"Stratasys equipment is a key technology for validating tools. It lets us put 100% validated parts in front of our customer."

Dan Leuciuc / Alseca

Alseca uses the Fortus 900mc 3D Printer to test tooling for the automotive industry.

CASE STUDY

Lightening The Load

ALSECA REDUCES TRUNK PLATE'S WEIGHT WITHOUT SACRIFICING STRENGTH

After Alseca, a Bucharest-based automotive company, was founded in 2010, one of its major expenses was the development of manufacturing tools. Those tools helped give the Romanian Tier 1 parts supplier an edge over the large, well-established suppliers that dominate the auto industry. However, in a little over a year, Alseca had spent $250,000 on production-ready tools, a significant cost investment in tooling for product development.

Early design development was labor intensive and included wooden forming tools, and separate tools for testing plastics and plastic bonding processes. That added a fair amount of time, especially when the first versions weren't perfect and new tools had to be created to test additional iterations.

Founders Claudiu Diaconescu and Dan Leuciuc decided that they needed to trim development time and cut costs in order to expand sales to automotive OEMs that now include GM, Dacia and Renault. Last year, Alseca joined the additive manufacturing movement, buying a 3D printer to create manufacturing tooling.

“The 3D printer from Stratasys lets us shrink the time to create tooling from three or four weeks to three or four days,” Leuciuc said. “We don’t have to order aluminum or steel and mill it.”

Additive manufacturing lets the development team try more design options, shorten development times and show customers a part that’s production ready.

“When you’re proposing something that’s innovative, you need to provide the comfort of proving that the tooling can be validated. There’s no better way to do that than to have a 100% representative part that’s been manufactured using tooling that can be used in production,” Leuciuc said.

Cutting kilos

When Dacia, a Romanian automaker owned by Renault, asked Alseca to develop a trunk plate, their goal was to improve gas mileage by reducing weight. These 3D printed trunk plate prototypes proved that Alseca could provide a plastic cover that was over 70% lighter than its predecessor.

Alseca used its 3D printer to quickly create tooling for its vacuum forming process. That allowed them to test different design configurations for a twin sheet structure. The two-sheet design provided extra strength while bringing a significant weight reduction over the cover’s wooden predecessor. Stratasys® 3D printing was ideally suited for this application because of the material strength needed for this manufacturing process, as well as the ability to test tool designs including hole placements, shapes and sizes.

3D printed production-ready tools made it simple for developers to compare multiple versions of the trunk plate and decreased the weight from 7.0 kg (15.0 lbs.) to 2.0 kg (5.0 lbs.), a reduction of over 70%.

“We needed to do virtual tests to see if a rectangular pattern or circular pattern provided the best combination of strength and light weight. We validated the design with five prototypes that were built using production-ready tooling made on our 3D printer,” Leuciuc said.

A winning combination

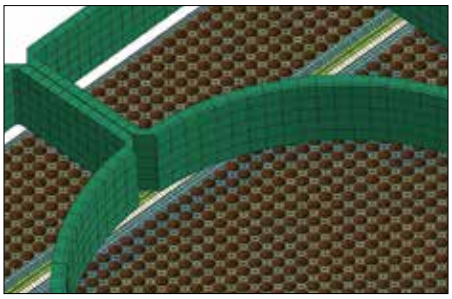
Though Alseca has only used additive processes for about a year, the technology is already transforming the company. When iterations can be made in days instead of weeks, engineers have more design freedom and can create tooling that would be difficult to make with conventional manufacturing processes. “3D printing is starting to change the way we design and engineer our parts,” Leuciuc said.

“Stratasys equipment is a key technology for validating the tools. It lets us put 100% validated parts in front of our customer,” Leuciuc said.

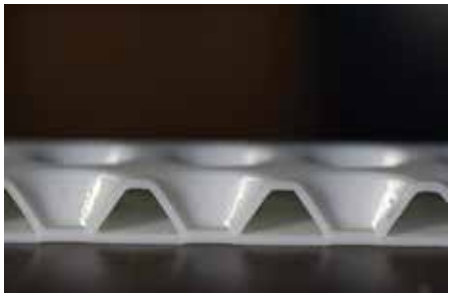
How does FDM compare with traditional tooling for Alseca?

METHOD	WEIGHT
Traditional manufacturing	7.0 kg (15 lbs)
FDM Technology	2.0 kg (5 lbs)
Savings	**5.0 kg (10 lbs) (71%)**

Mold used for testing trunk plate designs.



Trunk plate design for optimizing weight reduction and maximizing strength.



Side view of a design configuration for the twin sheet structure.

stratasys

E info@stratasys.com / STRATASYS.COM

HEADQUARTERS
7665 Commerce Way, Eden Prairie, MN 55344
+1 800 801 6491 (US Toll Free)
+1 952 937 3000 (Intl)
+1 952 937 0070 (Fax)

2 Holtzman St., Science Park, PO Box 2496
Rehovot 76124, Israel
+972 74 745-4000
+972 74 745-5000 (Fax)

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