

RP Gets On Track

> Rapid prototyping turbo-charges a remote-controlled racecar company.

BY KEVIN LACH



The race to create better-looking and higher-performing remote-controlled cars, trucks, and parts is every bit as intense as the fury on the hobbyist's racetrack. Trinity Products, Inc., is a \$10 million manufacturer and supplier in this nearly \$2 billion market, many of whose customers are adults with full-time jobs and comfortable incomes.

Trinity makes several lines of perfor-

mance vehicles — including the 1/7th-scale Nitro Spyder monster truck and the 1/18th-scale Itsy Bitsy Spyder four-wheel-drive racing truck — as well as engines, fuel, electric motors, batteries, accessories and after-market parts. The company employs 35 individuals at its headquarters in Piscataway, NJ, and is the exclusive U.S. distributor of rechargeable batteries for remote-control applications from Sanyo and Gold Peak.

A ZPrinter from Z Corp. produces small yet intricate parts at five times the speed of an old system for a maker of remote-controlled cars with details the old system could not match.

DETAILED RAPID PROTOTYPES - AT ANY SCALE

Trinity's design engineers are experts at conceiving new products and swiftly creating detailed 3D renderings with their SolidWorks 3D mechanical design soft-

ware. But to ensure a component fits a vehicle assembly properly and functions as intended, engineers need to hold a prototype in their hands. One mistake can cost thousands of dollars in wasted time and lost revenue.

This requirement prompted Trinity to invest in a 3D printer two years ago that could create a physical model of a part or assembly right in the engineering office. The device served engineers well enough until they came across a ZPrinter from Z Corp., which was pumping out small yet intricate parts at five times the speed of their existing system with details their current system could not match.

The performance of the ZPrinter astonished Trinity engineers, who had been having difficulty getting useful prototypes of smaller parts with their existing system. The problem was only worsening as consumer tastes had shifted toward the "mini" 1/18th-scale vehicles. In too many cases, the old printer couldn't make the part at all, or it made a part so flimsily that it wasn't useful for testing.

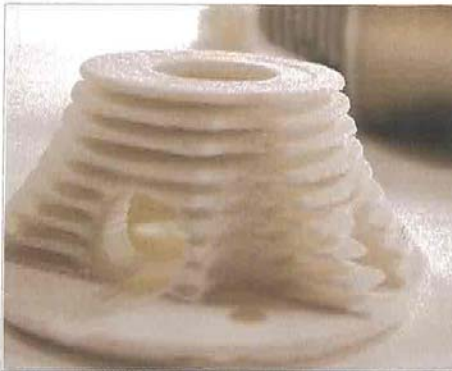
QUICK FUNCTIONAL PHYSICAL MODELS

Trinity Chief Engineer Mike Wood invited Z Corp. to show what its technology could do. Shortly after the handshakes, Z Corp. representatives were making prototypes of suspension parts that were then bolted right to the car and tested on the track. These prototypes proved fit and functionality where the other printing technology was unable to meet the strength and resolution requirements.

"That really convinced our team that we needed the Z Corp. printer," Wood said. "While priced competitively and focusing on value, it could do so much more than we were able to attempt with our previous printer. We could take virtually any part, bolt it on the car, ensure it fit seamlessly into the assembly and, in many cases, take it out for a full battery of functionality testing."

TIME AND MONEY SAVED, MARKETING BOLSTERED

Since investing in the Z Corp. system, Trinity credits the technology with saving time and money in both the short and long terms as well as generating new sales revenue and increased brand equity. The ZPrinter, according to Wood, shrinks Trinity's printing time by 80 percent for a typical part, enabling engineers



At 1/18th-scale, mini engine prototypes had to be sturdy and useful for testing on the track.

to complete time-sensitive designs faster, with fewer interruptions and delays. For example, a part that took five hours to create on the old system takes one hour on the ZPrinter.

3D printing has cut Trinity's entire design cycle in half, from eight weeks to four weeks. Moving from concept to manufacturing typically takes eight weeks when the prototype needs to come from a manufacturing partner — or longer if a company skips the prototype only to find out it doesn't fit as expected. By creating prototypes in-house and ensuring fit and function, Trinity compresses the prototyping part of the cycle from four weeks to less than a day.

In addition, asking a manufacturing partner for a production-level prototype engine would cost at least \$800 and often involves cashing-in favors. Still, no matter what the cost, the part would take three to four weeks to arrive, suspending Trinity's design process.

Trinity also believes that it reaps a significant return from the Zprinter's resolution, which is three times greater than the company's previous printer — 0.0035-in. layer thickness vs. 0.01 in. This difference enables Trinity to create prototypes that faithfully resemble production parts. This new capability enabled Trinity to create mockups of new vehicles for display at an important tradeshow. The high quality of the mockups helped drive new revenue.

"Unveiling prototypes at the show made all the difference in our sales that year, because the show is huge for our market," said Wood. "It drives our industry and Christmas sales. In addition to the

thousand of attendees, many people go online from around the world to see what's hot during the event. We couldn't display the prototypes with our old printing technology because of their poor quality. The technology's shortcomings in resolution left curved surfaces jagged and unsuitable for public display. Showing a prototype from the Z Corp. machine made an enormous difference."

Because of the finished look of a ZPrinter-generated prototype, for the first time Trinity can also use 3D printed models in advertisements, brochures, and marketing materials. Trinity also uses ZPrinter prototypes to communicate with suppliers, such as the overseas manufacturing partner

that makes Trinity's ready-to-run vehicles. For example, Trinity developed an entirely new category of 1/18th-scale vehicles and sent a secret mockup to the manufacturer. The prototype mockup gave the partner a chance to understand the product before engineers and executives visited to hammer out details. Giving all parties a jump on the process this way lets Trinity bring better products to market more quickly, which, of course, is just what RP is about.

"The combination of our CAD software and our ZPrinter system has been the single biggest step we've taken to improve the way we refine concepts, develop products, communicate with our suppliers, and market our products," says Wood. "Today, we can prototype a complete car kit before going to production and use it for fit and function testing, and a plethora of profitable marketing activities. It's just been phenomenal." ■

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