

TRUMPF additive manufacturing in the medical industry



Discover the possibilities of additive manufacturing in medical technology

Our technology opens up new perspectives for the production of medical components such as implants, earmolds or single abutments.

3D-printed sample parts for the medical industry



Hip cups with lattice structures

Material: Ti6Al4V ELI

Advantages of additive manufacturing

- Less deformation, fewer support structures, better use of installation space thanks to **preheating to 200 °C**
- High productivity and lower part costs thanks to the **multilaser system** and **high automation**



Spinal cage implant

Material: Ti6Al4V ELI

Advantages of the TruPrint 2000

- Lower acquisition costs, yet highly productive – also profitable for small series
- High flexibility thanks to adjustable **spot size of 55 or 80 µm**
- Preheating to 200 °C leads to improved material properties



Surgical instruments and endoscopes

Material: Stainless steel (e.g. 316L, 14542)

Advantages of additive manufacturing

- Low part costs, even for small series production
- Complex geometries and freedom of design



Dental implants

Material: Various titanium and titanium alloys

Advantages of the TruPrint 1000

- Efficient production thanks to options Multiplate and Preform
- Freedom of geometry



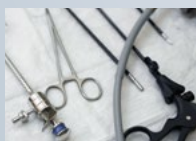
Advantages of TruPrint machines for your additive manufacturing

- External parts and powder management
- Accommodates up to 4 substrate plates
- Inert powder handling
- Hybrid production with Preform
- Monitoring of powder bed, melt pool and process data
- Multilaser
- Preheating 200–500 °C

TRUMPF solutions for medical technology



Laser cutting



Laser welding



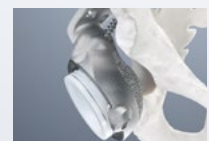
Laser marking



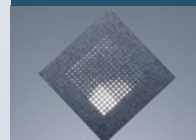
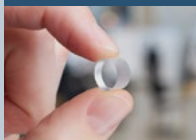
Laser structuring



Laser drilling



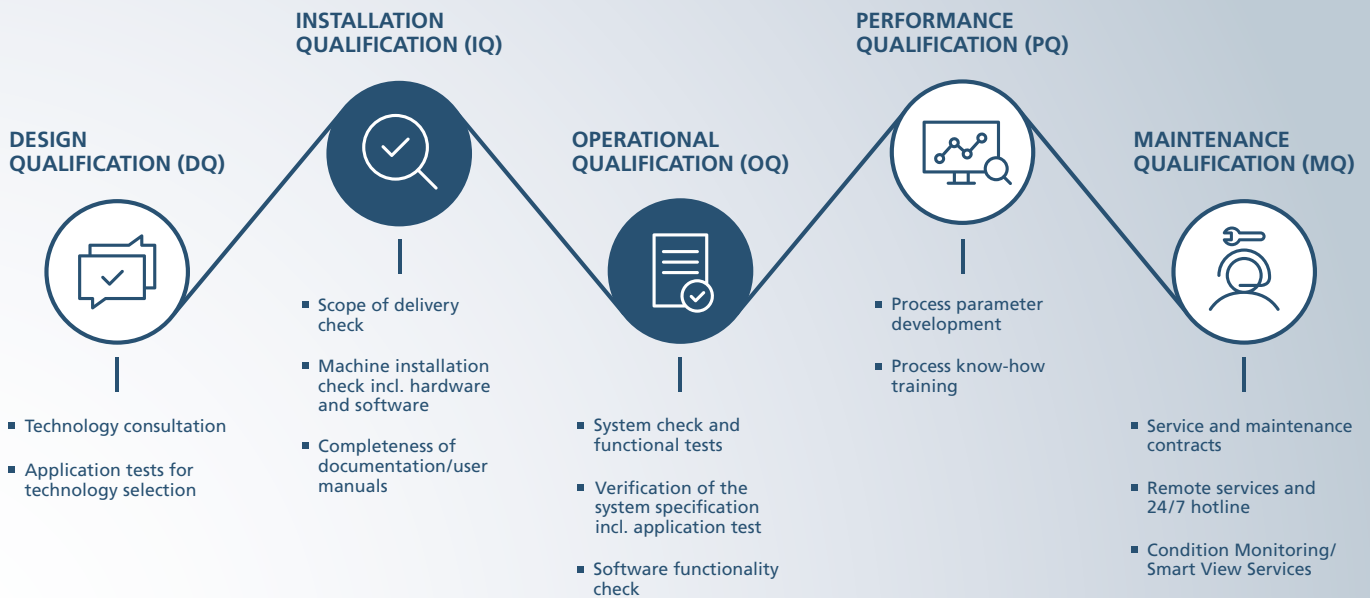
Additive manufacturing



Support in the qualification process

Having a laser system certified in regulated industries can be a challenging undertaking. Not so with the TRUMPF qualification experts, who support you in the qualification process in a time- and cost-saving manner and continuously develop their range of services. We focus on the particularly extensive

standards and requirements of the medical technology sector. Our services are therefore primarily based on the specifications of the following standards and institutions: ISO/ASTM 52941/52942, ISO 13485, ISO 9100, FDA, NADCAP and others.



Preferred materials for use in the field of medical technology

TruPrint systems are open systems, allowing customers to use powders of their choice. To achieve optimum process conditions and material properties, we recommend suitable metal

powders from international powder suppliers with the highest quality standards. You can obtain further information on the powders from our partners.

Stainless steel

Your advantages

- Chemical resistance
- High corrosion resistance
- High ductility

Typical use

- Instruments
- Medical technology
- Pharmaceutical industry

- 1.4404 / 316L
- 1.4542 / 630
- Printdur® HSA
- Medidur®

Titanium alloys

Your advantages

- Very good combination of density and strength
- Very good high-temperature and corrosion properties
- Standard properties for implants ASTM F3001/F136 are achieved

Typical use

- Medical technology
- Aerospace

- Ti6Al4V ELI Gr. 23
- Ti6Al4V Gr. 5
- Ti6242
- Ti Gr. 2
- Ti Gr. 4

Cobalt alloys

Your advantages

- High hardness and therefore wear resistance, biocompatibility

Typical use

- Dental and medical technology
- Mechanical engineering
- Aerospace

- CoCrWMo
- CoCr ASTM F75

Our products for your additive manufacturing



TruPrint 1000 $\varnothing 100 \times H 100$ mm

Premium-quality 3D printing: Highly productive and compact

- Highest build rates and machine runtimes
- Outstanding part and surface quality
- Ergonomic, contact-free powder handling
- Process flexibility and extended monitoring
- Best solution for dental applications
- Lower part costs due to Preform, Multiplate and hybrid, digital chain

TruPrint 2000 L 202 x W 202 x H 200 mm

Productivity squared

- Process flexibility thanks to adjustable beam diameter (55/80 μm)
- Highly productive due to full-field multilaser 2 x 300 W (optional 2 x 500 W)
- Low part costs due to perfectly tailored machine concept
- Highest quality standards thanks to Melt Pool Monitoring
- Inert, closed powder circuit

TruPrint 3000 $\varnothing 300 \times H 400$ mm

Flexible solution for industrial 3D printing

- Maximum productivity thanks to full-field multilaser 2 x 500 W
- High process reliability due to newly developed gas flux
- Flexible production setup
- Assurance of high quality standards through Automatic Multilaser Alignment
- Inert, closed powder circuit
- **NEW:** 2 x 700 W for 3D printing of aluminum

TruPrint 5000 $\varnothing 300 \times H 400$ mm

Highly productive and semiautomated 3D printing system

- Full-field multilaser 3 x 500 W with Automatic Multilaser Alignment for high component quality
- Preheating up to 500°C (optional)
- Inert, closed powder circuit
- External parts and powder management compatible with TruPrint 3000 and TruPrint 5000
- **NEW:** Preform option for hybrid production

TruPrint 5000 Green Edition $\varnothing 300 \times H 400$ mm

3D printing of copper and copper alloys

- Unique combination of green laser and additive manufacturing
- Highest quality and productivity thanks to green laser with a wavelength of 515 nm
- Outstanding thermal and electrical conductivities for printed copper parts

You can find more information online at:
www.trumpf.com/s/additivemanufacturing.
Or contact our experts directly:
additive.manufacturing@trumpf.com

Are you interested in a tour of the machines
or a virtual demonstration of our 3D printers?
Make an appointment now at:
www.trumpf.info/am-showroom