

The National Institute for Aviation Research to Leverage Velo3D's Additive Manufacturing Solution to Produce Next-generation Airframe Technologies

The Wichita State University organization will use their new Sapphire 1MZ to research performance-based qualification of metal 3D-printed parts

FREMONT, Calif.--(BUSINESS WIRE)-- [Velo3D](#), Inc. ([NYSE: VLD](#)), a leading metal additive manufacturing technology company for mission-critical parts, today announced that the [National Institute for Aviation Research](#) (NIAR) has purchased a Sapphire 1MZ printer to develop performance-based qualification methods of metal 3D-printed parts for airframe applications. The Sapphire 1MZ printer will be configured to produce parts in Inconel 718, a durable nickel-based alloy that provides high corrosion, oxidation, and creep resistance at extreme temperatures, which is extensively used in aerospace applications.

NIAR is a research organization that was established at Wichita State University in 1985 to drive innovation in aeronautical applications. The organization has a \$350 million annual budget, a staff of 1,200, and seven locations across Wichita, Kansas and Huntsville, Alabama. NIAR actively engages with many federal resources and programs to drive innovation in aerospace and defense applications.

“Our team is focused on helping the U.S. identify materials, designs, and techniques that can support the country’s aerospace, defense, and manufacturing industries and we’re glad to work with America’s own metal additive manufacturing provider,” said Lauren Tubesing, Business Development Lead, Advanced Manufacturing at National Institute for Aviation Research. “Our organization is well-known for its work in aeronautical research and by leveraging Velo3D’s solution to better understand the nuances within the additive manufacturing process, we can help build confidence in 3D-printed parts, thereby accelerating adoption of this advanced manufacturing technology.”

The Sapphire 1MZ, which has a 315 Ø x 1000 mm build envelope, will be used to identify and validate best practices related to performance-based qualification of additively manufactured parts for airframe applications. NIAR also recently received \$10 million from the Federal Aviation Administration (FAA) Center of Excellence for Composites and Advanced Materials (CECAM), which was established in partnership with the FAA and NIAR in 2004 at Wichita State University. The FAA funding was granted to NIAR to research advanced materials, focusing on composites and additive manufacturing. NASA also awarded the organization \$10 million to support research related to the development and implementation of composites and advanced materials for hypersonic applications, which is another area where additive manufacturing is driving innovation.

“Qualifying 3D-printed parts for production use is a massive challenge and something that

has greatly impeded broad adoption of additive manufacturing for commercial aviation applications and it's great to see a brilliant organization like NIAR work to solve this," said Brad Kreger, Velo3D CEO. "The work NIAR will conduct will not only be invaluable to their organization, but the entire industry. We're proud to be a part of this effort."

Velo3D's solution is unique within the metal additive manufacturing industry, as it leverages both hardware and software to provide customers with a fully integrated solution. This makes the solution uniquely suited to help with NIAR's research efforts. Specifically, Velo3D's Assure Quality Assurance software will play a key role in NIAR's performance-based qualification research. Assure gathers data on each layer of a print to give engineers complete confidence in the parts—going so far as to capture images of each layer. That data can then be compared to existing datasets to ensure consistent outcomes, even across an entire fleet of printers.

About Velo3D:

Velo3D is a metal 3D printing technology company. 3D printing—also known as additive manufacturing (AM)—has a unique ability to improve the way high-value metal parts are built. However, legacy metal AM has been greatly limited in its capabilities since its invention almost 30 years ago. This has prevented the technology from being used to create the most valuable and impactful parts, restricting its use to specific niches where the limitations were acceptable.

Velo3D has overcome these limitations so engineers can design and print the parts they want. The company's solution unlocks a wide breadth of design freedom and enables customers in space exploration, aviation, energy, and semiconductor to innovate the future in their respective industries. Using Velo3D, these customers can now build mission-critical metal parts that were previously impossible to manufacture. The fully integrated solution includes the Flow print preparation software, the Sapphire family of printers, and the Assure quality control system. Through this vertically integrated approach, the Velo3D ecosystem facilitates scalable metal AM using the same print file across any Sapphire system, ensuring repeatable outcomes without the need for additional optimization. This enhances manufacturing scalability and supply chain flexibility, allowing Velo3D customers to seamlessly adapt to fluctuating demand. The company delivered its first Sapphire system in 2018 and has been a strategic partner to innovators such as SpaceX, Aerojet Rocketdyne, Lockheed Martin, Avio, and General Motors. Velo3D has been named as one of [Fast Company's Most Innovative Companies for 2023](#). For more information, please visit [Velo3D.com](https://www.velo3d.com), or follow the company on [LinkedIn](#) or [Twitter](#).

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