AMAREA Technology Enhances Fraunhofer IKTS Innovation with New MMJ ProX 3D Printing Machine

- **AMAREA Technology delivers its next-generation MMJ ProX 3D printing machine to Fraunhofer IKTS, enhancing research in multi-material additive manufacturing.**
- **The 3D printing machine enables precise, scalable production of complex multi-material components with tailored properties, revolutionizing industries like aerospace, electronics, and medical technology.**
- **The Fraunhofer IKTS installation features six printheads, allowing up to six different materials in a single print process, maximizing efficiency and innovation potential.**

March 19, 2025: Dresden, Germany. Just two years after its successful spin-off from Fraunhofer IKTS, AMAREA Technology GmbH has reached another milestone in the commercialization of Multi Material Jetting (MMJ) technology - an innovative additive manufacturing solution that enables precise and efficient layer-by-layer fabrication of components and assemblies from multiple materials. This breakthrough unlocks new possibilities for functionalized, complex structures with customized properties. To further expand Fraunhofer IKTS's expertise in additive and hybrid manufacturing with ceramic materials, the research equipment has been upgraded with a next-generation MMJ ProX 3D printing machine. This partnership powerfully demonstrates how applied research can evolve into market-ready high technology.

The Multi-Material 3D printing machine, featuring a build platform of 530 x 300 x 200 mm, allows for the realization of both miniaturized and large-scale complex components with tailored material properties - features that are either impossible or require significant effort using conventional manufacturing methods. With the MMJ ProX series, AMAREA Technology takes this technology to the next level, enabling precise and scalable production of high-performance Multi-Material components. These components stand out due to their finely tuned mechanical properties, such as variable hardness and flexibility, as well as optimized functional characteristics like electrical conductivity and insulation. Additionally, thermal properties and chemical resistance can be precisely adjusted, for example, by combining UV-resistant materials with structurally robust ones. Aesthetic and haptic properties can also be optimally tailored.

The MMJ ProX series is a modular manufacturing system with a wide range of configuration options, adapting to the specific requirements of industrial and scientific users. The Fraunhofer IKTS-installed variant features six printheads, allowing up to six different materials to be processed in a single print job. This opens new possibilities for applied research in fields such as aerospace, electronics, mechanical engineering, energy, and medical technology, as well as in additive manufacturing for jewelry and watchmaking industries.

Multi Material Jetting (MMJ) selectively deposits particle-filled thermoplastic printing materials in droplet form. These droplets are precisely placed only where material is required, ensuring controlled fusion and layer formation within fractions of a second. This reduces the need for post-processing steps and significantly improves material utilization. Printed monomaterials can be re-melted and reused if needed, and the printing material remains stable for long-term storage.

Dr. Uwe Scheithauer, Group Leader for Additive and Hybrid Manufacturing at Fraunhofer IKTS, also highlights these advantages: “The high material efficiency and reusability of the printing materials make a significant contribution to the sustainability of our manufacturing processes. This allows us to significantly reduce material waste and scrap.”

By delivering the MMJ ProX to Fraunhofer IKTS, AMAREA Technology underscores the innovative power of MMJ technology and its relevance for both industry and research. "We are pleased that Fraunhofer IKTS is among the first customers to utilize our system for the development of novel products, thereby expanding the market for Multi-Material applications," says **Steven Weingarten**, developer of MMJ technology and co-managing partner of AMAREA Technology.

The installation of the MMJ ProX 3D printing machine at Fraunhofer IKTS paves the way for unprecedented innovation potential. Interested companies and research institutions are invited to experience MMJ technology firsthand.

Key Features of the MMJ ProX 3D Printing machine

- Additive manufacturing through precise droplet deposition – from individual droplets for targeted porosity to fully dense structures.
- Instant solidification through rapid cooling – for stable and dimensionally accurate components.
- Material-independent process – compatible with a wide range of material classes
- Unmatched precision:
    - Droplet volume: 0.5 nl to 50.0 nl
    - Droplet diameter: 200 µm to >1000 µm
    - Layer thickness: 70 µm to 300 µm

About Fraunhofer IKTS

The Fraunhofer Institute for Ceramic Technologies and Systems IKTS conducts applied research in high-performance ceramics. As a research and technology service provider, Fraunhofer IKTS develops modern ceramic high-performance materials, industry-relevant manufacturing processes, and prototype components and systems in complete production lines up to pilot scale. Additionally, the research portfolio includes expertise in material diagnostics and testing. With over 800 employees across 13 locations, Fraunhofer IKTS is Europe's largest ceramic research institute.

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About AMAREA Technology

AMAREA Technology GmbH is a system manufacturer of high-performance printing materials and Multi-Material 3D printing machines that can process multiple high-performance materials in one step to produce highly functional components. The company is a spin-off of Fraunhofer IKTS, the largest applied research institute for ceramics in Europe.

AMAREA Technology's Multi Material Jetting technology enables the production of components that are more functional than ever before. The technology is designed to shorten the process from sequential to direct manufacturing, resulting in reduced production times and costs. AMAREA Technology GmbH was founded in February 2023 and is headquartered in Dresden, Germany.

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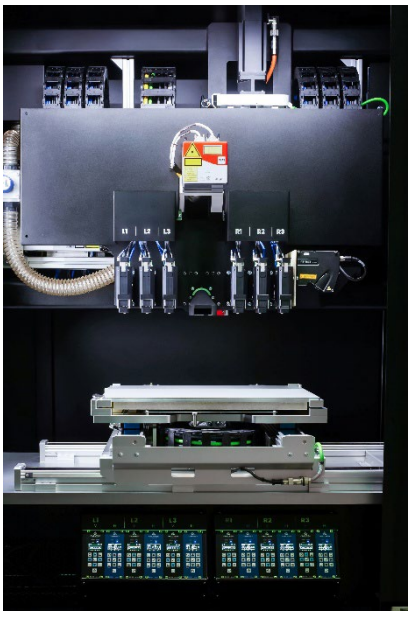
Capture: Successful handover of the MMJ ProX 3D printing machine at Fraunhofer IKTS from AMAREA Technology CEO Steven Weingarten to Lisa Gottlieb, Research Associate at Fraunhofer IKTS.



Images: MMJ ProX next-generation Multi-Material 3D printing machine.