



Press Release

TruPrint 5000 achieves outstanding 3D printing times with unique multi-laser principle

TRUMPF 3D printer ready for series production // Tool change cylinder and interfaces for flexible system automation

Ditzingen, November 15, 2017 – The high technology company TRUMPF presented the world's fastest and most productive medium-format 3D printing system for metal components at the formnext trade fair in Frankfurt. TruPrint 5000 works according to the multi-laser principle and is equipped with not just one, but three scanner-guided, 500-watt TRUMPF fiber lasers. The three lasers are fitted with optics specially designed by TRUMPF enabling them to operate simultaneously at any point in the system's construction chamber. As a result, they can generate components much faster and more efficiently, irrespective of the number and geometry of the components.

What makes the whole system so special is that, unlike other multi-laser concepts, the TRUMPF version is not limited to defined areas in the process chamber. This makes the 3D printer particularly fast and productive. Another reason for the speed is the exposure strategies developed by TRUMPF, which automatically calculate the ideal laser paths, so that all three lasers can always expose multiple parts. The finished components are literally seamless, as the outer contours are produced with a single laser. If all process parameters are in optimum settings, TruPrint 5000 requires just a third of the exposure time per job.

Based on Laser Metal Fusion (LMF) manufacturing technology, the system uses laser power to generate complex metallic components layer by layer in the powder bed. The components can measure up to 300 millimeters in diameter and 400 millimeters in height and consist of all weldable materials, such as steels, nickel-base alloys, titanium, aluminum and high-carbon hot-work steels. Pre-heating to up to 500 degrees Celsius ensures high component quality, particularly for hot-work steels and titanium, and guarantees a robust construction process for all materials.



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Flexible automation

When designing its 3D printers, TRUMPF has given much thought to system automation. For example, TruPrint 5000 is able to start the manufacturing process automatically, which leads to a robust process with less work for the operator. As soon as the build cylinder is placed in the system, it moves automatically to its setup and working position. The integrated zero point clamping system is the basis for downstream process steps such as EDM, milling and turning. It connects the substrate plate automatically with the piston in the cylinder, doing away with the need for manual work steps, such as tightening screws. Next, a transport system in the process chamber places covers over the build and supply cylinders, sets them to a rest position, and the manufacturing process starts autonomously. In the next step, the lasers calibrate themselves, the substrate plate aligns itself, and the construction process starts automatically. By means of the integrated tool change cylinder principle, the build cylinder can travel out with the finished components, while the construction chamber remains inert with shield gas and is able to start immediately on the next job. This reduces downtimes and increases the productivity of the 3D printer.

Automated periphery makes processing easier

Able to clean several hundred kilograms of powder an hour, the TRUMPF sieve station ensures that powder quality remains constant. The unpacking station is also seamlessly integrated into the process chain; the covered build cylinder can travel directly into the station. The advantage of having a separate unpacking station is that it increases machine availability. And thanks to the station's safety gloves and eye protection, users don't come into contact with the powder when unpacking and cleaning. Excess powder is returned to the sieve station, ensuring a safe and closed materials cycle. Consequently, the system is ideally equipped for an industry-ready series production process.

At the trade fair, TRUMPF also showed where the automation journey was heading with TruPrint 5000. Thanks to its flexible automation interface, the system is compatible with a wide variety of industrial and manufacturing scenarios. For example, the 3D printing system can be quickly and easily

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connected to an automated robot solution, a rail system or a self-driving vehicle, depending on the factory concept.

TRUMPF prints optimized servo valves at formnext

If further proof were needed, the latest joint project between Bosch Rexroth, Heraeus Additive Manufacturing and TRUMPF demonstrates once again that additive manufacturing can optimize components and open up new design freedoms. In close collaboration, the three companies redesigned a servo valve, eliminated weaknesses and developed a hybrid manufacturing process. For its part, the technology group Heraeus determined the most suitable powder as regards flow behavior and particle size distribution. With its technological expertise, TRUMPF decisively shaped the manufacturing process. As part of the project, the project team developed a hybrid method of manufacturing servo valves for future series applications. This involves supplementing conventionally manufactured pre-forms with 3D-printed and laser-cut parts for cost-effective manufacture of the valves. The servo valves printed by TruPrint 5000 are considerably lighter and more compact, and the optimized channel guides reduce throttle losses and increase energy efficiency.

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TruPrint 5000

TruPrint 5000 works according to the multi-laser principle and is equipped with not just one, but three scanner-guided, 500-watt TRUMPF fiber lasers.



Series production

The TRUMPF medium-format systems are able to generate components measuring up to 300 millimeters in diameter and 400 millimeters in height.



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Multi-laser principle in TruPrint 5000

The exposure strategies developed by TRUMPF automatically calculate the ideal laser paths, so that all three lasers can always expose multiple parts.



Parts and powder management

Thanks to their automated periphery, the TruPrint medium-format systems are ideally equipped for industry-ready series manufacturing processes.



About TRUMPF

The high-technology company TRUMPF offers production solutions in the machine tool and laser sectors. It is driving digital connectivity in manufacturing industry through consulting, platform and software offers. TRUMPF is the world technological and market leader for machine tools used in flexible sheet metal processing, and also for industrial lasers.

In 2016/17, the TRUMPF Group – which has about 12,000 employees – achieved sales of 3.11 billion euros. With over 70 subsidiaries, it is represented in nearly all the countries of Europe, North and South America, and Asia. It has production facilities in Germany, France, Great Britain, Italy, Austria, Switzerland, Poland, the Czech Republic, the USA, Mexico, China and Japan.

For more information about TRUMPF go to www.trumpf.com

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