Joint Press Release

Press

by Siemens and ASME

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First 3D-printed Gas Turbine Blades: Siemens awarded by American Society of Mechanical Engineers

Siemens received an award from the American Society of Mechanical Engineers (ASME) for its outstanding technological achievement with the first successfully 3D-printed and fully tested gas turbine blades.

The Mechanical Engineering magazine Emerging Technology Awards is the first in the 137-year history of the Society that Mechanical Engineering magazine has singled out such future-focused technologies for recognition. The goal is to recognize some outstanding examples of what ASME calls ascending technologies: new products and processes that have left the breakthrough stage, crossed the so-called commercialization valley of death, and are poised to reshape the industries where they compete. After exclusive vetting, ASME editors selected the technologies from each of five focus areas: advanced manufacturing, automation and robotics, bioengineering, clean energy, and pressure technology.

“The 3D-printed turbine blade places Siemens at the forefront of a technology trend that is spurring a global revolution in product design and production,” said Charla K. Wise, president of The American Society of Mechanical Engineers, ASME. “Mechanical Engineering magazine is pleased to present one of the five Emerging Technology Awards to a leader in manufacturing, and we thank the design team on the 3D-printed blade for advancing technology excellence.”

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Earlier this year, Siemens has achieved a breakthrough by finishing its first full-load engine tests for gas turbine blades completely produced using Additive Manufacturing (AM) technology. The company successfully validated multiple 3D-printed turbine blades with a conventional blade design at full engine conditions. This means the components were tested at 13,000 revolutions per minute and temperatures beyond 1,250 degrees Celsius. Furthermore, Siemens tested a new blade design with a completely revised and improved internal cooling geometry manufactured using the AM technology.

“We are especially proud to be honored by such a recognized organization as ASME,” says Jenny Nilsson, who led the team that realized the blade project. “The project objective was to try out and map this radical new way of working. The outcome is another confirmation that we are on the right path toward further improvements of our gas turbine technology,” Jenny continues.

The project team worked with blades manufactured at the Siemens 3D printing facility in Finspong, Sweden and at Materials Solutions, the recently acquired company in Worcester, UK. Materials Solutions has more than 10 years` experience in additively manufacturing high performance parts for turbomachinery. Materials Solutions is AS 9100 certified and an approved vendor for Additive Manufacturing for leading customers in the aerospace industry. Applying its aerospace experience, Materials Solutions also supplies tooling to leading automotive companies and high performance parts in titanium and nickel super alloys for auto sports.

Additive Manufacturing has the potential to become a key technology in the production of gas turbine components. Siemens has been investing in this innovative technology right from its inception, and is now driving the industrialization and commercialization of these processes. Besides the awarded turbine blades,

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Siemens is using the innovative technology to produce burner tips, burner nozzles and to repair burner heads. “Additive Manufacturing is one of our main pillars in our digitalization strategy. With our combined know-how in 3D printing, we will continue to drive the technological development and application in this field,” says Christoph Haberland, Advisory Key Expert Additive Manufacturing, and member of the blade team.

The ASME distinction is the third award for this project, following the International 3D Printing Industry Award and the companywide Werner von Siemens Award. In addition to a 16-page special section of the December 2017 issue of Mechanical Engineering magazine, ASME has also produced a five-video series celebrating the technologies. Some of these videos were debuted at ASME’s largest annual event, the International Mechanical Engineering Congress and Exposition, held in Tampa in November.

This press release and a press picture are available at
www.siemens.com/press/PR2017120112PGEN

For further information on the Emerging Technology Awards (Siemens = Manufacturing), please see bit.ly/MEmagAwards

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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 170 years. The company is active around the globe, 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 2017, which ended on September 30, 2017, Siemens generated revenue of €83.0 billion and net income of €6.2 billion. At the end of September 2017, the company had around 377,000 employees worldwide. Further information is available on the Internet at www.siemens.com.

About ASME

ASME helps the global engineering community develop solutions to real world challenges. Founded in 1880 as the American Society of Mechanical Engineers, ASME is a not-for-profit professional organization that enables collaboration, knowledge sharing and skill development across all engineering disciplines, while promoting the vital role of the engineer in society. ASME codes and standards, publications, conferences, continuing education and professional development programs provide a foundation for advancing technical knowledge and a safer world. For more information visit www.asme.org.

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