

PRESS RELEASE

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Formnext 2024 Innovations for post-processing and finishing of additively manufactured components

At Formnext 2024, the Fraunhofer Group for Production will be presenting its comprehensive range of solutions for the post-processing of additively manufactured components. Under the title "Additive Manufacturing - Finishing and Refinement Solutions", the Fraunhofer Institutes will be showcasing numerous processes for surface finishing and functionalisation. A haptic exhibit in the form of a turtle illustrates these technologies and makes them tangible for visitors.

From 19 to 22 November 2024, everything at Formnext in Frankfurt will revolve around additive manufacturing and its further development. The Fraunhofer Group for Production will be represented in Hall 11, Stand D31, where it will be presenting innovative approaches that fully utilise the potential of additively manufactured components. Under the motto 'Additive Manufacturing - Finishing and Refinement Solutions', the participating Fraunhofer Institutes will be presenting various processes that significantly improve the surface quality and functionality of AM components.

The exhibit: A hands-on post-processing process

A special highlight is a haptic demonstration in the form of a turtle produced in a powder bed. Each segment of the turtle shows a different processing step, such as plasma polishing, vibratory cutting, vibratory grinding, selective coating, machining, laser structuring, plasma treatment, milling, glass bead blasting, sandblasting, flow grinding and other processes that offer specific advantages in terms of roughness, costs, surface structure, coating options and more, depending on the application. The additive manufacturing of smart multi-material components and the automated removal of support structures will also be demonstrated using the exhibit.

Visitors to the Fraunhofer stand can touch the segments of the turtle and watch videos about the processes. In this way, they can experience haptically how the post-processing gives the additively manufactured components their final surface quality and function.

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Technology examples from the following partner institutes will be presented:

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- Fraunhofer-Institute for Casting, Composite and Processing Technology IGCV
- Fraunhofer-Research Institution for Additive Production Technologies IAPT
- Fraunhofer-Institute for Manufacturing Engineering and Automation IPA
- Fraunhofer-Institute for Production Systems and Design Technology IPK
- Fraunhofer-Institute for Production Technology IPT
- Fraunhofer-Institute for Surface Engineering and Thin Films IST
- Fraunhofer-Institute for Machine Tools and Forming Technology IWU

From additively manufactured semi-finished products to industrial components

Additive technologies expand production possibilities where traditional processes reach their limits - for example through greater design freedom, lightweight construction options or more efficient utilisation of resources. However, AM components usually still require post-processing in order to fulfil the surface and functional requirements specified by the industry. Depending on the material (stainless steel, polymers, etc.) and the desired function and quality, various technologies are available for refining and functionalising the component surface.

The Fraunhofer Group has been researching new processes for AM post-processing and further developing existing processes for several years. Technologies for the automated removal of support structures and the production of smart multi-material components are also the subject of current research work.

Smart multi-material components consist of several metal alloys and can be equipped with sensors and actuators directly during the layer-by-layer build-up. The automated removal of support structures after production enables additive manufacturing to be scaled up and takes the industrial use of 3D printing a decisive step forward.



The **Fraunhofer-Gesellschaft**, based in Germany, is the world's leading organisation for application-oriented research. With its focus on key technologies relevant to the future and on the utilisation of results in business and industry, it plays a central role in the innovation process. As a signpost and driving force for innovative developments and scientific excellence, it is involved in shaping our society and our future. Founded in 1949, the organisation currently operates 76 institutes and research facilities in Germany. More than 30,000 employees, most of whom are trained in the natural sciences or engineering, work with an annual research budget of 2.9 billion euros. Contract research accounts for 2.5 billion euros of this total.