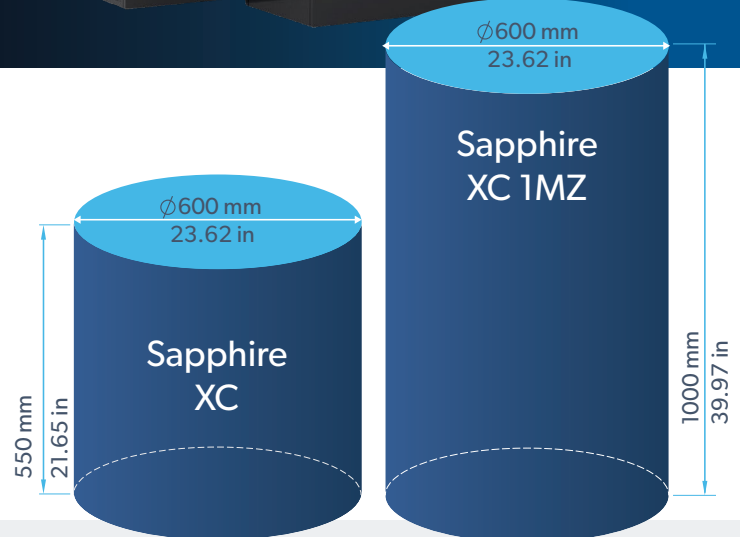# Sapphire XC and Sapphire XC 1MZ Printer

The Sapphire XC and Sapphire XC 1MZ metal laser powder bed fusion printers are production-scale machines that offer the same advanced functionality seen throughout the Sapphire family but feature a larger build volume of 600 mm Ø by 1000 mm z-height and increased throughput. This results in up to 4X productivity improvement and potential cost reduction compared to the standard Sapphire system.

The solution includes Flow print preparation software, your choice of Sapphire (XC or XC 1MZ), and Assure quality monitoring and control software.

Sapphire Printer Family Configurations:

- Sapphire (315 mm Ø x 400 mm)
- Sapphire 1MZ (315 mm Ø x 1000 mm)
- Sapphire XC (600 mm Ø x 550 mm)
- Sapphire XC 1MZ (600 mm Ø x 1000 mm)

Ø600 mm
23.62 in

Sapphire XC 1MZ

Ø600 mm
23.62 in

Sapphire XC

550 mm
21.65 in

1000 mm
39.97 in

Production-Level Metal Additive Manufacturing

Printing Without Compromise

Both Sapphire XC and XC 1MZ utilize eight 1kW lasers for faster printing at scale. A proprietary non-contact recoater eliminates the risk of part collision, protecting both the build and the recoater while enabling thinner walls and more accurate builds.

Standardized and controlled parameter sets, along with automated calibrations, ensure consistent geometric accuracy, surface finish, and validated material properties.

As with all Sapphire printers, XC and XC 1MZ provide exceptional supply chain scalability with one print file per part that works on any Sapphire worldwide.

Made for Production

To ensure consistent and successful print outcomes, Sapphire XC and XC 1MZ feature the same Intelligent Fusion underlying manufacturing process that binds and facilitates all aspects of the Velo3D fully integrated metal AM solution.

This includes intelligent part analysis and parameter assignment via Flow and intelligent tracking of each build via nearly 1,000 sensor readings. All Sapphire printers provide real-time layer-by-layer tracking of optical alignment, atmospheric validation, and powder bed health to ensure optimal quality. Meanwhile, Assure provides complete documentation and traceability of system calibration and build performance.

Sapphire XC and
Sapphire XC 1MZ Printer

VELO 3D

US Production Facilities
2710 Lakeview Court
Fremont, CA 94538

European Technology Center
Am Technologiezentrum 5
86159 Augsburg, Germany

Laser and Optics Fidelity

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

Powder Bed Uniformity

- Faster 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_2 during normal operation
- Active dew point monitoring
- Ambient temperature and pressure operation
- Highly regulated chamber gas flows
- High efficiency spatter removal

Sapphire XC 1MZ Features

- 600 mm Ø x 1000 mm z-height build volume
- Same geometric capabilities with identical build parameters as other Sapphire models

System Features

	Sapphire XC	Sapphire XC 1MZ
Build Volume	600 mm Ø	600 mm Ø
	550 mm z-height	1000 mm z-height
Size (L x W x H)	8.53 x 3.35 x 4.75 m	8.53 x 5.00[1] x 4.75 m
	336 x 132 x 187 in	Requires 160 cm deep pit[2]
Weight	~7450 kg	~8500 kg
	16,400 lbs	18,740 lbs
Lasers	Eight 1 kW lasers	
Throughput	Up to 400 cc/hr	
Surface Finish	5-15 µm Sa (typical)	

[1] With build module in unpack position
[2] Consult Sapphire XC Site Planning Guide for more information

Qualified Materials

Nickel	Inconel® 718, Inconel® 625, Hastelloy® C-22, Hastelloy® X, forAM® Haynes® 282®[1], Haynes® 214®
Copper	GRCop-42, C18150
Titanium	Ti-6Al-4V
Aluminum	F357, Scalmalloy®, Aheadd® CP1
Steel	M300 Steel

[1] Powder is produced by Höganäs under license from Haynes, International, Inc.

Metal 3D Printing Without Compromise

Velo3D separates itself from existing solutions with its unique ability to print low angles and overhangs 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. Velo3D frees designers to build the impossible – unlocking a wealth of designs that can now be produced with additive technology.

Build the Parts You Need at Lower Cost and 4x Better Productivity Without Design or Quality Compromise.

For more information on the Sapphire XC or Sapphire XC 1MZ printers: Velo3D.com