

Case study

BMF Bernstein Mechanische Fertigung GmbH



3D printing in industrial equipment manufacturing from prototype to high volume production



In 2007, Dörte and Ronny Bernstein founded BMF- Bernstein Mechanische Fertigung GmbH in the Grüna district of Chemnitz.

As a service provider for the CNC production of individual parts, small series and prototypes, BMF GmbH works for customers from the automotive industry, mechanical and industrial engineering, medical technology, luxury goods production and many more.

From a service provider with 2 employees, a globally operating company for mechanical and industrial engineering has grown.

SMART SURFACE CONTR  **L**®

New tasks require new solutions.

For this reason, BMF GmbH developed a new technology for the realization of defined and repeatable surfaces in 2012, the automatic shot blast machines Twister and Tornado.

Initially used only for the preparation of subsequent processes (e.g. anodising), the SSC technology is suitable for a wide range of applications.

The possibility of producing homogeneous and repeatable surfaces for the first time is being used more and more in areas such as aerospace, medical technology, automotive engineering and, of course, additive manufacturing.

The Challenge:

The multi-functionality of Smart Surface Control technology requires a large number of different components, some of which require complex manufacturing processes. Previously, this required a long production lead time and costly storage. Customer requirements, for instance with regard to special fixtures, could only be realized to a limited extent.

The goal was to replace as many machine components as possible with additively manufactured parts, to minimize inventory and to streamline or shorten production processes.



"We only manufacture what is immediately needed. Our inventory is now on the filament spool"

Chris Tettalowsky, Head of department blasting equipments
BMF GmbH

Implementation:

The BMF GmbH decided to invest in a Markforged 3D printer. In the first step only components without mechanical load were produced. For example parts for the machine status light (left picture) or also frames for viewing windows (right picture).



In-depth tests, including long term tests, showed that the base material onyx is also excellently suited for components with high mechanical loads. With the unique fibre reinforcement it is possible to achieve even better results. Today, workpiece carriers, covers and a wide variety of workpiece holders are produced using Markforged technology. One challenge is the design for 3D printing. Here we have completely different requirements on the design than it is the case with conventionally manufactured parts, but also offers the opportunity to realize geometries that cannot be produced conventionally or can only be produced at a very high cost.

Result:

By implementing the Markford systems in the production process, a significant proportion of the parts previously produced conventionally could be transferred to 3D printing. Through the specific implementation, the good collaboration between design and assembly, the inventory could be significantly reduced, the production effort minimized and the functionality increased.

„With Markforged we save resources and we also free up capacity in conventional manufacturing“,

Ronny Bernstein, CEO BMF GmbH



Why Markforged:

Apart from the great price-performance ratio, the ease of use of the Markforged machines and the Eiger software was impressive. Initially intended as an introduction to 3D printing technology, a large number of different parts for Twister and Tornado are now produced on several Markforged printers. The components made of the base material Onyx have proven to be very wear-resistant and break-proof even under extreme stress. Therefore, they can also be used in the blasting area without any concerns. Compared to milled components, a weight reduction of more than 50% can be achieved. The lead time for production is only hours.



**"Special customer requirements
can be realized in the shortest time
and at low cost"**

Marc Krause, Technical Sales
BMF GmbH

Summary:

The Markforged technology has become an integral part of manufacturing and the equipment. In the future, further fields of applications will open up and be filled with life. The low investment costs in 3D printing have proven to be a big and successful step into the future of BMF GmbH.





