



CASE STUDY
P3™ DLP

Thorlabs generates impressive cost savings with 3D printing applications

Guidance from TriMech leads to adoption of new additive manufacturing technology





Thorlabs designs and manufactures products for the photonics (light sciences) industry and serves segments such as university researchers, life and medical sciences, and defense. With worldwide reach, the company specializes in sophisticated equipment including fiberoptics, laser diodes, optical instrumentation, and polarization measurement and control.

With exact requirements, and a commitment to fast service, the Thorlabs philosophy is to manufacture as much as possible in house. It means they own and operate an impressive array of machinery and equipment, including Stratasys Origin® 3D printing production system, sold and supported by TriMech.

Assessing the need

An initial inquiry from Stratasys partner TriMech to Thorlabs led to Engineering Project Manager Andrew Kosco, a specialist in additive manufacturing solutions across the entire enterprise.

“My work includes studying our existing manufacturing processes, with the goal of ensuring efficiency and cost effectiveness.”

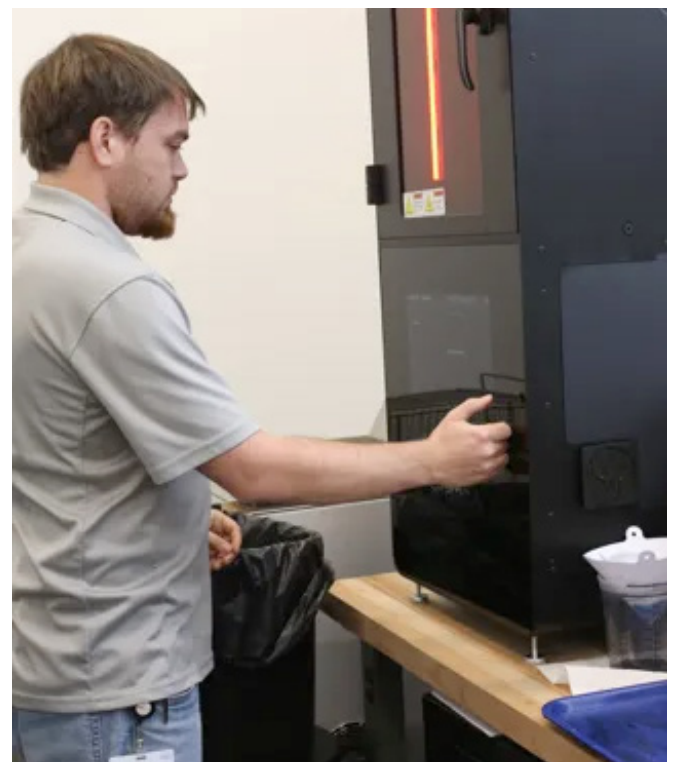
Conversations about Thorlabs’ needs helped TriMech’s additive manufacturing specialists recommend the Origin DLP system with confidence. Andrew hadn’t budgeted for the Origin, but after handling sample parts, and having TriMech do custom prints for him, he was ready to bring the printer in house.



Why Origin?

The Origin system offers extremely high accuracy, with tolerances of up to +/- 50 microns. It’s an industrial 3D printer that can produce end-use parts and manufacturing-grade prototypes with long-lasting dimensional stability and surface finish equal to injection molding quality.

Thorlabs does prototyping, one-off custom parts, and small print runs. Their need for customization, combined with the variety of high-performance material options, made Origin the right selection for the company’s next investment in 3D printing technology.



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Andrew Kosco
Thorlabs



Impressive cost savings

Access to Origin helps Thorlabs in its mission to control its own supply chain. In one example, a change in an external supplier's status led the team to update their hex key holder, which has small holes of varying sizes.

Thorlabs' clever use of Ultracur3D® ST45, a durable, rigid 3D printing material, allowed them to create a part that replaced an aluminum version. They maintained small tolerances and a smooth finish, all at a fraction of the cost.

The original cost per part was about \$11. Using Stratasys 3D printing, the cost per part is a little more than \$3, **resulting in savings of \$20,000 a year.**

"Cost reductions like these have allowed us to quickly prove the ROI we expected when we invested in Origin," Andrew explained. "And if we're manufacturing at top efficiency, we're providing even better value to our customers."

Using 3D printing also allows for easy and quick design iterations, leading to new and improved product features.

"We added a slot in the back of the key holder so we could attach a magnet. In the labs where these are used, people tend to glue on magnets or use a rubber band to attach it to a surface. Now we deliver a complete product that matches its real-life use."

3D-printed fixture prevents rework and waste

In the laser engraving area of the shop, Origin helped address a number of problems that were causing rework, or parts being entirely scrapped.

The odd profile of some parts being engraved made it challenging to align them properly within the machine. If the parts were slightly off kilter or a vibration caused them to misalign, the engraving would be misplaced, and the part would have to be reworked or scrapped. Considering this is the final step in the production process, after difficult machining operations, a misplaced mark is particularly frustrating.

Andrew got to work on a 3D-printed solution. The new custom fixture holds 10 parts in place at once, saving the operator time and ensuring perfectly engraved parts.

He noted that Origin prints fast, and a fixture like this one can be turned around in less than half a day. "The materials are also very robust," he added. "People drop parts every now and then. These parts don't shatter."





Materials open the door to new uses

Thorlabs is currently taking advantage of robust Origin One materials such as Ultracur® ST45, Loctite 3843, and Stratasys Dura56. High-heat, ceramic-filled materials are also on their radar, possibly for use in their glass-fabrication department.

Andrew said next steps for Thorlabs could include testing out more materials on Origin, and possibly investing in a second system. Most of his work is still in prototyping, and he'd like to move into more production of end use parts.

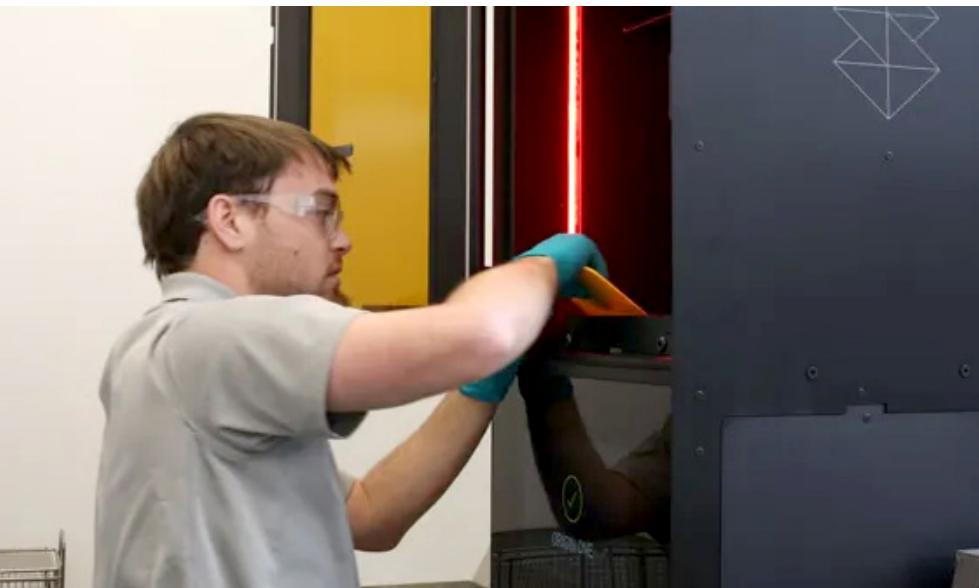
"I show printed prototypes to my colleagues here, and they'll say things like, 'you know, we could probably just sell this as is.' People hold the parts in their hands and quickly realize how solid the material is."

Working with TriMech

Andrew said TriMech is very responsive. "If I contact my solutions consultant or technician, they always have time for me. They also give me a heads up when something new is coming."

Thorlabs is online at thorlabs.com.

Courtesy of SYS Systems, Stratasys UK Platinum partner



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