



Driving Productivity

3D PRINTER AND SCANNER EXPEDITE PROTOTYPING FOR AUTO SUPPLIER

“The reduction in the time and cost of proposing new designs has enabled us to increase the number of product development projects by a factor of five without increasing our staff. We can respond more quickly to customer requests, which increases the odds of getting the order.”

– Dominic DiBlasio / Magna Closures

CASE STUDY

Magna International's Magna Closures subsidiary is a leading supplier of door modules, window systems, power closure systems, latching systems, handle assemblies, electronics, lighting systems, engineering glass and sealing systems to the global automotive industry.

“One of the greatest challenges faced by our product development team is that our products need to be tightly integrated into our customers' vehicles,” said Dominic DiBlasio, prototype manager for vehicle integration at Magna Closures. In many cases, Magna Closures designers had to prepare a proposal without computer aided design (CAD) files containing the vehicle's complex contours.

Simpler, Faster Prototyping

Previously, designers took manual measurements of the vehicle, created a rough CAD model and used that to design the new product. It took about two weeks to CNC machine a prototype that would get matched up to the vehicle. The initial prototype almost never fit, so designers had to measure the gaps and interferences between the prototype and the vehicle, adjust the CAD model, change the design and build a new prototype. Typically, it took three to six iterations to get the design right, with additional cycles required to try different designs of the new product. The complete process to build a prototype ready for customer presentation took about 12 weeks and cost an average of \$30,000, not including machining the final prototype and integrating it into the vehicle.

After Magna Closures brought FDM™ technology in-house, building all but the final prototype took no more than a day. Magna Closures also started using a service center that scanned the vehicle and provided a CAD file with the precise geometry. This enabled designers to integrate the new product with the vehicle much more accurately, often obtaining a perfect fit on their first attempt. But using the service bureau for scanning meant the designers had to generate a purchase order, and it took the service center about a week to scan the vehicle. This approach still cut the development time to six weeks and the cost to \$10,000, not including machining and integrating the final prototype.

An Exceptional In-House Combination

Magna Closures has since purchased a second FDM 3D printer because its 36 x 24 x 36 inch maximum build size makes it possible to build very large parts in production-grade materials including PC, FDM Nylon 12™ and ULTEM™ 9085 resin. Magna Closures also purchased a Creaform 3D scanner, adding even more efficiency to its development cycle.

“We selected the HandySCAN 3D [scanner] because of its high accuracy and portability,” DiBlasio said. For example, if the vehicle in the proposal is not onsite, DiBlasio can travel with the scanner to capture the data.

With a 3D scanner and a 3D printer in-house, the time required to develop a proposal has reduced to two weeks and cut the cost per proposal to about \$2,000, not including machining and integrating the final prototype.

“The reduction in the time and cost of proposing new designs has enabled us to increase the number of product development projects by a factor of five without increasing our staff,” DiBlasio said. “We can also respond more quickly to customer requests, which increases the odds of getting the order. As many of our higher volume of proposals come to fruition, we expect to see a substantial increase in revenues.”



Original geometry to be captured via 3D scanner.



3D printed prototype of new design used to assess styling, fit and finish.



Final CNC machined prototype integrated into vehicle.

METHOD	TIME	COST
Iterative design process	12 weeks	\$30,000
In-house 3D printer, scanning service bureau	6 weeks	\$10,000
In-house 3D printer and scanner	2 weeks	\$2,000
Savings vs. trial and error	10 weeks 83%	\$28,000 93%

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