

WSU News

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NIAR unveils new ATLAS facility with Solvay Manufacturing Innovation Center

By WSU Strategic Communications



The Expanding Your Horizons workshop introduces middle school girls to a variety of science, technology, engineering and mathematics (STEM) areas. Attendees will meet STEM role models, participate in hands-on activities and learn more about careers in those fields.

The Advanced Technologies Lab for Aerospace Systems (ATLAS) at Wichita State University's National Institute for Aviation Research (NIAR) held a grand opening for customers and partners.

The event took place at NIAR's south campus at Air Capital Flight Line and featured the unveiling of Solvay's Manufacturing Innovation Center within the facility.

The grand opening events included opening remarks and presentations from U.S. Senator Jerry Moran; Linden Blue, vice chairman of General Atomics; Carmelo Lo Faro, president of Solvay Materials; Paul Hughes, Kansas deputy secretary of Business Development; WSU President Rick Muma; and John Tomblin, WSU senior vice president for Industry and Defense Program and NIAR executive director.

Within the new joint center for ATLAS and Solvay, companies will be able to fabricate entire aircraft structures such as wings and fuselages at a fraction of the cost of making it themselves. Using automated and high-rate processing with smart and agile manufacturing technologies, Solvay and NIAR engineers will work hand-in-hand with customers to test ideas and innovative structures in real time. These capabilities help to increase the adoption of composites, and allow aviation companies to meet increased performance and efficiency targets.

"Our partnership with NIAR through this joint Manufacturing Innovation Center is an important milestone in Solvay's ambition to help key customers across the United States advance the future of aerospace and defense," said Carmelo Lo Faro, president of Solvay's Materials Segment. "Here, we can explore the advantages of new composite material forms with the latest manufacturing technologies to create a lighter, safer and more sustainable aircraft of the future."

ATLAS is a makerspace for industry-scale automated manufacturing research including automated fiber placement (AFP), fiber patch placement for complex geometries, thermoplastic welding, and thermoplastic over-molding for multi-functional integrated structures. This manufacturing innovation center is an extension of the research and development capabilities of the global aerospace industry.

ATLAS was established in 2019 within a small lab space at NIAR's headquarters on the main Wichita State campus. Since then, it has grown to employ more than 100 research engineers and student technicians in multiple laboratory and office spaces at the headquarters and new south Wichita facility, totaling about 150,000 square feet.

To address the demand for ultra-high-rate production of Advanced and Urban Air Mobility, ATLAS has incorporated fully integrated thermoplastic presses with robots, infrared ovens, and injection molding units from both KraussMaffei and ENGEL, two of the leading vendors in this industry. These are matured technologies in the automotive industry, reducing the risk of adoption for aviation production, despite necessary process improvements needed to meet aerospace quality requirements.

"We are delighted to be able to forge this strong partnership with NIAR, in regards to bringing these industry-proven automated, high-rate, out-of-autoclave solutions to the aerospace and space industry," said Nolan Strall, North American president of KraussMaffei Corp. US. "We are looking forward to

engaging with the team at NIAR for future development and industrialization of the technology needed to meet the in-situ process and qualification standards of the aviation industry.”

ATLAS also incorporates large-scale thermoplastic-capable AFP systems from Coriolis, Electroimpact and Mikrosam, allowing industry partners to select the technology suited to meet specific design requirements. Certain complex parts need for advanced and urban air mobility cannot be manufactured using AFP and, therefore, require a hand layup process. These parts can be manufactured using a fully automated fiber patch placement machine by Cevotec, which allows ultra-highrate production regardless of the part complexity.

“One of the reasons that air travel is so incredibly safe and economical is that the stakeholders that make commercial travel possible, take extraordinary measures to ensure the high levels of safety we have come to expect,” said John Melilli, president and CEO of Composite Automation. “NIAR and ATLAS will now continue this great tradition by providing a truly unique environment to perform the cutting edge research and development that creates new materials, processes and related technologies in a low-risk environment. Composite Automation, Mikrosam and Cevotec are honored and excited about the prospect of working with NIAR ATLAS and their clients in collaborative ways to create the next generation of sustainable air travel.”

“ATLAS is the future of aviation manufacturing, and we’re proud to provide a proving ground for some of the world’s most advanced aviation technologies and companies,” said John Tomblin, WSU senior vice president for Industry and Defense Programs and NIAR executive director. “Having Solvay’s material expertise on-site at this one-of-a-kind facility is a major asset for companies looking to explore what’s possible for future aircraft.”