REALIZER SLM

The Pioneer of 3-D Printers

SLM50

SLM125

SLM300*i*

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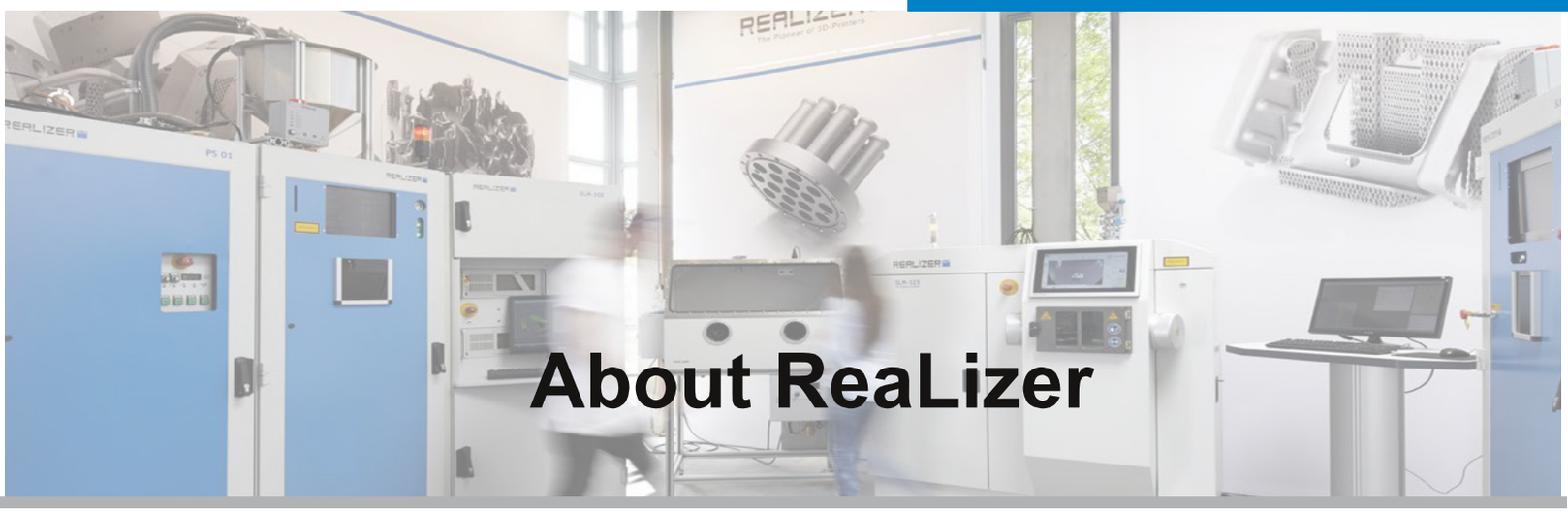
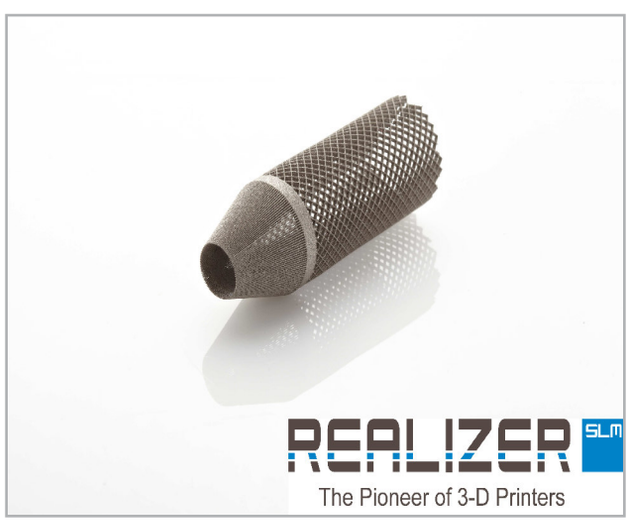


About ReaLizer

In 1990, the physicists Dr. Matthias Fockele and Dr. Dieter Schwarze founded the F&S company. As pioneers of Rapid Prototyping, they were globally among the first to develop and produce stereolithography equipment (STL) for the production of plastic prototypes.

In 1995, the company started the development of SLM-technology (Selective Laser Melting) for the production of components made of metallic materials in cooperation with ILT Aachen.



As early as 1997, the first patents were applied for. In 1999, the company delivered the world's first SLM machine for metals to the Forschungszentrum Karlsruhe.

In 2004, Dr. Matthias Fockele founded ReaLizer GmbH, another enterprise which focuses on the development and production of SLM machines for the manufacture of metal workpieces.

Innovation and Partnership

As a technology leader in the area of Selective Laser Melting, ReaLizer GmbH was the first company to develop an innovative and novel technology – a technology which has been in practical use for more than fifteen years now.

Creativity and innovation, combined with our wealth of experience, allows us to continually optimise and develop this technology.

We attach particular importance to a partnership based co-operation with our customers. They in turn appreciate our dedication.

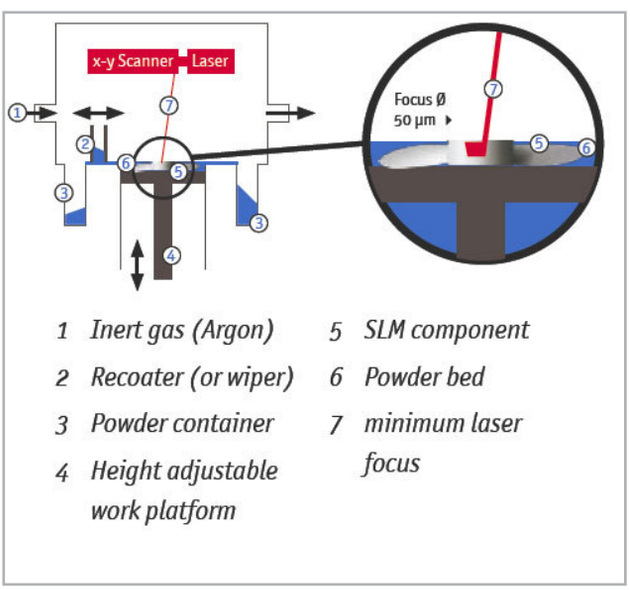
We don’t waste time with lengthy discussions when it is time to find a solution, we take creative, committed and positive actions.

Many tasks and objectives can only be realized in close and trusting co-operation with our customers.

SLM - The Technology

Selective Laser Melting (SLM) is an additive manufacturing method in which the desired components are produced directly from 3D CAD data. Using standard format STL files highly complex parts can be produced from a wide range of metallic materials.

With the SLM method, the workpiece is constructed in a three-dimensional layered structure. To accomplish this, the metal is applied in thin layers of very fine powder andmelted onto those areas where the workpiece is required to be constructed.



Dependingon the surface quality and production speed requirements, the powder is automatically applied with layer thicknesses of 20 to 100 µm. A powerful fibre laser then selectively melts the designated areas. Optimum focusing provides the laser beam with a very high power density which melts the material with extreme precision.

This results in workpieces with an absolute density being produced with wall thicknesses down to 40 µm. When the melting process is finished for the particular layer, the platform is lowered by the respective thickness and another layer of powder is applied.

The workpiece is constructed layer by layer in this manner. The duration of the process, which takes place in an enclosed inert gas atmosphere, is dependent on the amount of material used and the number of layers – rather than the complexity of the component.

SLM - The Technology

The layer structure facilitates the production of highly complex lattice and honeycomb structures which cannot be produced using other methods. With the SLM process, the component design can be optimised for strength with the advantage of weight saving that only this type of technology can deliver.

Components of absolute integrity, durability, strength and quality are produced by means of SLM, the material properties of which are nearly equal to those of conventionally produced components. Depending on the intended use and just like more conventionally produced components, they can be reworked using any other method.

This is what makes SLMTM technology a sensible alternative...

• When a functional metal component has to be produced from three-dimensional construction data in the shortest possible time. SLM makes prototypes available using the CAD STL quickly and without the time constraints experienced by more conventional processes. This process is not only faster, but also the most economic way to generate a perfectly functional sample.

• If complex components with hollow or lattice structures cannot be manufactured or only manufactured with very complex methods using conventional processes, SLM technology becomes the cost effective solution.

• When only a limited number or unique of components are to be produced.

• Compared to the lost-wax casting process, immediate SLM production can often prove more cost effective.

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SLM-Machine

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SLM 50

With the SLM 50, ReaLizer delivers the Industry‘s first SLM desktop machine for manufacturing components made of metal. The desktop device has been designed for the manufacturing of components with a diameter of up to 70 mm and a height of up to 40 mm.

Applications

An important application for the SLM 50 is the manufacturing of crown frameworks, bridge frameworks or brackets made of cobalt-chrome and gold alloys for the Dental Industry.
Following moulding by the dentist, initially a conventional dental die is prepared. The dental technician scans the model and prepares the data for the individual components using special CAD software.

Based on this 3D data, the SLM 50 produces exactly fitting dental components – quickly and of high quality. The components are absolutely true to size, homogeneous and require only minimal post processing. On the construction platform with a diameter of 70 mm, up to 40 individual components can be manufactured simultaneously.

Another field of application for the SLM 50 is the manufacture of jewellery. Many design ideas, that cannot be realized with conventional jewellery casting, become possible with the new SLM-technique. The new fabrication possibility of hollow parts for the jewellery industry is especially attractive. An important advantage of the SLM 50 is the small amount of material needed for the manufacturing of jewellery made of expensive precious metals.

Specifications SLM 50

Construction volume	Ø 70 mm, max. hight 40 mm
Thickness of layers	20 µm - 50 µm
Laser type	Fibre laser 20 W to 120 W
Power supply	16 A, 230 V
Power consumption	1,0 KW
Argon consumption	ca. 30 l/h
Dimensions	(H)500 mm x (W)800 mm x (D)700 mm
Weight	approx 100 Kg
Software	ReaLizer Control Software
Materials	Steel alloys, Titanium, Cobalt Chrome, Gold, Silver, etc.

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SLM 125

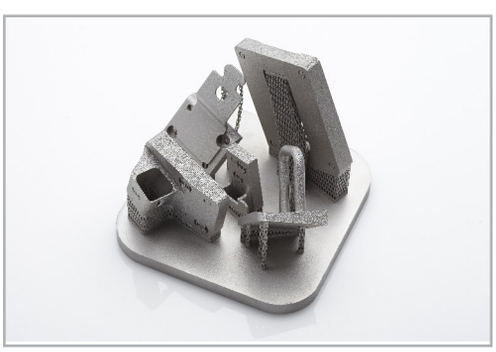
The ReaLizer SLM 125 is the first SLM machine with integrated powder recycling system worldwide. A powerful laser enables faster construction times.

The ReaLizer SLM 125 will set new standards in the field of SLM-machine technology.

The development team led by Dr. Matthias Fockele has managed a strong performance machine with an integrated and closed in itself powder recycling system.

The SLM 125 can produce on a square by 125mm x 125mm filigrane parts to a height of 200mm.

An additional aspect that speaks for SLM125 is its size. With a height of 1.55 m and a width of 1.6 m the All-in-one machine quickly finds a place in production halls and laboratories.



Specifications SLM 125

Construction volume	(W) 125 mm x (D) 125 mm x (H) 200 mm
Thickness of layers	20 µm - 100 µm
Laser type	Fibre laser 200 W - 400 W
Power supply	16 A, 230 V
Power input	1,5 KW
Argon consumption	app. 45 l/h
Dimensions	(H)1550 mm x (W)1600 mm x (D)800 mm
Weight	app. 350 Kg
Software	ReaLizer Control Software
Materials	Steel alloys, Cobalt Chrome, Titanium, other materials on demand

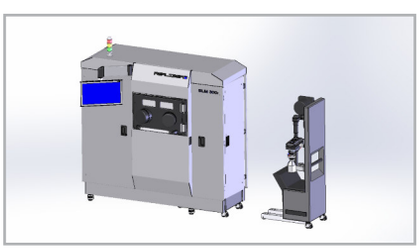
SLM 300i

The ReaLizer SLM 300*i* is designed for all-round use – It is suited for laboratories as well as the industrial production of components.

The construction volume measures 300 mm x 300 mm x 300 mm and offers great flexibility.

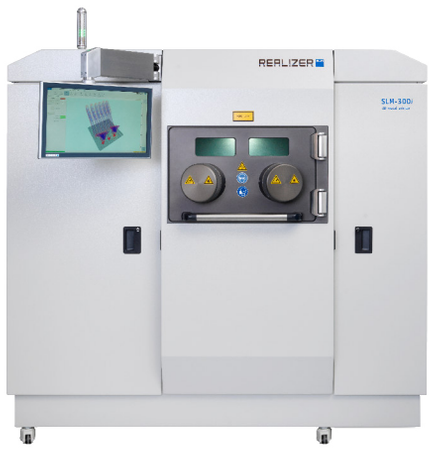
The processing area can be utilized to stack several pieces on top of each other or next to each other, whereby maximising the number of components being processed.

If a high component throughput is the primary requirement then the SLM 300*i* can also be equipped with a high-capacity laser with output power up to 1000 W.



New at the SLM300i is not just the sleek design. The machine also has a unique powder recycling system.

This system works as a cartridge unit and allows a powder change in less than two hours.



Specifications SLM 300*i*

Construction volume	(W) 300 mm x (D) 300 mm x (H) 300 mm
Thickness of layers	20 µm - 100 µm
Laser type	Fibre laser 400 W - 1000 W
Power supply	16 A, 400 V
Power input	4,0 KW
Argon consumption	app. 72 l/h
Dimensions	(H)2200 mm x (W)1990 mm x (D)850 mm
Weight	app. 850 Kg
Software	ReaLizer Control Software
Powder handling	Integrated powder recycling system
Materials	Steel alloys, Cobalt Chrome, Titanium, other materials on demand

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Equipment

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Specifications Glovebox

Dimensions	(H)1800 mm x (W)1000 mm x (D)800 mm
Weight	100 Kg
Argon consumption	40 l/h
Argon connection	10 mm connectors/ min. 1bar
Power supply	230 V / 50 Hz
Power input	app. 500 W
Continuous sound pressure level	65 db
Maximum sound pressure level	67 db

Specifications PRU

Sieve volume	0,5l - 5l
Sieve mesh size	20 µm - 100 µm
Screen speed	app. 2 m/s
Power supply	230 V
Power input	0,4 KW/h
Argon consumption	ca. 31 l/h
Dimensions	(H)1330 mm x (W)820 mm x (D)500 mm
Weight	app. 350 Kg

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