Small size, great protection

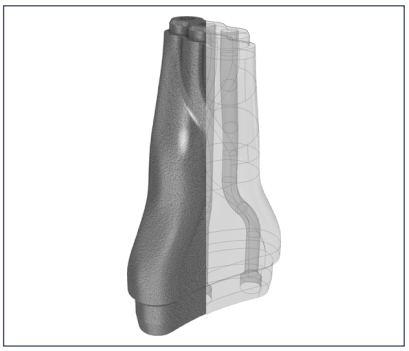
Precision and complexity are inevitable in the field of fibre optics technology. Endoscope tips, fibre guides and general miniaturisation of mechanisms help to decisively advance minimally invasive surgery. By means of Micro Laser Sintering (MLS), the required components are developed flexibly for the respective application and manufactured on demand. Size and shape are adapted according to the different application areas.

That is what it's all about

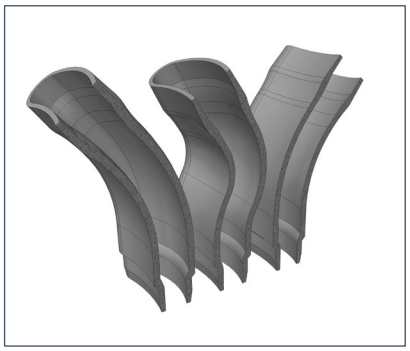
The basic function of any optical fiber is to guide light, i.e., to act as a dielectric waveguide: light injected into one end should stay guided in the fiber. In other words, it must be prevented from getting lost. Due to the high index contrast, even tiny scratches of the glass on the outer surface could lead to substantial optical losses by scattering. Therefore, the outer surface would have to be well protected against damage and dirt. This problem can be mitigated with some suitable buffer coating around the fiber on the one hand and proper fiber guidance, covering and fixing periphery on the other hand. Usually, conventionally manufactured components are used for this purpose, whose complexity is technologically limited and the manufacturing costs are often correspondingly high due to the required precision.

Thinking additive

The ability to produce highly complex channel guides with very low component wall thicknesses and tight tolerances without complicated joining processes are the main disciplines of micro 3D printing. The applications are accordingly diverse: from fibre guides, bundles or splitters through end pieces or couplings and connectors, to tips for cameras or endoscopes. Compared to other available metal printing technologies the advantages for Micro Laser Sintering are a significantly higher detail resolution for filigree structures as well as the high surface quality right after the manufacturing process which reduces the post processing costs extraordinary.



complex fiber optics guide



fibre optics cover tubes (section view)

endoscope tip

The featured parts were manufactured with a DMP Micro Laser Sintering system developed by 3D MicroPrint GmbH.

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The technology

Micro Laser Sintering (MLS) is a powder-based additive manufacturing process for micro parts and components with micro characteristics. On the basis of digital CAD data, a DMP machine from 3D MicroPrint builds up the workpiece layer by layer without recognizing this on the finished product. Product designers' benefit from newly gained design freedom (cavities, inner structures) as additive manufacturing eliminates shape constraints in many areas. Complex structures such as intertwined or interwoven individual parts can thus be manufactured to the highest quality. This tool-free processes enable cost-effective production of single pieces up to individualized series products.

About 3D MicroPrint GmbH

3D MicroPrint GmbH is known for high-precision micro parts manufactured by Micro Laser Sintering. Since the company was founded in 2013 by EOS GmbH and 3D-Micromac AG, the additive manufacturing process has been further developed for micro parts and has been adapted to run an industrial production. Today we are providing our customers the entire portfolio of design consulting for additive manufacturing, feasibility studies and parts production up to their own 3D MicroPrint Micro Laser Sintering system. Furthermore 3D MicroPrint offers material developments for exclusive technologies on demand. The key applications for micro parts are medical industry, wearables, semiconductors and micro industries, high frequency applications as well as aerospace.

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