DSM materials set to transform rapid prototyping time, cost and quality for global manufacturer

When MGS Mfg. Group came across Somos® PerFORM from DSM, it saw an additive manufacturing material that could transform the speed, cost and quality of rapid prototyping. In partnership with Realize Inc., a DSM business partner, MGS is set to cut prototyping times from 15 to five days, cut costs by up to 30% and improve new product development.

Customer

MGS Mfg. Group

Challenges

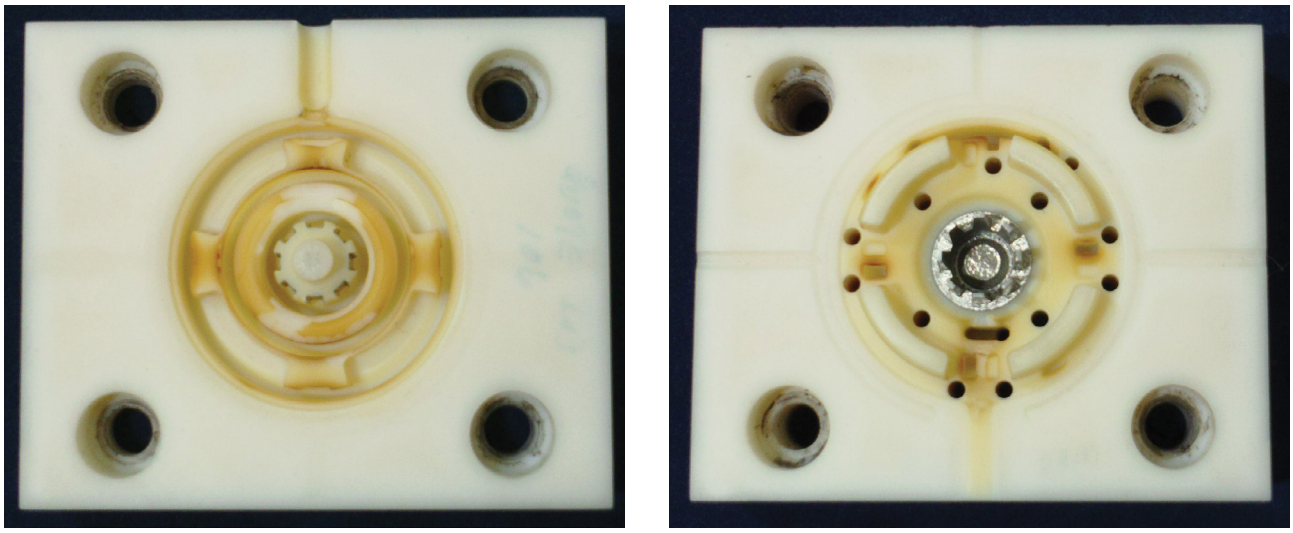
- Customer demand to bring products to market quickly
- Cost and time constraint of traditional rapid prototyping
- Volatility of most 3D printed tooling materials

Solution

- Somos® PerFORM
- Partnership with US service bureau Realize

Benefits

- Cuts prototyping times from 15 to five days
- Reduces costs by up to 30%
- Makes new product development fast and efficient
- Creates 3D-printed tools capable of producing over 100 parts



Injection molding tools 3D printed with Somos® PerFORM after molding more than 100 parts

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"MGS sees the additive manufacturing industry is focused on making significant advancements in material performance. But none yet have performed near the level that the DSM materials are performing today. There are a number of products currently available that perform quite well, but DSM is ahead of the curve."

Kevin Klotz, Engineering Manager, MGS

Challenges

MGS is a leading provider of optimized manufacturing solutions for high precision plastic products. The company offers a full range of engineering, design and tool build services across the globe and produces over 250 high-quality, high-cavitation injection mold tools annually.

With demand from customers to bring products to market quickly, paired with greater demand and complexity, businesses like MGS are under pressure to help customers design, develop and test products faster and at lower cost.

New product development frequently involves several prototype iterations with minor design changes. Continually remaking prototypes is expensive and causes delays. For MGS, this has meant finding new ways to improve injection mold tooling. MGS produces superior quality tools using high-performance CNC (Computer Numerical Control) machines and modern tool-building techniques. Highly detailed and intricate parts often require extensive machining and can take time, typically at least three weeks.

New techniques, like 3D-printed tooling and additive manufacturing materials, have the potential to revolutionize early product design and tooling. To better service customers, MGS is expanding its services with techniques such as 3D-printed rapid tooling. It allows early and increased involvement in preliminary design phases, increases revenue and forges better partnerships with customers.

Solution

At an industry conference, MGS was introduced to advanced additive manufacturing materials from DSM, specifically Somos® PerFORM.

Kevin Klotz, Engineering Manager at MGS, says, "We were very excited about Somos® PerFORM, specifically its tensile strength and heat deflection temperature. Those properties exceeded the values of the other additive manufacturing materials we had been testing."

At the same event MGS met Realize, a DSM partner and a leading rapid prototyping service bureau. Realize was the first service bureau in the US to use Somos® PerFORM.

Working with Realize gives MGS the edge it needs to get involved earlier in product design. Klotz says, "Two things are critical for MGS to improve the scope and value of its services: cost and lead time for producing prototype parts in the chosen molding material. We've gained access to Realize expertise and resources which – along with Somos® PerFORM - help us improve performance and reduce costs."

MGS tested Somos® PerFORM against other additive manufacturing materials and although most performed reasonably well, there were significant performance differences when testing high-engineering grade molding materials. Only Somos® PerFORM inserts successfully molded parts in quantities exceeding 100. They could not withstand the high processing melt temperatures and pressures of materials like Ultem®.

Benefits

Outstanding properties

"When we came across Somos® PerFORM, it had properties like stiffness and heat resistance we hadn't seen before, making it ideal for demanding applications like motorsports and aeropsace."

Jeff Costin, Realize

With Somos® PerFORM, MGS can now confidently offer customers a rapid tooling solution that cuts costs and time to produce molded prototypes.

An MGS customer produced up to 25 prototypes using a polyolefin material before the tools deteriorated. Effective testing required more than 25 parts; the customer needed more tools. MGS recommended Somos® PerFORM since it can quickly print a single tool capable of producing multiple polyolefin-based parts. That delivered significant time and cost savings to the customer and opened up access to a far greater range of molding materials.

Another MGS customer interested in Somos® PerFORM is a manufacturer whose products have 50-year lifecycles. The original tools for these products no longer exist, but the equipment still needs replacement parts. For such low quantity production needs, additive manufacturing tooling is cost effective. Somos® PerFORM makes part production quick and affordable and uses mid- to high-performance molding materials.

Another benefit of Somos® PerFORM over traditional soft tooling like aluminum or alloy steel is the ability to produce part detail. It can be difficult to easily produce fine detail in a soft tool without, for instance, applying Electrical Discharge Machining (EDM) techniques. Somos® PerFORM supports detail that otherwise could not be made and does it quickly. This cuts tooling production time from 15 to five days at a third of cost.

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