

Customer Spotlight

United Tool & Die



Design Evolution through 3D Printing

United Tool & Die is a prominent tube, duct, and sheet metal fabricator operating in the aerospace industry. Founded in 1925 and based in West Hartford, CT, their customer base includes acclaimed aerospace leaders such as Boeing, Pratt & Whitney, and Sikorsky. UTD has flourished in the aerospace field due to an unyielding dedication towards innovation and continuous process improvement. They've recently implemented 3D printing as a primary method for producing functional jigs, machining fixtures, and positioning dies.

Francis "Skip" Charest, UTD's Process/Tooling Engineer understands the challenges faced in this industry, particularly the increasing demand for tighter tolerances on final parts. UTD has always relied on tooling fixtures to support processes and to ensure these tighter tolerances are met. In the past, they've used traditional fixtures made from aluminum, magnesium, and stainless steel. However there are significant expenses associated with metal fixtures, including high production costs and substantial lead times.

Through 3D Printing, Skip and his team have drastically reduced tooling costs. Their two Stratasys 3D printers allow them to generate durable fixtures in ABS+ thermoplastics. When UTD purchased their first printer, the uPrint SE, Skip initially had the intention of creating simple channel fixtures to control handling damage. However after becoming familiar with the technology, Skip realized there was virtually no limit to the design freedom, and that it was possible to create designs for a wide spectrum of uses, including forming dies, check fixtures, machining fixtures, and even wire EDM fixtures. UTD eventually added a Dimension 1200 to their arsenal in order to keep pace with increasing capacity and to satisfy the need for a larger build envelope.



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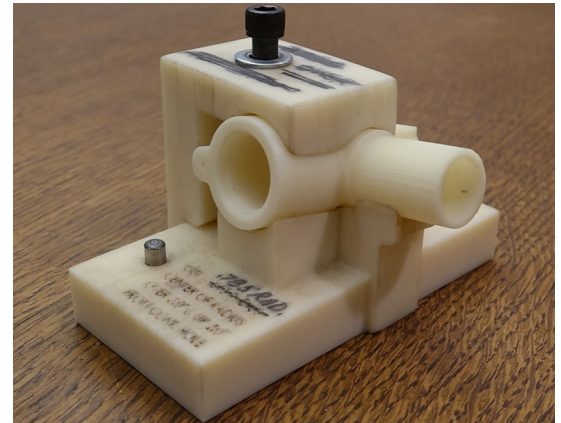
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The design freedom and ability for 3D fixtures to conform to complex geometries also opened up a new market for UTD, one focusing on short-run experimental jobs that were once cost prohibitive. Tools are now lighter and easier for workers to handle, which has increased overall productivity on the shop floor. In some cases, 3D fixtures have even eliminated certain steps in an assembly process, resulting in shorter lead times. As the technology evolves, Skip and his team continue to contrive new and innovative designs that help them maintain a level of competitiveness necessary to thrive in the aerospace industry.

UTD has taken advantage of Cimquest's service contract for maintenance on their 3D printers. "We have received nothing but great support from Cimquest. As soon as I call, they have a gentleman here within 24 hours servicing and fixing the machine. If we didn't have any type of service contract, we wouldn't have the quick response time, and it would cost us all the money for travel and replacement parts".

Skip and his team are currently investigating another Stratasys machine, the Fortus 450. They like the idea of having access to more materials with higher heat and strength resistance, including ULTEM 9085, Polycarbonate, and FDM Nylon 12. Every day, they continue to generate new design ideas, and a leap up to the Fortus 450 would allow them to produce even stronger tools that could withstand the pressures of more demanding applications. UTD embraces the evolution of 3D Printing and we are excited to see them push beyond the limits to yield more and more groundbreaking designs.

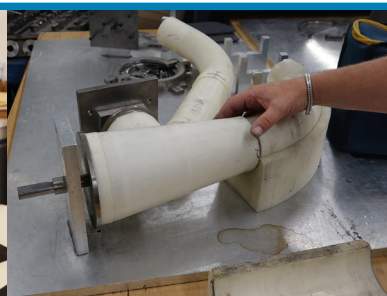
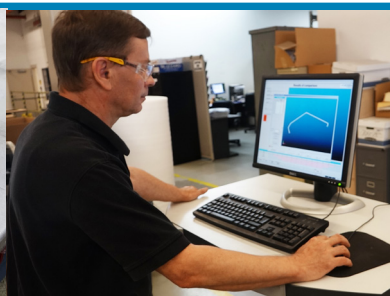
Watch their story.



Experimental job - Machining fixture with an actual 3D print of the part, providing a visualization of the part before it was produced. Fixture holds part at the proper angle allowing for simple machining with an end mill. "Doing a fixture like this out of metal would be either next to impossible or very expensive". -Skip Charest



Expansion die used to expand the end of a tube approx. 100 thousandths of an inch. 3D printed ABS insert to hold tube in proper location.



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