


PowerConnect v5 release information

1 Defining a new connection model

This section briefly informs the PowerConnect user on the new program's workflow in order to define a new connection model.

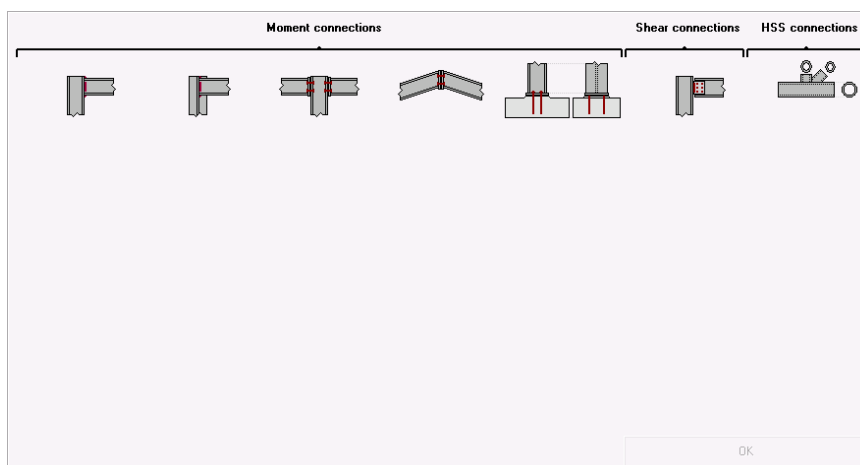
To define a new connection model,

- either use the menu function 'File' – 'New',
- or click on the  icon of the icon toolbar.

This will launch the so-called navigation window in which the user can easily select the type of connection to be analyzed. The selection is made by navigating through an intelligent tree structure that gradually rolls out depending on the initial choices made by the user.

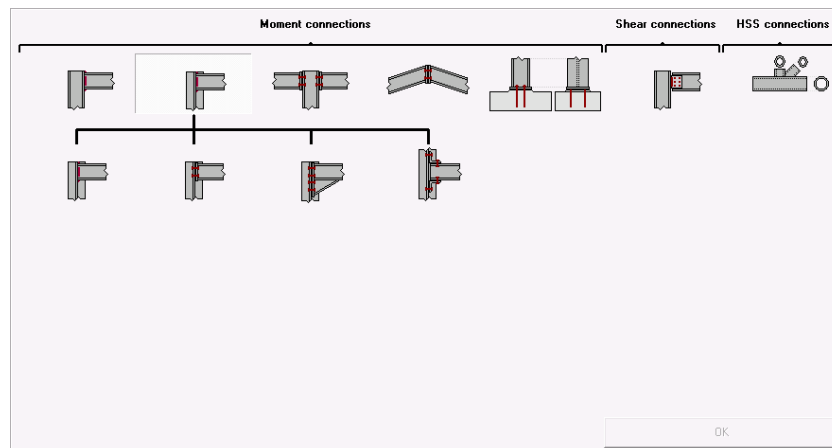
Initially, the user has the choice between following connection types:

- moment connections, subdivided in
 - single-sided beam to column flange
 - single-sided beam to column web
 - double-side beam to column flange
 - beam to beam
 - column base plate
- shear connections
- HSS connections (hollow structural section connections)



Choosing one of the available options, the navigation tree will start to roll out. The user is thus invited to make the next choice in the definition process. As an example, the single-sided beam to column web connection will be selected. The user will then have the following options:

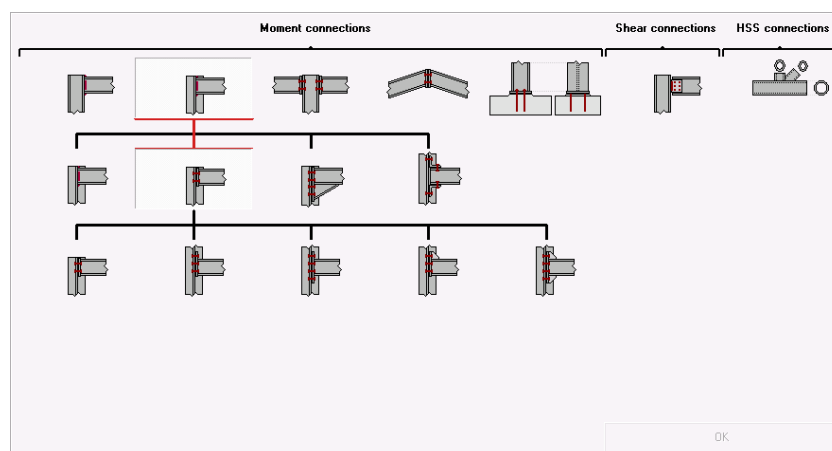
- beam & haunched beam welded
- bolted moment end plate
- haunched beam end plate
- bolted angle cleats



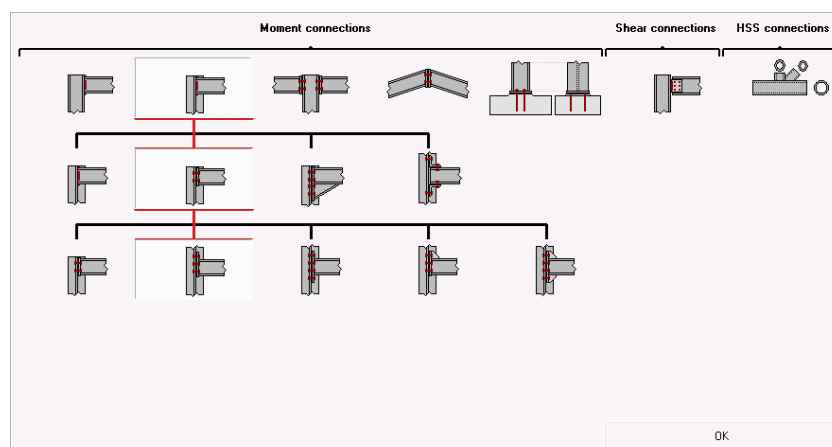
Choosing now for the bolted moment end plate, the navigation tree will further roll out to present following options:

- flush moment end plate
- extended moment end plate (1 side)
- extended moment end plate (2 sides)
- extended moment end plate (1 side) with stiffener
- extended moment end plate (2 sides) with stiffener

as can be seen from the following view of the navigation window.



Making the next choice, no further options will be presented for this particular type of connection and the user will confirm the current selection by means of the 'OK'-button in the navigation window.



As soon as the final selection has been made and has been confirmed by the user, a new dialogue window will be presented in which the user is invited to confirm or modify the characteristics of the different connection elements, e.g.

- beam and column section
- dimensions of end plate
- bolt grade

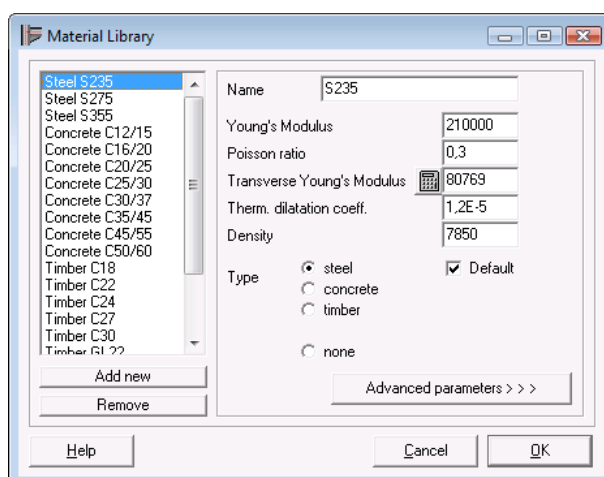
As soon as a confirmation is given, the user will enter into the 'Geometry' window which presents a 3D view of the connection. More information on the 'Geometry' window is given in section 3.2.1 of this reference manual.

2 Libraries

A typical use scenario for PowerConnect will always start with the definition of a geometry model, and will mostly include also a number of modifications applied to the geometry model. Those tasks are significantly enhanced through the availability of a number of libraries within the PowerConnect environment. Those libraries will be discussed in more detail within the current chapter of the reference manual.

2.1 Material library

PowerConnect includes a material library with the most common concrete and steel grades. The library itself can be opened for editing and modifications through the menu 'Edit – Material Library...', which will open the following dialogue window.



Next to the elastic material properties, the library also contains a number of strength characteristics that are typically needed for design verifications with respect to national or international design standards. Those characteristics can

be accessed through the button **Advanced parameters >>>** in the above window. On the left hand side, all design codes supported by PowerConnect are listed. On the right-hand side, the corresponding strength characteristics are documented for the select design code.

In case a particular steel grade has been selected as the active material, following characteristics are available:

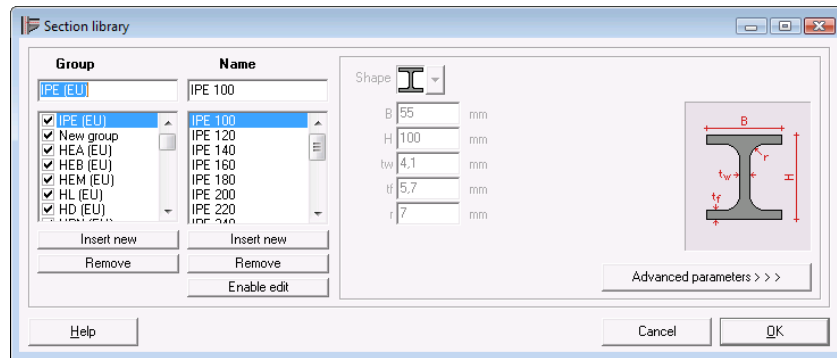
- yield strength and ultimate tensile strength as a function of plate thickness
- partial safety factors

Those parameters depend of course on the type of standard that is selected. For more information, reference is made to the appropriate standard.

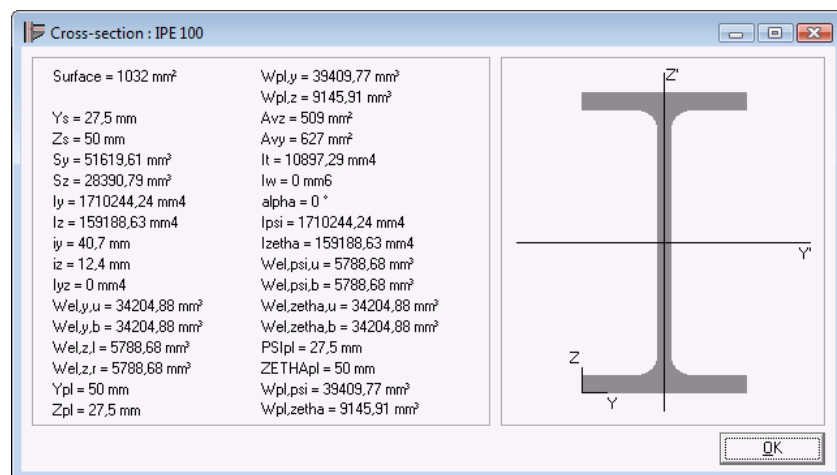
In case a particular concrete grade has been selected as the active material, a wide range of characteristics are available. However, within the context of a PowerConnect design analysis only the compressive strength will intervene.

2.2 Section library

PowerConnect includes a section library with the most common European, English, American & Indian steel sections. The library itself can be opened for editing and modifications through the menu 'Edit – Section Library...'



The first column presents a list of all section groups currently available within the library. The second column presents a list of all sections which are part of selected group. At the right-hand side of the window, the selected section is represented graphically. More detailed information on section properties (moments of inertia, resistance, ...) is obtained by means of the button Advanced parameters >>>.



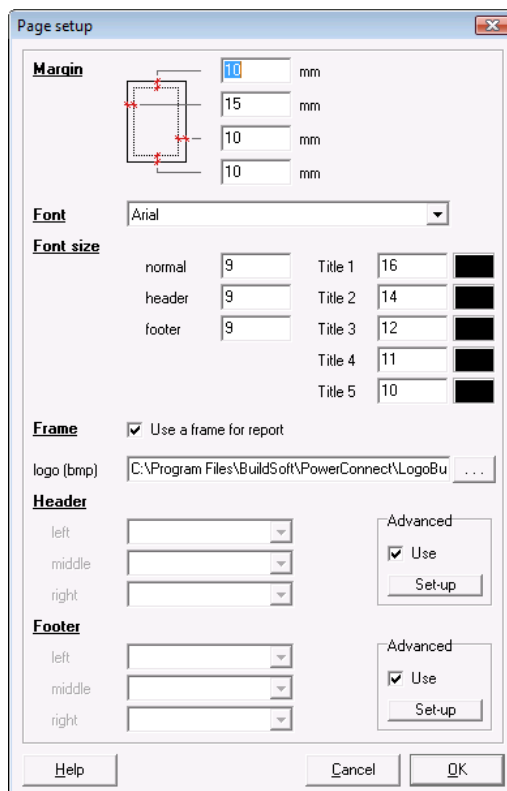
In case a new section group needs to be added to the current list, click on the button Insert new just below the group list. Now edit the name of the new group in edit field just on top of the Group list.

As already stated, the section library includes by default a number of European, English, American and Indian sections. It may occur however that the user is not necessarily interested in all those sections, depending on his or her geographic region. In that case, it is interesting to know that section groups can be made active or inactive by selecting or unselecting them in the group list. Note that de-activating a group will not remove the sections from the section library, it will just make those sections invisible in the list whenever the user wants to assign a section to a selected bar element. It is thus a very convenient tool to shorten the list of available sections down to the daily needs and practice of each individual user.

3 Reporting

3.1 Page setup

Through the menu command 'File – Page setup', a number of global page settings can be specified for use with any report to be created by PowerConnect. All specifications are given in the dialogue window below, which is issued by the afore mentioned menu command.



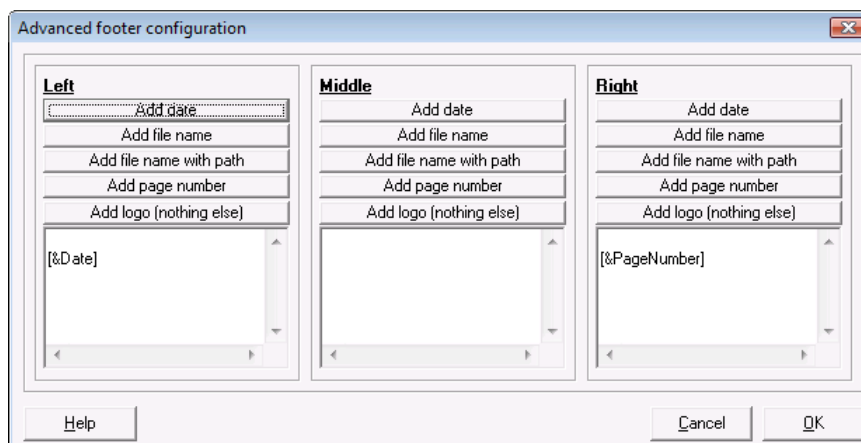
The 'Page setup' dialog box contains the following sections:

- Margin:** A diagram of a page with four margin input fields: top (10 mm), bottom (15 mm), left (10 mm), and right (10 mm).
- Font:** A dropdown menu currently set to 'Arial'.
- Font size:** A table of font sizes for different report elements:

Element	Size
normal	9
header	9
footer	9
Title 1	16
Title 2	14
Title 3	12
Title 4	11
Title 5	10
- Frame:** A checked checkbox labeled 'Use a frame for report'.
- logo (bmp):** A text field containing 'C:\Program Files\BuildSoft\PowerConnect\LogoBu...' with a browse button.
- Header:** Three pull-down menus for 'left', 'middle', and 'right' sections. To the right is an 'Advanced' section with a checked 'Use' checkbox and a 'Set-up' button.
- Footer:** Three pull-down menus for 'left', 'middle', and 'right' sections. To the right is an 'Advanced' section with a checked 'Use' checkbox and a 'Set-up' button.
- Buttons:** 'Help', 'Cancel', and 'OK' at the bottom.

Apart from the straightforward parameters as margin, font & font size, following parameters may need some extra clarification:

- **FRAME:** if the option 'Use frame for report' is selected, both the header, body and footer of the report will be framed.
- **LOGO(BMP):** allows to specify a bitmap-file (with the company logo). This file can then be used as part of the report header or footer.
- **HEADER/FOOTER**
 - If the 'Advanced' option is not selected, use the left/middle/right pull-down menus to define the contents of the header & footer fields. At the bottom of the pull-down menu, the field named 'Logo' refers to the bitmap file defined in the previous step.
 - If the 'Advanced' option is selected, use the **Set-up** button to enter in a new dialogue window allowing for a more customized definition of header and footer.



The 'Advanced footer configuration' dialog box is divided into three columns: 'Left', 'Middle', and 'Right'. Each column contains a list of options to add to the footer:

- Left:** Add date, Add file name, Add file name with path, Add page number, Add logo (nothing else). Below the list is a text area containing '[&Date]'.
- Middle:** Add date, Add file name, Add file name with path, Add page number, Add logo (nothing else). Below the list is an empty text area.
- Right:** Add date, Add file name, Add file name with path, Add page number, Add logo (nothing else). Below the list is a text area containing '[&PageNumber]'.

Buttons at the bottom: 'Help', 'Cancel', and 'OK'.

Next to the available standard fields, like 'date' – 'file name' – 'page number' – 'logo' - ..., text can freely be entered by the user in the edit boxes for the left/middle/right part of header & footer.

Any changes that have been made in the above dialogue windows, and which have been properly confirmed by means of the 'OK'-buttons, will be active until the next changes are defined. Until then, all changes will be used for any new report that is created by PowerConnect.

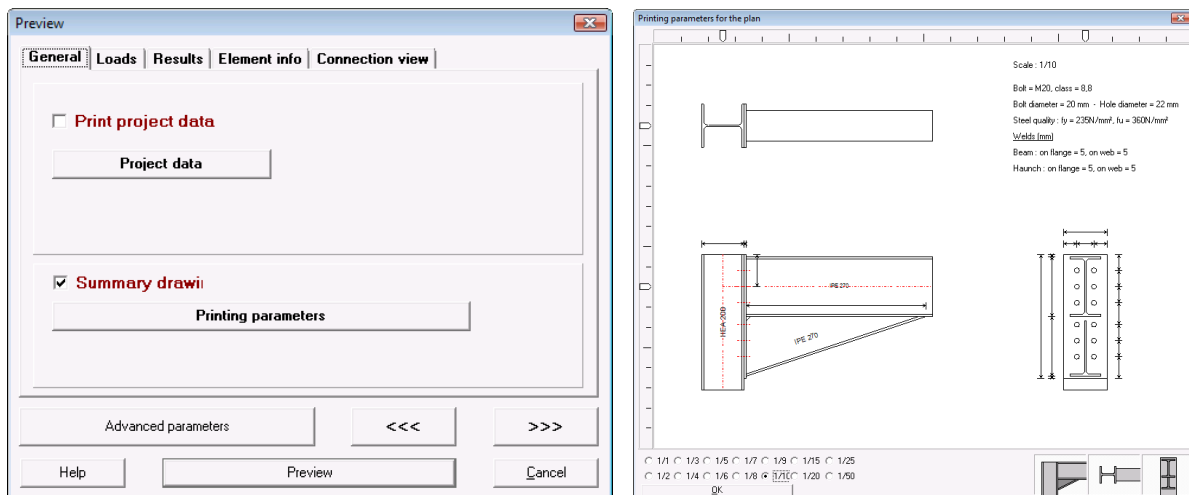
3.2 Report configuration

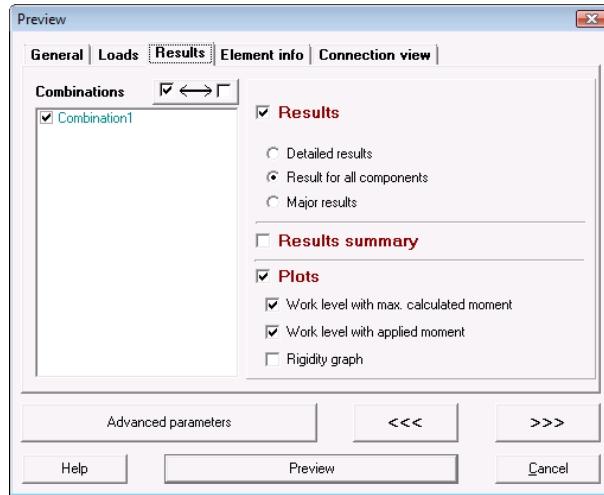
Report contents are configured through 5 different tab pages, corresponding to 'General' items, 'Loads', 'Results', 'Element info' and 'Connection view'.

▪ Tab page 'General'

Select the option 'Print project data' to include the data which have defined through the menu command 'File–Project data'. In case those data still need further elaboration, this can be done through the button labeled 'Project data' in the dialogue window below. Select the option 'Summary drawings' to include a global connection drawing in the report. How those drawings are presented can be specified through the button labeled 'Printing parameters', which will open a new dialogue window with following controls:

- a series of buttons at the right bottom corner which enable the user to specify which drawings are to be included,
- horizontal and vertical cursors which allow to control the position of the different drawings
- a range of values to define the scale of drawings.



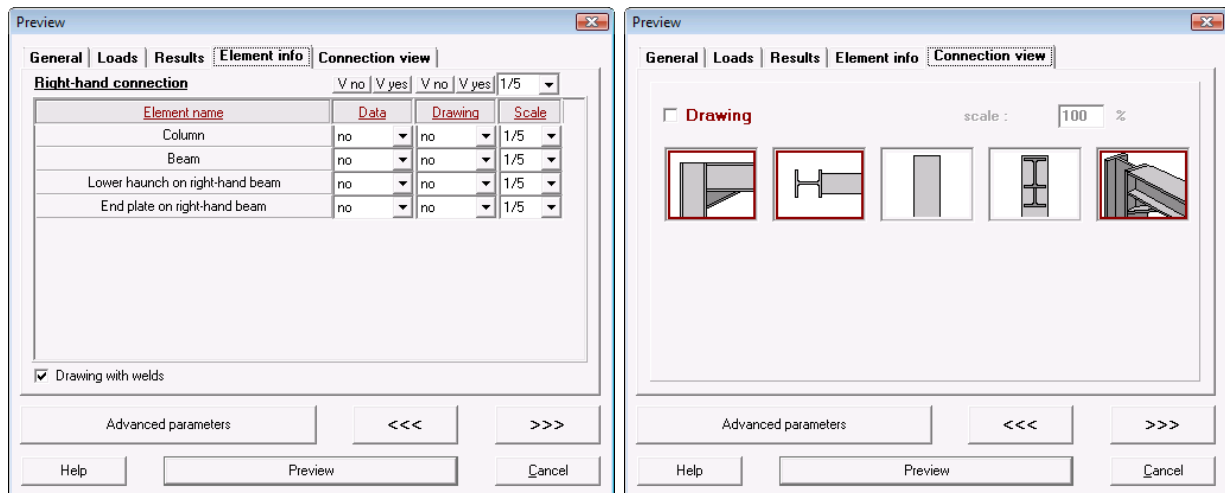


- types of plots to be reported, giving a choice between 3 types:
 - work level with maximum calculated moment;
 - work level with applied moment;
 - rigidity graph.


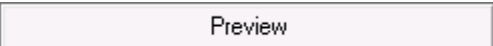
▪ **Tab page 'Element info' and Tab page 'Connection view'**

On this tab page, the user will find a list of all elements that are part of the connection being analyzed. If data and/or drawings should be created for all elements, then just use the 'V yes' buttons on top of column 1 and/or 2. By means of the pull-down menu on top of column 3, a uniform scale factor can be specified for all drawings.

Select the option 'Connection view' to include one or more of the available connection views in the report. It should be noted that those views are intended only for qualitative reporting, giving an indication about connection geometry.



3.3 Previewing

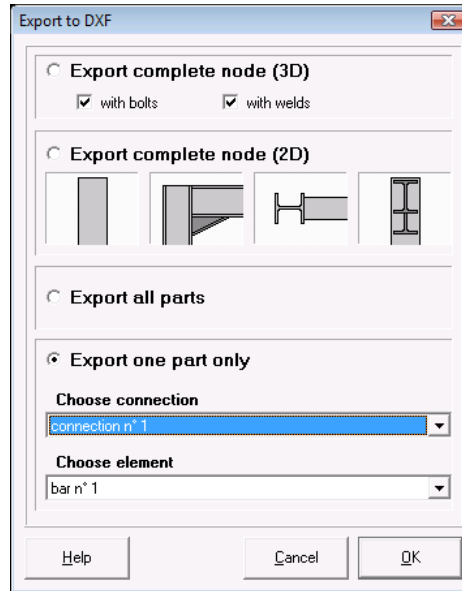
Use the menu command 'File – Preview' or the  icon of the icon toolbar to launch the 'Preview' dialogue window and use the  button.

4 Export of element drawing to DXF-file

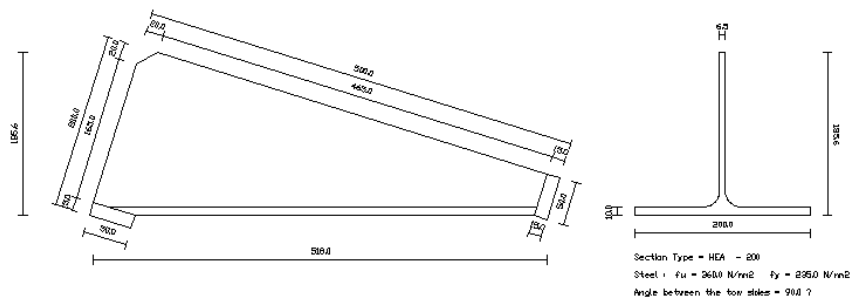
All elements which are part of a connection, as well as the connection itself, can be exported to a DXF file for further elaboration in a CAD environment. To do so, use the menu 'File – Export – Drawing to DXF'.

In the dialogue window below, make a choice between the 4 available options. In case only one element is to be exported to DXF, select the name of the element from the pull-down menu. In case the connection is a double connection (eg. beam-column-beam connection), the user should also make sure to specify which part of the connection is to be considered for export.

After confirmation by means of the 'OK'-button, PowerConnect will prompt where to save the DXF-file and what the name of the file should be.



Below, an example of a haunch which has been exported to DXF and which has then been imported into a CAD software.



Remark : the drawings which are exported to DXF always have a unit system with millimeter as length unit.