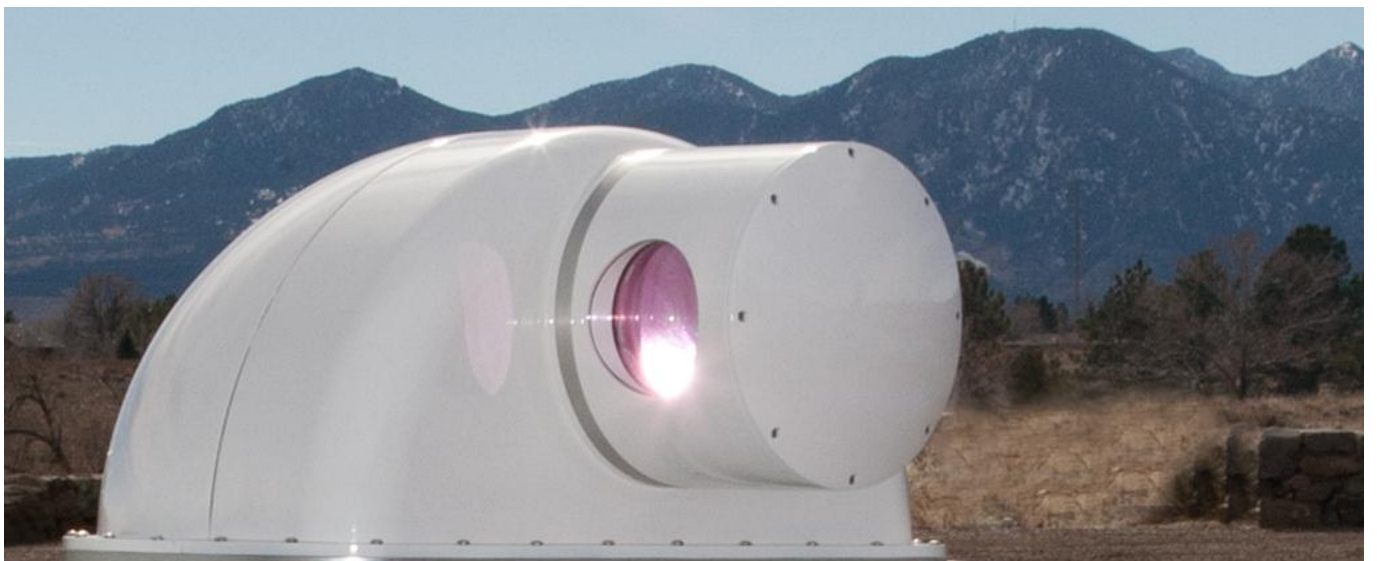


Printing Parts for a LIDAR Wind Speed Measuring System

When [Sibelloptics](#) co-founder Steve Vectorino and his team required a robust, lightweight enclosure for a key feature of their Windimager® LIDAR wind measurement system capable of withstanding extreme temperatures anywhere on earth, they turned to [Axis Prototypes](#), a company specializing in 3d printing and rapid prototyping. Comprising one of four main subsystems of the LIDAR (a remote sensing technology for measuring wind speed and direction by illuminating particles in the air with a laser and analyzing the reflected light), the hemispherical scanner for which the parts were printed, outputs a low-power, omnidirectional infrared laser beam consisting of a series of amplified pulses. Data regarding the frequency and range of the returning light (Doppler shift) is obtained by the system's detectors and sophisticated software. Ultimately, highly detailed maps are created showing wind speed and direction at various distances. The field-tested Windimager® boasts a range of 10 km and can continuously monitor winds in a volume of atmosphere consisting of more than 2 trillion cubic meters.



Designed to protect the mirrors, motors, and slip-rings of the scanner, the parts were printed in Nylon using SLA technology and consist of a 24-inch diameter dome and a 9-inch diameter cowling (see pictures). The parts were then primed and painted for aesthetics.



Due to the size and geometric intricacies of the parts, Steve conceded that the only way to produce them cost-effectively and to spec was through additive manufacturing: “Given the large size and internal features of the printed scanner enclosure parts, I know of no other means to create them other than through 3d printing.”

After a year in operation and being subjected to temperatures ranging from -17°F to +100°F at Sibelloptics’ testing facility in Berthoud, Colorado, the parts have met if not exceeded the client’s expectations. Steve commented that,

“The 3D printed nylon dome and cowling have survived without a scratch, chip or dent. Without a doubt, the Dome and Cowling have exceeded our greatest expectations; their durability and resilience are truly remarkable! These features coupled with their light weight, great appearance, and cost effectiveness are why we will continue to use 3d printing technology for all future systems.”

About [Axis Prototypes](#)

Based in Montreal, Canada, Axis Prototypes provides 3d printing and rapid prototyping services to support low-cost, low-volume manufacturing operations across numerous markets, including aerospace, aeronautics, automotive, sporting and consumer goods, dental and medical, architecture, and telecommunications. Axis Prototypes operates production grade 3d printers to produce conceptual and functional prototypes from various polymer and metallic materials based on additive manufacturing technologies such SLA, DMLS, SLS, and FDM. Axis is a distributor of 3D SLA printers from Prodways, a leading 3d printer manufacturer in Europe.

About Sibelloptics

Established in 2011, Sibelloptics of Boulder, Colorado provides robust remote sensing platforms

that serve a variety of industries. Their staff has more than 100 years combined experience in developing state-of-the-art Lidar transceivers, telescopes, high energy lasers, and long range chemical detection sensors. Their first Windimager, delivered in February of 2014, was built for NASA to study aircraft wake turbulence. Their second system was recently installed on the island of Aruba to predict winds approaching a wind farm power installation.

<http://3dprinting.com/news/printing-parts-for-a-lidar-wind-speed-measuring-system/>



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