

# SOLAXIS INGENIOUS MANUFACTURING, INC.

GROWING A DESIGN, TOOLING, AND MANUFACTURING  
COMPANY WITH SOLIDWORKS AND STRATASYS SOLUTIONS



Using the combination of SOLIDWORKS design and analysis tools and Stratasys 3D printers, Solaxis has grown to become one of the largest manufacturing companies in Canada, specializing in fused deposition modeling for rapid prototyping, specialized tooling, and low-volume production applications.

### **Challenge:**

Launch and grow a prototype production, tooling development, and direct digital manufacturing business.

### **Solution:**

Implement SOLIDWORKS Professional design software, SOLIDWORKS Premium design and analysis software, and Stratasys Fortus 900mc and Fortus 400mc 3D printing solutions.

### **Benefits:**

- Cut tooling development cycles by 75 percent
- Increased tooling business to 20 percent
- Grew 3D-printed production part business to 20 percent
- Reduced material usage, scrap, and rework

Solaxis Ingenious Manufacturing, Inc. is an innovative company that specializes in 3D printing, 3D scanning, design, prototyping, and tooling. The Canadian manufacturing services provider has embraced the use of advanced design, rapid prototyping, and production technologies to offer superior, efficient solutions to clients in the aerospace, ground transportation, defense and security, robotics, and manufacturing industries. The company delivers high-quality parts, tooling, and services to integrators, assemblers, and manufacturers, with quick turnaround times for 3D design, prototyping, short-run production, jigs, fixtures, tooling, and proof of concepts.

According to Solaxis President François Guilbault, choosing the right 3D CAD system and 3D printer for rapid prototyping and direct manufacturing was critical to fulfilling the company's vision of providing fast, flexible options for product design, tooling, and manufacturing. "To compete successfully, we need to invest in the 3D CAD software and rapid prototyping equipment that allows us to offer the advanced design and rapid production services that differentiate us in the market," Guilbault explains. "When we sat down and evaluated the software that would best serve as the foundation of our business, SOLIDWORKS® design solutions was the logical choice.

"SOLIDWORKS is much easier to use than other software, and most of the engineering technicians that we hire have already learned SOLIDWORKS as students," Guilbault adds. "It was simply the most intuitive and pervasive software—among prospective clients and employees—with the widest range of capabilities for the price."

After implementing SOLIDWORKS Professional design and SOLIDWORKS Premium design and analysis software, Solaxis took the same deliberate approach in assessing rapid prototyping and direct manufacturing solutions. "Although we started out doing a lot of prototyping, we wanted to be much more than a service bureau," Guilbault says. "We understood that 3D printing held great potential for accelerating tooling development as well as outputting short runs of actual production parts, so we identified Stratasys as the 3D printing brand that we wanted and Fortus machines as our best solution."

### **FASTER DESIGN, PROTOTYPING, DIRECT MANUFACTURING**

Using the combination of SOLIDWORKS design and analysis tools and Stratasys® Fortus® 900mc™ and Fortus 400mc™ 3D printers, Solaxis has grown to become one of the largest manufacturing companies in Canada specializing in fused deposition modeling® (FDM™) for rapid prototyping, specialized tooling, and low-volume production applications in Canada. The company's success stems from its quick turnarounds and high precision.

"With SOLIDWORKS and Stratasys solutions, we're simply faster, especially for specialized tooling applications," Guilbault stresses. "A conventional approach to developing a jig can take anywhere from 12 to 14 weeks. We've completed these types of projects—from design to production—in just three weeks using SOLIDWORKS software and Stratasys 3D printers, which is at least a 75 percent reduction in development cycles when compared to traditional techniques."

### **LIGHTWEIGHT JIGS, FIXTURES, AND PARTS**

In addition to enabling the development of specialized tooling, production components, and surrogate parts more quickly, SOLIDWORKS and Stratasys solutions allow Solaxis to offer innovative approaches that improve both performance and safety. For example, during the development of a 36 x 24-inch jig with grippers for an automotive production application, Solaxis reduced the weight of the jig by one-fifth, from 150 to 28 pounds. Lightweighting the jig not only improved safety, it cut four seconds per cycle from the process, a productivity improvement of 15 percent.

"Because we are able to provide customers with substantial productivity gains in a fraction of the time of conventional approaches, we're realizing dramatic growth," Guilbault says. "Initially, we did mainly prototypes. Now, our tooling and 3D printed production parts business have both grown significantly and each makes up roughly 20 percent of our revenue. We anticipate that these services will soon become the core of our business."



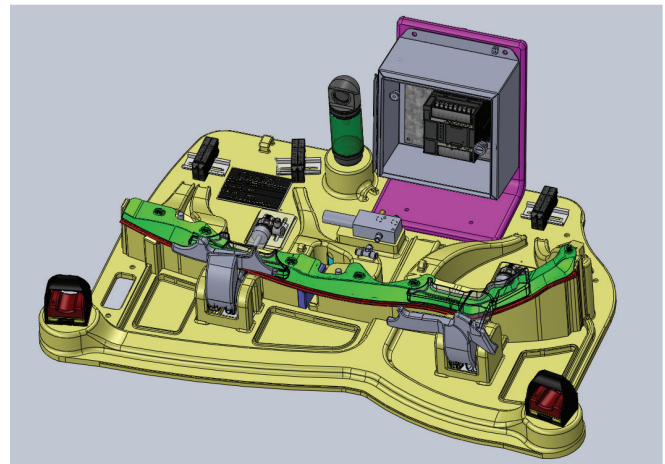
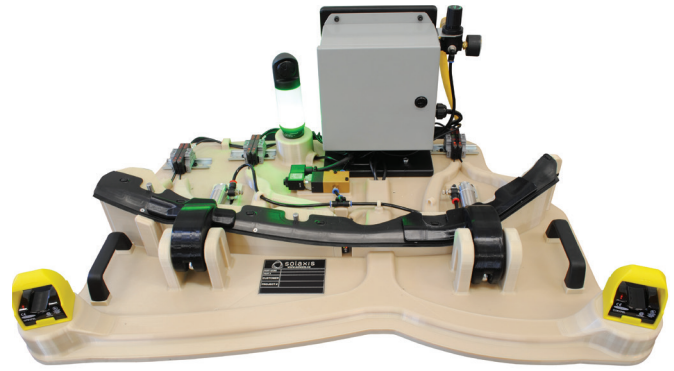
**"With SOLIDWORKS and Stratasys solutions, we're simply faster, especially for specialized tooling applications."**

— François Guilbault, President

## COMBINING FEA AND 3D PRINTING

Solaxis anticipates additional benefits in the future by combining the finite element analysis (FEA) simulation capabilities of SOLIDWORKS Premium software with Stratasys 3D printing technology. "We plan on using FEA for more than virtual testing of part performance," Guilbault says. "We also plan on using FEA and 3D printing to make recommendations on design changes to improve tooling cycle life, shave material from a design, and validate the performance of 3D printed materials, as well as push the envelope with FEA further into the 3D printing realm.

"Working with aerospace plastics like the ULTEM 9085 material, we build parts at high temperatures in the 3D printer build chamber," Guilbault continues. "SOLIDWORKS Simulation tools will enable us to ensure that the parts won't warp before we start the build. We also plan to use FEA studies to tell us the optimal part geometry required. This capability will allow us to minimize expensive material usage and reduce scrap and rework, saving time and money in the process."



With SOLIDWORKS design and analysis software and Stratasys 3D printing solutions, Solaxis reduced the weight of this jig, which is used for an automotive production application, from 150 to 28 pounds. They also cut four seconds per cycle from the process, a productivity improvement of 15 percent.

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