

Formnext 2019, Hall 12.1, Booth D81

## Siemens further expands portfolio and partnerships for industrialized additive manufacturing

- **Extension of seamless software and automation solutions in the Digital Enterprise portfolio drive forward the industrialization of additive manufacturing for machine builders and users**
- **Expansion of partner network advances industrial additive applications**
- **New: AM factory planning now offered by IoT Services Consulting**
- **Siemens Additive Manufacturing Network is now globally available**

Under the slogan “Thinking industrialized Additive Manufacturing further!”, Siemens is exhibiting at Formnext 2019, the leading global trade fair dedicated to additive manufacturing and all of its upstream and downstream processes, where it will present its entire solution portfolio for industrialized additive manufacturing, tailored to specific industries. With the Digital Enterprise portfolio, the company is offering a comprehensive end-to-end solution for the entire value chain from function-driven design through manufacturing to services. The portfolio of industrial software and automation also includes leading simulation software and CNC technology. With its Digital Enterprise portfolio, Siemens supports the complete use of digital twins, which simulate the real world for machine manufacturers and users in order to ensure the correct manufacture of a component on the very first attempt.

### **Partner network for advancing industrial applications and innovations**

Together with strategic partners, at this year’s Formnext Siemens is presenting a selection of real-life additive manufacturing applications, which illustrate the end-to-end process for four widely used AM technologies: binder jetting, powder bed fusion, material extrusion and directed energy deposition. “All of our industrial additive applications have been developed in close partnership with machine builders and users. Their success is based on end-to-end solutions for specific industrial applications. Our

tools for development, simulation, production preparation and 3D printing are connected in a seamless system, the Digital Enterprise portfolio, and seamlessly integrated into our partners' production solutions. In recent months, we significantly expanded this portfolio by adding further innovations," explains Dr. Karsten Heuser, Vice President Additive Manufacturing at Siemens Digital Industries. The innovations developed with partners, enable support for a broader range of industrial applications and are driven by the seamless digitalization of the entire process chain – design, production planning, production engineering, production execution and services.

Significant progress has been made in the optimization of the printing process for powder-based additive manufacturing. Local overheating, which can arise when the laser moves over the powder on preprogrammed paths, can adversely affect the printing process or the part geometry. With NX AM Path Optimizer, a new beta technology integrated in NX software, Siemens demonstrates how to locally adapt and optimize the printing process during production planning through a machine learning algorithm trained using synthetic data from a multi-physics simulation. The AM Path Optimizer technology quickly calculates and corrects laser paths and process parameters as it detects imminent overheating. This technology complements the Simcenter 3D Additive Manufacturing Process Simulation launched last year and is being demonstrated with TRUMPF as a partner.

In the field of machinery equipment, Siemens and SCANLAB are presenting an integrated control solution for manufacturers who build machines for a wide range of laser processing methods. This jointly developed solution integrates a scanning head control into the machine controller. A shared IPC platform for PLC, HMI and scanning head control combines all automation tasks in one system, which enables faster queries thanks to reduced interfaces.

In September of this year, a strategic partnership agreement was signed with Farsoon, a leading Chinese manufacturer in the powder bed fusion technology segment. The first result of this cooperation is the new and efficient FS301M industrial metal printing system. The system is equipped with Siemens automation technology from the Digital Enterprise portfolio and will be presented at the Farsoon booth.

With CEAD, a technology supplier of 3D printing equipment for fiber reinforced materials on a big scale, Siemens showcases their latest innovation, the AM Flexbot. The machine consists of a Comau robot arm, controlled by Sinumerik Run MyRobot /Direct Control and is equipped with a single screw extruder. With this, the AM Flexbot achieves great precision despite of complex robot movements, which enables large scale 3D printing and even a combination of printing and milling to create final contours. The printing of large fiber reinforced parts becomes reality with CEAD's multiple 3D printing solutions.

### **IoT Services Consulting extends portfolio to include the digital AM factory planning**

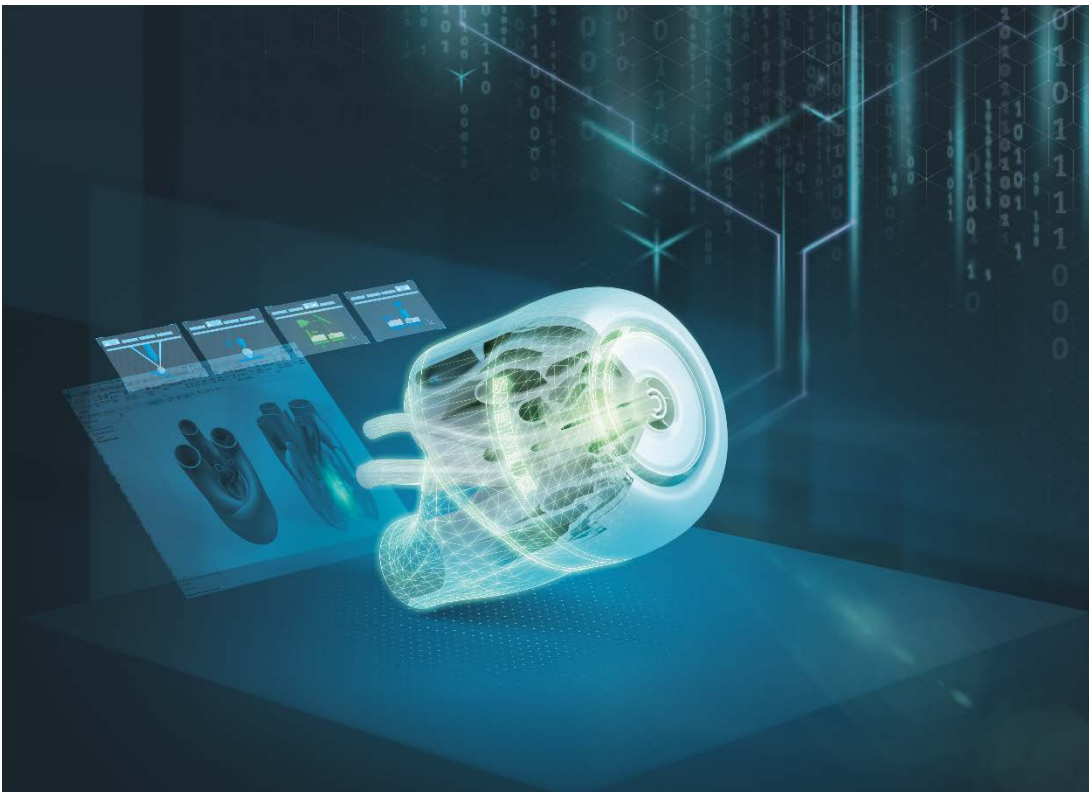
With the digital AM factory kit, IoT Services Consulting is presenting a further component for the industrialization of additive manufacturing at Formnext. The company is combining its expertise in conventional factory planning with its AM expertise. Through its modular approach, Siemens IoT Services Consulting supports the industrialization of AM technology: from strategic development through the optimization of product design, development of the manufacturing process, pilot phase, economic feasibility assessment to the planning and implementation of a turn-key AM factory. Based on the digital twin, a flexible and scalable manufacturing concept is developed and validated, which complies with the requirements of conventional series production in terms of productivity and cost considerations before production is even started, which also ensures prompt certification.

Together with EOS, the company shows in this context that the expansion of the machine to an integrated line can already be achieved in real life. With this strategic partner, Siemens is working successively on joint solutions for the industrial AM factory. At Formnext, EOS is presenting EOS Shared Modules for the EOS M 400 Series, which are equipped with control and drive technology from the Siemens Digital Enterprise portfolio and can be used to implement a fully automated AM factory. In addition, Siemens will demonstrate a print workflow integrated with NX software and linked to EOSPRINT. The workflow also supports the use of the Identify3D Technology Suite, an intellectual property protection, quality assurance and data security solution in all phases of digital manufacturing.

**Additive Manufacturing Network is now globally available**

Formnext 2019 is also a milestone for the Siemens digital AM platform. Following a successful pilot phase with key partners, the Additive Manufacturing Network is now available to all those involved in the AM ecosystem. The concept, that was first introduced in April 2018, is today a market-ready cloud-based solution that fosters collaboration and process orchestration between engineers, procurement and suppliers of 3D printed parts. Providing an end-to-end digital process that connects the demand for parts with a supplier network enables a truly global distributed manufacturing.

In addition, Siemens' customers will be supported on their additive journey by unique AM training solutions based on a newly announced collaboration between Siemens Gas and Power and the American Society of Mechanical Engineering (ASME). Siemens Gas and Power will bring its technical application content as a leading industry user of additive manufacturing to the partnership and combine it with ASME's industry-leading competency model framework. It will be offered as an extension of the additive manufacturing service portfolio of Materials Solutions, a Siemens business.



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This press release and a press picture are available at

<https://sie.ag/2CHoYOt>

For further information regarding Siemens at the Formnext, please see

[www.siemens.com/press/formnext2019](http://www.siemens.com/press/formnext2019) and [www.siemens.com/formnext](http://www.siemens.com/formnext)

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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 170 years. The company is active around the globe, focusing on the areas of power generation and distribution, intelligent infrastructure for buildings and distributed energy systems, and automation and digitalization in the process and manufacturing industries. Through the separately managed company Siemens Mobility, a leading supplier of smart mobility solutions for rail and road transport, Siemens is shaping the world market for passenger and freight services. Due to its majority stakes in the publicly listed companies Siemens Healthineers AG and Siemens Gamesa Renewable Energy, Siemens is also a world-leading supplier of medical technology and digital healthcare services as well as environmentally friendly solutions for onshore and offshore wind power generation. In fiscal 2019, which ended on September 30, 2019, Siemens generated revenue of €86.8 billion and net income of €5.6 billion. At the end of September 2019, the company had around 385,000 employees worldwide. Further information is available on the Internet at [www.siemens.com](http://www.siemens.com).