Project: **Press Release**
Publication: **April 9, 2025**
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Zellerfeld Brings in Fraunhofer IAPT to Scale its Additive Production

Zellerfeld, an internationally successful pioneer in the additive manufacturing of personalized shoes, is on a growth trajectory. The company aims to scale its production environment from 200 to several thousand 3D printers. The experts from the Fraunhofer Institute for Additive Production Technologies IAPT are accompanying the conceptualization of the new infrastructure.

Hamburg, April 9, 2025 – Additive production – or Additive Manufacturing (AM) – opens up numerous opportunities, from resource-efficient lightweight construction to customized components in batch size 1, such as patient-specific implants or personalized products. This is where the business model of the German-American company Zellerfeld comes into play. It revolutionizes shoe production by 3D printing functional shoes with varying designs. The additive production of the shoes is based on individual scans, being fully digital and sustainable.

The international success prompts Zellerfeld to expand its production capacities. The transition from hundreds to thousands of 3D printers requires precise planning of spatial requirements while adhering to legal regulations and safety aspects. At the same time, Zellerfeld aims to identify and leverage optimization possibilities in the production process.

For the success of this large project, Zellerfeld is relying, among other things, on the consultancy of Fraunhofer IAPT and its expertise along the entire AM production route. The applied research of the Fraunhofer IAPT contributes to improving industrial production processes and supports Zellerfeld in its growth trajectory.

From Plan to Layout: Approach and Results

The first phase of the project has been completed by Fraunhofer IAPT and Zellerfeld with the definition of requirements for a highly scaled production. During the six-week project duration, the production metrics relevant for scaling from the current production concept were reviewed, validated, and assessed. The team at Fraunhofer IAPT identified bottlenecks, highlighted opportunities, and developed practical recommendations for action. Recommendations, particularly regarding fire protection, have also been incorporated into the requirements catalog to ensure safe and compliant production.

A central result of Fraunhofer IAPT's work is a layout of the production environment. It takes into account not only the arrangement of production areas but also office spaces and measures for fault tolerance. A well-founded space requirement assessment forms the basis for long-term improvements. For selecting an optimal property as a future production site, Fraunhofer IAPT specified technical and regulatory guidelines.

Lennard Stoever, Co-Founder and President of Zellerfeld, comments on the collaboration: "Fraunhofer IAPT helped us validate crucial insights with a practical analysis – a valuable foundation for our further scaling."

The jointly developed concept enables Zellerfeld to implement its growth strategy in a structured and future-oriented manner, significantly increasing production from the current 200 3D printers to up to 5,000 3D printers. It was created in close collaboration with Zellerfeld's

employees. The methodology of Fraunhofer IAPT ensures a solution that is theoretically sound and practically aligned with the real needs of production.

About Fraunhofer IAPT
The Fraunhofer IAPT stands for sustainable innovations in the field of additive manufacturing. Its portfolio includes research and development along the entire AM manufacturing route – from unique component designs and system solutions, including process and material levels, to factory planning and virtualization. All aspects of the additive manufacturing process are comprehensively considered from the initial idea and feasibility to industrial implementation in new or existing production environments. A particular focus is placed on socially relevant future topics in the fields of life sciences, energy, mobility, as well as security and defense. Our overarching goal is to ensure that additive manufacturing technologies are industrially applied, significantly contributing to increased productivity, resource conservation, resilience, and prosperity.

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