

**CHALLENGE:**

Growing business needs to increase production efficiency & output to keep up with customer demand.

**SOLUTION:**

Implement Stratasys' 3D printing solutions from GoEngineer to help control production & streamline manufacturing processes.

**RESULTS:**

Prototype turnaround times decrease from 6 weeks to 1 day; 3D-printed jigs & fixtures increase production floor consistency & accuracy, & reduce costs.

## GOENGINEER'S 3D PRINTING SOLUTIONS HELP SPEED HIGH LIFTER'S PRODUCTION AND REDUCE ERRORS

### It All Started in the Backyard

Scott Smith grew up camping and riding all-terrain vehicles (ATVs) with his dad Mike. Cutting it up through mud and rough terrain was always a ton of fun for father and son alike. But as their passion for the ATV sport grew, Mike Smith wanted to use larger tires to achieve more ground clearance since they were often riding through rough and extremely muddy terrain. He had seen ATVs with homemade lifts, and he wanted one for his 1996 Honda Foreman.

Since his son Scott was good at building things with his hands, Mike asked him if he'd try to make a lift for his Honda. Scott Smith created dozens of iterations over the next few months before a final version for the Honda was completed. Not only was Mike Smith impressed with his son's handiwork, but friends and neighbors were asking Scott if he'd make a lift for them, too.

Scott was soon spending evenings after work in his backyard building and selling lift kits. "All inventory was kept in a small plastic dish-washing tub," says Scott, laughing. The father and son saw a real market for the lift kits, and Scott had a vision for the lift kits being sold nationally and even internationally—thus was born High Lifter Products, Inc.

### Unprecedented Success

Product demand was great, but High Lifter was limited regarding what it could achieve because the

company relied heavily on a manual process and local machine shops to produce its parts—and prototypes were often time-consuming and expensive.

For a company bursting at the seams with business, something had to change.

In 2009, Scott's brother Brian Smith, a mechanical engineer, joined High Lifter to, among other things, improve its production processes. And Brian knew that 3D printing was going to become a key technology to help take High Lifter's production to the next level.

### The Perfect Fit Every Time

After researching options for 3D printing technology, High Lifter decided on the FDM-based Dimension 1200es from Stratasys, which it purchased from GoEngineer, a local reseller that is passionate about enabling innovation and helping its customers deliver better products faster.

"It was actually very simple to set up, after attending the 3D printer training that GoEngineer provided," reports Brian. "We also had a maintenance agreement, which has definitely paid for itself. When we had issues, the GoEngineer technicians came out and took care of the machine at no cost to us."

And the 3D printer gave them the flexibility to experiment with design fit before committing to large production runs. "When you're ordering over

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– **BRIAN SMITH, Engineering Manager**

\$100,000 of product, you can't just hope it fits. The part has to be perfect—every time,” says Brian Smith.

High Lifter can now design, print, and then verify the actual part clearances on the ATV. If issues are discovered, the design is modified, printed, and tried again. “It's been a lifesaver,” states Brian. “I can easily make a physical part, install it in the unit, check all my clearances, and have complete confidence in my final design.”

“Before getting a 3D printer, simple prototypes cost the company \$600 each with a six-week turnaround time—for one prototype.” Smith continues: “Now, I can design a prototype, print it overnight, and in the morning check to see if it works. It probably costs me \$10 in material. And, if I don't like the prototype, I can change it and have the absolute perfect design in just two days.”

High Lifter also leverages its 3D printer for production tooling. “With the 3D printer we make a complex part that helps me bend pipe accurately and consistently. The tool usually lasts several months. If it

breaks, no big deal; I just print another one.” High Lifter also prints jigs that help production locate parts for welding, which helps maintain consistency and accuracy on the production floor.

#### **We Are the Customer**

From its backyard beginnings to becoming a multi-million-dollar company, one thing has not changed at High Lifter. The owners and key managers remain avid ATV enthusiasts. “We're not just people who make a product; we use the product we make all the time,” says Brian. “I think it helps us stay in touch with our customers.”

“We don't want to just be another company; we want to be THE Company,” concludes Brian Smith. “We want to be the company that's innovating, that's coming up with new ideas, new products, and new ways of doing things.” And GoEngineer's design and manufacturing products, services, and support will continue to help High Lifter leverage the latest technologies and reach even higher levels of productivity.



The “snorkel” kit allows deep water crossing without worrying about getting water in the engine. This 3D printed snorkel is being used temporarily as a functional part until the production pieces are completed.



Heavy duty axle prototypes can be produced literally overnight with the Stratasys 1200es 3D printer. Design fit is quickly validated and improvements implemented, virtually eliminating the risk and expense of unforeseen errors.



Physically assembling these parts helped to validate design and highlight areas for improvement, which enabled High Lifter to maximize thicknesses to increase strength and durability.



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GoEngineer is a provider of powerful product design and engineering tools including support and training for SOLIDWORKS, Stratasys, CAMWorks, Altium, and PLM with over 30 years of customer experience in high tech, medical, machine design, energy, and other industries.

#### **High Lifter Products, Inc.**

Developing unique after-market accessories for utility, 4-wheel-drive ATVs, UTVs, & RUVs since 1996.

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