

VELO3D Selected for its 3D-Printed Aftermarket Part Solutions for Gas Turbines in Aviation and Energy

Additive manufacturing will help keep aging engines operational with greater flexibility and shorter delivery times than traditional MRO supply chains

CAMPBELL, Calif.--(BUSINESS WIRE)-- VELO^{3D} is pleased to announce that <u>Chromalloy</u>, a manufacturing and repair solutions provider for gas turbine engine manufacturers and operators worldwide, recently selected the <u>VELO^{3D}</u> Sapphire[®] system as their additive manufacturing (AM) solution to significantly impact the economics of future Maintenance, Repair & Operations (MRO) projects in Chromalloy's aviation and energy markets.

Chromalloy is installing the VELO^{3D} Sapphire[®] in its manufacturing and repair services environment. This industrial AM technology is increasingly being adopted by manufacturers as a solution to offset the high costs of low-volume, direct-part replacement for conventionally produced parts when demand and long-term forecasting are uncertain.

"Chromalloy continues to seek innovative alternatives for our customers to extend the life of their engines and reduce their MRO costs," says John Green, Vice President, Engineering & Technology, Chromalloy. "The VELO^{3D} additive manufacturing equipment provides a unique, practical solution for our proprietary LifeX customer solutions."

According to Chromalloy's Jim Whitton, Director, Innovation Strategy, "For Chromalloy, 3D printed parts must provide inherent value *because* they are 3D printed. Otherwise, the printing itself is just a novelty. VELO^{3D'}s unique build capability and material density create high value by reducing post-processing requirements."

VELO^{3D} will qualify Chromalloy's machine for 3D printing nickel-based superalloys, including Hastelloy[®]X, which is known for its strength and durability characteristics in high temperature environments. VELO^{3D} is renowned for enabling geometric freedom through its patented SupportFree process. The capability to produce practically unlimited geometries eliminates the need to redesign legacy parts in order to produce them with AM. This tremendously reduces the barrier of transitioning legacy parts, produced historically by casting, welding or brazing, to additive manufacturing.

All Sapphire machines come standard with VELO^{3D} 's highly automated, user-friendly Flow™ pre-print software and Assure™ quality assurance and control system.

"As an industry leader in the aviation MRO space, Chromalloy is an excellent partner for us," says Benny Buller, VELO^{3D} founder and CEO. "They have the expertise to open up a whole market category of parts. With the flexibility to produce high value, high mix, low-volume parts, AM allows the supply chain to be scaled to market- and customer-specific

requirements."

Jim Whitton agrees. "For complex gas turbine combustor components that have limited aftermarket availability or high replacement cost, the Sapphire system will allow Chromalloy to produce hardware on-demand, negating high NPI (new product introduction) tooling costs and lead-times of other methods," he says.

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Media Contact for Chromalloy:

Jeff Romaine
Director of Corporate Communications
JRomaine@chromalloy.com

Media Contact for VELO^{3D}:

Renette Youssef Chief Marketing Officer press@velo3d.com

Twitter: https://twitter.com/VELO3DMetal

Facebook: https://www.facebook.com/Velo3Dinc/ Linkedin: https://www.facebook.com/Velo3Dinc/

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