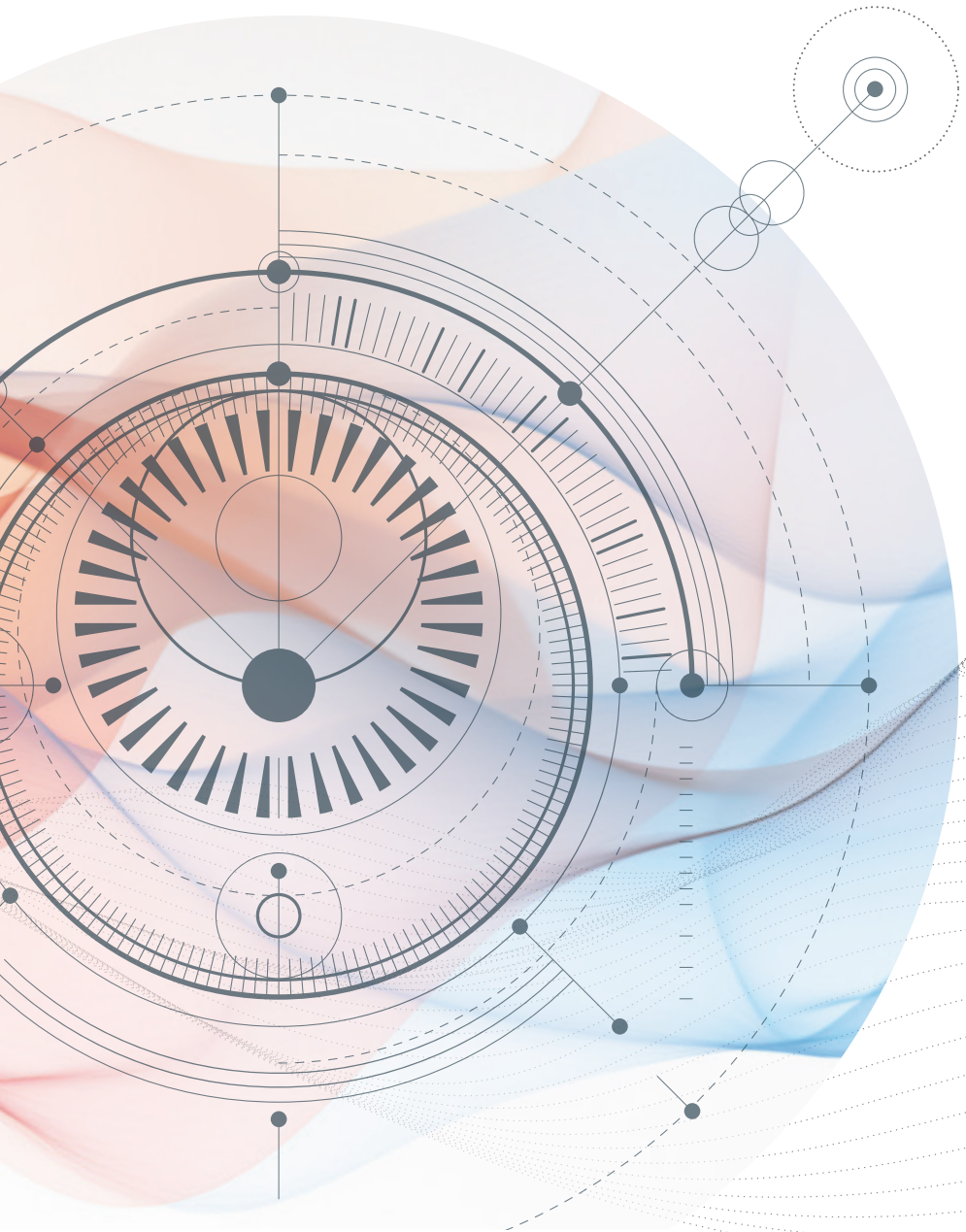
Tritone Pro-Tips
THREADING GUIDELINES IN MOLDJET TECHNOLOGY



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CHALLENGE

Manufacturing internal threads with high quality in additive manufacturing can bring an enormous advantage to the design process, as it **reduces the need for additional post process to parts after they were manufactured using MoldJet Technology.** Using these guidelines to properly create threads in CAD while manufacturing with MoldJet will lead to a reduction in cost and manual operations.

SOLUTION

A batch of parts were designed to test the accuracy and repeatability of the internal threads manufactured with MoldJet technology. The goal was to test the internal threads and provide design guidelines when designing them.
The internal threads were manufactured in two fashions:

- With the axis normal the X-Y plane
- With the axis collinear to the X-Y plane

The threads tested include sizes starting at M2 up to M7, with offsets from -0.1 mm to +0.3 mm from nominal. See Figure 1 below.

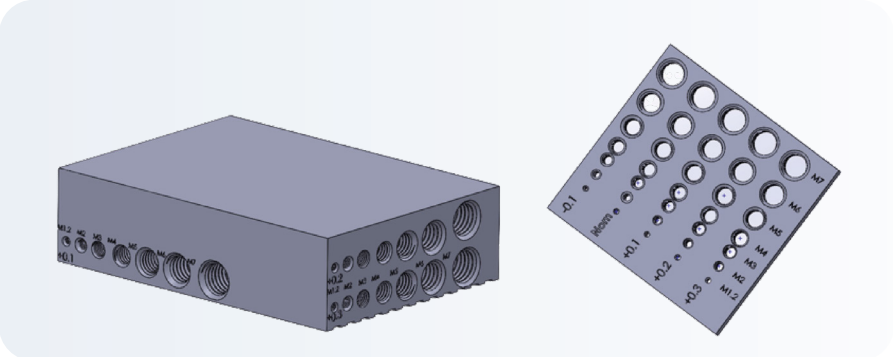

Figure 1: CAD Model of the test parts

BENEFITS

This case study enables the testing of guidelines for manufacturing an internal threads, that ensures a precise fit with a standard screw following ISO or DIN norms. The objective is to achieve maximum strength while minimizing the gap between the internal and external threads, ensuring it's not too small to create interference.

A simple manipulation of the thread design tool on CAD softwares, allows to manufacture the correct size of thread for a Normal Fit.

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SUCCESS

- The results obtained are displayed in Figure 2
- This case study confirmed the accuracy and repeatability of MoldJet technology, giving consistent results on all the parts.

Hole Size Perfect vs Offset	M2	M3	M4	M5	M6
-0.1					
0					
+0.1					
+0.2					
+0.3					

Figure 2: Axis Normal to XY plane

Hole Size Perfect vs Offset	M2	M3	M4	M5	M6
-0.1					
0					
+0.1					
+0.2					
+0.3					

Figure 3: Axis Collinear to XY plane

No go | Tight fit | Normal fit | Loose fit

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Figure 4: Part made using MoldJet Technology

CONCLUSION

For design guidelines, engineers should reference to Figure 2 and 3 to determine the appropriate tolerances for their threaded holes. This can be achieved quickly on SOLIDWORKS for instance using the “Hole wizard” feature, as shown below:

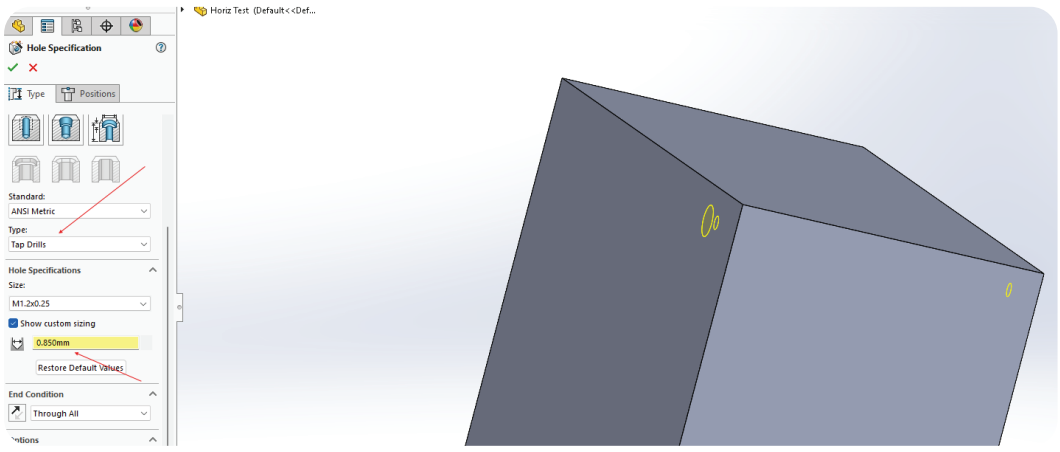

Figure 5: Hole Wizard feature

Note:
Do not forget to start the thread above the surface of the part.