



“We shrank the overall design and manufacturing cycle time from 16 to 20 weeks with traditional manufacturing, to three to five weeks with Stratasys 3D printing.”

Francois Guilbault / Solaxis

Using Fortus 3D Printers, Solaxis 3D prints tooling for the automotive industry.

CASE STUDY

Assemble With Ease

SOLAXIS CREATED AN AUTOMOTIVE ASSEMBLY JIG WITH 3D PRINTING, CUTTING WEIGHT AND IMPROVING ACCURACY

Jigs used to assemble automotive parts traditionally share two downsides: They can be difficult to maintain, and because they're made of metal, they're heavy — up to 150 pounds — too heavy for a single worker to move easily amid a bustling factory floor.

But as the engineers at Solaxis Ingenious Manufacturing in Bromont, Canada, have demonstrated, jigs don't need to possess any of those negatives. With the help of Fortus® 3D Printers from Stratasys®, the company designed and manufactured a jig for an automotive supplier, which uses it to assemble high-volume plastic door seals. After developing several iterations of the jig, Solaxis was not only able to produce a 3D printed jig that is over 100 pounds lighter than a typical jig for this application, but it also slashed the design and manufacturing time by at least two thirds compared with traditional methods.

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THE 3D PRINTING SOLUTIONS COMPANY™

Iterations on Demand

Solaxis design engineers continued to refine the door seal assembly jig, producing at least a dozen different design iterations over the last couple of years. The rapid speed at which the designs could be completed through CAD software and then quickly printed with Fortus 3D Printers was relatively new for their automotive customer. The customer has in-house injection molding, and a machine shop with mold and die tooling capability.

“From design to design, we could easily make changes,” he added. “It’s not like we had to come back (to the customer) and say, ‘We have to redo your tooling’.”

This agility increases the flexibility of design, enabling Solaxis engineers to integrate minor adjustments, such as the placement of buttons and handles, the addition of chutes, and other ergonomic improvements. This also enabled Solaxis to lessen the number of parts in the design, integrating off-the-shelf internal hardware that can be quickly replaced by the customer if a switch or wire breaks.

Depending on the part complexity, engineers can make CAD iterations in just eight to 20 hours, Guilbault said. Solaxis and the customer’s engineers shared files to quickly confirm the design and produce a new jig within days. Unlike a jig produced primarily by an operator using a CNC machine, Fortus 3D Printers can run without supervision, with production scheduled at any time of the day or night, and on weekends.

The results were clear to the customer. “We shrank the overall design/manufacturing cycle time, which is traditionally, 16 to 20 weeks, to three to five weeks,” Guilbault said.

On the Floor, In Demand

The Solaxis jig, which is 34 inches by 22 inches, and weighs just 28 pounds, is light enough for anyone to pick up and move. Now, every operator is expecting one of these jigs at their workstation.

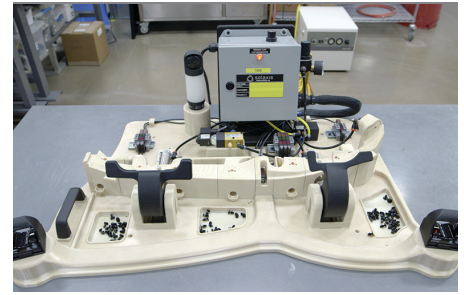
In addition, by using the Solaxis jig, workers save an average of four seconds per cycle. With 250,000 cycles a year performed by a typical employee assembling the seals, the supplier has saved hundreds of hours in labor time.

“Just that cycle time gain alone justifies the price of the jig,” Guilbault said. “So their ROI is achieved within 12 months.”

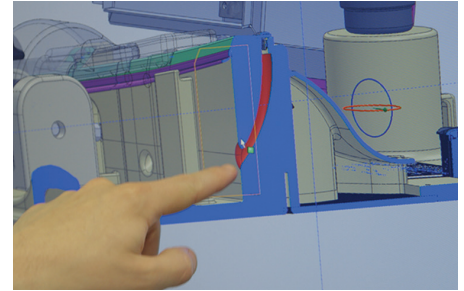
Compliance Verified

Before working with Solaxis, the customer had recurring compliance issues. Deliveries to the OEMs were returned, resulting in substantial time and cost to re-inspect and fix the shipments.

Stratasys 3D printing technology enabled Solaxis to continuously improve the jig, saving the customer production time and money. In turn, the automotive supplier has significantly increased the reliability of the door seals it provides to its OEM customer. With zero compliancy issues the last two years, that means higher profits for the company.



Automotive assembly jig built in ULTEM™ 9085 and FDM Nylon 12™ material.



New design iterations can be 3D printed and tested quickly.



The operator uses pins to lock the part into place.



A green light confirms the pins are accurately locked into place and is a validated part.

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