

Micro Laser Sintering

3D **micro**
PRINT



3D MicroPrint GmbH manufactures high-precision micro metal parts using Micro Laser Sintering technology. We offer a comprehensive service from product design and prototype development through to series production.

Why 3D MicroPrint GmbH?

- Micro Laser Sintering combines the advantages of additive manufacturing with those of micro machining
- Complex geometries with high resolution, high dimensional accuracy and low surface roughness
- Moving parts without further assembly - with our "print-as-one" solution
- Micro metal parts with entire value chain from engineering to post-processing
- DIN EN ISO 9001 certified and processing to DIN EN ISO 13485

Technical Key Figures

- Building platform:
 - 60 x 60 x 40 mm (LxWxH)
 - 120 x 120 x 100 mm (LxWxH)
- Layer thickness: 1 - 30 μm
- Laser spot size: < 30 μm
- Accuracy: 5 μm
- Minimum wall thickness: 30 μm
- Roughness: Ra: 1 μm Rz: 5 μm
- Part density: > 99.5 %



Materials

- Stainless steel:
 - 316L (1.4404)
 - 17-4PH (1.4542)
- Titanium:
 - Ti6Al4V (3.7164)
 - Ti (3.7035)
- Copper:
 - CuCr1Zr (2.1293)
 - Cu-OF (2.0040)
- Inconel® 718

Other materials within the scope of a development process

Case Studies

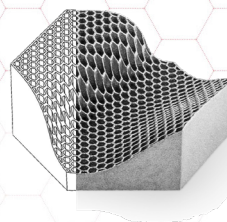
Merger Tree

- 1,024 tubes with a \varnothing 120 μm are combined into a single tube with a \varnothing 7 mm
- min. 80 μm wall thickness
- Size: 13 x 13 x 16 mm
- Weight: 1.4 g
- Material: Ti6Al4V (3.7164)



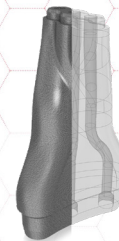
Honeycomb

- Complex microgrid structures
- Honeycomb size (inside) 250 μm
- 60 μm wall thickness
- > 60 % material saving
- Size: 11 x 9 x 4 mm
- Weight: 0.5 g
- Material: 1.4542 (17-4PH)



Optical fiber guide

- Twisted fiber guide for modular system
- Complex channel with very good surface quality and geometry tolerances
- Inner channel diameter: 500 μm
- min. 200 μm wall thickness
- Height: 10 mm
- Material: 316L (1.4404)



Micro Forceps / Gripper

Task

Conventional 5 parts assembly design has to be transformed to a print-as-one concept without assembly.

Solution and added value

- One piece instead of 5 single parts and multiple suppliers
- Integrated channel for lighting
- Single part production w/o assembly
- Reduced lead time to market availability
- Length: 20 mm
- Diameter: 1.6 mm



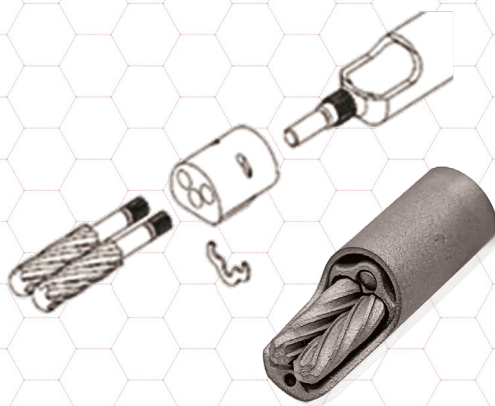
Twin-tipped Arthroscopic Shaver

Task

To print parts for an arthroscopic shaver for veterinary medicine based on a novel technical idea and concept draft. Redesign of the 6 parts assembly to create a print-as-one solution with the twin shavers, gear set, body, clip and outer shell.

Solution and added value

- Print-as-one solution instead 6 parts assembly
- Improved functionality by sturdy design
- Integrated water flushing and suction channels for shavings
- Integrated channel for lighting
- Single part production w/o assembly
- Less total cost for the final part
- Reduced lead time to market availability
- Diameter: 6 mm



Spot-jet Nozzle

Task

Reduction in acquisition costs and lead times by reducing the number of individually manufactured parts from 7 to 1.

Solution and added value

- Print as one solution instead of 7 parts assembly
- Reduced quality inspection and post processing steps
- Improved functionality with self alignment feature and printed M3 fixing thread
- All stainless steel without galvanic corrosion issues
- Production cost reduced by 60 %
- Lead time reduction from 6 weeks to 2 days

