

The AAE Special Seminar Series
Presents

“From the Lab to the Sky: Printing the Future of Flight”

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Abstract

Additive manufacturing, which promises lighter, more complex airframe and engine components produced cheaper and faster, is quickly becoming one of the most sought-after technologies in aerospace manufacturing. Arconic, a global technology, engineering and advanced manufacturing leader, is playing a leading role in making that promise a reality. This presentation will demonstrate how Arconic is using its comprehensive capabilities in a variety of metals-based additive technologies, including direct, indirect and hybrid techniques, to take 3D printing out of the lab and into the skies—and help shape the future of aerospace manufacturing. The presentation will describe the three distinct additive manufacturing value streams that Arconic is pursuing: new material discovery, direct manufacturing and indirect / hybrid manufacturing. We will also highlight some of the key process, and product development advances developed by Arconic to be able to meet the stringent qualification requirements for aerospace structural components. In addition, novel hybrid manufacturing approaches will be discussed that make use of additive manufacturing in combination with conventional metallic process to achieve significant cost reduction in flight critical components.

Bio

Dr. Markus Heinimann is the Vice President, Engineered Product and Process Technology for Arconic. In this role, Markus is leading the development and execution of the technology strategy for Arconic's Engineered Structures business unit. He is responsible for advancing new and existing material, process, product and manufacturing technologies for metallic materials, machining and structural assemblies to meet the needs of the aerospace, defense, energy and other high tech segments. Dr. Heinimann has more than 25 years of aerospace experience in engineering and technology development. Previously he was the Technology Manager for Aerospace at the Alcoa Technical Center where he led the technology development for aerospace structures, materials and advanced manufacturing technologies.

Dr. Heinimann holds Bachelor of Science, Master of Science and Doctorate degrees in Aeronautics and Astronautics from Purdue University. Markus is a member of the American Institute of Aeronautics and Astronautics (AIAA) and ASTM International Committee on Fatigue and Fracture where he chairs the ASTM sub-committee on Structural Applications. He has received the Award of Merit and title of Fellow from ASTM, and the Outstanding Aerospace Engineer Award from Purdue University.