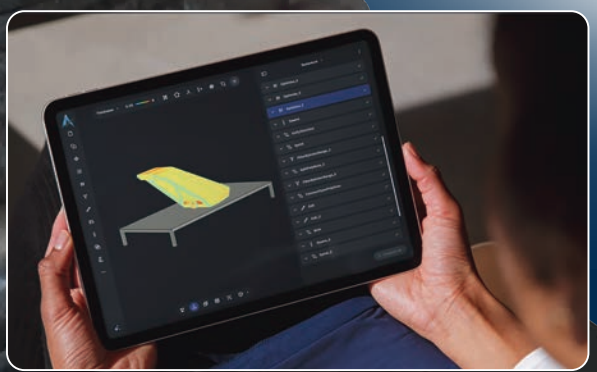
ADDiTEC™

Print Different



DROiD BUiLDER™

Ai-Powered 3D Printing Software

We Created a new way to print

ADDiTEC™
Print Different

Content

Dear Valued Customers and Partners,

Welcome to ADDiTEC!

At ADDiTEC, we are more than just a company; we are pioneers in the field of metal 3D printing, driven by a passion for innovation. For years, we have been on a mission to unlock the vast potential of additive manufacturing and developed novel transformative technologies along the way. I am genuinely excited about the possibility of you joining us on this remarkable journey.

In 2023, we were thrilled to announce the acquisition of Elem Additive Solutions from Xerox Corporation, acquiring all the assets, technology and IP of its groundbreaking Liquid Metal Jetting technology, which is capable of creating intricate metal parts with unparalleled precision, speed, and cost-effectiveness. With this strategic move, we have expanded our portfolio of metal 3D printing technologies, offering you a broader range of options and flexibility to meet your metal additive manufacturing needs.

Welcome

At Formnext 2023, we proudly unveiled the commercial version of our impressive AMDroid system. This unique product features a class-leading powerful laser DED technology in an atmosphere controlled deployable robotic cell, and is a testament to our dedication to pushing the boundaries of metal additive manufacturing.

Now, we are excited to bring our new commercial Hybrid products to market. Look forward to our product launches in June 2024 at TCT3Sixty in the UK and TCT RAPID in the USA. These events will mark another milestone in our journey to revolutionize metal additive manufacturing.

Central to ADDiTEC's mission is our commitment to helping you overcome challenges and seize opportunities through metal additive manufacturing. Our solutions are meticulously designed to meet your specific needs, whether you require turnkey systems, research and development support, specialized training, or assistance with application development.

Your satisfaction and success are of utmost importance to us. Our dedicated team of engineers and experts is always ready to address any inquiries or challenges you may face. I warmly invite you to visit our USA innovation centers in Palm City, Florida, and Raleigh, NC. Here, you can witness our technology in action and engage with our passionate team.

As the CEO of ADDiTEC, I want to assure you that our commitment to your success goes beyond mere words; it is a promise. We are genuinely excited about the prospect of collaborating with you to help you achieve your goals through metal additive manufacturing.

Thank you for trusting ADDiTEC as your additive and hybrid manufacturing partner.

Warm regards,

Brian Matthews

Our Journey

2015

ADDiTEC was established to develop novel AM technologies to change how metal parts are made

2018

Developed experimental and patented novel multi-laser DED technology

2019

MELTIO

Co-founded Meltio in 2019 to manufacture and commercialize AM systems using ADDiTEC's multi-laser DED technology

2022

AMRC – S: Introduced our scalable robotic AM solution that allows for multi-robot configurations with multi-deposition heads to achieve scalability

Solutions Oriented

Breadth of experience in both system design and manufacturing, as well as applications for industry.

Commercialization for industry.

Proven technology commercialization through direct sales and JV activities.

Pedigree

Proven disruptive innovation and go-to-market experience with over 100 high-pedigree customers and industry recognition.

Technology

Novel disruptive technology portfolio encompassing years of development experience with over 300 global patents

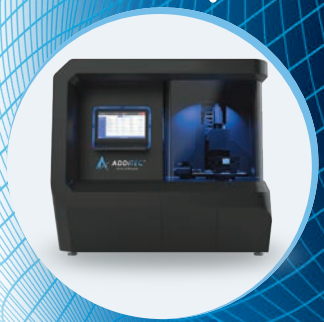
Financial Success

Consistent YOY growth for enhanced financial stability.

2023

AMDroid: Introduced our portable robotic AM solution that provides all the benefits of a robotic architecture in a compact welded cell that is portable.

Acquired Elem Additive Solutions LLC from Xerox Corporation, creating new liquid metal printing technology offering.



Launched ADDiTEC's novel hybrid manufacturing solution, Hybrid 3, with 3 technologies in one machine and sophisticated LMJ print head.

Launched New Commercial Hybrid Products to market

2024

2025

AMDROiD X: Introduced our expandable robotic AM solution that provides all the benefits of a robotic architecture in a deployable container.

Your Partner for Metal Additive Manufacturing

One-off cutting-edge research projects aimed at universities, research institutes and R&D departments

Customer training and support

Custom application work that fits your company's specific needs

Design for Additive Manufacturing (DfAM) for optimizing form and function of a part and enabling "Supply-chain in a Box"

Advanced system design and integration

Additive Manufacturing Process Design (AMPD) for manufacturing parts with technical standard acceptance and enabling commercially feasible AM adoption in industries

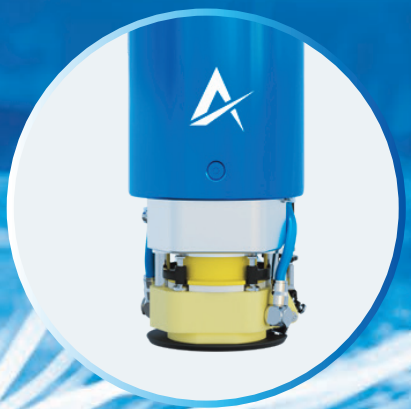
Serving a Diverse Range of Customers

- Aerospace
- Prominent Universities
- Major Research Centers
- Automotive
- Nuclear
- Technology Centers
- National Laboratories
- Repair Facilities
- Goverment Facilities
- Energy
- Service Bureaus
- MIning

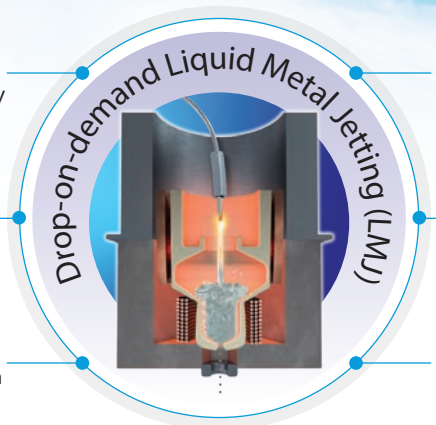
Solutions

Two Novel Technologies

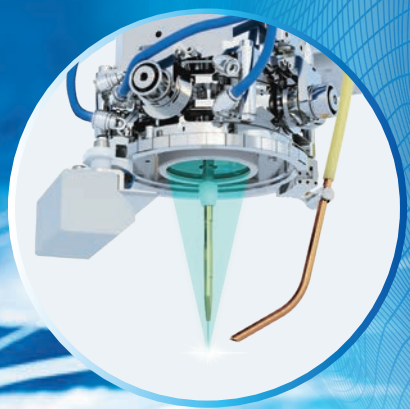
Liquid Metal Jetting



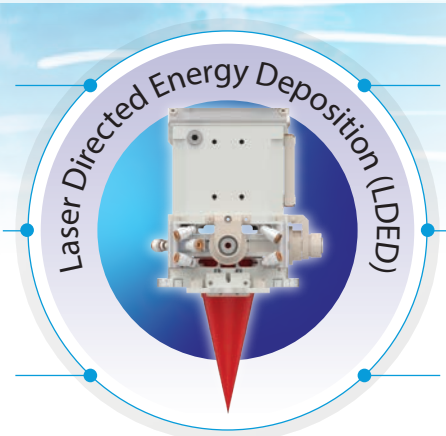
Our LMJ technology has over 10 years of development history, it uses a highly sophisticated drop-on-demand liquid metal printing process that is protected by over 300 patents. The technology affords high resolution parts with built-in closed loop process control, providing high quality and reliable output and the lowest part production cost in the industry.



Laser Directed Energy Deposition



Our high-power 6kW laser system brings intricate large designs to life using a cost-effective high throughout process. Our deployable robotic architecture allows you to max produce metal components that exceeds the current manufacturing capabilities.



Technologies

2 System Platforms

HYBRiD^{3}™
Print Different

AMDROiD™
Print Different

AMDROiD X™
EXPEDITIONARY UNIT

Laser Directed Energy Deposition Technology

LDED technology

High Performance LDED

Integrated Vacuum Pump
Enables rapid purge cycles for working with reactive materials like titanium.

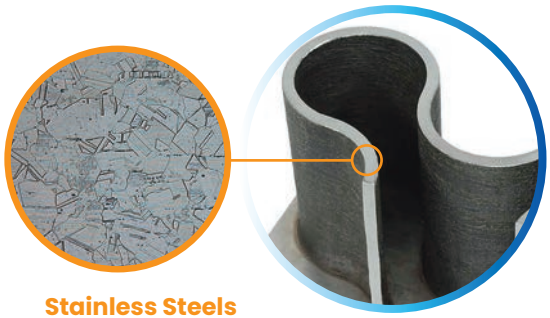
Industrial High-Power Fiber Laser
Provides exceptional beam quality and power range up to 6kW.

Precision Wire Feed System
State-of-the art precision wire feed system from DINSE, with built in wire straightening and feed pressure monitoring system. Also qualified for soft materials like Al.

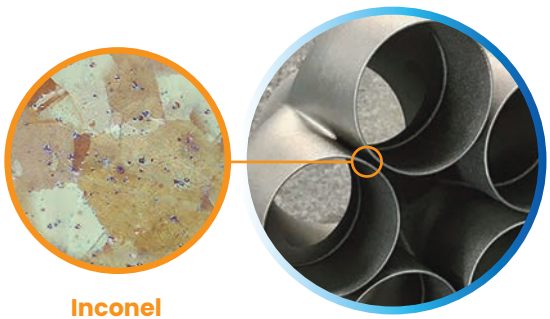
Closed-Loop Process Control
Included pyrometer enables melt pool temperature closed-loop control with automatic laser power modulation.

Class-Leading Processing Head
State-of-the art processing head with over a decade of development experience. Novel beam expansion process. Rated for high power.

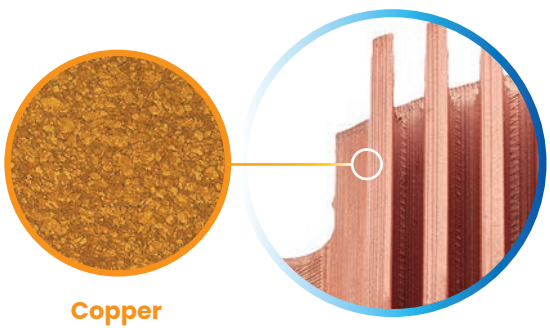
Selection of Tested Wire Materials



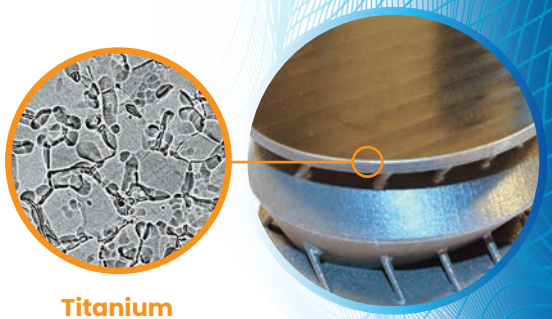
Stainless Steels
Fully supported:
316L (EN 1.4404) 3001 (E014316)
and 304 (EN 1.4307).



Inconel
Fully supported: Inconel 718
and Inconel 625 (EN 2.4600).

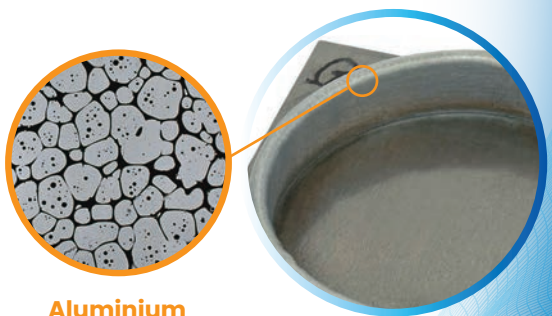


Copper
Under Development



Titanium
Fully supported: Titanium
Grade 5 (EN 3.7165).

Carbon Steels
Fully supported:
SAE 4140 (EN 1.7225) and
A-5.18:ER70S-6 (EN 1.5130).



Aluminium
Under Development

AMDROiD X™
EXPEDITIONARY UNIT

A self-contained and portable Laser Directed Energy Deposition (LDED) solution, designed for demanding operations and rapid deployment in harsh terrains or maritime environments. With an Ultra High Power Option of a 12 kW fiber laser, enabling in-field production and repair of large-scale metal components, including mission-critical parts made from stainless steel, inconel, aluminum, and copper, with high deposition rates.

Its compact robotic architecture is housed within a 10-foot expandable modular container, allowing for the fastest possible production of printed parts. The system includes an option for 4 powerwalls, delivering 54 kWh of reliable energy, which can be recharged via its solar roof. Additionally, the state-of-the-art DROiD BUiLDER software tool supports complex multi-axis geometries, making printing easier and more accessible for both experienced and new users.

Technical Data	**Laser DED Technology**
Maximun laser power	Standard Configuration 6kW Ultra High Power Option 12 kW
Laser Type	Fiber laser
Laser wavelength	1080 nm
Layer Thickness	0.6 - 1.8 mm
Deposition rate	4 kg/hr Material & Feature Based
Build volume	1.4 m x 1.4 m x 1.47 m (WxDxH)
Wire feed Stock	0.8 - 12 mm Φ
Processable materials	Fe, Ni, Cu, Al, Etc.
Shielding	Localized (Ar or N)
Cooling	Active water cooling
Process Control	Closed-loop laser power modulation (pyrometer-based) with wire feeder control.

AMDROiD X

Motion Technology	
Motion axes	6+2
Robotic partners	ABB and Siemens
Robotic motion software	ADDiTEC DROiD BUiLDER. Compatible with other software programs
Portable Cell	**Expandable CELL**
Machine Footprint (m)	6.0 m x 3.0 m x 3.8 m (WxDxH)
Oxygen sensor	0- 25% minimum measurable oxygen level
Fume controller	HEPA air filter (MERV 17)
Total weight	7000 kgs approx.
Power Requirements	60KVA 80A 50/60 Hz 480V AC 3L + N + PE / 5 Wire 3 Phase
*These specifications are subject to change without notice.	

Portable enclosure for **forward deployment**

Robot arm for **multi-axis large-scale geometries**

Rapid Deployment **to any austere terrain or maritim**

12 kW fiber laser **for high deposition rate**

Expandable to **169 sqf**

Wire feeder rated for common **metals including SS, Inconel, Al & Cu**

AMDROID™
Print Different

Features

The **AMDroid** is the first laser-wire based portable additive manufacturing robot cell rated for reactive materials like titanium with a deposition rate as high as 4 kg/hr. The AMDroid provides all the benefits of a robotic architecture in a compact welded cell that is portable, allowing installation and the first printed parts in just one day. The AMDroid features state-of-the-art software tools to accommodate complex multi-axis geometries, making printing easier and more accessible for experienced and new users. It is designed, developed and integrated by our innovative engineering team, and powered by a proprietary user interface command center. ADDiTEC has partnered with major industrial robot brands to allow for seamless integration for large scale robotic 3D printing.

Specifications

Deposition Technology

Maximum laser power	6 kW
Laser type	Fiber laser
Laser wavelength	1032 nm
Layer thickness	0.8 -1.2 mm ø
Maximum Deposition rate	4 kg/hr
Wire feed stock	0.8 -1.2 mm
Build volume	5.8' x 4.1' x 4.5'
Processable materials	Iron, nickel, titanium, copper, and aluminum alloys
Shielding	Localized (Argon or Nitrogen)
Cooling	Active water cooling
Deposition software Process control	ADDiTEC
Process control	Melt pool temperature (Pyrometer) based closed loop laser power modulation along with wire feeder control

Motion Technology

Motion axes	6 + 2
Robotic partners	ABB, FANUC and YASKAWA
Robotic motion software	Adaxis or Aibuild configured, compatible with other software programs

Portable Cell

Cell volume	7.5' x 9' x 10.6'
Inert chamber system	Vacuum and Argon
Oxygen sensor	0% minimum measurable oxygen level
Fume management system	HEPA air filter
Total weight	12500 lbs approx.

Wire feeder rated for common metals including Al & Cu

6 kW fiber laser for high deposition rate

Capable of simultaneous wire powder deposition for new alloy development

Robot arm for multi-axis large-scale geometries

Hermetically sealed portable enclosure for forward deployment

Integrated Vacuum Argon system to inert enclosure for reactive materials.

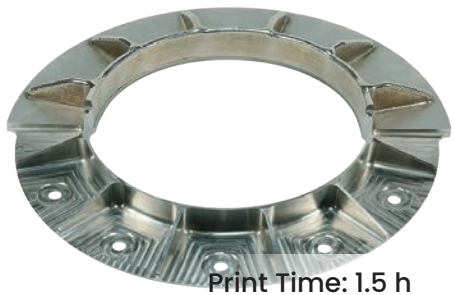
Applications

Model Sample

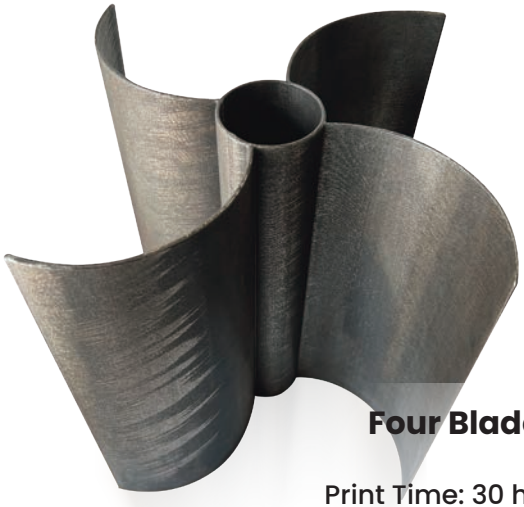
Print Time: 5 h
Material: Ti6-Al-4V
Wire diameter: 1 mm
Model Size: 13 x 13 x 20 cm
Model Weight: 2.3 lb
Aplication: Prototyping

Print Time: 2h 50m
Material: 316 L
Wire diameter: 1 mm
Model Size: 10 x 10 x 16 cm
Model Weight: 1.2 lb
Aplication: Prototyping

Print Time: 45 min
Material: Aluminum 2219 (AlCu3)
Wire diameter: 1.2 mm
Model Size: 12 x 12 x 8 cm
Model Weight: 0.4 lb
Aplication: Prototyping



Print Time: 1.5 h
Material: TA6V
Wire diameter: 1 mm
Model Size: 20 x 20 x 5 cm
Model Weight: 0.5 lb
Aplication: Aerospace Flange



Four Blade Turbine

Print Time: 30 h
Material: Stainless steel 316L
Wire diameter: 1.2 mm
Model Size: 35 x 28 x 28 cm
Model Weight: 17 lb
Aplication: Energy Industry

Helix Wind Turbine

Print Time: 26 h
Material: Stainless steel 316L
Wire diameter: 1.2 mm
Model Size: 67 x 34 x 34 cm
Model Weight: 17.5 lb
Aplication: Wind Power

Rocket Nozzle

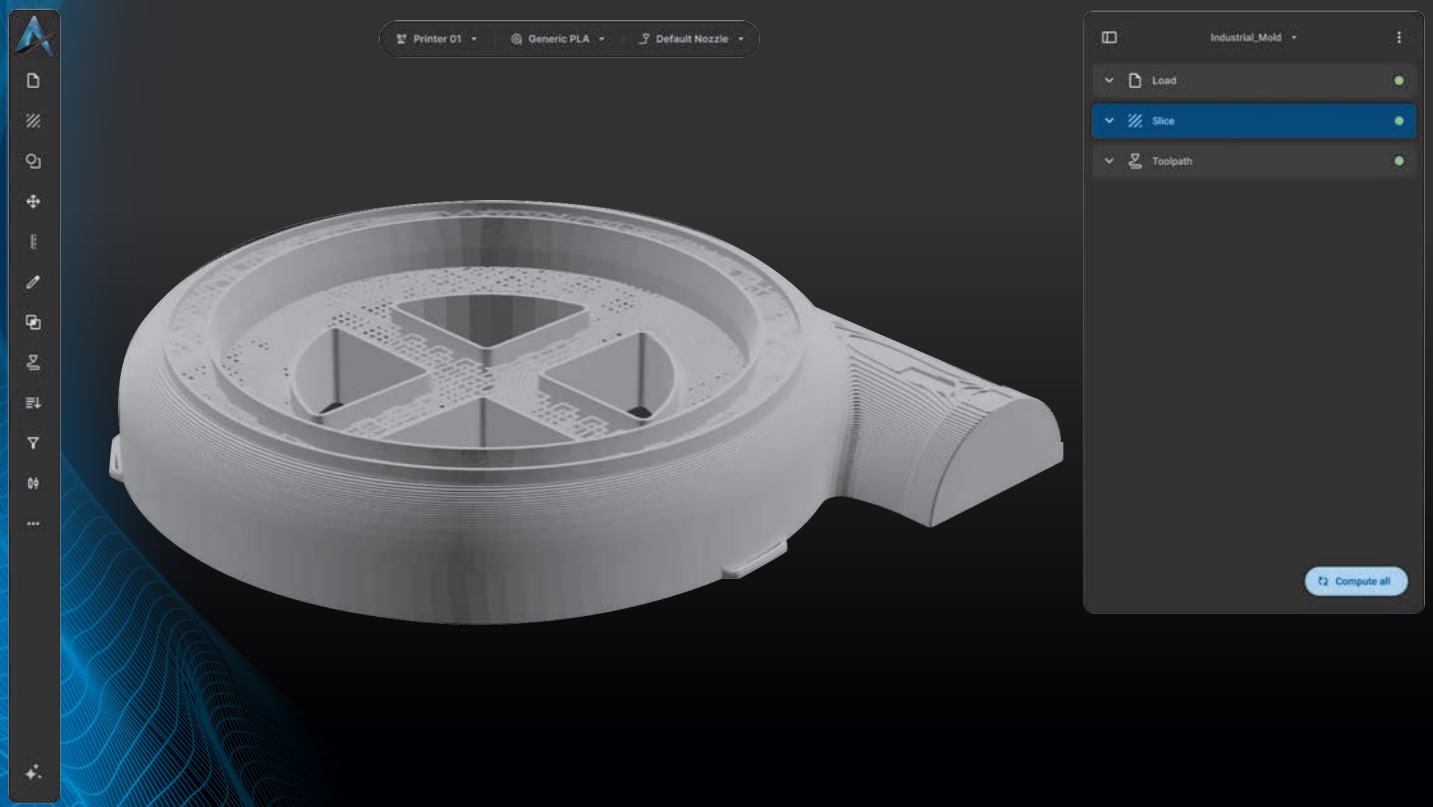
Print Time: 52 h
Material: Stainless steel 316L
Wire diameter: 1.2 mm
Model Size: 63 x 55 x 55 cm
Model Weight: 28 lb
Aplication: Aerospace Industry

Overhang Test

Print Time: 3.5 h
Material: Aluminum
Wire diameter: 1.2 mm
Model Size: 13 x 14 x 9 cm
Model Weight: 0.6 lb
Aplication: Prototyping

ADROiD BUiLDER™

Ai-Powered 3D Printing Software

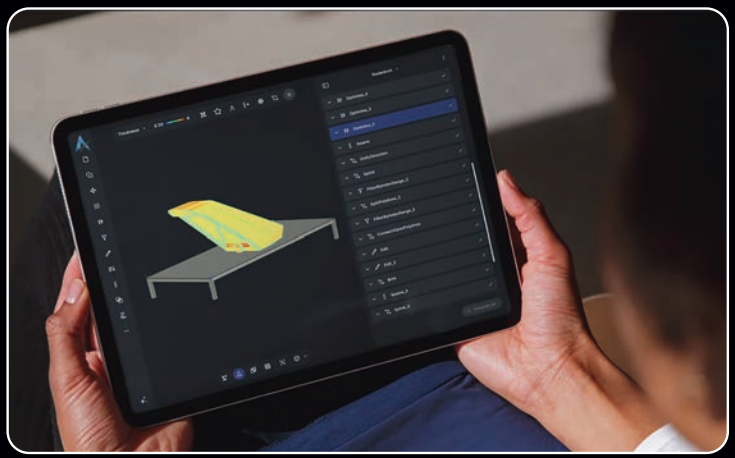


ADROiD BUiLDER

Easy to get started
We reimagined the entire manufacturing process to elevate your experience. With a library of examples and AI recommendations, getting started with AM has never been easier.

Desktop Security
Operating where internet connectivity is limited or in high-security environments where sensitive data needs to stay on-site? Go offline and install Additec Builder Desktop on your device.

Cloud ready
No installations, no crashes, no saving files. With Additec Builder Cloud your entire manufacturing workflows are securely accessible from any device and any location.



DROiD BUiLDER™

Ai-Powered 3D Printing Software

Delivers multi-process robotic 3D printing into a single platform. With direct desktop deployment, it enhances data security by keeping all critical design and production data securely in-house, protecting against external threats.

Pre-configured for the AMDROiD, this solution offers a validated and optimized software package for LDED 3D printing, eliminating the need for costly R&D while ensuring consistent, high-quality prints and reducing time-to-market.

With advanced slicing strategies designed for metal additive manufacturing, DROiD BUiLDER allows users to create precise toolpaths using meshes, planes, points, paths, tool orientations, and simulations, ensuring unparalleled robot control.

Unlimited flexibility

Additec Builder's unique open platform architecture and visual programming interface allows for the creation of even the most complex toolpaths with no limits.

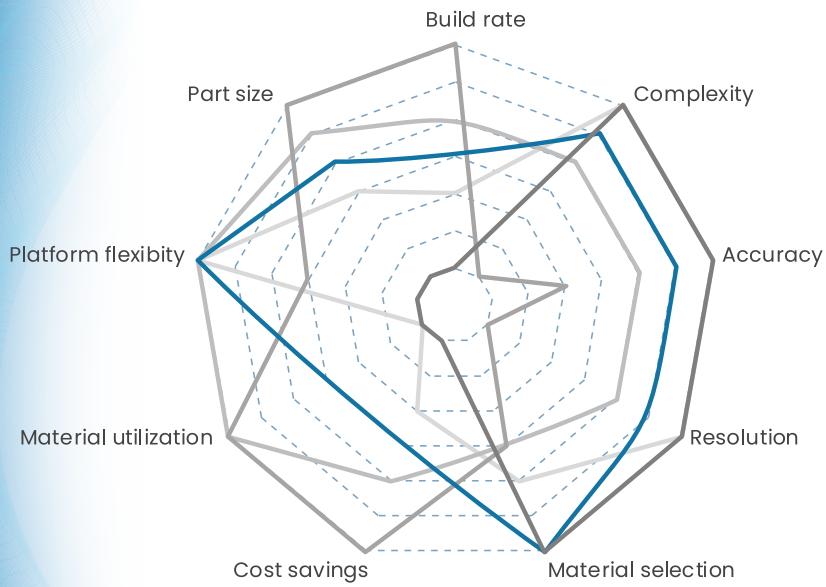
Full automation

Every action you do on Additec Builder is fully traceable and reusable. Simply define your manufacturing strategies once and generate ready-to-print toolpaths with one click.

Knowledge sharing

We take pride in surrounding our users with access to information and support. Our AM experts and R&D lab act as the extension of your team throughout your journey with Additec Builder.

The Benefits of a Laser Wire/Powder DED Process



LDED Benefits

Cost savings
Low raw material (wire feedstock) cost and equipment cost reduces the overall cost of good sold (COGS) for parts produced using laser wire DED.

Complexity
Integrating the deposition technology to a robotic arm enables multi-axis printing for highly complex geometries.

Platform flexibility
Decoupling the deposition technology from the motion enables integration with small scale gantry systems for new materials development, CNC systems for hybrid manufacturing, and robotics for large-scale multi-axis geometries

Part size
Integrating the deposition technology to a robotic arm enables large-scale printing where size limitation does not exist.

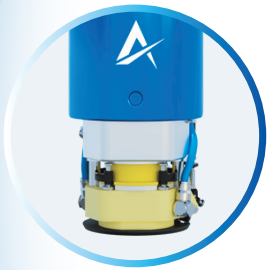
Material utilization
100% of the wire feedstock enters the melt pool providing highest material utilization among AM processes.

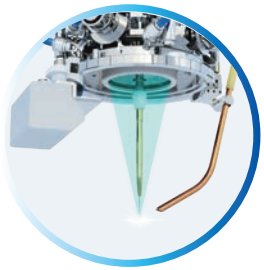
Accuracy
Tolerances of up to ± 0.01 inches can be achieved with optimized tool path and process parameters.

Liquid Metal Jetting Technology

HYBRID^3™

Print Different





Manufacturing System with Liquid Metal Jetting, Laser Directed Energy Deposition and CNC Machining.

Features

Liquid metal jetting (LMJ) and laser directed energy deposition (LDED) are two additive processes desired within a hybrid manufacturing system as both processes use low-cost COTS welding wire to print near-net shape parts with 100% material utilization. With LMJ we unlock high resolution capability while with LDED we unlock high deposition rate capability. In addition, multi-material capability is enabled by having two additive processing heads within a single system. The subtractive process within a hybrid manufacturing system provides post-machining capabilities to achieve desired surface finish and tolerances for parts printed using the two additive processes

Industrial High-Power Fiber LDED

Provides exceptional beam quality and power range up to 6kW.

Class-Leading Processing Heads for LDED & LMJ

State-of-the art processing heads, with over a decade of development experience.

Closed-Loop Process Control

Smart manufacturing is empowered by Factory-Smart Sensors. In LDED, laser power modulation based on melt pool temperature, guided by pyrometer feedback, ensures precise control. Conversely, LMJ employs point profile sensors for topology corrections, guaranteeing meticulous precision across the manufacturing process.

Deployment Mechanism

Integrated mechanism to deploy and retract the processing head automatically through the process tool path code.

Precision Wire Feed System

State-of-the art precision wire feed system, with built in wire straightening and feed pressure monitoring system. Also qualified for soft materials like Al.

Specifications

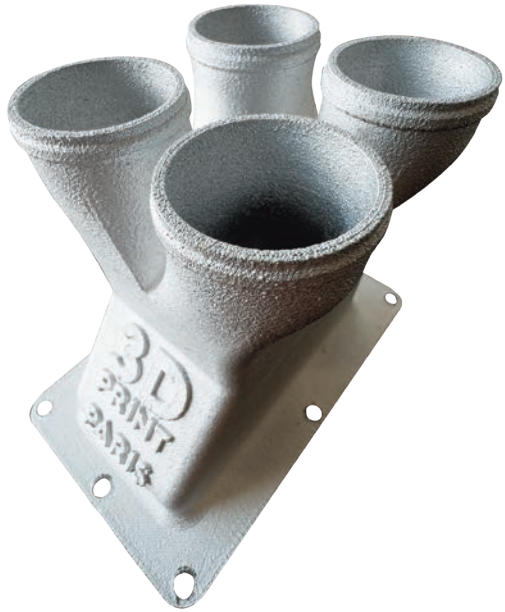
Parameter	Laser DED	LMJ
Maximum Laser Power	6 kW	-
Laser Type	Fiber laser	-
Laser Wavelength	1080 nm	-
Layer Thickness	0.8 – 1.2 mm	0.24 mm (min.)
Maximum Deposition Rate	4 kg/hr	0.5 kg/hr
Wire Feed Stock	0.8 – 1.2 mm ø	1.6 mm ø
Resolution	2.5 mm	0.5 mm
Process control Closed Up	Yes	Yes

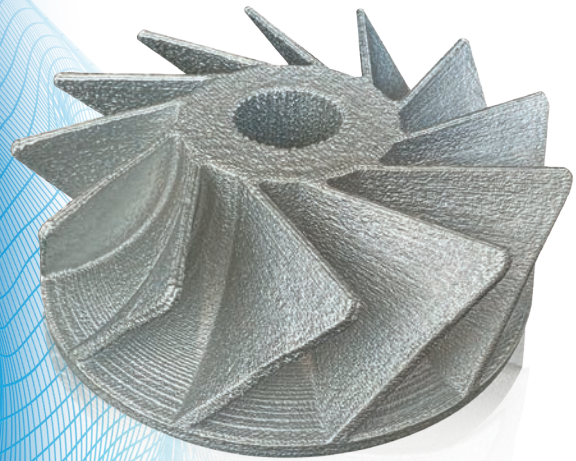
CNC Machining
Build volume
40” x 20” x 25”
Max. Spindle Speed
12000 rpm
Max. Cutting Speed
21.2 m/min

Materials	Iron, nickel, aluminum, and copper alloys
Shielding	Localized (Argon or Nitrogen)
Cooling	Active water cooling
Slicing software	ADDiTEC

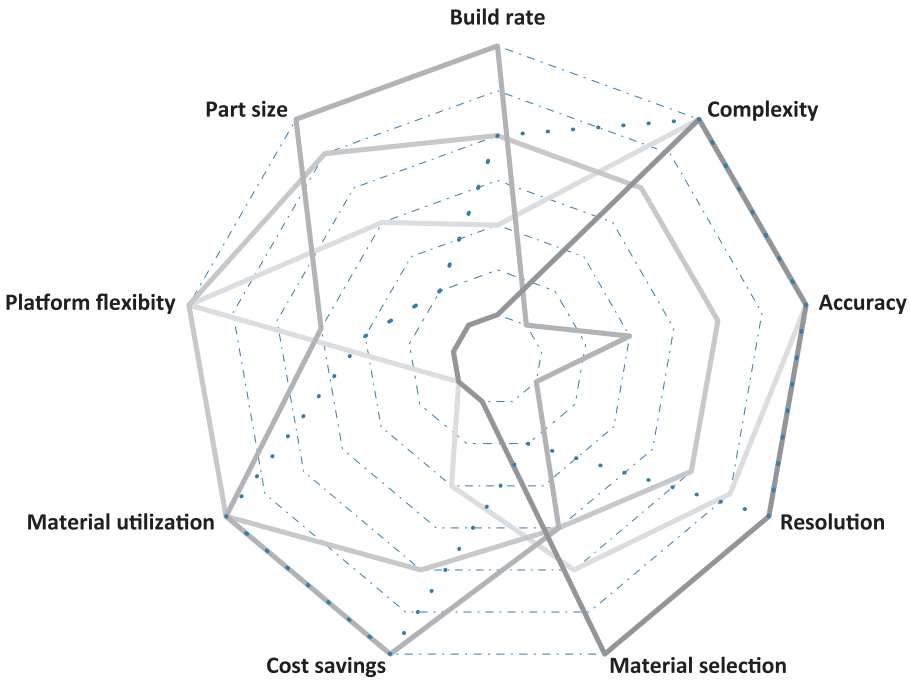
LMJ
Examples

Produces complex parts with an entirely unique, proprietary and highly sophisticated liquid metal jetting process, printing high resolution parts in a wide range of Al alloys. More materials under development.





The Benefits of the Liquid Metal Jetting Process



Cost savings
Low raw material (wire feedstock) cost and equipment cost reduces the overall cost of good sold (COGS) for parts produced.

Build Rate
Up to 0.5 kg/hr. deposition rates have been demonstrated with droplet frequency of 400 Hz.

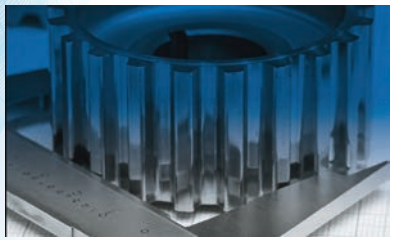
Material utilization
100% of the raw material is utilized in this process as the wire is melted in a crucible and ejected as droplets to create a part

Complexity
Up to 90° overhang features have been demonstrated. Most complex gyroid designs have been fabricated.

Resolution
Sub-1mm feature sizes have been demonstrated with optimized nozzle selection and process parameters

Accuracy
Tolerances of up to ± 0.30 mm can be achieved with optimized tool path and process parameters

Customer Testimonials



Amorphology Inc.

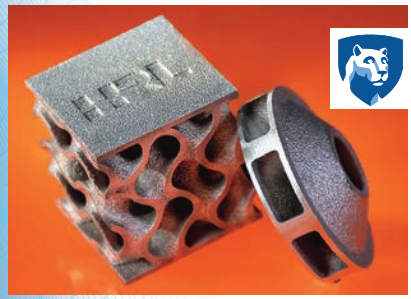
"Functional grading with multiple materials allows us to develop gear components for robotics that cannot be fabricated with conventional metallurgy. The ability to tailor the properties of a gear via alloy composition gives us an entirely new design freedom when developing precision mechanisms. Whether it's improving the wear resistance of gear teeth while maintaining toughness in the rest of the part or using high-value steel in combination with low-cost steel to save cost, multi-material additive manufacturing is allowing us to innovate in the way that we approach gears for robotics."

Dr. Glenn Garrett, Amorphology CTO

California State University

"We are very excited about this collaboration. Together with our multi-scale capabilities, this ADDiTEC developed DED technology will enable us to explore new horizons in additive manufacturing and microstructural engineering of advanced metallic alloys. It will also provide an advanced manufacturing solution to our MakerSpace and will enable education of underrepresented groups of students on this growing technology."

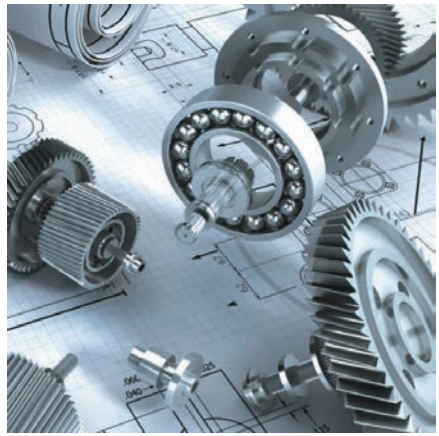
Dr. Mohsen Eshraghi



Penn State University

"ADDiTEC's DED technology will be used for the following research objectives 1) Validation of melt pool and microstructure modeling. We are specifically interested in iron- and nickel-based alloys. We will integrate the modeling framework with machine learning to develop robust predictive models. 2) Development of novel alloy systems such as oxide dispersed iron alloys as well as functionally graded structures. 3) Understanding high-temperature tensile, fatigue, and creep properties of iron- and nickel-based alloys."

Professor Amrita Basak



Departament of the Navy

"The ease of use and the quality of the printed parts exceeded our expectations. This technology represents a significant enhancement in our ability to maintain and repair equipment while at sea."

Dr. Garth Hobson Director, Camre

Partners

Technology Partners:

aibuild SIEMENS ABB COMAU

Academic Affiliations:

MIAMI UNIVERSITY PennState CSU The California State University THE UNIVERSITY OF TOLEDO 1872

FAMU FLORIDA AGRICULTURAL AND MECHANICAL UNIVERSITY BINGHAMTON UNIVERSITY UNIVERSITY of VIRGINIA Oregon State University

Goverment Partners:

NASA U.S. ARMY FLEETWERX SPEED | INNOVATION | COLLABORATION

Memberships & Affiliations:

NEXTFLEX® CELEBRATING 10 YEARS OF HYBRID ELECTRONICS LEADERSHIP

the FloridaMakes network America Makes

ADDiTEC™

Print Different

America Makes

Contact Us:

Email: info@additec3d.com

Facilities

4413 SW Cargo Way, Palm City, FL 34990
3252 S Miami Blvd Suite 120, Durham, NC 27703

For more information please visit

www.additec3d.com