

Mawe presstec's F170 3D printer allows customization and adaptation in the production of fixtures.

Streamlining Production

Additive Manufacturing With the Stratasys F170 3D Printer Replaces Metal Tool Production at mawe presstec GmbH

Whether it's tools, parts or products, mawe presstec GmbH in Hatzenbühl, Germany, has 30 years of experience in sheet metal manufacturing, providing custom solutions for key sectors such as aerospace, automotive, medical, engineering and construction. Custom tools and fixtures for different machinery and processes are essential for the delivery of high-quality products – themselves often customized.

Transforming the Factory Floor

Typically manufactured in various metals such as milled aluminum, mawe presstec recognized that these tools and fixtures were time-intensive and costly to create, reorder or replace. This led the company to explore replacement production technologies. Aware of the benefits offered by additive manufacturing, Managing Director Marco Werling spearheaded the move to invest in an industrial grade Stratasys F170™ 3D printer to create in-house custom fixtures and tools for the factory floor.

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Marco Werling

Managing Director, mawe presstec GmbH



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The results, explained Werling, have been transformational. Mawe presstec has shortened development cycles and processes considerably using thermoplastics to 3D print fixtures and tools for production floor machinery.

“Additively manufacturing our tools and fixtures with the Stratasys F170 has reduced part production time and streamlined the overall development processes on our factory floor,” he said. “Producing fixtures in advanced thermoplastics delivers gigantic time savings for us – as much as 50% for certain parts – while also ensuring a higher level of customization and flexibility. The F170 can run 24/7 – this means higher productivity and the ability to print nonstop.”

Mawe presstec often requires customized fixtures to achieve certain geometries and designs on sheet metal projects. These fixtures also have to be updated periodically to match specific job needs. One example is a factory floor fixture that needed changing to accommodate flap hinges. This would normally be manufactured in multiple stages or sourced externally but mawe presstec was able to create the fixture with hinges in one print operation on the F170.

Reducing Fixture Production Costs

The F170 has delivered substantial time savings since its installation and also met mawe presstec’s objective to reduce manufacturing costs. Replacing metal fixtures and tools with additively manufactured counterparts has decreased the cost-per-part and proven valuable when handling sheet metal parts.

“We are saving around 20-30% on cost per part, simply because of the reduced material costs compared to the metal we used previously for fixture production,” Werling commented.

“We also reduce material waste by additively manufacturing.”

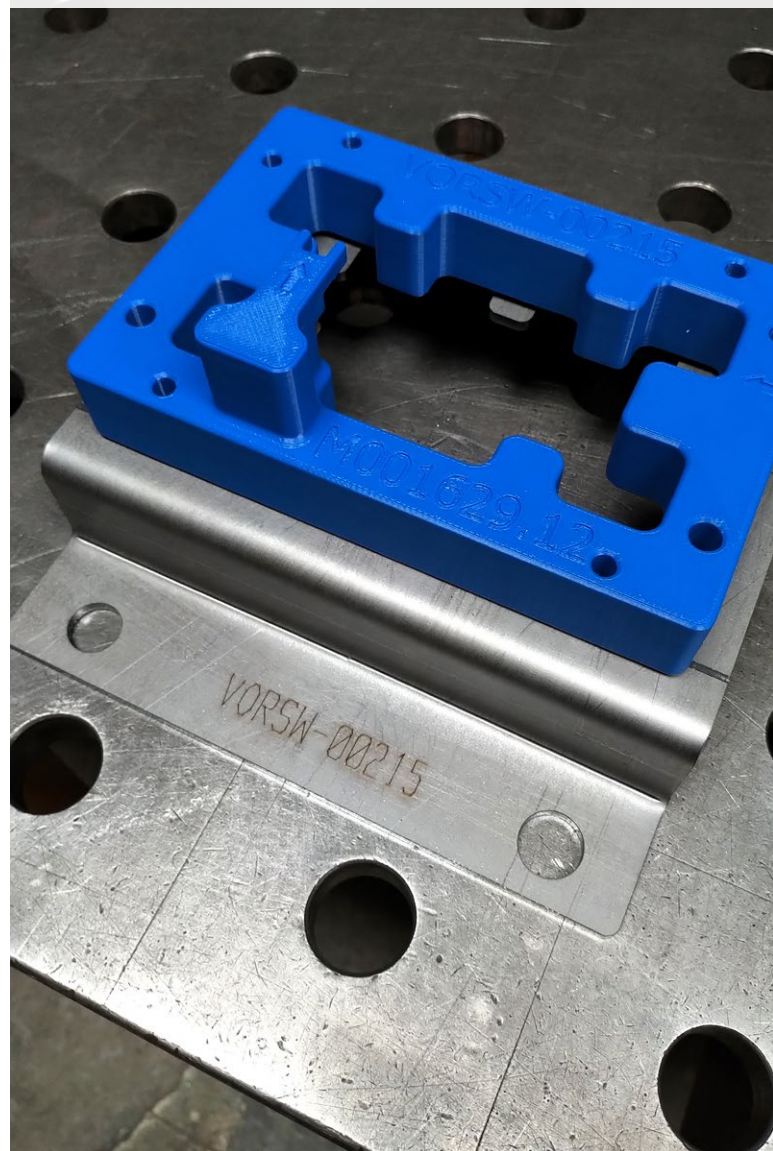
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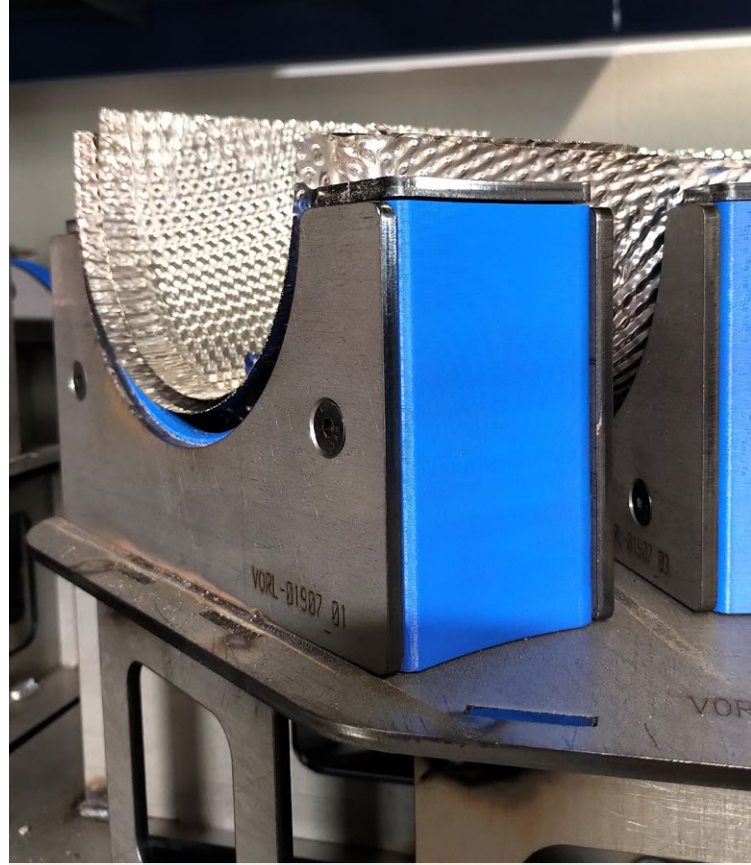
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Engineering-grade ABS material is mawe presstec's material of choice since it meets all the criteria to make fit-for-purpose fixtures. Fixtures demand a high level of durability and impact resistance to withstand the forces applied to them during the production process. At the same time, heat resistance and geometric precision are necessary to ensure production tools function effectively.

The attributes of FDM® ABS material provide further advantages for fixtures that come into contact with polished metal products. Metal fixtures would scratch the surfaces of polished products in the bending and shaping stages of production. But the rigidity-to-softness ratio of ABS eradicates this problem. Additionally, using the Advanced FDM utility within GrabCAD Print™, the fixtures can be printed to avoid seams on the surfaces in contact with the workpiece, further ensuring a smooth, scratch-free finish.

Advancing the Design Cycle With 3D Printing

Beyond successfully incorporating FDM ABS thermoplastic into fixture and tool production, mawe presstec has extended the use of its F170 3D printer to prototyping. As Werling explained, this has helped advance the company's customer engagement considerably, since product prototypes help potential and existing customers visualize designs better. Difficult design requests can be analyzed and solved much faster with a physical prototype, which accelerates the overall sales process.



Fixtures printed with ABS material are sufficiently strong but soft enough to prevent scratching polished sheet metal parts.

“The F170 has positively impacted our services, as we are able to use 3D printed prototypes effectively in sales discussions and design verification,” Werling added. “Another great tool in shortening the product design cycle is the GrabCAD Print software, which we use to quickly and easily convert CAD files to 3D prints. Specifically, with the newest updates in the last year, the GrabCAD software has made the design stage of our in-house production a lot more comfortable and streamlined.”

Mawe presstec has seamlessly integrated the F170 into its tooling and fixture production, as well as prototyping needs of the business. It's a valued addition to the machinery park and production capabilities and allows mawe presstec's sheet metal experts to focus on the essentials: delivering the best possible sheet metal products to customers.

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