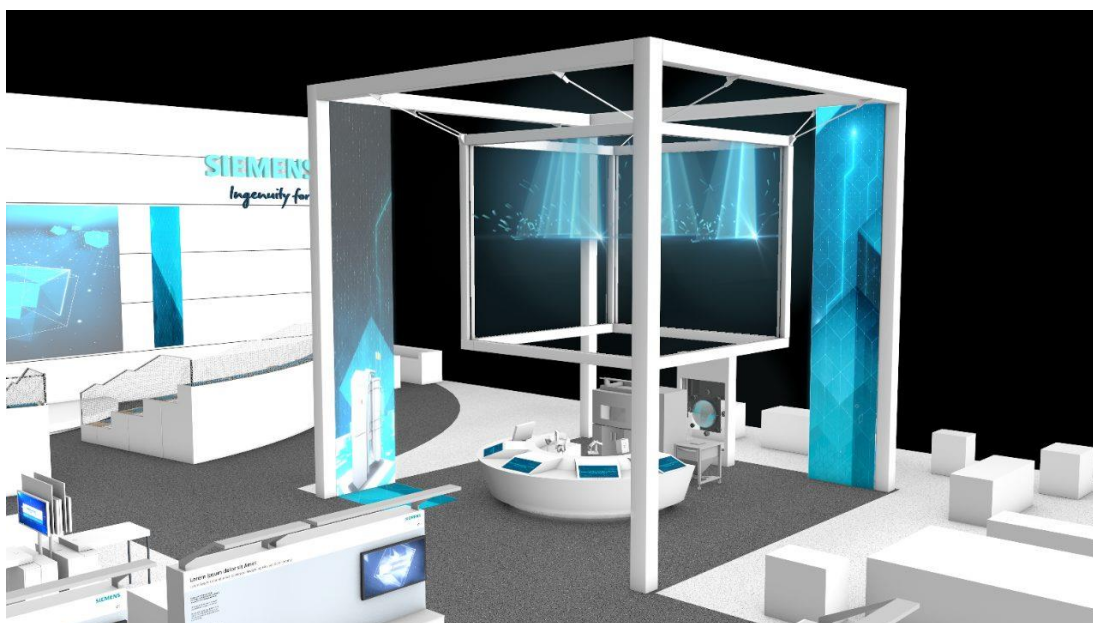


Hanover, April 24, 2017

Hannover Messe 2017, Hall 9, Booth D35

Additive Manufacturing: Digitalization for greater productivity and customization

The Siemens booth features an Additive Manufacturing showcase at the
Hannover Messe 2017



The manufacturing industry is facing a variety of challenges. It needs to reduce time-to-market for products, accommodate increasingly individual customer requirements, and offer competitive prices while maintaining the same or even a higher level of quality. The fast-growing digitalization revolution offers new options for meeting these requirements – and additive manufacturing is making an important contribution. This manufacturing method allows industry to save time while flexibly and efficiently producing workpieces and products that would be impossible using conventional production processes. At the Hannover Messe 2017 from April 24 to 28, Siemens will be demonstrating the benefits of additive manufacturing using a number of vivid examples. How automation and digitalization can work together will be illustrated in line with the trade show motto this year: “Discover the value of the

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Digital Enterprise.” Using digital data, additive manufacturing makes it possible to produce geometrically complex objects that exhibit an extremely high strength-to-weight ratio. It also makes it much easier to create customized products as it eliminates the need for labor-intensive production line resetting processes at the preparation stage and simply generates new data for the additive manufacturing production system. This also means that spare parts can be manufactured when they are actually required, which cuts down on warehousing and logistics costs.

Whether additive manufacturing offers true value added depends largely on how the process is integrated within the company. Here, Siemens offers an extensive and interlinked portfolio for the industrialization of additive manufacturing production systems and their integration into digitalized enterprises. Siemens shows the entire procedure on a multimedia table that provides a detailed demonstration of all process steps, from the digital design of a product and its engineering to preparation for printing. With a machine from EOS, the global market leader in powder-bed manufacturing systems, the workpieces are then printed at the booth using a powder-bed fusion process – enabling us to depict the entire production process from the digital to the actual production world.

At the Hannover Messe, this will be illustrated using a practical example: The economical production of customized, patient-specific surgery guides for the implantation of artificial knee joints has only been made possible with the advent of additive manufacturing. Computed tomography and the conversion of the resulting data result in the creation of a precise 3D model of a patient’s anatomy – a digital twin. Based on the digital twin, bioengineers develop a precise plan for the surgery and patient-specific implants and surgical instruments that were also initially developed as digital twins. After approving the plan, the surgeon can transform the model into a real object and then use the printed instrument. This process makes it possible to eliminate as many as nine work steps compared with a traditional surgery. For patients this means a faster recovery, shorter hospital stays, and fewer revision operations.

The PLM software, Siemens NX, is used along with Teamcenter as a product data management system for the work steps, from product design to print preparation. Totally Integrated Automation, the industrial automation technology from Siemens, makes it possible to link the virtual world to the actual production. The

industrialization of the additive manufacturing process is enabled by a variety of solutions, including the Simatic S7-1500 software controller combined with the Simatic ET 200SP distributed I/O and together with Simatic HMI, Sinamics S converters, and Simotics S motors as well as protection, switching, measuring, and monitoring devices from the Sirius and Sentron portfolios. Siemens continues to advance these solutions, and support the customers throughout the entire product lifecycle. This is why EOS will be relying on industrial automation technology from Siemens in future machine generations of its AM production system.

The complete portfolio of automation hardware and industrial software designed to interact perfectly together offers advantages for patients and businesses alike – and similar benefits apply to other sectors of industry.

This background information and further material are available at

<http://www.siemens.com/press/pool/de/events/2017/digitalfactory/2017-04-hannovermesse/background-additive-manufacturing-e.pdf>

For further information on Siemens at the Hannover Messe 2017, please see

www.siemens.com/press/hm17 and www.siemens.com/hannovermesse

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Siemens AG (Berlin and Munich) is a global technology powerhouse that has stood for engineering excellence, innovation, quality, reliability and internationality for more than 165 years. The company is active in more than 200 countries, focusing on the areas of electrification, automation and digitalization. One of the world's largest producers of energy-efficient, resource-saving technologies, Siemens is a leading supplier of efficient power generation and power transmission solutions and a pioneer in infrastructure solutions as well as automation, drive and software solutions for industry. The company is also a leading provider of medical imaging equipment – such as computed tomography and magnetic resonance imaging systems – and a leader in laboratory diagnostics as well as clinical IT. In fiscal 2016, which ended on September 30, 2016, Siemens generated revenue of €79.6 billion and net income of €5.6 billion. At the end of September 2016, the company had around 351,000 employees worldwide. Further information is available on the Internet at www.siemens.com.