Subject: RHINO user with stl / meshing questions
Posted by MODbot on Sun, 08 Jul 2012 19:45:07 GMT
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Hi. I use Rhino for 3D modelling. I have 3d modeled for six years but only been 3D printing stuff for about a year now.

I have successfully printed many models but I am still not entirely clear on what makes a model good for printing (rather than just a 3D rendering.)

I always prepare the model as all extruded surfaces and boolean them together and make sure I have one joined surface. I also always convert the mesh while still in rhino and I use some of the basic repair tools they have there - unify normals, cull degenerate faces.

I then export the model as an stl file. and I use the basic netfabb program to fix the model. I have a basic understanding of this program and have used it to reorient faces and make sure I only have one shell. Other than that, everything in this phase is not clear to me.

my questions:
1) what repair tools do you use in rhino when preparing your mesh for printing. are there any checks that all printable models should pass?

2) I know the model needs to be one shell and that the whole model should show as green in nettfabb in order to be printed. What are the other parameters the model should fit into to be printable?

If anyone has advice, I would really appreciate it. Thank you.

-Susan

Subject: Re: RHINO user with stl / meshing questions
Posted by Dotsan on Sun, 08 Jul 2012 21:22:04 GMT
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Hi Susan, I also use Rhino, fixing meshes is a bit of a black art in Rhino and you also need a lot of patience. The basic command in Rhino4 is check mesh, this will tell you errors. Knowing the errors you have to go through remove bad elements, fill holes and keep checking in mesh until you get the message this is a good mesh. Rhino 5 has some automatic fixing but I always end up

fixing things manually.
Hope this helps.
V

Subject: Re: RHINO user with stl / meshing questions
Posted by MODbot on Sun, 08 Jul 2012 22:39:04 GMT
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Thank you for your response. I did the rhino check mesh command and a window came up saying the mesh was valid but then when I export the file as an stl I still get the warning, the stl file you are saving is not adequate for creating rapid prototype parts.

then when I upload that same file into the basic netfabb it comes up with the following parameters: 1 shell; 3000 invalid orientation; 12 holes. so I run the basic repair function in nettfadd yet I still get these parameters. and I am still getting an exclamation mark next to the model which I assume means something is wrong but I am not sure what I should even be looking for.

the object I modelled is a mesh basket so it has a weave like pattern on all 5 sides . What I find more perplexing is that when I run the repair in nettfabb it closes all the holes in the mesh on the very bottom of the basket but it doesn't close the holes on any of the sides. I don't want these holes closed but I am also wondering why it would only close the ones on the bottom. all sides are equal in thickness and the weave holes are placed the same distance from one another. Plus they are there intentionally. I don't know if the software is reading them as errors. Do you have any thoughts on this.

Also, because you said you are able to check the mesh yourself, can you please tell me what you look for? What are the parameters?

Thanks so much again!,
Susan

Subject: Re: RHINO user with stl / meshing questions
Posted by Fredd on Mon, 09 Jul 2012 01:48:35 GMT
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If you get completely disgusted, post a link where we can download the STL. Many times its simple stuff, double verts, normals facing the wrong way. A model you want to 3D print is a totally different animal from a model you want to just render, Susan

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Subject: Re: RHINO user with stl / meshing questions
Posted by Dotsan on Mon, 09 Jul 2012 08:25:12 GMT
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Fredd is right, if you can upload your file or send it via private message I can have a closer look at it and identify specific issues?

Subject: Re: RHINO user with stl / meshing questions
Posted by MODbot on Tue, 10 Jul 2012 18:04:59 GMT
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Thank you all for your help.

Please see attached screen shot; these are the errors in the model.

The model is a mesh basket with holes on all 5 sides. When I ran the fix repair option in nettfabb - the program closed all the holes in the mesh on the bottom on the basket. These are not errors. they should be there. What is stranger is that the holes on the bottom are the same thickness and spacing as the holes on all the sides. I am unsure why the program would close only those on the bottom. it is confusing to me as to why they are recognized as errors but the other holes in the mesh are not.

I am at work right now but can upload my rhino or stl model when I get home. I would be really appreciative if anyone has feedback on the attached screenshot in the meantime.

In addition, if someone can give some guidance on what I should be looking for when making sure a model is printable, I would really appreciate it. This stage of the process is not clear to me.

Thank you again. I really appreciate the feedback.

File Attachments

1) errors.PNG, downloaded 103 times

Subject: Re: RHINO user with stl / meshing questions
Posted by SGDesigns on Fri, 07 Sep 2012 04:22:30 GMT
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Hi skosor, I usually type "check mesh" and if the window pops up and says my mesh is ok them everything is all good but sometimes it will show you a list of errors. Here is what I use to fix each type of error.

http://www.rhino3d.com/4/help/commands/checkrepair-meshes.ht m

Then I discovered ZBrush. All I can say about this program is A - MA - ZING. You can import your model here as a .obj and there's a button called "fix mesh" and thats it. Problem solved. But it does help to know how to fix it manually with the link above.