
MX3D
PRINT ON DEMAND SERVICES
ART
JORIS LAARMAN LAB
JVDSGN
CRACKINGART
NOVAMETAL
TANJA SMEETS
ALYSON SHOTZ
mrt
Musei Reali Torino
RICARDO REGAZZONI
TAKENAKA
JONATHAN VERVOORT
MX3D
www.MX3D.com

WAAM FOR ART & DESIGN

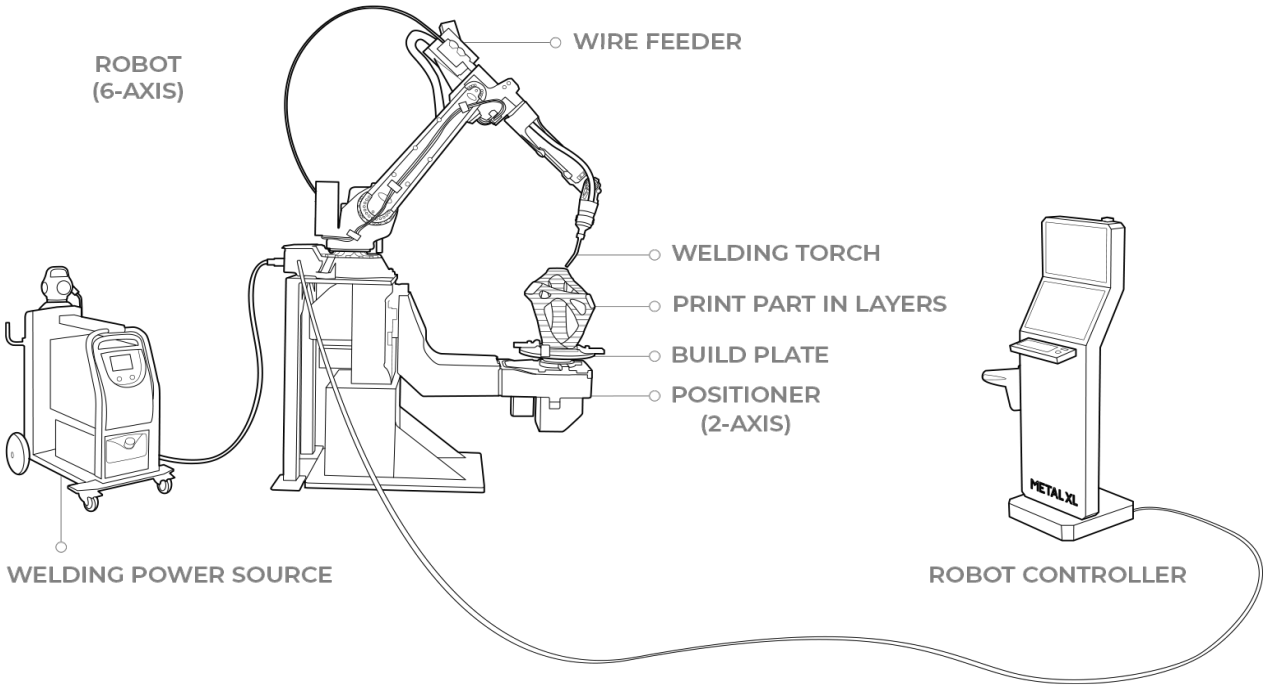
MX3D - WAAM FOR ART & DESIGN

MX3D

- 15+ Robots
- 30+ People, skilled design and manufacturing
- Delivering quality since 2014
- Creator of the iconic multi-award winning MX3D Bridge
- Highly skilled in fabricating artistic sculptures, organic designs and complex structures
- Assisting with 3D scanning and modeling

WHAT IS WAAM?

Wire arc additive manufacturing, in short **WAAM**, is a **metal 3D printing technology** in the subsection of direct energy deposition (**DED**). 3D printing, or additive manufacturing has found its way from prototyping into industrial applications and final products. In comparison to subtractive methods like milling and turning, the material is **added layer-by-layer** such that only the material needed is used. Parts produced with WAAM have mechanical properties comparable to cast or forged material.



LATER LOVE SCULPTURE

Rowan Gillespie |
Ireland |
Bronze

Clay sculpture 3D scanned and prepared for 3d-printing, quick grinding pass and patina applied by the artist

DOLIUM

JVDSGN

Javy Design |
The Netherlands |
Corten Steel

Pre-assembled ring welded to printed parts

TURTLE

CRACKINGART
NOVAMETAL SA SWITZERLAND

Cracking Art |
Italy |
Stainless Steel

BUTTERFLY SCREEN

JORIS LAARMAN LAB

Joris Laarman Lab |
Centre Pompidou 2017 |
The Netherlands |
Bronze

WHALE PASS

Musei Reali Torino

Paolo Albertelli and Mariagrazia Abbaldo |
(Studio C&C) |
Turin, Italy |
Stainless Steel

WOLF

Cracking Art / Novametal |
Switzerland |
Steel

CORTEN HEADS

Rowan Gillespie |
Ireland |
Corten Steel

Clay sculpture 3D scanned and prepared for 3d-printing.

MEMORY OF WATER

JONATHAN VERVOORT

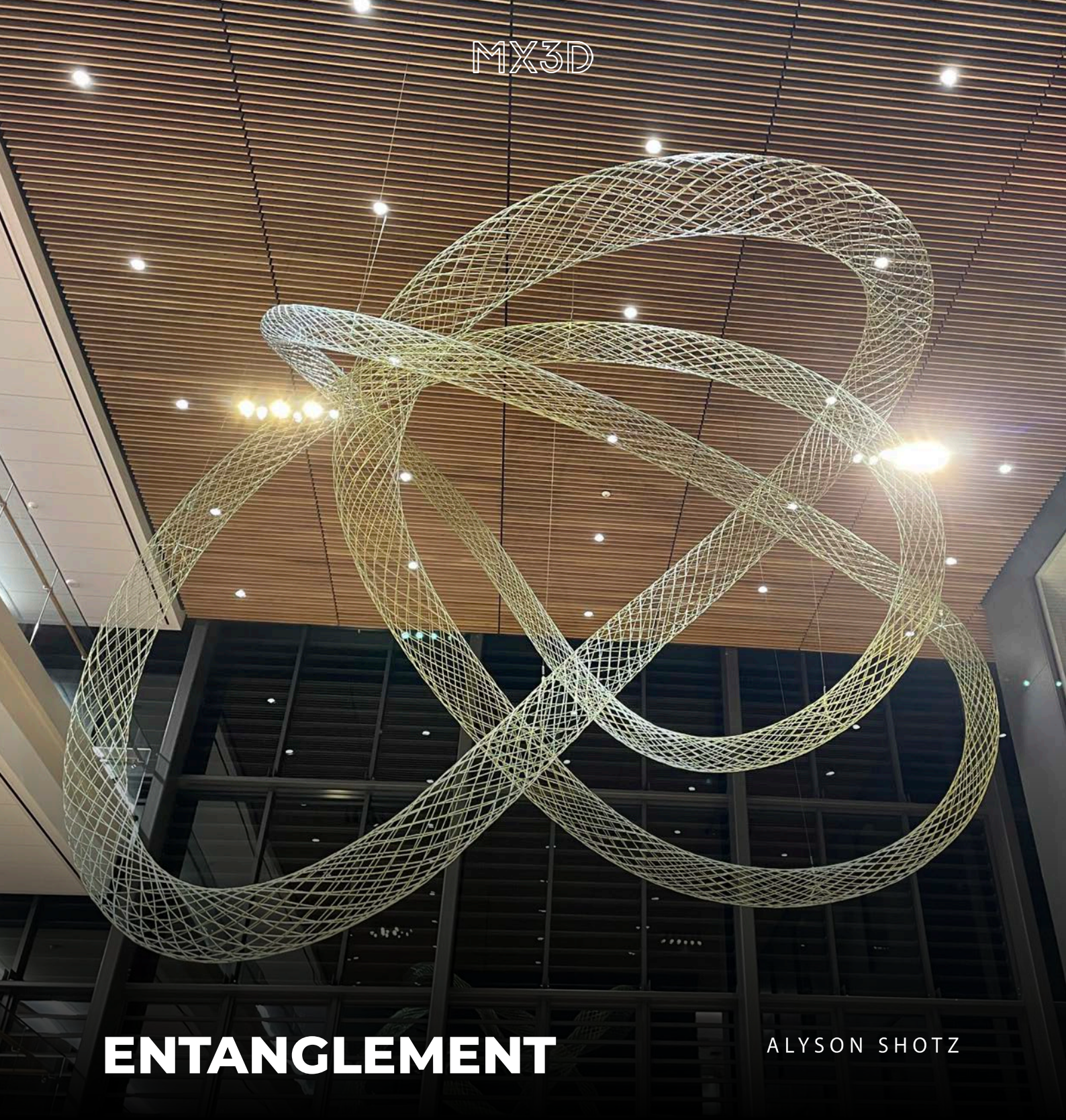
Jonathan Vervoort |
The Netherlands |
Aluminium

THE UNDERGROUND TREE

TANJA SMEETS

Tanja Smeets |
The Netherlands |
Stainless Steel

Metal Wax Finish applied by the Artist



ENTANGLEMENT

ALYSON SHOTZ

Alyson Shotz |
New York, USA |
Stainless Steel

HYPERGRID

JORIS LAARMAN LAB

Joris Laarman Lab |
The Netherlands |
Bronze

Two different patinas applied.
Printed in one piece.

STAR LAMP SERIES

MX3D |
The Netherlands |
Stainless Steel

TRESSE TOWER

RICARDO REGAZZONI

Ricardo Regazzoni |
France |
Stainless Steel

Tips are polished and clad with gold leaf

ARC BIKE SERIES

TU Delft

MX3D & TU Delft |
The Netherlands |
Aluminium

MOTHER OF DRAGONS BENCH

NIKE
JORIS LAARMAN LAB

Commissioned by Nike |
Designed by Joris Laarman Lab |
Oregon | USA |
Duplex Stainless Steel

HAGOROMO BENCH

TAKENAKA

Takenaka |
Nagoya, Japan |
Stainless Steel

WATERFRONT CUCUYO BAR & CAFE

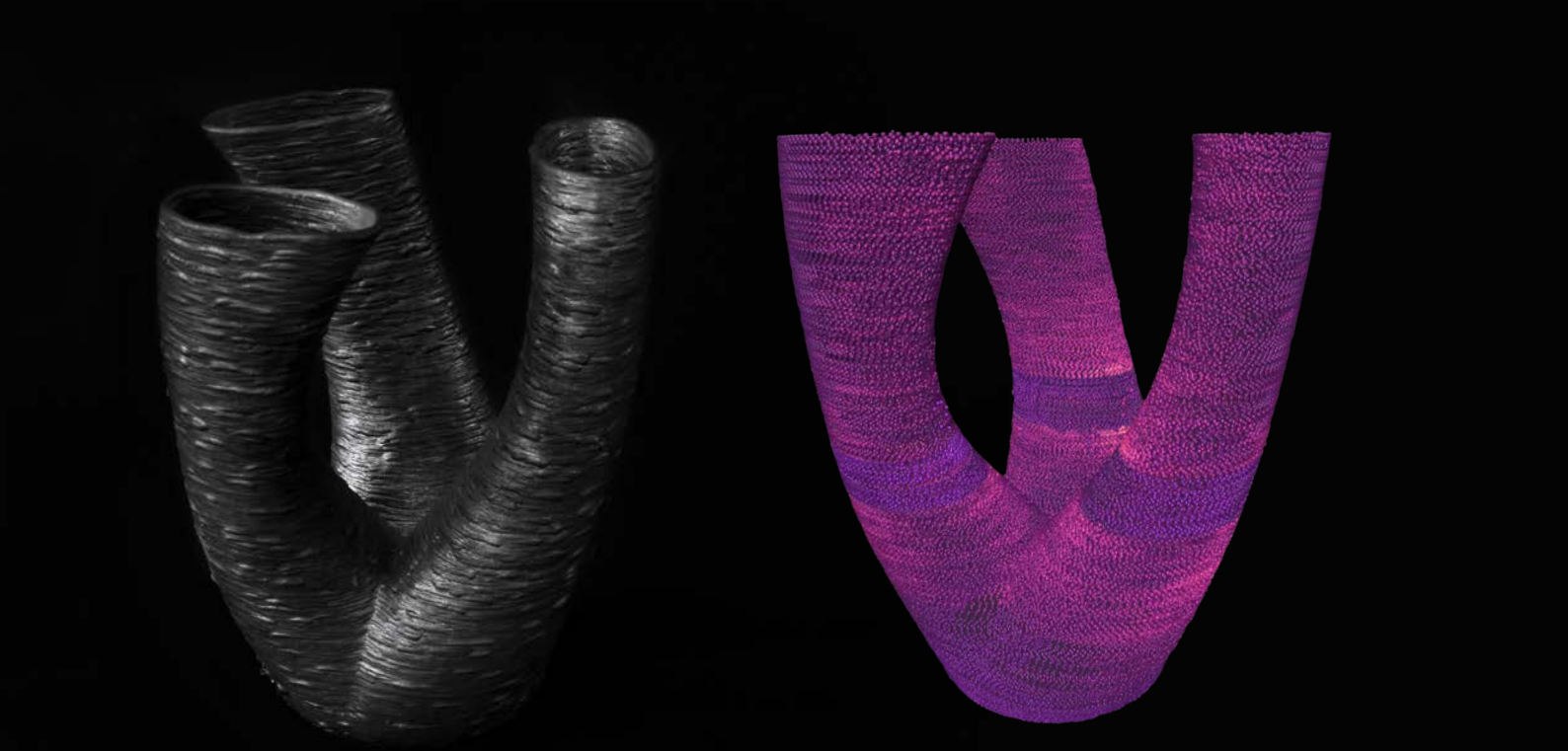
Commissioned by Pérez Art Museum Miami |
Designed by Berenblum Busch Architects |
Miami | USA |
Stainless Steel

BENEFITS OF WAAM FOR ART

WAAM is well-suited for producing **complex steel parts**. It enables easy modification of designs without incurring additional tooling costs, making it **ideal** for producing **large volumes** of **parametrically designed parts**.

- No need for **special moulds or fixtures**.
- Ideal for **large volumes of unique connectors**.
- Aligns with the growing interest in **parametric design**.
- From 10>10.000+ kilograms of metal per piece.

WAAM generates **less material waste** compared to traditional manufacturing processes. This contributes to **cost savings** and significant **environmental benefits**.



CERTIFICATION

MX3D has a **certified** additive manufacturing facility for **robotic wire arc additive manufacturing** (Wire-DED). The qualification includes control relating to feedstock, equipment, personnel, process and build control covering multiple metal alloys.

The company has **extensive experience** in the **qualification** of special projects working closely with Lloyds Register, The Welding Institute (UK), DNV, GL and Bureau Veritas. It follows **standards** such as SPEC, ASTM, SAE, AISI, and BS.

POST PROCESSING

3D-printed metal can be treated like any other metal after production.

A common step is **sandblast** a part so that the residual dust layer from the production process is cleaned.

Printed parts can also be **polished** and **coated**.

SAMPLES

On request, MX3D can provide a **sample box** with a range of our most common materials.
For current pricing and shipment estimates, please reach out to sales@mx3d.com

MASS CUSTOMISATION

Each connector is slightly different?

Not a problem for MX3D's WAAM system! Where in classic manufacturing variation is costly, for 3D printing each part can be unique.

By following **a strict procedure certification** of parts is obtained even when they are all slightly different.

MATERIALS

ALUMINIUM

5356: EN ISO 18273: S Al 5356 (AlMg5Cr(A))
5183: EN ISO 18273: S Al 5183 (AlMg4,5Mn0,7(A))
4018: EN ISO 18273: S Al 4018 (AlSi7Mg)
4046: EN ISO 18273: S Al 4046 (AlSi10Mg)
4000 series
5000 series

STEEL

(Stainless) Steels
308LSi: EN ISO 14343 – A: 19.9LSi
316LSi: EN ISO 14343 - A: 19.12.3LSi
Duplex ER2209: EN ISO 14343 - A: 22.9.3NL

Carbon Steels
G3Si-1: EN ISO 14341-A: G 3Si1
G4Si-1: EN ISO 14341-A: G 4Si1

High-Strength Steels
NiMo: EN ISO 16834-A: G Mn3Ni1Mo
NiCrMo: EN ISO 16834-A: G Mn3Ni1CrMo

Steel Alloys
Stainless Steels
Maraging Steels
Tool Steels
Mild Steels
Low alloy Steels
Duplex Steels

NICKEL ALLOYS

Ni625 EN ISO 18274 : S Ni 6625 (NiCr22Mo9Nb)
Ni718 EN ISO 18274 : S Ni 7718 (NiFe19Cr19Nb5Mo3)

BRONZE

CuSn6: EN ISO 24373: Cu 5180A
CuSi3 : EN ISO 24373: S Cu 6560
CuAl8: EN ISO 24373: S Cu 6100
CuAl8Ni6: EN ISO 24373: S Cu 6328

MX3D uses off-the-shelf welding wire with standard 3.1 material certificates.

FACILITY

Since 2014 MX3D has been the **innovation leader** in 3D metal printing for steel structures.

With **15+ industrial robots**, MX3D has a large production facility **specialised in 3D metal printing** of metal structures. MX3D manufactures parts in a qualified facility, with qualified machinery and materials.

Gijs van der Velden / CEO MX3D

"Our data-centric engineering approach combines design, test results and qualification standards to optimise part design and the manufacturing process. This approach allows for cost-effective mass customisation. It offers an intelligent and innovative perspective for the future of the architecture, engineering, and construction (AEC) industry."

CERTIFIED STRUCTURAL AND MATERIAL ANALYSIS

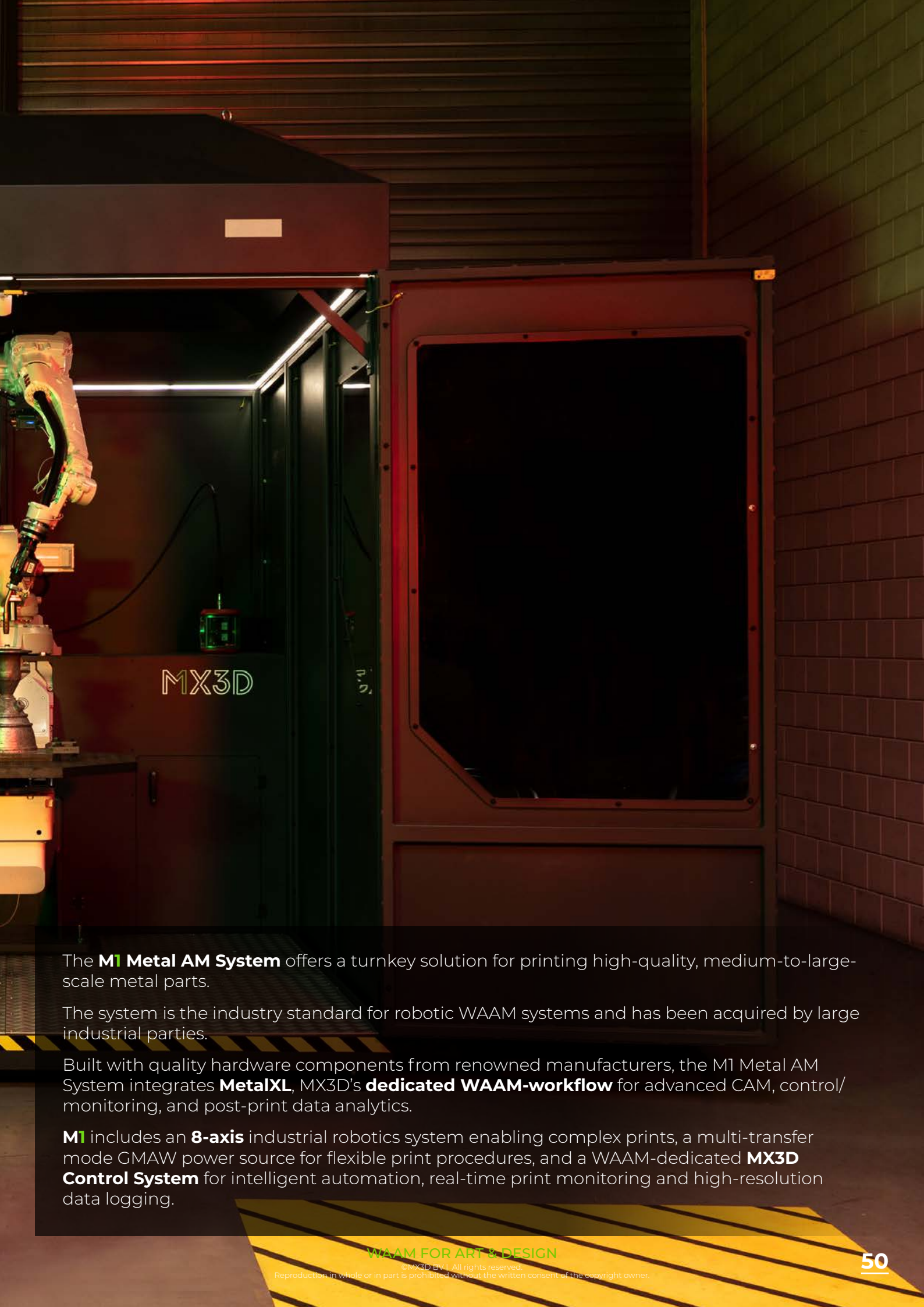
MX3D produces parts with mechanical properties comparable to those of cast or forged material and aligned with new and existing international standards.

MX3D collaborates with **certified partners** across the world to **validate the material** and structural properties of WAAM-printed elements.

Certified partners

- **Arup, Engineering Services (INTERNATIONAL)**
- **Element, Material Research (INTERNATIONAL)**
- **Imperial College London, Engineering Services (UK)**
- **Bologna University, Engineering Services (IT)**
- **Belgium Welding Institute, Material Research (BE)**
- **Norwegian University of Science and Technology, Material Research (NO)**
- **University West, Material Research (SE)**
- **Technical University of Twente, Structural Research (NL)**
- **Technical University of Eindhoven, Fatigue (NL)**

M1 SYSTEMS



The **M1 Metal AM System** offers a turnkey solution for printing high-quality, medium-to-large-scale metal parts.

The system is the industry standard for robotic WAAM systems and has been acquired by large industrial parties.

Built with quality hardware components from renowned manufacturers, the M1 Metal AM System integrates **MetalXL**, MX3D's **dedicated WAAM-workflow** for advanced CAM, control/monitoring, and post-print data analytics.

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

MX3D

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