

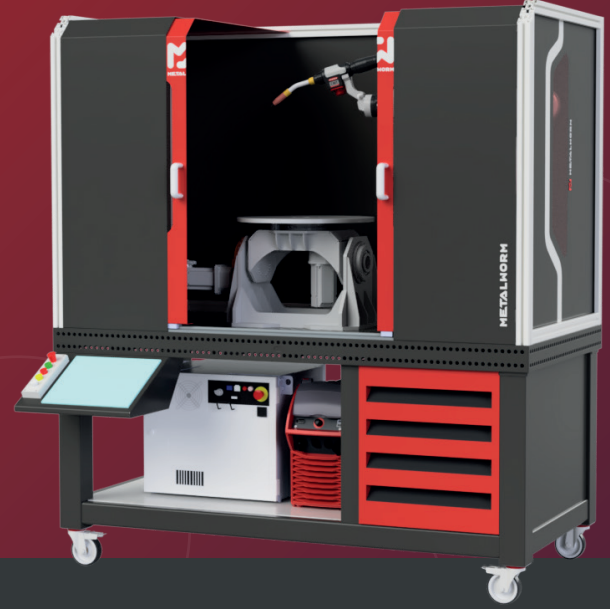


Revolutionizing Research on WAAM

MW-LAB Technologies:

- Programming with Cobot/Robot
- High Stable Arc with CMT
- Process Development
- New Alloy Processing
- In-Situ Monitoring and Control
- Digital Twin
- Robotic Additive Manufacturing

MW-LAB provide cost effective solutions for universities, institutes and research centers.



MATERIALS

Aluminum Alloys:

-2319, 4043, 5087, 5183, 5356, 6061, 6063, 7075

Steel Alloys:

-ER70, ER80, ER90, ER120

Stainless Steel Alloys:

-ER304L, ER307, ER316L, ER630, ER2209, ER2594, Invar 36

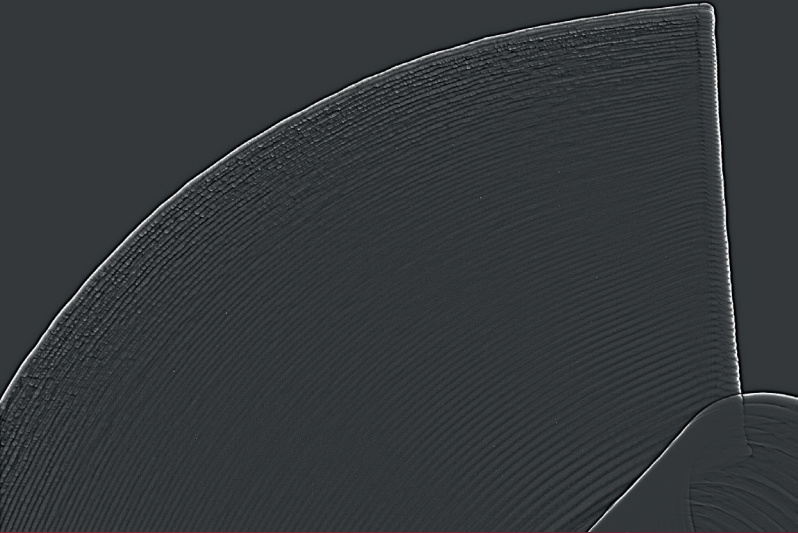
Nicel Alloys:

-Inconel 625, Inconel 718

Copper Alloys:

-CuAl8Ni6

and More

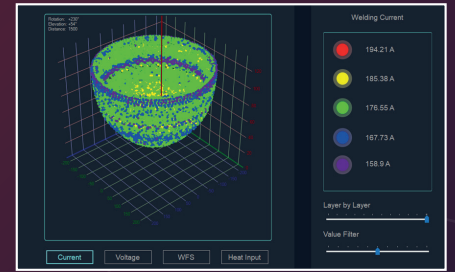


MetalWorm Diagnostic Software

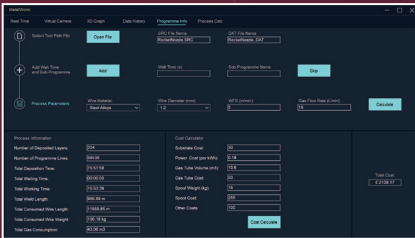
- Real Time Data Collection
- Real Time Process Monitoring
- Digital Twin for WAAM
- Strong Process/Material Library
- Melt Pool Monitoring
- Realtime Process Control
- Arc Voltage Control
- Temperature Control

MetalWorm Robotic Tool Path Planning

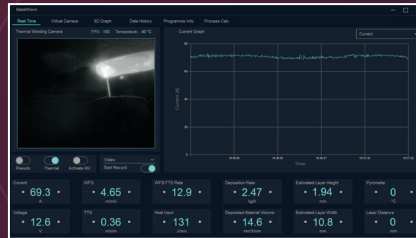
- Robot & Process Simulation
- Internal Slicing Strategies
- Multi Axis Tool Path Planning
- External Axis Support
- Tool Path Planning by Region
- Tool Path Orientation Adjustment
- Customize Robot Programs
- Collision Detection



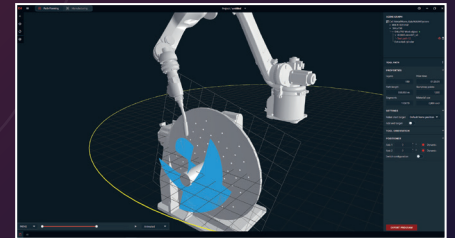
Anomaly Detection and Analysis



Process Planning



Real-Time Process Monitoring



Robotic Toolpath Planning



ROBOTIC ADDITIVE MANUFACTURING TECHNOLOGIES

WAAM (Wire Arc Additive Manufacturing)
Laser-DED (Laser Directed Energy Deposition)



Low Buy-to-Fly Ratios

Achieves low BTF ratios (up to 1.5) by precisely depositing material only where needed, minimizing waste and enabling efficient use of high-value metals.



Cost Effective Production

Lower production costs by minimizing raw material waste, reducing machining time and allowing for on-demand manufacturing, thus avoiding excessive inventory costs.



Design Freedom

Design and manufacturing freedom aspects from medium to large scale parts using various materials.



Faster Manufacturing

Offers significant advantage on decreasing lead times by up to 80% compared to traditional processes like casting, forging and machining.



Low Carbon Emissions / Green Manufacturing

Eco-friendly manufacturing technology with low CO₂ emission compared to conventional manufacturing.



Diverse Industrial Use

Aerospace, defense, maritime, manufacturing, automotive, energy construction, and more.

TECHNOLOGIES

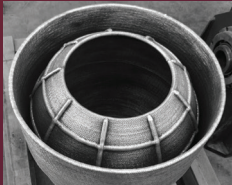
- Realtime Process Monitoring
- Closed-Loop Process Control
- Realtime Anomaly Detection
- Melt-Pool Monitoring
- Thermal Monitoring and Control

- Advanced Sensor Fusion Technology
- Digital Twin for WAAM
- High Deposition Rate
- High Stable Arc
- Controllable Heat Input

- Wide Range of Materials
- Cold Metal Transfer Technology
- Easy Robotic Tool Path Planning
- Uninterrupted Large-Scale Manufacturing

INDUSTRIAL APPLICATIONS

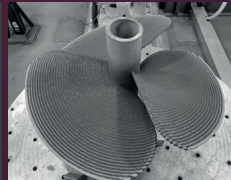
Pressure Vessel



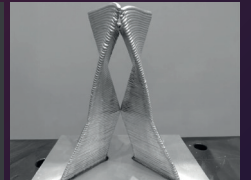
Connector



Propeller



Aesthetic Shape



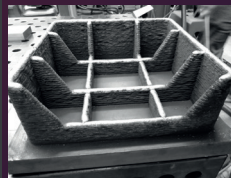
Composite Mold



Rocket Nozzle



Landing Gear



Valve

