

Large Format Selective Laser Melting

Fully Automated Series Production with
a Scalable Multi-Machine Setup



SLM[®] 800

Selective Laser Melting Machine

New Possibilities for Large Production Parts



Build parts 850mm tall
with extended z-axis height

Quad-laser efficiency
from the multi-laser pioneer

Multi-machine setup
for production environments

Selective laser melting with an expanded build envelope and integrated automation

Offering the tallest powder bed fusion chamber on the market, the SLM[®]800 efficiently builds large components and opens new production possibilities. All SLM Solutions' patented innovations have been scaled up and partnered with features such as a metal recoating brush, permanent filter module and centralized powder supply to enable successful large builds. The SLM[®]HUB and optional Build Cylinder Magazine create an automated, multi-machine production manufacturing cell.

Patented multi-laser overlap strategy for consistent material quality

As the innovation leader in the selective laser melting field, SLM Solutions focuses on both productivity increases and material characteristics. SLM[®] patents include a scan strategy to minimize soot interference with lasers and a laser overlap strategy for efficient processing. Testing proves comparable density and mechanical property results in overlap and single-laser scan areas. The exact laser overlap is altered layer by layer to avoid a visible seam or mechanical weak point in the finished component.

Modular, Automated Production

SLM[®] 800

Selective Laser Melting Machine



Technical Specifications

Build Envelope (L x W x H)	500 x 280 x 875 mm reduced by substrate plate thickness
3D Optics Configuration	Quad (4x 400W or 4x 700W) IPG fiber laser
Real Build Rate	up to 171 cm ³ /h*
Variable Layer Thickness	20 µm - 90 µm, more available on request
Minimum Feature Size	150 µm
Beam Focus Diameter	80 - 115 µm
Maximum Scan Speed	10 m/s
Average Inert Gas Consumption in Process	Dependent on machine setup
Average Inert Gas Consumption in Purging	Dependent on machine setup
E-Connection / Power Input	400 Volt 3NPE, 63 A, 50/60 Hz, 8-10 kW
Compressed Air Requirement	ISO 8573-1:2010 [1:4:1] 7 bar
Machine Dimensions (L x W x H)	Dependent on machine setup

*depending on material and build part geometry

Build Chamber Sizes



1 SLM®800 Selective Laser Melting for Serial Production Solutions

The SLM®800 utilizes the proven quad-laser technology of the SLM®500 with an extended z-axis for larger production builds. SLM Solutions' patented sintered wall gas flow prevents disruption of the laser for consistent quality and the durable metal recoating brush ensures stable powder recoating while enabling error correction during the build.

Vertically extending the build envelope reduces exposure per layer and internal stresses with a higher surface quality for long components. Decreased supports through vertical orientation also reduces material usage and post-processing.

2 Permanent Filter Module Improves Machine Uptime and Reduces Costs

The permanent filter module traps process soot in a sintered plate filter that is purged with gas. The waste material is coated with an inhibitor and stored in a bin for dry disposal, while clean gas returns to the process chamber, stabilizing gas flow to ensure part quality throughout long builds without interruption.

The elimination of consumable filter cartridges increases safety while improving machine uptime and reducing costs. Operators no longer need to flood filters and waste management is simplified as controlled diffusion renders a standard dry material for disposal.

3 Fully Automatic Powder Handling Increases Safety and Material Quality

Each SLM®800 features an integrated powder tank to supply the machine with a direct source of material. The additional central powder supply unit (CPS) features two 220l tanks, one fixed for delivery to the machine and one portable for powder refill. Sieves are located both in between the two CPS tanks and on the machine directly before use to ensure powder quality throughout the process.

4 SLM®HUB for Fully Automated Build Cylinder Handling

The SLM®HUB utilizes a linear axis to drive build cylinders between three integrated stations and directly into or out of the SLM®800 machine. Setup of new substrate plates and removal of finished parts takes place in the handling position while dedicated locations in the parking chamber allow for pre-heating of cylinders before or controlled cooling after a build.

The integrated powder removal chamber separates the build cylinder from the substrate plate and rotates the build with vibration motions. A specially designed gas flow ensures safe depowdering within an inert atmosphere. All powder can be recovered and returned to the centralized powder supply.

Up to five SLM®800 machines can link to one SLM®HUB to optimize utilization with full automation to minimize costs.



Up to five machines can be connected to one SLM®HUB in a multi-machine setup

Quality Assurance of the Selective Laser Melting Process

Comprehensive monitoring and quality assurance enable a high degree of process documentation and verification. Chamber temperature, oxygen, gas flow and other variables are constantly monitored and logged. This level of process control results in consistent, high quality builds.

Layer Control System (LCS)

Layer Control System (LCS) is a testing and documentation system that examines the performance of each powder layer by monitoring the powder bed and detecting possible coating irregularities.

Melt Pool Monitoring (MPM)

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.

Laser Power Monitoring (LPM)

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.

Innovation Comes Standard

SLM Solutions is known as the innovation leader in selective laser melting, being the first to introduce both twin- and quad-laser production systems. Features such as bi-directional powder recoating to reduce manufacturing time, open powder architecture allowing use material from any supplier and full process parameter access for custom development come standard on every selective laser melting machine.

Qualified Material Solutions

SLM Solutions offers expert know-how that drives unique specifications to assure mechanical properties through the combination of machine, parameters and powder audited for composition, quality and flowability. Our material experts are always collaborating with customers to develop and source new alloys optimized for selective laser melting.

Consultative Development and Expert Knowledge-Sharing

SLM Solutions' consulting, applications, training and service teams put customer success first to ensure their return on investment is maximized. Our experts works with customers every step of their additive journey, from application identification and development to factory layout and full serial production ramp-up.



SLM Solutions - Technology Pioneers, Innovation Leaders

SLM Solutions helped invent the laser powder bed fusion process, was the first to offer multi-laser systems and all selective laser melting machines offer patented quality, safety and productivity features. Taking a vested interest in customers' long-term success in metal additive manufacturing, SLM Solutions' experts work with customers at each stage of the process to provide support and knowledge-sharing that elevate use of the technology and ensure customers' return on investment is maximized. Optimal paired with SLM Solutions' software, powder and quality assurance products, the SLM® technology opens new geometric freedoms that can enable lightweight construction, integrate internal cooling channels or decrease time to market.

A publicly traded company, SLM Solutions Group AG focuses exclusively on metal additive manufacturing and is headquartered in Germany with offices in China, France, India, Italy, Russia, Singapore and the United States and a network of global sales partners.



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