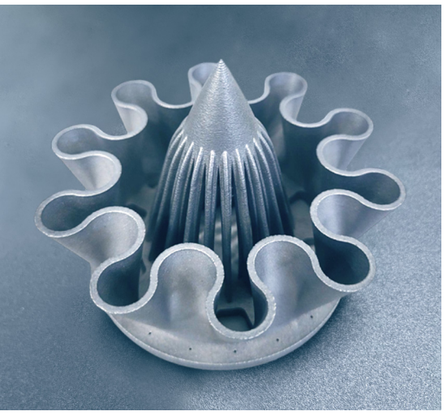
ROSATOM
ADDITIVE
TECHNOLOGIES

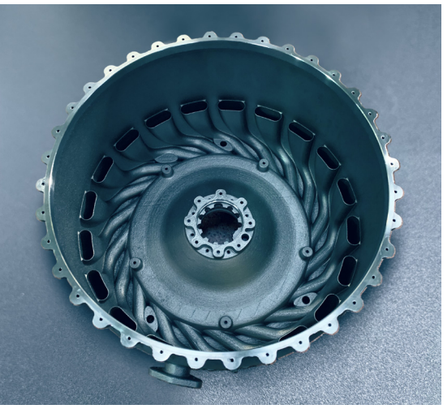
80 YEARS
OF RUSSIA'S
NUCLEAR INDUSTRY

RUSMELT 300M

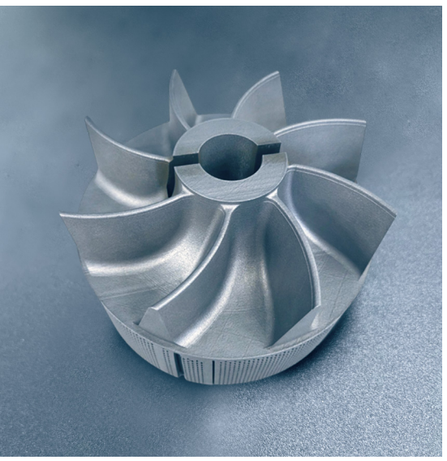
SLM System for Metal 3D Printing



Gas turbine engine exhaust pipe mixer



Combustion chamber for jet engine



Impeller

RusMelt 300M
SLS-MPK-310

Machine for producing shaped blanks and products using selective laser melting (SLM) of metal alloy powder compositions made from aluminum, titanium, nickel, cobalt-chrome, copper, stainless and tool steels, depending on the selected technological mode.

Main advantages

- Large build volume in the medium-format equipment segment (300×300×300 mm)
- High productivity: 10–35 cm³/h with powerful lasers (1–2 pcs) up to 700 W
- Modular system: easy maintenance and quick replacemen of components
- Two-stage inert gas filtration system with self-cleaning function
- In-house monitoring system and integrated operator safety features
- Optional flexibility: equipment configuration tailored to customer-specific technological needs
- High quality of printed parts

Printing materials
(Metal powders with a particle size range of 10–63 μm)

- Stainless steels: 12Cr18N10Ti, 316L, H15N5D4B
- Heat-resistant nickel alloys: Vzh159, EP648, Inconel 718, Inconel 625
- Titanium alloys: VT6, VT1-0, PT3-V or equivalents
- Aluminum alloys: RS-300 (AK9ch), RS-320
- Cobalt-chromium alloys: Kh28M6 (CoCr-based alloy)

Fields of application

- Aviation and space industries
- Shipbuilding
- Automotive industry
- Nuclear industry
- Medicine
- Power engineering

Certificate of Origin (Form ST-1) has been obtained

Main characteristics of the machine

Build area (in X-Y-Z axes)	300x300x370 mm
Type of laser used	ytterbium fiber single mode (TEM_{00}) laser
Number of lasers used	1/2 (optional)
Power of lasers used	500W/700W (optional)
Type of scanning optical system	three-axis scanning system with dynamic focus along the Z axis
Nominal laser beam spot diameter (focal plane)	85±5 μm (adjustable in the range of 80-120 μm)
Laser radiation parameters	wavelength 1070±10 nm; beam quality M2 no more than 1.2
Maximum scanning speed of the laser beam	10 m/s (along the plane of the worktable)
Positioning accuracy of the laser beam along the plane of the worktable (along the X-Y axes)	at least 20 μm
Adjustable layer thickness	in the range of 20÷200 μm
Minimum element size	200×200 μm
Roughness of the resulting surfaces(Ra)	in the range of 4÷25 μm
Build platform heating	up to 200 °C
Fusion performance (per laser)	starting at 10 cm3/h
Video surveillance system for the printing process	real-time, (1080p, 60 frames per second)
Power supply	400 V÷5%, 50 Hz
Energy consumption of the machine	not more than 12 kW
Area occupied by the machine, dimensions (W×H×D)	4600×2700×3300 mm
Machine weight	not more than 2500 kg
Softwar	a set of software for setting mode parameters, visualizing active controls and the current state of the build process, maintaining logs of the part bulding and equipment event log

Company Services

As part of Rosatom's Additive Technologies business line, Additive Technology Centers have been established as integrated engineering and production hubs that serve as demonstration and manufacturing sites and designed to help solve complex industrial challenges.

3D scanning

3D scanning is the process of creating a digital copy of a physical object, allowing for the generation of highly accurate volumetric and mathematical digital models, which is especially effective when replicating unique, one-of-a-kind parts.

Enterprise audits for the implementation/optimization of additive manufacturing

Rosatom Additive Technologies provides full cycle services for the additive manufacturing implementation. If a company already owns 3D printing equipment, our specialists can assess its efficiency and provide recommendations on how to maximize benefits or optimize production.

Topological optimization of the part

Topological optimization is the process of optimizing part design through digital modeling that adapts part geometry for 3D printing while maintaining or enhancing its functionality.

Additive Technologies R&D

Execution of R&D projects for the development of equipment and products for 3D printing. This also includes the creation of regulatory and technical documentation, printing process parameters, post-processing procedures, and more.

3D printing

Additive Technologies Center provides 3D printing services for both metal and polymer products of varying complexity and different volumes sizes - up to 600x600x600mm, using printers developed in-house and by partner companies.

Service maintenance of equipment

Warranty and post-warranty service for additive manufacturing equipment, both in-house and third-party produced. Services include diagnostics, troubleshooting, and repair of additive systems.

Post-processing

The equipment at the Additive Technologies Center allows the heat treatment of workpieces after a 3D printing cycle, finishing the external and internal surfaces of products (including internal complex-profile channels and cavities).

Trainings and education

Course programs in the field of "Additive Technologies" are designed to completely immerse specialists in the topic of additive manufacturing - from theoretical foundations to practical application, including 3D scanning and software usage.

3 Kashirskoe highway, Block 2, Structure 4, Moscow, 115230
8 (499) 949-24-30
rosat@rosatom.ru
rosat.tvel.ru