

**CHALLENGE:**

Regain design control & increase production efficiency.

**SOLUTION:**

Implement SOLIDWORKS software & Stratasys 3D printer solutions from GoEngineer.

**RESULTS:**

New designs developed in SOLIDWORKS create unprecedented product success: prototype turnaround times decrease from 6 weeks to 1 day; increased design accuracy reduces ordering errors.

## GOENGINEER'S TECHNOLOGY SOLUTIONS HELP RAISE HIGH LIFTER TO NEW LEVELS OF SUCCESS

### 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 the 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 with its designs. The company relied heavily on a manual process and local machine shops to produce its parts—even the drawings were done by outside vendors.

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 increase the company's design capabilities and improve its production processes.

Brian's first task was to bring in a computer-aided design (CAD) system, and the second was to purchase a 3D printer. Brian reviewed several CAD packages and finally chose Dassault Systèmes SOLIDWORKS from GoEngineer, a local reseller that is passionate about enabling innovation and helping its customers deliver better products faster.

"SOLIDWORKS was simple to use yet really powerful—plus we could afford it!" says Brian. "And if we got stuck on a problem or had questions regarding a new feature, the support team at GoEngineer was always quick to respond and very helpful."

One of the initial reasons High Lifter bought SOLIDWORKS was for tire design. The company had trouble getting its tire manufacturer to understand exactly what they wanted. Granted, it was a very complex geometry. Every side of the tread needed to be a different shape; the tires had to be extremely aggressive for muddy terrain, but also ensure a smooth ride—among many other requirements.

Up until the Outlaw 2, the more aggressive mud tires were always a rough ride. "Once we were able to control our own design in SOLIDWORKS, we made the tire exactly the way that we, as ATV enthusiasts ourselves, wanted it to be designed," says Brian Smith.

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*BRIAN SMITH, Engineering Manager*

it hit our dock.” The market was obviously hungry for an aggressive, go-through-any-muddy-terrain tire that provided a comfortably smooth ride.

#### **A Life Saver**

Brian Smith's next task was to find a 3D printing solution. After researching the myriad of options, High Lifter decided on the FDM-based Dimension 1200es from Stratasys, which it also purchased from GoEngineer. “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. If we had issues, the GoEngineer technicians came out and took care of the machine at no cost to us.”

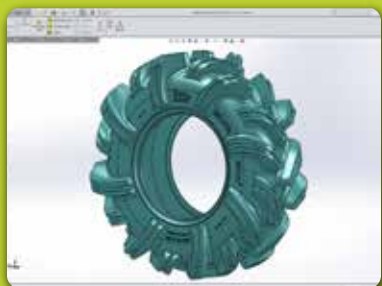
With the combination of SOLIDWORKS and the Stratasys 3D printer, High Lifter can design, print, and then verify the actual part clearances on the ATV. If issues are discovered the design is modified, printed, and tried again. “It's been a lifesaver,” states Brian. “I can easily print a physical part, install it in the unit, check all my clearances, and have complete confidence in my final design. When you're ordering over \$100,000 of product, you can't just hope it fits. The part has to be perfect—every time.”

“Before getting a 3D printer, simple prototypes cost the company \$600 each with a six-week turnaround time—for one prototype.” Brian 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 ten bucks in material. And, if I don't like the prototype, I can change it and have the absolute perfect design in just two days.”

#### **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 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.



Outlaw 2 tire, exclusively created by the High Lifter team, rendered in SOLIDWORKS.



High Lifter Outlaw 2 on the show floor with Stratasys 3D printed prototype in foreground.



Heavy duty axle prototypes can be produced literally overnight with the Stratasys 1200es 3D printer.



goengineer.com | 1-800-688-3234  
marketing@goengineer.com

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.  
**Address:** 780 Professional Dr N, Shreveport, LA 71105  
**P:** 318-524-2270 | [highlifter.com](http://highlifter.com)