Case Study





NextGen Zip Tie



Muscle and Arm's owner, Dan Vorhis had designed a new product – the NextGen Zip Tie. Its revolutionary design allows it to be locked and then released for future use.

The client originally came to GoProto asking them to potentially create a mold for these parts. Due to cost and timing, GoProto recommended they test print the part on their new HP Jet Fusion 3D 4200 Printer.

They had tried to 3D print the NextGen Zip Tie before, but the quality was unacceptable.

The Challenge

"Surface finish was of one of the big reasons we chose to partner with HP. In the past when we'd attempted to 3D print the part, either the definition wasn't good enough to create the "teeth" in the zip tie or the part was too brittle to flex the way a zip tie should. Our first step was to verify that HP's process would allow us to create a functional part."

Mass-manufactured zip ties are made of nylon, allowing them to be both strong and flexible. The quality of injection molding is excellent. The locking mechanisms are always well-defined, and as a result, zip ties rarely fail.

For GoProto the first task was to confirm that they could create a 3D printed part that could compete with injection molding. It had to have the strength to remain locked under all kinds of conditions while retaining the flexibility to bend again and again.

-Tony Moran, GoProto CEO

The Solution

GoProto's engineers began by running the part on the company's HP Jet Fusion 3D printer, and once they found it was successful, they sent the part to Muscle and Arm for review and feedback.

A few days later they received a video from Mr. Vorhis. It was a demonstration of his product. In the video, he mentioned that the part had been created by GoProto and that HP's Jet Fusion 3D Printing Solution offered the detail, strength, and flexibility the part required. Mr. Vorhis also noted that he could, "very reasonably demonstrate the concept without the need for a casting mold."

Once they knew they could print a part that met the client's expectations, the next step was to compare the cost of production with the cost of injection molding to determine where HP's Multi Jet Fusion 3D printing technology could be directly competitive.

The Results

With the help of their new HP Jet Fusion 3D 4200 Printer, GoProto was able to produce their client's product at a level of quality that was comparable to what could be mass manufactured. *The part was both strong and flexible*.

The cost analysis conducted by the team at GoProto determined that Multi Jet Fusion could be less expensive than injection molding at run lengths of 1,000 parts or less. Access to this technology greatly reduces the barrier to entry. Product designers can go to market with less upfront investment. As demand increases, they can more easily justify the investment in mass manufacturing.

HP's Jet Fusion 3D Printing Solution allowed Muscle and Arm Farm to both prototype for the look and feel while simultaneously creating a functional end-use part that he could produce in shorter volumes before committing to the expense of injection molding.

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