SIEMENS
Ingenuity for life

Multi-industry

MBFZ toolcraft

Global additive manufacturing leader uses NX to improve traceability, save time and reduce errors

Product

NX

Business challenges

Early adopters to additive manufacturing

Many tests required with multiple software solutions

Potential loss of traceability during multistep process

Chance for errors and loss of time with required data translations

Keys to success

Siemens' NX additive manufacturing solution enables toolcraft to perform all the functions in their process chain

Consolidate the process for customers that request traceability

Results

Reduced work time and error rates

Improved traceability

Communicated changes faster and easier

MBFZ toolcraft uses Siemens PLM Software solutions to accelerate 3D metal printing processes

Finding the best solution

MBFZ toolcraft GmbH (toolcraft) offers many manufacturing services, including metal laser melting, robotics, injection molding and mold making, turning and milling, spark erosion, engineering, measuring and testing. Metal laser melting is of particular significance.

Founded in 1989, toolcraft started as a one-man operation in a garage with a used three-axis machine. They have grown to approximately 350 employees with more than 70 computer numerically controlled (CNC) machines. Toolcraft supports industries such as aerospace, medical technology, semiconductors and automotive.

In 2011, toolcraft purchased its first additive manufacturing machine. An early entrant in the 3D printing sphere, toolcraft now possesses ten powder bed additive manufacturing machines, and is advancing to powder nozzle technology. In addition to 3D printing, toolcraft offers the entire process chain starting from design and ending with nondestructive testing on the part. All told, toolcraft offers a seven-to-nine step print process to their customers, all under one roof.

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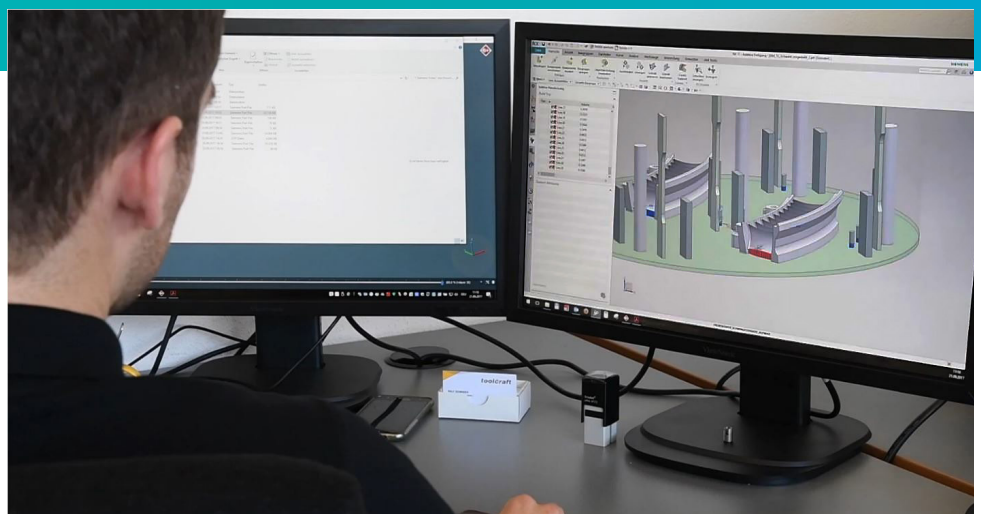
Christoph Hauck
Managing Director
MBFZ toolcraft GmbH



In 2011, additive manufacturing was more closely associated with prototyping. A high volume of tests needed to be performed to be successful, and toolcraft used four software solutions to finish the process.

Looking to pare down the process, toolcraft turned to Siemens PLM Software, which offered the ability to use one software solution to perform every task in the process chain. This is particularly valuable with aerospace, medical technology and semiconductor customers as they insist on traceability.

When preparing additive manufacturing parts, there are several versions of a part created to complete the process. First, the 3D data are received from the customer, then toolcraft begins the process of modifying it. Toolcraft optimises the component with FEM calculations and topology optimisation in terms of weight and cost savings. In addition, the designer generates support structures, does oversizes on surfaces and changes angles in order to be able to build the component optimally in the machine. They then have a modified

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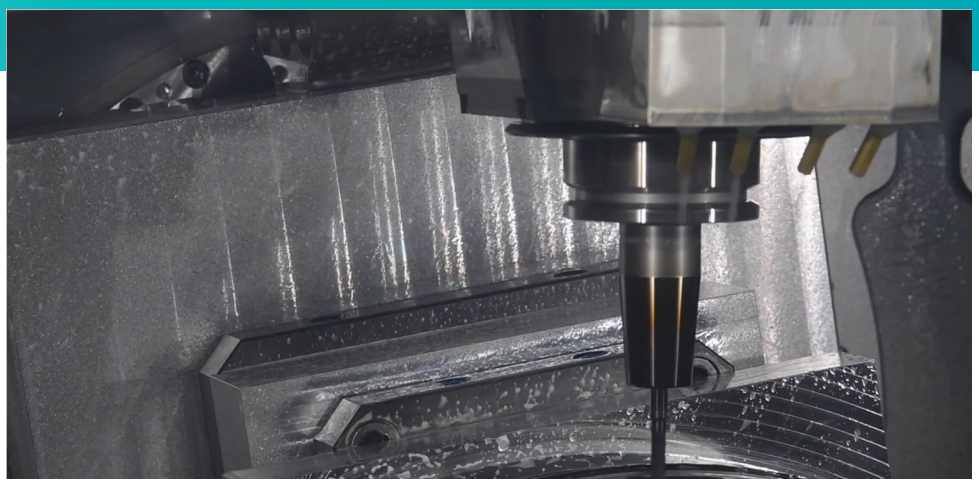

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Engineering and simulation
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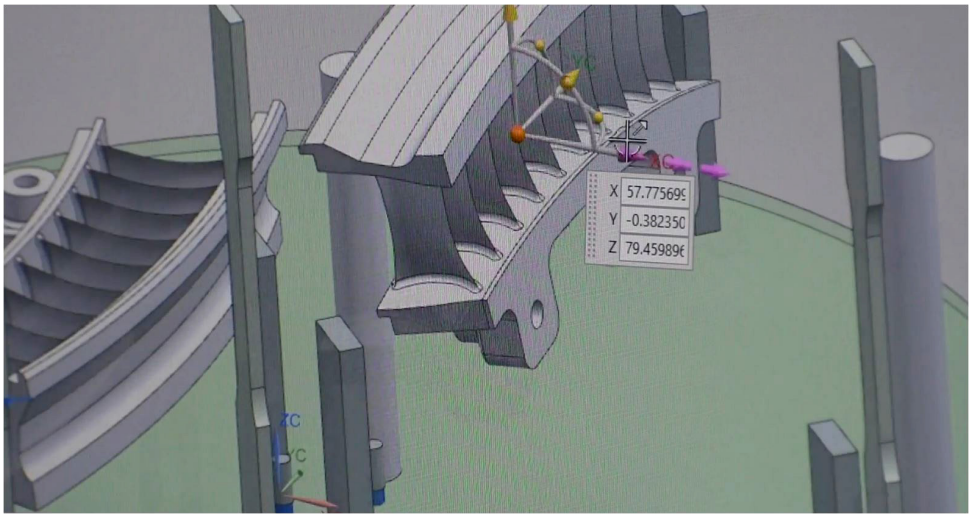
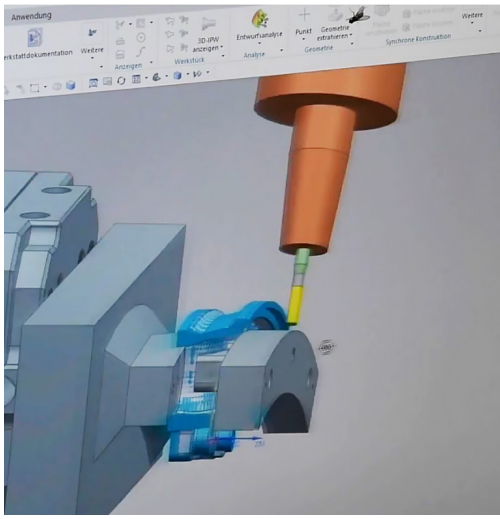
part that goes directly to the 3D printer. After the part has been printed, the support structures are removed and the component is finished by machining. Subsequently, the finished part is optically and tactilely measured. Non-destructive surface testing according to Nadcap is also possible.

"With Siemens' NX, we work with only one file along the process chain," says Ralf Domider, engineering and simulation metal laser melting at toolcraft. "There is less complexity. You can work in less time and have a lower error rate. That's the main advantage of NX. With Siemens' NX, we can supply all of these systems and all of these machines – Trumpf, EOS and Concept Laser."

Siemens' NX™ software solutions provide toolcraft with the desired traceability as the full digital thread is in one software tool. With NX, it is easier to communicate with other departments if there are any changes on the computer-aided design





Solutions/Services

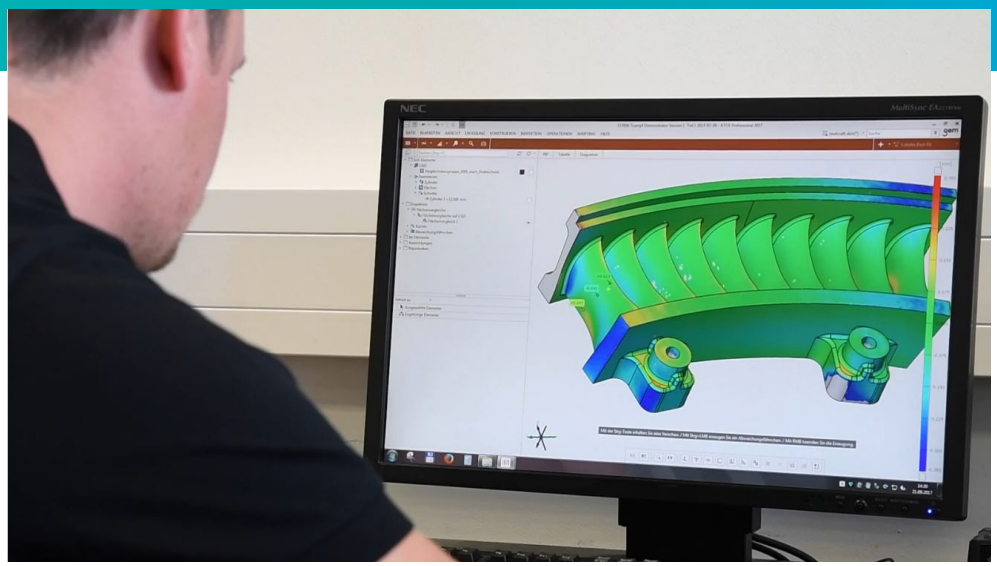
NX
www.siemens.com/nx

Customer's primary business

Toolcraft is a pioneer of forward-looking technologies, such as 3D metal printing and the construction of customized turnkey robotics solutions. Toolcraft tests and develops innovative engineering processes for use on production lines. They are a supplier of high-quality parts to various industry original equipment manufacturers (OEM) in medical, automotive, aerospace, electronics and other industries.
www.toolcraft.en.html

Customer location

Georgensgmünd
Germany



(CAD) models. Since using NX, toolcraft has realized significant improvements in quality and accuracy. In addition, it is much easier to communicate model changes because design, additive manufacturing and machining are in one software solution.

"We see that with Siemens' NX, this is only the beginning," says Christoph Hauck managing director, toolcraft. "We have high expectations that in the future a lot of our problems will be fully solved by Siemens."

Toolcraft envisions their business evolving from powder bed additive manufacturing to full five-axis additive manufacturing, and expects to look to Siemens again as these future capabilities are added to their manufacturing processes.

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