

STRATEGIC ADVANTAGE FOR SERVICE AND ADVANCED MANUFACTURING CENTERS

How the Axta Workflow™ is enabling high throughput, precision manufacturing at AM services all over the globe



SOLVING FOR SERVICE BUREAUS

In the additive manufacturing industry, service bureaus play an essential part, both facilitating access to 3D printing technologies for small and large enterprises alike and providing their AM skills and expertise for application development and part production. To fulfill this role to an optimal degree, service bureaus rely on additive manufacturing solutions that are at once reliable, flexible and cost-efficient.

One of the technologies that can unlock new degrees of flexibility and productivity for service bureaus is Axta3D's Hybrid PhotoSynthesis (HPS), a hybrid photopolymerization process that combines the key benefits of digital light processing (DLP) with those of stereolithography (SLA). These dual light sources work simultaneously to cure layers of resin: the DLP projector cures the bulk of the layer, while the laser cures the edges of the cross section, resulting in a DLP-fast printing process that has SLA's high resolution (~45 microns) and part precision. Axta3D's resin-based process has been commercialized in the Lumia X1, a system that offers 24/7 lights-out production and among the fastest print speeds on the market and comes with a versatile material ecosystem and a business model that fits well with the needs of service bureaus.

Services bureaus require reliable machines, flexibility with materials, as well as cost-effective procedures to ensure that they're not wasting their or their customers' resources. And these issues can occur at any stage in the AM workflow, be it a curing chamber set to the incorrect frequency for the material or a failure during the initial print. The Axta Workflow™ addresses all these potential issues and grants you the ability to track the process to allow for repeatability, removing a potential barrier for returning customers.

REAL CUSTOMERS, REAL IMPACT

Don't just take our word for it: read for yourself how the Lumia.X1 is functioning in real service bureaus across the globe.

DINSMORE

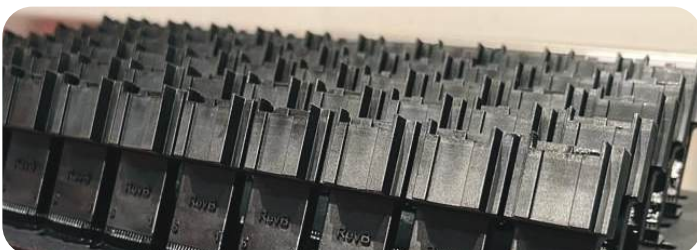
California-based Dinsmore, a 3D printing service provider that is part of the ADDMAN Group, was an early adopter of the Lumia.X1. The company, which specializes in micro-printing, has successfully been using the photopolymerization technology for the production of high-precision parts like artery stents and flow drivers. Kirill Tulinov, Lab Supervisor at Dinsmore, stated: "It's only a matter of time before people notice the importance of this collaboration of two technologies into one, DLP filling while you have the accuracy and surface finish of the laser." Among Dinsmore's successful use cases for the Lumia X1 is an artery stent with a layer thickness of 100 microns and a weight of just 2.97 grams. The small component was manufactured in under an hour with a cost per part of just \$0.53. The service also makes a more complex flow driver, which can be printed in six and a half hours, that has a high level of detail that the Lumia X1 can deliver.

PROTOLABS

At Protolabs, the Lumia X1 was a clear choice. “The addition of the Lumia X1 allows us to offer greater print speed while providing access to more functional materials, in addition to the part quality our customers expect,” explained Kenny Capps, Protolabs’ 3D Printing Director of Manufacturing Operations. The manufacturing-on-demand company plans to leverage the Lumia.X1 and Ultracur 3D RG 3280 in its services for the production of injection mold inserts as well as other applications like electrical connectors. The latter application area is enabled using materials with fire retardant properties and electrostatic discharge resistance, as well as Lumia X1’s TruLayer Adaption technology and dual Z-axis, which helps maintain accurate resin thickness throughout the printing process for highly dimensionally accurate connectors. According to Protolabs, the 3D printing platform is enhancing its capacity to rapidly produce high-quality end-use parts on a mass scale.

MET-L-FLO

At Met-L-Flo, an Illinois-based 3D printing service, the Lumia.X1 has already been put to work to produce insert molds. The company is today successfully injection molding more than 500 parts per mold set for low-volume production applications. Carl Dekker, President of Met-L-Flo, mentions, “While using printed tooling solutions in injection molding isn’t entirely new, the ability to rapidly produce components significantly reduces the risk of failure. If a tool needs replacing, it has to be done quickly—otherwise, the machine, setup, operators and support personnel are all left in limbo. When working on material and time-sensitive projects, waiting days to get back up and running simply isn’t an option.”



LASER PROTOTYPES EU

Laser Prototypes Europe (LPE), a long-running rapid prototyping service serving the UK and Ireland, also includes the Lumia.X1 in its fleet of 3D printers. The company, which has made parts for customers like the Game of Thrones franchise, leverages Axta3D’s technology in the production of large parts with fine details. The Lumia.X1 is known for its large build volume of 250 x 140 x 500 mm, which Axta3D points out is larger than competing resin systems with comparable resolutions. The accuracy of the printer enables customers like LPE to seamlessly transition from design prototypes to functional parts without having to compromise on part quality or print parts in separate pieces that must be assembled.



PROTOTEK

Prototek, an American digital manufacturing service specialized in dental and medical products, was drawn to the Lumia.X1 for its material flexibility, high throughput and high-quality surface finishes. Ben DeGrave, Production Manager at Prototek, elaborated: “Axta3D’s Lumia.X1 unique technology that combines DLP speed with SLA sidewall quality provides the best quality at fast speeds with broad new material options. The high accuracy rivals or surpasses competitors.” The finish and accuracy he speaks of, with a glass-like surface finish within +/- 20 microns, streamlines the production process by minimizing the need for post processing. 3D prints simply require a 10-minute wash and 30-minute post cure cycle post-printing, and existing SLA or DLP post-processing equipment can be used.