TRUMPF enjoys an excellent reputation in the aviation and aerospace industry. In the various areas of application for the lasers, TRUMPF meets the stringent quality requirements for repaired or additively manufactured components such as turbine, compressor and blisk blades. Thanks to their precision and flexibility, 3D printing systems are predestined for these tasks and are shaping the future of manufacturing in this industry. TRUMPF is the only manufacturer in the world to offer all relevant laser technologies for additive manufacturing from a single source: laser metal deposition (LMD) as well as laser metal fusion (LMF) / powder bed fusion (PBF).
Rocket injector ring
Dimensions: \( \phi 285 \times 145 \text{ mm} \)  
Build time: 27.8 h  
Number of layers: 2,410 à 60 \( \mu \text{m} \)  
Material: Ti6242
- Do it once, do it right!
- Manufactured with 500°C preheating to reduce tension in-situ during build-up
- High-performance alloy offering excellent mechanical strength, stability, good corrosion and creep resistance to temperatures as high as 600°C
- Residual stress significantly reduced and productivity increased
- Process safety and lower costs per part due to robust process parameters
- Fulfiling Safety Class QL1 AIMS03-22-000, attested by Zeiss CT Scan inspection with all defects < 200 \( \mu \text{m} \)

Satellite thruster
Dimensions: \( \phi 60 \times 180 \text{ mm} \) (h)  
Build time: 14.4 h  
Number of layers: 4,339 à 40 \( \mu \text{m} \)  
Material: Pure nickel or niobium (C-103)
- Very efficient and economical design
- Parts from niobium: Can be used in the temperature range from \(-150°C \) to \( > 1000°C \)
**Satellite antenna demonstrator for K_a-band telecommunication**

Dimensions: 40 × 40 × 40 mm  
Build time: 18 h (4 antennas)  
Number of layers: 1,994 à 20 µm  
Material: AlSi10Mg

- Reduced signal loss due to a monolithic design resulting in improved performance (not possible with conventional processing)
- Increased component performance, including lightweight construction and complex structures

**E-drive concept demonstrator**

Material: Pure copper + aluminum

- Maximum part and motor performance thanks to the electrical conductivity of pure copper with 101% IACS and an internally cooled housing
- Enhanced cooling properties due to internal cooling channels; housing made of aluminum or ferromagnetic material

**Combustion chamber reinforcement and extension via LMD**

Material: CuCr1Zr / nickel coating (sample)

- LMF process with green laser: Good printing resolution and very detailed features
- Flexibility and enhanced structural properties under higher temperatures by means of nickel coating via LMD

**Processing optics for LMD with new highspeed-LMD nozzle**

DepositionLine Package for integrators

- NC-controlled adjustment of beam diameters by motorized collimation
- Feature resolution of 0.2 to 4.0 mm feasible
- Complete package for system integrators: DepositionLine with TruDisk laser with powerful IR or innovative green laser beam for processing highly reflective materials such as copper, aluminum, etc.
- High-speed laser metal deposition thanks to appropriate nozzle for coating rotationally symmetrical parts at up to 1500 cm²/min; typical coating thicknesses: 100 to 300 µm
With TRUMPF you are not only buying a machine but an industrial solution

It can be quite challenging to have your laser system certified in regulated industries, but not with TRUMPF qualification experts who provide you time- and cost-saving support throughout the qualification process and constantly continue to develop their range. Our focus is on the particularly comprehensive standards and requirements from the aviation and aerospace sectors amongst others. This way, our services are oriented primarily toward the requirements of standards and institutions: NADCAP, ISO/ASTM 52941 and 52942, ISO 9100 and others.

Our services

![Image of service icons]

You can find more information online at https://www.trumpf.com/de_INT/loesungen/branchen/luft-und-raumfahrt/
Or contact our experts directly: additive.manufacturing@trumpf.com

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