
MELTIO

About

Our mission is to delight customers, partners and employees by pioneering the development of affordable metal 3D printing solutions
that are **reliable, safe and easy to use**,
continually reinforcing our status
as a disruptor.

MELTIO

Excellence in technology and commercial development

Incorporated in June 2019 through a joint venture of AddiTec, a Las Vegas based technology company, and Sicnova, a leading 3D printing commercial distributor. Meltio proudly counts with the strategic support of ArcelorMittal, the largest steel producer in the world.

SICNOVA®

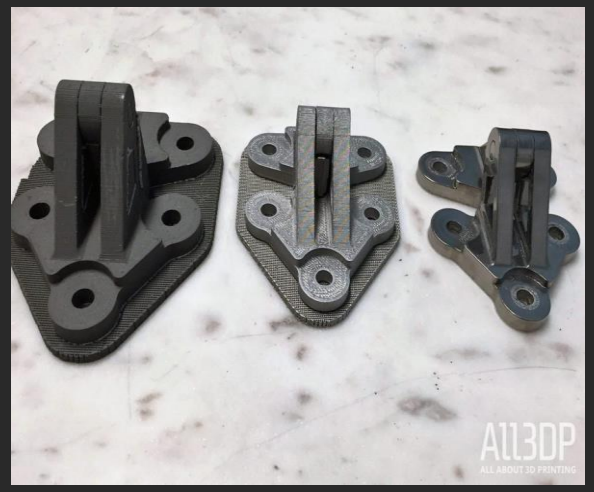
ADDiTEC
ADDITIVE TECHNOLOGIES

Introduction

Metal 3D printing adoption has not changed for the past 20 years

Metal additive manufacturing barriers for industrial adoption

High Investment, Development and Running Costs



Limited Part Size and Part Properties

Subpar User Experience and Convenience

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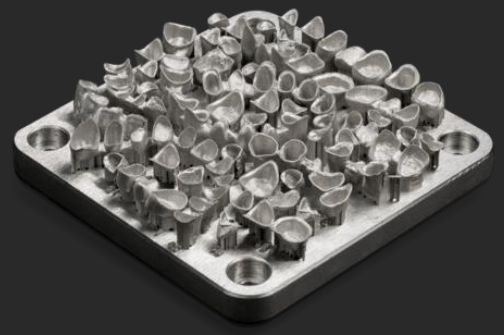
Only niche applications have benefited from metal 3D printing



Small and
Personalized Parts

High Complexity and High
Performance Parts

Concepts and
Sophisticated Designs

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Meltio enables the **shift from niche to industrial applications** for metal 3D printing

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Meltio’s key levers for industrial adoption

Investment and Running Costs

Business model built around volume, not margin, results in lowest capital equipment cost.

Use of commodity welding wire, part cost as low as 10€/kg or 0,1€/cm3

Part Size and Part Properties

Part size only dependent on motion system.

Consistent 99.998% density, near isotropic parts with microstructure superior to casting and forging.

User Experience and Convenience

Designed for industry without the need for industrial infrastructure

Bulk of the process built around wire, the safest and cleanest metal feedstock.

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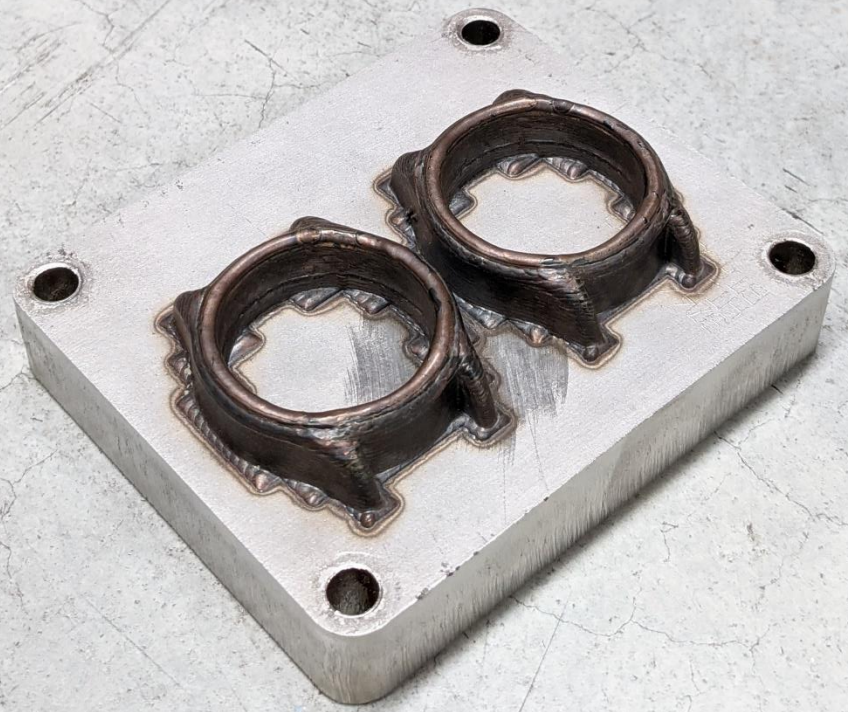
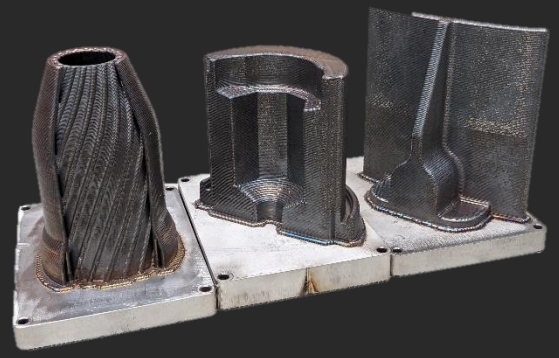
Applications

From lab research to spare part replacement

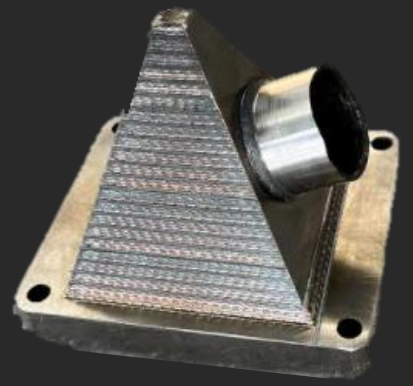


Meltio Applications



Near Net Shape
Manufacturing

Hybrid
Manufacturing



Repair and
Feature Addition

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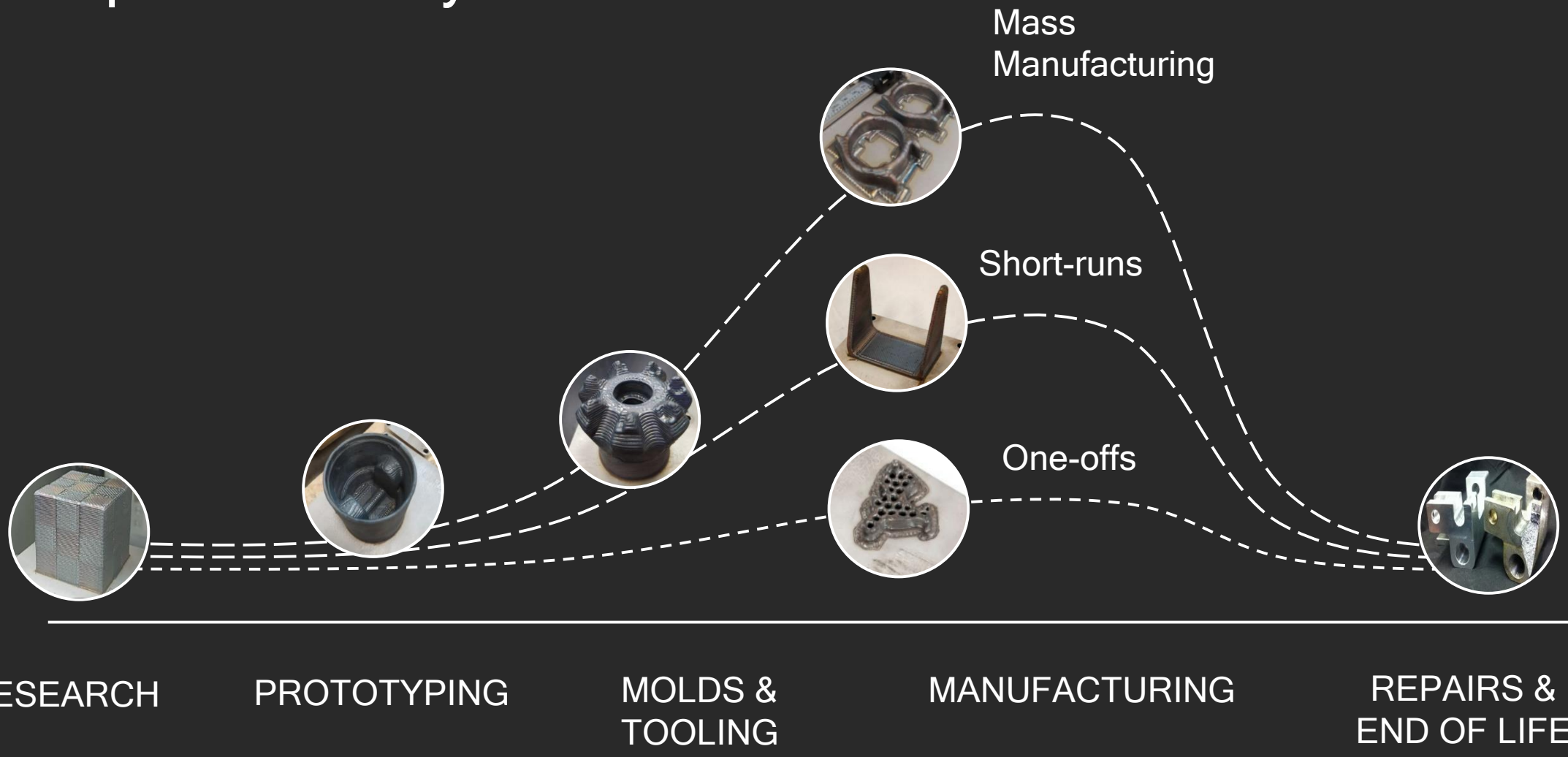
ROI positive in every stage of the product lifecycle



Engine Mount - Titanium
Size: 75x24x235mm
Weight: 0.52kg
Time: 3h 50’
Cost: 80.08€

Mold Core – Stainless Steel
Size: 132x132x144mm
Weight: 6.59kg
Time: 23h 25’
Cost: 76,37€

Cooled Nozzle – Stainless Steel
Size: 78x78x120mm
Weight: 0.79kg
Time: 3h 3’
Cost: 17.92€

Watch Bezel – Stainless Steel
Size: 45x53x11mm (per piece)
Weight: 0.11kg (both)
Time: 1h 28’ (both)
Cost: 13.44€ (both)

Turbine Blade - Inconel
Size: 75x35x135mm
Weight: 1.11kg
Time: 3h
Cost: 72,99€

Knee Implant - Titanium
Size: 99x77x51mm
Weight: 0.41kg
Time: 2h 9’
Cost: 38,44€

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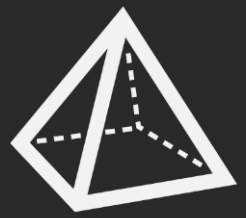
Key filters to identify parts suitable for Meltio WP-LMD technology



Geometry Complexity

Relatively simple, medium to large size and **hollow parts** see the greatest cost savings when compared to CNC machining from casting or billet metal.

In addition, traditionally made parts can be enhanced with **feature addition.**

Materials

Difficult to machine metals such as **Inconel and Titanium** greatly benefit from our process when compared to conventional manufacturing and powder based 3D printing.

Meltio dual wire and wire-powder capabilities allow for the creation of **multi-metal structures and on the fly alloying.**

Production Volume

Personalization, short-runs, spare parts and part repair consistently beat the break even point of conventional methods.

Larger volumes will be unlocked for applications that fall inside the geometry and material sweet spot for Meltio WP-LMD technology.

Materials

Use single wire, dual wire or wire and powder simultaneously

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Single and Dual Metal 3D Printing

Meltio recommends printing the bulk of the parts with metallic wire.

Single Wire

The bulk of the 3D printing process is built around wire, the safest, cleanest and easiest to work with metal feedstock.

Dual Wire

Combine different metal materials in a single part. The wire switching process is quick, automatic and clean.

Wire and Powder

Create new alloys on the fly, test bi-metallic structures and research metal matrix composites (MMC).

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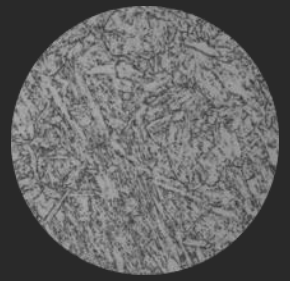
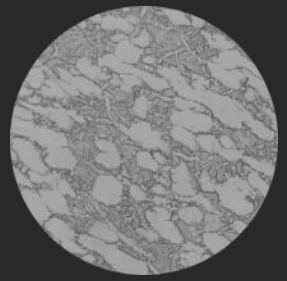
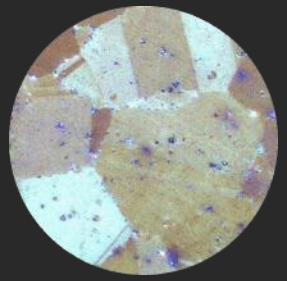
Open Materials Platform



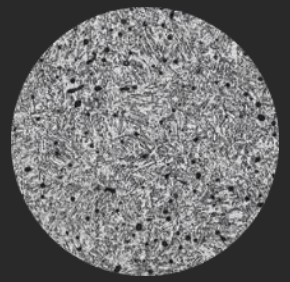
Stainless Steels, Wire & Powder
Fully supported: 316L (EN 1.4404), 308L (EN1.4316) and 304L (EN 1.4307)



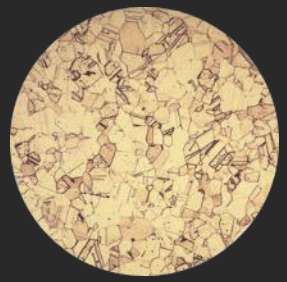
Titanium, Wire
Fully supported: Titanium Grade 5 (EN 3.7165)



Inconel, Wire & Powder
Fully supported: Inconel 718 and Inconel 625 (EN 2.4668)



Carbon Steels, Wire & Powder
Fully supported: SAE 4140 (EN 1.7225), and A-5.18:ER70S-6 (EN 1.5130)

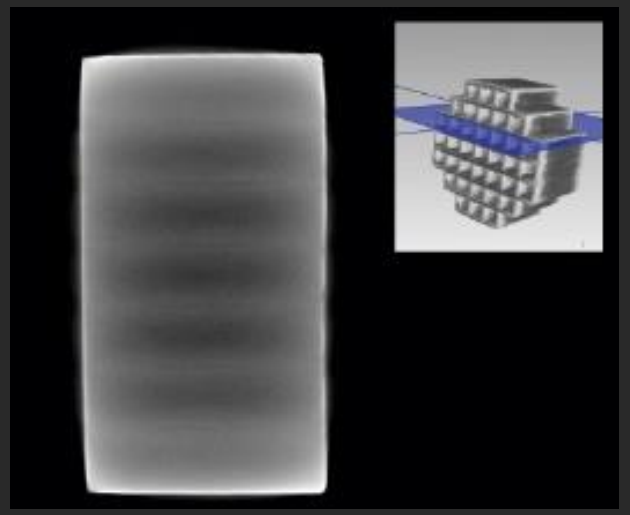


Copper, Wire & Powder
Under Development: expected to be released by the end of 2021.

Aluminum, Wire
Under Development: expected to be released by the end of 2021.

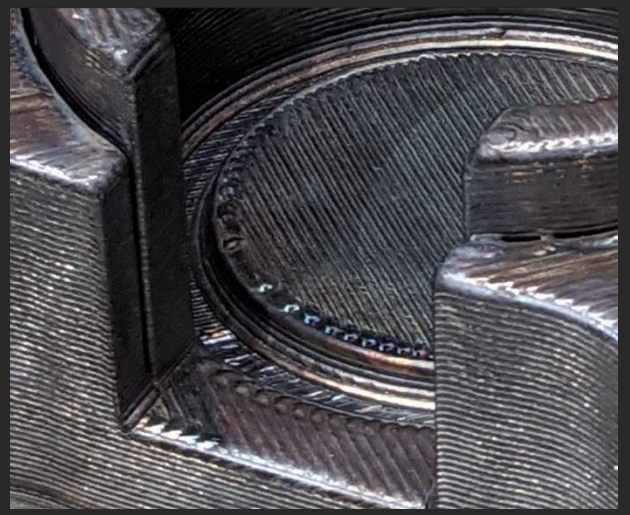
Excellent Mechanical Properties

Meltio’s compact heat affected zone process achieves exceptional mechanics, decreased thermal stress and near isotropic properties, exceeding casting and forging material properties.



Consistent 99.998% densification

Meltio’s WP-LMD produces fully dense parts with superior microstructure.



From 0.3 to 1.2mm layer heights

Under some conditions, Meltio’s surface roughness using wire outperforms those produced with powder based processes.

Post-process when necessary

Meltio’s WP-LMD overthickness is homogenous and for applications printed in high-resolution only post-treatment of critical areas is necessary.

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Tested Mechanical Properties

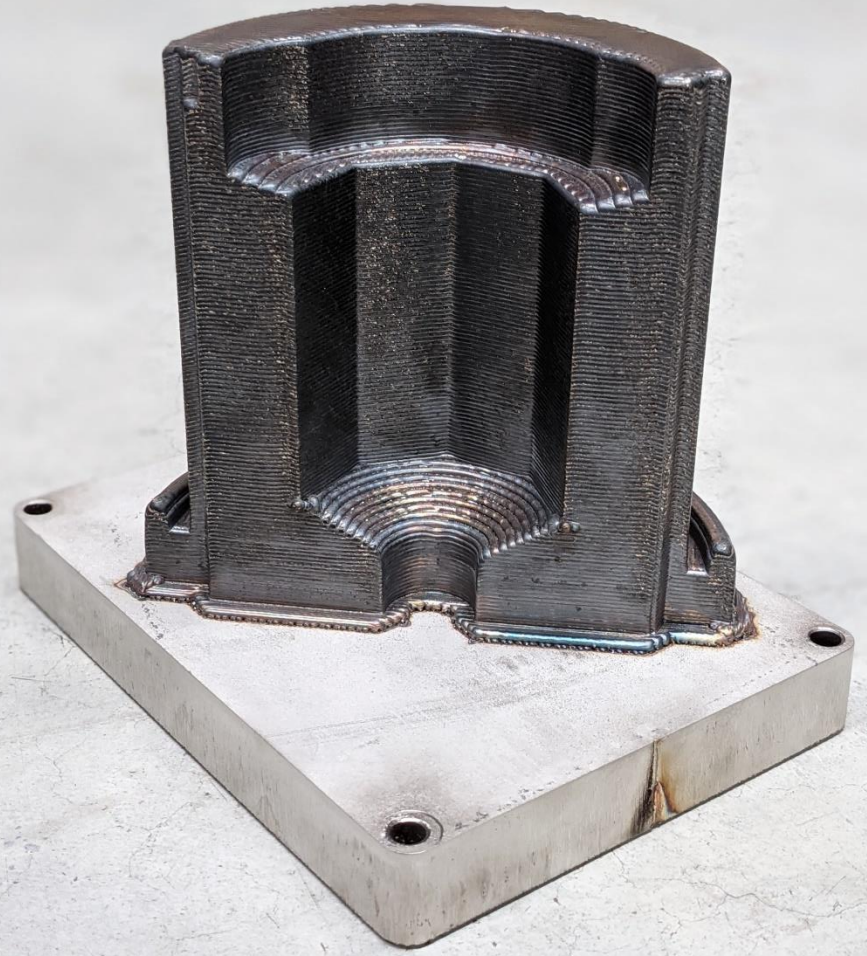
Stainless Steel 316	Wrought Properties	Cast Properties	Meltio XY Properties	Meltio XZ Properties
Tensile Strength (MPa)	515	550	635 ± 13	650 ± 7
Yield Strength (MPa)	208	260	390 ± 30	380 ± 17
Elongation (%)	40	35	52 ± 3	46 ± 4

Titanium 64	Wrought Properties	Cast Properties	Meltio XY Properties	Meltio XZ Properties
Tensile Strength (MPa)	930	860	950 ± 5	-
Yield Strength (MPa)	860	758	882 ± 5	-
Elongation (%)	>10%	>8%	12 ± 0.5	-

Inconel 718	Wrought Properties	Cast Properties	Meltio XY Properties	Meltio XZ Properties
Tensile Strength (MPa)	1241	802	1308 ± 10	1235 ± 11
Yield Strength (MPa)	1034	758	1128 ± 20	1040 ± 12
Elongation (%)	10	5	6.6 ± 2.1	8.5 ± 0.7

Technology

A cost-effective laser metal deposition technology



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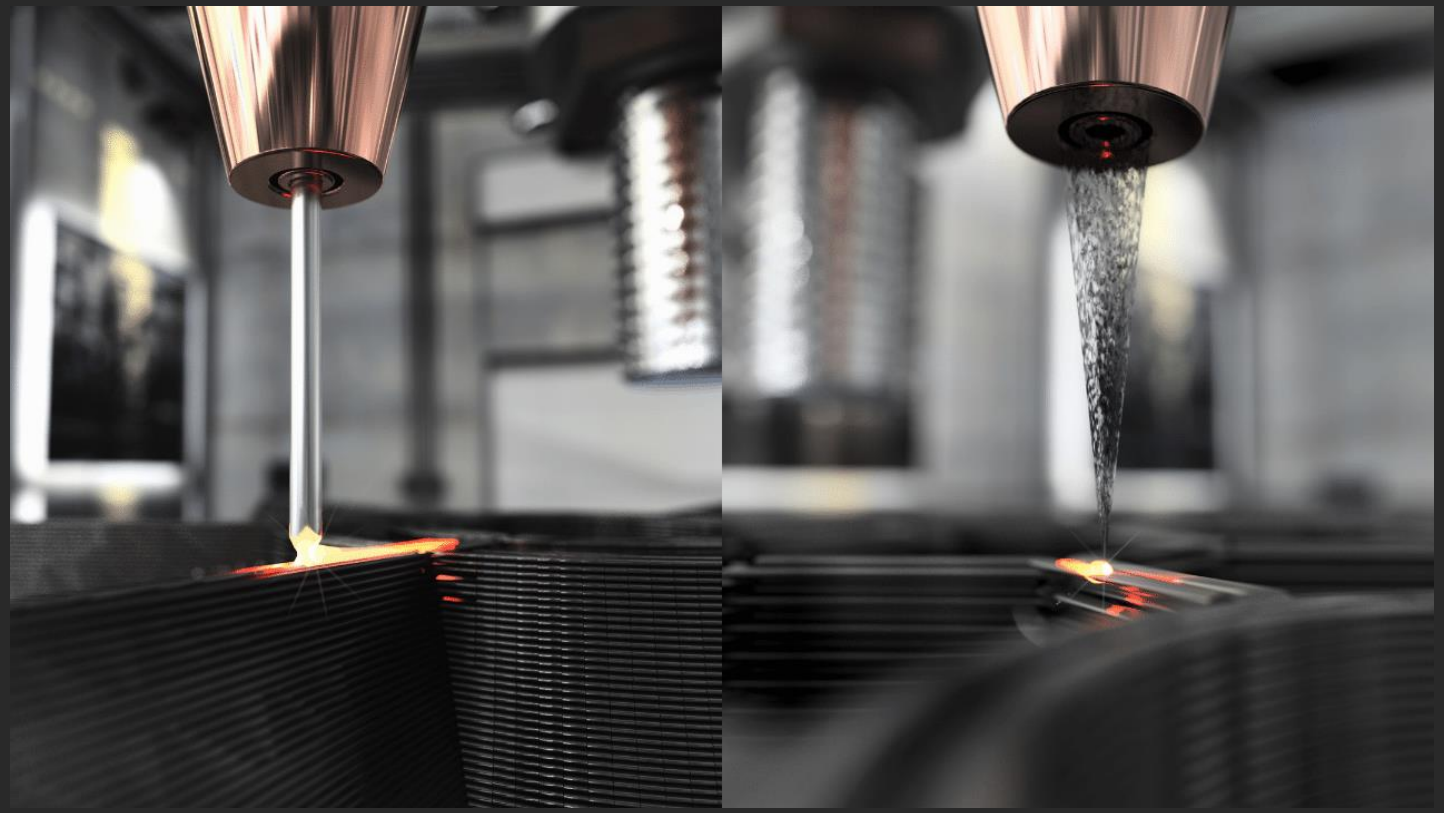
Wire-Powder Laser Metal Deposition

WP-LMD is a Directed Energy Deposition (DED) process that functions by precisely stacking layers of weld beads, in powder or wire form, when introduced into the laser generated melt pool



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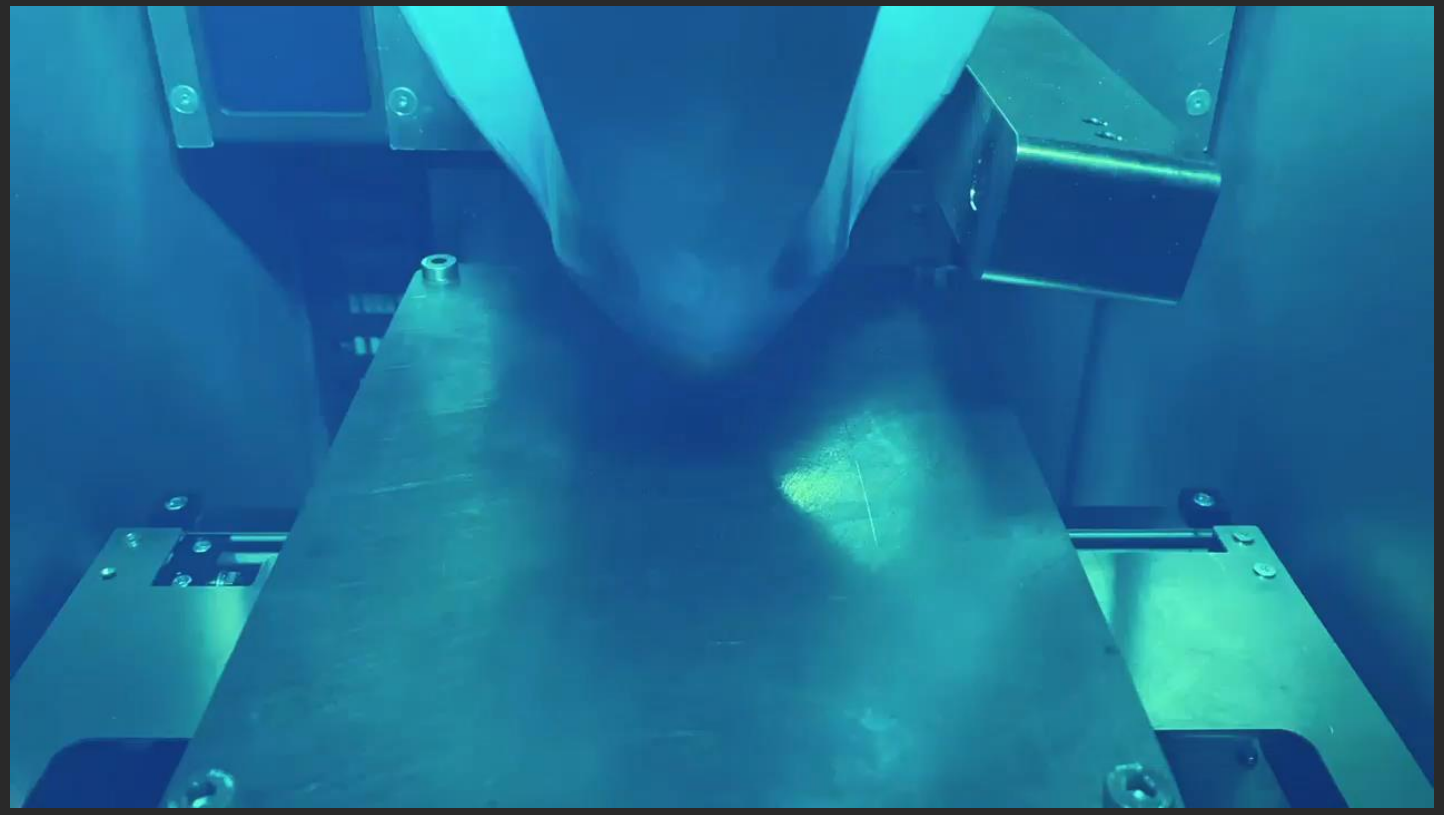

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Multi-Laser Deposition Head

Meltio’s technology comes packaged in a compact 1.2kW deposition head, host of multiple lasers and capable of processing wire and powder independently or simultaneously.

Safe and Reliable

The bulk of the 3D printing process is built around wire, the safest, cleanest and easiest to work with metal feedstock.

Integration Ready

Turn an existing CNC or robotic platform into an hybrid manufacturing system with no inherent size constraints.

Multi-metal 3D Printing

Print dual wire for hard-facing or anti-corrosion applications, or wire and powder to create new alloys on the fly.

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WP-LMD 3D Printing Process

The only process able to deliver **strong, affordable and fully dense metal parts within a few hours**

1
Print

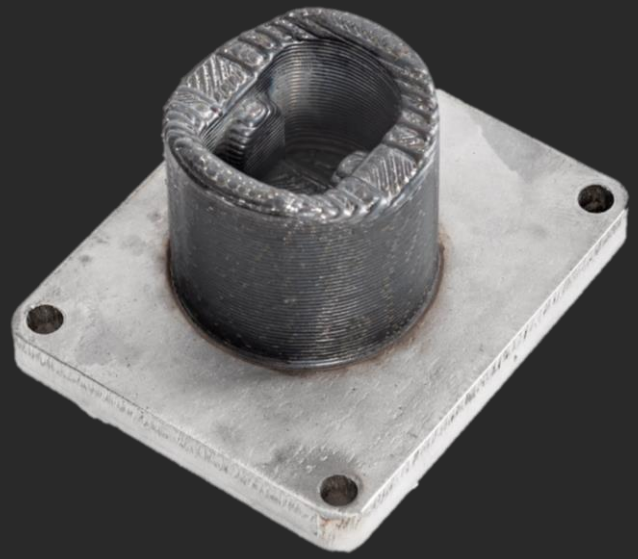
With steels, titanium, inconel, copper* and aluminum* alloys

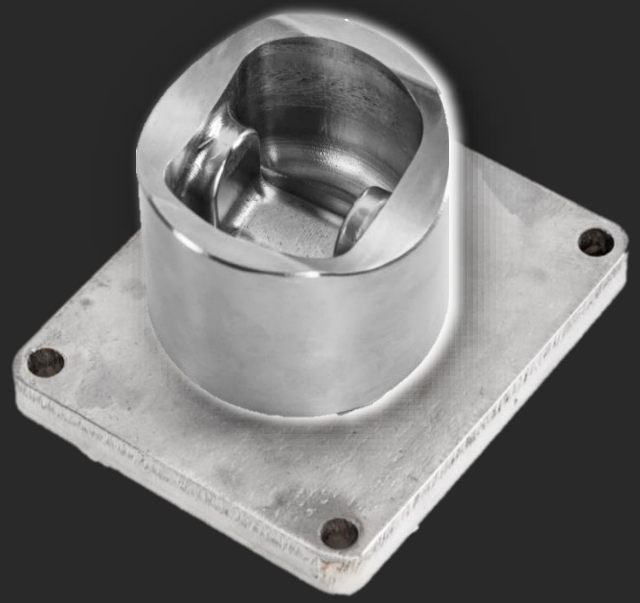
2
Post-process

With heat treatment, CNC machining, bead blasting, polishing…

3
Cut

Remove the build plate using a band saw or wire EDM





*Under Development: expected to be released by the end of 2021.

Product Portfolio

A configuration for every metal 3D printing need

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Metal 3D Printing Solutions

A package that suits every requirement; turn-key metal 3D printer, CNC integration for hybrid manufacturing or robotic integration for large components.

Meltio M450
3D Printer

Meltio Engine
CNC Integration

Meltio Engine
Robotic Integration

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Meltio M450

Designed for industry without the need for industrial infrastructure; reliable, affordable, safe and easy to use metal 3D printer. Ideal for small to medium size part fabrication and multi-metal 3D printing research.

Dimensions (W*D*H):
560*600*1400mm

Print Envelope (X*Y*Z):
150*170*425mm

Weight:
250kg

Laser Power:
1200W

Laser Type:
multiple 200W direct diode lasers

Laser Wavelength:
976nm

Process Control:
closed-loop, laser and wire modulation

Power Input:
208/230V single phase or 400V three phase

Power Consumption:
2-5kW peak depending on selected options

Wire Feeds:
up to 2 x K300 spools

Wire Feedstock:
0.8-1.2mm wire diameter

Powder Feeds:
external plug and play powder feeders

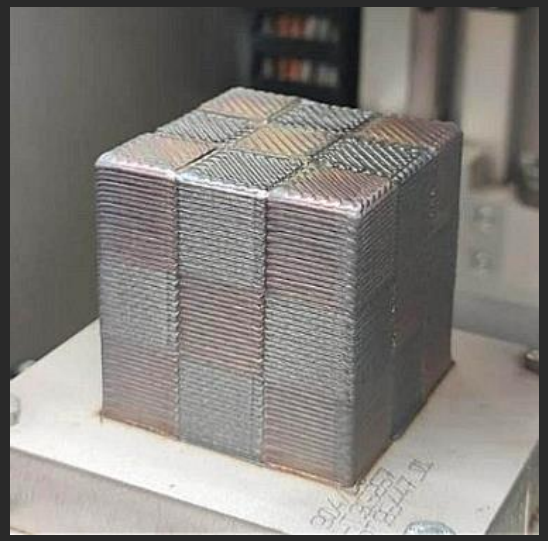
Powder Feedstock:
45 to 90µm particle size

Cooling:
active water-cooled chiller included

Meltio M450 Upgrades and Accessories

Hot Wire

Programmable electric current that preheats the material to increase the deposition rate.



Dual Wire

This option allows to 3D print two wire materials sequentially with very quick wire switches.

Powder Feeder

Necessary to 3D print from powder feedstock, unlocks on the fly metal alloying.

Station

Sturdy wheeled table made from stainless steel and aluminum. Contains tool and material drawers.

Meltio Engine

Advanced control module for fitting existing CNC and robotic equipment with Meltio technology. Turn any motion platform into a metal 3D printing system with no inherent size constraints.

Dimensions (W*D*H):
390*650*1000mm

Print Envelope (X*Y*Z):
inherent to motion system

Weight:
90kg

Laser Power:
1200W

Laser Type:
multiple 200W direct diode lasers

Laser Wavelength:
976nm

Process Control:
closed-loop, laser and wire modulation

Power Input:
208/230V single phase or 400V three phase

Power Consumption:
2-5kW peak depending on selected options

Wire Feeds:
From one K300 spool up to two external wire drums

Wire Feedstock:
0.8-1.2mm wire diameter

Powder Feeds:
external plug and play powder feeders

Powder Feedstock:
45 to 90µm particle size

Cooling:
active water-cooled chiller included

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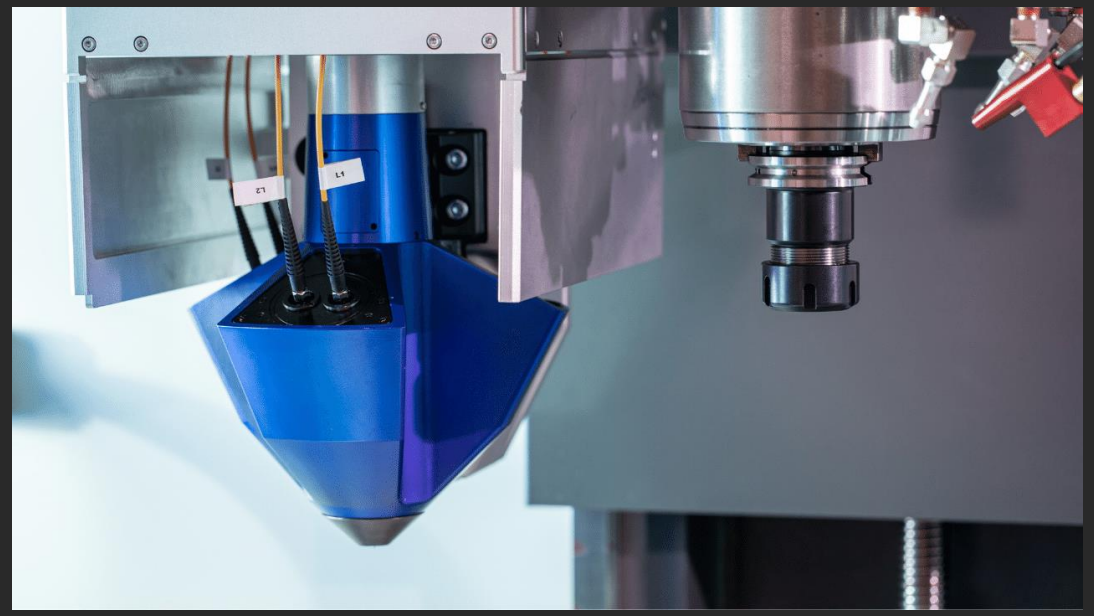
Meltio Engine Integration Hardware



CNC Hardware Kit

An actuated hardware mechanism for CNC applications where the deposition head is stored in a sealed enclosure when it is not in use and automatically deployed when needed.

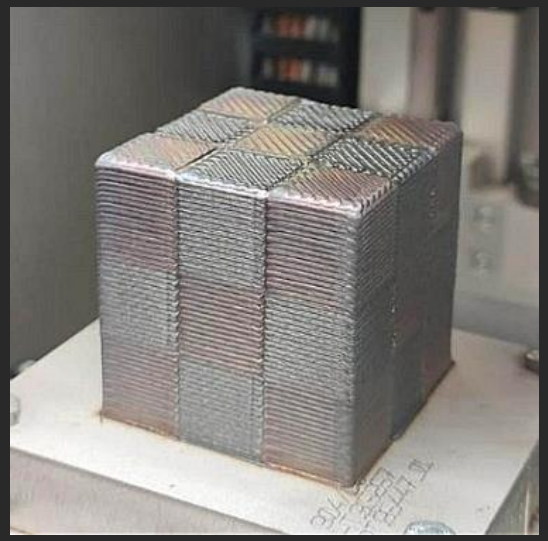
Robotic Hardware Kit

Mounting hardware for the deposition head and related electronic sensors in robotic applications for unconstrained metal 3D printing.

Meltio Engine Upgrades and Accessories

Hot Wire

Programmable electric current that preheats the material to increase the deposition rate.



Dual Wire

This option allows to 3D print two wire materials sequentially with very quick wire switches.

Powder Feeder

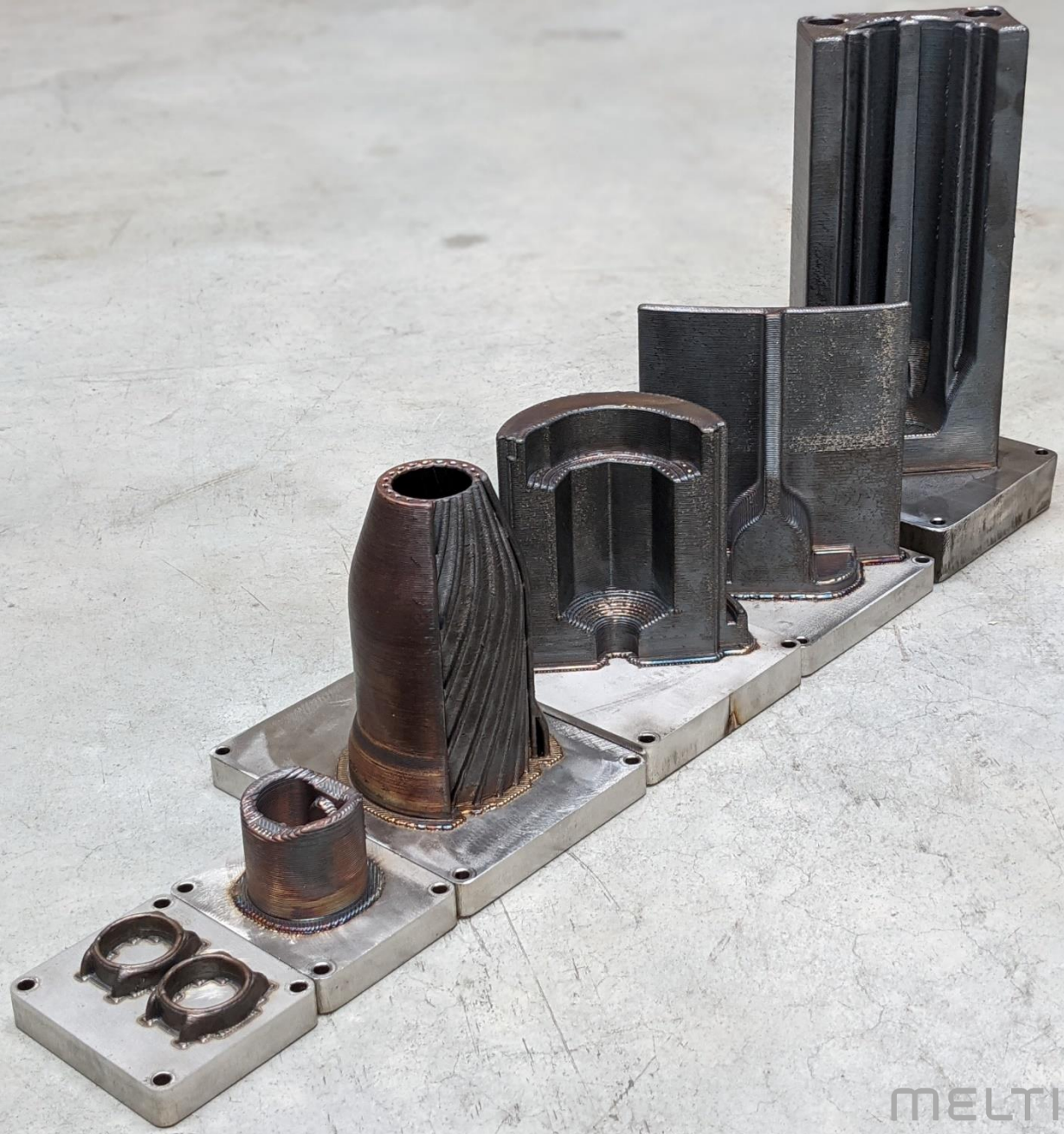
Necessary to 3D print from powder feedstock, unlocks on the fly metal alloying.

External Wire Drum

Draw from an external wire source. Drums from 100kg may be used for convenience.

Thank you!

www.meltio3d.com



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