CASE STUDY **PROBLEM | SOLUTION**

3D PLATFORM

Q: Is there one CAD modeler that is better than another for 3D printing?

A: There are many good modeling programs that will work for 3D printing. The key is to have a fully closed, or watertight model to be successful.

PRINT QUALITY

1. The model has self intersecting faces.
2. These faces result in the slicer printing surfaces in areas that will ultimately cause print failure.

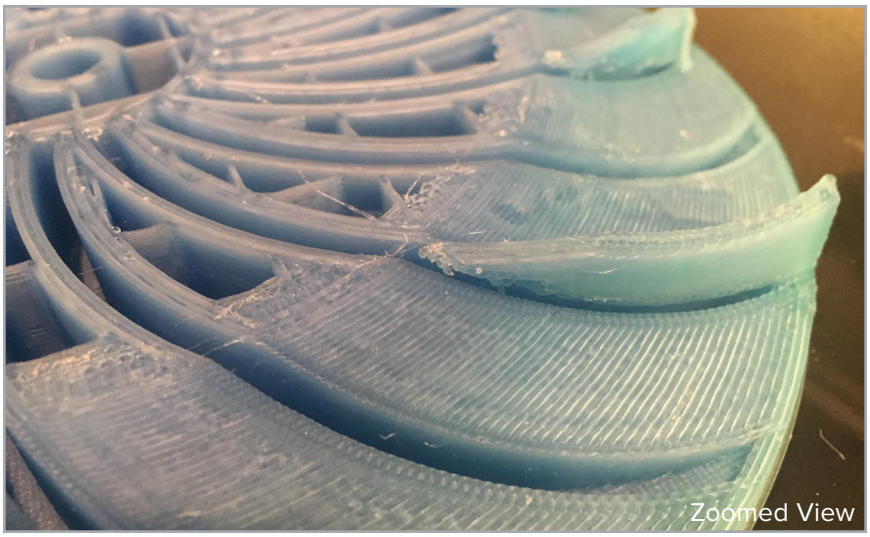
PROBLEM

The model was created using several different solid models that intersected one another. These models can exist in the virtual world but not in the physical world. This causes major issues for the slicing software.

CORRECTIVE ACTION

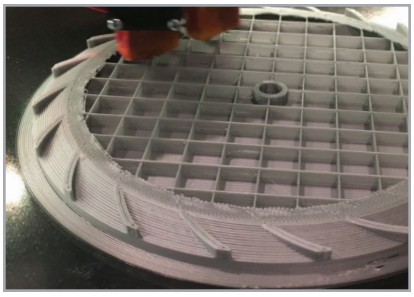
A model repair is necessary. By importing the STL file into Netfabb and using the file repair features, we can create one solid file that does not have intersecting surfaces. This will make the file printable and eliminate the problem. It also decreases print time by eliminating the internal structure of the separate models. These are unnecessary when the model is printed with infill material.

Website: **www.nefabb.com**

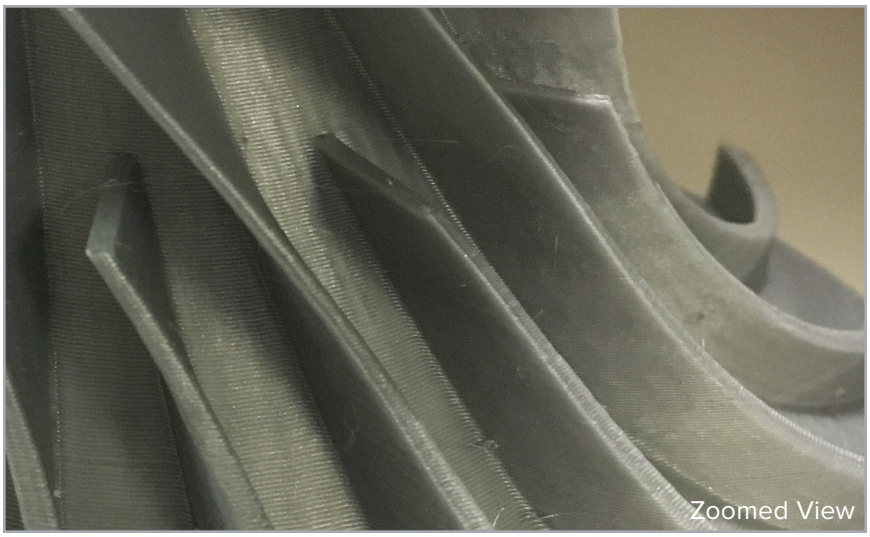


Failed Print: Model errors contribute to the failure of this print

Failed Print



Fixed Print



Fixed Print: Smooth layers are essential to a successful print.

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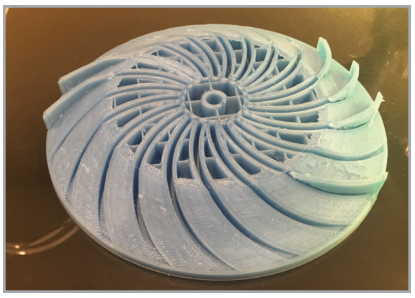
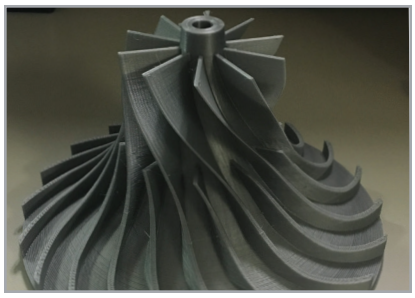
CASE STUDY **PROBLEM | SOLUTION**

3D PLATFORM

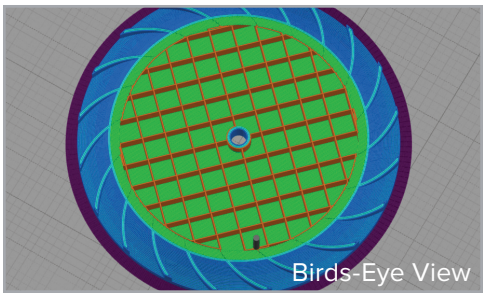
Rule of Thumb: Only make one adjustment at a time, so you can see the result of the change.



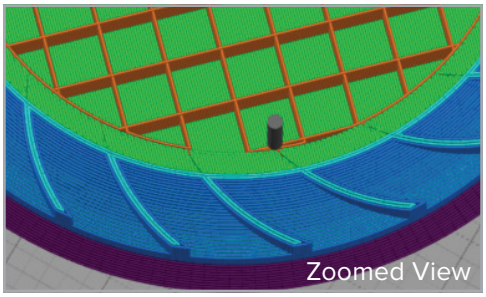
Failed Print



Fixed Print



Model, Sliced:



Model, Sliced:

PRINT PROCESS SETTINGS	BEFORE FIX BAD PRINT	AFTER FIX GOOD PRINT
Material Type	PLA	PLA
Bed Temperature	80C	80C
Nozzle Size	.6mm	.6mm
Nozzle Temperature	200C	200C
Flow Rate (Extrusion Multiplier)	1.00	1.00
Extrusion Width	.72mm	.72mm
Print Speed	100mm/s	100mm/s
Layer Height	.3mm	.3mm
Number of Perimeters	3	3
Top Layers	10	10
Bottom Layers	10	10
Infill Percentage	10%	10%
Support Structures	none	none

KEY POINTS

The model must be one solid, water-tight model to achieve a successful print. The intersecting bodies cannot exist in the physical world.

OTHER NOTES

There are several STL repair software packages available:

NetFabb
Materialise Magics
MeshMixer
Make Printable

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