



PARAGON
Rapid Technologies



Paragon Increases Part Quality and Reduces Production Lead Times with **Stratasys** Stereolithography Technology



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Stereolithography (SL) has always ticked all of the boxes when it comes to producing exceptional models and one-off parts with an outstanding surface finish. As such, we identified the Neo[®]800 as a best-in-class very early on its lifecycle. We first invested in 2016 and the constant positive feedback from our customers and the need to expand our business offering has led us to the purchase of a further two Neo800s.”

Marc Faux
Divisional Head, Rapid Technologies,
Paragon Rapid Technologies Limited

Located in Darlington, County Durham, [Paragon Rapid Technologies Limited](#), provides high-level support throughout the product development cycle. The company is split into three strategic business units: Paragon Rapid Technologies; AM Technologies and CNC Technologies. These business units serve customers from a wide variety of industries including, aerospace, automotive, consumer goods, entertainment, medical and many more.

Paragon's Rapid Technologies business unit offers prototyping and low to mid volume manufacturing services through 3D printing, vacuum casting, reaction injection molding and silicone molding technologies. The team also has a model shop for assembly and finishing. It is within this unit that the company is utilizing the Stratasys Neo line in the form of the three Neo800 stereolithography 3D printers.

The Neo range of 3D printers features dynamic laser beam technology that enables improved build accuracy, increased feature detail, and low variability across the full extent of a large build platform. As an open resin system, the Neo products provide customers materials with a wide range of properties to suit their specific application requirement - be it chemical resistance, heat tolerance, flexibility, durability, and optical clarity. The Neo800 can produce large parts up to 800 x 800 x 600 mm, providing a significant build area in a small footprint.

According to Marc Faux, Divisional Head, Rapid Technologies, it is these capabilities and more that led to the investments in the Neo800s, "Stereolithography is one of the oldest and most well-known methods of 3D printing and has been a part of our business for many years. Our familiarity with the technology aided in identifying

Neo solutions as the next step for our Rapid Technologies business unit and the business. The ability to quickly produce highly accurate parts with high-level industry quality directly answers the increasingly exacting demands of our customers."

Functional and reliable models and parts across all industries

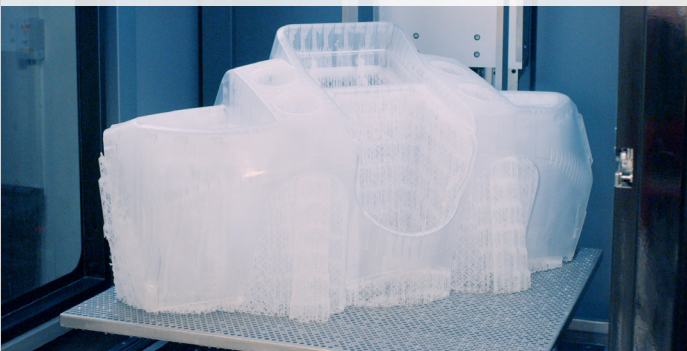
With a wide range of customers in many industries, Paragon must adapt to the often-meticulous demands that are required as well as the ever-changing nature of markets. The team is often commissioned to produce prototypes, gauges, jigs and fixtures, pattern masters and even end-use models and parts that are needed quickly, making traditional production and manufacturing methods a less viable option.

This is underscored by one automotive customer that urgently needed a prototype car bumper in a rapid response time. As the bumper is a large component, the part would normally be machined from solid using traditional manufacturing methods – a process that can take two to three weeks. During this time the bumper would have to undertake post machining and fabrication processes that may be required for vacuum forming and GRP lay ups. Not only that, but the tools would also have to be machined, as well as any jiggling fixtures needed, further delaying the production time.

In contrast, 3D printing using the Neo800 has shortened the process to just two to three days of printing time – a decrease of 90%. Additionally, as the surface finish is so good, even after one single print, post-processing time is greatly reduced.

Andrew McCormack, Commercial Projects Manager, Paragon Rapid Technologies Limited, explains, "Customers come to us with challenging projects, and we have to adapt. Using the example of the car bumper, we saved time, by cutting-out all the add-ons such as tools and jigs and fixtures previously needed during one single print. Also, more fundamentally, we knew we could take on the production of such a large part, thanks to the Neo800's significant build area of 800 x 800 x 600 mm. As a result, where appropriate, we have started to shift from traditional manufacturing methods towards our Neo SL solutions, opening up new avenues of work for our business."

The Neo800's significant build area of 800 x 800 x 600 mm allows Paragon to produce large parts in one single print - greatly reducing post-processing and production time





The surface finish of models produced using the Neo800 greatly reduces the post-processing time and replicates actual parts and models with low-volume one-offs used for end-use. (Model in image shown is provided by Jet Cooper of Makinarium.)

High quality models in high-grade materials

Furthermore, following the investment in the three Neo800's, Paragon has been able to diversify its offering and explore new business streams in new and exciting sectors that demand high quality parts and in smaller quantities. This includes producing end use parts and models for the entertainment industry. Servicing clients in stage, screen, amusement parks, museums and attractions, Paragon produces very-low volume and bespoke functional parts and models such as costumes, helmets, armor and weapons.

The level of detail, durability and surface finish required to produce these parts is made possible with the material offering of the Neo 800. According to McCormack, the team uses [Somos® EvoLve 128](#) and [WaterShed XC 11122](#). He expands, "We have been using WaterShed XC 11122 for many years now and it was one of the step-up materials in terms of quality. Before, materials were brittle and unattractive. It is durable, easy to post-process and finish and has therefore become our 'workhorse' resin – it ticks all the boxes."

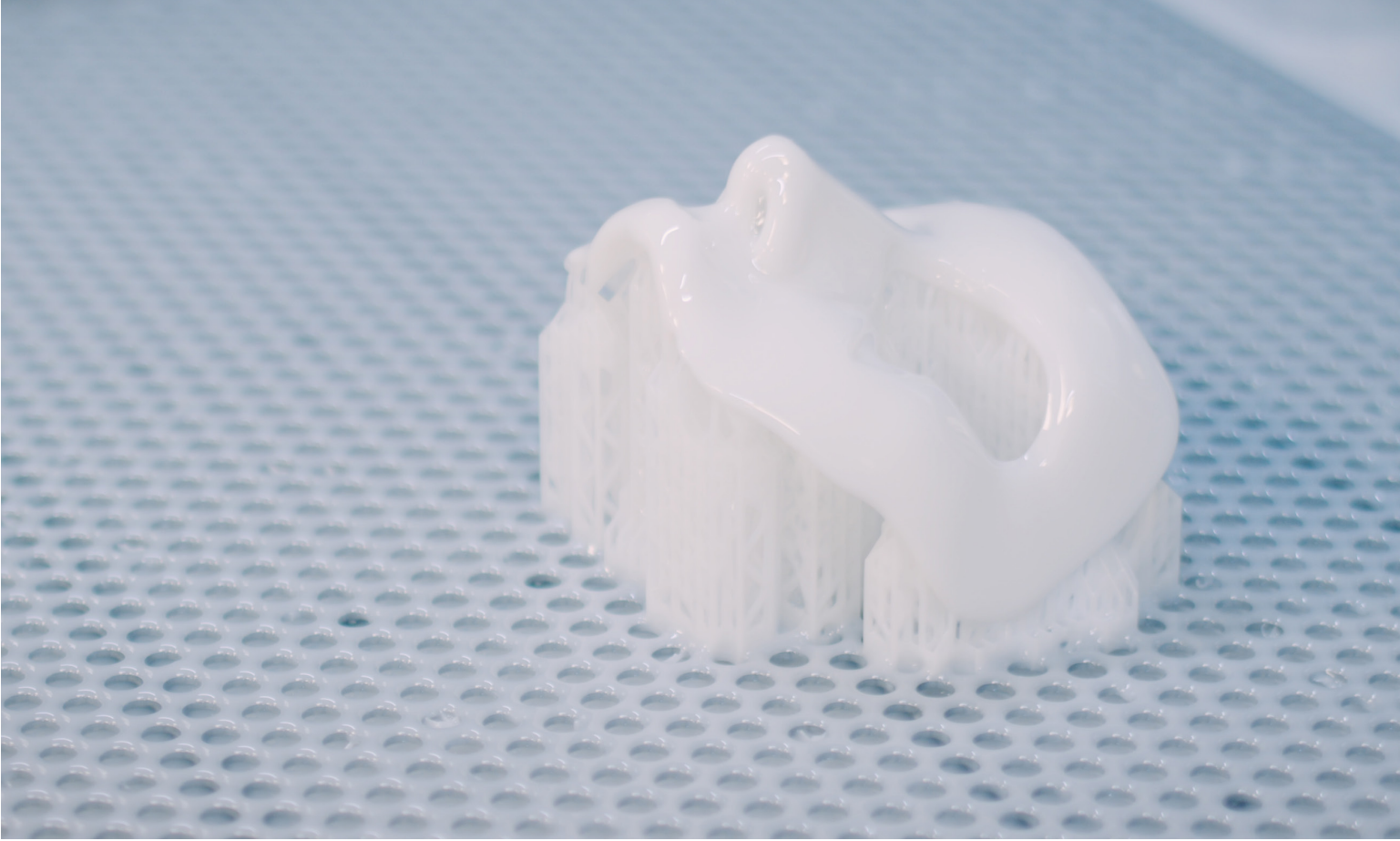
Predominantly utilized for building parts and prototypes for functional testing applications, the

EvoLve 128 material results in time, money and material savings during product development. Ideal applications include tough, functional prototypes, snap-fit designs and jigs and fixtures.

McCormack continues, "The EvoLve 128 material is more next-gen and we have only been using it a few years. It is high impact, flexible and feels more like a molded material than traditional SL resins. Customers often comment that prototypes are more akin to the feel of an actual final product, as well as having a good enough surface finish to look like it."

As of 2018, Paragon is the only 3D printing service provider that has three industry leading, large bed Neo800 stereolithography 3D printers





Paragon's use of Somos® EvoLve 128 and Somos® WaterShed XC 11122 stereolithography materials ensures models have an ideal surface finish as well as high strength and durability in incredible detail. (Model in image shown is provided by Jet Cooper of Makinarium.)

Continuing to deliver on promises

While Stratasys acquired RPS in 2021, the team at Paragon is looking forward to the continuing positive relationship and believes Stratasys' industry-leading products will offer Paragon and other Neo line customers an expanded set of applications.

Faux concludes, "We would find it extremely difficult to deliver on the promises we have made

to customers without the help and support of RPS/Stratasys and our Neo line of 3D printers. We regularly receive positive feedback from our customers and while that is partly down to the skill of our technicians, the technology and the support helps make that possible. Having already grown our market share in several industries, we aim to progress even more on that front, using new applications and solutions in the future."

Stratasys Headquarters

7665 Commerce Way,
Eden Prairie, MN 55344
+1 800 801 6491 (US Toll Free)
+1 952 937-3000 (Intl)
+1 952 937-0070 (Fax)

[stratasys.com](https://www.stratasys.com)
ISO 9001:2015 Certified

1 Holtzman St., Science Park,
PO Box 2496
Rehovot 76124, Israel
+972 74 745 4000
+972 74 745 5000 (Fax)

