



BMF GmbH

INDUSTRY
APPLICATION
LOCATION
PRINTERS
MATERIALS
SOFTWARE

Metal fabrication
Automated blasting equipment
Grüna district of Chemnitz, Germany
1 Onyx Pro, 1 Mark Two, and 4 Onyx Ones
Onyx
Digital Source



THE CUSTOMER

BMF GmbH invented a device to automate media blasting of small parts, traditionally a manual operation. Typically, a worker would direct a high-pressure air nozzle containing the blasting medium at a part to smooth its surface. This process was time-consuming and error-prone. BMF founder Ronny Bernstein had a better idea.

To solve these problems, he invented the Twister blasting cabinet. It contains removable tree-like workpiece holders that suspend multiple parts from their arms. To accommodate unique part geometries, these workpiece holders are often custom-designed to securely hold the parts during the blasting process. These fixtures are attached to a rotating platform.

Automated centrifugal streams then blast the rotating parts, providing faster and more uniform cleaning while minimizing labor. BMF currently has over 200 Twister customers worldwide.

When BMF first began producing Twisters in 2014, all of the parts were CNC machined. But in 2018, founder Ronny Bernstein purchased a Markforged Mark Two printer and began experimenting with 3D printing its components using Onyx. The results were so successful that BMF converted its Twister part production to this rugged material.

BMF also provides CNC machining services to a growing number of customers.

INDUSTRY HIGHLIGHTS

1

Providing its customers with secure, distributed access to print replacement parts for their machines has enabled BMF to grow, manage its demand and support its customers better.

2

BMF's distributed parts model has opened up opportunities for it to provide workholder design services to its customers.

3

Digital Source has enabled BMF to build a more sustainable business by significantly reducing the amount of time spent managing, printing and shipping replacement parts.

THE CHALLENGE

Because the blasting medium is abrasive, 3D printed and CNC-machined gears and other parts inside the blasting cabinets become eroded; BMF recommends that they should be replaced approximately every six months. As BMF's 3D printing and CNC machining businesses grew, it was taking longer to produce replacement parts and ship them around the world to its customers. "In some cases, they had to wait up to six weeks to receive replacement parts, an unacceptable amount of downtime for many of our customers," founder Ronnie Bernstein recalls.

It was also taking BMF's workers longer to schedule time to print parts for new Twister machines. In addition, the growing Twister parts business was also starting to interfere with the CNC work BMF does for other customers, he points out.

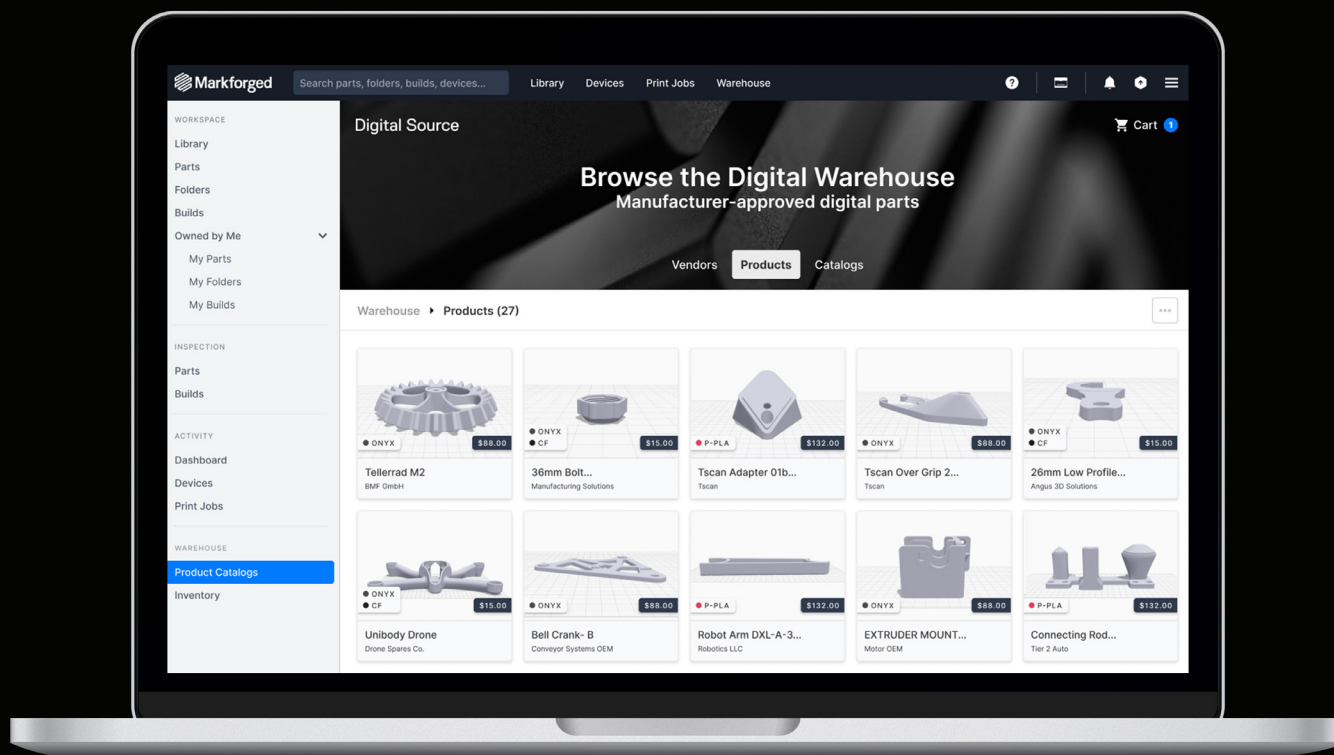
Also, printing, packing and shipping parts to its customers was becoming very time-consuming for BMF's logistics team. Two of them were focused on

fulfilling customer part orders full-time. The problem was getting worse as the company's customer base grew.

According to BMF development engineer Thomas Mueller, downtime can be very expensive for BMF's customers. He explains why: Each workholding fixture may hold 10 parts, and the rotating blasting cabinet platform can hold 10 fixtures at a time. Twister's cycle times are typically just a few minutes, meaning that each day a Twister machine isn't running, as many as 50,000 parts per day are not sandblasted and other secondary processes may be idled in customer facilities, too, he estimates.

Although customers loved the performance of their Twisters, many of them relied on BMF's engineering expertise to design workholding fixtures to hold their unique parts. This further strained the company's already limited resources. There had to be a better way to get parts to its worldwide customer base.





“Through the Digital Source platform, the customer can print the component they need the moment a failure or wear is detected. The part is available in a matter of hours and the machine can continue to run. We can collapse downtime from an average of 14 days to one day.”

— RONNY BERNSTEIN

OWNER

BMF GMBH

THE SOLUTION

Markforged Digital Source enables customers to create a digital warehouse that acts as an electronic inventory for their customers to securely purchase spare parts to print on demand.

Bernstein points out that Digital Source and Markforged printers are an excellent choice for BMF's customers because they're intuitive and easy to use. BMF began digitizing certain parts of its inventory with Markforged Digital Source, which provides each Twister customer access to a digital warehouse containing BMF-approved designs for replacement parts.

Bernstein says that in many cases, printing replacement parts and workholding fixtures for their Twister machines on their Markforged printers is many of their customers' first exposure to 3D printing.

The biggest benefit of Digital Source, he points out, is that it eliminates the long lead times that were formerly required for BMF to 3D print customer parts and ship them around the world. BMF's customers are ecstatic because they have eliminated a big source of downtime.

Bernstein appreciates the level of security that's built into Digital Source, which not only protects BMF's intellectual property but helps ensure that customers are only using OEM-approved parts in their Twister machines.

"Our machines contain very expensive and high-quality components. It's essential that all components, including spare parts, meet the same stringent quality standards as the parts we send directly from our warehouse to the

customer. That's why it's critical that the parts cannot be manipulated and the customer can only print the exact original parts," he emphasizes.

Bernstein adds that Digital Source also eliminates part versioning problems. In other words, if BMF makes an engineering update to a part, the latest version of the print file is automatically added to the part inventory of all customers who have access to it and the old print file is removed.

Digital Source has opened new and unexpected sources of business for BMF. Because each part its customers need to sandblast has a unique design, each workholding fixture must also be uniquely constructed to securely hold it.

Fixture design is often an iterative process. Bernstein says Digital Source makes it easy for BMF to upload a fixture design to a customer's inventory, which they can print and test on their Twister machine. If its design needs to be tweaked, Mueller can update the CAD drawing and repost the new digital part design to the customer's catalog. This becomes another way for BMF to make additional profit without having to spend money on printing and shipping.

Finally, now that some of its customers are printing their own replacement parts and workholding fixtures, BMF can respond faster to 3D printing and CNC machining jobs for its other customers. Mueller says the BMF team can also print parts for new Twister builds without lengthy production scheduling delays.

THE FUTURE

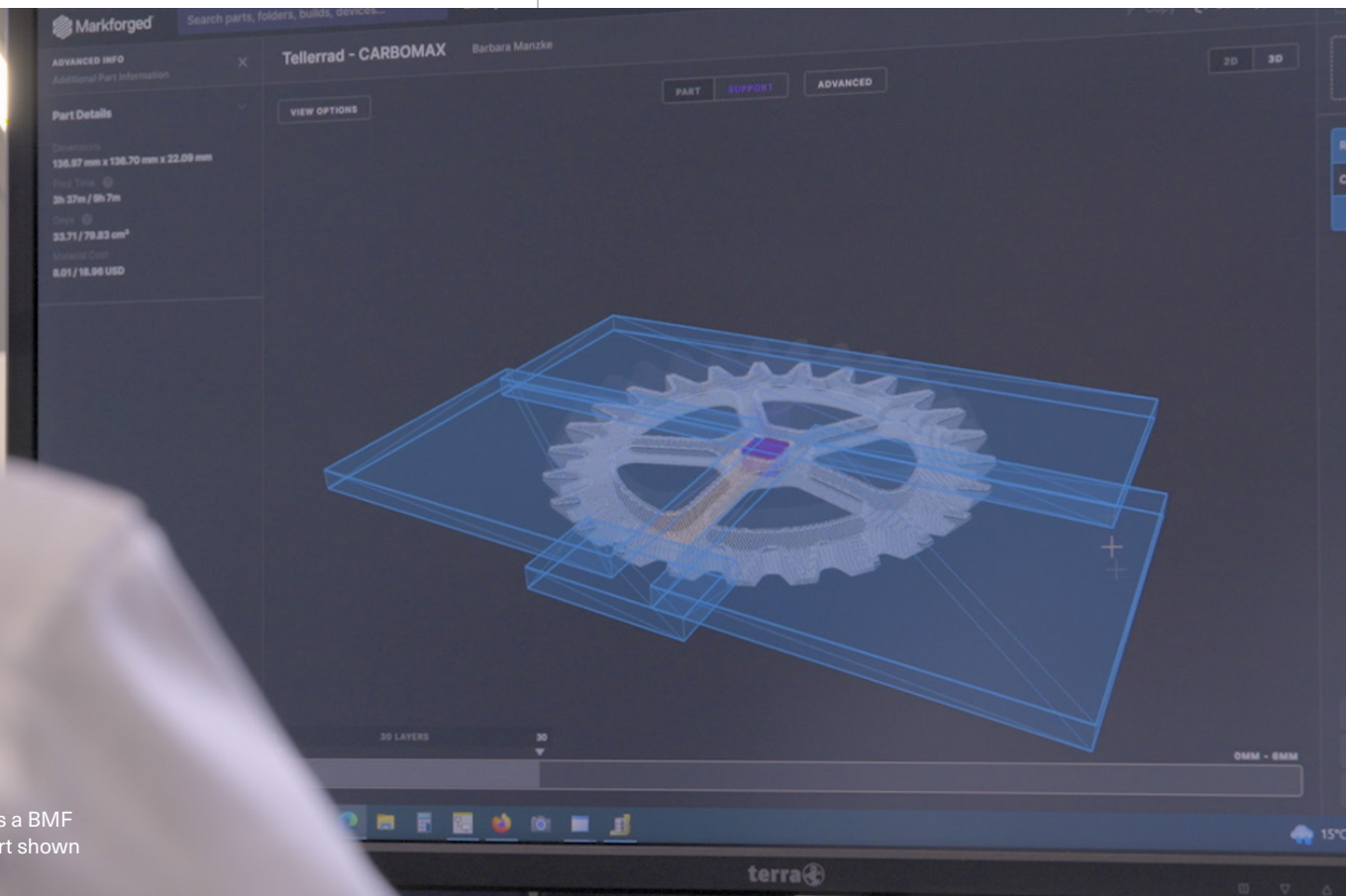
BMF already has 20 of its customers using Digital Source, but Bernstein hopes to grow that number significantly now that Digital Source has proven its value. For those BMF customers who cannot afford to invest in a Markforged printer, he said they can partner with a local 3D printing service bureau to get replacement parts printed quickly.

Bernstein says Digital Source will enable BMF to continue to grow without overwhelming the company's limited staff and shop space. It also frees up staff time to focus on higher value-added tasks that can help grow the business. "Thanks to Digital Source, our work can become more creative," he concludes.

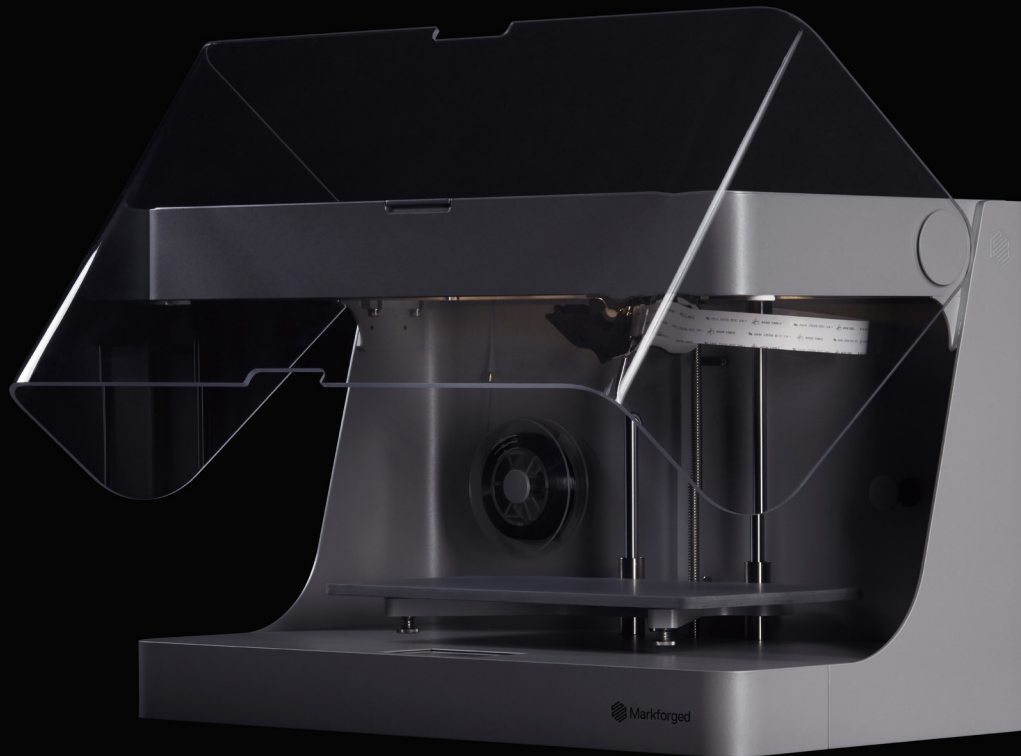
“Markforged offers a solution that works for both the customer and the manufacturer of parts. I think it has great potential and will establish itself as a revolutionary solution for many manufacturers.”

— RONNY BERNSTEIN

OWNER
BMF GMBH



Showcased above is a BMF Twister machine part shown in Eiger.



Showcased above
is the Mark Two.



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