



3DXpert™

3DPRINTING EXERCISE

Infills

Tutorial_V9- Updated: 14,0100,1592,863(SP1)

Contents

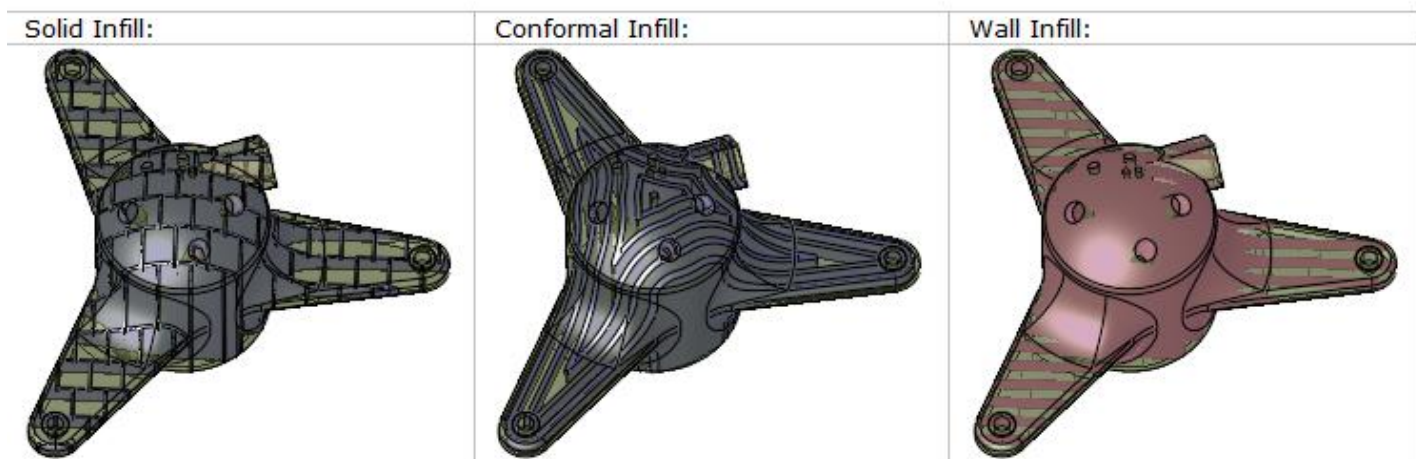
Part 1 – Infill	2
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In this exercise, we will discuss specific printing preparation functionality in 3DXpert:

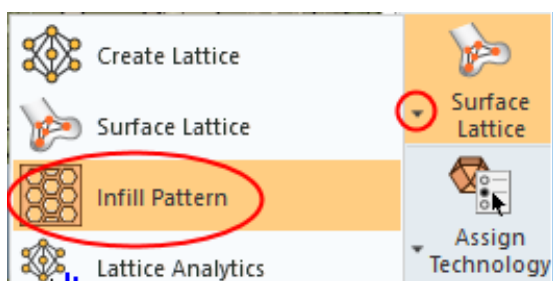
Infills - Filling the part's with Pattern based volume.

Part 1 – Infill

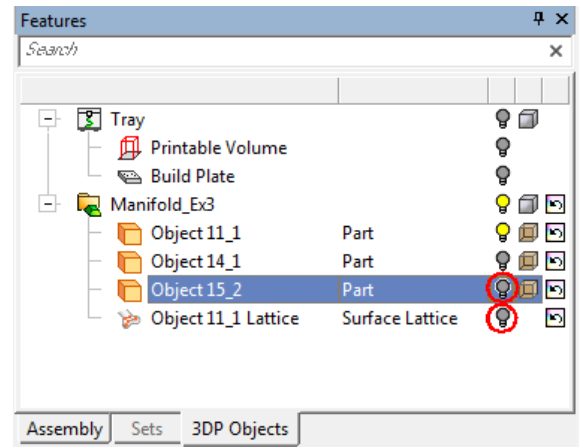
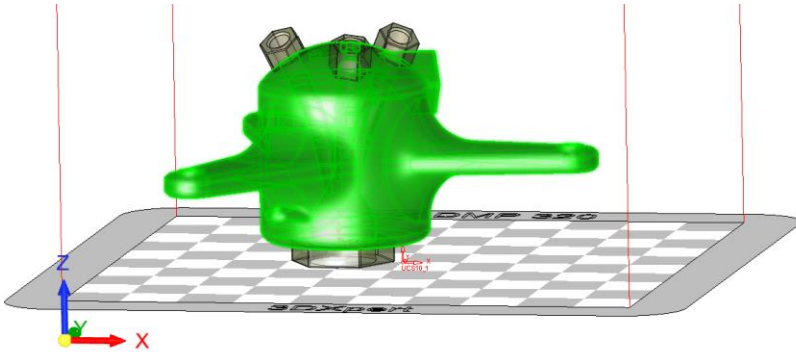
Infills are used for creating structures that support the inner volume and save sintering time. The Infill creation dialog is divided into three Infill types: **Solid** Infill, **Conformal** Infill and **Wall** Infill



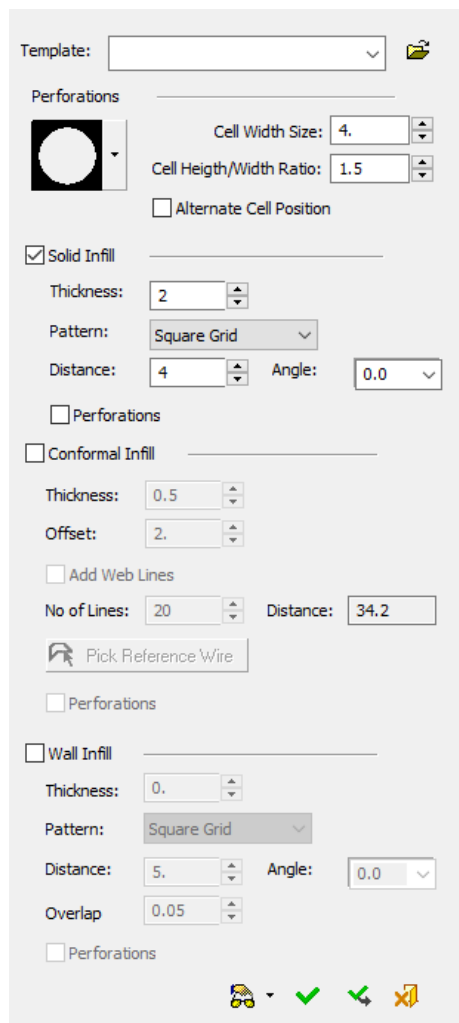
1. Load the file **infill_lattice.elt**
2. Select the Infill option



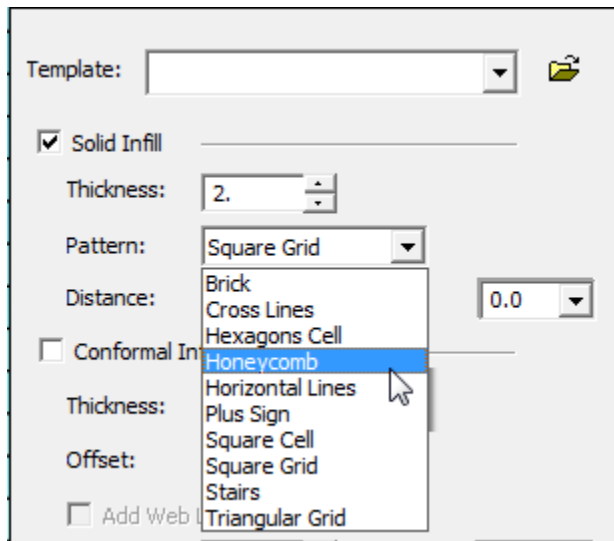
3. Select the main object
4. From the 3DP Objects tab, hide the upper and lower objects by clicking their relevant bulbs:



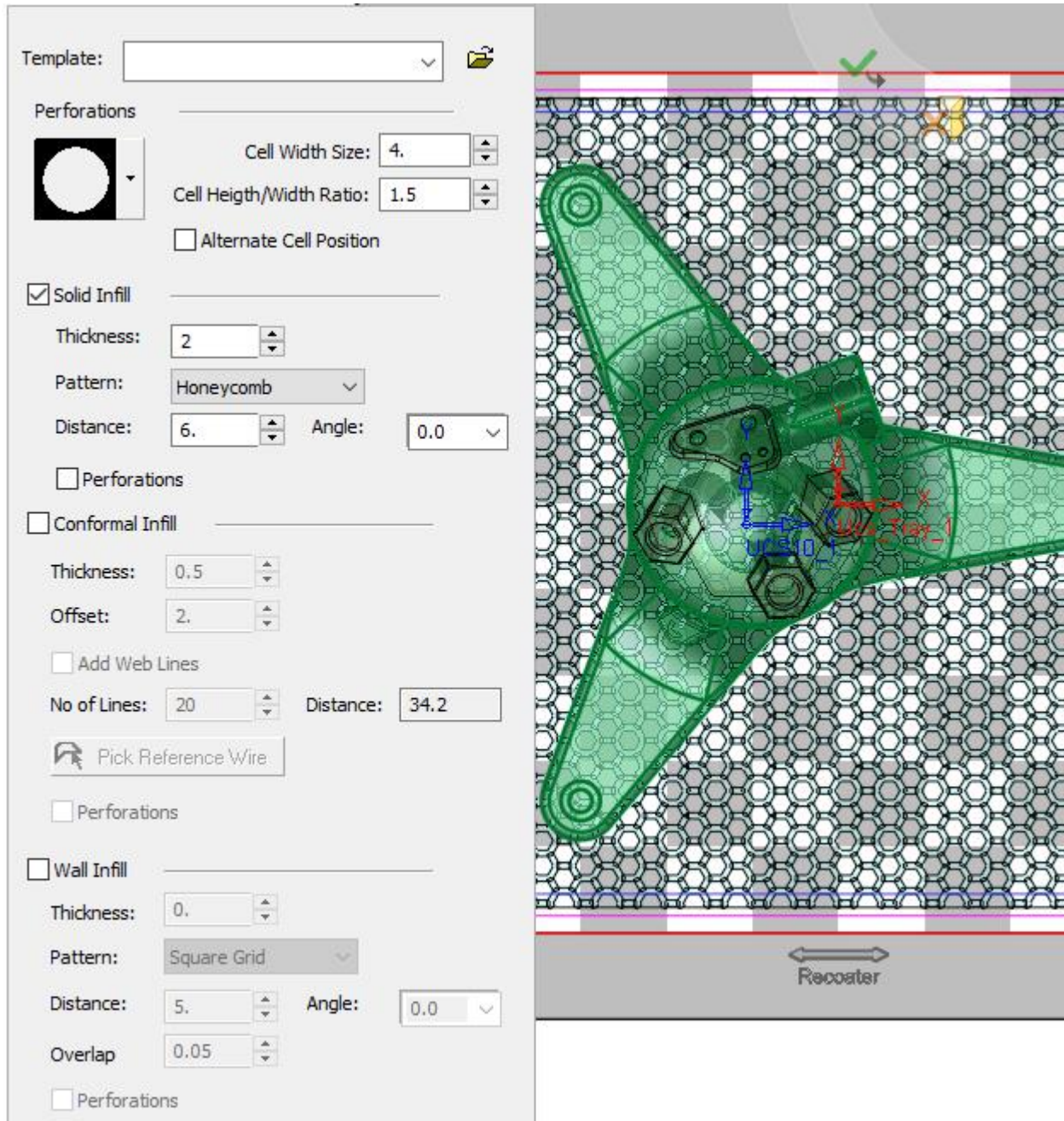
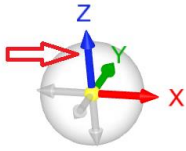
5. Click the **Solid Infill** box. This creates a solid inner structure based on the selected predefined pattern.



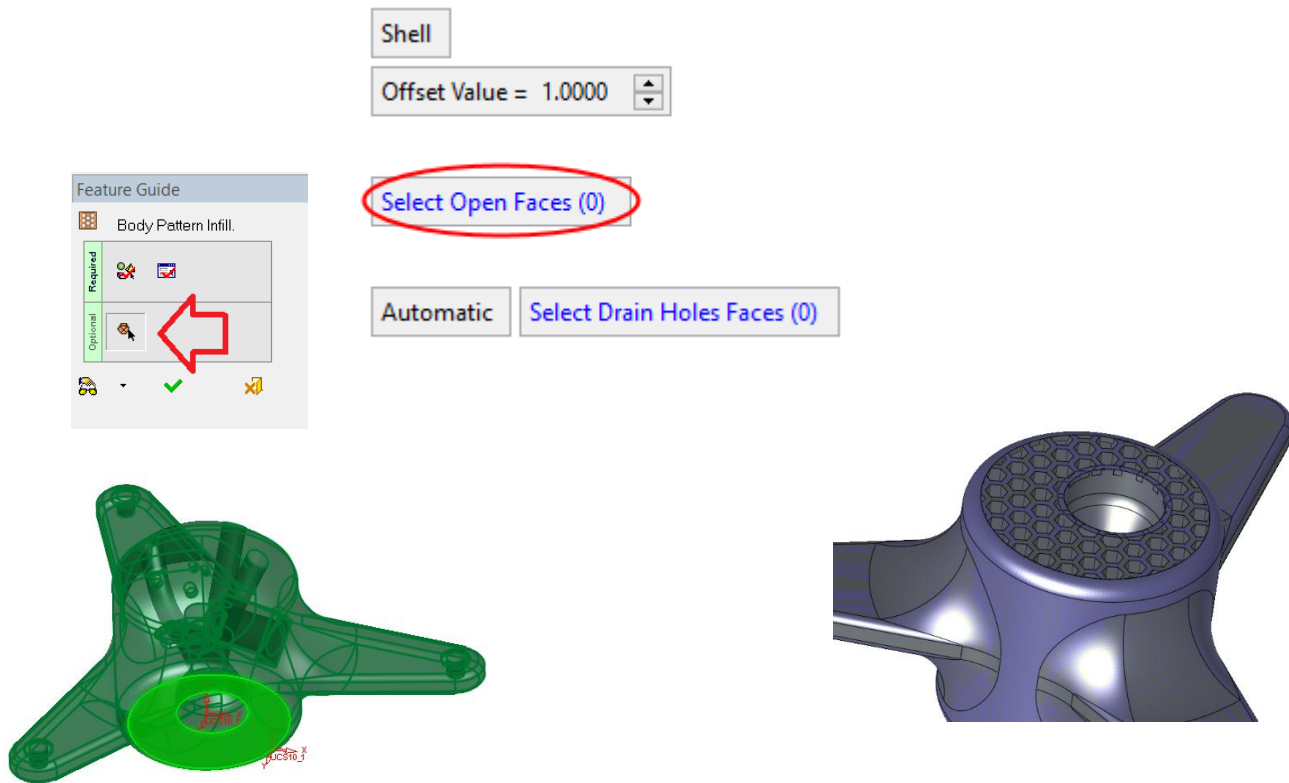
You can choose from various types of Infills patterns. For example, select the Honeycomb pattern. Set the Wall thickness to **2** and the Distance to **6**.



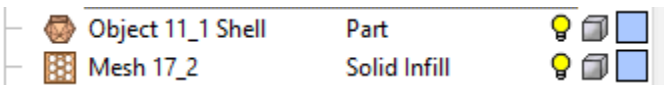
6. It is convenient to see the pattern and part from top view so click the Z axis of the dynamic UCS



- Click the optional Shell button through the Feature Guide, use the option **Add Open Faces** and set an Offset Value of **1mm**. Pick the lower face as the open face. Press **OK**.



- Check the Objects tree for the new part and Infill objects:

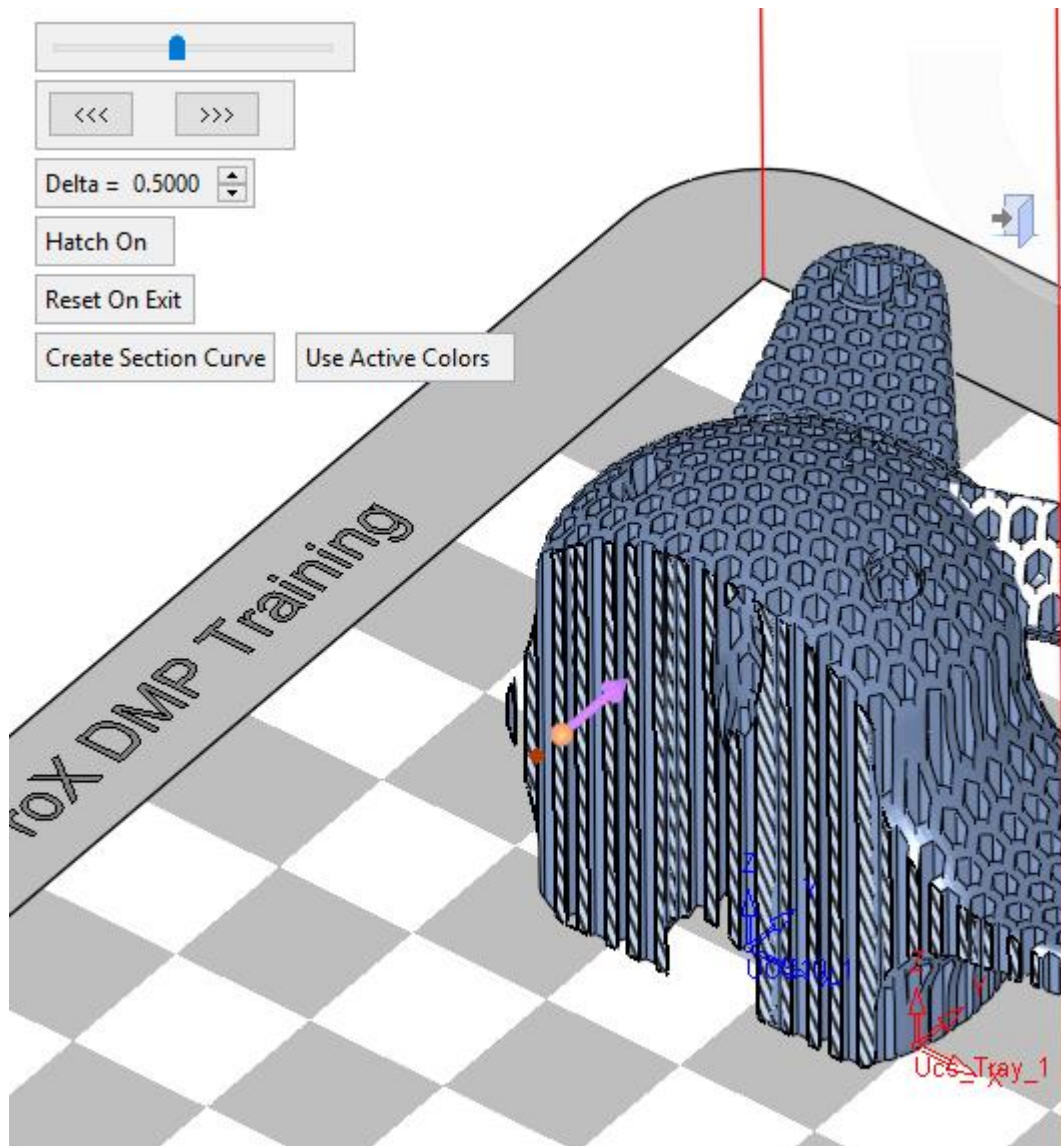


Notice that each has its own technology assigned automatically.

Note: Instead of opening the part, you can add drain holes.

This is similar to the drain holes feature on the Lattice interaction. This is explained in the Volume Lattice Exercise (3DXpert Exercise #3).

- Enter the **Dynamic** section to view the infill result

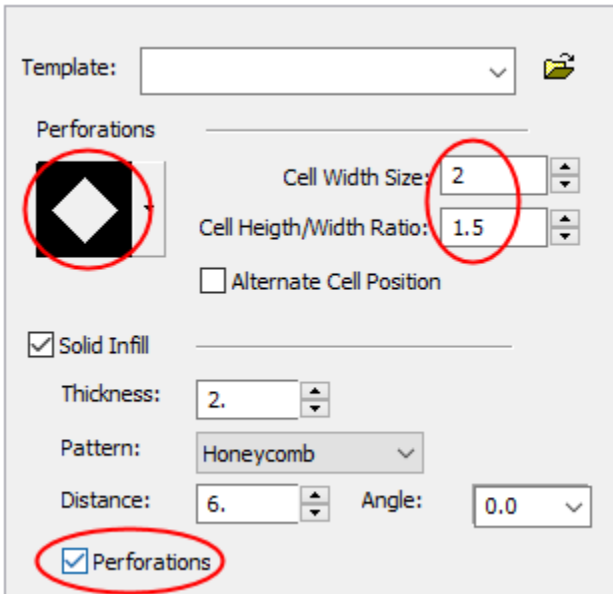


Infill may also come with **perforations**. The perforations option allow removing powder when the infill is used.

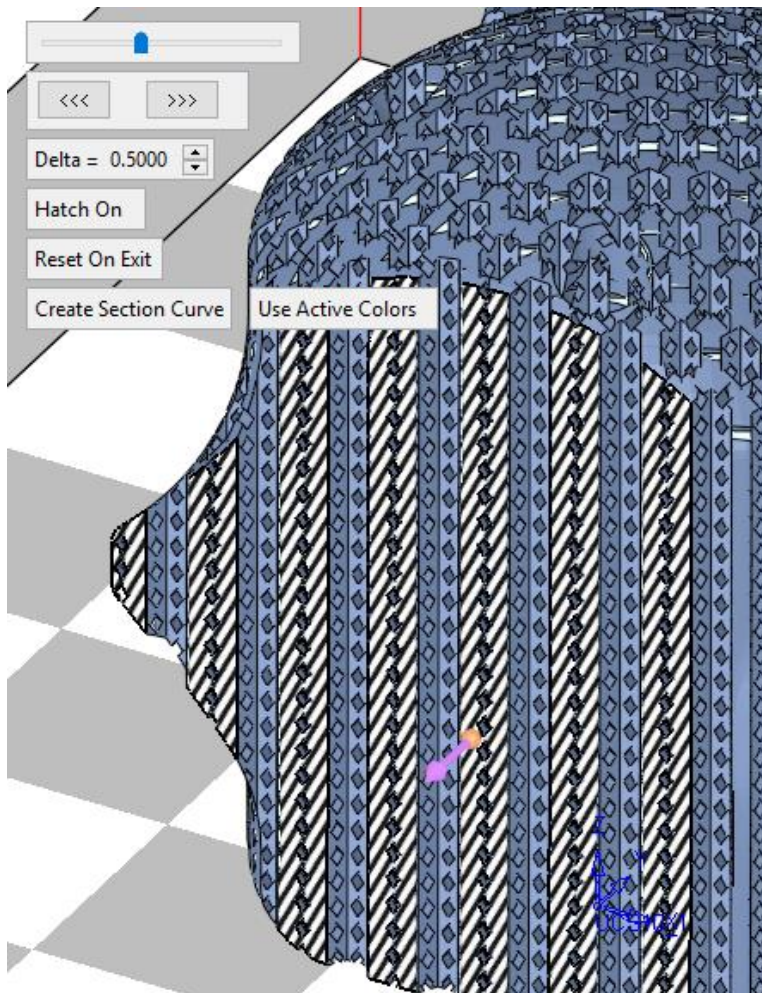
You may apply perforation in **each one of the three Infill types**.

10. Edit the mesh infill feature.

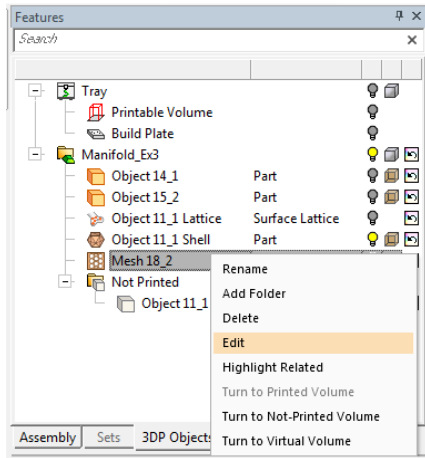
11. Check the Perforations option. Set the pattern and the parameters as shown in the picture below and press **OK**.



12. Enter the **Dynamic** section to view the infill result

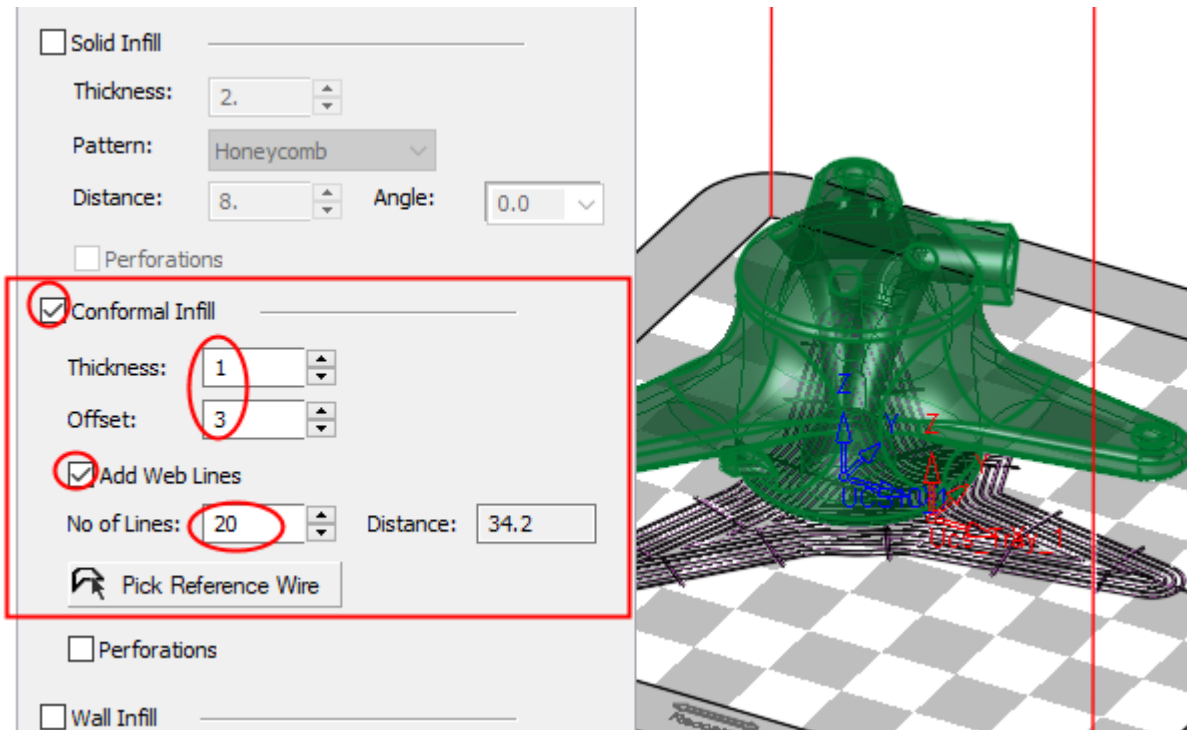


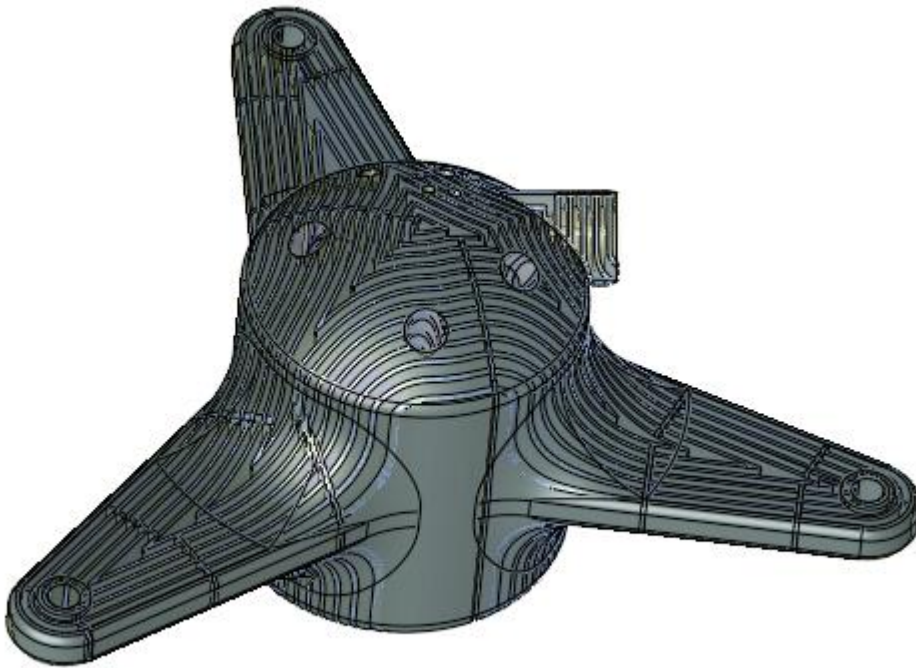
13. Edit the Infill feature by right mouse click either of the two objects and selecting Edit



14. Uncheck Solid Infill and check Conformal Infill. This Infill pattern uses by default the outer shape (silhouette) of the object.

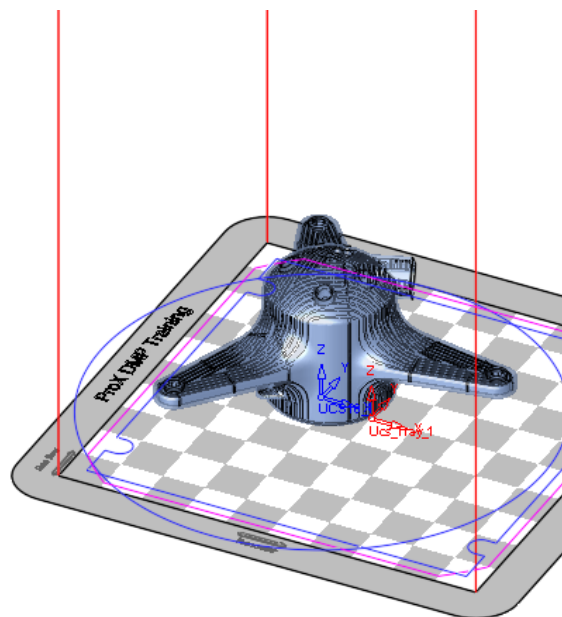
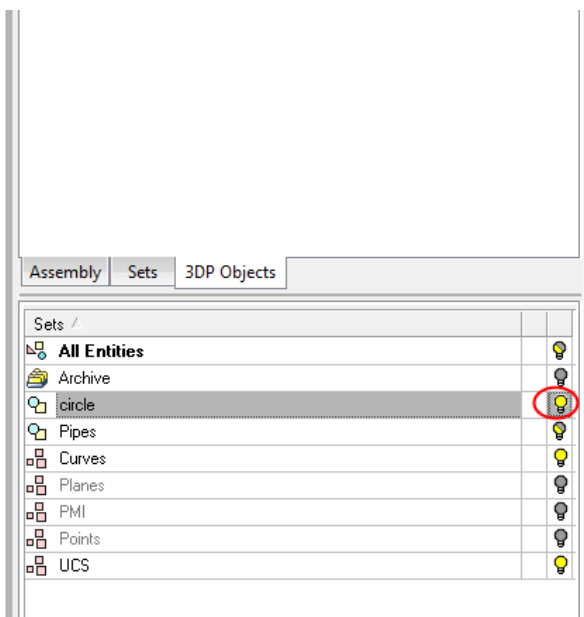
15. Set a thickness of **1mm** and Offset of **3mm**, check **Add Web Lines** (use the default **20 lines**) and press **OK**.





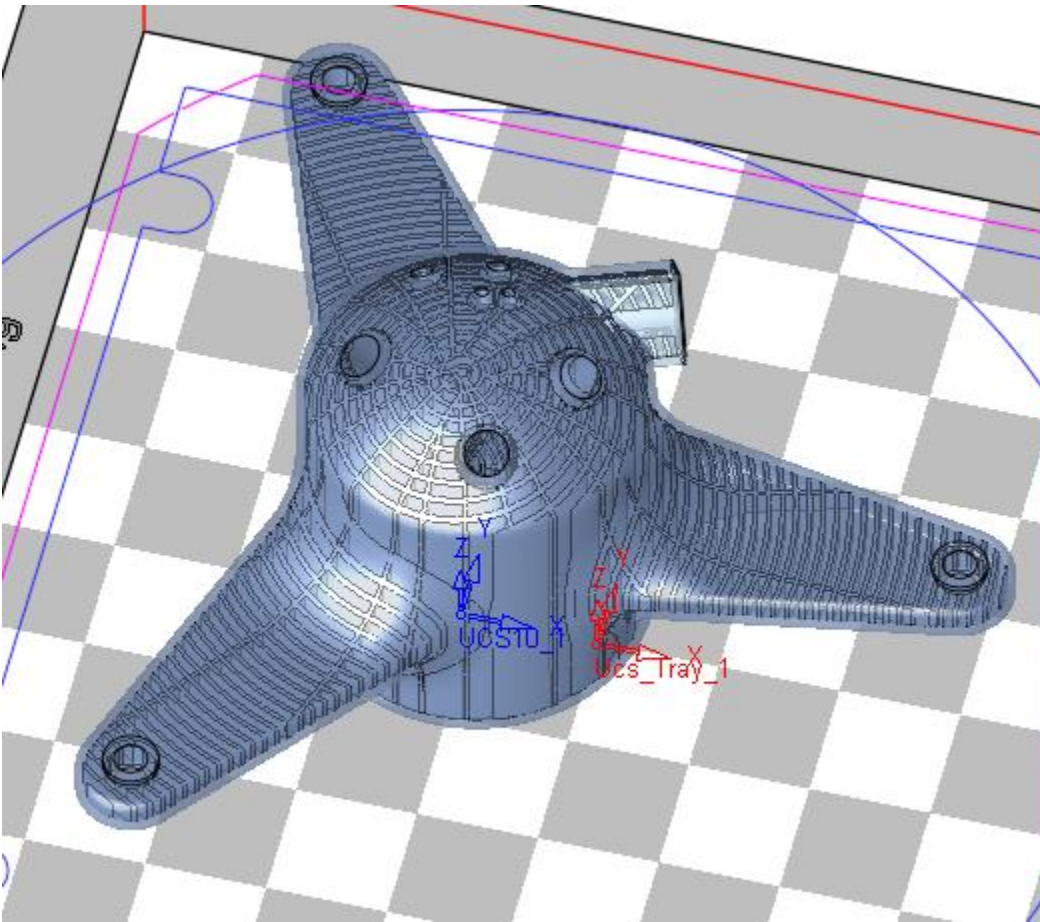
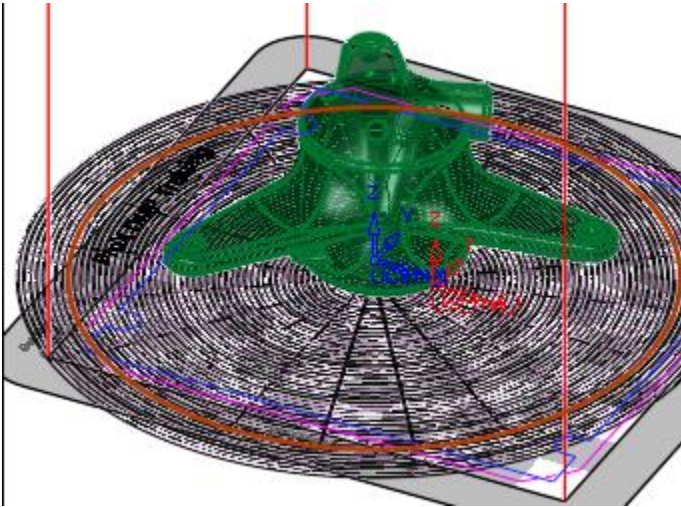
16. You can make the infill conformal to any other shape by clicking the 'Pick Reference Wire' button and picking a 2D wire. Edit the feature again

17. Click the Set tab at the bottom of the feature tree and show the Set called Circle




18. Pick the circle



19. Select OK.




20. Edit the Lattice once more. Uncheck the Conformal Infill option.
Check both the Solid Infill and Wall Infill and enter the parameters shown here: Press **OK**.

Template: 


Perforations


 Cell Width Size: 



Cell Height/Width Ratio: 

☐ Alternate Cell Position

☒ Solid Infill


Thickness: 


Pattern: 

Distance:  Angle: 


☐ Perforations


☐ Conformal Infill

Thickness: 

Offset: 


☒ Add Web Lines


No of Lines:  Distance:



 Pick Reference Wire


☐ Perforations

☒ Wall Infill





Thickness: 

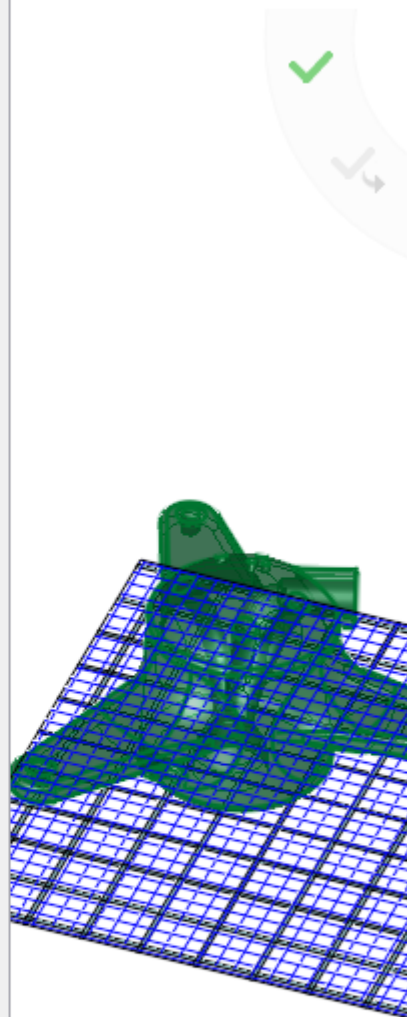
Pattern: 

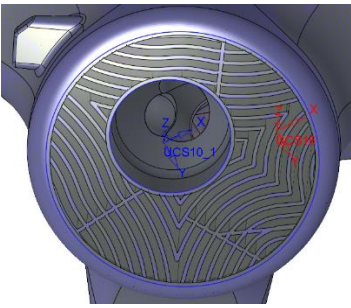
Distance:  Angle: 

Overlap 

☐ Perforations

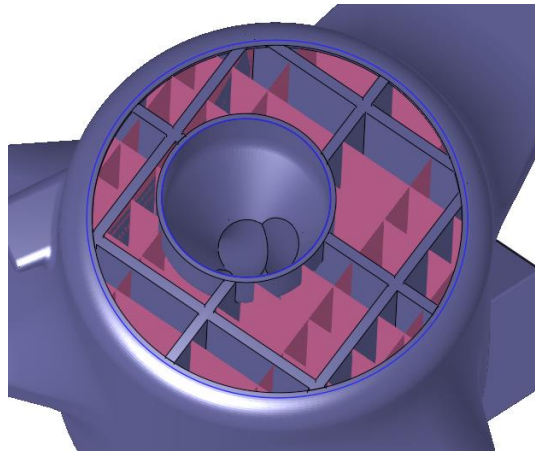









The Overlap parameter controls how much the Wall Infill penetrates the part. Press Ok.

The result is a mix of robust Solid Infill and in-between, intermediate Wall Infill supports.



Note that the new part and each Infill is assigned with its own Technology.

<ul style="list-style-type: none"> Wall 17_1 Object 11_1 Shell Mesh 17_2 	Wall Infill			
	Part			
	Solid Infill			

End of Exercise.