

High Throughput Drone Production with Quantum Laser Sintering

As US-Based UAV Manufacturer **SmartDrone** Scales Up, they Look to Move to the Latest in High-Throughput Additive Manufacturing Technology from Nexa3D



CASE STUDY

Customer

SmartDrone

Industry

Survey Drone Manufacturer and Service Provider

Products

- QLS 820 3D Printer
- Nylon PA 12 Powder Material

Application

SmartDrone is shifting production of their external housing from MJF additive manufacturing to Nexa3D's new Quantum Laser Sintering platform with PA 12 to reach higher throughput at lower cost as they scale their business to the next level.

Advantages

- 60% faster build speed
- 2x the packing density
- Larger build volume
- Hot Swappable Build Units

Highly Accurate LIDAR Equipped Drones for Large-Land Surveys

SmartDrone is a leader in drone surveying innovation and technology. Founded in 2020 and based in Tyler, Texas, the company has a mission to bring a capable aerial surveying tool to surveying companies and developers who need to get an accurate picture of the landscape or jobsite without blowing their budgets.



By bringing high resolution LIDAR and camera together with a sensitive GPS module and a powerful onboard computer, and of course a complex software algorithm, the team at SmartDrone was able to provide 1-foot accuracy contour maps - a big deal for their customers. SmartDrone manufactures and sells the drones, but they also have a team of 7 Field Applications Specialists - located regionally across the U.S. - who can provide drone services to customers who aren't yet ready to invest (though many do purchase their own Discovery 2 drone once they witness the capabilities and ease of use offered by the platform.)

3D Printing Drone Parts at Production Scale

Additive manufacturing allows the SmartDrone team to maintain an agile product development and production process. "We move very quickly in our design and design iterations so tooling something up like this would be very difficult to do with injection molding and the tooling cost at our low volume just makes zero sense," says Chris McKulsky, SmartDrone's Engineering Lead.

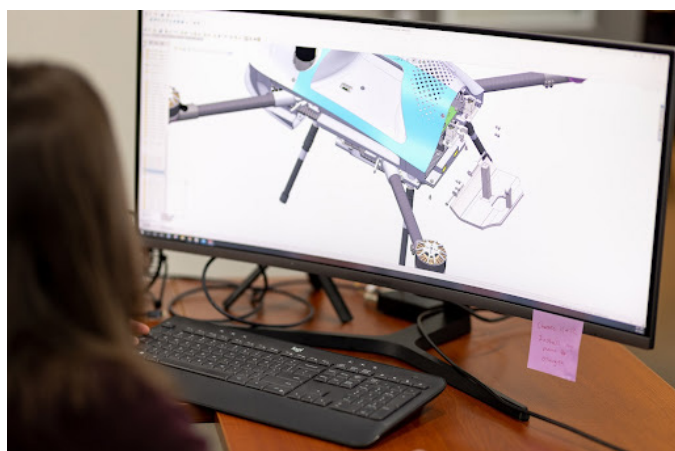
While additive was an obvious solution out of the gate - using an external service provider equipped with Multi Jet Fusion technology, McKulsky and the team at SmartDrone ultimately have a desire to scale up and are considering bringing an industrial 3D printer in house.



A Growing Company Requires a Cutting Edge Technology

At a prior company, two co-founders of SmartDrone shared a building with Nexa3D in Southern California. The teams kept in touch and by early 2022, as QLS was getting ready to come to market the teams joined forces in a beta program to get a better understanding of just how QLS stacked up against the likes of MJF tech they were already using.

What sets QLS apart from other powder bed technologies is its unparalleled throughput. At 8 liters per hour, it is about 60% faster than MJF, plus it has an average build density of 20% compared to just 10% with MJF. Both of those numbers mean higher overall throughput, but QLS also has a bigger build volume, and quick swapping build units, further cementing the appeal of this cutting edge tech in the eyes of the SmartDrone team. “Looking at costs, the cost of a full assembly built on QLS is the cost of just one of the parts using MJF with our service provider,” says McKulsky.



Maps to GPS, Airplanes to Drones

In the 1990s, surveyors and developers were still relying on maps and traditional survey tools for large scale projects. While GPS was becoming available, it was slow to catch on. That’s where Rob Cammack, CEO of SmartDrone sees the potential of commercial drones as survey tools - an extremely valuable tool that is slowly starting to catch on. “We are already seeing drones’ rapidly growing role in many industries today, such as land mapping and surveying, inspections, delivery services, and many more.”

With a drive to equip their customers with the best LiDAR drone technology, their talented R&D engineers have to iterate product features quickly in response to market demand from our clients and customers. “Additive manufacturing, like the QLS 820 from Nexa3D, is an excellent tool for iteration and scaling new product features,” says Cammack. “The costs for manufacturing at low volume or scale make complete business sense in manufacturing products.” Technologies such as the QLS also help to alleviate supply chain issues that hinder the ability of manufacturers to meet rapidly growing demand, all while bringing down overall cost of production, and delivering quality, speed and affordability for a rapidly growing company such as SmartDrone.

