

# PRESS RELEASE

## **Fast and cost-effective: process-safe additive manufacturing of titanium components in the aerospace industry**

With the project "EasyTitan", the Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM in Dresden has launched a project for the rapid and process-reliable manufacturing of light-metal components in aerospace. Together with the space management of the German Aerospace Center e.V. (DLR), filament-based metal printing processes are to be optimized under reduced gravity conditions. The aim is to develop additive manufacturing processes for use in space.

In order to minimize the use of equipment and consumables and the associated costs, developments are focusing on the further development of a hybrid process chain for the simple production of titanium components. At the beginning of this chain is the additive metal printing process Fused Filament Fabrication (FFF), which has already proven its suitability in the aerospace industry. The plastic molds created here are then filled with a metal powder suspension in a controlled manner during a gel casting process to mold components. Finally, they can be compacted into fully-fledged metal components during a heat treatment process (sintering).

Central to this is the use of the light metal Ti-6Al-4V, the processing of which is to be qualified as a gel casting suspension. In addition, the influence of various gravity conditions on the manufacturing process is to be investigated with the aid of accompanying simulations. This will lay the foundation for new concepts for defect-free and simple filling of printed molds.

The expected results of the project are manifold. For the gel casting suspension, a recipe for Ti-6Al-4V powder will be developed, the simulation tool for the design of filling processes will be created, and the elaborated processing and handling concept for the Ti-6Al-4V suspension will be developed.

In the field of heat treatment, the results will be used to create a catalog of requirements for a minimum furnace concept for space.

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**Editor**

**FRAUNHOFER INSTITUTE FOR MANUFACTURING TECHNOLOGY AND ADVANCED MATERIALS IFAM,  
BRANCH LAB DRESDEN**

In the future, the results should also be usable in further projects on casting processing and heat treatment. Even though "EasyTitan" is designed for space travel, the results are equally conceivable for terrestrial applications. Examples include solutions for the production of design studies, prototypes and special, small and medium series. The reason for the wide range of potential applications is that the process combines the advantages of a low investment volume with simple and fast processing and yet achievable high surface quality.

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In addition to the manufacturing route via gel casting used in the "Easy Titan" project, direct metal printing via the filament-based approach is also being pursued at Fraunhofer IFAM in Dresden. If you would like to learn more about this additive manufacturing process Fused Filament Fabrication, we cordially invite you to the industry workshop "Additiver metallischer Filamentdruck für die Praxis" (in German) on May 27, 2021 at Fraunhofer IFAM in Dresden. Get an insight into the development status of FFF as well as application examples from industrial partners and an overview of the commercial process chain. [Here you can find out more about the event and register directly.](#)

[Further information on Additive Manufacturing at Fraunhofer IFAM Dresden.](#)

Gefördert durch:



aufgrund eines Beschlusses  
des Deutschen Bundestages

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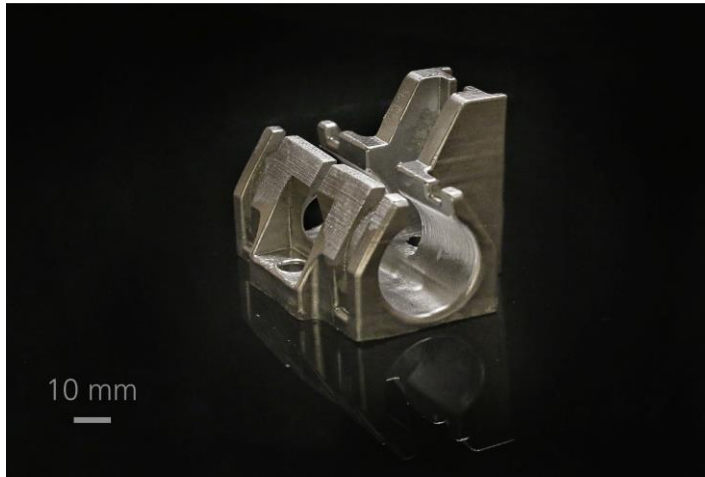
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Bracket for a linear guide  
(demonstrator),  
manufactured by means of  
gelcasting