



Rapid.Tech 3D
22–23 June 2021
Messe Erfurt

Sparking a real revolution

AM is a game-changer for freedom and sustainability in architecture and building – new Rapid.Tech 3D forum demonstrates the potential of additive technologies in this field

(Erfurt, 01 June 2021). Imagine being able to build on a more customised basis, yet no less effectively, using less material, cutting transport costs, applying automated processes... additive manufacturing (AM) for architecture and building offers all this potential. “By using additive technologies, you can trigger nothing short of a real revolution in this field. This will pave the way for a quantum leap in freedom and sustainability in construction,” declares Bruno Knychalla with conviction. The architect and construction roboticist is managing director of Additive Tectonics GmbH, a start-up by 3D printing pioneer FIT AG, and has put together the lecture programme for the forum AM in Construction Engineering & Architecture.

This session on 23 June 2021 is new on the Rapid.Tech 3D specialist conference, which this year is taking place exclusively online due to the pandemic. Its main focus this year is sustainability. In response to ambitious climate objectives, the focus is turning to resource-efficient and energy-efficient raw materials and production processes in construction. “With sustainable materials and processes, AM can make a significant contribution here,” points out Bruno Knychalla.

However, wood – a renewable raw material – has so far escaped much notice when it comes to additive manufacturing in the construction industry. In his talk, Dr. Klaudius Henke from the Technical University of Munich outlines the possible ways in which wood could be used, and how it could reduce material costs. He presents solutions such as the extrusion of lightweight concrete or the selective binding of wood-based particles for use as a construction material.

Sebastian Künne of Otto Fuchs KG demonstrates the potential offered by the selective laser melting (SLM) process in manufacturing individual 3D-printed components quickly, flexibly and resource-efficiently. In particular, he examines factors such as process quality, the analyses that accompany the print job and reproducibility in order to pave the way for a component that can be approved.

Additive manufacturing doesn’t always have to involve a “layer-by-layer” build. Using the “branch-by-branch” method, it is possible to expand the design of highly efficient, complex structural systems quite considerably. Maged Guerguis of the University of Tennessee explains how this works in his lecture. The research institute is one of the world’s most renowned bodies for 3D printing in construction. The architecture and design expert showcases a robot-controlled platform for additive manufacturing and computer-aided design, which permits the full-scale design and production of a 3D-printed component. Thanks to topology optimisation, which imitates structures and shapes found in nature, the process uses far less material without reducing quality.

Christian Wiesner of Additive Tectonics GmbH demonstrates how aspects such as industrialisation and geometric freedom can be combined in construction using additive methods. Selective cement activation, or SCA for short, has proven radically sustainable for this purpose. The company has developed its own material Econit, a magnesium oxychloride cement that is harder than normal cement and notable for its sustainability credentials in terms of energy efficiency and other properties. The aim is to develop a scalable industrial additive-manufacturing system that can fabricate individual construction elements with a high degree of automation and meeting the highest quality standards. The system has been trialled on, among other things, a large façade measuring approximately 3,000 square metres, featuring some 650 panels in all sorts of shapes.

The new forum AM in Construction Engineering & Architecture on 23 June 2021 is just one of the sessions on offer at the digital Rapid.Tech 3D specialist conference. Also new on the programme is the forum News From AM on 22 June. Furthermore, the ever-popular sessions of Automotive & Mobility; Aviation; Medical,



Dental & Orthopaedic Technology; Software, Processes & Construction; Tool, Model and Mould Making; AM Science and the Fraunhofer Competence Field Additive Manufacturing will also be hosted on 22 and 23 June.

The full conference programme is available at:

<https://www.rapidtech-3d.com/conference/conference-program.html>

Tickets can be purchased via the online shop:

<https://ticketing14.cld.ondemand.com/shop?shopid=202>

General information about the event: www.rapidtech-3d.com

The Rapid.Tech 3D specialist conference and accompanying exhibition is being broadcast online thanks to a partnership with Jena-based room AG. room AG provides all-round 2D, 3D, Virtual Reality (VR) and Augmented Reality (AR) solutions, and this practical solution is enabling the event to go ahead, even in the context of the pandemic. room AG has won multiple awards for its unrivalled start-up idea and for individual flagship projects, including at the German Innovation Awards 2019 and the Thuringia Innovation Awards 2020.

Website: www.room.com

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