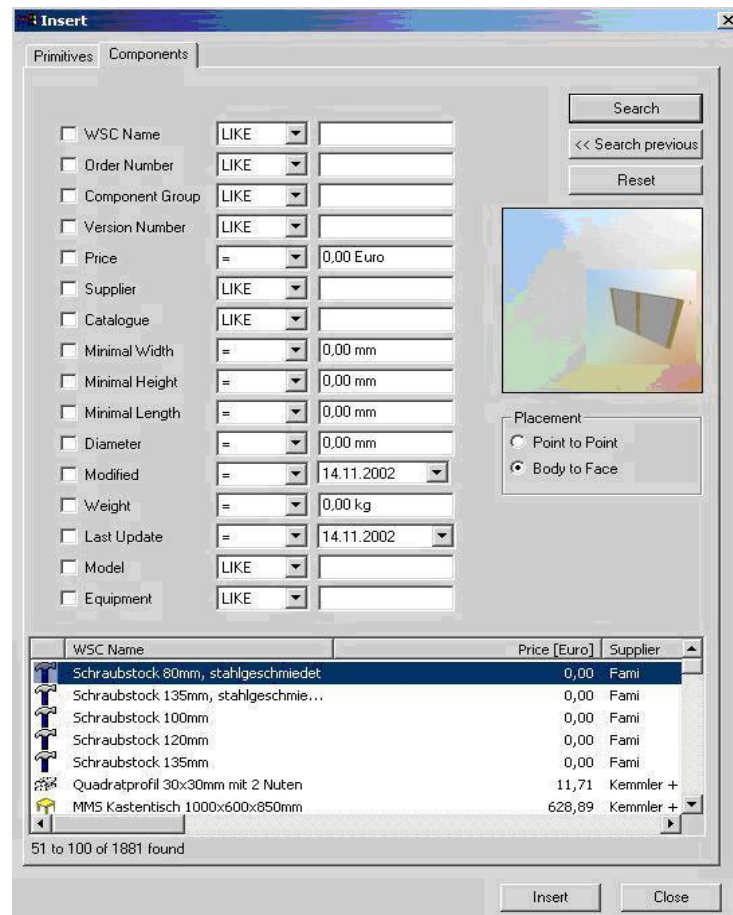


Figure 66: Inserting Existing System Items

9.3.5 Editing Self-Created System Items

You can edit your own system items any time you like. You can change **Properties** dialog data as well as a system item graphic. You can make changes in the system library and in a system item application.

System items of an application only represent references of the system item created in the system library. It is not important whether or not changes have been made in the system library or in an application. They affect all of the referenced system items and the system item in the system library in both cases.



Note

The changes first take effect after you have saved them. You are recommended to close the Graphic Editor after changing a graphic.

To Edit Self-Created System Items

- 1) Open the **Properties** dialog to edit a system item. In an application, you can open the Properties dialog either in the bill of materials or in the layout.
- 2) To edit a system item, you can use all the functions available for the creation of a new system item i.e. **Insert primitive** and **Change primitive**.

**Tips for Editing**

You can create new system items based on those that have already been created. This method is particularly recommendable if only minor changes are to be made to the new system, i.e. in the graphic.

- 1) Create a new system item in the system library.
- 2) Insert a system item that has already been created, which you want to use as a basis for the new system item in the graphic of the new system item.
- 3) Now you can make your changes such as changing the dimensions or the system item color. In the graphic mode, for example, you also have the **Split** context function. Using this function, you can minimize a system item until the primitive level is reached. Using the **Merge** context function, you can merge minimized system items again.

9.4 Using CAD Files for System Items

You can use CAD files to create a system item graphic. These graphic files are created externally by means of CAD software. The CAD files are assigned to a system item in the **Edit Graphic** mode. Using this mode, you can assign as many CAD files as you like to a system item.

In addition to a CAD file, you can also use primitives and existing system item graphics to design the graphic.

You can use following CAD Formats for System Items:

- CAD graphics of the ...*VRML* file formats.
- CAD graphics of the ...*CGR* file format. CAD files of this file format are created by means of the **CATIA** CAD software only.

9.4.1 Importing and Inserting CAD Files

To prevent the normal user from importing CAD files into the CAD files directory, set the entry **not_copy_cad_files** to 1.

Administrator or a user with corresponding rights decides which user or which department (usually the design department) is allowed to import CAD files.

To Import and Insert CAD Files

- 1) To prevent the normal user from importing CAD files, please set in menu **Tools < Settings < Maintenance Tool < Global < Graphic** the entry **not_copy_cad_files** to 1.

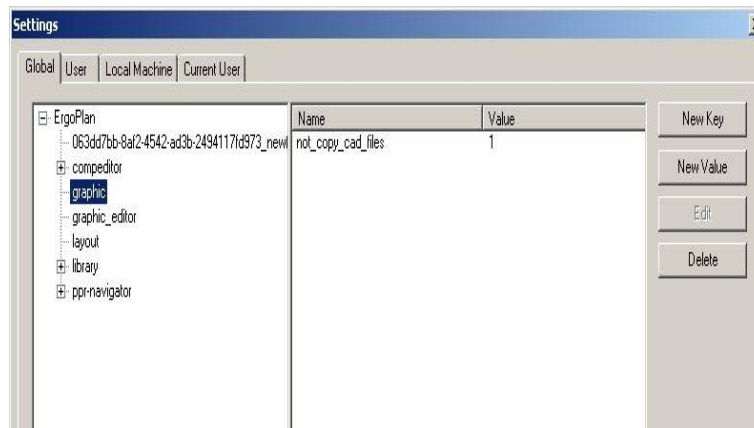


Figure 67: Settings for CAD Files

To insert a CAD file in a system item graphic, you have to import a CAD file in a directory first. In this directory, you can assign the corresponding CAD file to the graphic.

- 2) To import a CAD file select the system element to which you want to assign a graphic, open the context menu and select **Properties**.

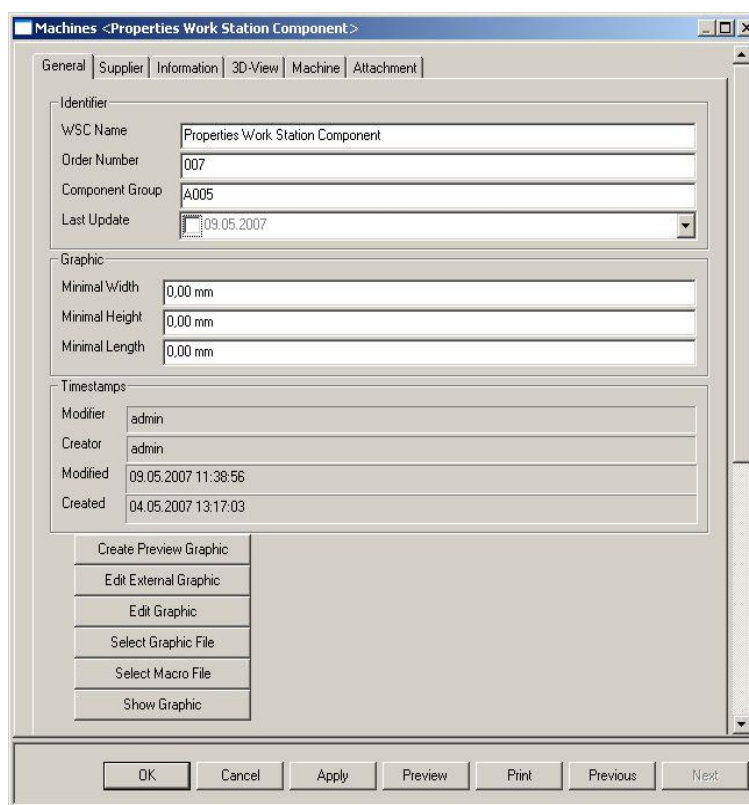


Figure 68: Properties Dialog System Elements

- 3) Open the graphic editor using the **Edit Graphic** button in the Properties dialog.
- 4) Activate the open graphic using the mouse button and click **Insert Primitives** in the tool bar.

Edit Graphic

- 5) In the Insert dialog you find several directories from which you can select primitives or CAD files using the buttons **Insert** or **Add to tree**. Please refer to the [Figure 69](#).



Figure 69: Activating Insert Primitives in the Tool Bar

- 6) The **Primitives** tab in the **Insert** dialog displays the three directories which the corresponding CAD files can be imported to. The way to import the CAD files is regardless of the file type.
- 7) The following example of a ...VRML file format illustrates the way how to import a CAD file into a directory and to insert it in a graphic afterwards.

9.4.1.1 Importing CAD File into Directory

- 1) Select the **VRML files** directory (VRML 1.0 Files) in the dialog. To do this, you do not have to open the directory. Nevertheless, you are recommended to open the directory as the required CAD file might have already been imported.



Figure 70: Selecting a Directory – File already Imported

- 2) Having selected the directory, click **Add to tree** in the **Insert** dialog. The **Open dialog** which includes the VRML directory pops up.
- 3) The VRML files are displayed in the VRML directory of the **Open** dialog. Select the ...VRML data format in the combo box **File type** to display the existing VRML files.
- 4) Select a file and click **Open** button. The file is imported to the directory of the **Insert** dialog. Please refer to the [Figure 73](#).

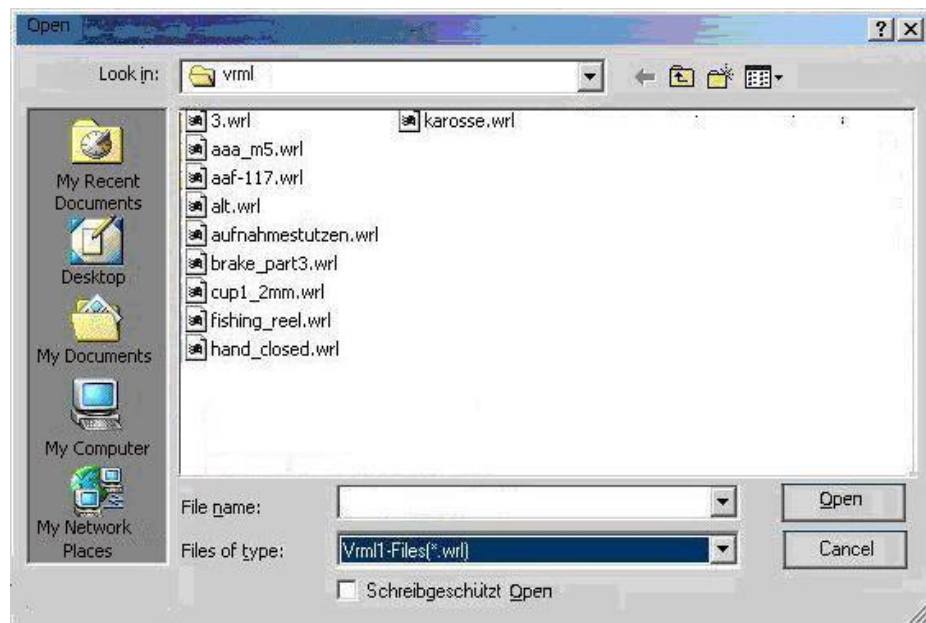


Figure 71: Open Dialog – Selecting CAD File

A message appears if a file has already been imported to the directory. You can either cancel the import or overwrite the file.

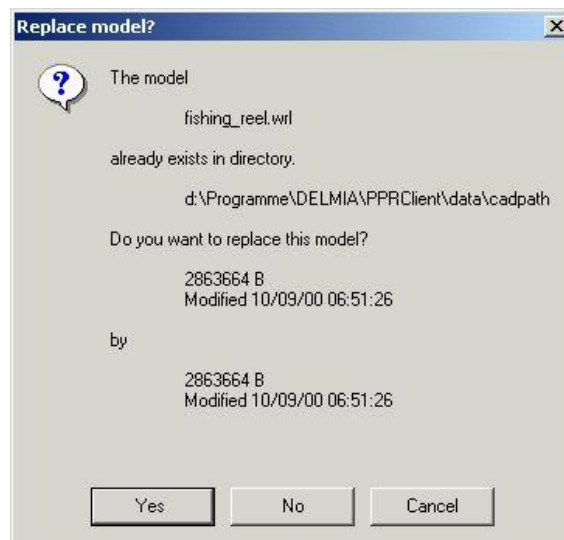


Figure 72: File already Imported – Message



Note

You are recommended to overwrite the file if changes have been made to this file. The change status is displayed in the message.

9.4.1.2 Inserting CAD Files in the Graphic

You can create system item graphics using CAD files, primitives, and system items in the **Edit Graphic** mode where you open the system item graphic whenever you want. In this mode, you can use each of the three CAD file formats for the system item. You can also insert as many CAD files in the graphic as you like.

An example of a CAD file of the ...VRLM file format serves to illustrate the way in which CAD files are to be inserted in the graphic.



Note

The **...VRLM** file format uses meters as a measuring unit. In the Process Engineer, measurements are processed in millimeter units. Meters have to be converted into millimeters using the 1000 scaling factor before the file is inserted into the graphic. If a wrong scaling factor is selected for the **...VRLM** file format, the CAD graphic dimensions are displayed either incorrectly in the graphic or not at all.

To Insert CAD Files in the Graphic

Edit Graphic

- 1) Open the graphic in the **Edit Graphic** mode to insert a CAD-file in the system item graphic.
- 2) Activate the **Insert Primitives** icon in the tool bar to access the **Insert** dialog.
- 3) Open the **VRLM** directory. Select a file from the directory. The graphic is always displayed in the form of a preview. Please refer to the [Figure 73](#).

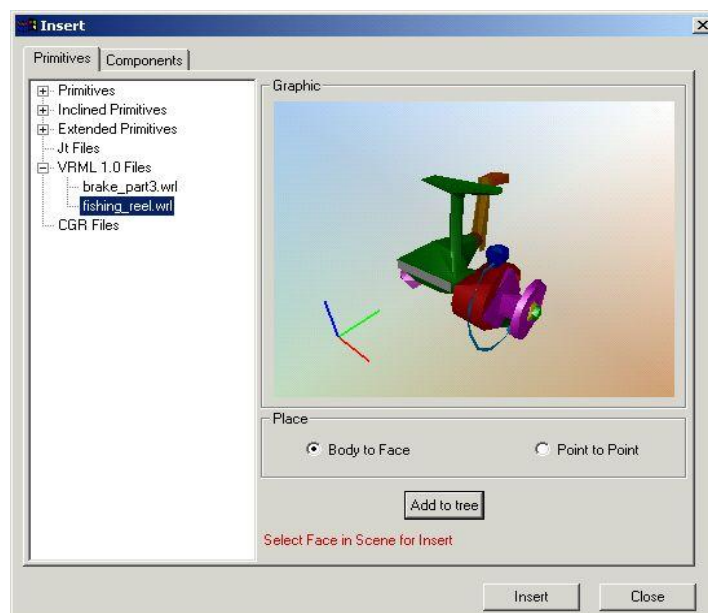


Figure 73: Import File is displayed in the Directory

You can place a CAD file in the graphic using the **Insert** function of the Insert dialog as well as using the insert tool.

Insert



- 4) When using the **Insert** button, the CAD graphic is always inserted at the zero point of the graphic.
- 5) Using the insert tool, you can place the CAD file in the graphic exactly at the point where you place the insert tool in the graphic. Please refer to the [How to Insert Primitives in a Graphic](#).
- 6) Before inserting the CAD graphic in the system item graphic, you have to specify the parameters. It is the scaling factor for the **...VRLM** file format in the example.
- 7) Use **Help** button to get information on the scaling topic.

Help

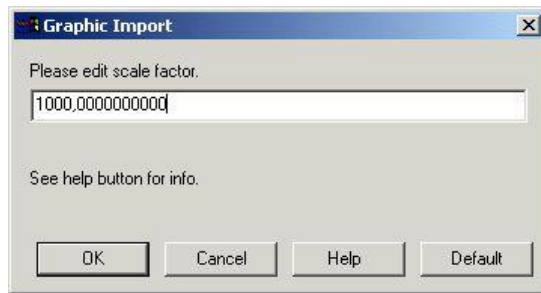


Figure 74: Help Button

Example**Example of ...VRLM File Format with different Scaling Factors**

The same CAD graphic is displayed in different proportions. The small object displayed in the graphic has been inserted in the graphic by means of the **100-scaling factor**.

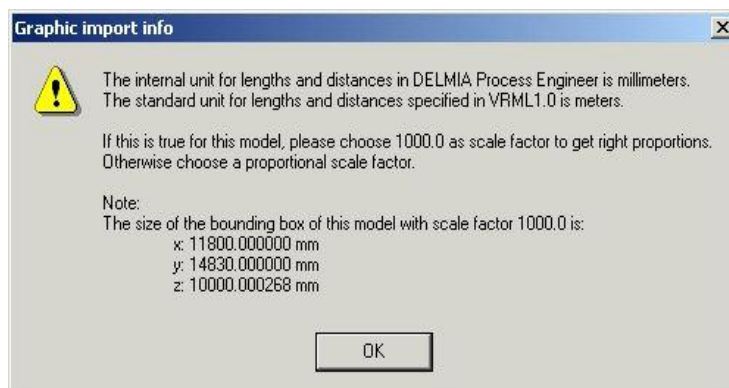


Figure 75: Scaling Example - ...VRLM File Format

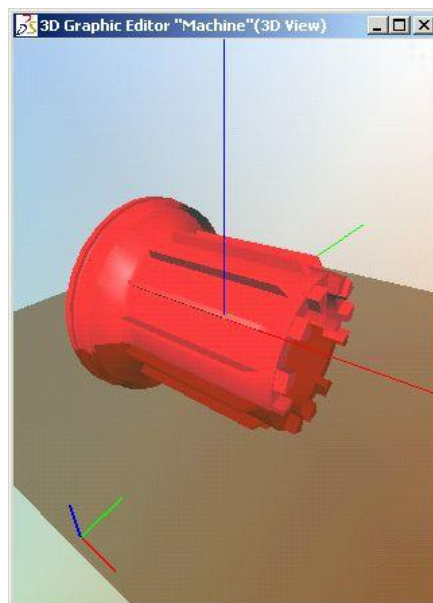


Figure 76: Example of a CAD Graphic with different Scaling

Example**Example of the ...CGR File Format**

Parameters of this file format are not specified by a scaling factor but by quality levels. The quality level at which the graphic is to be displayed is specified by means of the different quality levels in the settings dialog before inserting an object in the system item graphic.



Figure 77: CGR File Format with Quality Levels Selection

The **Medium** quality level is the default setting in the Process Engineer. You can increase the quality using the **Good** and **Very Good** quality levels. An increase in the quality affects the file size.



When selecting a quality level, always consider the available hardware such as the storage medium or the available main storage.

The file size decreases if a lower quality level is selected.



Note

*You are recommended to first select the **Medium** quality level. If the quality of the graphic is too poor, you can insert the graphic at a higher quality level. A low quality level can be used with a very small file size and a medium import quality.*

8) Use **Help** button to get information on the quality levels.

9.4.2 Creating Substructures

A substructure can be created from all graphic items used for the creation of a system item graphic such as primitives, system items, and CAD files.

A substructure has to be composed of at least two graphic items, i.e. primitives. Substructures are created to treat several graphic objects as a whole unit when editing the graphic.

- Substructures can also be created by several created substructures.
- There are **no bills of materials** created for substructures in the system library.
- Substructures can be undone at any time. A substructure is undone level by level. The single primitive represents the last level.

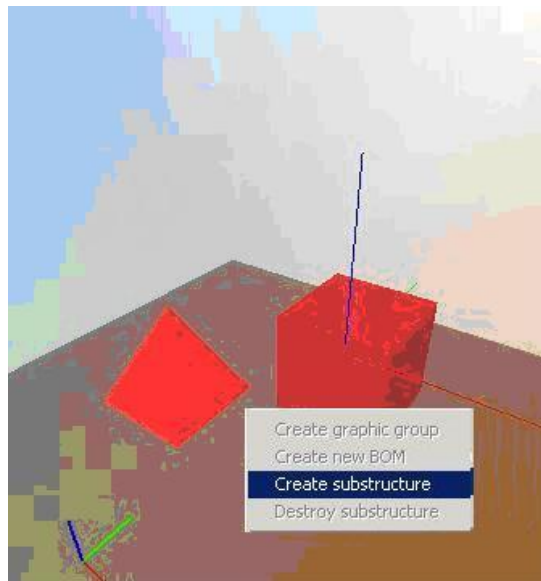


Figure 78: System Item Substructures

To Create Substructures

- 1) Select the graphic objects and open the context menu to create a substructure. Click **Create substructure**.
- 2) Select the created substructure and open the context menu to undo a substructure. Click **Destroy substructure**.

9.5 System Items as Macro

You can also use macros for a system item graphic. System items created from macros are inserted in a system layout or an assembly station layout and used for planning. These macros in the layout can be flexibly adjusted to the environment using parameter settings; for example if changes are made in the layout, the macro can be easily adjusted to the changed planning directly in the layout by means of the parameter settings.

Parameters, which can be set for a macro, depend on the macro type. In the parameters, you can change the size or color of a macro. The change in the macro parameters in the layout affects the layout only.

Macros serve as examples for:

- 1) Roller tables
- 2) Rails or curves of electrical suspension tracks
- 3) Vehicles which can be displayed either with or without doors

9.5.1 Using Macros for System Items

Select Macro File

Create a new system item in the system library to use macros for system items.. Please refer to the [Inserting System Items](#).

To Create a New System Item

- 1) Click **Select Macro File** in the **Properties** dialog. Select the macro from the macro directory.
- 2) Click **Open** button in the directory to assign the macro system to the item.
- 3) Save the system item.

**Note**

If you change system items by means of macros, i.e. if you reassign another macro or an edited macro to the system item, the old macro always get deleted.

9.5.2 Using System Items with Macros in the Layout

System items with macros are inserted directly in the layout or the system bill of materials of the plant using the drag and drop function. When inserting a macro in the layout, the parameter settings dialog automatically opens. You can either set new parameters or just close the dialog by clicking **OK**. You can change parameters at any time in the context menu directly in the layout.



The example of stairs defined as a macro shows you how you can open the dialog for the parameter settings directly in the layout and make the changes.

To Use System Items with Macros in the Layout

- 1) Select the system item (macro) in the layout.

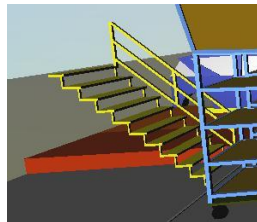


Figure 79: Stairs Macro

- 2) Open context menu and click **Edit**.

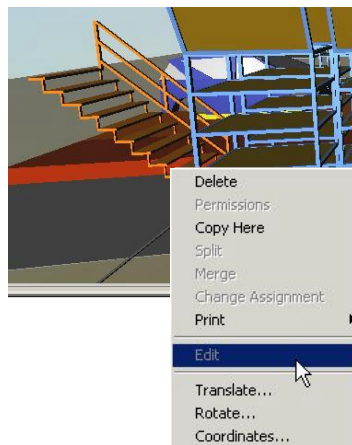


Figure 80: Opening Context Menu – Edit Parameters

- 3) You can set the parameters in the dialog. Here, you can make entries such as the manufacturers' instructions, the designation for ordering the resource, and the order number.
- 4) The dimensions of a macro, can be adjusted to the planning state at any time.
- 5) The example shows closed stairs. Use **Default** button to display the macro default values in the dialog. You can also enter parameters directly or overwrite default values.

Figure 81: Parameter Settings Dialog

Example

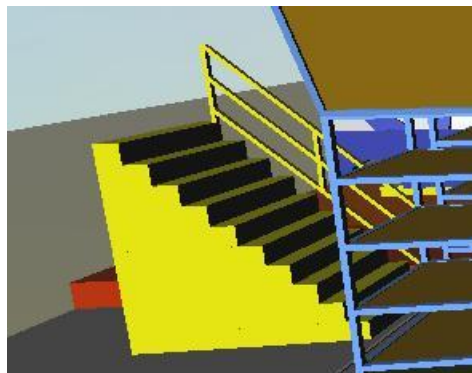


Figure 82: Example of Closed Stairs as Macro in the Layout

9.6 Displaying Usage Data of System Items

Using the **Find usage data** context function, all objects in which the selected system item is used are displayed

- Using the **Find usage-General** menu item, all usages of a system item are displayed.

- Using **Find usage-special relations**, all usages which correspond to the selected relation are displayed.

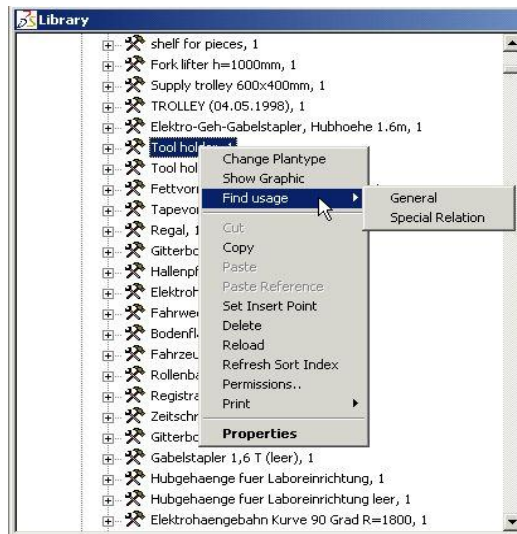


Figure 83: Opening Find Usage in the Context Menu

To Display Usage Data of System Items

- 1) Select a system item in the system library and then open the context menu to display a usage.
- 2) Click the corresponding function in the **Find Usage** menu item to display the usage.

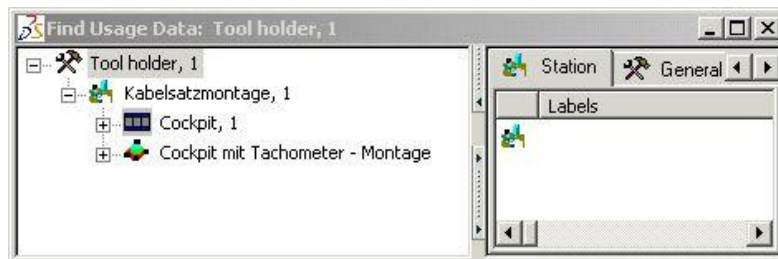


Figure 84: General Search – Displaying Find Usage Data

9.7 Exporting Graphics

System items graphics can be exported and saved in a directory; example for the purpose of data backup or multiple usage of a graphic.

The graphics can be exported with the following three file formats: ...VRLM, ...DXF, and ...CGR which are selected in the dialog list.

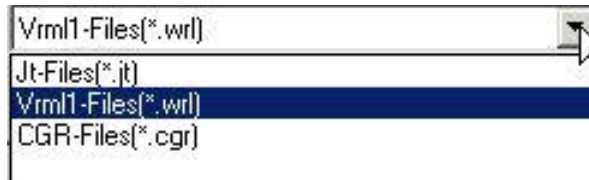


Figure 85: File Formats

Scaling is absolutely essential for the ...**VLRM** file format. Scaling is not necessarily required for the other two formats. These two formats have to be scaled, for instance, if the graphic dimensions are to be increased.



Note

The ...VRLM file format uses meters as a measuring unit. In the Process Engineer, measurements are processed in millimeters. Meters have to be converted into millimeters using the 1000 scaling factor before the file is inserted into the graphic. If a wrong scaling factor is selected for the ...VRLM file format, the CAD graphic dimensions are either displayed incorrectly in the graphic or not at all.

To Export Graphics

- 1) Open the graphic to enable graphic export.
- 2) Click **Export** icon in the toolbar. The **Graphic Export** dialog opens.
- 3) Specify the scaling factor. Use **Help** function to get information on the export.

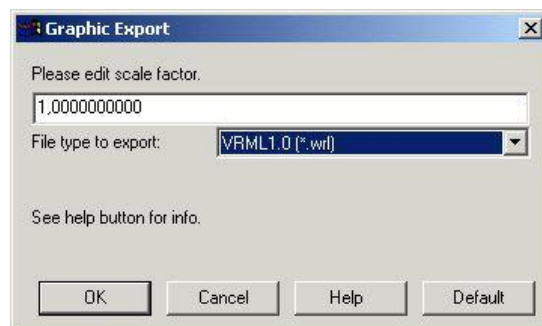


Figure 86: Graphic Export Window with Scaling Factor

- 4) Click **OK** button.
- 5) Specify the LOD with which the graphic is to be exported. You only have to make this entry for graphics of the ...CGR file format.

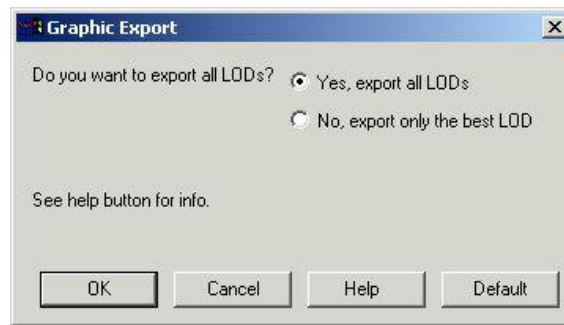


Figure 87: Specifying LOD

6) Click **OK** button. You can save the file in the directory.

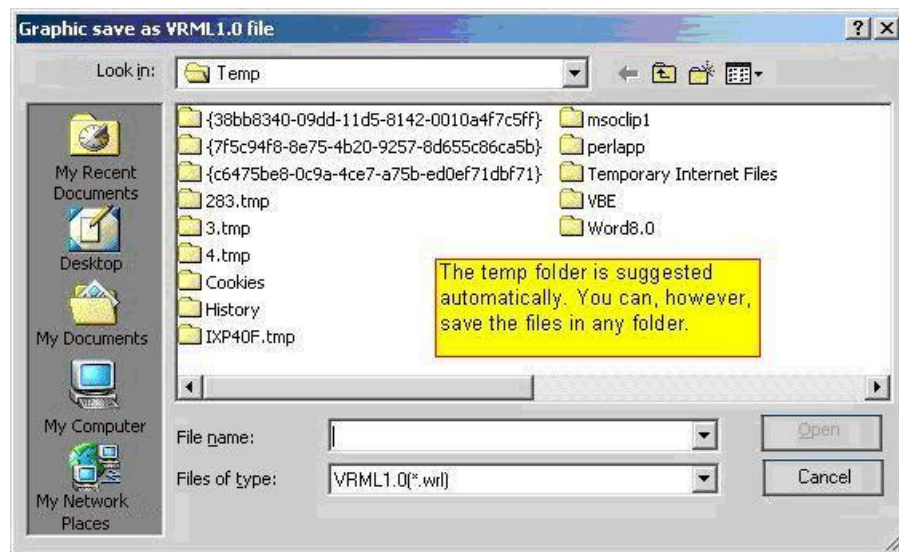


Figure 88: Path Selection Window for Exported Files

9.7.1 Exporting Graphics as Bitmaps

The dialog for exporting graphics has been extended in version PE 5.14. Five further formats are available for graphics export. The formats are....*jpg*, ...*gif*, ...*bmp*, ...*tif*, and ...*png*.

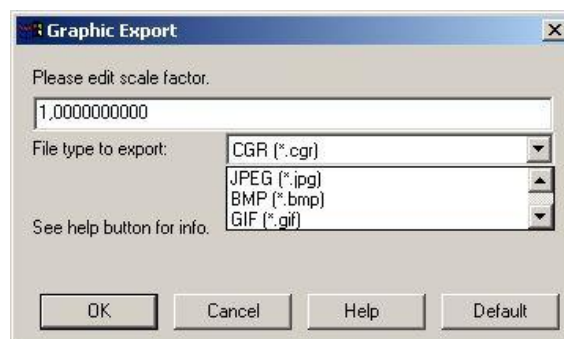


Figure 89: Graphic Export Dialog

- Another dialog is available for the export of these five formats; in it you can select the number of pixels and the set the quality level.

- The settings dialog is opened after you have selected one of the five formats for the export of bitmap graphics. *Please refer to the [Figure 90](#).*

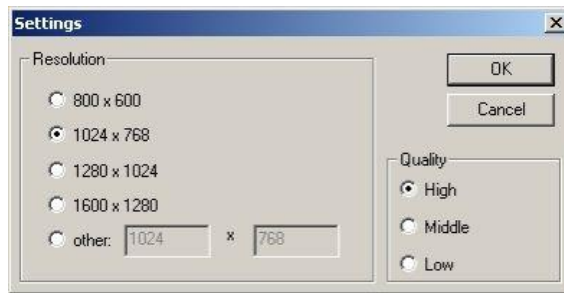


Figure 90: Dialog Settings for Graphics Export

10. V5 Scripts

10.1 V5 Scripts

V5 Scripts are added to the System Library of DPE. These scripts are modelled in same way as E5 Scripts. They behave similar to E5 Scripts except that they cannot be run in DPE.

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