



Press Release

LASER trade show: TRUMPF ultra-short pulse marking lasers make medical technology more sustainable

The new marking lasers are designed to meet the highest demands of medical technology and the aerospace industry // The particularly precise ultrashort pulse technology can also be used in materials processing

Ditzingen/Munich, June 23, 2023 – The high-tech company TRUMPF is making the use of medical technology more sustainable and cost-effective with its new TruMicro Mark 1020 marking laser. "Medical technology manufacturers can use the ultrashort pulse laser to mark stainless steel surgical instruments, for example, in a way that does not affect their corrosion resistance through cleaning cycles. As a result, doctors can use the expensive surgical instruments for many years. This would not be possible with conventional marking methods," said Holger Breitenborn, Product Manager at TRUMPF responsible for marking lasers. TRUMPF is presenting the new ultrashort pulse marking laser at the world's leading trade show LASER - World of Photonics in Munich.

Use in the medical technology and aerospace industries

With the TruMicro Mark 1020, medical technology manufacturers can mark their products three-dimensionally with very short pulses without much material heating. Even on complex, three-dimensional surfaces, a so-called micro-nano structuring is produced, and this becomes visible because it captures the light. As a result, the marking appears deep black from all the angles and is easy to read. Experts therefore refer to this as blackmarking. This application is particularly important for medical technology manufacturers. Their products are traceable thanks to the marking and at the same time can be reused for a particularly long time.

Thanks to the laser's small focus diameter of less than 50 micrometers, users can also mark very small components precisely. "This is a major advantage, for example when marking stents," says Breitenborn. These implants, only a few



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millimeters in size, keep blood and nerve pathways open. In this way, doctors can exercise greater influence on lifestyle diseases such as heart attacks and strokes. In the U.S. alone, patients receive more than two million stents a year, and the trend is rising.

The aerospace industry also relies on "cold" marking. This industry has strict requirements for the so-called structural modification of materials: The marking process must not impair the structure and strength of the components under any circumstances. Otherwise, in the worst case, components of aircraft or rockets could break. "Only the TruMicro Mark 1020 ultrashort pulse laser enables this "cold" 3D black marking process on complex 3D surfaces made of metal," said Breitenborn.

Ultra-short pulse marking laser can also process material

Users can not only mark with the TruMicro Mark 1020, but also cut, drill or structure materials such as metal, glass, ceramics or plastics. This is possible thanks to the laser's very high peak pulse powers. The permanent measurement and documentation of the laser power ensures marking and processing quality that can be tracked at any time. This function is important for quality assurance.

Simple operation and integration into line production

Large companies can easily integrate the TruMicro Mark 1020 into their line production. This is made possible by the laser's modular design and compact dimensions. Since the TruMicro Mark 1020 has all the common industrial interfaces, it is suitable for use in networked manufacturing. Users can expand the TruMicro Mark 1020 into a complete solution, for example with the TruMark Station.

However, the system is also ideally suited for smaller operations. If desired, TRUMPF can take care of installation and operations qualification (IQ/OQ).

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Laser with beam source insertion

The TruMicro Mark 1020 is very well suited for use in medical technology.



Laser head with image processing

Users can expand the TruMicro Mark 1020 into a complete solution.



About TRUMPF

TRUMPF is a high-tech company offering manufacturing solutions in the fields of machine tools and laser technology. The company drives digital connectivity in the manufacturing through consulting, platform products and software. TRUMPF is a technology and market leader in highly versatile machine tools for sheet metal processing and in the field of industrial lasers.

In 2021/22, the company employed some 16,500 people and generated sales of about 4.2 billion euros. With over 80 subsidiaries, the TRUMPF Group is represented in nearly every European country as well as in North America, South America and Asia. The company has production facilities in Germany, France, the United Kingdom, Italy, Austria, Switzerland, Poland, the Czech Republic, the United States, Mexico and China.

Find out more about TRUMPF at www.trumpf.com

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