Becoming a Fan of 3D printing: Reitz Ventilatoren Optimizes Production Workflow with the F770

Established in 1948, Konrad Reitz Ventilatoren GmbH & co. KG is a family-owned business specializing in the production of high-quality radial fans for various industrial applications.

Headquartered in Hoexter, Germany, the company operates on a global scale, manufacturing tailored fan solutions for customers in nearly every industry. These include food, environmental, chemical and pharmaceutical, as well as steel, glass, textile, paper and wood processing.

Building the complex fans — sometimes housing up to 100 individually manufactured parts — typically involves working with sheet metal. However, prototyping new sheet metal parts is time-consuming, labor-intensive and costly. With a need to optimize its production workflow, Reitz Ventilatoren started looking at alternative and more innovative manufacturing solutions to complement its traditional processes. As part of this exploration, the company decided to investigate the suitability of 3D printing to meet its needs.

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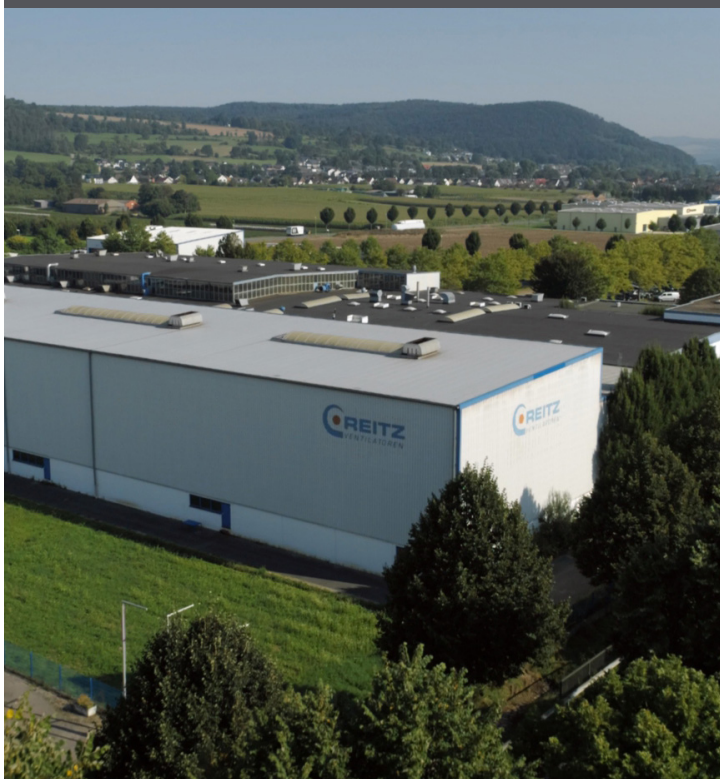
>
> Dieter Voeckel
> **Work Preparation CNC at Reitz Ventilatoren**



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Case Study

Building Big

In 2019, Reitz Ventilatoren invested in a basic 3D printer to assess how the technology could improve its production capabilities. Stephan Kister, Production Manager at Reitz Ventilatoren, saw the potential of the technology and started looking for a more advanced, industrial solution.

"Through testing the technology, we knew 3D printing offered massive potential to shorten production lead times, but also allow us to redesign how we build products," he says. "We needed a technology that would enable us to 3D print larger end-use parts on an industrial level — and when the Stratasys F770 FDM® 3D printer came into the picture, we knew this was the perfect fit for us."

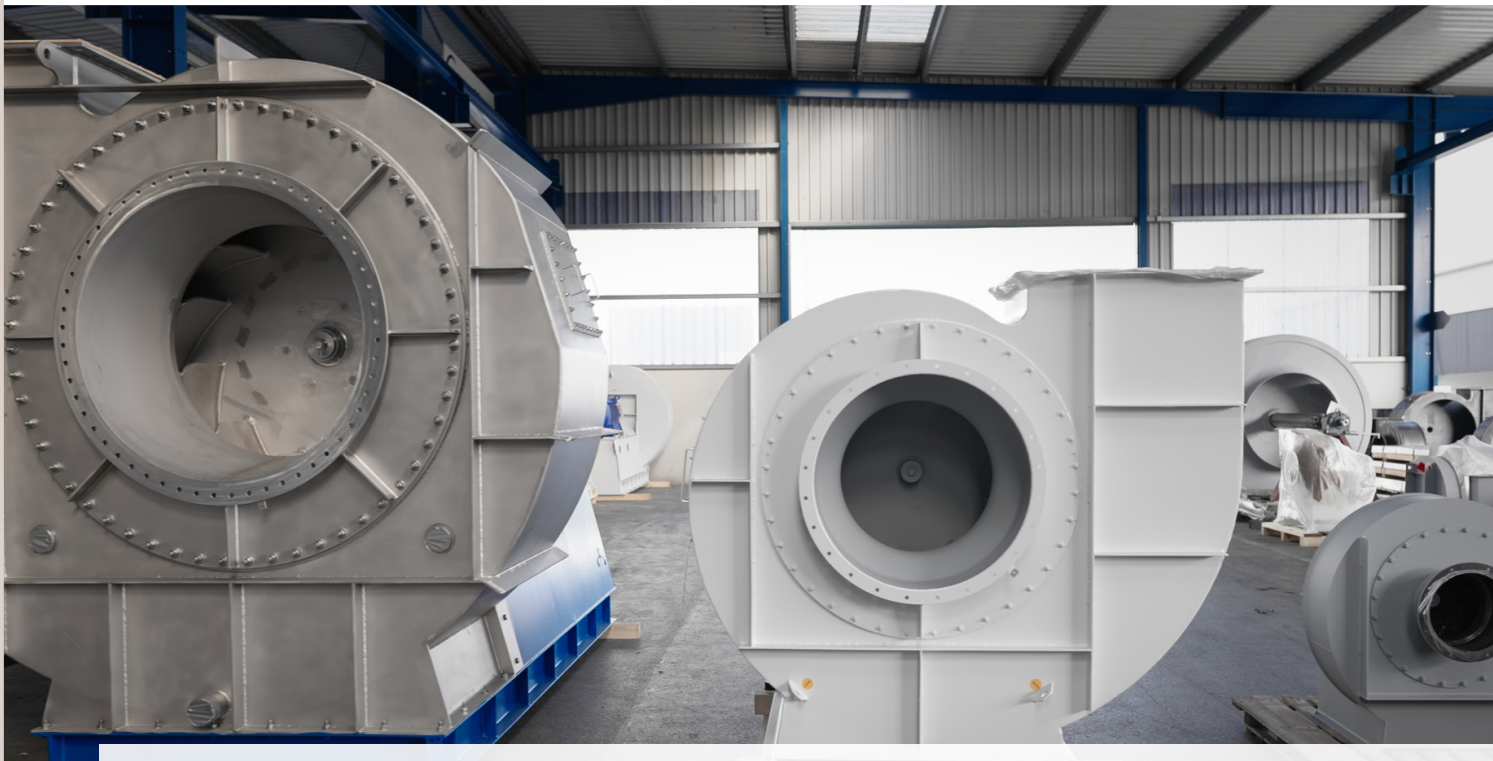
Reitz Ventilatoren builds bespoke radial fans of various proportions — from the size of a shoe box up to large-scale versions the size of a house. For larger customized parts, the F770's 1,000 x 610 x 610 mm (39.4 x 24 x 24 in.) build tray easily handles large dimensional requirements of certain parts. One example is the impeller, which sits at the heart of each ventilator. With the F770, the company was able to 3D print an impeller that measured 609.5 mm (24 in.) in diameter.

New Design Possibilities

Besides the ability to print larger parts, Reitz Ventilatoren also uses the technology to ensure part quality and repeatability, while taking advantage of its geometric design freedom.

"The Stratasys 3D printer opens up new design possibilities for our customized fan solutions," Kister adds. "Basically, we no longer have any restrictions in part geometry, which is another key differentiator against our previous methods of bending and rolling sheet metal."

As a result, Reitz Ventilatoren has leveraged the technology's attributes to manufacture 3D printed fixtures and tools for its in-house production line.



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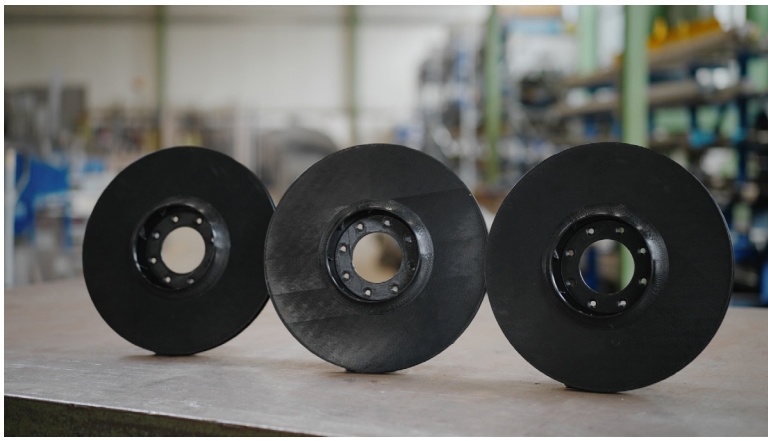
Optimizing Workflows

“Since installing the technology, we have 3D printed various tools and fixtures for our own production — from positioning guides to simple clamping jaws for a vice,” says Dieter Voeckel, Work Preparation CNC at Reitz Ventilatoren. “These are often notoriously difficult to manufacture through traditional methods due to their geometric complexity, but 3D printing overcomes this fundamental issue. Not only that, such tools and fixtures can be quickly and easily customized to our liking. This has been a real bonus for our business in that we are no longer dependent on external service providers for these parts — saving us time and expense within the production workflow.”

Reitz Ventilatoren’s radial fan production is a multistage process with numerous steps for each individual part up to product assembly. To minimize lead times of its high-quality parts, Reitz Ventilatoren has successfully integrated the F770 more and more into its production process.

One such example is the impeller. To manufacture this dynamic part, cutting, forming, joining, coating and balancing operations must be completed. 3D printing eliminates all of these steps, by simply printing the part as one piece in a single print operation.

For the impeller, 3D printing has significantly reduced lead times,” says Kister. “Compared to traditional metal machining, 3D printing the part has equated to lead time savings of up to 50%. For other parts we manufacture, such as the inlet nozzle, which measures the flow rate in the fan, we can reduce the manufacturing lead times from 1.5 weeks down to three days with 3D printing.”



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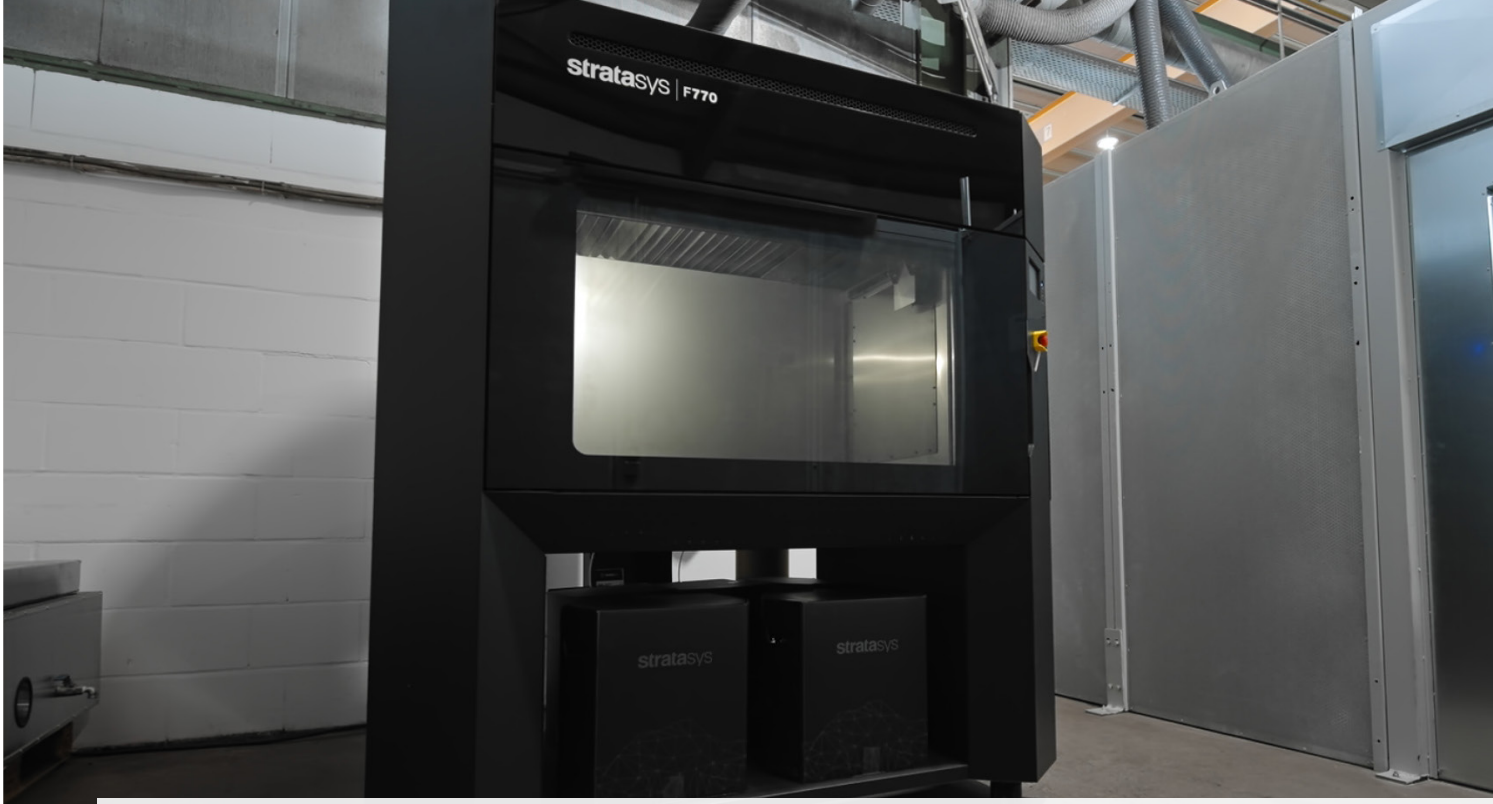

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In addition to the cost and time savings, Reitz Ventilatoren has benefited from the industrious attributes of the F770 — especially the ability to leave the printer running trouble-free 24/7. This around-the-clock use is verified in the data; within the first 12 weeks of use, the F770 achieved an average utilization of over 5 days per week with no trouble.

“Despite our F770 still being a relatively recent installation, it has made an immediate impact and clearly has the capabilities to deliver more for us in the future,” says Voeckel. “With the ongoing support from Stratasys and continued adoption of the technology for more and more parts, we are excited to see where we can go with 3D printing. In summary, we can say that the F770 has far exceeded our expectations.”

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