

PRESS RELEASE

Versatile and inexpensive: Alternative powders developed for the additive manufacturing of steels

At the Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM in Dresden, a new type of iron powder has been successfully processed and tested, which answers one of the cost questions in additive manufacturing and opens up new possibilities.

Up to now, only spherical powders produced by inert gas atomization have been used for additive manufacturing in the powder bed-based processes Selective Electron Beam Melting (SEBM) and Selective Laser Melting (SLM). As a result, the prices are very high.

With the newly tested production method, prices for iron powder can be achieved which are only around 10 % of current costs. There are also inexpensive alternatives for other materials, such as HDH titanium powder.

Fraunhofer IFAM in Dresden has now shown with a feasibility study for processing by SEBM that dimensionally stable components can be produced with this iron powder. Despite the more irregular particle shape and the expected poorer flowability compared to gas atomized powders, this iron powder is a real low-cost alternative. Furthermore, it has been repeatedly proven that the SEBM process is a very robust technology with regard to variations in the flowability of the powder.

The addition of various powder mixtures and, thus, the processing of a wide variety of alloys have also been successfully tested. Detailed investigations into the respective alloy behavior are currently underway.

Thus, Fraunhofer IFAM Dresden has not only created an inexpensive alternative for the additive manufacturing of steels, which is also conceivable for other materials. Material flexibility also increases and a larger range of materials becomes economically feasible.

The institute offers partners from industry and research a wide range of development services from powder to component, e.g. in the form of feasibility studies, the evaluation of powders for additive manufacturing and the qualification of new materials. Furthermore, component development, starting with powder and continuing

Editor

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

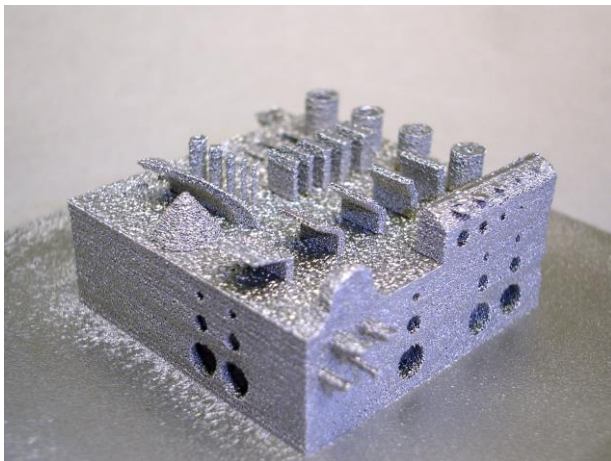
through design (e.g. topology optimization for weight reduction and/or component integration) to production and post-processing, is part of the offer.

PRESS RELEASE

July 11, 2019 || Page 2 | 2

In the Innovation Center Additive Manufacturing (ICAM), the institute has bundled its additive manufacturing technologies in one location and can thus offer tailor-made solutions for a wide variety of problems from a single source. Customers can choose from the following processes at the site: Selective Electron Beam Melting, 3D Screen Printing, Fused Filament Fabrication, three-dimensional stencil printing and dispense printing.

[Learn more about Additive Manufacturing at Fraunhofer IFAM Dresden.](#)



Iron powder demonstrator
component produced by
Selective Electron Beam
Melting
(Design from Agent-3D)

The **Fraunhofer-Gesellschaft** is the leading organization for applied research in Europe. Its research activities are conducted by 72 institutes and research units at locations throughout Germany. The Fraunhofer-Gesellschaft employs a staff of more than 26,600, who work with an annual research budget totaling more than 2.6 billion euros. Of this sum, more than 2.2 billion euros is generated through contract research. Around 70 percent of the Fraunhofer-Gesellschaft's contract research revenue is derived from contracts with industry and from publicly financed research projects. International collaborations with excellent research partners and innovative companies around the world ensure direct access to regions of the greatest importance to present and future scientific progress and economic development.

Editor

Cornelia Müller | Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM, Branch Lab Dresden |
Phone +49 351 2537-555 | Winterbergstrasse 28 | 01277 Dresden | www.ifam-dd.fraunhofer.de | cornelia.mueller@ifam-dd.fraunhofer.de |

Further Contact

Dr. rer. nat. Burghardt Klöden | Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM, Branch Lab Dresden |
Phone +49 351 2537-384 | burghardt.kloeden@ifam-dd.fraunhofer.de