



# PROTOLABS®

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## Protolabs Serves as Quick-turn Collaborator in NASA Generative Design Project

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***Digital manufacturing leader meets challenge from NASA engineers to rapidly manufacture a generatively designed space travel apparatus; delivers part in 36 hours***

MINNEAPOLIS--(BUSINESS WIRE)--Jul. 17, 2024-- In coordination with digital manufacturing leader [Protolabs](#), engineers at [NASA recently showcased the power of their AI-driven design tool](#) at the PowerSource Global Summit, an annual conference bringing together technology leaders across disciplines.

On the first day of the conference, NASA engineers challenged attendees to provide inputs for generative design to create a prototype apparatus for collecting gas samples released by sunlight hitting the moon as part of NASA's ongoing Artemis moon exploration missions.

The crowdsourced constraints defined desired traits of the sample collection container like modularity, stack-ability, scalability, and how a person or robot would interact with the device. Simultaneously, the geometries and part qualities identified had to ensure the part was machinable while maintaining strict size requirements.

NASA's generative design software then produced a CAD file based on those constraints that was ready for machining in Protolabs' digital factory that evening. The goal was to deliver the part by the conference's wrap-up two days later.

"For this demonstration to be successful, we knew that any manufacturer we went with [to make the part], needed to deliver the part we ordered on-time, there was no room for error or delay," said Matthew Vaerewyck, a mechanical engineer at NASA's Goddard Space Flight Center in Greenbelt, Md. Protolabs was uniquely positioned to achieve this feat for NASA, as the only digital manufacturer in the world that combines the digital thread with speed, reliability, and quality.

Vaerewyck uploaded the part's CAD file to Protolabs' digital quoting platform. The organic design went through 19 hours of toolpathing at Protolabs' CNC machining facility. The part was then shipped from Minnesota to the conference in Florida, arriving before the final day's activities began, less than 36 hours after the order was placed.

The first-of-its-kind experiment was deemed a resounding success. NASA was able to demonstrate the power of generative design to cut down on iterations and significantly reduce development time while also creating parts that meet stringent spaceflight constraints. Protolabs, enabled by its quick-turn digital manufacturing capabilities, served as a key partner, bringing the part to life for conference attendees to see.

"We couldn't have been more excited to serve as the manufacturing partner in this novel exercise showcasing the impact of combining generative design with automated manufacturing," Greg Thompson, senior director of CNC machining at Protolabs. "As a company that has revolutionized manufacturing, Protolabs is proud to play a role in NASA's mission to push the boundaries of innovation to enable space exploration."

Learn more here: <https://www.protolabs.com/resources/partnerships/nasa/>

### About Protolabs

Protolabs is the fastest and most comprehensive digital manufacturing service in the world. Our digital factories produce low-volume parts in days while [Protolabs Network](#) unlocks advanced capabilities and volume pricing through its highly vetted manufacturing partners. The result? One manufacturing source—from prototyping to production—for product developers engineers, and supply chain teams across the globe. See what's next at [protolabs.com](https://www.protolabs.com).

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