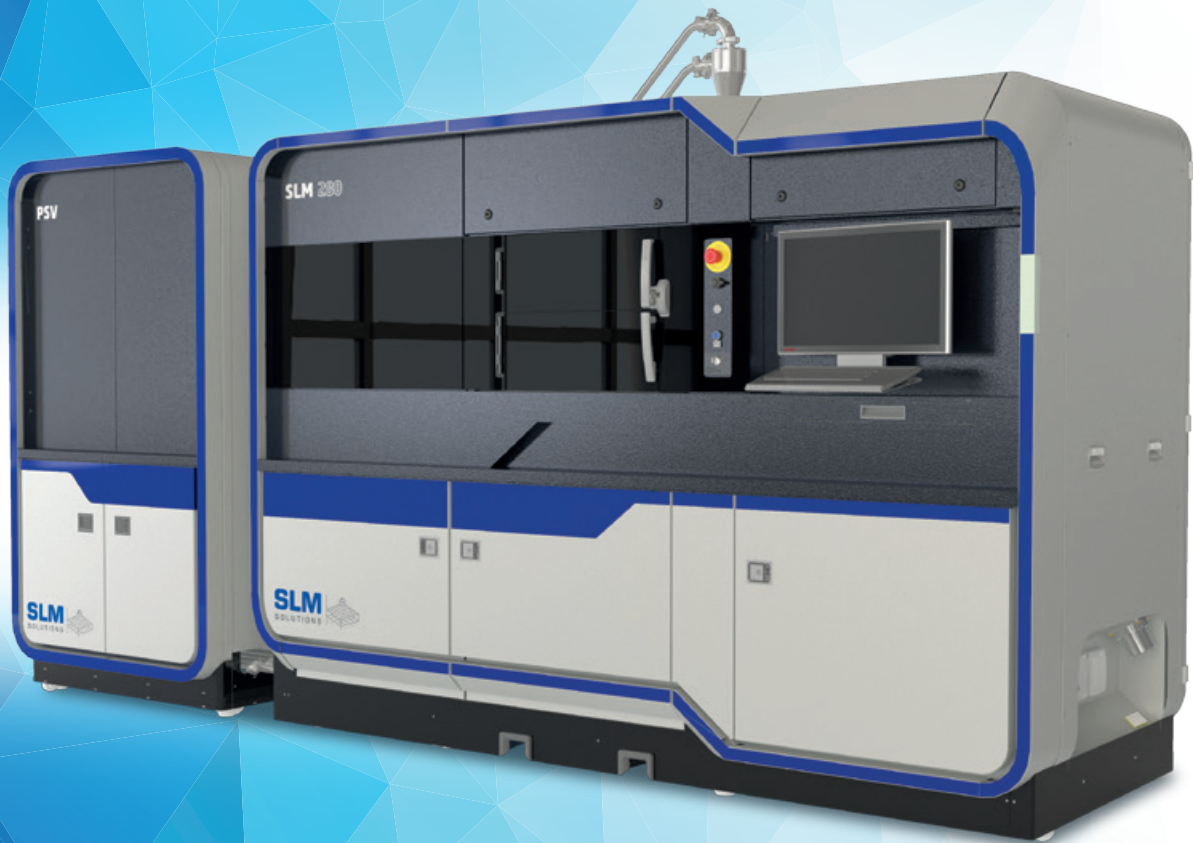


SLM[®] 280 Production Series **Selective Laser Melting Machine**



**Robust and High-Performance Machine
with Closed-Loop Powder Handling
for Highest Process Stability and Availability**

SLM[®]280 Selective Laser Melting Machine

The SLM[®]280 Selective Laser Melting machine provides a **280 x 280 x 365 mm** process chamber and **patented multi-beam laser technology** optimized for production. During the build process up to two fiber lasers, the optimum amount for mid-range machines, expose the build field via a 3D scan optic.

This third-generation system focuses on **increased robustness** and **consistent performance** available in several configurations: single (1x 400 W or 1x 700 W), dual (1x 700 W and 1x 1000 W) or twin (2x 400 W or 2x 700 W) optics. Multi-laser systems can achieve build rates 80% faster than single laser machines. In addition, the **patented bi-directional powder recoating** decreases manufacturing time further by reducing the number of passes required to lay fresh powder during a build.

The SLM[®]280 enables the manufacture of complex metal components based on CAD data for **series production with individual parameters**. As an **open system**, there are many options for optimizing production processes with custom set process parameters, when required.

Technical Specifications

Build Envelope (L x W x H)	280 x 280 x 365 mm reduced by substrate plate thickness
3D Optics Configuration	Single (1x 400 W), Twin (2x 400 W), Single (1x 700 W),
Dual Configuration:	Twin (2x 700 W), Dual (1x 700 W and 1x 1000 W)
with switching unit	IPG fiber laser
Build Rate (Twin 700 W)	up to 88 cm ³ /h*
Variable Layer Thickness	20 µm - 90 µm
Min. Feature Size	150 µm
Beam Focus Diameter	80 - 115 µm
Max. Scan Speed	10 m/s
Average Inert Gas Consumption in Process	2,5 l/min (argon)
Average Inert Gas Consumption Purging	70 l /min (argon)
E-Connection / Power Input	400 Volt 3NPE, 63 A, 50/60 Hz, 3,5 - 5,5 kW
Compressed Air Requirement / Consumption	ISO 8573-1:2010 [1:4:1], 50 l/min @ 6 bar
Dimensions (L x W x H)	2900 mm x 1200 mm x 2500 mm
Weight (without / incl. powder)	approx. 1300 kg / approx. 1800 kg

Machine configuration for all types of metal powders /
Technical changes reserved

*depending on material and part geometry



SLM[®] 280

A clean process chamber is essential to successful builds with acceptable mechanical properties. The SLM®280 production model is equipped with a **safe Permanent Filter Module**. This solution not only maintains a clean process chamber, but increases filter life, eliminates the need for complicated filter cartridge changing and decreases the long-term cost of ownership by eliminating the need to purchase replaceable filters. The Permanent Filter Module results in consistent process conditions that ensure optimal build quality.

PSV Powder Supply Unit

The PSV features a 90-liter tank sufficient for any production process and **eliminates the need to fill powder via individual powder bottles**. An integrated ultrasonic sieve processes the powder just before feeding it to the machine, ensuring no oversized particles or foreign objects find their way into the SLM® process. The transport of powder between the PSV and the SLM® machine is **fully automatic** and carried out **via vacuum technology**.

The PSV uses **three independent routes to convey powder**. In addition to supplying freshly sieved metal powder to the SLM®

The optimized **inert gas flow** efficiently removes soot from the build chamber, ensuring excellent process conditions. Flowing through a sintered chamber wall, the enhanced gas flow creates constant conditions at the work surface as well as protecting the beam entry glass from contamination to not hinder the lasers. The efficient inert gas circulation not only creates a clean process environment, but also reduces gas consumption, an important operating cost.

machine, a second route returns the excess powder from the overflows back to the sieve. The third conveying route uses a manual suction device in the process chamber to remove the excess metal powder after a build and conveys it directly back to the PSV.

Powder transport, sieving and storage is contained within a **closed-loop, inert gas atmosphere**. Moreover, the powder is transported via steel pipes to ensure uncontaminated powder quality. **Contactless powder handling** ensures maximum operator safety.

Quality Assurance of the Production Process

A comprehensive monitoring and quality assurance system enables a **high degree of process documentation and verification**. The Additive.Quality product family is key to a controlled, high-quality build.

Melt Pool Monitoring (MPM) is an available on-axis tool for visualizing the melt pool in the SLM® process. Data from MPM can be used as a resource for efficiently developing and evaluating the process parameters. In the production of safety-critical parts, the data collected serves as documentation for quality assurance in the production process. The recorded data enables conclusions to be drawn regarding irregularities during fusion, which can lead to anomalies in the manufactured parts.

Laser Power Monitoring (LPM) is an available on-axis monitoring system that continuously measures and documents target and actual emitted laser output throughout the production process. On the one hand, the module can be used as an early warning system for preventing machine downtime with targeted measures when irregularities occur. On the other hand, it makes an important contribution to quality assurance thanks to its process documentation.

Layer Control System (LCS) is a testing and documentation system that examines the performance of each powder layer. Developed specifically for the SLM® process, it monitors the powder bed and detects possible irregularities in coating. The LCS visually detects powder preparation and execution after each cycle and, if necessary, reacts before damage occurs in the process.

The quality modules are available **for single and multi-laser operations**.

Software Solution – Additive.Designer®

A scalable software solution for the **easy data preparation** of complex components, Additive.Designer® offers **full process-chain integration** with each step from machine selection to post-processing taken into consideration during data preparation. The **intuitive user interface** offers efficient and simple data preparation, in addition to the software's optimized part orientation guidance, and SLM Solutions' unique support structures. For users scaling to series-production Additive.Designer® offers production management options such as administration via web browsers, user rights management and processes traceability.

About SLM Solutions

The Lübeck-based SLM Solutions Group AG is a leading provider of metal-based additive manufacturing technology. SLM Solutions focuses on the development, assembly and sale of machines and integrated system solutions in the field of selective laser melting.

SLM® technology offers diverse options in the metal-based additive manufacturing of parts, such as a new design and geometric freedom, lightweight construction through the reduction of metal part weight, significant advantages in terms of production speed and the manufacturing of internal undercut parts in low quantities.

Our products are utilized globally by customers from the most varied sectors, particularly in the aerospace, automotive, tooling, energy and healthcare industries, as well as in research and education.

They particularly value the following advantages of our technology partnership:

- Highest **productivity** using patented multi-laser technology
- Highest material density and **part quality** through our innovative gas stream management
- Completely closed **powder management** in an inert gas atmosphere
- Cutting-edge process monitoring using various **quality control modules**
- Multilingual open **software architecture** with customer adaptability
- Ultracompact **modular design**
- Long-term and **confidential customer relationships**
- **A technological leader and pioneer** in metal-based additive manufacturing with decades of market experience

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