

# Pro/Engineer SLP (Render) File Geometry Import Converter

This geometry import converter imports and processes SLP (Render) files which are typically exported by Parametric Technologies Pro/Engineer program. Once the SLP file has been imported it can be automatically exploded into separate objects, and each object can have its vertices welded together. The resulting optimized polygon mesh can then be rendered with no changes necessary using such programs as Okinos NuGraf Rendering System or Autodesk's 3D Studio MAX.

The import process proceeds as follows:

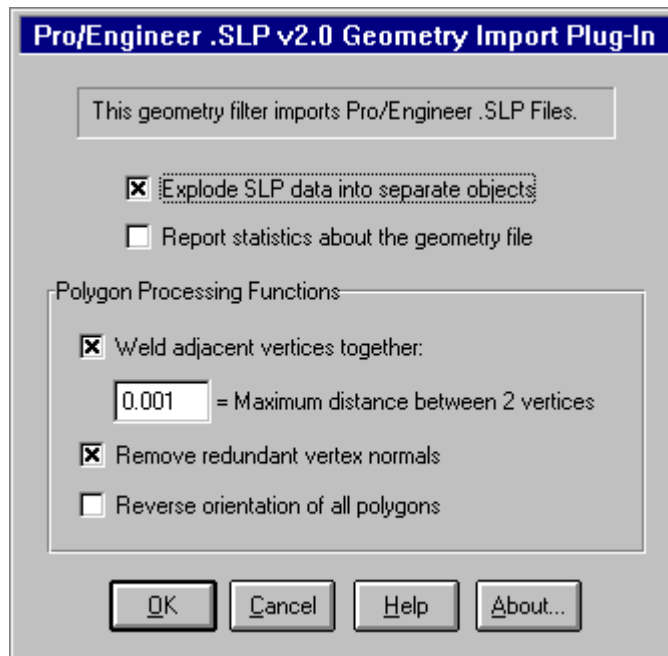
- The raw SLP triangle data is parsed and read into memory.
- The vertices of the polygonal data is optionally welded together so that each polygon shares explicit vertices with that of its neighbour.
- The redundant vertex normals (which result from the welding operation) are deleted.
- The polygonal mesh is exploded into separate objects according to the original colors assigned in Pro/Engineer.

## Notes:

In order to properly explode the polygonal mesh into separate objects you must assign a different color to each part within Pro/Engineer. However, Pro/E only allows 12 (or 15) colors to be exported to a SLP render file, thus if you want to export 12 or more distinct objects to a SLP file then you will have to do it in multiple passes.

## CONVERTER OPTIONS:

The following information explains the various options on the dialog box:



## Explode SLP Data Into Separate Objects

If this option is enabled then the imported object will be broken apart (exploded) into separate pieces according to the colors assigned to each polygon. For example, if the imported file has half of its polygons assigned a red color and the other half assigned a white color then the object will be broken apart into two separate pieces, each with its own unique material (one material will use

a red color and the other material will use a white color). If this option is not enabled then the imported object will not be broken apart.

### **Report Statistics About the Geometry File**

If this checkbox is enabled then the import converter will print out the number of objects, polygons, normals and surfaces that were parsed from the file.

## ***Polygon Processing Functions***

### **Weld Adjacent Vertices Together**

This function will combine all adjacent vertices together which are within a specified distance of each other. The default distance is shown on the dialog box. This is a useful function to apply to SLP data since the polygon data is stored in the .slp file as separate triangles and not as a welded mesh. Such a disjoint set of triangles will not appear smooth when rendered in such programs as 3D Studio MAX unless they are welded together first.

#### **Threshold Value Type-In**

If the distance between two vertices is less than or equal to this number, and the **Weld Vertices** checkbox is check-marked (enabled) then the two vertices will be collapsed (welded) into one.

### **Remove Redundant Vertex Normals**

After the welding operation is complete there may be a significant number of redundant (duplicated) vertex normals. As an optimization step this option can be enabled to remove all redundant normals from the polygon mesh - this will make the polygon mesh use less memory but it will NOT affect the appearance of the polygon mesh in any way.

### **Reverse Orientation of all Polygons**

If this option is enabled (checkmarked) then the orientation of all polygons will be reversed and all vertex normals of the polygons will be flipped. For example, if the vertex normals of the object currently all face inward then this function will cause all of the vertex normals to face outward. Normally this option does not need to be enabled for SLP data.

