news DIGI3D

LTT-1 Event Successfully Held in Eskişehir!

Eskişehir hosted the LTT-1 event, bringing together students from partner institutions for an intensive week-long training program held between **22-26 September 2025**. The program, organized in Eskişehir, focused on advanced applications of digital design and additive manufacturing, offering participants both theoretical knowledge and hands-on experience. As part of the training, experts from **TEI** delivered a series of presentations addressing key aspects of digital design and manufacturing in 3D printing. These sessions provided students with valuable insights into current industrial practices and emerging technologies in the field. The program also included a technical visit to the **Eskişehir Technology and Innovation Center (ETIM),** where students toured state-of-the-art 3D printing facilities.

During the visit, participants observed industrial-scale additive manufacturing processes and gained first-hand exposure to advanced production environments. In addition, students carried out practical design and manufacturing activities at **ESOGU**. Participants designed and fabricated sample components using different 3D printing techniques, allowing them to compare methods, materials, and production outcomes. The printed samples were presented and discussed with the students, reinforcing their understanding of the strengths and limitations of various additive manufacturing technologies. Overall, the LTT-1 event in Eskişehir provided a comprehensive learning experience, successfully combining expert knowledge, facility visits, and practical application, and contributed significantly to the professional development of the participating students.

Funded by the European Union

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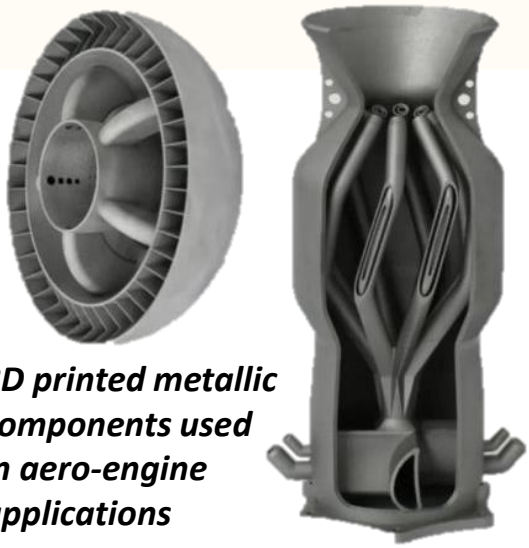
Metallic 3D Printing Takes Flight in Aerospace

***Additive manufacturing of metallic materials**—commonly known as **metal 3D printing**—is reshaping how aerospace components are designed, produced, and maintained. By building parts layer by layer from metal powders or wires, this technology enables the fabrication of highly complex geometries that are difficult or impossible to achieve with conventional manufacturing. Lightweight lattice structures, internal cooling channels, and part consolidation are among the key advantages, directly supporting the aerospace industry's constant drive for weight reduction, performance optimization, and fuel efficiency. Aerospace-grade metals such as tit**anium alloys (Ti-6Al-4V), nickel-based superalloys (e.g., Inconel 718), aluminum alloys,** and **stainless steels** are widely used in metal additive manufacturing. Techniques like **Laser Powder Bed Fusion (LPBF)** and **Directed Energy Deposition (DED)** allow precise control over material placement and microstructure, making them suitable for critical components including **brackets, heat exchangers, turbine parts**, and **structural fittings**. Beyond new production, metal 3D printing also plays a growing role in repair and refurbishment, enabling localized material deposition on high-value components and extending their service life. Despite its advantages, the adoption of metal 3D printing in aerospace requires rigorous **qualification** and **certification** processes. Mechanical performance, fatigue behavior, and process repeatability must meet strict aviation standards. As research advances in process monitoring, material characterization, and post-processing techniques, confidence in additively manufactured metallic parts continues to grow. Today, metal 3D printing is no longer a future concept—it is a strategic manufacturing tool helping the aerospace industry innovate faster, reduce costs, and push the boundaries of design.*



3D printed metallic components used in aero-engine applications

Eskişehir Design and Innovation Center (ETIM) was established within the **Eskişehir Technology Development Zone**, located on the **Eskişehir Organized Industrial Zone** campus, under the **Technical Assistance Project**. The project is implemented by **Anadolu Technology Research Park (ATAP)** within the framework of the **Competitive Sectors Programme**, which is financed by the **European Union** and carried out by the **Ministry of Industry and Technology**.

The **primary objective of ETIM** is to enhance the global competitiveness of SMEs operating in **Eskişehir** and its surrounding regions, particularly in the **aerospace, rail systems, machinery manufacturing, automotive**, and **white goods** sectors, through the development of innovative products. By directly contributing to the improvement of engineering capabilities—such as **design, manufacturing**, and **prototyping**—ETIM aims to reduce the country's foreign trade deficit and increase the overall competitiveness of the region.

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