

DSM helps world-leading medical equipment maker GE Healthcare improve imaging equipment for patients and clinicians

When GE Healthcare began developing a new imaging device component, it partnered with MGS Mfg. Group, Inc. and chose DSM additive manufacturing materials for the application. GE Healthcare and MGS have transformed the product development process for this component resulting in faster prototype production and cost savings of nearly 70%.

Customer

GE Healthcare

Challenges

- High cost and time to produce high-quality prototypes
- Producing prototypes that perform like the final product

Solution

- Somos® PerFORM
- MGS rapid prototyping services

Benefits

- Makes 3D printed prototyping three times faster and less costly
- Cuts cost of rapid tooling by up to 70%

- DSM material tooling \$6k vs. steel tooling up to \$20k
- Advances rapid tooling further forward in the product development process
- Supports multiple types of injection mold plastics use for final product



“GE Healthcare’s partnership with MGS and use of DSM materials has resulted in streamlining new product development. The ability to 3D print molding inserts and then test design iterations with real materials has made product development much more robust. It also has the added benefit of making the designs more ‘moldable’ as we transition towards the creation of expensive production tooling.”

Jesse Schrimpf, Senior AME - Additive, GE Healthcare

Challenges

Reducing lead time and costs to make prototypes that perform like final product is a significant challenge faced by all product development teams. GE Healthcare successfully produces ‘printed’ prototypes for its product development groups in-house but needed to expand its capability to include printing tooling inserts that can make ‘molded’ prototypes. GE Healthcare knows that for truly effective new-product testing, it is imperative that prototype parts closely match the finished product in color, strength, and chemical resistance.

Kevin Klotz, Engineering Manager at MGS - a DSM business partner and a US rapid prototyping specialist - says, “3D printing additive materials have been used to print tooling inserts for several years. However, optional injection molding resins that can be processed using additive material (AM) tooling was limited to resins that process at low temperature and pressure. Typical examples include the polyolefin and elastomeric resin families. Even so, AM generated tooling rarely molded greater than 50 parts before failure.”

GE Healthcare has partnered with MGS to help refine and optimize its product design and development process, specifically targeting shorter lead time, lower cost and high-performance resins.

Enabling manufacturability

“Early involvement by MGS and DSM in design considerations for manufacturability for customers like GE Healthcare have significantly improved the prototyping stages of product development which leads to a seamless transition from prototype tooling to high-quality production-grade tooling.”

Kevin Klotz the Engineering Manager at MGS

Development of an imaging device component for GE Healthcare demonstrated how MGS partners with customer product design teams to identify the best 3D machine/material system to generate rapid tooling and molded prototypes.

A key part of this is how MGS helped GE Healthcare build its injection mold design skills early in the production process. For the GE Healthcare imaging device, and many other projects, MGS had recommended DSM additive manufacturing materials.

Solution

“DSM products, like Somos® PerFORM, make possible additive manufactured tooling inserts that perform exceptionally well during injection mold processing of various resins. Somos® PerFORM tool inserts withstand the pressures, temperatures and abrasive characteristics of high-performance molding resins that other additive manufacturing materials simply cannot withstand,” says Klotz.

The GE Healthcare imaging device component needed 100 or more parts molded of a material that demanded challenging process conditions. In one test, that mirrored a metal tool, MGS used Somos® PerFORM to produce printed inserts to successfully mold over 100 parts. Several other 3D printed materials performed admirably during similar testing, but none performed nearly as well as the DSM material.

Benefits

DSM materials are playing a key role in helping businesses reduce cost and time to manufacture and bring new products to market. For the GE Healthcare medical instrument project, Somos® PerFORM enabled MGS to produce tooling three times faster than traditional steel tooling, at a third of the cost. The tool produced using Somos® PerFORM inserts cost near \$6,000 compared to a steel tool which would have cost upwards of \$20,000. Furthermore, the quality of the molded parts using Somos® PerFORM inserts were so good that GE Healthcare was able to use them for customer testing.

Another key benefit is being able to quickly and cost effectively produce a tool when changes are needed. This helps make product design and development more effective. Using Somos® PerFORM, designers can produce a realistic physical part, test it, and if necessary, make changes and quickly produce another tool.

In addition, producing tools out of Somos® PerFORM makes the molding of prototypes possible in materials such as glass-filled nylons, polyesters, and even filled Polyetherimide materials.

MGS is now providing this service to several clients. Klotz says, “The ability to successfully provide prototype parts molded of engineering-grade materials is the differentiating factor between Somos® PerFORM inserts and inserts printed in alternative SL resins.”

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