What's New in Impact 2013R2

P. Spooner / 16 October 2013

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This document contains details on the new features in ImpactCAD. This document applies to only the specified version of ImpactCAD.

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Contents

Overview

This document covers the new features introduced in the 2013R2 Release of Impact. Many of these features can be utilised out-of-the-box; however, several may require configuration changes, i.e., where an existing installation is to be upgraded. Such features are identified throughout this document by an asterisk (*). Please consult Arden Software for further details.

3D

Environment*

Several new 3D environment options have been added – most notably allowing user-defined colourations for **3D Highlight Face Back**, **3D Highlight Face Front**, **3D Highlight Snap End**, **3D Highlight Snap Middle** and **3D Dimensions**. These items are particularly relevant in the light of the new 3D developments contained within this release.

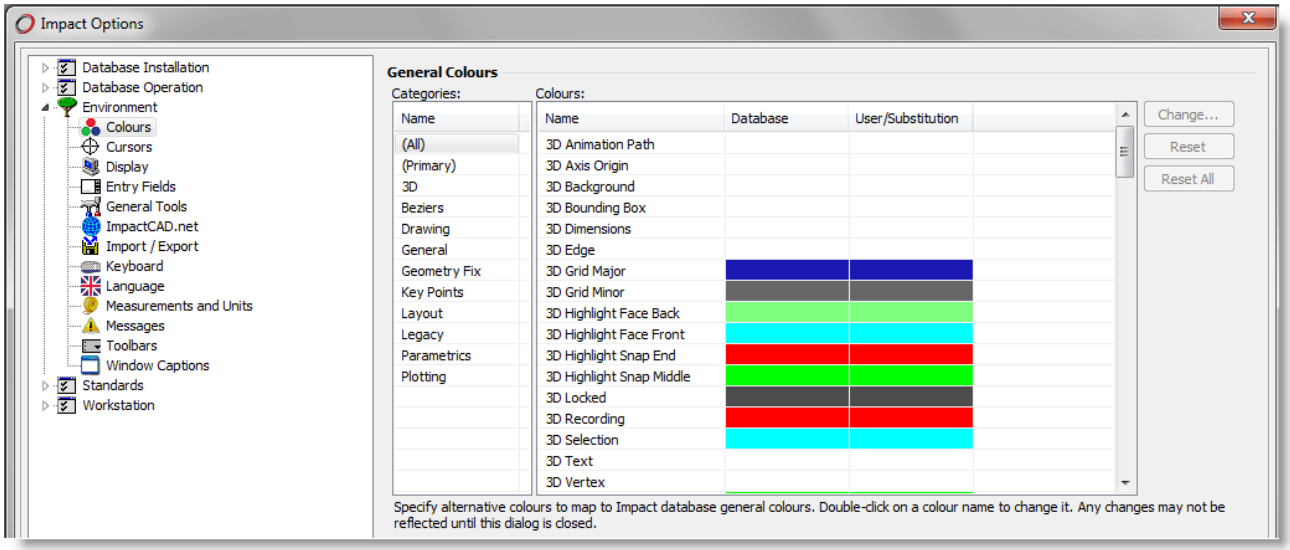


Fig 1 – New 3D colour options within Environment>Colours.

3D Dimensions

The **3D>Dimensions>Dimension Objects** tool has been **removed**. The existing **Draw>Dimension>Aligned** tool has been extended to work within a 3D scene.

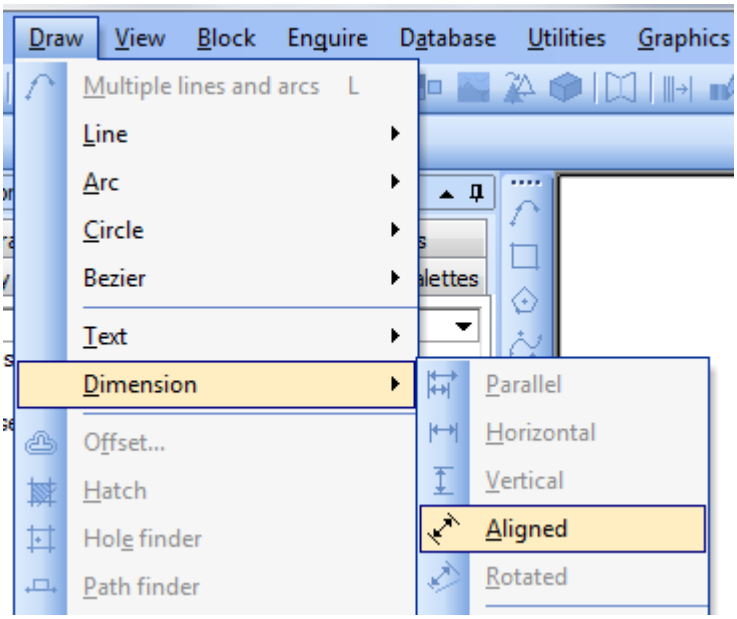


Fig 2 – The Draw>Dimension>Aligned tool is now available for use within 3D scenes.

The tool will provide the usual edit bar list-box containing existing **Dimension Master Tool Settings**, plus an additional **Placement Snap** option.

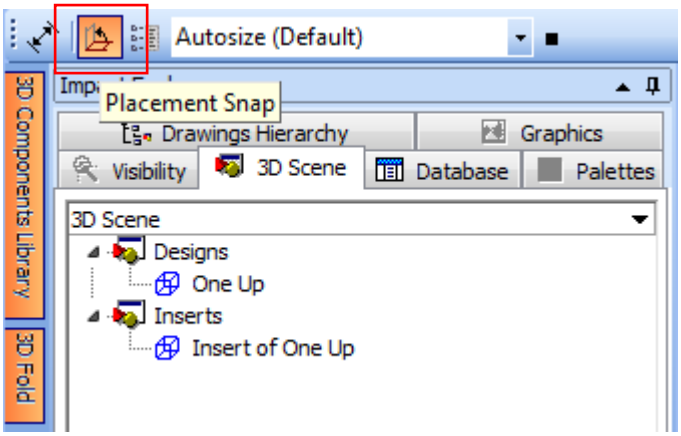


Fig 3 – Edit Bar option for the Draw>Dimension>Aligned tool within a 3D scene.

Once the **Draw>Dimension>Aligned** tool has been activated, hovering the cursor over the face of a folding model will highlight the face. The **SHIFT** key toggles between front & back faces of a panel and the **CTRL** key displays the snap-points.

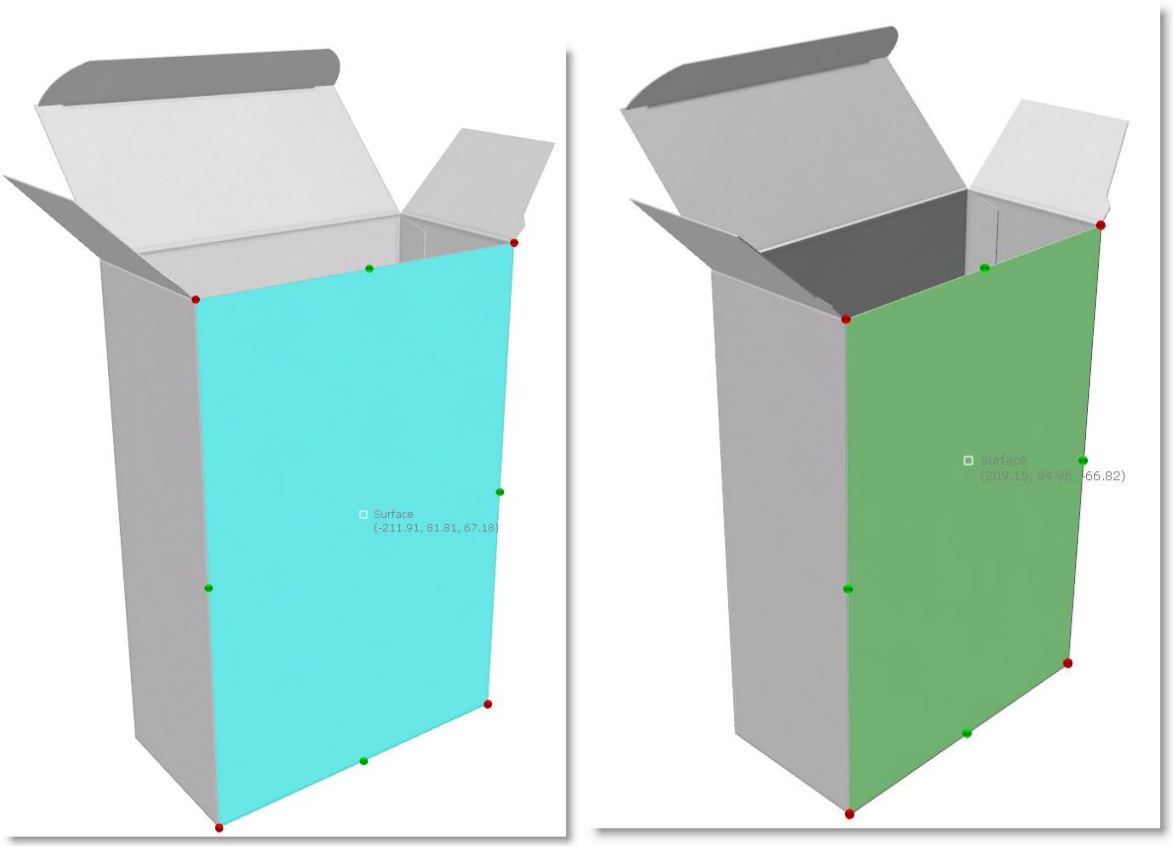


Fig 4 – Front Face & Back Face highlighting with snap points.

Simply click on the required points and place the dimension in accordance with the **Placement Snap** option. If enabled, the **Placement Snap** option allows the dimensions to be aligned to the orientation of the object (or face) being dimensioned **or** the current world X, Y or Z axes. Otherwise the dimension may be placed arbitrarily.

The **Help Tips** on the **Status Bar** will update whilst the tool is in-use ('Select the first dimension point', 'Select the second dimension point' and lastly 'Place the dimension').

Once a 3D dimension has been created, the **3D Scene** tab of the **Impact Explorer** will update to show the dimension (as with previous Impact versions).

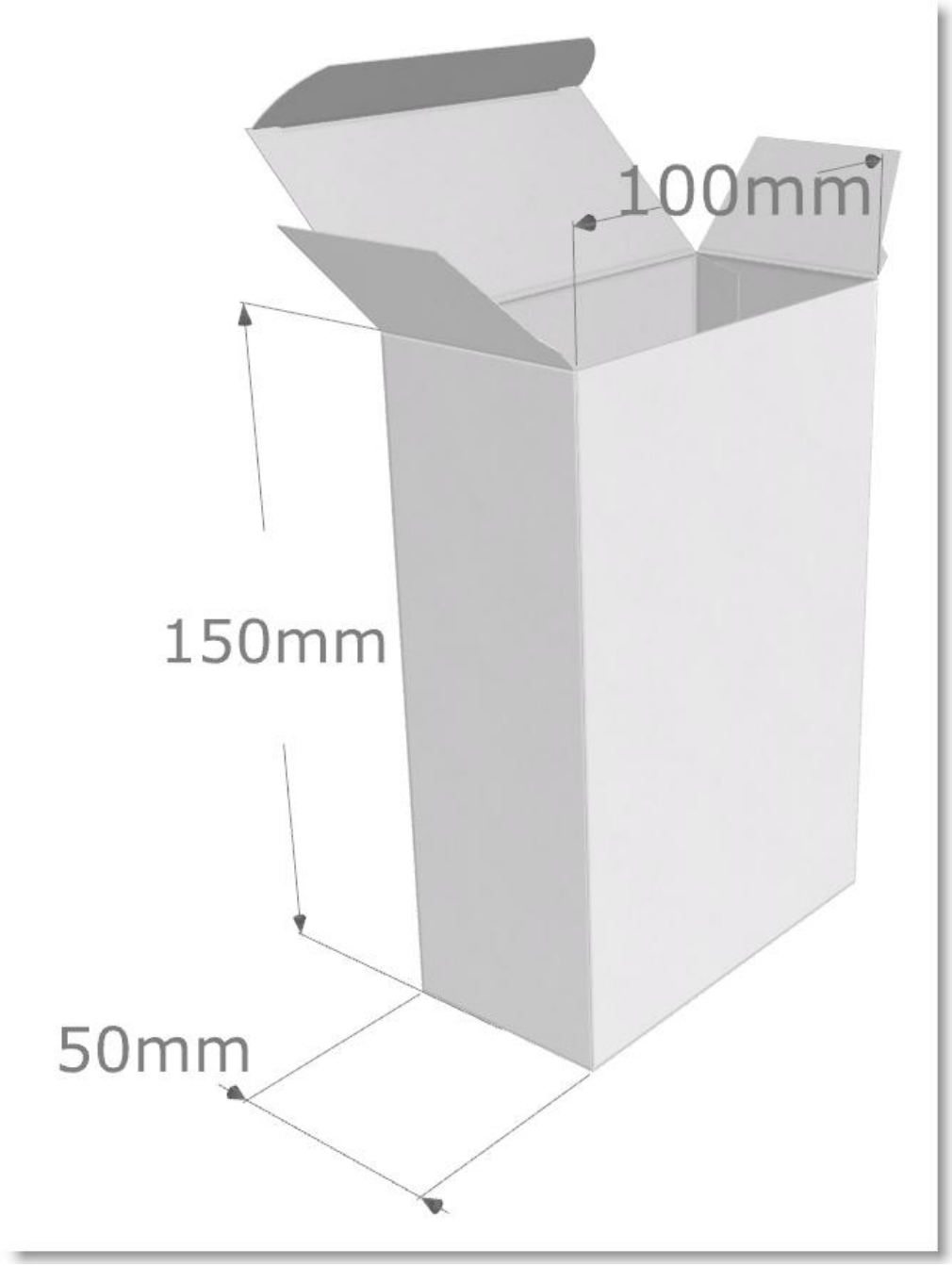


Fig 5 – Simple 3D dimensions applied to a folding model.

Once a 3D dimension has been added to a scene, **Terminator Style & Size**, **Leader Length**, **Dimension Gap & Projection Ascent**, **Leader**, **Text Position** & **Text Mode** may all be modified via the **Entity Inspector**.

The creation of a dedicated **3D** Dimension Master Tool Setting (within **Options>Master Tool Settings>General Tools>Dimension Settings**) may be a worthwhile consideration. Not all dimension options are available for use within a 3D scene – the **Autosize**, **Labels** & **Tolerance** tabs are unavailable, as are **Angle Formatting** options.

Note that the use of **Closed Filled Arrow** style terminator can give a pleasing effect within a 3D scene.

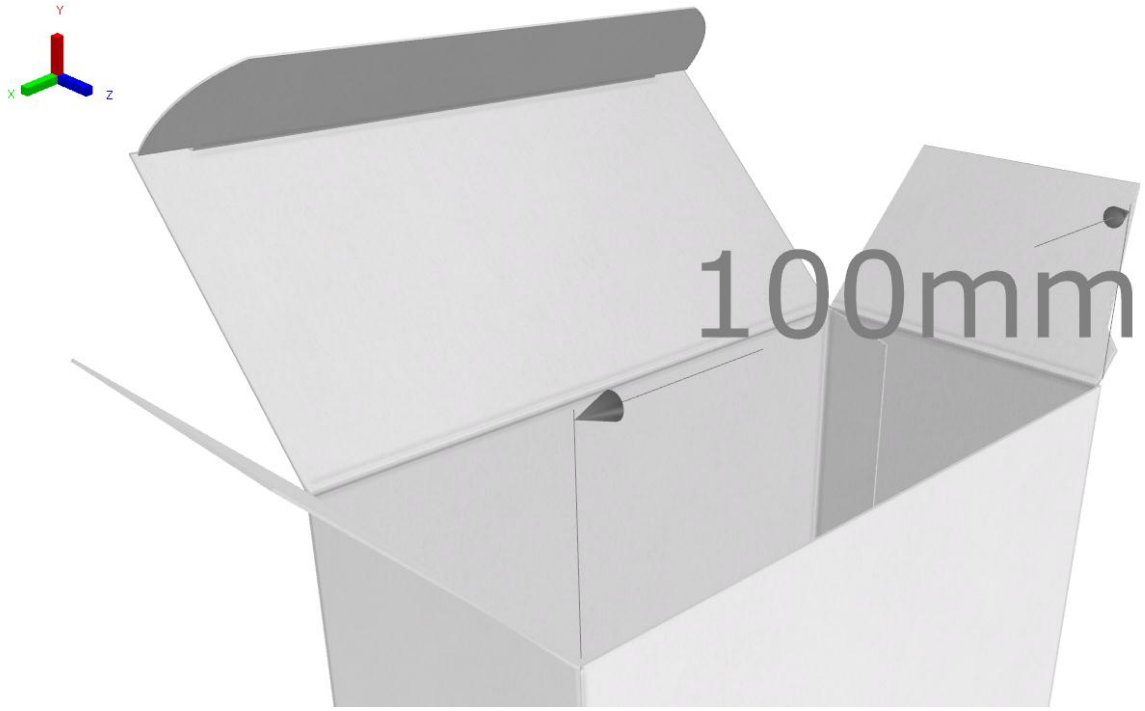


Fig 6 – Closed Filled Arrow style terminators.

3D Enquire

The **Enquire>Distance>2 Points** tool has also been extended to work within a 3D scene.

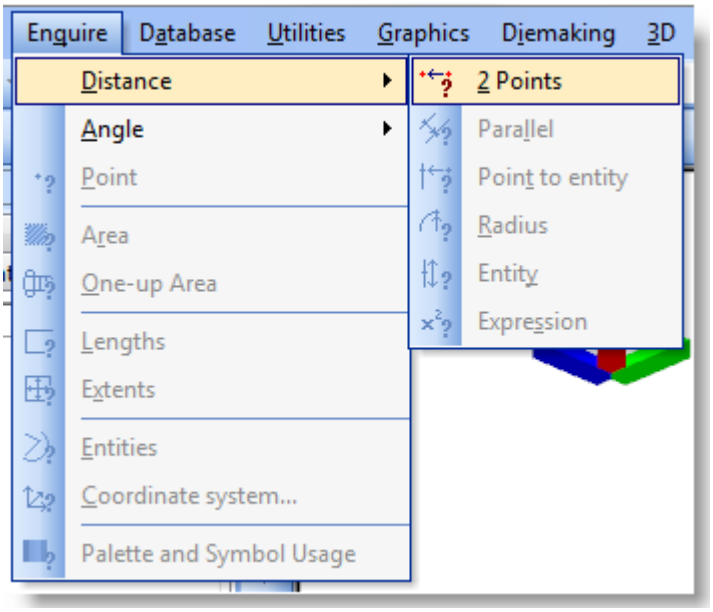


Fig 7 – The Enquire>Distance>2 Points tool is now available for use within 3D scenes.

The tool works **identically** to the **Draw>Dimension>Aligned** tool in that faces are highlighted by simply hovering the cursor over them, the **SHIFT** key can be used to select a back-face and the **CTRL** key will display snap-points.

Note that the **Help Tips** on the **Status Bar** will update whilst the tool is in-use ('Select the first enquiry point' and 'Select the second enquiry point').

The results will be displayed on the **Edit Bar** and within the **Output Toolbox** (**Windows>Standard Toolboxes>Output Toolbox**) as with similar 2D enquiries.

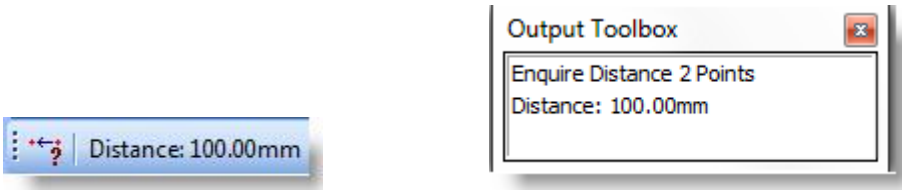


Fig 8 – The results of Enquire>Distance>2 Points tool – Edit Bar & Output Toolbox.

3D Dimension & Enquire on 3D Mesh/Solid Objects

Both the extended tools may be used with 3D Mesh/Solid Objects – though edges on such objects will not feature mid-points. The procedure for using the tools with 3D solids is identical to using the tools with folding models - the exceptions being that the pressing the **Shift** key **has no effect on 3D solids** and **vertices** are highlighted when the **Ctrl** key is pressed.

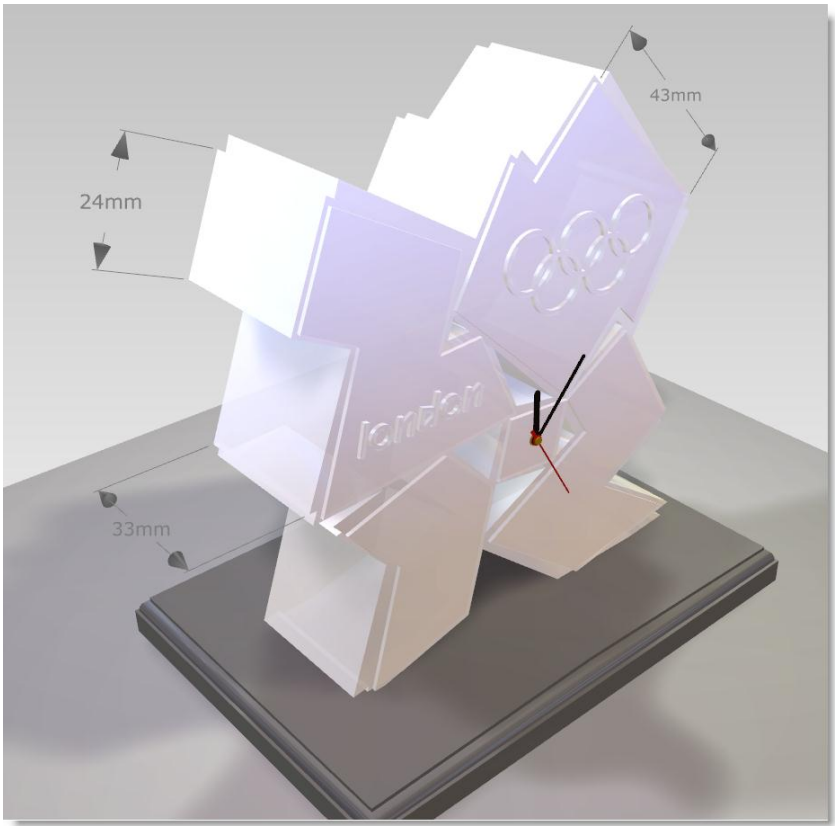


Fig 9 – 3D Dimensions on an imported solid object.

3D Multi-Part Alignment

A new tool **3D>Object>Align** has been developed.

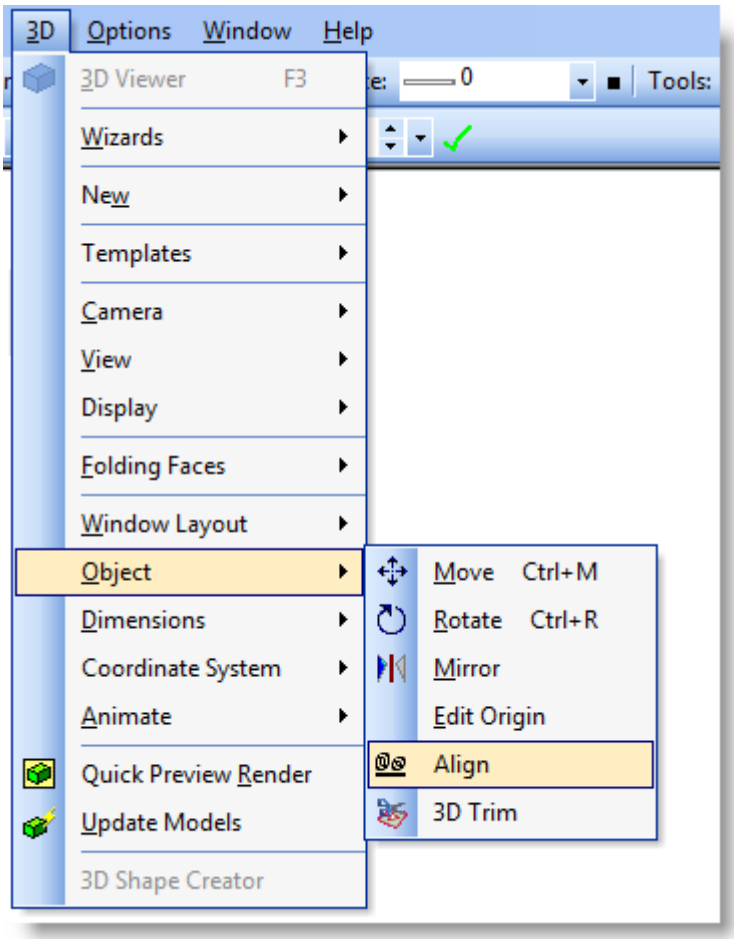


Fig 10 – The new 3D>Object>Align tool

The tool simplifies the assembly of multi-part models by providing interactive placement & rotation of folding models & 3D Mesh/Solid Objects. Several features introduced by the **Draw>Dimension>Align Dimension** and **Enquire>Distance>2 Points** tools have been re-used, notably the selection of faces by hovering the cursor, the use of **SHIFT** to toggle between front & back-face highlighting and the use of **CTRL** to display snap-points.

Several **Edit Bar** options are available, once the tool has been activated:

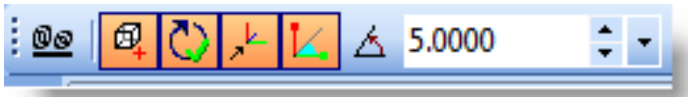


Fig 11 – Edit Bar options for the 3D>Object>Align tool – note the Angle Snap entry field.

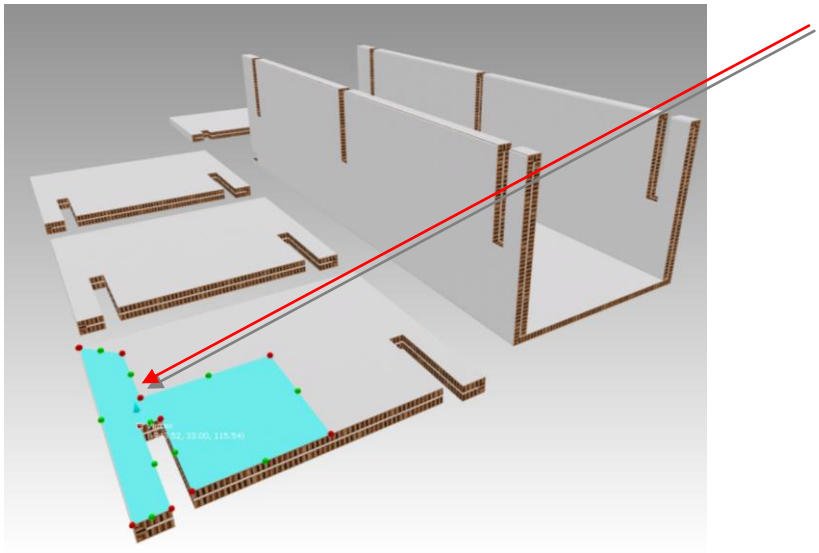
Group – if enabled the source object will **automatically** be parented to the destination object. This saves time as the user no longer needs to drag & drop the objects within the **3D Scene** tab of the **Impact Explorer** to create a composite model which moves & rotates as a single object.

Allow Rotation – if enabled, the highlighted surface on the source object will automatically rotate to match the orientation of the highlighted surface on the destination object.

Set Origin – if enabled, the 3D origin of the source object will be reset to the point at which it joins with the destination object.

Angle Snap – if enabled, an entry field will be displayed allowing a value (up to 45º) to be entered. Free-hand object rotations will be limited to the specified increment.

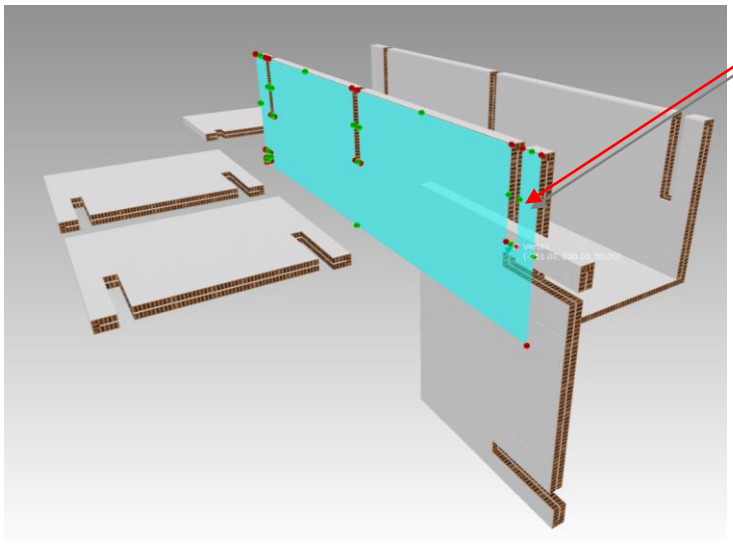
Note that the **CTRL** key must be held for the angle helper to be displayed after initially placing objects!



Selection of the snap-point on the front-face of the source object.

Only the CTRL key is used, as the snap-point to be used is on the front-face of the panel.

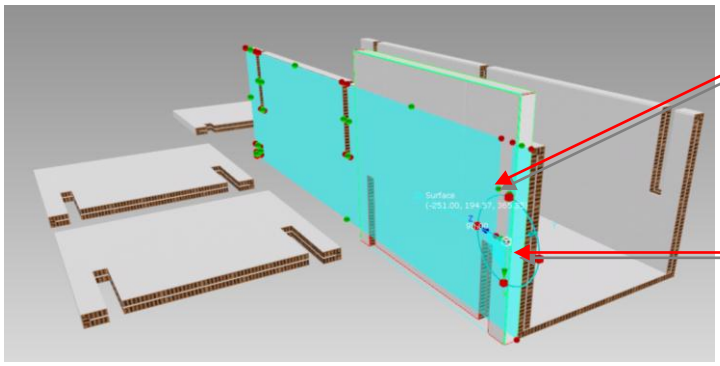
Fig 12 – Front-face highlighting & snap-points on source object.



Selection of the snap-point on the front-face of the destination object.

Again, only the CTRL key is used, as the snap-point to be used is on the front-face of the panel.

Fig 13 – Front-face highlighting & snap-points on destination object.

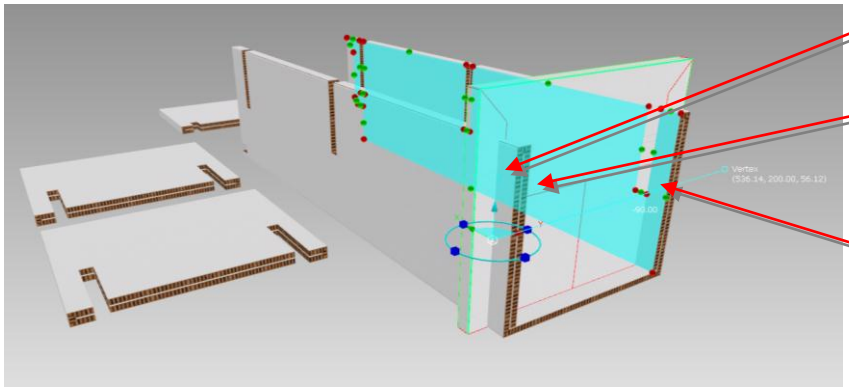


Rotation of the source object about the Z-axis.

The rotation cursor allows the selection of an axis of rotation and the actual rotation amount.

Clicking on the solid blocks of colour on the rotation cursor will perform 90º rotations.

Fig 14 – Z-Axis rotation about snapped point.

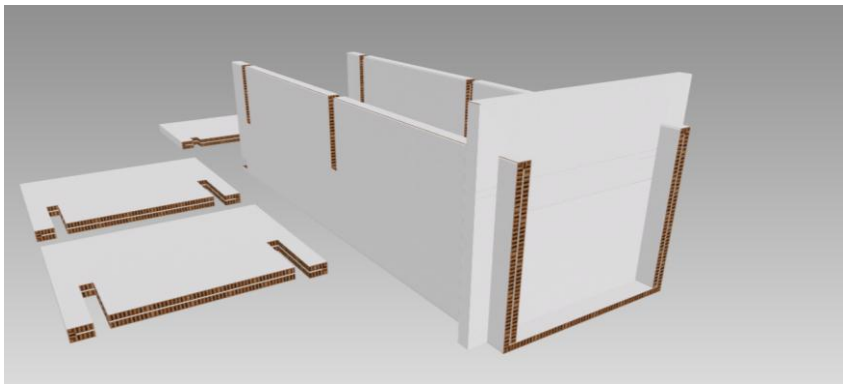


Rotation of the source object about the Y-axis.

The 'pie chart' indicator on the rotation cursor provides a visual indication of the rotation angle.

Additionally, the actual rotation angle is displayed on the cursor itself.

Fig 15 – Y-Axis rotation about snapped point.



Source & destination objects, after placement & rotation.

Fig 16 – Final placement.

3D Rotate Object to Plane/Ground

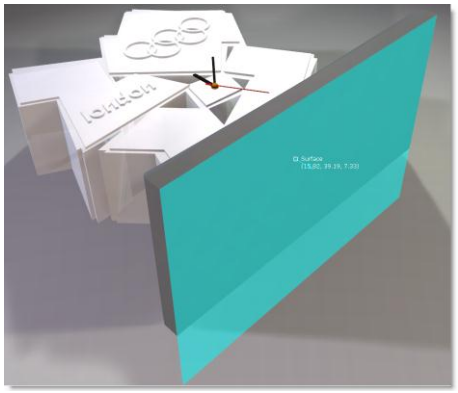


Fig 17 – 3D Mesh/Object before alignment to ground.

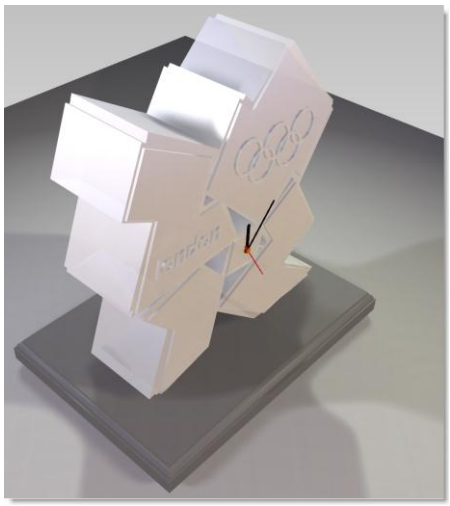


Fig 18 – 3D Mesh/Object after alignment to ground.

The **3D>Object>Align** tool can also be used to quickly align 3D Mesh/Solid Objects and folding models to the ground or to any face on another 3D Mesh/Solid Object or folding model.

Simply run the tool, hover the cursor over any face on the source object to highlight and click to pick.

Repeat the process to place the object on the ground or any other surface. The SHIFT modifier (to toggle between font & back-faces) is applicable to folding models only, whilst CTRL will display available snap points for 3D Mesh/Solid Objects as well as folding models.

3D Cross-Section

The **3D>New>Grid** tool has been modified to allow the alignment of the cross-section grid with the **face of the bounding box** of a folding model or a 3D Mesh/Solid Object. A new **Edit Bar** control has been added ('**Bounding Box**'). If enabled, this option will allow the user to highlight a face (on a 3D Model/Mesh Object or a Folding Model) and the cross-section grid snap to that bounding box at that face. The cross-section grid will also resize to match the extents of the bounding box. The user can then manually shift the grid (either free-hand or by a fixed distance, using the **Entity Inspector Standard Toolbox**) into the required position. If the **Bounding Box** option is not enabled, a user-defined width & height may be entered and the grid snapped to a suitable point within the 3D scene (as with previous versions).

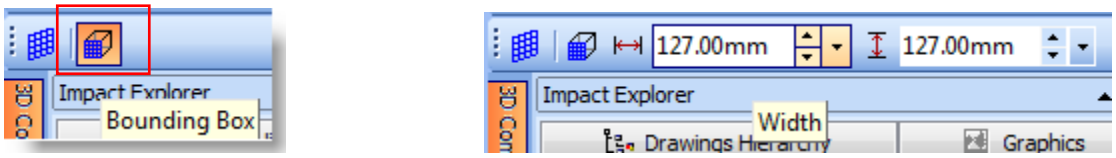


Fig 19 – 3D>New>Grid tool – with the 'Bounding Box' option enabled (left) and disabled (right)

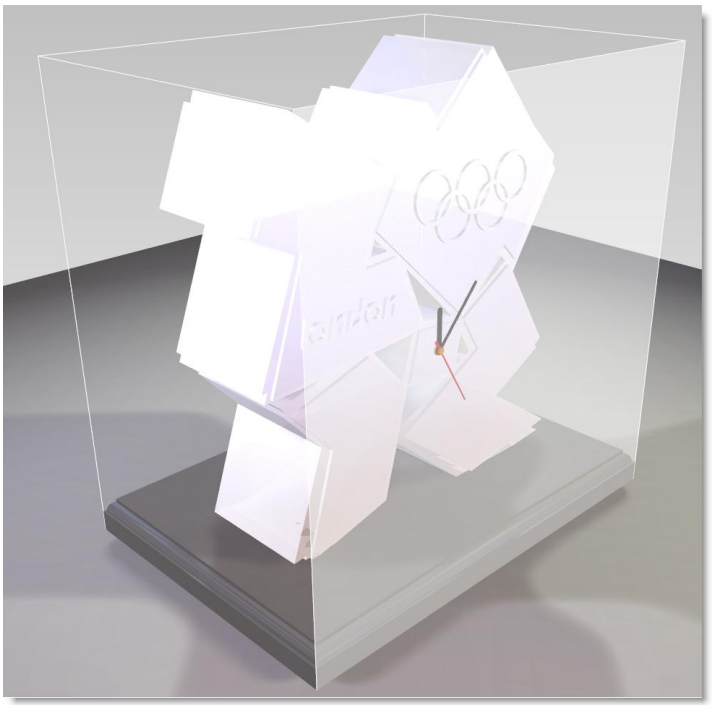


Fig 20 – Aligning the bounding box with a face on a 3D Mesh/Solid Object

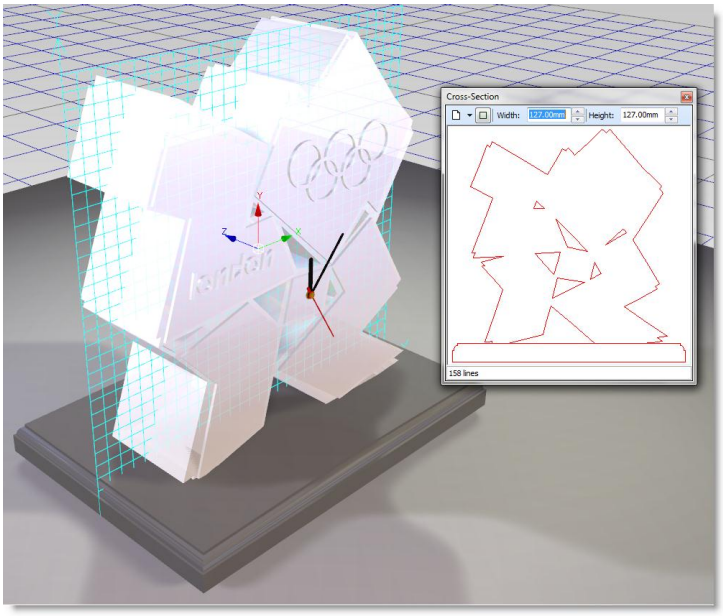
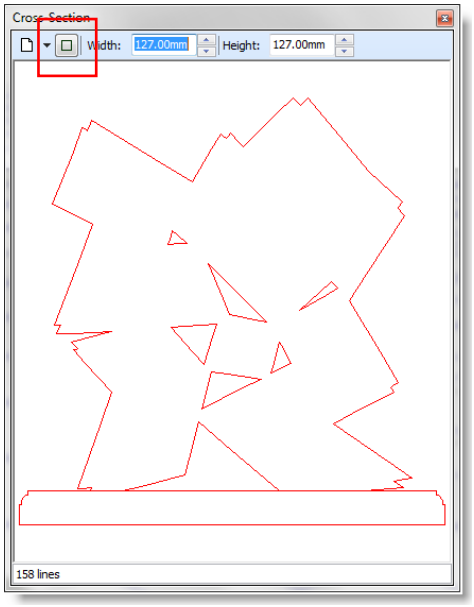
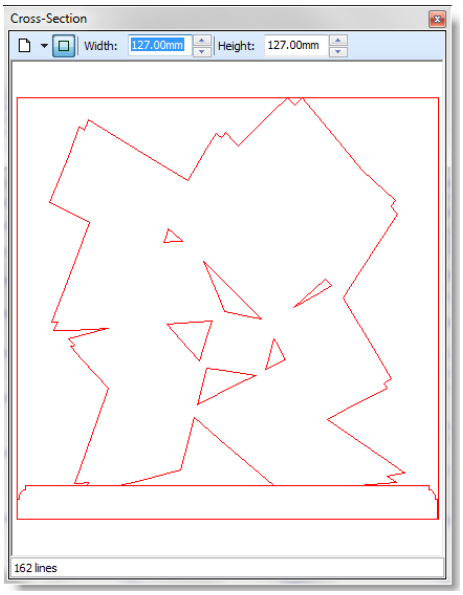


Fig 21 – The Cross-Section Grid Standard Toolbox after repositioning the grid

An additional button has been added to the **Cross-Section** Standard Toolbox as shown below:



The button will add geometry to the cross-section, in the form of a bounding box matching the extents of the cross-section.



As with previous versions, this geometry can then be added to a new or existing 2D layer within the current project.

Fig 22 – Before creation of 'Bounding Box' geometry.

Fig 23 – Additional 'Bounding Box' geometry.

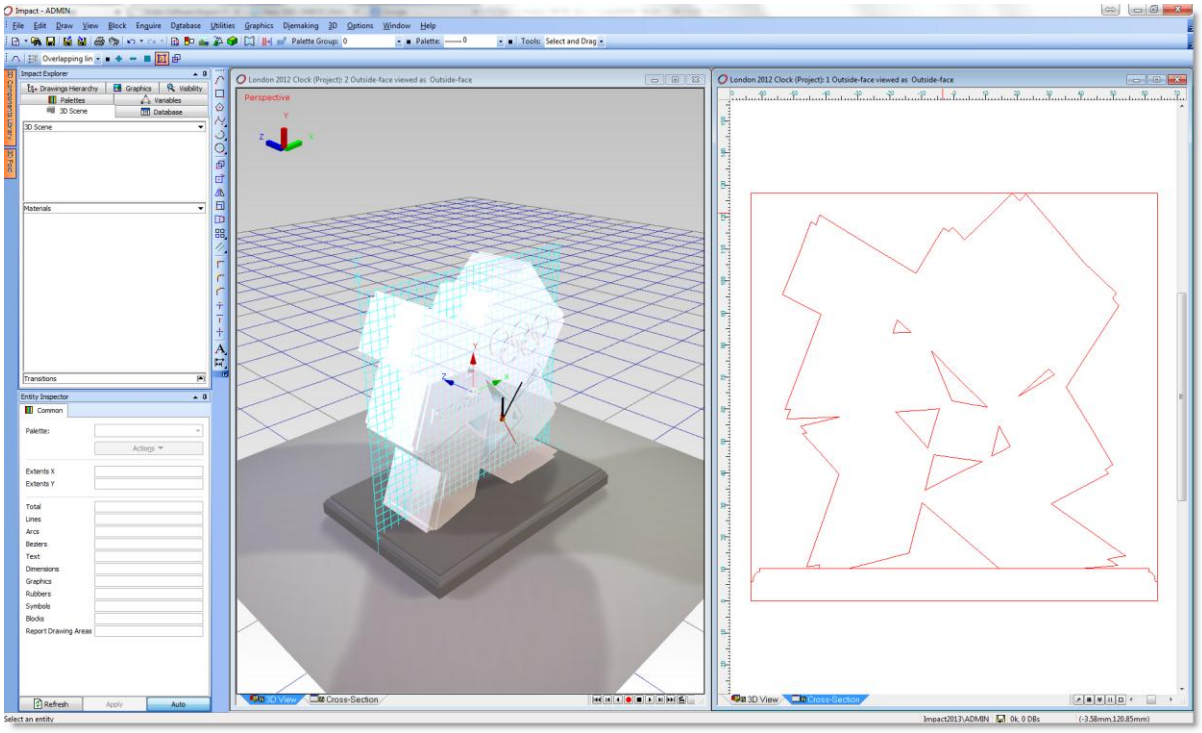
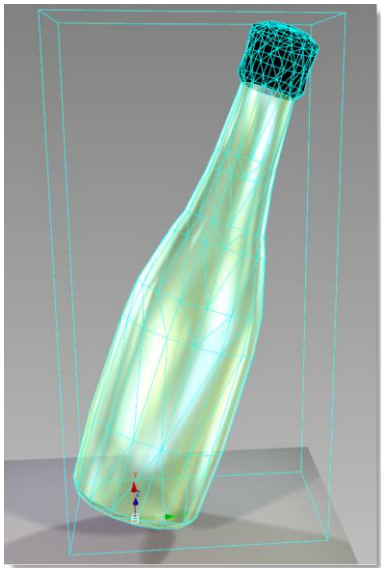


Fig 24 – 3D & 2D Layers – note the bounding box geometry within the 2D layer (right).

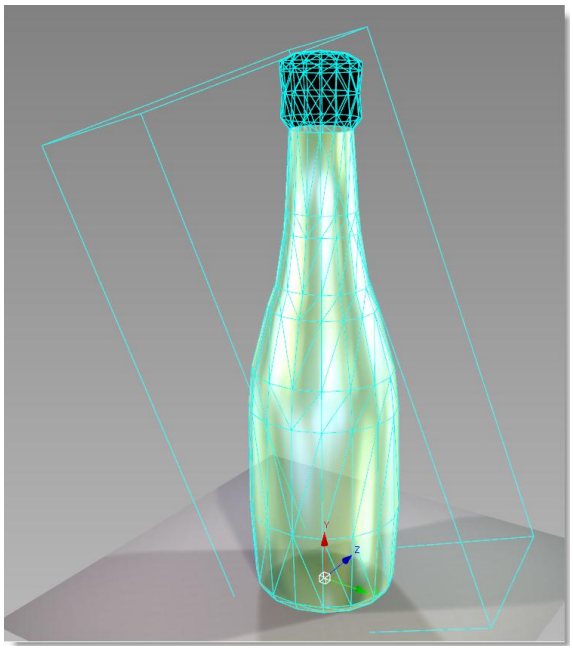
3D Reset Bounding Box

This is a new **Entity Inspector** option, which allows the bounding box to be reset to world X, Y & Z coordinates, **once an object has been manually re-aligned**.



I wish to rotate the imported solid object on the left, so that the base is placed on the floor. I'll use the **rotate to plane** functionality to accomplish this.

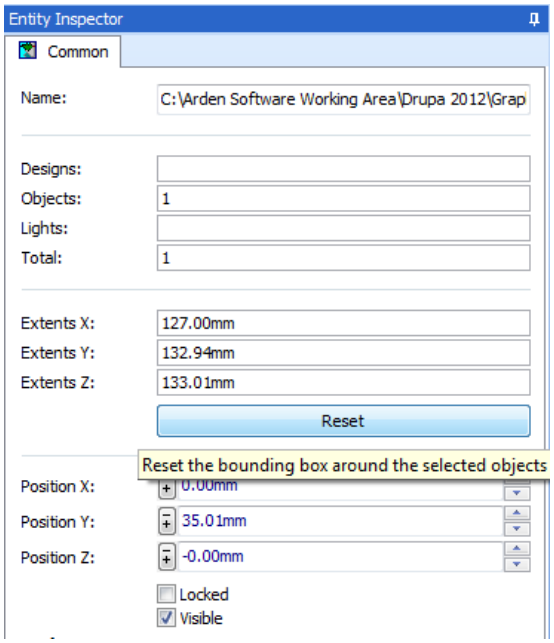
Fig 25 – 3D model with bounding Box



The **bounding box** has rotated **with** the model. Whilst I may have the model in the desired orientation, if I wish to use the **Bounding Box** to place a grid (in order to generate a cross-section), the **Bounding Box** itself may need to be re-aligned to the world X, Y & Z coordinates.

Fig 26 – Rotated model & bounding box

A new **Reset** option has been added to the **Entity Inspector** Standard Toolbox which will re-align the **Bounding Box** as shown below.



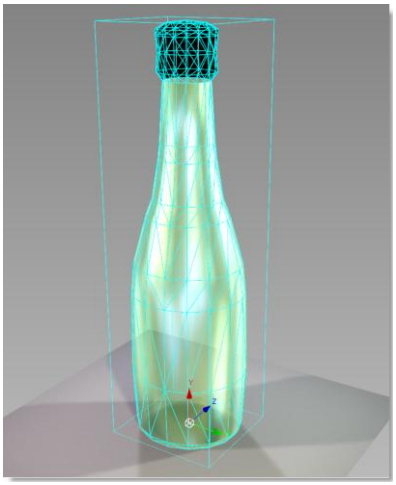


Fig 27 – Entity Inspector with Reset Bounding Box tool

Fig 28 – Realigned bounding box

Now I can place a grid in alignment with the bounding box:

Fig 29 – Grid placement on realigned bounding box

3D Export *

For customers with 3D-equipped licenses who are **upgrading to Impact 2013R2 from earlier versions**, the **Master Tool Settings>3D** folders **3D Export Settings** and **VRML Settings** (and their contents) will be **completely removed** once they have upgraded to **Impact 2013 R2**.

These folders contained settings for 3D exports to the 3D Studio Binary (*.3ds) and VRML 2.0 (*.wrl) formats. The settings will need to be recreated (once the upgrade has taken place) in a new **Master Tool Settings>3D** folder named **3D Import/Export Settings**.

If in doubt, print these Master Tool Settings to a text file prior to the upgrade:

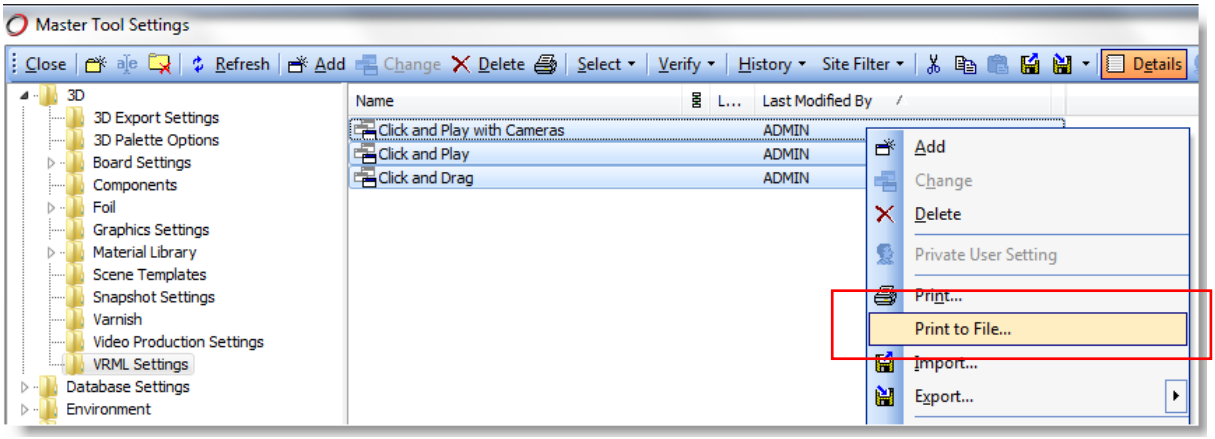


Fig 30 – Print-to-File for VRML Export Master Tool Settings prior to upgrading to Impact 2013 R2

Use the details contained within the text file to re-build those settings within the new **3D Import/Export Settings folder**. Note that settings exported from earlier versions of Impact will not be able to be imported into Impact 2013R2!

The new **3D Import/Export settings** will function much in the same way as their 2D counterpart, whereby an export setting has a branch for each supported format (though at the moment, the majority of those branches are unused).

The following screenshots illustrate the 3D Studio Binary and VRML 2.0 export branches of the new Master Tool Setting – the available options are identical to all Impact versions post 4.1.

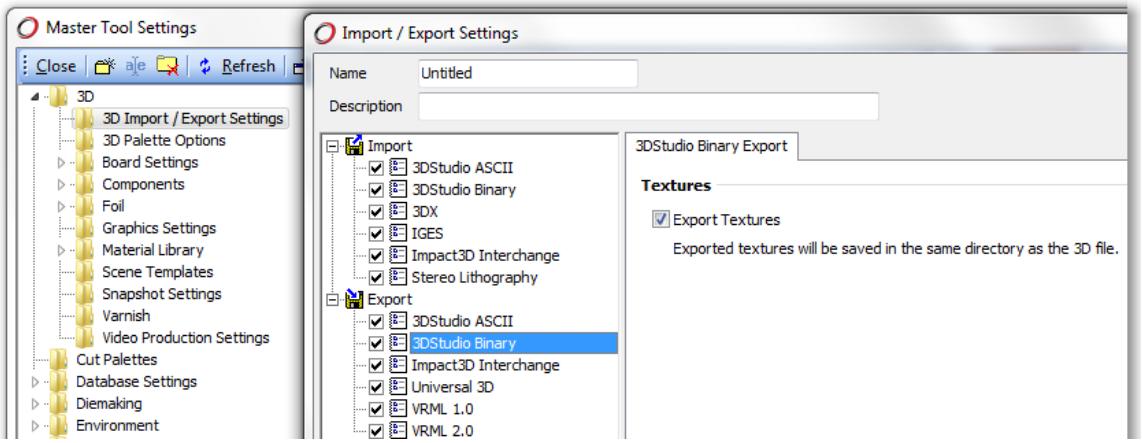


Fig 31 – 3D Studio Export branch of the new 3D Import/Export Master Tool Setting

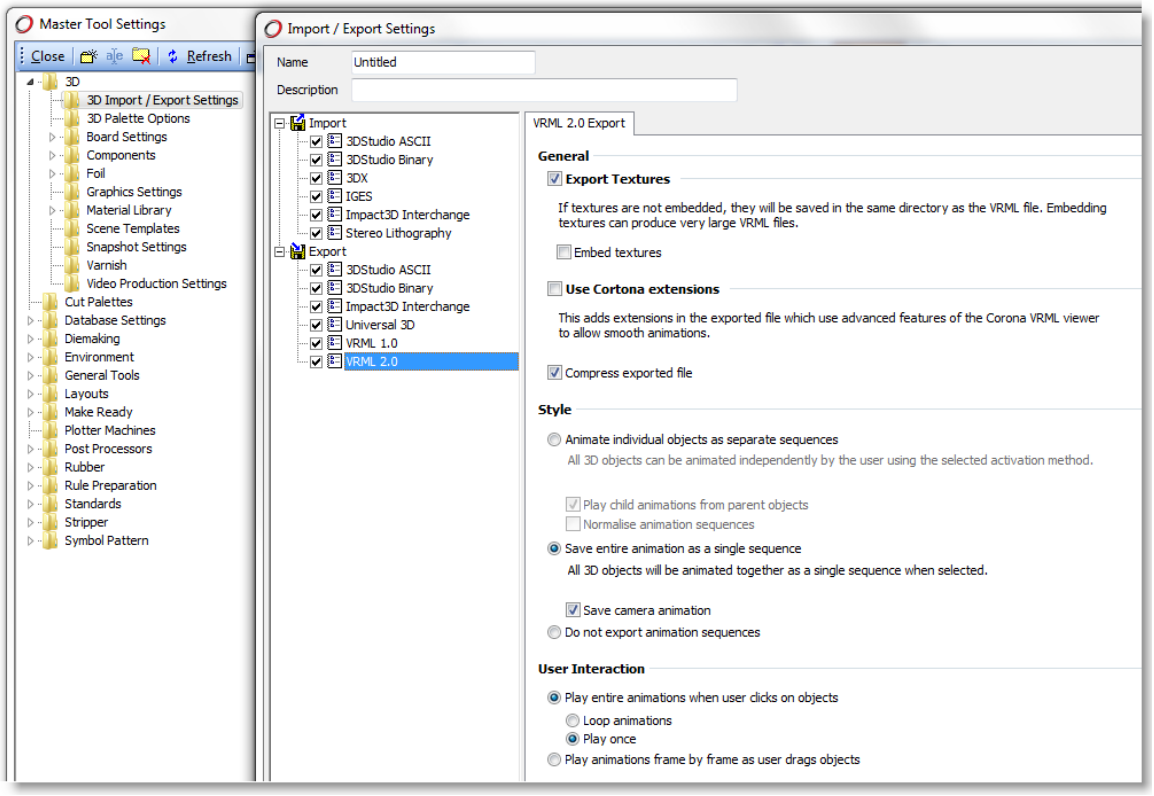


Fig 32 – VRML 2.0 Export branch of the new 3D Import/Export Master Tool Setting

3D Import*

Customers with 3D-equipped licenses will now be presented with some additional options when they import 3D Mesh/Solid Objects. Objects may be imported into the **current project & layer** (if applicable), to a **new layer in the current project** or to a **new project altogether**. These options are available from the **Import File dialog** and also within the **3D Import/Export Master Tool Setting**.

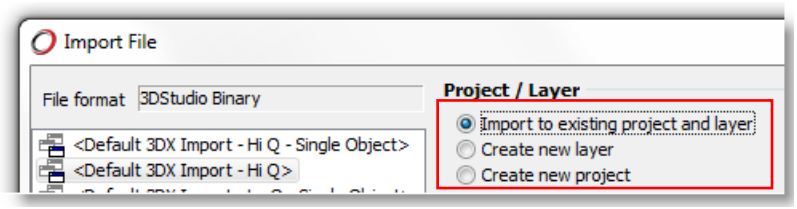


Fig 33 – New options within the Import File dialog box

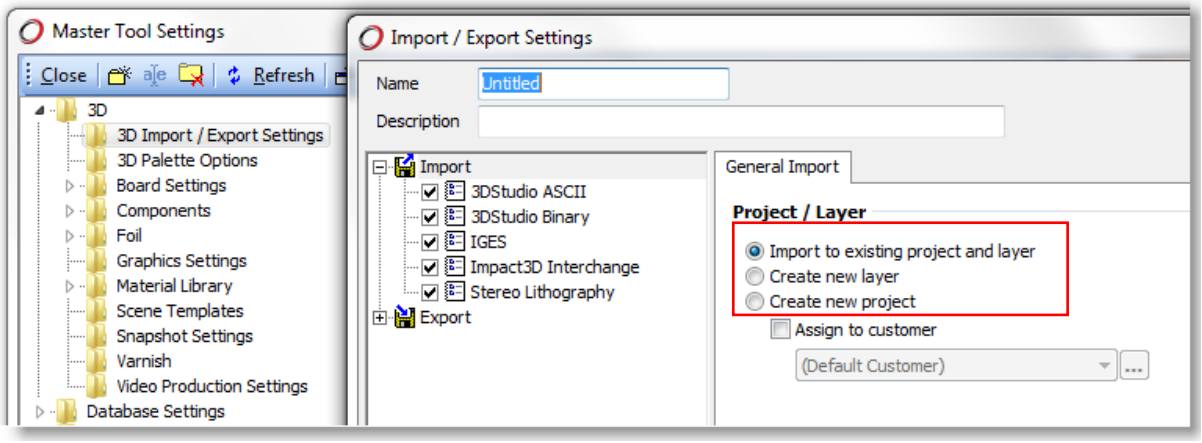


Fig 34 – Options may be configured as part of a 3D Import/Export Master Tool Setting

3DX Import*

For customers with **3DX-equipped licenses**, the upgrade to Impact 2013R2 brings several additional features, which may be accessed via the **3D Import/Export Master Tool Setting** (and also via the **File Import** dialog as a temporary override).

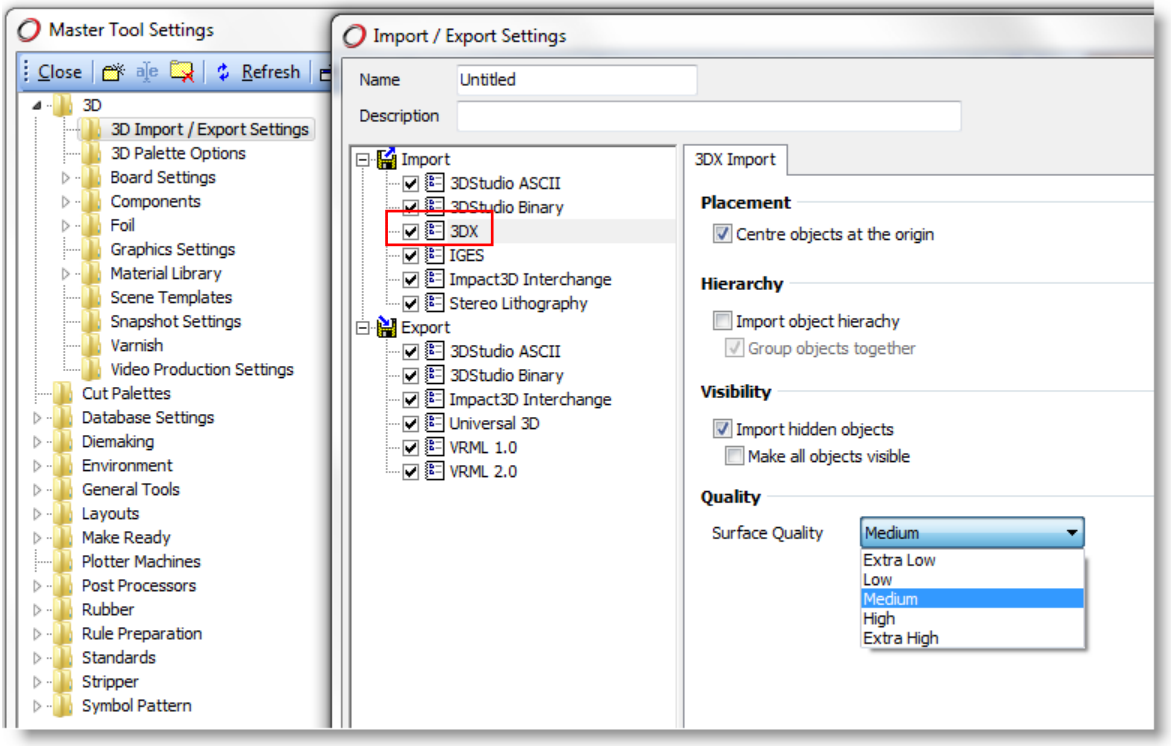


Fig 35 – 3DX Import options

Centre objects at the origin – if enabled, the centre of the model will be positioned at the centre of an Impact 3D scene (X,Y & Z = 0.00mm,0.0mm & 0.0mm) . If this option is not enabled, the model's own origin will be used and positioned at the centre of an Impact 3D scene.

Import object hierarchy – if the 3DX model contains a hierarchy (a collection of related parts and sub-parts) and this option is enabled, the hierarchy of parts & sub-parts will be preserved. If the option is disabled, the resultant model will be a comprised of a single object. This option is analogous to the 2D importing of a drawing containing *Blocks & Sub-Blocks* without exploding them.

Group objects together – if the hierarchy has been imported and this option has been enabled, hierarchies and sub-parts *within* a model may be selected, but not translated unless they are manually un-parented (removed from the hierarchy). If this option is disabled, hierarchies & sub-parts may be selected & translated, without any need for un-parenting. Disabling this option is analogous to the 2D recursive exploding of *Blocks*.

Import hidden objects – if the model contains objects marked as *hidden or invisible* in the originating application, this option will allow the import of those objects.

Make all objects visible - all objects within the model will be made visible, regardless of their status in the originating application.

Surface Quality – choose from extra low, low, medium, high & extra high. This affects the number of polygons & vertices which are created for the model (or each sub-part, if a hierarchy is imported). The more polygons & vertices, the smoother the model (or sub-part) appears, albeit at a cost of increased import-time & memory usage. The Surface Quality option is analogous to the curve tolerance control found within the 3D Wizard.

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