stratasys

CASE STUDY
SAF

Laser Modeling's Additive Manufacturing Arsenal Features SAF™ Technology to Mass Produce Medical Device Parts

The opportunity

Combining additive manufacturing solutions to build sophisticated device parts for a medical simulation customer







Photos courtesy of LMI

The opportunity

Laser Modeling Israel was founded as a service bureau with a lofty vision: to give engineers, scientists, and doctors access to every manufacturing technology possible to support their research and development.

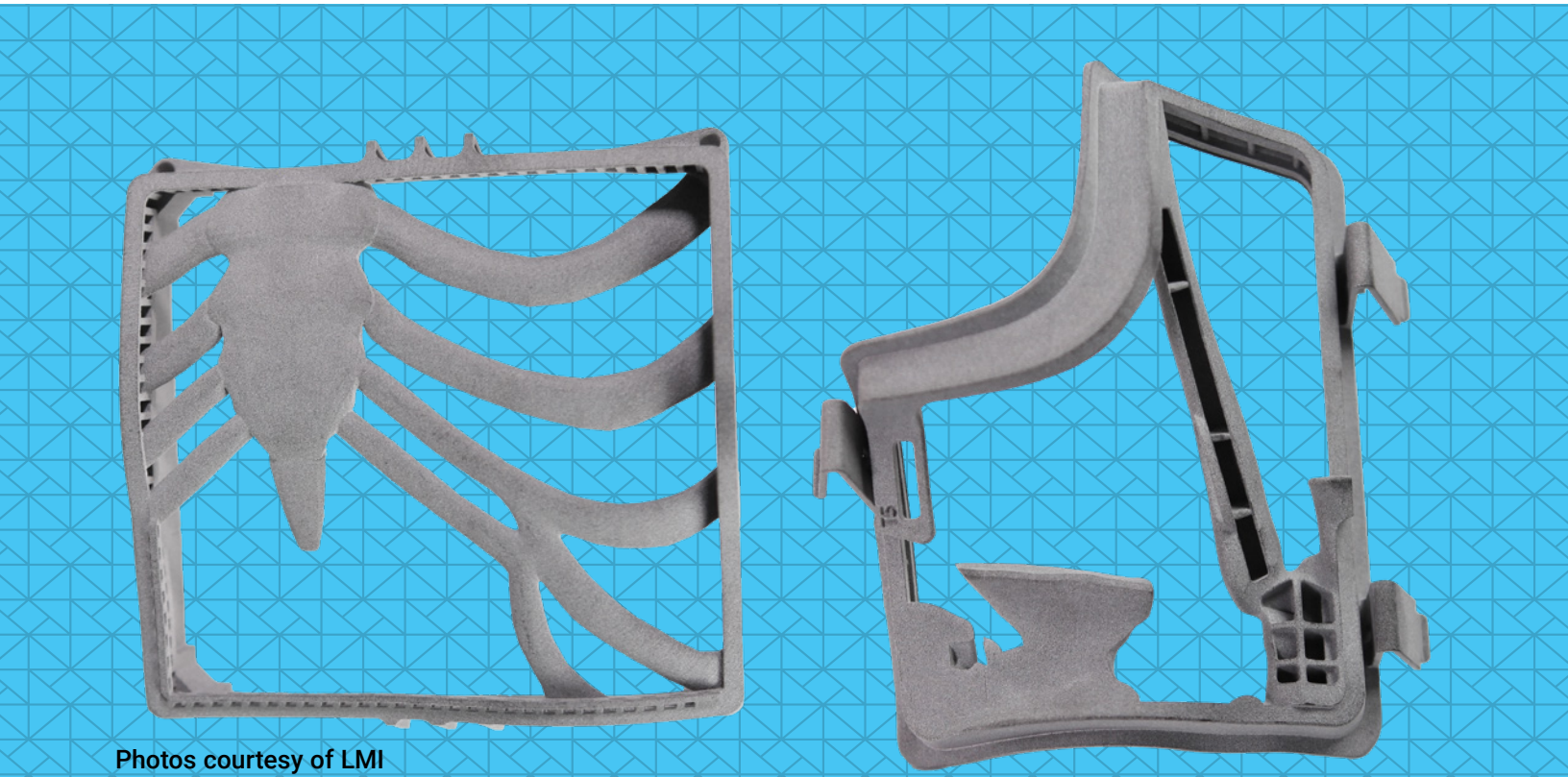
Nearly 30 years later, Laser Modeling leverages an arsenal of 3D printers that include FDM (fused deposition modeling), PolyJet, P3 DLP (programmable photopolymerization digital light processing), and SAF (selective absorption fusion) technologies.

SAF technology revolutionizes 3D printing by deploying industrial-grade print heads to precisely apply a fusing fluid on a powder bed. Using an infrared lamp to selectively fuse particles layer by layer, the fluid enhances heat absorption of the powder particles to form solid objects. This method supports high-volume production of complex shapes, rendering an efficient and cost-effective way to manufacture end-use parts, without the constraints of traditional manufacturing processes.

The SAF H350 printer has become the first step for producing complex medical simulations for equipment calibration and training.

“In the medical field, the technological opportunities are endless,” says Arie Kalo, co-founder and owner of Laser Modeling. “We rely on Stratasys technologies like SAF as part of our portfolio to get the best product possible.”

For their long-time customer, a company that specializes in creating surgical simulators for doctors in all areas of expertise, Laser Modeling leverages these technologies to create functional medical simulators that include anatomical structures like bone, muscle, arteries, veins, and skin, and can accept interchangeable parts.



Photos courtesy of LMI

The Technology Solution

The printer: SAF™ H350™ Printer

SAF technology, used by the Stratasys H350, prints across a powder bed in the same, time-controlled direction to ensure a uniform thermal experience and part consistency. SAF-based products can deliver end-use functional parts with a competitive cost per part, production-level throughput, part quality and consistency, and a high production yield.

For Kalo and his team, SAF is the ideal solution for producing hundreds and thousands of parts for their customer's anatomy simulator needs.

"There are many reasons to choose SAF technology over other powder-based technologies. Firstly, SAF technology is easier to use and manage. Furthermore, it has superior capabilities when printing parts with thicker geometries, such as bones or spinal columns. Additionally, we're using the H350 because of its accuracy, repeatability, and unified workflow through GrabCAD print software" explained Kalo.

"GrabCAD is very easy to use for part manipulation, and we can integrate it into our end-to-end workflow," says Kalo. "From receiving the part from the customer, we utilize GrabCAD for cost estimation, optimize packing arrangements, and quickly initiate the printing process. With real-time tracking within GrabCAD, we stay informed about job progress and anticipated completion time"

"Moreover, unlike other powder bed fusion printers, with the H350, during the cool-down periods, we can efficiently reload the printer with powder, to get ready for the next job."

Laser Modeling utilizes both Nylon 11 (PA11) and Nylon 12 (PA12) on their production floor. Stratasys® High Yield PA11, sourced entirely from bio-based materials, has exceptional mechanical performance, making it ideal for applications requiring improved impact and fatigue resistance.

On the other hand, SAF™ PA12 offers outstanding fine feature resolution, strength, accuracy, and consistency across builds, which makes it suitable for versatile applications.

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Stratasys SAF H350 Printer

The Result

Meeting medical device application needs

Laser Modeling serves the needs of medical device companies by helping them throughout the entire process from initial design concepts to prototyping and final production.

In the model below, the H350 printer is being used to mass produce the bone structures for thousands of functional, realistic end-use parts. The parts are used for simulators that provide hands-on training for an unlimited number of ultrasound and fluoroscopy-guided interventions supporting multiple specialties. The simulators provide a realistic learning experience but also offer portability and flexibility with interchangeable components.

Stratasys H350 also enables companies to speed up their development process by changing designs quickly, precisely without design constraints. This agility not only helps in reducing the time-to-market but also allows for continuous refinement of designs based on real-world testing and feedback, leading to superior end products. This is by ensuring the cost-effectiveness of the development process.

Laser Modeling is an essential partner in bringing innovative medical devices to market swiftly, efficiently, accurately, and cost-effectively.

“The SAF allows us to design and create new concepts without the boundaries that exist in machining and injection molding,” says Kalo. “Stratasys technologies work perfectly for these complex medical applications where repeatability and accuracy are key.”

Want to see and feel the material with your own hands? Request a SAF™ sample part.



Photo courtesy of LMI



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