



**Rapid.Tech (14–16 June 2016), Messe Erfurt**

**Unlimited freedom for design, construction and toolmaking  
Additive thinking promotes innovation and competitiveness**

*Erfurt, May 2016: Additive Manufacturing (AM) or industrial 3D Printing enables components to be developed without the limitations of traditional production processes. Functional optimisation is centre stage here, and almost unlimited freedom is opening up for design engineers to explore innovative product concepts. In order to leverage the full benefit of this potential for value creation, however, a new approach to construction design is needed. This will be the subject of the “Design” and “Tools” trade forums at the 13th Rapid.Tech. The international trade show and conference for Additive Manufacturing is being held from 14–16 June 2016 in Erfurt.*

The design of conventionally manufactured components and tools follows rules - which can be overridden in Additive Manufacturing. The design engineer can set aside the constraints of manufacturing technology and simply work on the principle of form following function. AM makes it possible to create cavities, hinges, joints, highly complex geometrics and designs with integrated cooling or tempering channels which cannot be produced conventionally. “AM has huge potential for product innovation and for increasing added value. It is only possible to leverage this fully, though, if the design process itself includes additive thinking,” explains Professor Detmar Zimmer, Doctor of Engineering and Chair of Design and Drive Technology at Paderborn University Faculty of Mechanical Engineering, who is convener of the “Design” trade forum (14 June 2016) at the 13th Rapid.Tech. What “additive thinking” actually means is the subject of the first presentation. It concludes that the aim of new technologies should be to create added value that outstrips the high costs of manufacturing components using AM. Another talk illustrates the opportunities for product optimisation using Additive Manufacturing as well as approaches to information gathering, decision making and design. It also covers quality control methodologies throughout the manufacturing process. Alongside these sessions, the trade forum will showcase solutions that reduce development costs by using advanced CAD techniques for



automated design and additive design manufacturing. A study of design recommendations for manufacturing small and light structures using electron laser beam smelting will also be presented. Two examples of successful design will round off the agenda. One is an AM-produced customised bicycle handlebar stem that, owing to its optimised strength and lightweight construction, weighs 30 percent less than its commercial counterparts. The second is an affordable, ultra-light, hybrid design gripper, which is made of carbon fibre sections connected by AM-produced nodes.

### **Time and cost savings for tool and mould manufacture**

The Rapid.Tech “Tools” trade forum (15 June 2016) is devoted to one of the most elaborate and expensive areas of manufacturing. “The design freedom offered by AM, for instance to integrate bionic components such as complex cooling ducts, doesn’t just create huge potential savings, for example, increased service life for tools and shorter cycle times. It also leads to improved quality of injection-moulded parts,” says Dietmar Frank, Regional Director for Central Europe at EOS GmbH and convenor of this trade forum. Presentations include the integration of direct metal laser sintering (DMLS) in tool and mould manufacture, where the process is being combined with traditional abrasive technologies. The opportunities offered by industrial computer tomography for optimising the value chain in AM production of precisely sized functional components will also be demonstrated. Other topics being explored at the trade forum include the capacity of hot work tool steels with a carbon content of over 0.4 percent for laser melting and a robotic Additive Manufacturing process for the production of geometrically complex large components.

“In order to stay abreast of the rapid advances in Additive Manufacturing and industrial 3D Printing, we have supplemented our established programme for this year’s Rapid.Tech with the “3D Metal Printing”, “Additive Contract Manufacturing”, “Electronic Engineering” and “Automotive Industry” trade forums. The extended, three-day duration of the event has also contributed to this,” explains Wieland Kniffka, CEO of Messe Erfurt. The complete programme can be found at [www.rapidtech.de](http://www.rapidtech.de). All presentations will be simultaneously translated (German<>English).

Thanks to its unique combination of trade show and specialist conference, Rapid.Tech in Erfurt is among the world’s foremost events in the field of Additive Manufacturing and



industrial 3D Printing. For the fourth time FabCon 3.D, Germany's 3D Printing fair for semi-professional users and prosumers, will be held in parallel with the event.

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Contact for editorial matters:

SCHULZ.PRESSE.TEXT. , Doris Schulz, Journalist (DJV), Landhausstrasse 12,  
70825 Korntal, Germany, Phone +49 (0)711 854085,  
[doris.schulz@presstextschulz.de](mailto:doris.schulz@presstextschulz.de), [www.schulzpresstext.de](http://www.schulzpresstext.de)

Messe Erfurt GmbH, Thomas Tenzler, Gothaer Strasse 34, 99094 Erfurt,  
Germany, Phone +49 361 400-1500, [rapidtech@messe-erfurt.de](mailto:rapidtech@messe-erfurt.de),  
[www.rapidtech.de](http://www.rapidtech.de); [www.fabcon-germany.com](http://www.fabcon-germany.com)