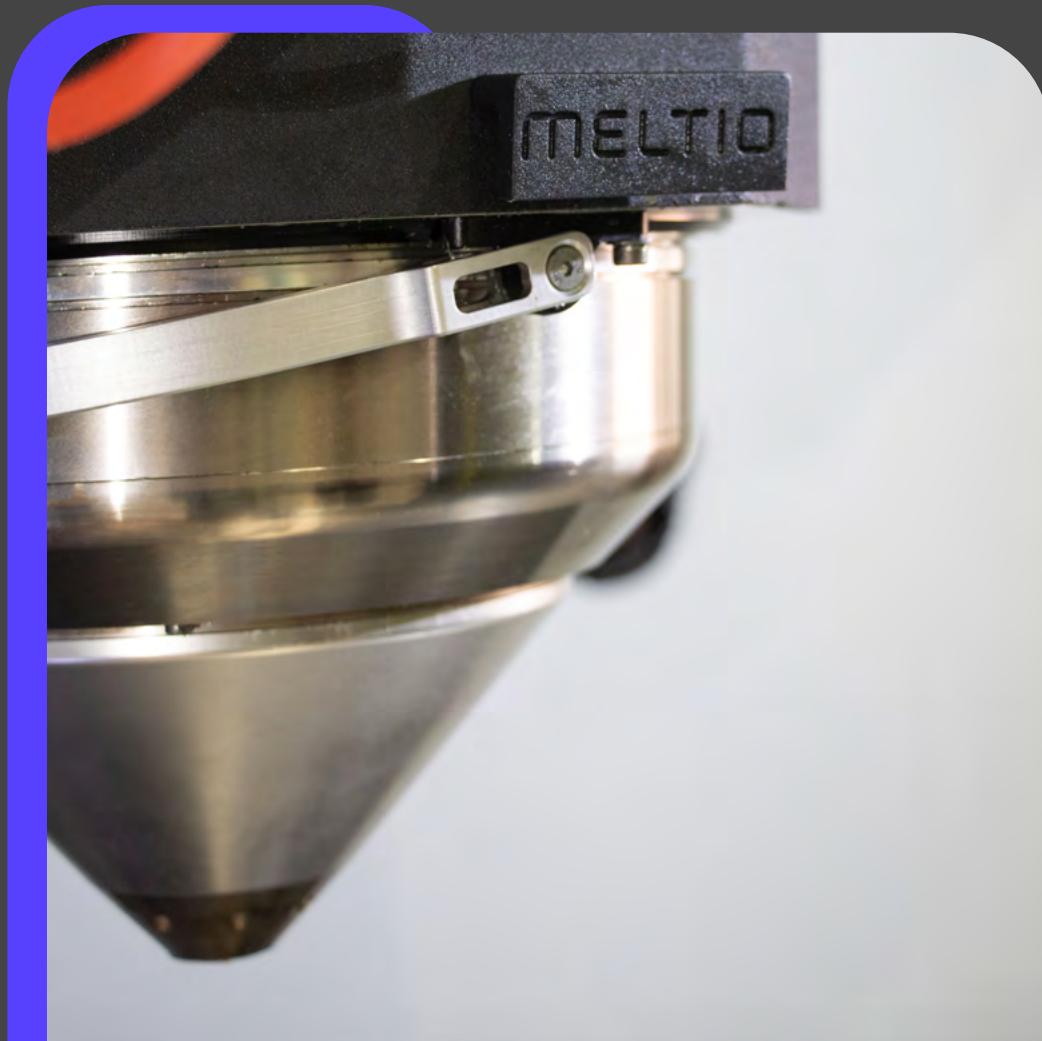# MELTIO

Manufacturing and Developing
Wire-Laser Metal Additive Manufacturing Technology

Laser Metal Deposition

Multi-Laser Deposition Head

LMD is a Directed Energy Deposition (DED) process that functions by precisely stacking weld beads on top of one another. The wire feedstock is introduced into the laser-generated melt pool.

Meltio's technology comes packaged in a compact deposition head, host of multiple lasers, capable of processing commodity welding wires independently and sequentially.

Wire-Laser Metal Additive Manufacturing Technology

Discover Meltio's cutting-edge wire-laser metal 3D printing technology - available as a **standalone metal 3D printer or easily integrated into Vertical Machining Centers and Industrial Robot Arms**. Our plug-and-play integration kits make it simple to adopt advanced metal additive manufacturing with minimal components and fast setup.

Meltio's solutions offer unparalleled opportunities for seamless 3D printing and CNC machining, enhancing your production capabilities while keeping costs low. With the use of standard, pure metal wire, our technology ensures **reliable, high-density parts** with proven structural integrity.

Our mission is to **empower customers, partners, employees, and shareholders** by delivering affordable, reliable, and user-friendly metal 3D printing systems, continually disrupting the industry with innovative solutions that integrate effortlessly into existing manufacturing environments.

Blue Laser

1. Blue light

450 nm light improves energy absorption and printing efficiency across the metal material spectrum and opens new material possibilities.

3. No calibration

The new Head eliminates the need for calibration between material changes and comes factory-aligned, ensuring maximum printing repeatability and minimal maintenance.

2. Hotwire compatible

The deposition Head is designed for use with an optional hotwire supply, enabling increased deposition rates and expanding the range of materials that can be processed.
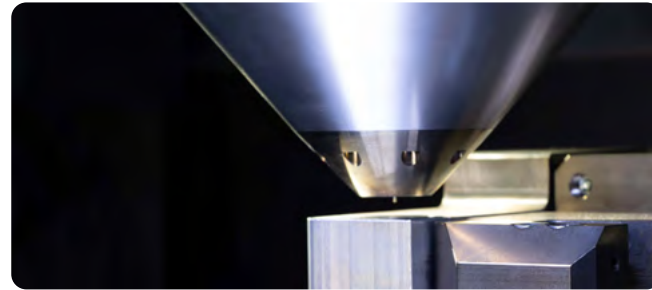
Material and Feeding System

1. Aluminum and Copper Ready

The Meltio M600 is compatible with steel, carbon steel, nickel, titanium, aluminum and copper based alloys.

3. Wire Drum Ready

The wire drum connector allows for a reliable and industrial feeding system for material spools of +100kg.

2. Dual and Quadruple Wire

Options for printing with up to four different materials in the same print sequentially with the reliability of a single wire process.

4. Hot Wire

Programmable power supply that preheats the material to increase the deposition rate.

Meltio M600

Industrial Metal 3D Printer

Expand your manufacturing capabilities with Blue Lasers, a large build volume and a fully inert chamber for the best material properties. Printing is easier than ever thanks to the improved process control, advanced sensors and live monitoring allowing you to produce parts consistently 24/7.

The Meltio M600, with its built-in 3-axis probing system and work-holding solutions, is the ideal companion for your manufacturing operations.

Production Ready　**Reliable**　**Easy-to-use**　**Repeatability**

Dimensions (WxDxH):	1050 x 1150 x 1950 mm	Power Input:	380-415 V Three-phase + N + PE / 200-240 V Three-phase +PE
Build Envelope (WxDxH):	300 x 400 x 600 mm	Power Consumption:	4-6 kW typical consumption, 12 kW Max
System Weight:	800-1000 kg (depending on options)	Process Control:	Closed Loop, Laser and Wire Modulation
Movement System:	Servo Motor Linear axis with absolute encoder on all axis	Touch Probe:	Automated XYZ Touch Probe integrated
Filtration System:	3 Stage Particulate and Chemical Filtration included	Enclosure:	Laser safe, Controlled inert atmosphere
Environment Control:	Control O2 and Humidity levels	Interface:	USB, Ethernet
Laser Type:	9x Direct Diode Lasers	Cooling:	Active water-cooled chiller included
Laser Wavelength:	450 nm (Blue)	Wire Feedstock:	Diameter: 0.8-1.2 mm / Spool Type: BS300 External wire drum ready
Total Laser Power:	1000 W		

Combustion Chamber DM

Size:	132 x 200 x 176 mm
Weight:	6.4 kg
Material:	Inconel 718 // Copper

Bracket

Size:	153 x 345 x 275 mm
Weight:	18.6 kg
Material:	Stainless Steel 316L

Integration Kits

For **Robots** and **Vertical Machining Centers**

Meltio is dedicated to making advanced metal additive manufacturing **accessible and affordable** for the industry. In addition to our complete 3D printing solutions like the Meltio M600, and Meltio Robot Cell, we offer integration-agnostic Meltio Engine Integration Kits. These kits **enhance Industrial Robots and CNC Mills** by incorporating our high-precision laser head technology, allowing companies to leverage metal 3D printing using their existing equipment.

By democratizing metal manufacturing, Meltio **empowers businesses to innovate and elevate their production** capabilities efficiently. Our **flexible integration solutions** maximize return on investment, enabling more companies to compete effectively in the evolving manufacturing landscape.

`Hybrid` `Retrofitting` `Geometry Freedom` `Part Repair` `Large-Scale` `Cladding`

1. **+1.4kw Blue Laser** Factory Calibrated

2. **Stronger & Reliable** Dual Wire Feeders

3. **Compact** & Simple System

4. All Quick-Connect **Easier Integration**

5. **Process Control** More Stable & Compatible

6. 27" & 17" **Screen Options**

7. **Melt Pool Camera** on Head

8. **Max Safety** Level PL4e

9. **Predefined Print Profiles** for Meltio Materials

10. **Frictionless Wire Liners**
    (no external motor or reservoir)

Easier than Ever

Integration Steps

1. **Select Your Movement System**: Choose between Robot or CNC Mill

2. **Mount the Meltio Engine:** Includes Laser Deposition Head, Engine Control Unit, Touch Screen (HMI), Spool Holder and Chiller

3. **Protect Your Team:** Laser-safe windows, panels, and door interlocks

4. **Two-Way Communication:** 8 digital I/O & respective M-codes. Dual channel safety lines between controllers

5. **Let's Slice:** Enjoy a 1-year free Meltio Space subscription for Robots, or select Hybrid CAM software with adaptable post-processors for CNC Mills and M-codes

6. **Start Printing:** Enhance your productivity with predefined print profiles for Meltio Materials for solid and hollow geometries

Rely on your **Integratior's Network**

Local Expertise: Integrators understand regional markets and specific robot/CNC brands, tailoring solutions effectively

Enhanced Support: Local partners offer timely, expert support, boosting customer satisfaction across platforms

Market Penetration: Our partner network enables fast market entry, adapting to different brands and technologies

Adaptation and Innovation: Collaborations drive innovation, aligning Meltio's technology with diverse sector needs and CNC architectures

Accessibility: This approach ensures Meltio's solutions remain globally accessible and compatible with various machinery

Explore the opportunity to **become one of our partners**

Include your own integrations within the "Powered by Meltio" Portfolio, allow your integration to be sold within your region by our reseller network.

Meltio Engine Integration Kit for Vertical Machining Centers

Hybrid Manufacturing

The most affordable hybrid manufacturing solution, fitting almost any Vertical Machining Center in the market. Enable metal 3D printing and machining of complex geometries in a single process step.

The Meltio Engine is the ideal complement for near-net shape manufacturing, repair and feature addition.

Hybrid   **Retrofitting**   **Geometry Freedom**   **Part Repair**

Laser System:	1000 W 9 x 450 nm direct diode lasers	Feeder System:	Quad-point traction servo feeders, frictionless liners
Printhead:	Mounted on the right side of the spindle 32.5 to 35 kg	Process Control:	Melt Pool Camera & Closed-loop wire modulation
Printhead Retracted Size (WxDxH):	280 x 332 x 684 mm	Power Input:	200/240 V 3W+PE 380/415 V 3W+N+PE
Printhead Unretracted Size (WxDxH):	280 x 332 x 943 mm	Power Consumption:	9,2 kW peak 2-5 kw avg.
Control Unit:	Wall mounted, air-cooled 80.5 kg 600 x 300 x 800 mm	Wire Feedstock:	Diameter: 0.8-1.2 mm / Spool Type: BS300 External wire drum ready
Human Machine Interface:	Wall mounted 17" tactile screen		
Cooling:	Water-cooled deposition head. Chiller Included	Product Configurations:	Single or Dual Wire
Print Envelope (WxDxH):	Depending on the Machining Center		

Semi-Open Impeller

Size:	73 x 48 x 17 mm
Weight:	1.47 kg
Material:	Stainless Steel 316L // Nickel 625

Aircraft Bracket

Size:	110 x 161 x 35 mm
Weight:	1.5 kg
Material:	Titanium 64

Meltio Engine Integration Kit for Industrial Robots

Large-Scale Metal 3D Printing

Turn a robot arm into a metal 3D printing system with no inherent size constraints. It is the perfect platform for large and complex 3D printing, repair, cladding and feature addition.

The Meltio Engine integrates with any robot arm manufacturer and interface on the market. Meltio Space slicer software for robots is compatible with ABB, Kuka, Fanuc, Yaskawa and Siemens.

Large-Scale   **Geometry Freedom**   **Part Repair**   **Cladding**

Laser System:	1000W 9 x 450 nm direct diode lasers	Feeder System:	Quad-point traction servo feeders, frictionless liners
Printhead:	Robot Mounted 20.5 to 23 kg	Process Control:	Melt Pool Camera & Closed-loop wire modulation
Printhead Size (WxDxH):	262 x 272 x 572 mm	Power Input:	200/240 V 3W+PE 380/415 V 3W+N+PE
Control Unit:	Wall mounted, air-cooled 80.5 kg 600 x 300 x 800 mm	Power Consumption:	9,2 kW peak 2-5 kw avg.
Human Machine Interface:	Wall mounted 27" tactile screen	Wire Feedstock:	Diameter: 0.8-1.2 mm / Spool Type: BS300 External wire drum ready
Cooling:	Water-cooled deposition head. Chiller Included		
Slicer Software:	Meltio Space 1-year subscription Included	Product Configurations:	Single or Dual Wire
Print Envelope (WxDxH):	Depending on robot's reach		

Screw Compressor

Size:	75 x 75 x 230 mm cladded
Weight:	6.6 kg
Material:	Stainless Steel 316L

Naval Propeller - 3 Blades

Size:	900 x 900 x 250 mm
Weight:	11 kg
Material:	Stainless Steel 316L

Meltio Engine Robot Cell

Plug-and-Play Solution for Robot Integration

An affordable turn-key solution for the Meltio Engine Robot Integration. It is designed to provide industries with a secure and efficient solution for manufacturing metal 3D printed parts.

The Meltio Engine Robot Cell is the most versatile & capable solution for 3D printing, repair, cladding and feature addition.

Plug-and-Play Installation   **Best Components**   **Safe**   **Tested and Certified**

Dimensions (WxDxH):	4.050 x 2.350 x 3.000 mm Indoor use only	**Integration:**	Unified Control Panel, 4k WebCam monitoring & Live Timeline of sensors and 3D model based on reading TCP positions from robot
Print Envelope:	1 meter diameter printing volume with continuous positioner axes interpolation. Actively Cooled 300x400 mm build platform	**Slicing software:**	Meltio Space one year subscription included. Pre-defined Print profiles and slicing strategies. Focused on ease of use
System Weight:	4.000 kg	**Power Input:**	385-415V 50/60Hz (3W+N+PE) 20kw peak 7kw avg. upon request: 230V 50/60Hz (3W)
Laser Type:	Meltio Engine Robot Integrated and Tested	**Required Inputs:**	Inert Argon Gas supply between 2 to 5 bar. (Meltio offers an optional Gas Regulator) & Internet Lan cable connection
Movement System:	6- Axis Robot Arm & 2-Axis Workpiece Positioner	**Accessories:**	Inert Bubble for full Print envelope with Independent Atmospheric Control O2 and Humidity and Temperature Monitoring
Platform:	Structural Steel with Laser-safe Class 1 enclosure with CE certification. All equipment anchored to the platform		

Conveyor Belt

Size:	130 x 903 x 855 mm
Weight:	4.99 kg
Material:	Stainless Steel 316L

High Performance Exhaust Header

Size:	160 x 326 x 190 mm
Weight:	5.95 kg
Material:	Stainless Steel 316L

Powered by Meltio

Turn-key Meltio Engine solutions by our partners

Harness the power of our advanced metal additive manufacturing technology with confidence, backed by expert support of our integration and reseller partners. **Available regionally,** these solutions cater to a wide range of industrial applications, making it easier than ever for businesses to elevate their production capabilities.

Our vision is to integrate with every robot, CNC mill, and CNC controller, including various CNC architectures like lathes. **"Powered by Meltio"** is a game-changing market segment, **adapting to diverse industries** while upholding the quality and reliability of the Meltio brand. We invite new integrators and resellers to join us in this exciting journey, empowering you to offer innovative solutions that meet the evolving needs of the market. **Together, we can transform the future of manufacturing!**

Turn-key   **Pre-configured**   **Expert Support**   **Confidence**   **Regional Availability***

Phillips Additive Hybrid
3-axis & 5-axis Hybrid CNCs
Haas Controller

Jupiter & Union MT
3-axis & 5-axis Hybrid CNCs
Fanuc Controller

Lagun L1600 Hybrid
3-axis Hybrid CNC
Fanuc Controller

Force Automation
6+2 axis Robot Cell
ABB Robot

Wire Trading
6+2 axis Robot Cell
Kuka Robot

Accufacture
6+2 axis Robot Cell
Fanuc Robot

*Consult Meltio for their availability in your region

Meltio Materials

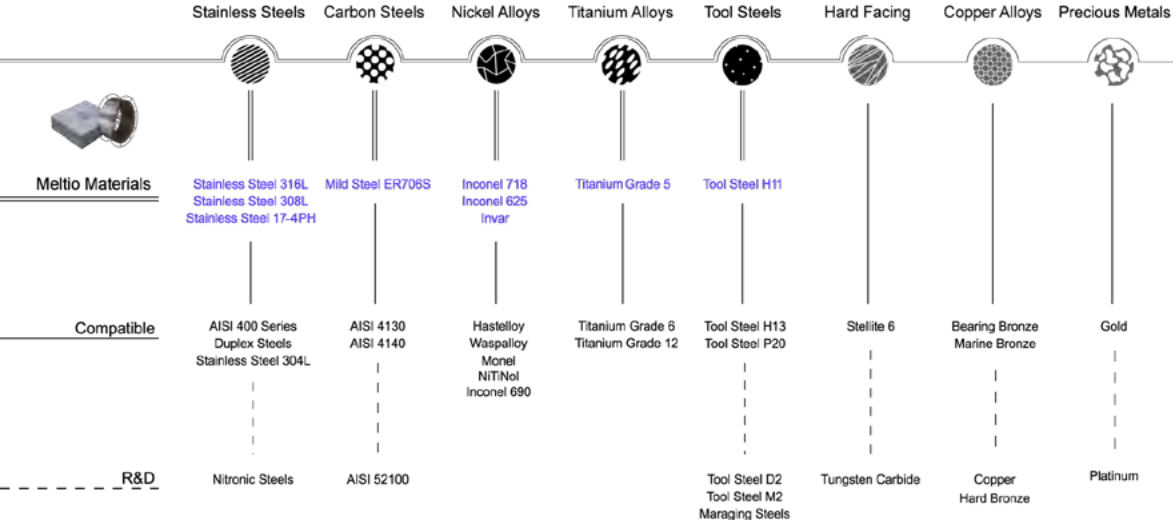## Multi-Wire Metal 3D Printing

Meltio's Laser Metal Deposition process achieves exceptional material mechanical properties using multiple wires.

Choose the ideal welding wire for your application: unlimited third-party commodity material or qualified Meltio Wire Materials that secure the user experience.

Single Wire **Dual Wire** **Quad Wire** **99.98 % Densification**

Unlimited Third-party Material Choice

	Stainless Steels	Carbon Steels	Nickel Alloys	Titanium Alloys	Tool Steels	Hard Facing	Copper Alloys	Precious Metals
Meltio Materials	Stainless Steel 316L Stainless Steel 308L Stainless Steel 17-4PH	Mild Steel ER706S	Inconel 718 Inconel 625 Invar	Titanium Grade 5	Tool Steel H11			
Compatible	AISI 400 Series Duplex Steels Stainless Steel 304L	AISI 4130 AISI 4140	Hastelloy Waspalloy Monel NiTiNol Inconel 690	Titanium Grade 6 Titanium Grade 12	Tool Steel H13 Tool Steel P20	Stellite 6	Bearing Bronze Marine Bronze	Gold
R&D	Nitronic Steels	AISI 52100			Tool Steel D2 Tool Steel M2 Maraging Steels	Tungsten Carbide	Copper Hard Bronze	Platinum

Meltio Materials

Meltio Stainless Steel 316L

Meltio Stainless Steel 308L

Meltio Stainless Steel 17-4PH

Meltio Mild Steel ER70-S

Meltio Tool Steel H11

Meltio Inconel 718

Meltio Inconel 625

Meltio Titanium 64

Meltio Invar

Materials Properties

Superior Mechanical Properties:
Meltio delivers significantly higher Ultimate Tensile Strength (UTS) and Yield Strength compared to traditional casting and wrought methods, ensuring robust performance in demanding applications.

Competitive Hardness:
Materials like Tool Steel H11 (49 HRC) and Nickel 718 (245 HV-30) offer excellent wear resistance, making them ideal for high-performance components.

Material and Time Efficiency:
Additive manufacturing minimizes material waste and energy consumption contributes to more sustainable production practices, particularly for hollow or thin parts, leading to lower production costs and shorter lead times.

Lower Heat Input:
The laser energy source used in Meltio reduces the heat-affected zone (HAZ), resulting in stronger, more durable parts by minimizing material recrystallization.

High Density and Compliance with Standards:
With over **99.5%** density achievable in various metal alloys, Meltio meets or exceeds ISO and ASTM standards, providing confidence in material performance.

Summary of Structural Properties As Printed

Material	Ultimate Tensile Strength (MPa)	% of Casting	% of Wrought	Yield Strength (MPa)	% of Casting	% of Wrought	Hardness (HV-30)	% of Casting	% of Wrought
Stainless Steel 316L	643	126%	118%	429	206%	165%	173 HV-30	80%	77%
Stainless Steel 17-4PH	1017	130%	78%	815	106%	70%	258 HV-30	66%	66%
Mild Steel ER70-S	598	144%	136%	484	236%	194%	175 HV-30	109%	138%
Tool Steel H11	1830	92%	88%	1170	71%	70%	49 HRC	92%	100%
Inconel 718	833	104%	67%	537	71%	52%	245 HV-30	72%	70%
Inconel 625	739	89%	90%	323	78%	66%	160 HV-10	73%	73%
Titanium 64	802	93%	86%	727	96%	85%	303 HV-30	89%	87%
Meltio Materials Average	802	111%	95%	609	123%	100%	186.57 HV	83%	87%

*Printed parts can be heat treated in order to enhacence its structural behavior

Meltio Horizon

Metal 3D Printer Slicer

Meltio Horizon is a proprietary toolpath generator software for 3-axis metal 3D printing, tailored specifically to our laser-wire deposition process with the Meltio M600 metal 3D printers.

Simpler profile selection and premade profiles that cover a large range of geometries and qualities.

Custom Buildplates **Improve Layer Flatness** **Cool New Possibilities** **Crisp Overhangs**

Tailor-made for wire-laser process:	Designed for Meltio's W-LMD process and materials. Complete solution with defined material parameters
User-friendly:	Access just the essential settings, with clear guidance to get you started
All-in-one integration:	Going beyond simple toolpath generation, this system merges print and material profiles into one single job file. This integration provides greater control over the entire printing process
Future Ready:	By developing a dedicated platform for toolpath generation tailored specifically to Meltio, we are positioning ourselves to broaden our range of services in the future
Optimized gas profiles:	Easily configure your gas source and costs directly in Meltio Horizon. Flow rates can be customized for each material to optimize performance and efficiency
Hotwire compatibility:	Leverage Meltio Hotwire features directly within the slicer to optimize various sections of your build for enhanced quality and speed

Meltio Horizon Slicing Strategies

Unlinked Infill	Hotwire Printing Processes
Full Control	Advanced Infill Strategies and Objects Modifiers
Improved Overhang Quality	Perimeters + Infill Joint

Meltio Space

Tailor-made 3D printing software

Meltio Space is a state-of-the-art toolpath generator software for the Meltio Engine Robot Integration with an easy-to-use interface for planar, non-planar, and Meltio's tech adapted variable extrusion calculation for the ABB, Kuka, Fanuc, Yaskawa and Siemens robots.

A new perspective on 3D printing, specifically for robot systems, by breaking free from the limitations of 3-axis systems.

Unlock Complex Geometry **Reduce Programming Time** **Unparalleled Easy-of-use**

Intuitive:	No previous expertise in robotics or programming is required thanks to a modern interface built specifically for wire-DED and robots
Powerful:	Multiple slicing options including variable deposition to address a wide variety of geometries with very fast calculation of complex toolpaths
Post-Processor:	Meltio Space offers its users a diverse range of post-processors for the most popular robot brands, including predefined options such as: ABB (IO), ABB (OPC), ABB (Socket), KUKA (IO), FANUC (IO), YASKAWA (IO)
Investment Protection:	Low capital and running costs. Includes continuous updates and predefined robot kinematic libraries
Dependable:	High success rate thanks to its kinematic model able to detect collisions along part creation even with part itself
Tuned to Meltio LMD:	Automated process parametrization when defining only the Geometry (Solid or Hollow), the desired Quality (Utility or Fully Dense), and the Material

Meltio Space Slicing Strategies

Planar Horizontal	Cladding
Planar Along Curve	Conical Fields
Planar Angled	Non-planar Surface
Radial	Revolved Surface
Radial 360º	Sweep

MELTIO

Get to know us!