

Press Release

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WE3D: LIGHT METAL COMPONENTS FROM THE 3D PRINTER

Starting shot for COMET project: LKR Light Metals Competence Centre Ranshofen leads Austria-wide consortium

Ranshofen/Vienna: Great success for the LKR Light Metal Competence Centre Ranshofen of the AIT Austrian Institute of Technology: With the funding approval for the COMET project "We3D" (Wire- based additive manufacturing - materials and technologies - for 3D metal structures of the future), a comprehensive research project in the field of industrial additive manufacturing will now be realised. Under the leadership of the LKR, a broad consortium of research and industry partners will take wire-based additive manufacturing (WAM) to a new level in the coming years.

Additive manufacturing as the manufacturing process of the future

Additive manufacturing (AM) stands for a new type of manufacturing process in which a component is produced layer by layer based on 3D design data through defined material application of powders or wires. Compared to the conventional, subtractive approach to component manufacturing, the technology has enormous potential, especially in terms of cost and resource efficiency - particularly with regard to the drastic shortening of manufacturing and product development cycles and the reduction of the necessary material input.

One process that is used for the additive manufacturing of metals is the so-called "wire-based additive manufacturing" - also known as "wire-based additive manufacturing". In this process, conventional standard welding equipment is adapted in such a way that it enables the production of components by direct metal deposition from welding wires at comparatively high build-up rates and theoretically unlimited component size. At the LKR Light Metal Competence Centre in Ranshofen, both standard welding consumables based on aluminium and magnesium and special wires developed and produced in-house are processed.

We3D: Next-generation additive manufacturing

Wire-based Additive Manufacturing (WAM) is considered a future key technology using welding wires for the layer-by-layer build-up of large 3D parts that cannot be produced with powder-based AM technologies. WAM combines the advantages of the latest welding technologies, robotic automation, computer-aided design and manufacturing. Thus, large 3D components can be manufactured from new WAM-suitable welding wires made of aluminium and magnesium in a material- and energy-saving, high-quality, cost- and time-efficient manner.

Within the framework of the COMET project "We3D", WAM is now to be further developed accordingly: The goal of the research project with a total volume of approximately 5.3 million Euros is to further develop the technology for new applications in a wide variety of industrial fields - such as the automotive sector, aerospace or mechanical engineering.

Dr. Stephan Ucsnik, thematic coordinator and responsible for the submission at the LKR: "With We3D we want to take wire-based additive manufacturing to a new level: with innovative wire materials, novel process, sensor, control and regulation technologies and validated software tools for process simulation. In this way, we are opening up completely new fields of application for this manufacturing process in the aerospace, oil & gas, automotive and railway sectors. By further developing WAM, we are making a decisive contribution with We3D to a prosperous, modern, competitive and climate-neutral economy - in line with the goals of the European Green Deal for 2050."

COMET: Cooperation between industry and research for the technologies of tomorrow

The COMET Competence Centers for Excellent Technologies programme promotes the establishment of competence centres, the core of which is a high-level research programme jointly defined by industry and science. This should set new research impulses, lead to increased technology transfer and strengthen the innovative capacity of companies. This should lead to new product, process, and service innovations. In this sense, COMET represents an essential factor in strengthening Austria as a research location and business location.

The COMET programme is funded by the Federal Ministry for Climate Protection, Environment, Energy, Mobility, Innovation and Technology (BMK) and the Federal Ministry for Digitisation and Economic Location (BMDW), as well as, in the case of We3D, by the provinces of Upper Austria, Lower Austria, Styria, Vienna and 16 business partners. COMET has been a constant success since 2008. It is managed by the Austrian Research Promotion Agency FFG.

Further information on the LKR Light Metal Competence Centre Ranshofen:

<https://www.ait.ac.at/lkr>

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