Case study:

3D printed fixtures for a Laser welding machine

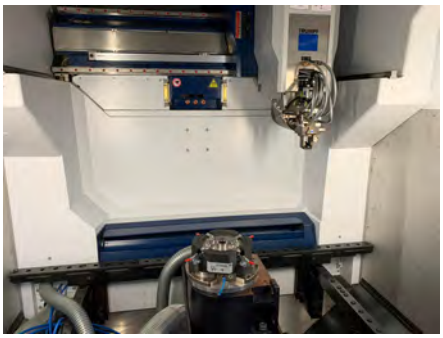
The company Primetall GmbH from the Oranien city of Dillenburg in Hessen stands for customer-specific solutions made of stainless steel and has many customers in various areas of industry. In addition to medical technology, laboratory technology and gastronomy, customers also come from the aviation and packaging industry.

The core business is sheet metal processing as a contract manufacturer. From laser & punching, over edging & welding, to grinding, bending and finishing.

Challenge

Primetall GmbH was faced with the challenge that different fixtures were needed for a laser welding system, as they were investing in a new system. Until now, these fixtures were conventionally made of aluminium.

In order to achieve an even higher speed of the rotary axis, the devices had to be made lighter. In addition, the fixtures were very expensive to manufacture and it was very difficult to integrate a gas duct into the conventionally manufactured fixtures.



Implementation

Primetall GmbH decided to invest in a Markforged 3D printer of the X series.

The Markforged 3D printers are able to integrate a continuous carbon fiber into the fixtures via a second nozzle in the print head.

Now it is possible to manufacture light, but nevertheless highly stable and heat resistant fixtures, which are in no way inferior to the fixtures made of aluminium.

In the course of some considerations, these fixtures were optimized with additive manufacturing.

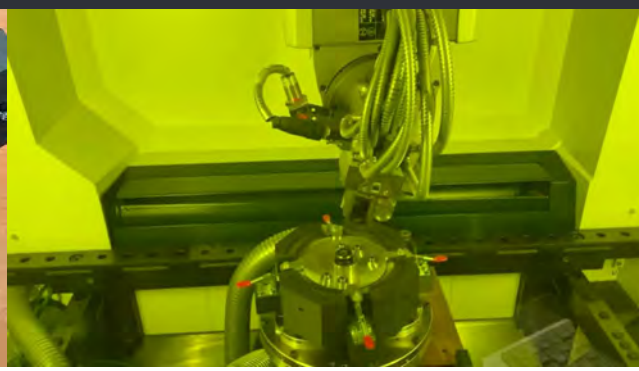
The 3D printed device consists of the base material ONYX and was additionally reinforced with a continuous fibre. The mounting points for the zero-point clamping system can be attached directly to the fixture, thus reducing machine set-up times to a minimum.

A further advantage of additive manufacturing is that a gas duct can now be integrated into the fixtures with which forming gas is guided. Forming gas is an important factor for clean welding. Now it is possible to guide the forming gas exactly where it is needed - with only one connection. So literally "drilling around the corner!"

Mark3D
Print Stronger

primetall





Why Markforged?

Markforged offers a super smart system. From online editing and direct download to the machines. The 3D printers are of very high quality and function perfectly, explains Raphael Willgenss, Operations Manager at Primetall GmbH.

By implementing Markforged composite fiber technology into the manufacturing process, the previously conventionally manufactured fixtures could now be transferred to 3D printing.

Thanks to additive manufacturing with Markforged, the fixtures are now much lighter with the same stability.

The 3D printed fixtures compared with the conventionally manufactured aluminium fixtures:

Over 1000€ are saved per fixture!

The average cost of the aluminium fixture is around 1200€, depending on the design.

On the otherside the 3D printed fixtures costs about 150€. This corresponds to a saving of over 1000€ per fixture!

This is manufacturing redefined.

The resulting savings have contributed to an immediate return on investment for the 3D printer. Primetall GmbH is now going through everyday processes to find further savings potential.

Cooperation with Mark3D

"We are very happy with the decision to invest in a Markforged 3D printer.

We work very closely with the Mark3D. If we have any questions, they help us in any case. We can only recommend the Markforged 3D printers and the Mark3D as partners". - Raphael Willgenss, Operations Manager Primetall GmbH

You can find more pictures and videos of the fixtures here: https://bit.ly/3aKO4uE