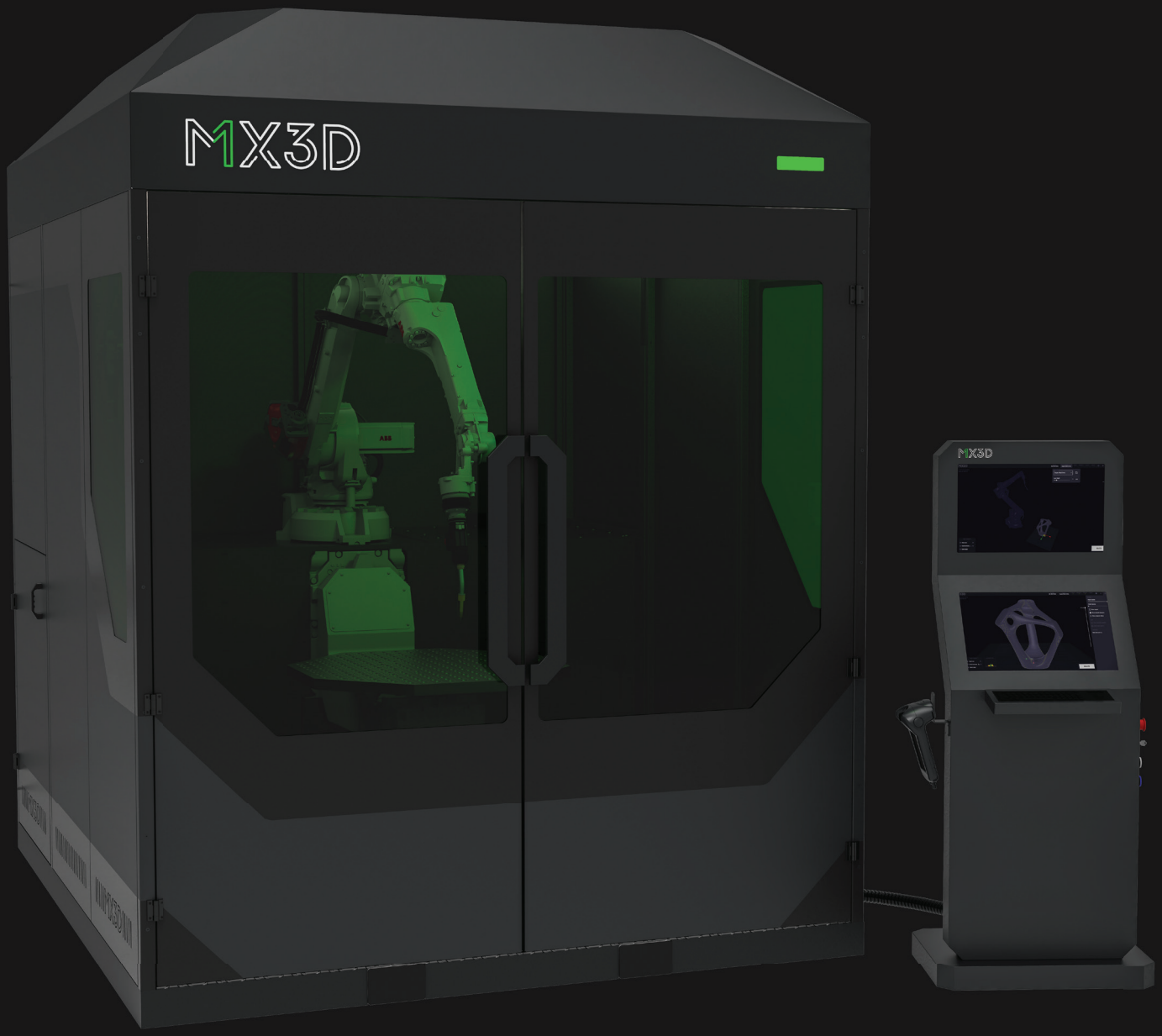
M1 | METAL AM SYSTEM

ROBOTIC WIRE ARC ADDITIVE MANUFACTURING



MX3D

WWW.MX3D.COM

M1 | built for industrial 3D metal printing

M1 - METAL AM SYSTEM

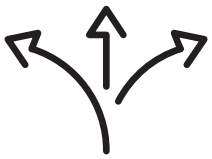
Building on our extensive experience with >20,000 kg printed metal, the **MX3D M1 Metal AM System** ensures quality for Robotic Wire Arc Additive Manufacturing (WAAM).

M1 is built for WAAM. It offers a full solution to get started with WAAM fast and print **high quality parts**. It is fully integrated with MetalXL, our dedicated WAAM-workflow for advanced process control/monitoring, and includes quality hardware components from renowned manufacturers.

M1 includes an **8-axis industrial robotics system** enabling complex prints, a **multi-transfer mode GMAW power source** for flexible print procedures. A WAAM-dedicated **MX3D Control System** for intelligent automation, real-time print monitoring and high-resolution data logging.

MetalXL, our robotic WAAM solution, is fully integrated into M1 thanks to the connected control system and sensors. This enables you to get **from design to print in one go.**

M1 - BENEFITS

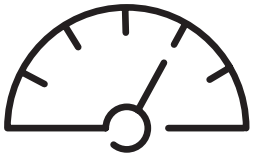


FLEXIBILITY

By using 8-axis industrial robots, you can print bigger and more complex shapes.

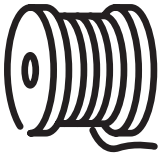
COSTS

Up to 50% lower CAPEX and >5x cheaper OPEX compared to powder-based 3D metal printing.



SPEED

High deposition rate (>2kg/hour) for increased productivity and reduced lead time.



MATERIALS

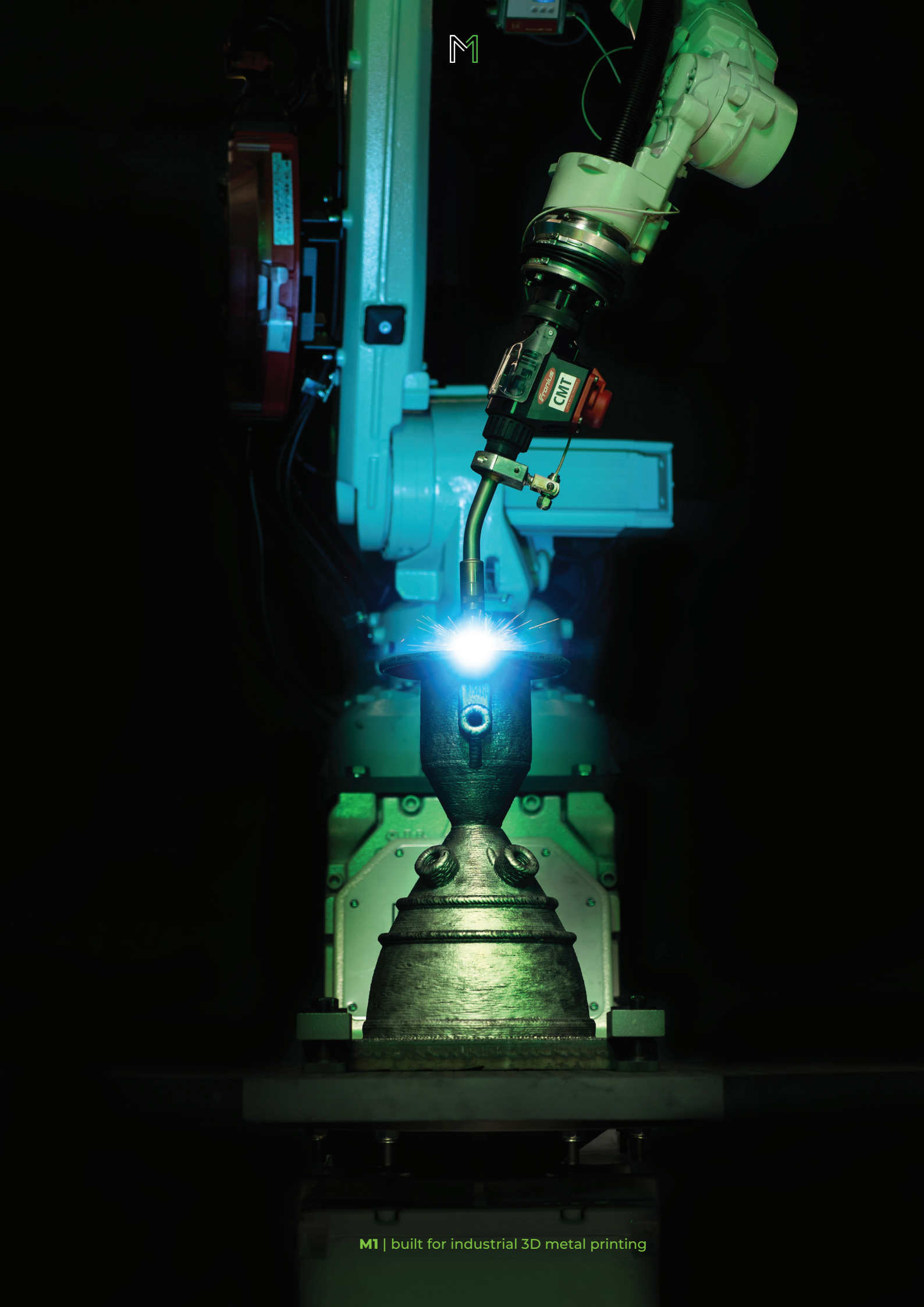
Lower material usage and waste reduction due to near-net-shape and optimized parts.

EASY TO USE

Fast adoption due to high automation requiring only basic engineering skills to operate

PERFORMANCE

Achieve enhanced print performance and productivity by dynamic sensors for continuous control and monitoring



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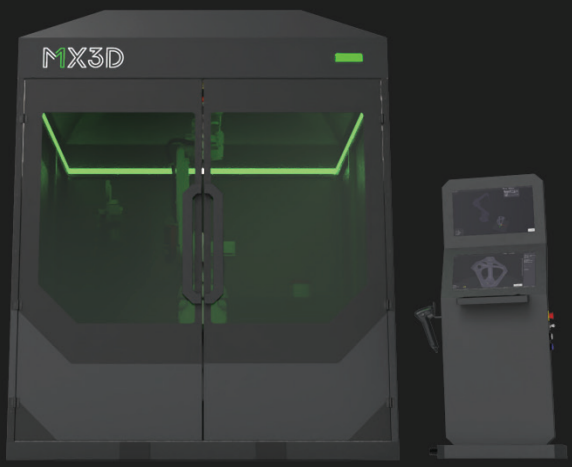

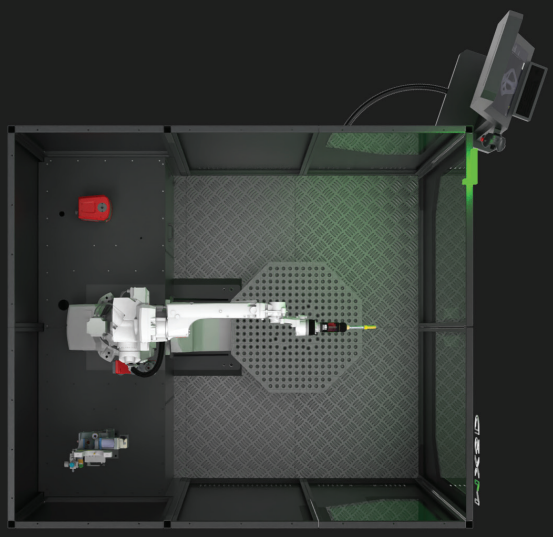

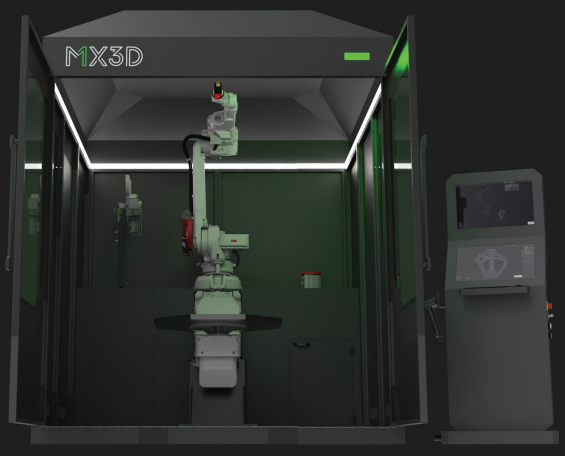

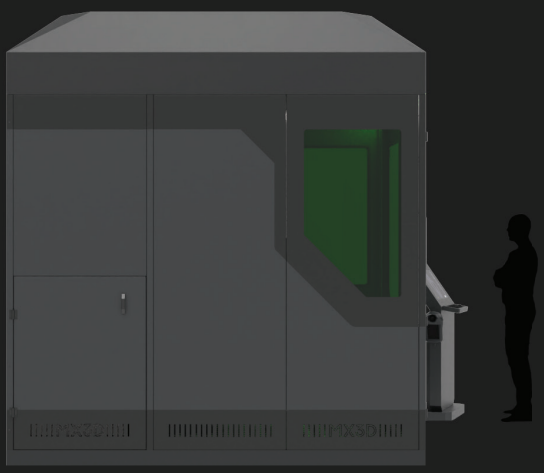

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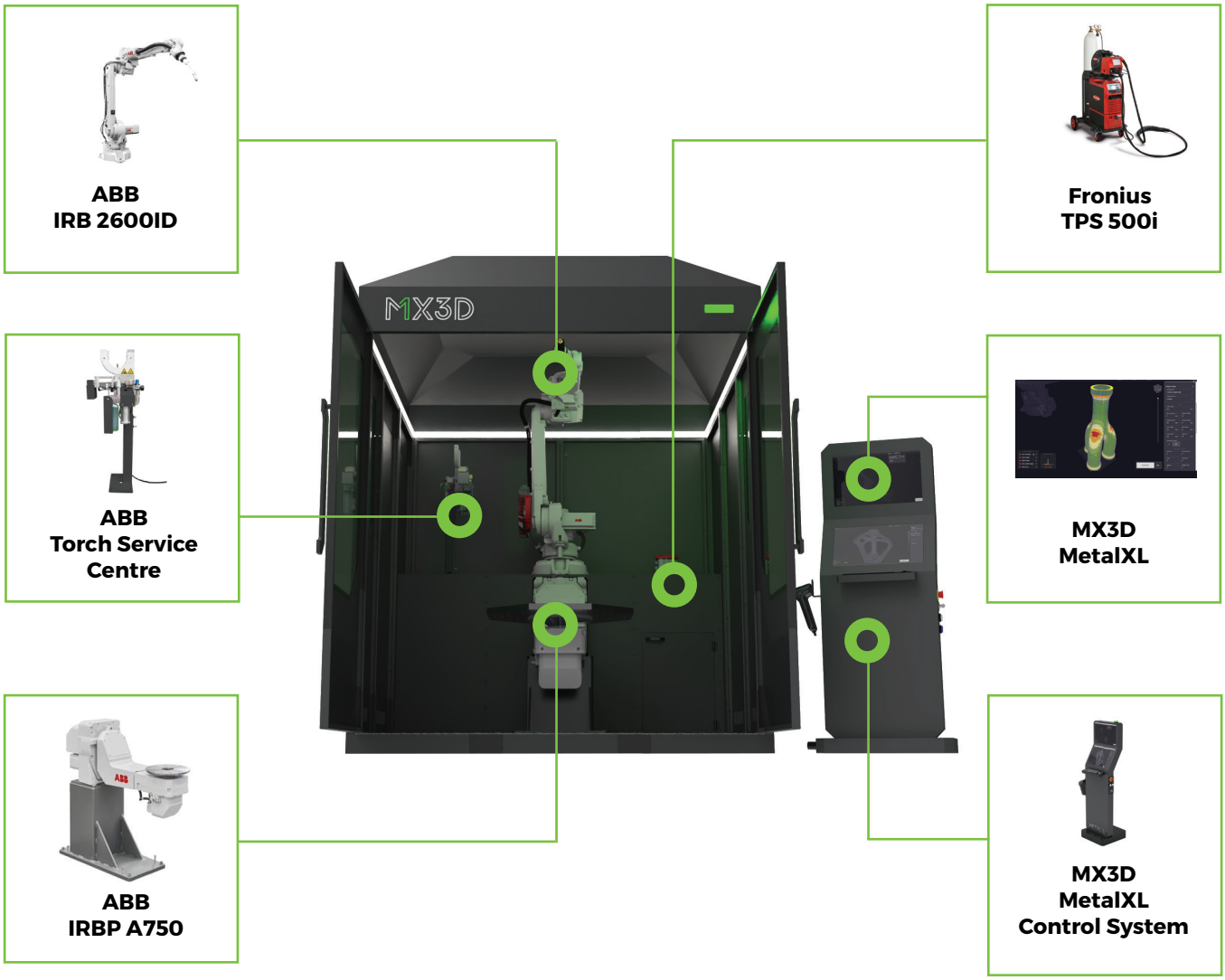
M1 - STANDARD CONFIGURATION

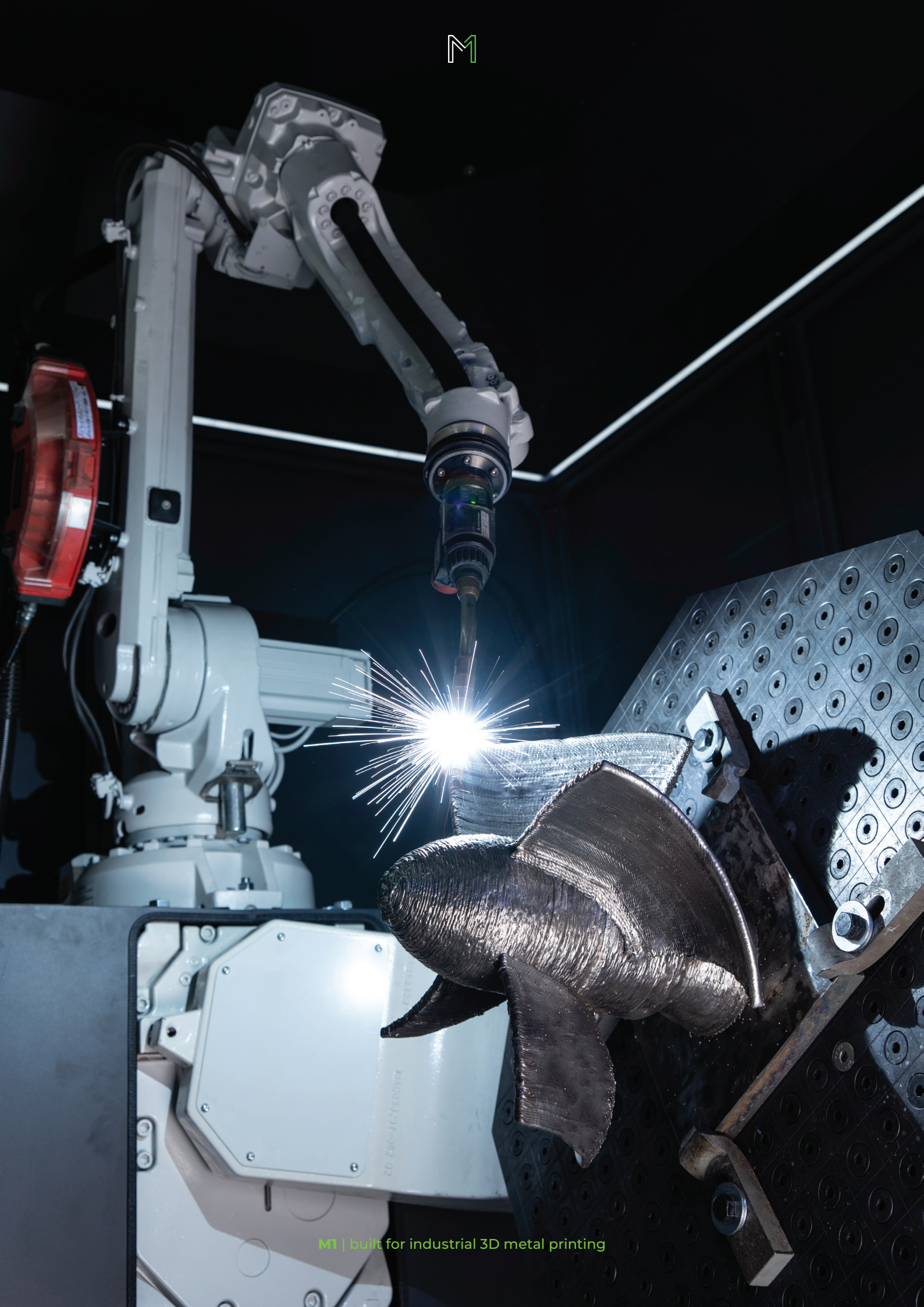


ADVANTAGES

- Off-the-shelf hardware, ready-to-print setup.
- Print with 8-axis for increased freedom of geometry.
- CMT and MIG/MAG print.
- Integrated sensors and control system for process control and monitoring.

FULLY INTEGRATED WITH METALXL

- From design to print in one go: plan your print via the MX3D MetalXL control system and push it directly to the robot.
- Follow your print on the MX3D MetalXL Control System.
- Digital twin of the print for optimal parameters assessment and components certification.
- Continous print monitoring and receive print alerts on your phone for unexpected events.



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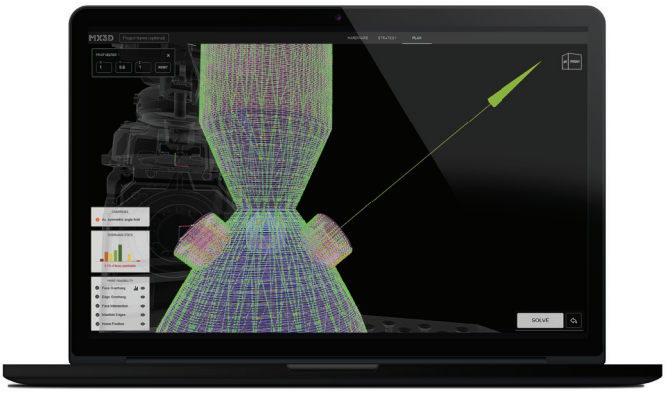
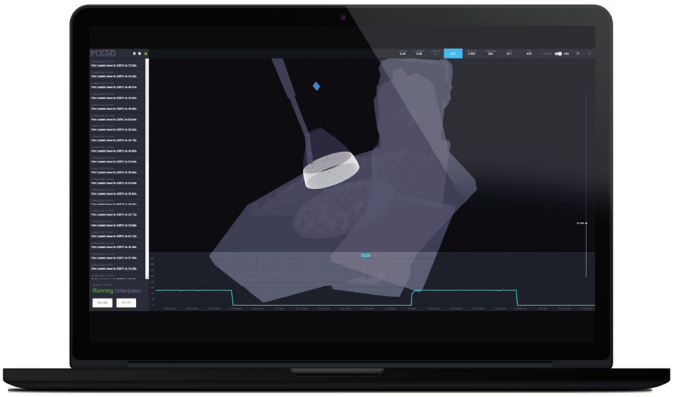
MetalXL CAM - Optimized toolpaths & infill strategies



MetalXL Live - Real-time data collection of voltage, current and stick-out distance



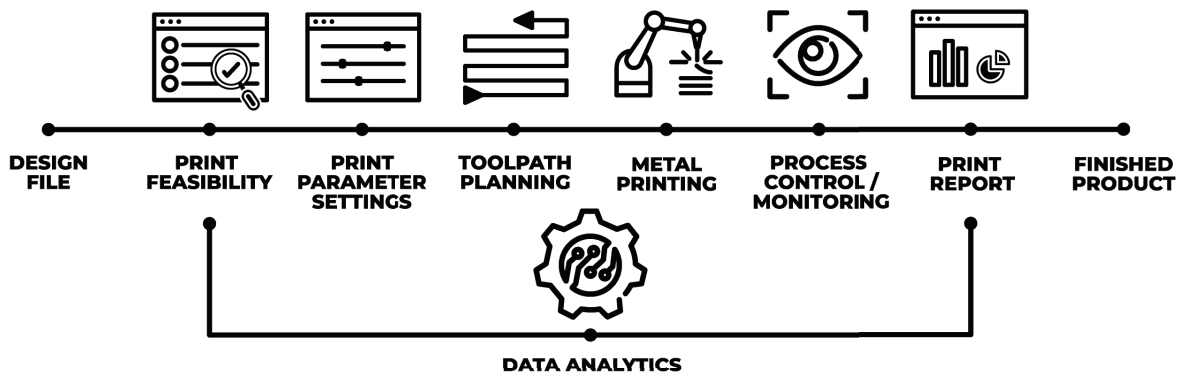
MetalXL: dedicated WAAM solution from CAD to print in one go

METAL XL

MetalXL is built by MX3D to enable 3D metal printing of large metal parts in-house, using robotic WAAM technology.

Its streamlined end-to-end workflow allows our users to easily manage the whole printing process from design to print.

It offers diverse features to both print with preset metal alloys and process parameters, or customize the entire process to your own needs.



CONTROL SYSTEM

PROCESS CONTROL

- Advanced sensors to measure key parameters in real-time directly from the torch
- Dynamic toolpath streaming that pushes the next layer when passing set parameter levels (e.g. interpass temperature)
- Automated start/stop with failure detection,.

PROCESS MONITORING

- High-resolution logging and visualization of key parameters
- Monitor the printing process live layer by layer on the digital twin
- Live alerts on unexpected print parameter deviation pushed to the operator

PRINT ANALYTICS

- 3D visualization of logged key parameters during print
- Detect, filter and analyse deviations during the printing process
- Visualize the logged data after printing as a 3D point cloud, and compare it to the printed object to optimize the printing parameters

HIGH-RESOLUTION DATA COLLECTION

- Current
- Voltage
- Dynamic interpass temperature and layer cooling time

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