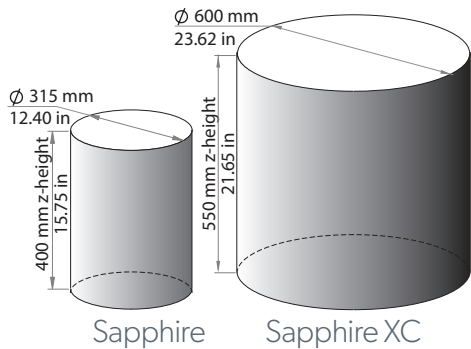


# Sapphire<sup>®</sup> XC Printer

The VELO<sup>3D</sup> Sapphire XC is a production-scale metal laser powder bed fusion printer capable of both higher volume production and larger single parts. Sapphire XC uses the same advanced functionality designed into the standard Sapphire while expanding the build volume to 600 mm Ø by 550 mm z-height and increasing throughput up to a factor of five.

Using the same optical design, recoater, gas flow, control, and monitoring capabilities, parts produced for Sapphire can be printed on the Sapphire XC with the same process conditionals and material properties.



## Production-Level Additive Manufacturing

### Enabling SupportFree™ Geometries

Low angles down to zero degrees (vs 45 degrees with conventional AM) enables impossible geometries and significantly less post-processing

Large inner diameters up to 100 mm (vs 10 mm with conventional AM) enables manifolds, volutes and crossovers

High aspect ratios up to 3000:1 (vs 8:1 with conventional AM) enables high performance heat exchangers and assemblies

### Made for Production

In-situ metrology sensors reduce variances between builds, parts, and machines

Non-contact recoater eliminates risk of part collision protecting both the build and the recoater

Complete documentation and traceability of system calibration and build performance

Independent calibration per tool – One print file per part, on any Sapphire – worldwide

# Sapphire XC Printer



## Laser and Optics Fidelity

- Run-time and one-click optical calibrations
- Self-cleaning laser windows

## Powder Bed Uniformity

- Non-contact recoater
- Per-layer 3D powder bed height mapping
- Full-height printing without interruption for powder addition or filter changes

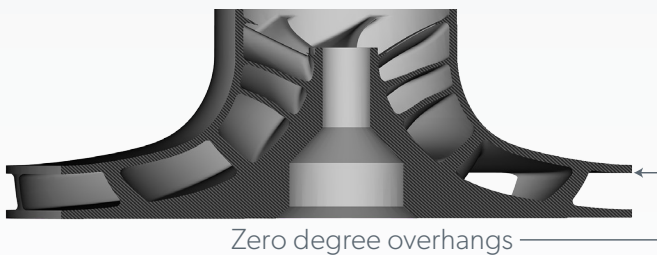
## Environmental Control

- Low ppm O<sub>2</sub> during normal operation
- Active humidity monitoring
- Ambient temperature and pressure operation
- Highly regulated chamber gas flows
- High efficiency spatter removal

## SupportFree Metal 3D Printing

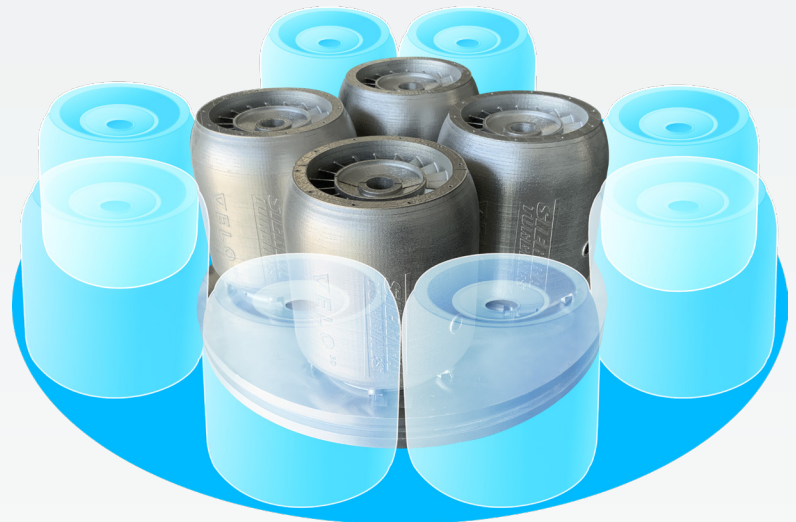
VELO<sup>3D</sup> separates itself from existing powder bed fusion solutions with its unique ability to print low angles and overhangs down to zero degrees, as well as large diameters and inner tubes up to 100 mm without the need for supports.

This not only reduces the need for post-processing, but it overcomes the “45 degree rule” for conventional AM which recommends supports for any surface less than 45 degrees. VELO<sup>3D</sup> frees designers to build the impossible – unlocking a wealth of designs that can now be produced with additive technology.



## System Features

- Build volume: 600 mm diameter by 550 mm height
- Lasers: Eight 1 kW lasers
- Materials: IN718, Ti6Al4V, Al357, Hastelloy® X
- Typ. throughput: Up to 400 cc/hr
- Typ. surface finish: 5-15 µm Sa
- Size (L x W x H): 2.7 by 2.7 by 3.1 m (106 by 106 by 122 in)



Print up to 4 units on a standard Sapphire build plate  
Print up to 12+ units on the Sapphire XC

**Unlock SupportFree Capabilities  
for your company**

[info@velo3d.com](mailto:info@velo3d.com)