

COLIBRIUM
ADDITIVE
a GE Aerospace company

M Line

Metal additive for serial production



The production machine solution for industrial 3D metal printing

More than just a single machine, M Line is a system created specifically for metal additive production, developed around safety, reliability, repeatability and efficiency.

The M Line offers a modular machine architecture that enables economical series production on an industrial scale.

The modular machine technology concept physically decouples the Laser Processing System (LPS) and the Material Handling Station (MHS) units used for upstream and downstream stages of the production process and part production. These tasks can now be carried out in parallel and physically separate from one another thanks to the modular architecture.

This production system is flexible, expandable and centrally controllable, which decreases current stoppage times as a result of manual processes, such as supplying or extracting metal powder. This will deliver considerable time and cost savings.

Machine architecture

- Laser Processing Station (LPS) with individually movable powder, build and overflow modules
- Machine Handling Station (MHS) for build job preparation, dismantling and powder management

M Line Benefits

- Reproducible, high part quality
- Stitching with quad laser system on single laser level
- Enabling large parts: 500 × 500 × 400 mm
- Highest safety standards
- Productivity
- New modular software, designed for series production
- Upgradeability
- Ease of Use
- Serviceability

Key Features

Modular machine architecture

- Laser Processing Station (LPS) with individual, movable powder, build and overflow modules
- Machine Handling Station (MHS) for build job preparation, dismantling and powder management

Pre- and post-processing integration

Architecture allows for simultaneous printing and pre- and post-processing for maximum productivity.

Quad laser stitching:

With over 70% of the build area covered by two or more lasers, interweaving laser paths on the same layer, and scan field calibration, the quad laser system stitches on single-laser quality level.

- Minimized thermal effects for best optical stability and less recalibration needs
- Improved robustness against remaining multi-laser drifts by patented scan paths
- Robust scan paths allowing for large overlap area for highest flexibility between quality or laser melting rate

Parameter transferability:

M2 Series 5 parameters are easy to transfer to M Line.

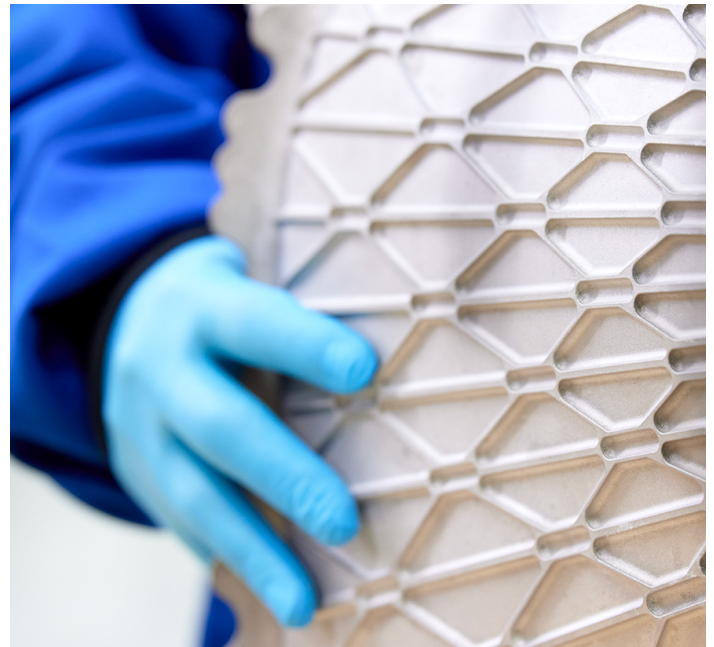
Industrialized product technology

This product was designed to enable reproducible part quality and high availability.

- Superior gas flow and optics accuracy, stability and repeatability for large platform
- Thermal management also including gas flow cooling
- Single-laser load balancing

Highest safety standards

- Automated EHS risk detections
- Laser safety allowed for automatic operation (T1)
- Automated lid system



CL WRX 3 modular machine software

- Effective, user-friendly, individually expandable
- User centric, role-based user management
- Production planning, execution and monitoring



Office



Manager



LPS Control



MHS Control

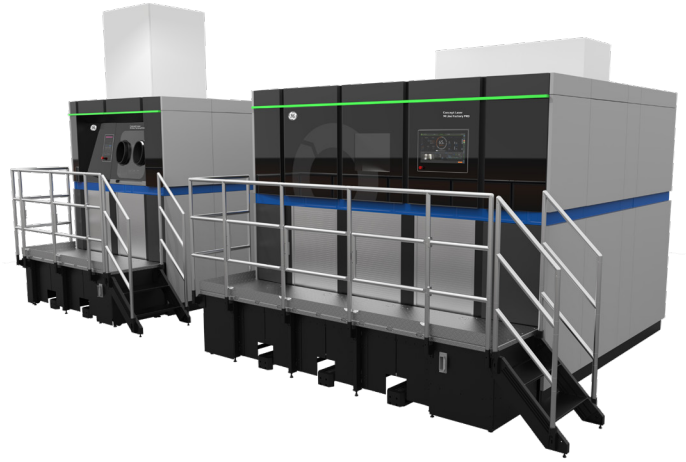
M Line

Technical Data

Build envelope	500 × 500 × 400 mm (x, y, z)
Layer thickness	20 – 100 µm
Scan speed	max. 5 m/s
Laser system	3D optics with 4 × 400 W
Focus diameter	50 µm – 500 µm (dynamic focus adjustment)
Filter system	integrated with 2 × 20 m ² filter surface
QM modules	QM Live View, QM Atmosphere QM Meltpool Powder bed Monitoring
LPS dimensions	4,245 × 4,300 × 3,525 mm (W × D × H)
LPS Weight	approx. 14,000 kg (max. full weight)
MHS dimensions	2,960 × 3,090 × 4,190 mm (W × D × H)
MHS weight	approx. 7,000 kg (max. full weight)

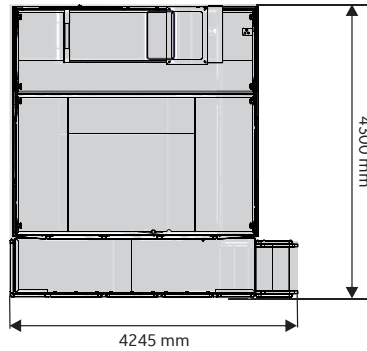
Materials Available

- Nickel based alloy: Ni718, Ni625
- Aluminum: A205
- Cobalt chromium alloy: CoCrMo, CoCrW
- Steels: 316L 17-4PHM300 H13

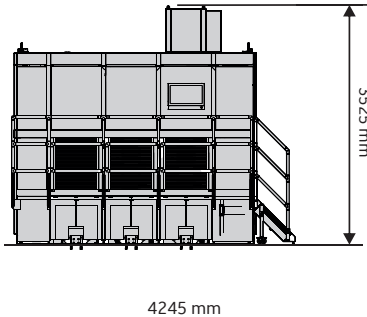


Laser Processing Station (LPS)

Top view

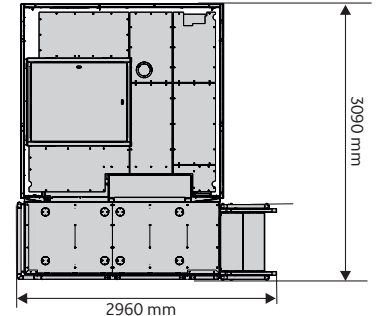


Front view



Material Handling Station (MHS)

Top view



Front view

