

# FINDING NEMO'S BEST DESIGNS

## Prototyping with Dimension Helps Backpacking Equipment Manufacturer Stay Ahead of the Competition

*"The Dimension 3D Printer enables us to create a few more varieties of prototypes and, in the end, come up with a better solution."*

— Brandon Davey, NEMO Equipment

*This is a sample of assembled pieces printed by NEMO Equipment with the Dimension 3D Printer.*

NEMO Equipment designs and produces streamlined backpacking equipment, yet its prototyping process was anything but streamlined. The company needed to bring this function in-house to enable designers to keep up with the demand for new products.

Founded in 2002 amid the mountains of New Hampshire as New England Mountain Equipment, NEMO pioneered AirSupported Technology, a tent support system with low pressure air beams in place of metal poles. The system is two and a half times stronger than the traditional aluminum poles used in camping tents. AirSupported Technology sets up and tears down quickly, and it packs into irregular shapes such as the deep corners of a kayak or backpack. "Its flexibility and ease of use make it ideal for everyone from the mountain expedition guide to the family on a weekend camping trip," said NEMO's Senior Designer Brandon Davey. It even develops tents for U.S. military personnel, including Navy SEALs.

"We want to have the best there is and often can't find that on the market, so we design it ourselves," said Davey. This could be anything from a small accessory to a full functioning frame system. In the past, NEMO had outsourced its prototyping, but there were two problems with that arrangement: time and cost.

"We started to see a higher demand for prototyping," said Davey. "Our turnaround time needed to be a lot quicker." So, NEMO's founder, Cam Brensinger, began searching for an in-house printer. He found CAPINC.

"CAPINC personnel helped us make a decision on a printer," said Davey. "We sent them files, and they showed us what different printers could do. They were helpful in explaining differences and answering questions."

NEMO designers didn't take long to decide on a Dimension 3D printer. "We built a sample part for them," said Doug Russell, CAPINC sales representative. "They saw it and walked out with a printer. At first, in addition to cost and time savings, it was the strength of the ABS P430 material that attracted them."

But there was more. "Having attention to detail is pivotal to our products," said Davey, who appreciated the printer's ability to turn that detail into a prototype.

The Dimension uses Fused Deposition Modeling (FDM) technology. The process begins with proprietary Stratasys software, which processes an STL file in minutes, mathematically slicing and orienting the model for the build process. If required, support structures are automatically generated. The machine dispenses two materials – one for the model and one for a disposable support structure.

The thermoplastics are liquefied and deposited by an extrusion head, which follows a tool-path defined by the CAD file. The materials are deposited in layers as fine as 0.005-inch thick, and the part is built from the bottom up – one layer at a time.

“Because the Dimension 3D Printer saves time over out-of-house printing, we can keep our minds fresh on the design,” Davey said. “Each day, we can continually improve a design rather than having to refresh our minds after time away. We can stay with one product and not have to bounce around between projects while waiting for a model to come back.”

The Dimension 3D Printer was put to use right away. “Some days it is running constantly and printing part after part because of high development times,” said Davey. “It can run 15 jobs a week for us.” Parts, which typically are used for product development, testing and analysis, generally don’t receive any finishing work except for sanding so they can move together without friction. Buckles, for example, need to fit together smoothly.

“Rapid prototyping is extremely important to our business,” said Davey. “It helps us keep things fresh and quickly turn designs into production quality parts. Prototyping with the Dimension saves us two or three months from concept to production on any one part.”

The Dimension 3D Printer also enhances collaboration within NEMO. “Having an in-house printer gets people excited about a design because they can actually see the printer creating a part,” said Davey. “In other companies, people in marketing and sales might only see the final prototype after the bad designs have been destroyed. Our marketing and sales team gets to see each part and be involved in the entire process, which is beneficial.”

“With an in-house system, we don’t feel constrained to create a perfect design in every round,” said Davey. “We have the freedom to experiment a little more, and tinkering is part of the fun. The Dimension 3D Printer enables us to create a few more varieties of prototypes and, in the end, come up with a better solution.”



*This working prototype was created with the Dimension 3D Printer.*



*Brandon Davey, Senior Designer at NEMO Equipment, loads NEMO's Dimension 3D Printer.*



*NEMO Equipment's creative work space at the company headquarters in Nashua, NH, where Brandon Davey, Senior Designer, collaborates with Cam Brensinger, founder and owner of NEMO, Suzanne Turell, Director of Product Design, and Nate Phipps, Senior Designer.*

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