

# Slashing costs, improving performance: Medical device development and manufacturing with the Stratasys Origin One

Enventys Partners, a full-service, turnkey product launch agency, delivered end-use biocompatible devices, while avoiding the long lead time, high costs and design constraints of injection molding or CNC machining by printing with the Stratasys Origin One.



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The Origin One 3D printer allowed us to make several initial options for our client to choose from and then make tiny tweaks, almost in real time, without delaying the project or incurring huge expenses. By prototyping on the same machine that will make the final parts, we had extreme confidence in every piece we were making.”

**TJ Root**

Senior Design Engineer, Enventys Partners





## 3D printing facilitates a new paradigm towards cost-effective production of high quality end-use parts.

Enventys Partners, a full-service product launch company that handles all aspects of product development, crowdfunding and ecommerce marketing, is no stranger to developing new products and solutions for a variety of industries. They have access to a multitude of manufacturing options, so it's unusual when a company comes to them with a request that challenges their capabilities. When FloSonix, a leading device for lice eradication, approached them with designs for a new head lice treatment device, they were surprised to find that they were, momentarily, stumped.

The handheld device required biocompatible materials, a lightweight design, textured grips, and heat-resistant materials, all with an aesthetically pleasing appearance. Several parts required, or would benefit from, a lattice pattern, to keep total weight to a minimum. In addition, multiple small nozzles directing airflow accurately and precisely would be key to the success of the project. FloSonix was requesting 200 to 300 devices annually. The reality was that the part size, count and design complexity would be difficult and expensive to achieve using traditional manufacturing methods.

# From prototyping to production with the Stratasys Origin One.

## Iterative product development, from design to production.

FloSonix approached Enventys Partners with experience, requirements and key industry knowledge but were looking for Enventys Partners to collaborate to partner with them for the end-to-end solution, from design to manufacturing. Given the extensive list of requirements, from aesthetic finishes, durability and biocompatibility; airflow design requirements and production flexibility, the tooling costs alone posed a huge financial challenge. Without the right 3D printer able to manage these demands, simply designing the product itself would have been cost-prohibitive.

“The Origin One has allowed us to not only adapt to changing supply chains, but plan our development in stages; for example, we often like to refine the product in the future, but not immediately,” explains TJ Root, Senior Design Engineer at Enventys Partners. “Additive manufacturing allows us to iterate incrementally without having to recut molds, retool, or have to dispose of excessive old stock; this saved us both time and capital that would normally be at stake during redesigns.”

Complicating design and manufacturing further were the multiple pieces required for success, which would normally require several suppliers, and thus, multiple potential failure points.

## The clincher: material options.

By far the most significant challenge to the success of the FloSonix 3D printing project was finding the right materials: able to withstand temperatures ranging from 60°C to 80°C, highly

durable, lightweight and able to support complex stacking and tapping on even the smallest of parts. The parts would also need to stand up to the corrosive realities of being handled every day without losing their texture or deforming. Early on in the process, it became clear that the end product would be comprised of seven parts, made up of three different materials to accommodate a variety of functional requirements. All of those materials, despite their differences in chemistry, would need to be compatible with a single 3D printer to keep the economics of the project within bounds.

“Because of the design constraints, from the outset, additive manufacturing really made sense for this project for us, not just for the part-to-part aspects but also considering what downstream implications it would have on our organization, both in design and manufacturing,” said TJ Root, Senior Design Engineer at Enventys Partners.





# Continuous iterative design and beautiful end-use production with one complete 3D printing solution.

## Beautiful surface finish and functional parts in days, not months.

The solution to all three of these challenges was found in the Stratasys Origin One 3D printer, which was designed with manufacturing in mind. Two machines were installed at the FloSonix manufacturing area and were producing parts up to 20 hours a day.

Stratasys materials partner Henkel Loctite had several options of materials that fit all of FloSonix's needs: Loctite 3D 3843 HDT60 High Toughness, Loctite 3D IND403 HDT80 High Modulus and Loctite MED413. Because of Stratasys's open materials network, Enventys Partners was able to work directly with both Henkel and Origin One team to develop a variation of an existing material that not only matched the color, but also allowed repeated disinfection, greatly elongating the life of the product.

The Enventys Partners team was able to take the FloSonix handheld device from ideation to production with just a single Origin One printer and only required one additional printer to fulfill FloSonix's annual required inventory. This was integral in optimizing the ROI of the project for Enventys Partners and ensuring that FloSonix was able to go to market as soon as possible.

"Enventys Partners' approach to this application is incredibly innovative and an ideal process for any brand taking a complex, mid-volume product to market quickly and economically. By using an additive-first approach, combining parts, designing custom textures and taking advantage of Origin One's material selection and final part quality, they've created a playbook for product development using additive manufacturing," said Chris Prucha, VP of Production Photopolymers at Stratasys.

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