

3D PRINTING WINS PROTOTYPING TIME TRIAL

MCD Racing Reduces Prototyping Time By 67%



“Our Dimension 3D printer has on numerous occasions saved us more than its cost by identifying problems that we were able to fix before we ordered expensive injection molding tooling.”

— Yetkin Yazici, MCD Racing

MCD Racing Race Runner V4.

MCD Racing is the world leader in producing 1/5 scale four wheel drive (4WD) radio controlled (RC) model racing cars. The Istanbul, Turkey based company produced the world's first 4WD 1/5 scale car, the first 1/5 shaft driven RC car and the world's only valved shock absorbers. MCD has won many championships such as the 2009 German 4WD 1/5 scale racing crown with three first place and four podium finishes in seven races. MCD recently unveiled its newest Race Runner V4 car which has been redesigned with over 50 new parts to deliver improved handling, performance and durability.

MCD's cars are built from over 1000 intricate parts each of which has been carefully designed to withstand the rigors of speeds up to MCD's world's record of over 60 mph. “We design the cars using the latest solid modeling systems,” said Yetkin Yazici, Industrial Designer for MCD. “But viewing an image of a part on a computer screen is not enough to determine whether the design is correct.”

In the past, it was not unheard of to spend \$20,000 to \$40,000 and a month to make injection molding tooling only to discover that the part was not right. In most cases, MCD was able to fix the tool for \$5,000 or \$10,000, but there have been times when it had to remake the tools from scratch. For these reasons MCD usually made aluminum prototypes, but these took 3 days, were expensive and did not provide a good match to the properties of the production plastic parts.

Yazici suggested that the company begin using 3D prototyping services. He started by ordering parts from several service bureaus. “One 3D printing process produced good looking parts, but they were not strong enough for use as functional prototypes.”

“We recommended Dimension 3D printers, because they use ABSplus™ modeling material, a production-grade thermoplastic that offers mechanical properties close to those of production parts,” said Kenan Donmez, Rapid Manufacturing Technologies Consultant at infoTRON, Dimension reseller in Turkey.

How Did Dimension Compare To Traditional Prototyping Methods For MCD Racing?

Method	Lead Time
Aluminum prototype	3 days
Dimension Prototype	1 day
SAVINGS	2 days (67%)

We found that parts produced on a Dimension printer had the strength needed for testing on the track,” Yazici said. While Dimension prototypes cannot withstand full-speed racing, which requires composite parts, they can be run on the race cars at moderate speeds to evaluate functionality, before ordering injection molding tooling.

MCD purchased a Dimension 3D printer one year ago. Since then, the company has produced about 200 prototype parts for its own cars, as well as many others for sister companies and for sale in its own service bureau business. “It takes only one day to produce a prototype part on the Dimension 3D printer,” Yazici said. “So we can now prototype nearly every new part to see how it looks, how it fits together with other parts and run it on the track to see how it performs before ordering production tooling.”

MCD’s ability to quickly generate additional design iterations often helps the company improve the design resulting in better performance on the track. In one example, Yazici made a rapid prototype of a gas cap that needs to be opened and closed quickly during races. Installing the prototype on the car, he noticed his hand slid off the bottom so he added a surface that stopped his hand from sliding vertically. “The functional prototype made it very easy to identify and fix the problem,” Yazici said. “Our Dimension 3D printer has on numerous occasions saved us more than its cost by identifying problems that we were able to fix before we ordered expensive injection molding tooling.”



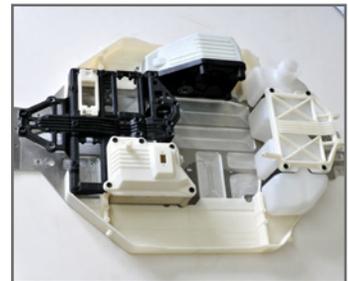
Initial prototype of gas cap (top) and improved prototype with ergonomic feature added (bottom).



Functional prototype gas cap installed on Race Runner V4.



Additional prototype parts being functionally tested on Race Runner V4.



Assembly made up completely of prototypes except chassis and gas tank.

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