

# Meltio Engine V3 Robot Integration

## Large-scale Metal 3D Printing

Turn a robot arm into a metal 3D printing system with no inherent size constraints. The Meltio Engine Robot Integration 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.



## Technical Specifications

<b>Dimensions (WxDxH):</b>	390x700-1300x1100-1560 mm	<b>Power Consumption:</b>	2 - 5 kW peak depending on selected options
<b>Print Envelope(WxDxH):</b>	Depending on the integration	<b>Process Control:</b>	Closed-loop, laser and wire modulation
<b>Control Unit Weight:</b>	125 kg	<b>Enclosure:</b>	Laser-safe, sealed, controlled atmosphere
<b>Laser Type:</b>	6 x 200 W direct diode lasers Class IV	<b>Cooling:</b>	Active water-cooled chiller included
<b>Laser Wavelength:</b>	976 nm	<b>Wire Feedstock Diameter:</b>	0.8 - 1.2 mm
<b>Total Laser Power:</b>	1200 W	<b>Wire Feedstock Spool:</b>	BS300 or Wire drums
<b>Power Input:</b>	208/230 V single phase or 400 V three phase		

## Wire Materials

<b>Stainless Steels:</b>	Excellent strength and corrosion resistance.
<b>Mild Steels:</b>	Cheap and ductile, with unparalleled machinability and weldability.
<b>Carbon Steels:</b>	High impact strength, retain hardness at high temperatures.
<b>Titanium Alloys:</b>	Highest strength to weight ratio and corrosion resistance.
<b>Nickel Alloys:</b>	High versatility, outstanding heat and corrosion resistance.

## Printhead Information

<b>Printhead Size (WxDxH):</b>	230x310x710 mm
<b>Printhead Weight:</b>	15.5 kg

## Key Integration Requirements

Payload of at least 45 - 60 kg ensures that the robot can follow the additive toolpath precisely.  
Position repeatability of  $\pm 0.06$  mm according to ISO 9283.

At least 8 Digital I/O configured according to "Communications Protocols Robot Meltio Engine". When using OPC DA or Socket as the default communication protocol, Meltio recommends a total of 16 Digital I/O.

The robot and the positioner must be installed, configured, and calibrated before the Meltio Engine Integration.

Laser-safe robot cell with a security circuit between the robot controller, the Meltio Engine, and the cell door interlock.  
The integrator is responsible for the correct installation and operation of the security system.

## Upgrades and Accessories

<b>Hot Wire:</b>	Programmable power supply that preheats the material to increase the deposition rate.
<b>Dual Wire:</b>	This option allows to 3D print two wire materials sequentially with very quick wire switches.
<b>Laser Alignment System:</b>	It allows users to align Meltio's multi-laser deposition head accurately and effortlessly prior to every print.

