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„3D printing technology has revolutionized Muller Martini's testing“

Roger Hochuli and Janick Suter work as vocational trainers on Muller Martini's future and are gaining experience in working with 3D printing technology.

As vocational trainers, we supervise 16 apprentice design engineers and 16 apprentice automation engineers. We attach great importance to practical training and encourage mutual and cross-professional understanding between them. 3D printing technology is primarily an additional and exciting part of their work in training Muller Martini's design engineers.

The use of 3D printing technology at Muller Martini received a considerable boost in 2019. Numerous engineers and specialists increasingly developed an interest in it and sounded out the possibilities with great curiosity. Our devices work with filament – in other words, they fuse synthetics, which are fed from a roll. We generally receive the orders from the technical department, which wants to visualize its ideas, for example, to check their feasibility or carry out a collision check. Thanks to 3D printing, engineers get answers to their questions quicker than if prototypes would have to be produced mechanically.



The supporting stand (left) and the blow air finger are classic examples of how 3D printing is being used at Muller Martini. The prototypes were produced using 3D printing, while the series parts are manufactured using plastic injection molding. They are used in saddle stitchers.

3D printing is the day-to-day work of designers

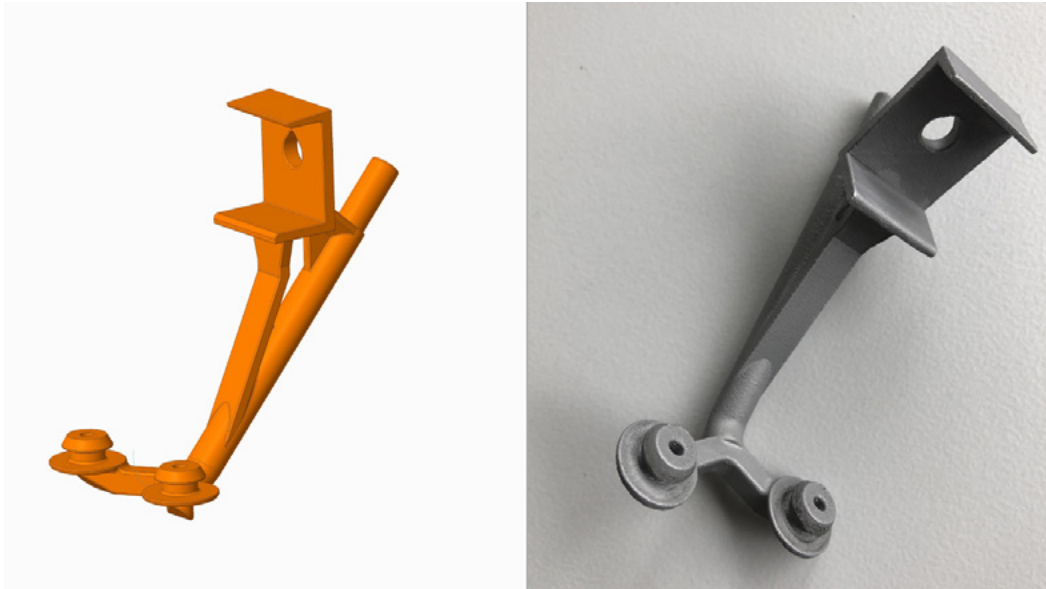
Our first attempts at 3D printing go back to 2013, when the devices were first available for less than 1,000 Swiss francs. Reason enough to buy a 3D printer first privately and then also in the company, and to familiarize ourselves with the technology. The phase of tinkering and testing was quickly followed by realizing that the new production method could be used regularly in the engineers' training. In the first and second years of their apprenticeship, they acquire the basics before heading out to the departments. 3D printing technology is part of the day-to-day work of apprentice design engineers. They need to be able to design 3D parts that are actually producible on a 3D printer. This training is provided in close cooperation with our engineers who have extensive experience in 3D printing.

At the beginning, we produced single pieces for models. Later, the new process attracted the attention of the engineers and we gradually began to produce prototypes. A well-known example is the clamp of the shipping system chain. Today, we have three printers, allowing us to produce components of up to 200 millimeters in height on a DIN A4 surface. Looking back, we can say without exaggeration that the 3D printing process has revolutionized testing and prototyping at Muller Martini – also because distances at the company are short and the 3D printers are quickly ready for use.

No in-depth changes, but an exciting addition

The inner workings of Muller Martini machines are constantly being scrutinized in search of changes that could reduce both weight and costs. The possibilities arising from 3D printing technology are increasingly being incorporated into this process, with the remarkable result that plastics have even managed to replace metal in some components. However, the tendency is for this to remain the exception since due to the stress in continuous operation, mechanical parts will continue to be mainly made of metal in the future.

Add to this the fact that 3D printing is insufficient when it comes to precision. When things need to be precise (as well as attractive), mechanical processing is still the gold standard. In this respect, 3D printing technology won't turn the design engineer's profession upside down, but will be an exciting addition – especially also during training at Muller Martini. 3D printing, by the way, is not yet part of the designers' training curriculum and that won't be the case for several years.



The suction pipe (on the left as a model, on the right the final product) with its hollow space and complex shape is virtually predestined for 3D printing. This part is built into the ProLiner in small numbers, which is why it is produced in series using a metal 3D printer.

Prototypes yes, mass production no

Test parts are the predominant application for 3D printing at Muller Martini. We don't produce anything that is built in, and we're not planning to build a 3D printing farm. If a component that was previously mechanically produced is actually replaced by a 3D printed part, a specialist supplier takes care of the production – regardless of whether plastic or metal printing is used.

3D printing technology is not yet mature enough for mass production; larger series take too much time and are therefore too expensive. Accordingly, in the near future, it is likely that individual components from Muller Martini machines will be considered for 3D printing production. 3D printing can be an alternative, for example, if the production of a (injection) mold is not worthwhile due to low volumes.

Your
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