FORWARD AM
Innovating Additive Manufacturing

BASF
We create chemistry

Leak Test Seals Exceed Performance Expectations

State-of-the-art materials and advanced 3D printing technologies provide strength, accuracy and reduced production costs

OVERVIEW

Battery end-of-line leak testing validates that the coolant loop and the battery pack is properly sealed. To complete an accurate test, custom leak test seals are manufactured and used to completely close off openings of various shapes and sizes, in areas of low clearance during the test. This makes them very challenging to manufacture using traditional machining methods.

Using BASF Forward AM's Ultracur3D® ST 45 B resin in combination with the Stratasys Origin® One P3™ DLP printer, Valiant TMS was able to achieve great results in finish quality while also reducing the manufacturing cost.

QUICK FACTS

Materials:

- Ultracur3D® ST 45 B

Technology:

- P3™ DLP

Partner:

stratasys

VALIANT TMS

Valiant TMS is a global company with over 1,500 employees working at 20 facilities spread throughout 11 countries. They specialize in welding and joining, automated assembly and test, industrial parts washers, final assembly, and material handling systems.

They design, build and integrate intelligent automation solutions that leverage new technologies to create smart and sustainable factories for the world's leading companies.

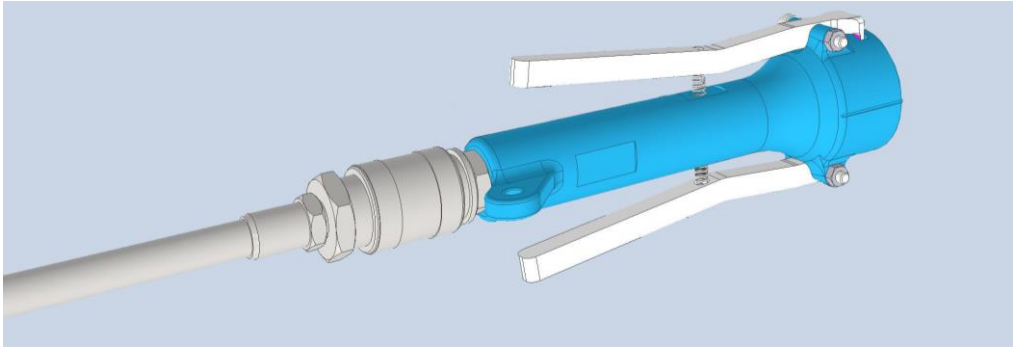
VALIANTTMS.COM

Reduced production time from 10 days to 8 hours

Lowered production costs by 150%

Challenge: Utilize best-in-class material for the application along with top-tier technology to produce it

Many of the sealing areas on the battery are plastic electrical connectors which can be easily damaged. Therefore, it is crucial that the seals are non-conductive and do not scratch or damage the connectors.



Previous seals were made with machined aluminum or Delrin bodies, but this made them bulky and not ergonomic leading to the potential damaging of the electrical connectors.

Solution: A 3D printed Leak Test Seal meeting the part requirements of strength, accuracy, and surface finish

Through the utilization of Additive Manufacturing, the production time required was significantly lower than that of traditional manufacturing. 3D printing also enabled Valiant TMS to lower the cost by 150% when compared to alternative manufacturing.

The material properties of Ultracur3D® ST 45 B become isotropic which improves part strength while also offering a smooth surface finish superior to other manufacturing technologies. Additionally, the accuracy of the part is much higher, meaning secondary post-processing may be eliminated. Printing the tools with Ultracur3D® ST 45 B also made the Leak Test Seals smaller to better fit in the restricted space along with making the assembly process easier.

"It's clear that the way we use additive manufacturing in our company draws the attention of the OEM's and it shows that we have a story to tell in the AM industry. Working closely with partners like BASF Forward AM and Stratasys, we can create case studies that can provide other companies a recipe for success as they begin their AM journey. Our success leads to OEM's success and eventually provides a better product to the market."

-- Adrian Pop, Additive Manufacturing Leader at Valiant TMS

Learn more about Ultracur3D® ST 45 B: