Build the Impossible

Turbomachinery parts are traditionally made using manufacturing processes that require long product development cycles, sacrifices in optimal performance geometry, or both.

With the VELO 3D AM Solution, manufacturing without compromise is no longer an impossible task -- whether you are looking to utilize Additive Manufacturing (AM) for new product development, serial production, or direct part replacement. Make the parts you want, when you want them.

The VELO 3D AM Solution vs. Traditional Manufacturing

Turbomachinery can leverage the VELO 3D AM Solution in multiple ways.

For New Product Development & Serial Production
- Unlimited design flexibility
- Rapid iteration
- Scale on-demand

For Direct Part Replacement
- Low-volume or single-part production, as-designed
- Nimble supply chain - print on any machine, any location, with consistent quality.

While castings are cheap and relatively quick, they can be tooling and time intensive for small quantities. Brazing and welding requires an even longer time investment, and often delivers surface finishes and tolerances that are not required. With the VELO 3D AM Solution, high-quality, reliable parts can be delivered in just 3-4 weeks.

Built from the Ground Up with Production in Mind

The VELO 3D AM Solution is a fully integrated system:
- Flow™: The pre-print software removes the need for specialty knowledge with a vast library of feature specific processing parameters.
- Sapphire®: The printers ensure repeatability with push-button calibration and real-time, multi-sensor, monitoring.
- Assure™: The quality system validates the part, layer-by-layer, providing a final report with unmatched insight into the build.

Expect traceability, reliability, and consistency every time.
How Does the VELO3D AM Solution Support Turbomachinery?

Axisymmetry of parts such as impellers is critical. However, traditional metal AM systems are forced to print parts like these at an angle to minimize the need for support structures during printing. This will cause dimensional instability as well as asymmetric mechanical properties and surface finishes.

But, with VELO3D’s SupportFree™ technology, near-horizontal features can be printed entirely without supports, maintaining axisymmetry and greatly reducing the need for post-processing.

SupportFree metal AM frees us up to use the geometry we’d like to use rather than being pushed into using a design that compromises the aerodynamics in order to make an AM-friendly part.

Chad Robertson, Senior Engineering

A Manufacturing Solution for Your Entire Product Lifecycle

New Product Development
Eliminate design constraints and enable rapid iteration.
- Design for optimal functionality rather than manufacturability.

Direct Part Replacement
Create your own nimble and robust supply chain for late-stage products.
- Print as designed with no changes necessary.

Bridge & Serial Production
Scale production with demand.
- Reduce forecasting risks and inventory costs.

With the VELO3D AM Solution, one CAD file can be used to print parts on any system, any location, with the same consistent quality.

Contact us at info@velo3D.com