



3D MicroPrint GmbH manufactures high-precision micro metal parts using Micro Laser Sintering technology. We offer a holistic service from product design, prototype development to series production of your unique component.

## 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
- QM system certified according to DIN EN ISO 9001 and 13485

## Technical Key Figures

- Building platform: 60 x 60 x 40 mm (LxWxH)
- Layer thickness: 5  $\mu\text{m}$
- Laser spot size: < 30  $\mu\text{m}$
- Accuracy resolution: 5  $\mu\text{m}$
- Minimum wall thickness: 30  $\mu\text{m}$
- Roughness: Ra: 1  $\mu\text{m}$  Rz: 5  $\mu\text{m}$
- Part density: > 99.5 %



## Materials

- 1.4404 (316L)
  - 1.4542 (17-4PH)
  - 3.7165 (Ti6Al4V)
  - Inconel® 718
  - Tungsten
  - (Pure) titanium grade 4
  - (Pure) copper
  - Precious metals
- Further materials within the scope of a development process*

## Case Studies

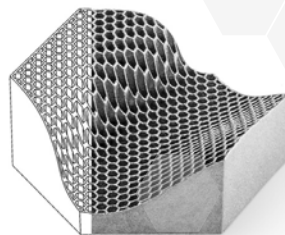
### Merger Tree

- 1,024 tubes  $\varnothing$  120  $\mu\text{m}$  combined into a single tube  $\varnothing$  7 mm
- 120  $\mu\text{m}$  to 7 mm tube diameter
- min. 80  $\mu\text{m}$  wall thickness
- Size: 13 x 13 x 16 mm
- Material: Ti6Al4V
- Weight: 1.4 g



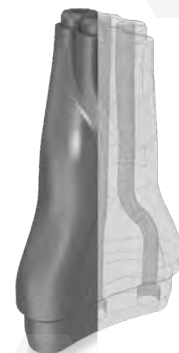
### Honeycomb

- Complex microgrid structures
- Honeycomb size (inside) 250  $\mu\text{m}$
- 60  $\mu\text{m}$  wall thickness
- > 60 % material saving
- Size: 11 x 9 x 4 mm
- Material: 1.4542 (17-4PH)
- Weight: 0.5 g



### Optical fiber guide

- Twisted fiber guide for modular system
- Complex channel ducts with very good surface quality and geometry tolerances
- Inner channel diameter: 500  $\mu\text{m}$
- min. 200  $\mu\text{m}$  wall thickness
- Height: 10 mm
- Material: 316L (1.4404)



### Micro Forceps / Gripper

#### Task

Conventional 5 parts assembly design was 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



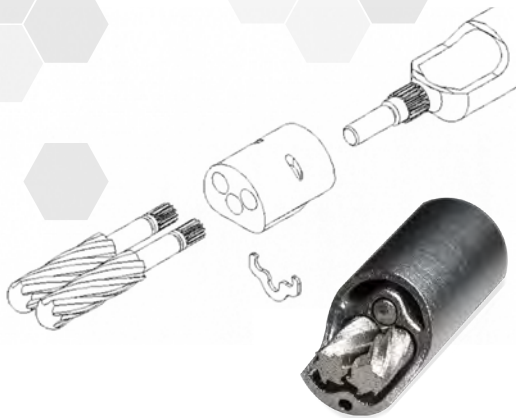
### Twin-tipped Arthroscopic Shaver

#### 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
- Tight tolerances reduce wear and tear
- 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

Conventionally designed nozzle assembly creates high input cost and 6 weeks lead time due to manufacturing 7 sub assembly components individually and assembling as one.

#### 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

