

ONE CLICK METAL

**Rapid manufacturing for
your own business:
cost and time efficiency
with additive metal
manufacturing**



THE CHALLENGE

The fast and cost-effective production of a component that must fulfil complex functional and mechanical requirements and at the same time function reliably for long-term industrial use.

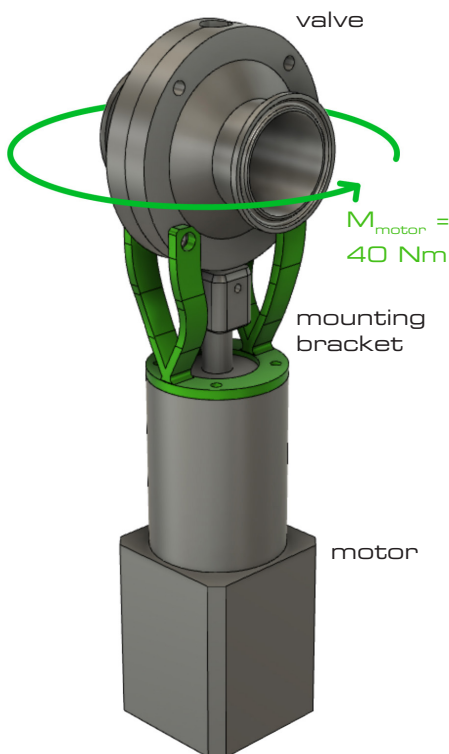
If you are in the process of product development and need a component with a specific mechanical function, then two things are crucial for the further procedure: time and costs.

The component is needed quickly, and it must not cost too much to produce. This applies to all development departments, regardless of their company size.

In the case of One Click Metal, the geometric and mechanical requirements for the component are complex: the component is used in an endurance test stand and functions as a holder for attaching a motor to a valve, which is screwed down via holes on both the motor and the valve. The material properties must also be highly resilient in order to withstand the motor's moment of up to 40Nm.

Since the component must therefore be suitable for long-term industrial use, conventional rapid prototyping with the production of a sample component is not sufficient. To ensure reliable and robust use, we must think a step further towards rapid manufacturing.

To equally meet all the demands on the component to ensure permanent industrial use, an essential decision therefore had to be made in advance: Which manufacturing process ensures the best result?



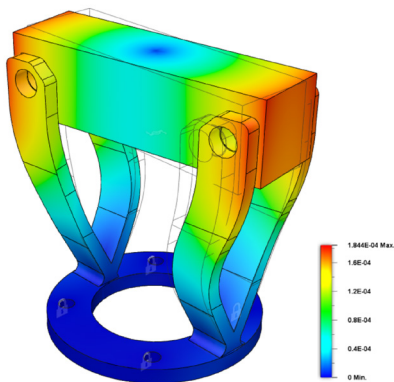
Milling or additive?



The manufacturing process must be able to implement the requirements on the component and make it available quickly.

– Stefan Weber, CTO, One Click Metal





Forces on the component

The component shifts to varying degrees within the holder when the motor is subjected to a load of 40Nm. The red areas shift the most with 0.18µm.

THE SOLUTION

Additive metal manufacturing ensures both cost and time effectiveness while providing industry-standard component quality for long-term use.

Conventional subtractive milling or additive manufacturing? If the two available manufacturing processes are compared and examined in terms of costs, time, and flexibility in the design, three main conflicts arise when milling via an external service provider:



Time: Since there is no in-house milling machine, an external service provider must be called in. The fastest delivery time is one month. If the delivery time is shortened, the costs increase twice as much.



Costs: Depending on the chosen delivery time, the costs for the milled component range between 330€ and 620€. In addition, due to the limited freedom in geometry, the component must be manufactured in several parts, which means greater material and cost expense.



Construction: Due to the milling procedure, the possibilities of realising fine geometries are limited. This makes the component more massive and less accessible, which makes assembly more difficult.

Additive manufacturing with the in-house metal 3D printer MPRINT+ thus offered One Click Metal significant advantages over milling:



Time: Thanks to the in-house metal 3D printer, One Click Metal is independent of delivery times from external service providers and thus saves valuable time.



Costs: In addition to eliminating the costs of an external service provider, One Click Metal can immediately recycle up to 96% of the material used in metal 3D printing. This means that One Click Metal not only saves on material costs, but also chooses the more economical option with additive manufacturing.



Design: Additive manufacturing offers optimal functional integration, as the great freedom of design means that all the necessary technical functions are covered with just one component.

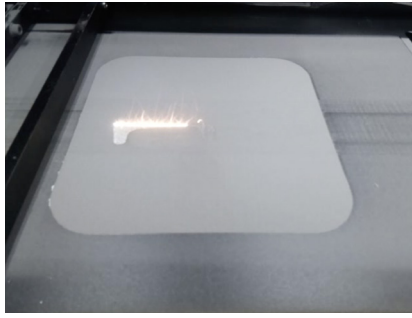
The MPRINT+ produces the desired component with a 200W fiber laser in a comparatively short time and at the same time offers One Click Metal an ideal price-performance ratio.

The use of metal powder as opposed to plastic materials also ensures that the material properties of the component withstand its function as a holder between the engine and the valve at an engine torque of up to 40Nm and does not break off. In this way, the component can be used without hesitation in the long term.



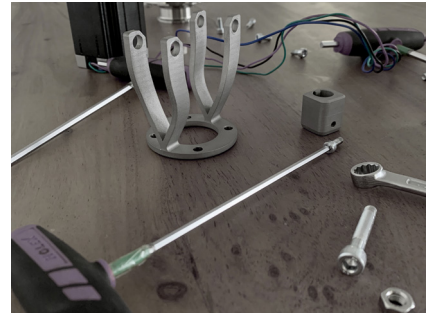
(1) CAD-model

The flexible design options of 3D printing enable optimal functional integration.



(2) Printing process

Predefined process parameters simplify print preparation and ensure the desired result.



(3) Assembly

After finishing, the component can be mounted immediately and is ready for use.



Time saving
96%



Cost saving
23%



Material saving
97%

Additiv

Fräsen

Technical information

Component function

Mounting bracket of valve and motor

Material

Stainless steel 1.4404/316L

Technology

LPBF with 200W fiber laser

Number of layers

3541

Construction time

22,3h

Powder consumption ¹

0,18kg

Production cost ²

253,01€

¹ Actual consumption for component, total effort for printing process not included.

² Cost calculation assuming an in-house machine with system market price incl. personnel and finishing costs.

”

The component must withstand the engine torque and therefore have a high tensile strength. The material properties must ensure this.

– Michael Volk, Lead Product Development Engineer, One Click Metal

“



THE ADVANTAGES

✓ Time and cost savings

The biggest advantage for One Click Metal in choosing additive manufacturing for the component was the significant reduction in time and cost. This includes not only manufacturing time and costs, but also the effort required in terms of delivery and materials. This resulted in an optimally balanced price-performance ratio with minimum effort and maximum result at the same time.

✓ Accelerated development time

Above all, the time independence of additive manufacturing in the company's own metal 3D printer MPRINT+ offered a major advantage for One Click Metal. The resulting flexibility in terms of when the component could be printed accelerated the development time considerably, as it was not restricted and delayed by delivery times from an external service provider.

✓ Sustainable supply chain

In times of globalisation, where many supply chains are unclear and complex, the possibility of in-house additive manufacturing meant a transparent overview of the entire value chain starting from the powder supplier to the finished component. In this way, One Click Metal was able to avoid long delivery routes and reduce potential environmental effects.

✓ Individual reproduction capability

The implementation of industrial metal 3D printing within the company simplifies the individual reproduction of a component many times over. Once the process parameters have been defined, a workpiece can be manufactured repeatedly at any time. In addition, possible changes can be easily adapted to the development status and adjusted to the respective requirements. This eliminates the need for large-volume overproduction or extensive inventories.

”

We were able to continue developing our product without delay because the component was available quickly and we were not dependent on delivery times.

– Roman Denisov, Development Engineer, One Click Metal

“

KEY FACTS SUMMARY

The Challenge

The fast and cost-effective production of a component that must fulfil complex functional and mechanical requirements and at the same time function reliably for long-term industrial use.

The solution

Additive metal manufacturing ensures both cost and time effectiveness while providing industry-standard component quality for long-term use.

The advantages

- ✓ Time and cost savings
- ✓ Sustainable supply chain
- ✓ Accelerated development time
- ✓ Individual reproduction capability



Time saving
96%



Cost saving
23%



Material saving
97%

Technical information

Component function

Mounting bracket of valve and motor

Material

Stainless steel 1.4404/316L

Technology

LPBF with 200W fiber laser

Number of layers

3541

Construction time

22,3h

Powder consumption ¹

0,18kg

Production cost ²

253,01€

¹ Actual consumption for component, total effort for printing process not included.

² Cost calculation assuming an in-house machine with system market price incl. personnel and finishing costs.



ONE CLICK METAL MADE WITH MIND

We believe that technologies can be made understandable for everyone and available with a click. We are particularly committed to technology beginners, for whom we develop simple and intuitive product solutions.



You don't know our metal 3D printing system BOLDseries yet?

We would be happy to get in touch with you and talk about your ideas and requirements.

More information

www.oneclickmetal.com



About One Click Metal

Founded in 2019, One Click Metal GmbH is a young industrial B2B based in Tamm near Stuttgart, Germany. We believe that technologies can be made understandable and accessible for everyone. That is why we simplify our product solutions so that anyone can use them successfully. With our metal 3D printing system, we primarily serve small and medium-sized enterprises and thus ensure that metal 3D printing technologies become accessible to the public. We are working on this with around 20 employees and a lot of motivation.

