TRUMPF

Solutions for the highest demands in medical technology

Precise laser marking of polymers: Contrast and durability in focus

Maximum contrast

Manufacturers of **medical devices and products** must work with utmost precision. Strict legal requirements for their safe functioning set the framework. In addition to corrosion-resistant CrNi steels, titanium alloys and hardenable surgical steels, **polymers are often used.** However, this material is more difficult to process. **Special production methods** are required, which are applied by experts in the TRUMPF application laboratories on a daily basis.

Lasers give manufacturers a powerful tool for **marking, cutting, drilling and structuring a wide variety of polymers in medical technology.** They can process even the smallest and most complex component shapes **flexibly and efficiently** – and with low thermal loads. Laser markings have the advantages of durability, **abrasion-resistance and high-contrast** and **ensure component traceability.** Since lasers work contact-free, they prevent contamination of materials.

The result: A fast and stable production process for higher medical device quality.

Your requirements – our solutions

YOUR REQUIREMENT

You want to:
- apply markings such as UDI codes and texts to complex 3D surfaces.
- save time and reduce complexity by marking multiple surfaces without repositioning the workpiece.
- mark both metals and plastics using only one laser.
- automatically monitor laser power for quality assurance.
- achieve sufficient transferability of laser parameters to other systems in production, for example to flexibly exploit their capacity.

OUR SOLUTION

TruMark 6030

The efficient marking laser enables:
- complex 3D free-form markings of Data Matrix Codes, UDI codes and text – thanks to TruTops Mark 3D.
- the marking of cylindrical workpieces up to 120° in one marking step without component rotation.
- the use of the same laser parameters on different systems through a linear power characteristic curve.
- the marking of metal and plastics containing additives.
- to design the marking and workpiece with just one software.
- the reliable marking of complex surfaces thanks to workpiece-oriented CAD software.

Find out more about the TruMark 6030!

IN ACTION

At Samaplast, the marking laser also provides plastic-injection-molded parts with 3D markings.

YOUR REQUIREMENT

You want to:
- produce highly legible, high-contrast markings – from any viewing angle.
- mark the smallest Data Matrix Codes even on complex 3D surfaces.
- use marking systems that are process-stable and reliable.
- save time and reduce complexity by marking multiple surfaces without repositioning the workpiece.

OUR SOLUTION

TruMicro Mark Series

What ultrashort pulse lasers can do:
- with TruTops Mark 3D, the TruMicro Mark 1020 generates complex 3D free-form markings.
- with its small focal diameter and telecentric lenses, the TruMicro Mark 2030 ensures highly precise microprocessing.
- the flexible setting of the pulse duration on the TruMicro Mark 2030 enables a wider range of applications such as engraving, drilling and cutting.

With their ultrashort laser pulses, both lasers apply the smallest UDI codes. These meet the strict legal requirements.

Experience the TruMicro Mark Series lasers in action here!

IN ACTION

KLS Martin marks the handles of its plastic screw-drivers with the ultrashort pulse laser TruMicro Mark 2030.

YOUR REQUIREMENT

You want to:
- mark special plastics without additives that only absorb weakly in the infrared range.
- apply the finest markings with a small spot diameter.
- ensure reliable production and use an industrially proven UV marking laser.

OUR SOLUTION

TruMark 3330

The all-round marking system:
- marks all plastics precisely – especially flame-retardant and transparent plastics.
- enables different marking processes such as ablation, discoloration and foaming.
- marks even the smallest codes thanks to its very small laser spot diameter.
- has the benefit of a long service life of the UV laser components, thanks to its industry-proven laser concept.

Dive deeper into the world of the TruMark Series 3000!

IN ACTION

MED-EL applies resistant and high-contrast markings to the components for its cochlear implants.

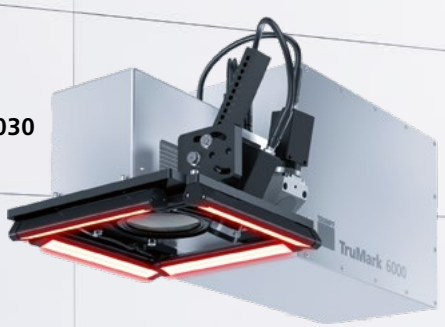
Find the laser you need for your individual application at TRUMPF. Whether infrared or ultraviolet – you can choose between different wavelengths, power classes and focusing optics with the TruMark and TruMicro Mark marking lasers.

The choice is yours!

TruMicro Mark 2030

TruMicro Mark 1020

TruMark 3330



TruMark 6030

Color change, ablation, foaming? Find out more about the different polymer marking processes:

Our full-service package

With our marking solutions, we ensure that you can concentrate completely on your marking tasks. These functions make your day-to-day work easier:

- **Turnkey marking solution:** We are a single-source provider for marking stations and lasers. We adapt them to your individual requirements with numerous options such as rotary axes, integrated suction systems and remote services.
- Be on the safe side with **VisionLine image processing software.** It enables 360° process coverage for quality assurance, including component identification, distance measurement, code and OCR text recognition, as well as evaluation.
- With the **software TruTops Mark 3D**, you have a comprehensive 3D CAD software for all your applications. With just a few clicks, you can import and create the marking content, place it using drag&drop, and mark the desired component. This also applies to complex component geometries. Use your existing 3D CAD data or create a component in our full 3D CAD environment. All laser parameters can be easily adjusted and marking files can be changed quickly if required.
- Do you need to **qualify your equipment and validate your marking process?** We support you with Installation Qualification (IQ) and Operational Qualification (OQ).
- The TruMark marking systems are long-lasting. Spare parts are available for at least 10 years after purchase of the system.
- We are internationally represented and thus a **reliable partner worldwide** with our global sales, services and application laboratory structure. All marking solutions are available on site – regardless of your production location.

Contact us if you have any questions. You will receive an individual solution package including application consulting in our laser technology showroom.

TRUMPF

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