

Technical note 2015/02
Changes in JPA Designer
6.02a1 build 013



1 Introduction

This technical note describes the changes to the JPA Designer U-value and SAP modules introduced with version 6.02a1 build 013.

2 U-value module

The following changes have been made to the U-value module:

- a new method of setting the **Element Type** (subsection 2.1);
- introduction of a correction factor for windposts (subsection 2.2);
- introduction of a correction factor for loft hatches (subsection 2.3);
- users can define their own standard thermal bridge configurations (subsection 2.4);
- print options for U-value and condensation risk have been revised (see subsection 2.5).

2.1 Defining element types

The type of element represented in the U-value calculation is defined in the **Edit Construction** dialogue. The selection is now carried out using the **Element Type** list (Figure 1), instead of the previous radio buttons. The range of element types is identical.

The change has made space for the new correction factors to be introduced.

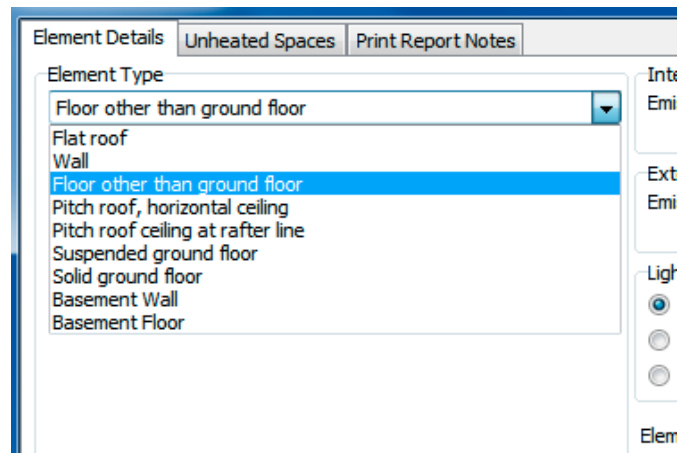


Figure 1: Selecting the **Element Type**

2.2 Windposts

U-value calculations have to be corrected for the additional heat loss which results when windposts or masonry support angles penetrate an insulation layer. The correction factor is defined in BR 443 *Conventions for U-value calculations* section 4.9.4. The calculation requires:

- the total length of the windposts or support angles, **L**, measured in metres;
- the total area of the wall, **A**, measured in square metres;
- the linear thermal transmittance associated with the windpost or angle, the **ψ -value** in W/mK.

Figure 2: Entering data for windposts

In JPA Designer the data required is entered in the *Element Details* tab of the **U-value Construction** dialogue (Figure 2):

1. In **Element Type** select *Wall*.

2. Tick **Windpost penetrate an insulation layer**.
3. Enter the length, **L**, area, **A** and **Psi-value**.

If a psi-value for the windpost is not available a value of 0.18 W/mK should be used.

2.3 Loft hatches

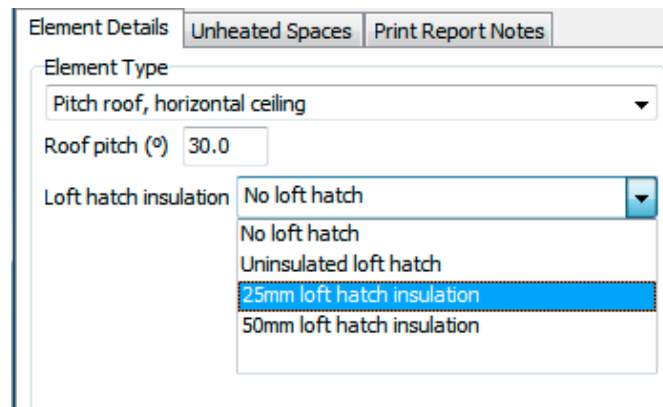


Figure 3: Setting loft hatch details

The rate of heat loss through a pitched roof insulated a ceiling level will be increased where there is a loft hatch which is not insulated to the same standard as the rest of the ceiling. To allow for this BR 443 section 4.9.7 defines a correction factor for loft hatches, which depends on the thickness of the loft hatch insulation: see Table 1.

Table 1: Loft hatch correction factors

Loft hatch insulation	Correction (ΔU)
0 mm	0.015
25 mm	0.006
50 mm	0.003

To correct for a loft hatch in JPA Designer using the *Element Details* tab of the **U-value Construction** dialogue:

1. In **Element Type** select **Pitch roof, horizontal ceiling**.
2. Set **Loft hatch insulation** to the most appropriate value (Figure 3).

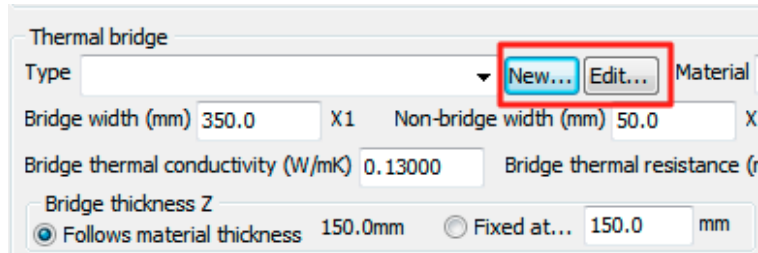


Figure 4: The New and Edit buttons for user-defined thermal bridge defaults

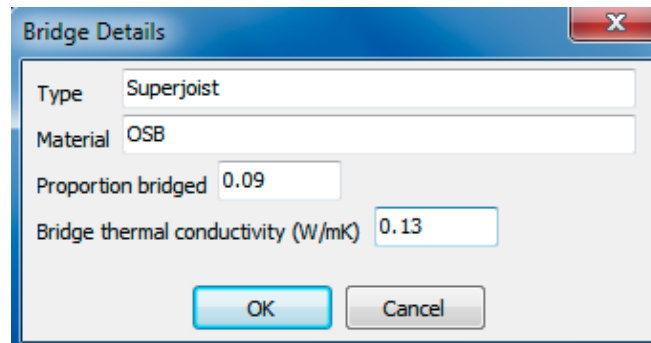


Figure 5: Defining a new type of standard bridging

2.4 User defined bridging

From version 6.02a1 it has been possible to define thermal bridging in a layer by using one of a number default bridge conditions using the **Type** list in the **Edit material** dialogue. With version 6.02a1 build 013 it is now possible for users to create and edit their own standard bridge sets to the list and to use them in calculations.

To add a new standard thermal bridge type:

1. Double click on a material layer in the main **U-value** window.
2. In the **Edit material** dialogue set the **Bridge type** to *1 dimensional*.
3. In the *Thermal bridge* section click the **New** button (Figure 4).
4. In the **Bridge Details** dialogue (Figure 5) enter:
 - a name for the bridge set in the **Type** box;
 - the bridge **Material**;
 - the **Proportion bridged** as a fraction (so, 9% bridging is entered as 0.09);
 - the **thermal conductivity** of the bridge, in W/mK.
5. Click **OK**.
6. The new bridge type will now appear in the **Type** list for any layer in which you specify bridging.

If you need to edit the values of a bridge you have added:

1. Clicking the **Edit** button.
2. In the **Bridge Details** dialogue (Figure 5) change the settings you need to.
3. Click **OK**.

2.5 Print options

The options for creating reports in PDF format and hard copy have been extended.

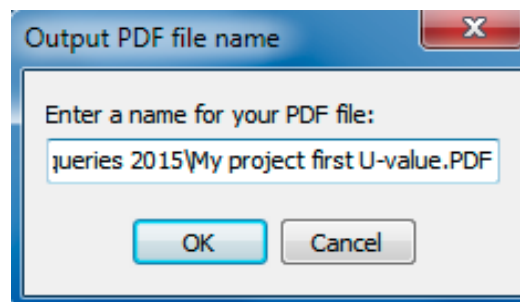


Figure 6: Changing the name for a PDF report

When you create a PDF of a report the module gives you the opportunity to change the name of the PDF file to something other than the default¹ (Figure 6). This allows you to produce different reports for the same calculation without earlier ones being overwritten by later ones.

The options for producing reports which include the results of condensation risk analysis have been revised². Until now, if the **condensation risk** box on the program status bar was ticked, the reports of U-value calculations always showed the vapour resistivity and vapour resistance values for the layers and did not show any bridging. It is now possible to produce reports which show the full U-value calculation – with bridging – as well as the construction details for condensation risk analysis on a separate page.

The **Sections To Print** dialogue has been extended to allow for these options (Figure 7). When the *condensation risk* box on the program status bar ticked the dialogue offers the option of producing:

- A U-value calculation, with optional pages for thermal bridging details and tapered insulation (where appropriate);
- Condensation risk analysis, with optional pages for the ISO 13788 moisture table and the summertime condensation results.

¹The default name, which is offered first, is still based on the project file name and the calculation name.

²These options only apply to the Uvalue 2010 Professional module and not to the standard Uvalue 2010 module.

- A thermal mass report showing the kappa-value and admittance results for the construction.

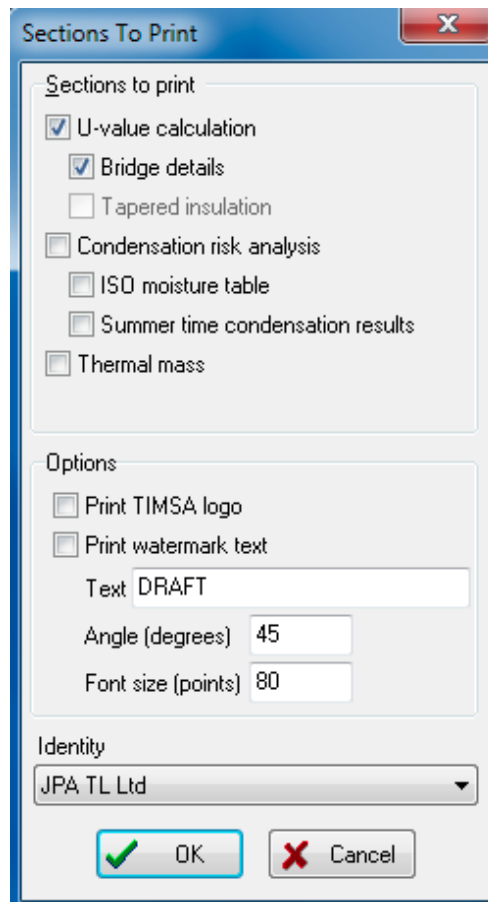


Figure 7: The revised **Sections to Print** dialogue

3 SAP 2012 module

The SAP 2012 module contains:

- a new method for setting default values for SAP calculations;
- filtering on the boiler database;
- a revised PDF creation option.

3.1 SAP default settings

To speed up some of the repetitive aspects of data entry in SAP there is now a new **Defaults** tab on the program's **Options** dialogue which allows you to set default values for calculations (Figure 8). Currently, there are options for:

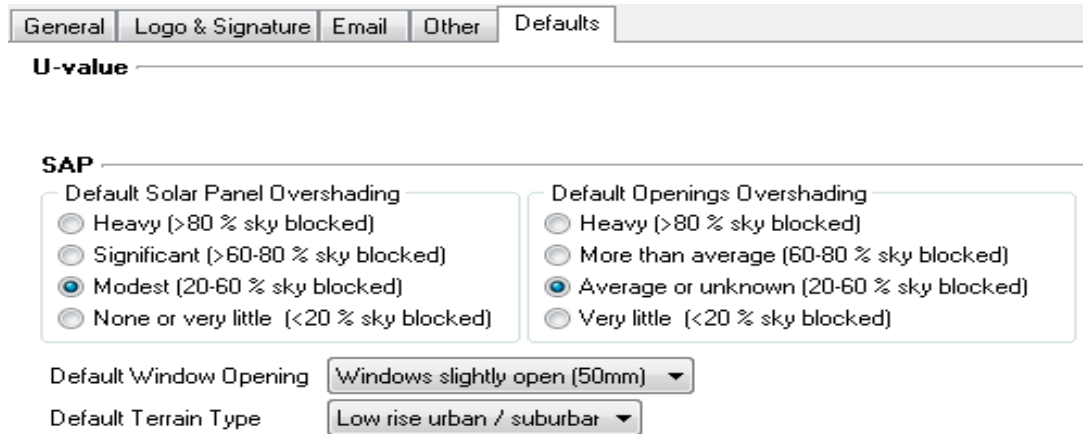


Figure 8: SAP default settings

- Solar panel over shading (applies to the **Hot water** tab);
- Overshading of openings (applies to the **Openings** tab);
- Window opening (applies to the **Overheating** tab):
- Terrain type (applies to the **PV and Alternative Technology** tab).

Once you have set the default values any new SAP 2012 calculations will use them.

3.2 Filtering items in the PCDF (the ‘boiler database’)

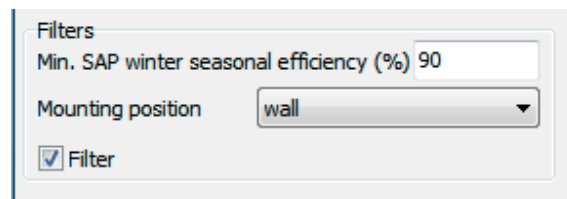


Figure 9: Filtering items in the PCDF

The Product Characteristics Data File (PCDF) is the recommended source of performance data for a wide range of building services products such as boilers and ventilation systems. Entries in the database are initially arranged by manufacturer to help users select products. The SAP 2012 module now offers additional filter tools to enable users to narrow the selections even further when trying to identify a suitable boiler.

The filter controls are in the lower part of the **BRE Boilers Database** dialogue (Figure 9). To activate the filters:

- enter a **minimum winter efficiency** for the boiler³; and/or,

³This is not quite the same value as the SEDBUK efficiency for a boiler.

- enter a **Mounting position**;
- make sure the **Filter** box is ticked.

The program will now only show boilers which meet the chosen criteria.

3.3 Print options

When you create a PDF of a report the SAP module gives you the opportunity to change the name of the PDF file to something other than the default⁴ (Figure 6). This allows you to produce different reports for the same calculation without earlier ones being overwritten by later ones. This is particularly useful if you want to produce TER and DER reports in separate files.

4 Further information

Information about JPA Designer may be found at <http://www.techlit.co.uk>.

Technical support by email only to support@techlit.co.uk.

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⁴The default name, which is offered first, is still based on the project file name and the calculation name.