Subject: Triangle Segment Size
Posted by pipescs on Sun, 22 Jan 2012 15:10:07 GMT
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I am very much a newbie at this and am unsure how to even discribe it.

I am drawing in AutoCAD 2002. The parts I am drawing will eventually be patterns for sand casting Live Steam Locomotive parts using brass and cast iron.

When I export the parts to an STL file format the curved faces have large triangular facets in the curves.

For one will these facets show up in the actual RP part and if so can anyone give me advice on reseting my AutoCAD to a higer density on the export to STL

File Attachments

1) 445868_v0_s14_convert_large.jpg, downloaded 253 times

Subject: Re: Triangle Segment Size
Posted by stop4stuff on Sun, 22 Jan 2012 16:36:06 GMT
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I don't know AutoCAD, but I do know the materials Shapeways offers.

As a general rule of thumb, aim for faces on curves that are half the minimum detail size. i.e. A 2mm diameter cylinder printed in WSF, 60 edges around the circumference and 1 edge for the height (= 120 triangular faces for the cylinder walls) this works out to be just over 0.1mm edges on the curved areas. (with FUD, aim for 0.05mm)

The limit for (regular) upload is 1 million triangles, surfaces constrained to the regular axis of a model should be ok at whatever size triangle, however surfaces that transistion from one axis to another or are on a diagonal need to be pretty detailed to avoid 'printer stepping'... so the more triangles you can get into your model the more accurate the final print will be to your model.

Paul

[edit] sorry, I forgot my manners. Welcome to Shapeways! :)

A handy tip when modelling, turn off all smoothing - smoothing is a visual thing for us human-beans, printers cannot see ;)

Subject: Re: Triangle Segment Size
Posted by pipescs on Sun, 22 Jan 2012 20:20:36 GMT
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Thank you for the help.

Sadly I am not educated enough yet to understand all you have said.

The part I uploaded is is a tapered cylinder that is 3.5 inches in diameter and one inch high

Where can I find a definition of WSF?

Subject: Re: Triangle Segment Size
Posted by JamesSaunders on Mon, 23 Jan 2012 02:52:48 GMT
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WSF = White, Strong and Flexible.

Subject: Re: Triangle Segment Size
Posted by pipescs on Mon, 23 Jan 2012 02:57:49 GMT
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Thanks.

So as I understand this I need to increase the number of Facets up to the max allowed of one million.

Subject: Re: Triangle Segment Size

Posted by stonysmith on Mon, 23 Jan 2012 03:19:34 GMT
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WSF has a "minimum detail" size of 0.2mm

I would suggest designing with at least 1/2 or 1/4 of that size as your maximum. You don't want to be bigger than that or your facets are going to show.

Subject: Re: Triangle Segment Size
Posted by pipescs on Mon, 23 Jan 2012 12:51:17 GMT
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It would appear I will have to live with the facets.

The parts I am designing are to be used as patterns for doing sand castings to make brass and cast iron parts on a 1.6 inch to the foot model locomotive.

This is an example of a part that is around 8 inches long that was cast in sand haveing used WSF as a pattern

Changing the part size is not an option

Thanks for all the help so far. Quite a neat website.

File Attachments

1) 1211112037a[1].jpg, downloaded 186 times

Subject: Re: Triangle Segment Size
Posted by JamesSaunders on Mon, 23 Jan 2012 14:31:56 GMT
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There is no need to change any dimensions to increase the facet count. Facets are just how the model is rendered on-screen; the actual geometry is true to your numerical dimensions. However, when you export a mesh to print, only the facets are exported. You want to reduce the size of the individual facets to create a smoother appearance on your round surfaces. As mentioned above, ideally you will reduce the facet size to something smaller than the print resolution.

I don't know specifically how to change your facet resolution in AutoCAD, but Google sent me here: http://books.google.com/books?id=I49AEJAsa98C&lpg=PA352&ots=2N5mrKzUuu&dq=facet%20autocad&pg=PA352#v=onepage&q=facet%20autocad&f=false

Might be a good place to start.

Subject: Re: Triangle Segment Size
Posted by stop4stuff on Mon, 23 Jan 2012 17:40:09 GMT
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If you like, I can adjust your model for you to increase the face count & smoothnes without changing the size - I'd need an obj or stl file and it wouldn't take more than 10 minutes.

Paul

Subject: Re: Triangle Segment Size
Posted by JACANT on Mon, 23 Jan 2012 17:52:35 GMT
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AutoCAD

Type these commands in AutoCAD's command line:

1. Set DISPSILH to 1

2. Set ISOLINES to 0

3. Set FACETRES to 10

4. Relocate the object to the positive X-Y-Z octant

5. REGEN

Export your STL again to overwrite your first file.
I would recommend opening your stl file in Nettfabb to check, repair or scale.

http://www.netfabb.com/basic.php

File Attachments

1) facetres.png, downloaded 138 times

Subject: Re: Triangle Segment Size
Posted by pipescs on Tue, 24 Jan 2012 01:59:29 GMT
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Thanks for the everything. Especially dumbing it down to my level of expertice.

After changing the settings

File Attachments

1) 449845_v0_s14_convert_large.jpg, downloaded 110 times

Subject: Re: Triangle Segment Size
Posted by JACANT on Tue, 24 Jan 2012 16:20:29 GMT
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Looks smooth now.
If you open a new file and change all of these system variables plus all your layers etc. you can save this as a drawing template file '.dwt', then when you come to open a new drawing all these variables will already be set.
If ever you get stuck with Autocad give me a call. Always pleased to help.