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Velo3D Demonstrates Advancements in Predictable Metal Additive Manufacturing Through Simulation-Driven Production

Customer production results show 11 of 12 large-format builds successful on the first attempt, with PanX integration reducing hands-on simulation engineering time to less than one hour per build.

FREMONT, Calif., Nov. 19, 2026 /PRNewswire/ -- Velo3D, Inc. (Nasdaq: VELO), a metal additive manufacturing technology company, today announced production results demonstrating improvements in first-attempt build success, dimensional accuracy, and engineering efficiency through the integration of PanOptimization's PanX simulation technology with Velo3D's proprietary calibration and manufacturing processes.

Presented at ASTM International's Conference on Advanced Manufacturing (ICAM) 2026, the results address a key challenge in industrializing metal additive manufacturing: reducing physical build iterations while improving production predictability.

In a copper-nickel customer program using Velo3D's large-format, eight-laser Sapphire® XC platform, the company's applications engineering team simulated 12 builds representing 33 customer geometries and 1,756 print hours. Eleven builds completed successfully on the first attempt. The remaining build experienced a support structure failure and was successfully completed on its second attempt following adjustments informed by the initial results.

"I have been in AM for 15 years. When I started out 'first-time right' was really just a marketing buzz phrase. To see that it is now actually achievable through use of simulation is very satisfying. It is fun watching what a capable and forward-thinking organization like Velo can achieve with a powerful tool like PanX," said **Erik Denlinger, Co-Founder and Chief Engineer at PanOptimization**.

"Customers need more than the ability to print a complex part. They need a manufacturing process they can plan around," said **Arun Jeldi, Chief Executive Officer of Velo3D**. "By combining simulation with our calibration methods and production expertise, we're improving our ability to identify potential issues before a build begins. These results demonstrate meaningful progress toward more predictable and efficient production of complex metal components."

Integrating Simulation into Production

Velo3D integrated PanX into its existing print preparation workflow, allowing CAD geometry, support structures, and process definitions to carry through without extensive manual rebuilding.

This integration reduced hands-on engineering time for simulation and distortion pre-compensation from a previous range of 4 to 40 hours per build to less than one hour, making simulation more practical for routine production preparation.

Velo3D also applied its proprietary calibration process, using production data and in-situ thermal measurements to refine simulation inputs, including powder conductivity, process efficiency, and thermal boundary conditions. This approach improved agreement between simulated and measured manufacturing behavior.

Demonstrating Dimensional Accuracy

In a separate demonstration involving a microturbine engine core measuring approximately 13 by 14 by 17 inches, PanX simulations performed without advanced calibration or trial prints closely tracked measured distortion trends and predicted peak distortion within approximately 0.005 inches (125 microns).

Following one round of simulation-based compensation, peak dimensional deviation decreased from +2.0/−1.9 millimeters to +0.7/−0.6 millimeters, representing a 65% reduction. The resulting component met its specified dimensional tolerances.

Supporting the Industrialization of Metal Additive Manufacturing

For manufacturers producing complex, high-value components, unsuccessful builds and repeated engineering iterations consume machine capacity, materials, and production time.

The results demonstrate how integrating predictive simulation with manufacturing data and process calibration can reduce reliance on physical trial and error. The approach is particularly relevant to large-format metal additive manufacturing, where component complexity and extended build times can increase the consequences of failed builds.

The findings were presented at ASTM ICAM 2026 in Orlando by Daniel Driscoll, Senior Applications Engineer at Velo3D, during a joint technical session with PanOptimization.

About PanOptimization

PanOptimization is a provider of advanced simulation software for metal additive manufacturing. Its PanX platform enables manufacturers to predict thermal and mechanical behavior, evaluate distortion and build risks, and optimize manufacturing processes. By integrating simulation into production workflows, PanOptimization helps manufacturers reduce physical iterations, improve dimensional accuracy, and increase manufacturing efficiency.

For more information, visit www.panoptimization.com.

About Velo3D

Velo3D is a metal 3D printing technology company that enables customers to build mission-

critical metal parts. The fully integrated solution includes the Flow™ print preparation software, the Sapphire® family of printers, and the Assure™ quality control system—all powered by Velo3D's Intelligent Fusion® manufacturing process. Learn more at velo3d.com.

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Forward-Looking Statements

This press release includes "forward-looking statements" within the meaning of the "safe harbor" provisions of the Private Securities Litigation Reform Act of 1995. The Company's actual results may differ from its expectations, estimates and projections and consequently, you should not rely on these forward-looking statements as predictions of future events. Words such as "expect", "estimate", "project", "anticipate", "intend", "plan", "may", "will", "could", "should", "believes", "predicts", "potential", "continue", and similar expressions are intended to identify such forward-looking statements. These forward-looking statements include, without limitation, statements regarding the potential benefits of integrating simulation technology with the Company's manufacturing processes, including improvements in first-print success, dimensional accuracy, production efficiency and repeatability, as well as the applicability of these capabilities across different materials, geometries and production environments. These forward-looking statements involve significant risks and uncertainties that could cause actual results to differ materially from the expected results, including variability in manufacturing outcomes, differences in customer requirements and production conditions, and the Company's ability to achieve similar results in future applications. You should carefully consider the risks and uncertainties described in the documents filed by the Company from time to time with the SEC. These filings identify and address other important risks and uncertainties that could cause actual events and results to differ materially from those contained in the forward-looking statements. Most of these factors are outside the Company's control and are difficult to predict. The Company cautions not to place undue reliance upon any forward-looking statements, which speak only as of the date made. The Company does not undertake or accept any obligation to release publicly any updates or revisions to any forward-looking statements to reflect any change in its expectations or any change in events, conditions, or circumstances on which any such statement is based.

Investor Relations:
Hayden IR
James Carbonara, Managing Director
james@haydenir.com

Media Contact:
Velo3D
press@velo3d.com

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