



DSM material improves quality of investment casting process with 20% cost and time savings

US based product and tool development service bureau, Peridot, Inc., is using DSM Additive Manufacturing materials to transform investment casting and open up new business opportunities.

Executive Summary

Customer

Peridot, Inc.

Challenges

- Protect brand reputation for quality of service
- Strive to continually evolve and innovate operations

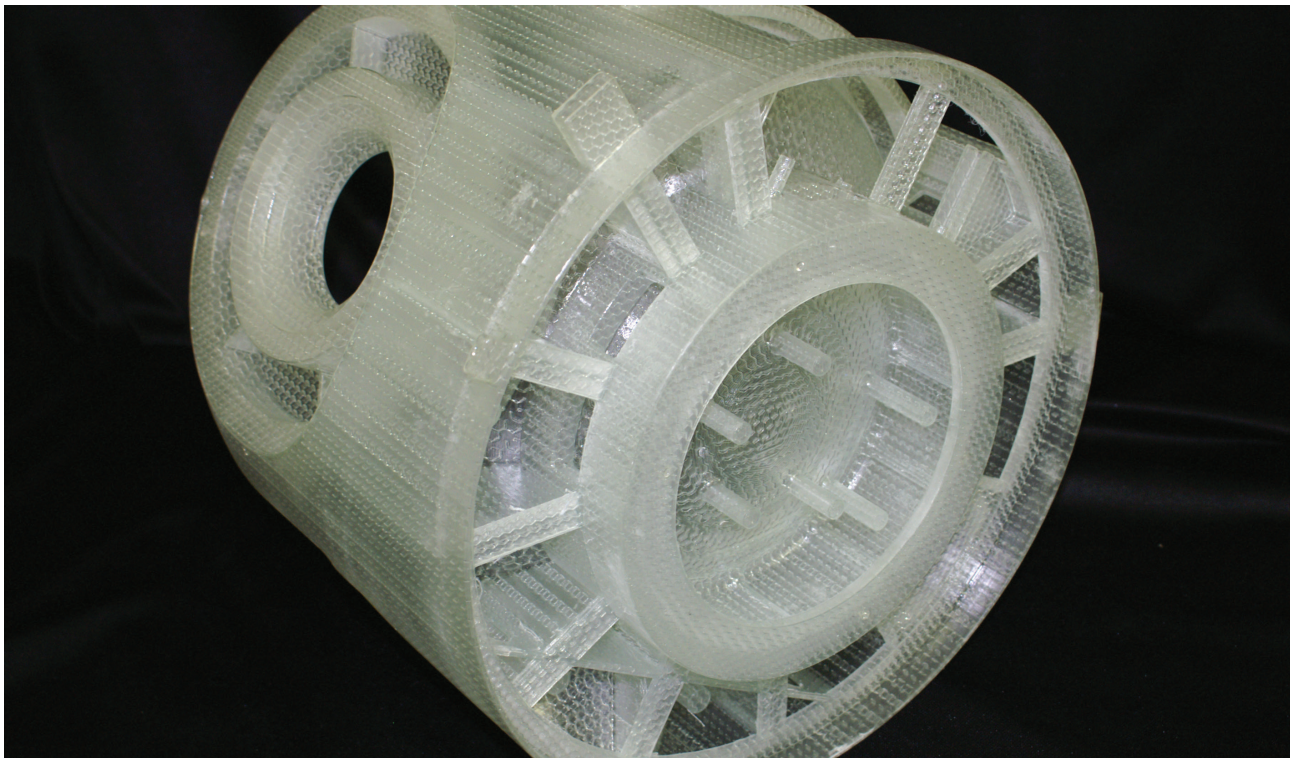
Solution

- Somos® Element
- Fast, low cost investment casting

Benefits

- Cuts investment casting costs and time-to-market by up to 20%

- Produces a high-quality finish, makes casting patterns lighter and easier to handle
- Expands business operations, opens new market opportunities
- Offers a viable, cost-effective alternative to 3D metal printed manufacturing



“DSM’s Somos® Element is proving to be a very important innovation for Peridot. We have a long and rich history in metal casting products and services and we’ve managed to build a formidable reputation. Somos® Element is quickly becoming a critical part of our business as it provides us with a new, more reliable and better-quality alternative to metal printing.”

Dave Hockemeyer, President of Peridot

Challenges

Peridot, Inc. is a product and tool development service bureau that has been providing several different investment casting services to the marketplace for over 20 years. It serves multiple industries and has built a compelling reputation for excellent quality and service. Customers comprise many major OEMs including Whirlpool, Caterpillar, Emerson, US defense and aerospace contractors.

Peridot develops casting patterns for foundries and provides investment casting techniques to produce finished products for end customers. Any changes in techniques and/or materials are closely scrutinized to

Somos® Element performs well

“There is increasing demand from foundry customers for high-quality patterns that produce flawless, end-use parts quickly and efficiently. With Somos® Element, finally we have a material that burns out and performs well in the foundry. It is a significant improvement on other SL patterns and means we can help customers produce clean, smooth parts as well as helping us create beautifully flawless titanium and alloy metal parts.”

Dave Hockemeyer, President of Peridot

ensure high quality. Peridot was an early adopter of using 3D printed patterns for some of its casting portfolio. It used traditional investment casting techniques for many applications and chose 3D printed patterns for speed. But accuracy and ash content of some SL materials were a concern and limited the use of this process.

Solution

When DSM introduced Somos® Element, Peridot was intrigued as the material was tailored specifically for 3D printed investment casting pattern applications. The material is antimony-free and designed to improve the repeatability and quality of 3D printed casting. Also, patterns created with Somos® Element leave only trace amounts of ash residue after burnout and have excellent green strength which reduces breakage. Peridot saw Somos® Element as an opportunity to transform investment casting.

Peridot tested Somos® Element with one of its customers, a foundry that manufactures pump equipment. It used Somos® Element to create casting patterns to produce various titanium parts for pump equipment housings. These parts have tight tolerances, so this was the perfect application to test patterns made with this new material.

Benefits

Somos® Element reduces the cost and time it takes to create parts using the investment casting process. Peridot says it cuts costs by up to 20 percent and reduces time-to-market between 10 percent and 20 percent.

Somos® Element achieves these savings because of features such as less burn-out ash, efficient processing and improved 3D pattern production. Peridot can now reduce the number of spare patterns it produces because of the improved quality of the 3D printed pattern made with Somos® Element.

The DSM material is also helping Peridot improve the quality of services and products it delivers to customers and is opening new market opportunities. In a short amount of time, Somos® Element projects now account for 30 percent of the company’s SL work and is expected to increase to 50 percent within a year.

The company says that as well as Somos® Element cutting production time, the process allows hollow patterns to be created, which also reduces the volume of material needed. Peridot is able to create these hollow patterns using an internal honeycomb structure for minimal mass. Hollow patterns reduce part weight by as much as 50 percent (compared to other 3DP patterns) which helps to reduce shipping costs and makes pattern handling in a foundry environment easier. Somos® Element also delivers a better-quality finish than other investment casting processes, which reduces finishing and labor needed in post-production. In addition, Somos® Element improves quality with its low residual ash capability meaning a much cleaner, pit-free surface finish for final products.

One area where Peridot sees Somos® Element helping to open new markets is Direct Metal Laser Sintering (DMLS) or 3D printed metals, where casting replaces direct manufacture. Using Somos® Element with investment casting is often more cost effective, repeatable and more reliable. Also, until firm quality standards are established for products manufactured using DMLS, it can be challenging for high-stress products such as pumping equipment or for mission-critical applications like aerospace.

NOTICE: Somos® is a registered trademark of Royal DSM N.V. Somos® is an unincorporated subsidiary of DSM Desotech Inc. The information presented herein is believed to be accurate. However, DSM Desotech expressly disclaims any product warranties which may be implied including warranties or merchantability and/or fitness for a particular purpose. Purchasers are responsible for determining the suitability of the product for its intended use and the appropriate manner of utilizing the product in purchaser’s production processes and applications so as to insure safety, quality and effectiveness. DSM Desotech reserves the right to change specifications of their products without notice. © 2018 DSM IP ASSESTS B.V. All rights reserved.

www.dsm.com

0007-October 2018

