

Inovus Medical Drives Affordable Products and Faster New Product Introductions with SLS Additive Manufacturing

Production-grade 3D printing materials and platform enable medical device manufacturer to reduce product costs and help other innovators.

Founded in 2012, Inovus Medical is an innovative, UK-based, multi award-winning designer and manufacturer of medical simulation products. The company focuses on affordable and realistic laparoscopic and hysteroscopic simulators for teaching surgical skills.

Driven by a vision of delivering affordable, accessible and highly functional healthcare training equipment across the globe, the Inovus management team has built its business from an original prototype 'built in a bedroom' to a rapidly growing company with customers in 67 countries.

To build and deliver on the company's vision the co-founders, Dr. Elliot Street, CEO, Dr. Edward Ridyard, and Jordan Van Flute, CTO, quickly turned from hand-building products to production through an outsourced additive manufacturing service.

"As a start up with basically zero startup capital, we were at a point where we couldn't afford traditional production because of the prohibitive costs: Tooling, minimum order quantities (MOQs), storage, import duty. The list goes on." said Jordan Van Flute. "And there was the risk: Get the tooling design even slightly wrong and we would be out thousands of pounds."

"Additive manufacturing makes total sense, because it avoids all of those upfront costs and allows you to make mistakes without a massive penalty," continued Van Flute.

Using outsourced additive manufacturing made sense economically to the team until 2018, when the company had grown enough to justify an investment to bring the additive production in house and further reduce costs.



CHALLENGE:

Produce effective and affordable medical simulation products without the high cost and risks involved with traditional injection molding tooling.

SOLUTION:

Bringing 3D Systems ProX® SLS 6100 3D printer and DuraForm® PA nylon material for in-house production.

RESULTS:

- Rapid production of end-use parts without tooling costs, MOQs and inventory storage costs
- Reduced economic risk during new product design and development
- Faster development cycles for new products
- Ability to optimize print builds with 3D Sprint software



"We started researching our options for additive in mid-2018 and quickly zoned in on the ProX SLS 6100 3D printer from 3D Systems, which has high quality part production, great materials and is, compared to the alternatives, surprisingly affordable," commented Dr. Elliot Street.

The ProX® SLS 6100 was installed in December 2018 and the Inovus team has never looked back, delivering production parts for the simulators, as well as being able to do rapid prototyping very easily. In addition, the team also helps other innovators and start ups access SLS additive with an 'incubator-style' additive manufacturing service.

"We usually use the DuraForm PA Nylon 12 material as it has enough strength to be used for the simulator housings as well as fantastic elongation at break for other parts, both for us as well as other start ups we are working with," noted Street.

All 3D Systems' plastics 3D printers come supplied with the 3D Sprint additive manufacturing software which Inovus has found to be very advantageous. 3D Sprint enables rapid 3D file repair, multiple import of various 3D file formats, nesting and optimization of the build, and job management of the 3D Printers.

"3D Sprint® is a true selling point for the ProX SLS 6100," said Van Flute. "It works perfectly with SOLIDWORKS CAD files, delivers seamless transfer of data across the network, and an intuitive workflow for customers."

Keeping the Healthcare Simulators Affordable

With a mission to provide affordable yet highly functional simulators, part cost considerations have always been top-of-mind for the Inovus team.

"While additive is not the cheapest form of production compared to, say, injection molding, it negates the need for expensive up-front costs in tooling for each new product we design and bring to market. Removing these up-front costs means they do not have to be passed onto the end user and allows us to meet our objective of delivering affordable healthcare simulation. The use of additive manufacturing also allows us to have flexibility when designing and launching new products which is key to us as a company that is extremely active in new product development." commented Van Flute.

No Tooling Costs Lead to Better Product Designs

Had the Inovus team opted for injection molding of parts they would have had an upfront cost of thousands or tens of thousands of pounds (£).

"The tricky bit about tooling is that you have to get it perfect right out of the gate or your investment is wasted," noted Van Flute. "The risk, especially for a start up like Inovus, was massive."



Faster New Product Introductions

Since the ProX SLS 6100 3D printer has been installed, the Inovus team has started accelerating its new product development.

“The ProX SLS 6100 has allowed us to get a much faster start on some new, more complex products we had been developing, and we are bringing them to market much more quickly than we ever thought we could do,” said Van Flute. “We are also constantly improving the possibilities made available by evolving our designs and making them more efficient. We couldn’t have done this without additive manufacturing using the ProX SLS 6100 and DuraForm production-grade nylon materials.”

Helping Others Innovate

Inovus Medical doesn’t stop at producing its own parts but also uses the ProX SLS 6100 to help other innovators design and prototype parts.

“Innovation is increasing and we see a true avenue in helping others be innovative with SLS additive manufacturing,” said Street “It also helps us reduce cost of materials for our own parts by ‘nesting’ other parts within the same builds, something that the 3D Sprint software is great for.”

Also, the investment in tooling for traditional manufacturing slows down innovation. By choosing additive manufacturing, the team found they could get production-grade parts without tooling and gradually evolve the design through the geometry being used.

“Our curiosity about improving the product design was helped through being able to change the CAD data and then simply print the parts to find the best design,” commented Street. “You can’t do that with traditional production methods. Once your tooling is created, you are locked in for the duration.”

No MOQs or Inventory Costs

Minimum order quantities for parts are a function of the injection molding process. For an outsourced manufacturer to take the time to change tooling and run the parts, a minimum of several thousand parts is usually part of the equation.

“Those MOQs would cost us thousands but then we would also have to store them and bear the ensuing inventory costs,” said Van Flute “SLS production avoids this through rapid, on-demand production of parts so we can operate with a lean inventory and free up cash flow to drive growth of the company.”



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