



Ropes Edge and HP Digital Manufacturing Network partner GoProto team up to produce high-quality parts and streamline manufacturing



Data courtesy of GoProto & Ropes Edge



As an HP DMN partner, **GoProto** assists **Ropes Edge** in producing a new safety device to protect life-supporting ropes from damage on sharp edges.



Data courtesy of GoProto

Introduction

GoProto, Inc. offers customized manufacturing services including prototyping and final part production in both plastic and metal. They serve the full spectrum of industries using the latest technologies to help their customers go from concept to design to final part as quickly and efficiently as possible. Since its founding in 2016, GoProto was among the first companies in the world to adopt HP Jet Fusion 3D Printing Solutions. They currently operate six machines in San Diego, California, and three machines in Melbourne, Australia.

One of GoProto's customers, Ropes Edge, makes "rope access" products for industrial applications. Based in Canmore, Alberta, Canada, Dirk Dorenbos facilitates IRATA assessments, special projects, and Rope Access training to ensure that companies and technicians meet the required high-level safety standards of Industrial rope access.

- **Industry**

Industrial

- **Sector**

Machinery and equipment

- **Objective**

To bring a new device to market using efficient processes and high-quality, durable materials that are strong enough to support a human body.

- **Approach**

As an HP Digital Manufacturing Network partner, GoProto assists Ropes Edge through the entire additive manufacturing journey thanks to their end-to-end, industry-standard 3D printing capabilities.

- **Technology | Solution**

HP Multi Jet Fusion technology, HP Jet Fusion 3D Printing Solutions

- **Material**

HP 3D High Reusability (HR)¹ PA 12

1. HP Jet Fusion 3D Printing Solutions using HP 3D High Reusability PA 12 provide up to 80% powder reusability ratio, producing functional parts batch after batch. For testing, material is aged in real printing conditions and powder is tracked by generations (worst case for reusability). Parts are then made from each generation and tested for mechanical properties and accuracy.



Data courtesy of GoProto & Ropes Edge

Challenge

As a rope access field technician for 18 years, Dirk Dorenbos understands his industry well. He knows what works and, more importantly, what doesn't work, especially when it comes to the safety of highly skilled and certified technicians who use ropes and rigging to gain access to some of the most obscure and seemingly impossible work locations. Dirk noticed an area of his industry that needed significant improvement, so he started designing a device that could protect ropes from catastrophic damage from sharp edges. With limited to no manufacturing background, Dorenbos consulted a third-party designer to help him bring his invention—the Vortex—to life.

“I had a choice to make,” Dorenbos said. **“I went to a local designer and the designer had GoProto as one of their current**

vendors. Once we had the functional prototypes in hand, we gathered data from some rigorous real-world destructive testing. After the material and the product proved themselves with above-and-beyond results, it was time to manufacture. I decided to work with GoProto directly.”

GoProto's suite of manufacturing technologies presented Dorenbos with a second choice: which technology would be best for the Vortex. GoProto evaluated his project and immediately knew that HP Multi Jet Fusion technology would be the best solution for the low-volume production of a device with complex geometries that requires an extremely high level of durability.

Solution

As a member of the HP Digital Manufacturing Network (DMN), GoProto helped Ropes Edge from the early stages through prototyping and part production.

“As an HP DMN partner, part of our value to customers is that we're willing to talk to customers about their projects and what they're wanting to accomplish,” said Jesse Lea, President of GoProto, Inc. **“We understand the product development cycle. We understand what they need and we have all the available options.”**

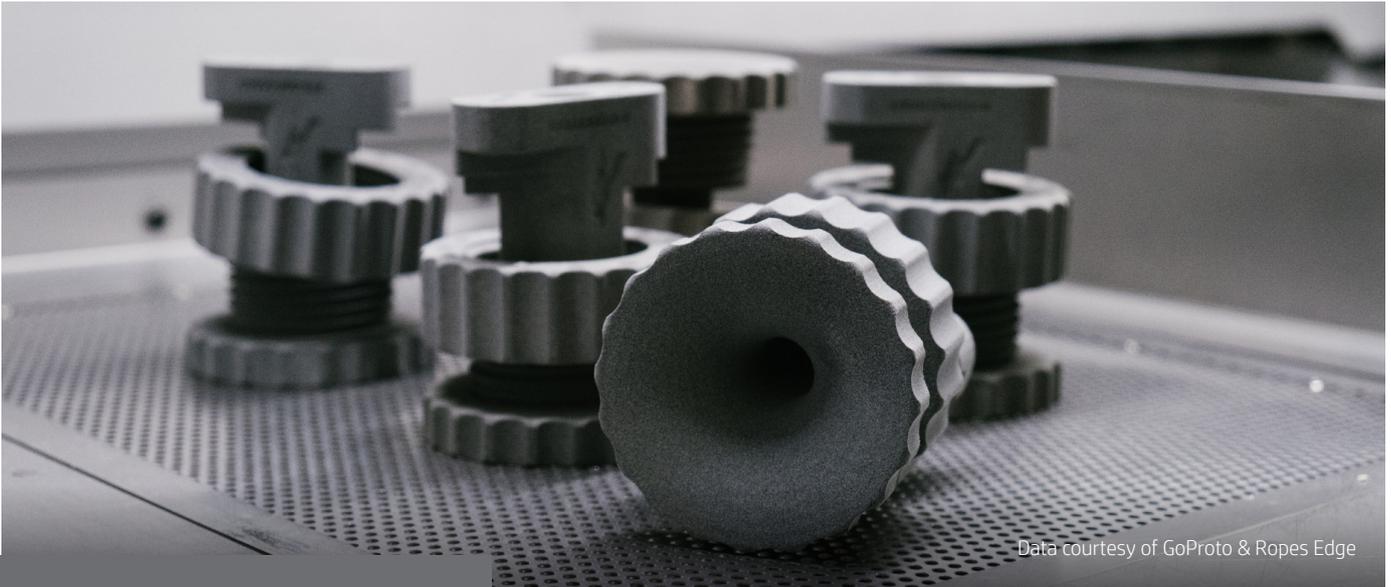
The HP Digital Manufacturing Network pre-qualifies suppliers and certifies them as providers of a certain standard of quality, a certain level of experience in the manufacturing environment, and a certain level of expertise, history of projects, and in-place manufacturing and quality systems.

“HP MJF is exciting for our clients because rather than strictly using 3D printing in the prototype or early product development stage, now with its durability, increased speed,

great surface finish, and excellent material properties, we're actually able to use it for production-type applications as well,” Lea added. **“There's no tooling to invest in, it's very fast, you're able to do geometries that you can't do with traditional manufacturing, you're able to change your design very quickly. All these things stacked together indicate that this is a game-changing technology.**

“It's extremely exciting that he (Dorenbos) is essentially a field technician that came up with an idea for a product that is quite complex and also had extremely high physical demands, and he was able to use HP Multi Jet Fusion to get it into production very quickly and easily at low costs.”

From a customer perspective, Dorenbos felt confident in GoProto's capabilities: **“They (GoProto) have the inside knowledge on how to use the technology. We moved very quickly through some of the issues that we had initially, and I think that's a direct result of their relationship with HP.”**



Result

With the assistance of HP DMN partner GoProto, Ropes Edge used HP Multi Jet Fusion technology to perfect their design and produce faster and less expensively than what was possible with traditional manufacturing methods.

“The HP Digital Manufacturing Network means that we’re applying the same standards of care, engineering, inspection, and continual process evaluation at that low quantity that we would at a high quantity as well, so it really makes production available for lower quantities at lower costs.” Lea said. **“This is just the tip of the iceberg. It’s really going to have a massive impact on how parts are made.”**

Using injection molding to create parts for these products would take 6 to 8 weeks plus several additional weeks to make adjustments, modify tools, and conduct re-trials. Ropes Edge considered using FDM or SLS, but both processes result in parts that aren’t strong enough and are too expensive to produce.

With GoProto’s in-house HP Jet Fusion 3D Printing Solution, Ropes Edge can receive both prototypes and final parts approximately 3 to 5 days after their order is placed. With faster iteration capabilities, Ropes Edge can innovate more quickly and make changes as they go. Customers who hire GoProto’s services to produce their products also can take advantage of

distributed manufacturing, which helps cut down on shipping costs.

“The Vortex is an amazing tool and getting it out into the market requires many players, so partnerships (like the HP DMN) are really critical,” Lea said.

With this new relationship with GoProto in place, Dorenbos sees no limit for what he can create next. **“From idea to concept, whatever I can think of right now to apply to my industry, we’re thinking about it.”**

As part of the HP DMN, Lea said: **“We really value getting our name out in the market aggressively, and that was the value with HP because we have a lot of customers that are doing everything from recreational equipment to industrial equipment to healthcare and aerospace; we really service customers across the board.”**

“Whether it be on the client end of things, whether it be us (GoProto) as a parts provider, or HP as a manufacturer of the machine, it’s really going to be a community that needs to be built, so partnerships like the HP Digital Manufacturing Network are absolutely critical.”

For more information on GoProto visit goproto.com

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