

AGENT-3D – Additive-generative manufacturing

The 3D-Revolution for products manufactured in the digital age.



- **Dispensing head.**
© Fraunhofer IWS
- **Turbo impeller.**
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- **Propeller, injection molding core with meander cooling channel, Bayonet nozzle.**
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- **3D printing**
A 3D printer builds three-dimensional objects layer by layer. The printing process is computer controlled, based on a predefined 3D model. Typical materials that are layered on top of one another in liquid form by a 3D printer include plastics, synthetic resin, ceramics and metals.
- **Additive-generative manufacturing**
Additive-generative manufacturing involves 'generating' a component by successively 'adding' layers of material, usually using laser light or an electron beam. Unlike conventional manufacturing processes, additive-generative manufacturing makes it easy to combine several different materials, produce complex components at no additional cost, and offer replacement parts without having to store them.
- **Industry 4.0**
The real and virtual worlds are converging into the "Internet of Things" in what is being dubbed the "Fourth Industrial Revolution". The term "Industry 4.0" refers to the goal of getting industry into shape for this process. Clients and business partners, for example, will be directly integrated into business and value creation processes, while intelligent monitoring will be used to manage and optimize manufacturing processes in real time.

Additive-generative manufacturing is revolutionizing the industrial production process globally. Leipzig Fraunhofer Center researchers are examining ways of readying the new technologies for the market in eastern Germany.

3D printing ● and laser and electron-beam based procedures should enable individual components to be manufactured with a smaller amount of material in a shorter time frame in future, whether they be joint prostheses made from maize starch or titanium components for a gas turbine burner.

The production processes of the future

Following the strategy phase, the first technology projects are set to be implemented starting from autumn 2015. The research institutions involved will document, analyze and evaluate their progress and results. The Leipzig researchers will then focus on the question of how additive-generative manufacturing techniques are changing conventional manufacturing processes and what the production processes of the future ● might look like.

Duration: 1/2014 – 6/2015
(duration project: 2014 – 2020)

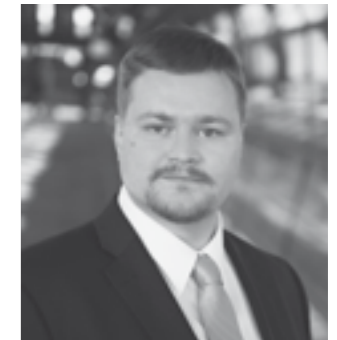
Client: Federal Ministry of Education and Research

Partners: Twelve research institutions and more than 45 companies

Team: Steffen Preissler, Dr. Harald Lehmann, Annamaria Riemer, Marianne Polkau, Inga Žirkova

Concept for strategy development

Twelve research institutions and more than 45 companies launched the strategic alliance AGENT-3D in 2014, with scientific oversight provided by the Fraunhofer Institute for Material and Beam Technology Dresden. The interdisciplinary team intends to build a strong network of representatives from industry, SMEs and research institutions in eastern Germany and develop additive-generative manufacturing ● into a key technology. Leipzig Fraunhofer Center researchers from the Knowledge and Technology Transfer Division are supporting the alliance as it develops its strategy. The organizational, communications and innovation concept of the alliance are based on a market study, expert interviews and partner surveys.



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