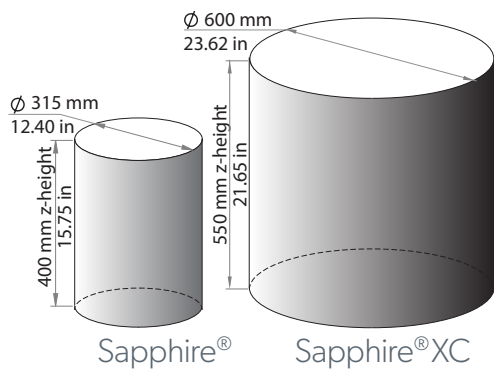


Sapphire[®] XC Printer

The Velo3D intelligent metal additive manufacturing solution is not just a printer, it is an end-to-end highly integrated production system driven by our underlying SupportFree[™] manufacturing process. The solution includes our Flow[™] intelligent print preparation software, your choice of a Sapphire[®] printer, and our Assure[™] quality monitoring and control software.

The Sapphire[®] XC production-scale metal laser powder bed fusion printer uses the same advanced functionality featured in the standard Sapphire[®] printer but expands the build volume to 600 mm Ø by 550 mm z-height and increases overall throughput. This provides users up to 5X productivity improvement and 75% cost reduction per part when compared to the existing Sapphire[®] system.



Production-Level Metal Additive Manufacturing

Enabling Velo3D SupportFree[™] Geometries

Low angles down to 0 degrees enables previously impossible geometries and significantly less post processing. Large inner diameters up to 100 mm enables manifolds, volutes and crossovers.

The Sapphire[®] printer prints extremely thin walls down to about 150 microns. Low angle pins (15 degrees), we can build pins as thin as 190µm in diameter, more vertical, down to 150µm.

High aspect ratios up to 6000:1 enables high performance heat exchangers and assemblies to be produced at exceptional quality.

Made for Production

8 1kW lasers for faster printing at scale. One print file per part works on any Sapphire[®] – worldwide- One-click independent calibration per tool ensures the exact same parts with the same quality anywhere.

In-situ metrology sensors reduce variances between builds, parts, and machines. Proprietary non-contact recoater eliminates risk of part collision protecting both the build, the recoater while enabling part of the support free process. Complete documentation and traceability of system calibration and build performance. Continuous powder handling and inert powder unpacking included.

Sapphire[®] XC Printer



Laser and Optics Fidelity

- Run-time and one-click optics 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

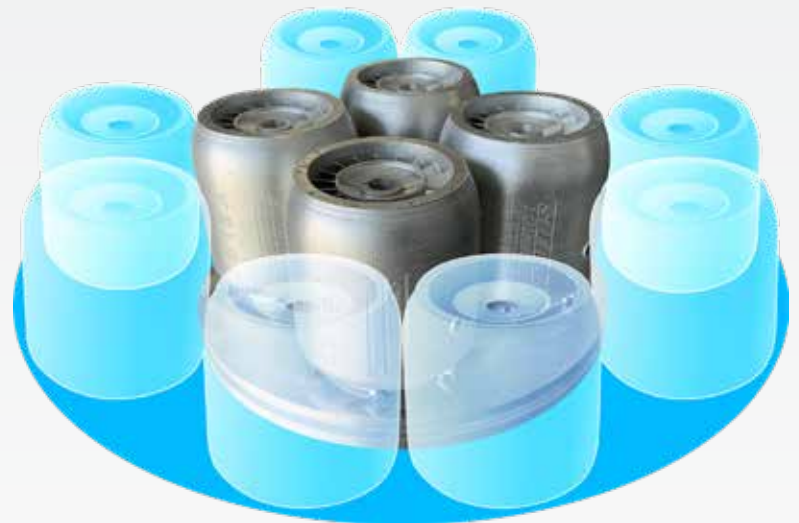
- Sub-10 ppm O₂ during normal operation
- Active humidity monitoring
- Ambient temperature and pressure operation
- Highly regulated chamber gas flows
- High efficiency spatter removal

System Features

Build volume:	600 mm diameter by 550 mm height
Lasers:	Eight 1 kW lasers
Materials:	Inconel 718 & 625, Hastelloy [®] X, Hastelloy [®] C22, Aluminum F357, Titanium Ti-6Al-4V
Typ. throughput:	Up to 400 cc/hr
Typ. surface finish:	5-15 μm Sa
Size (L x W x H):	8.53m x 3.35m x 4.75m (H) 336in x 132in x 187in (H)
Weight:	~ 16,400 lbs.

Velo3D SupportFree[™] Metal 3D Printing

Velo3D separates itself from existing powder bed fusion solutions with its unique ability to print low angles and over-hangs down to zero degrees, as well as horizontal large diameter circular holes and inner tubes up to 100 mm all the way down to 500 microns 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. Velo3D frees designers to build the impossible – unlocking a wealth of designs that can now be produced with additive technology.



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



Zero degree overhangs

Build The Parts You Need at Lower Costs
And 5x Better Productivity Without Design
or Quality Compromise.

For more information on the Sapphire[®] XC
or our other Sapphire[®] printers:
info@velo3d.com