**PRODUCT BRIEF**

**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 kW 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.

*Pre-production 3D rendering shown. Final production model design and dimensions may change. Contact Velo3D Sales Engineers for more details or to schedule a tour and demo: info@velo3d.com*
**VELO3D**

Sapphire® XC Printer

---

**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)
- **Weight:** ~ 16,400 lbs.

---

**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

---

**VELO3D SupportFree™ Metal 3D Printing**

VELO3D 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 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 postprocessing, 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.

VELO3D SupportFree™
Print up to 4 units on a standard Sapphire build plate
Print up to 12+ units on the Sapphire XC

---

For more information on the Sapphire® XC or our other Sapphire printers:
info@velo3D.com

---

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