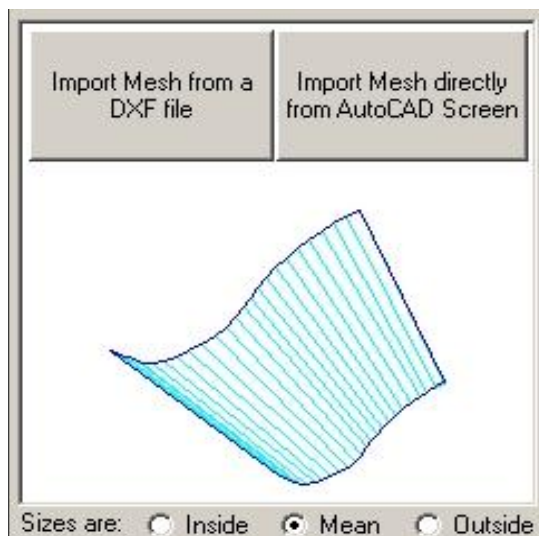




Module 7
Creating a Mesh in AutoCAD
and Importing it into Plate 'n' Sheet

Imported Surface Mesh



A surface mesh can be imported from AutoCAD. It may be selected directly from the AutoCAD screen (full AutoCAD only) or imported as a DXF from a compatible CAD program. The surface mesh may be created in AutoCAD or may have been created in Plate 'n' Sheet and exported to AutoCAD as a 3D wire-frame model and modified.

Notes: This category is used to import a mesh from AutoCAD or compatible CAD program. The mesh must be a “**Ruled Surface**”.

A ruled surface is a mesh consisting of straight lines in one direction and may be curved in the other direction.

While other types of mesh may be created in AutoCAD (Edgesurf, Revsurf, etc), the Ruled Surface is the only one we know can be produced by pressing or rolling to shape with standard metal working machinery.

The mesh must have a start and an end edge. If the mesh is created by meshing between two closed shapes (such as circles) this is NOT the case. A small break may have to be made in each closed shape before meshing it to define the start and end edges.

You may import the mesh by using one of the following methods:

A Import directly from the AutoCAD screen:

You may select the mesh object directly from the AutoCAD screen. It must be already created and visible on the AutoCAD screen. The AutoCAD version must be 2000 or later and must be the full AutoCAD program (that is, not AutoCAD LT).

- 1 After clicking the button labeled “Import Mesh from AutoCAD” in Plate 'n' Sheet you will be prompted to select a mesh object from the AutoCAD screen. You will receive an alert if a suitable AutoCAD is not running.
- 2 Otherwise, make AutoCAD the active window by clicking its icon on the Windows taskbar, leaving Plate 'n' Sheet running in the background.
- 3 The AutoCAD command line will now be prompting you to select a mesh. Select it by clicking on one of the mesh lines with the left mouse button.
- 4 Next, click the Plate 'n' Sheet icon on the taskbar and the mesh will be imported into the Plate 'n' Sheet session. It may not be visible until you select a view and ‘zoom extents’.

B Import the mesh from an existing DXF file.

Use this method if you don't have an AutoCAD version as described above. The mesh may be created in any CAD program with this capability and saved or exported as a DXF file.

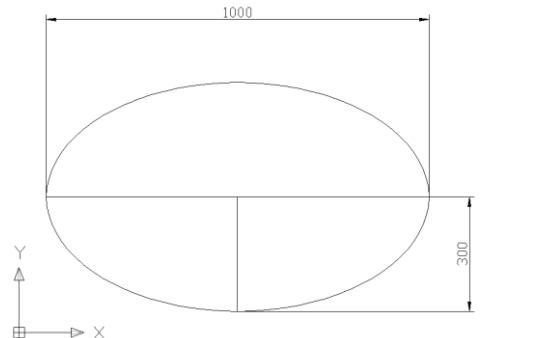
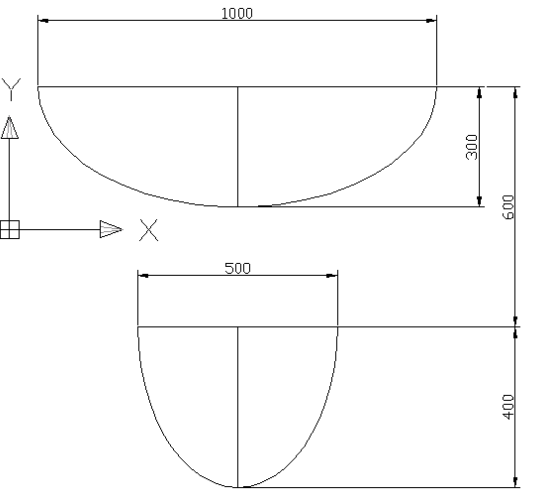
- 1 Click the "Import Mesh from DXF file" button and select a DXF file.
- 2 The import program will scan through the DXF and find the first suitable mesh, ignoring all other entities and additional mesh objects.
- 3 Select a view and zoom extents to see the mesh.
- 4 The most reliable results will therefore be achieved by selecting a single mesh object for DXF translation in the CAD program used to create it. In AutoCAD this means using the 'Entities' or objects option of the DXFOut command.

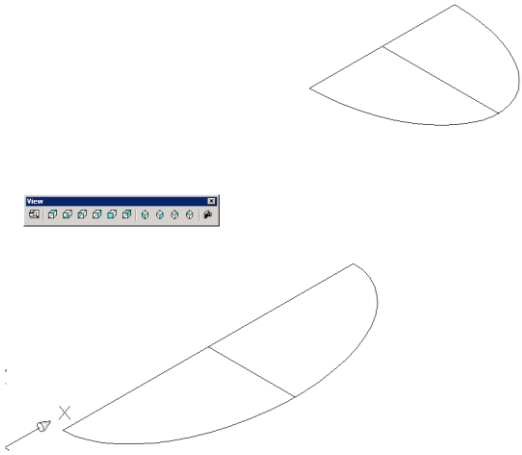
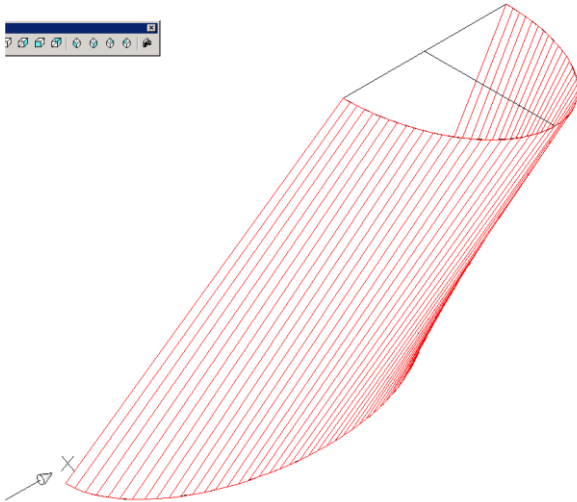
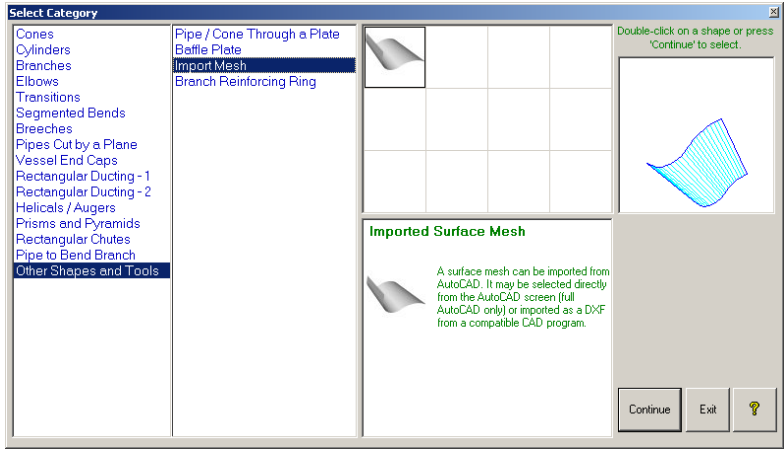
Once the mesh has been imported it can be unfolded. Plate 'n' Sheet Professional will triangulate the shape, adding press lines where required (if a face is twisted).

The following is a tutorial that follows the process of creating a surface mesh in AutoCAD and unfolding it in Plate 'n' Sheet.

Creating and unfolding odd shapes using AutoCAD and Plate 'n' Sheet Professional

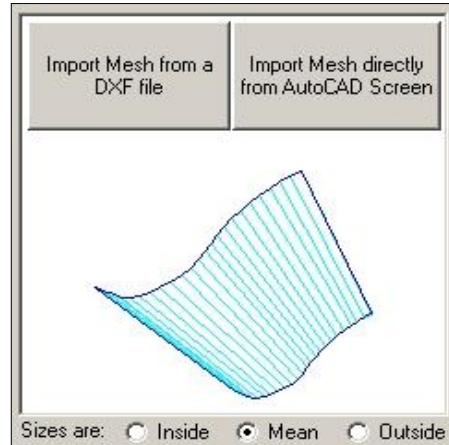
The first stage is to make a shape in AutoCAD. This done using the AutoCAD RULESURF command, which constructs a mesh consisting of straight lines between two profiles. In this example we will create a chute where the shapes at each end are ellipses of different sizes.

<p>In AutoCAD, draw two lines as shown. Construct an ellipse that fits the lines.</p>	
<p>Draw a second ellipse as shown and trim both ellipses to the center lines</p>	
<p>Move the second ellipse 1200 in the "Z" direction by selecting it as you would for a normal 2D move operation. Select any basepoint. Specify the second basepoint by typing @0,0,1200.</p>	<p>Turn on the "View" toolbar to assist in viewing the drawing. This is most easily done by right clicking over any button and selecting "View" from the drop-down list of toolbars.</p>

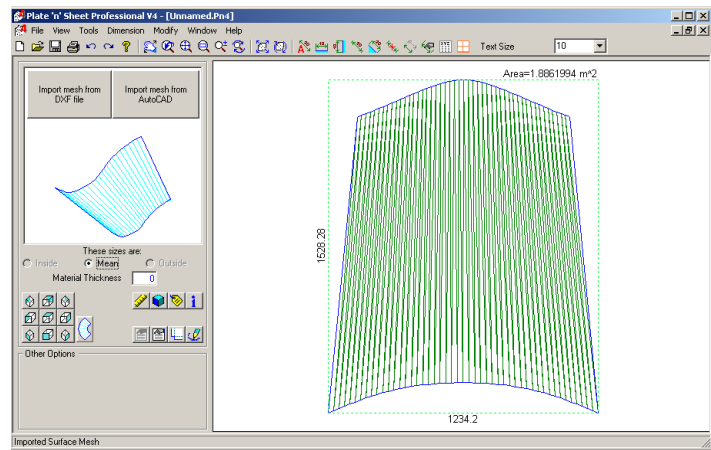
<p>Select the “South West Isometric” view from the toolbar.</p> <p>Set the number of press lines required, say 48 to produce a smooth curve. Type “SURFTAB1” at the AutoCAD command line. This determines the number vertices and therefore the accuracy of the shape.</p>	
<p>From the AutoCAD Draw menu, select Surfaces, then Ruled Surface. Pick each ellipse towards the same end on each. For clarity, select the mesh and set it to another colour. You should now be able to see our chute. Type “HIDE” for a better view. Click each button on the view toolbar to see it from different positions.</p> <p>Save the drawing and leave AutoCAD running..</p>	
<p>Now start Plate 'n' Sheet. Select the Import Mesh option from the category menu.</p>	

Click the 'Import Mesh From the AutoCAD Screen' button and in AutoCAD you will be prompted to select the mesh.

You will get a message saying "Suitable mesh found" when you return to the Plate 'n' Sheet screen.



Now view it in Plate 'n' Sheet using the view buttons. When you are ready click the "Create or update pattern" button.



The pattern may now be dimensioned or exported back to AutoCAD if required.