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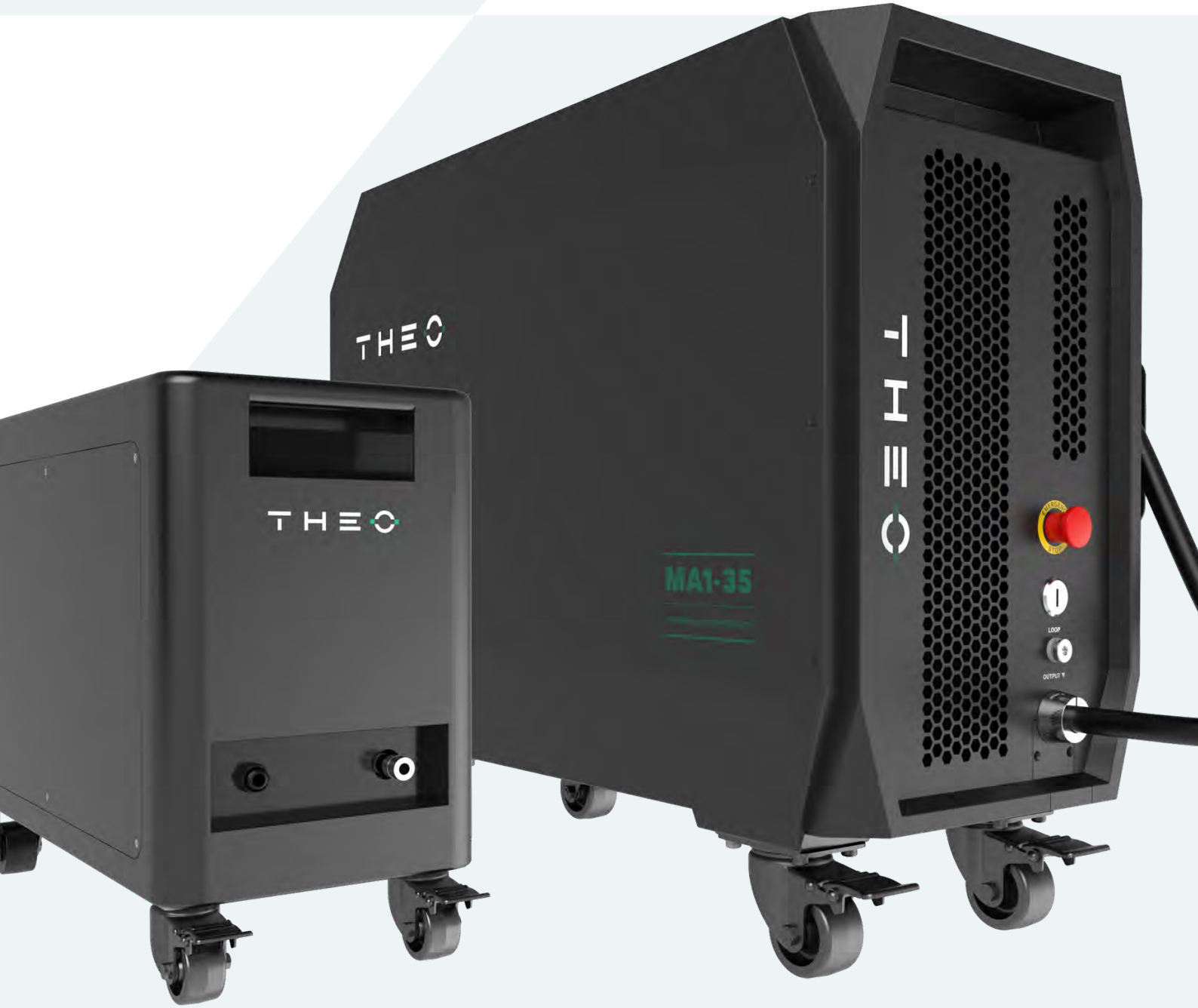
THEO BY MAX PHOTONICS



MA1 SERIES HANDHELD FIBER **LASER WELDING MACHINE**

EFFORTLESS OPERATION, SEAMLESS WELDING, **SUPERIOR RESULTS!**

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Lightweight & Compact:

Easy-to-handle handheld fiber laser welder.

Versatile Applications:

Welds stainless steel, carbonsteel, aluminum, and galvanised steel.

Unmatched Speed:

Up to 10x faster than traditional welding methods.

Superior Quality:

Higher weld strength with reduced porosity.

Minimal Heat Impact:

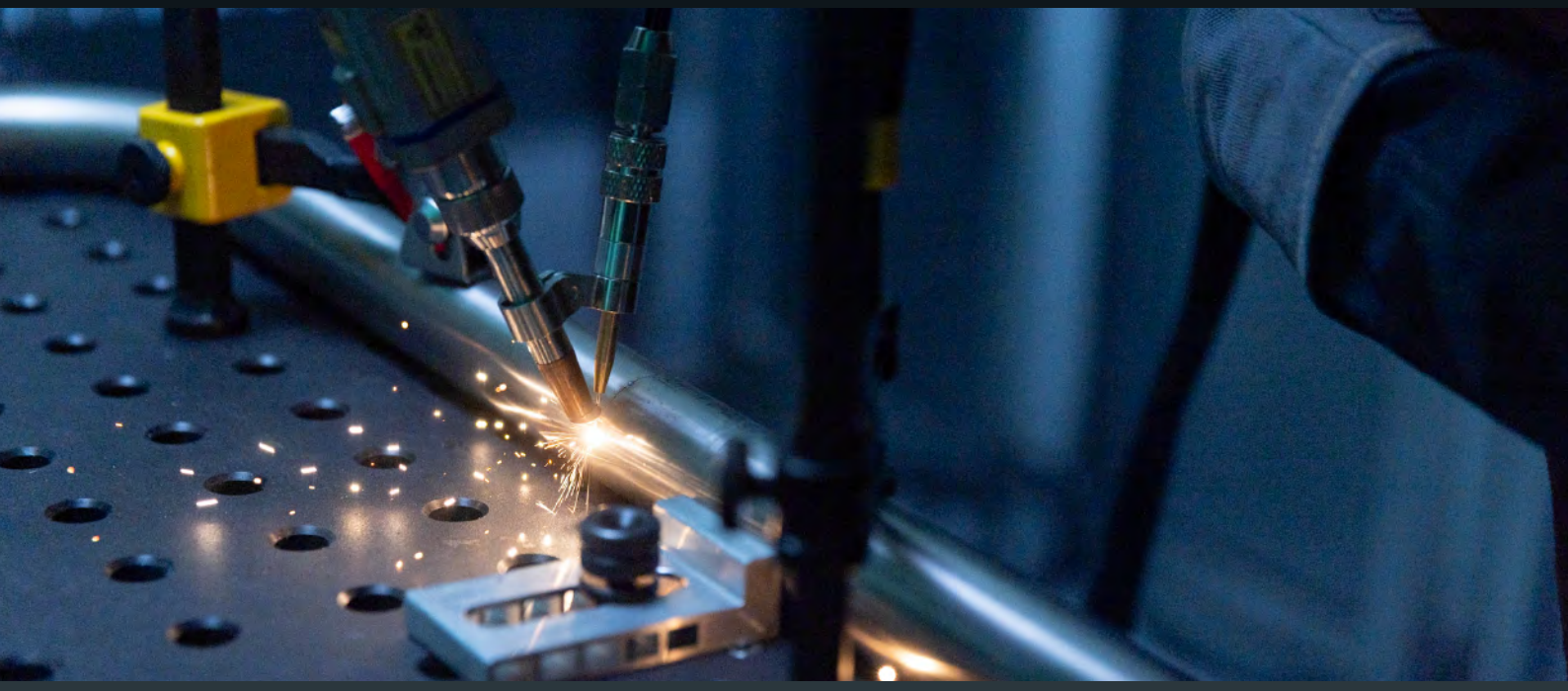
20µm spot size minimises heat-affected zones, deformation, and burn-through.

Clean Results:

Produces smooth, consistent welds with little to no post-processing.

Cost-Effective:

Enhances productivity, reduces waste, and lowers operational costs.



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THE THEO MA1

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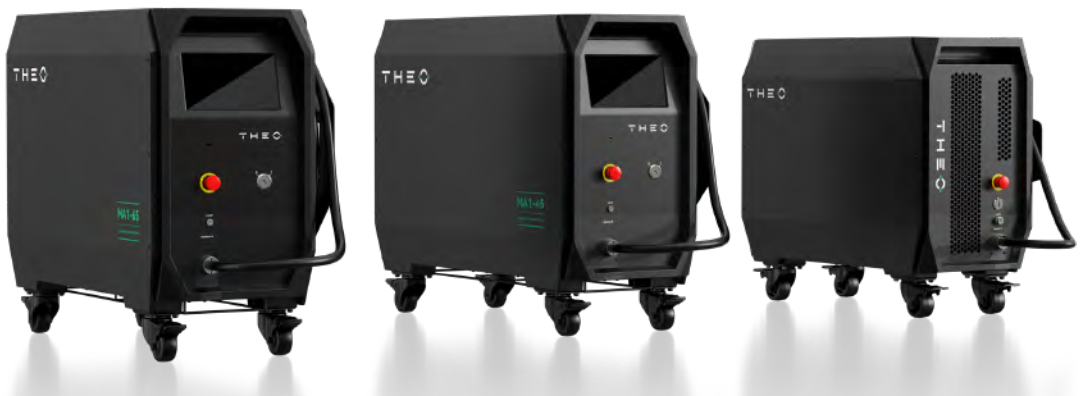
Product Model		2 kW	1.5 kW	1.2 kW	0.8 kW
Weld Thickness[1] (mm)	Stainless Steel	8.5mm	6.5mm	4.5mm	3.5mm
	Carbon Steel/Iron	8.5mm	6.5mm	4.5mm	3.5mm
	Aluminium	6.5mm	5.5mm	4mm	3mm
	Galvanised Sheet	8.5mm	6.5mm	4.5mm	3.5mm
Wobble (mm)		0.4mm	0-4mm	0-4mm	0-4mm
Operating Temp (°F)		0~104	0~104	0~104	0~104
Operating Temp (°C)		0~40	0~40	0~40	0~40
Weight (pounds)		86 lbs	86 lbs	84 lbs	62 lbs
Weight (kg)		39kg	39kg	38kg	28kg
Dimensions (mm*mm*mm)		667*276*542	667*276*542	667*276*542	576*265*425
Volume (cubic feet)		<3.5	<3.5	<3.5	2.1
Volume (m^3)		<0.1	<0.1	<0.1	0.06

[1] Data points represent extreme penetration depth based on lab test results; the penetration depth performance will vary according to setup and application. Disclaimer: All weld penetration depth values and performance specifications stated in this brochure for the MA1 ULTRA are based on preliminary testing. Final values may vary upon completion of further testing and validation.



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6 ROBUST SAFETY MEASURES FOR **UNMATCHED PROTECTION**

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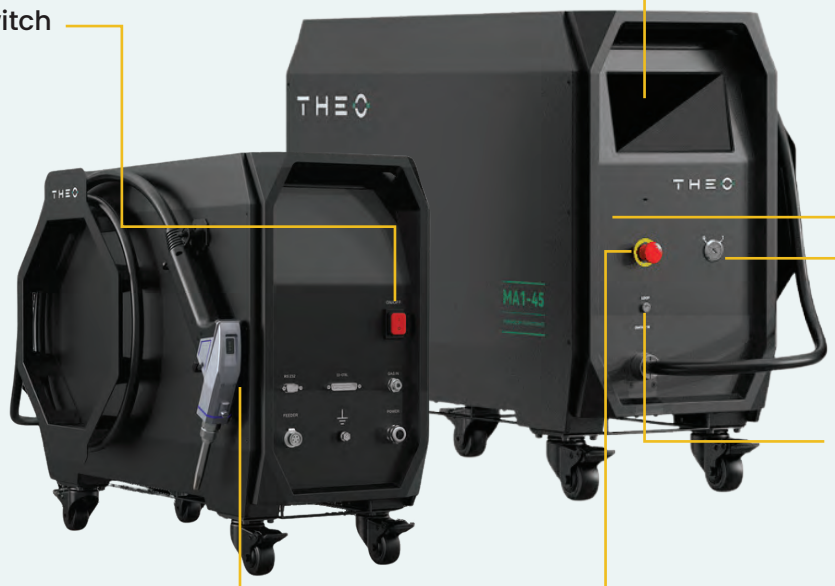
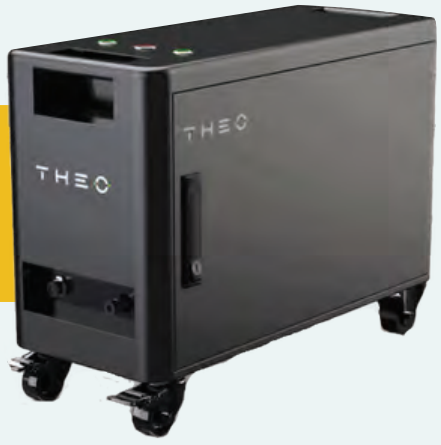
The MA1 Series Handheld Welder is a Class IV laser product. To guarantee safe operation, appropriate PPE (Personal Protective Equipment) is essential. At a minimum, laser-safe eyewear should always be worn. Theo includes a pair of goggles with every laser for added safety.



WIRE FEEDER UNIT INCLUDED – INTEGRATED WOBBLE WELDING



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TRADITIONAL WELDING
VS LASER WELDING

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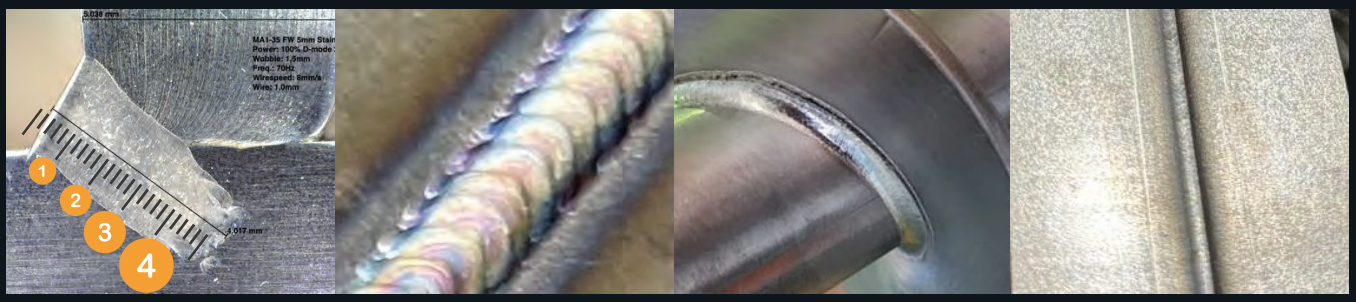
Feature	MIG/TIG Welding	Laser Welding
Welding Speed	Slow; requires multiple passes	Up to **3-8x faster**; reduces production time
Penetration Depth	Limited (approx. 2mm on a 6mm weld)	Deeper penetration (approx. **3-8mm on a 3mm weld**)
Weld Quality	Rough, irregular seams; requires significant finishing	Clean, smooth seams; **factory finish 98% of the time**
Heat Affected Zone (HAZ)	Large HAZ; increases risk of distortion and warping	**Small HAZ**; minimizes distortion, especially on thin materials and stainless steel
Power Consumption	High; consumes more energy during welding	**More efficient**; significantly lower power usage
Wire Consumption	High; continuous wire feed required	**Lower** wire usage; **3-4x less** wire consumed
Smoke & Radiation	High smoke production; high levels of radiation	**Lower smoke; minimal radiation**, safer for operators
Work Environment	Requires extensive fume extraction and protection measures	Cleaner workspace; less fume extraction required
Skill Level Required	Skilled operators needed for quality welds	**Easy to operate**; minimal training required
Flexibility of Use	Limited to certain materials and thicknesses	Can weld a variety of materials: mild steel, stainless steel, aluminium, copper, etc.
Cost of Consumables	Higher; more consumables required (wire, shielding gas)	**Lower; less consumables** (wire, gas, optics)
Finishing Work	Requires extensive grinding and polishing after welding	**Minimal finishing required**; clean welds reduce rework



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THEO HANDHELD FIBER
LASER WELDER FEATURES

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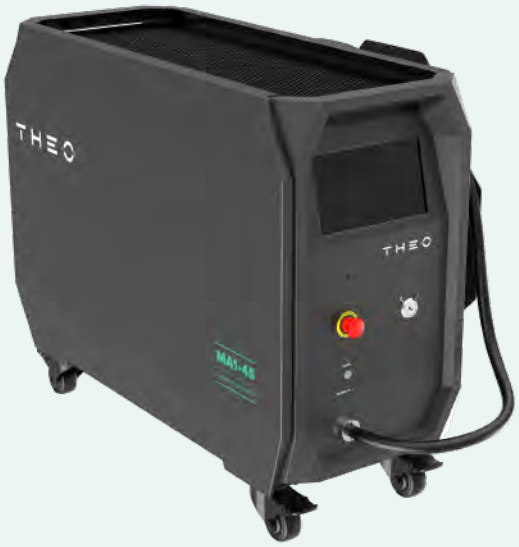

- Stable Performance and Reliable Quality
- Ergonomic Handheld Welding Torch
- Compact and Mobile
- Simple Operating System 7" Touch Screen

EASY INTEGRATION AND OPERATION

220V
Power Supply

Gas:
Nitrogen/Argon

Ground Clamp
Safety Loop

The product's rear panel is clearly labeled for effortless setup, making it especially convenient for beginners. Integration is further simplified with our user guide videos. All you need is a standard 220Vac power plug, a connection to industrial shielding gas like argon or nitrogen, and th interlock connection attached to your workpiece to start welding. The 7-inch LED touchscreen features an intuitive, multi-language operating system. Here, you can easily select from preset welding parameters or input your own precise user-defined settings.

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FREQUENTLY ASKED QUESTIONS

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What is laser welding?	Laser welding is a process that uses a high-powered laser beam to join materials by melting and fusing them together.
How does laser welding work?	A laser beam heats the material to its melting point, creating a molten pool. The materials fuse as the pool solidifies.
What materials can be welded with a laser welder?	Common materials include stainless steel, carbon steel, aluminum, titanium, copper, brass, and galvanised steel. You can also mix material by welding Copper onto stainless steel etc. This is where the welding demos gets interesting.
What are the advantages of laserwelding?	Faster welding speeds, higher precision, minimal heat-affected zones, clean welds, and less post-processing. Deeper penetration compared to traditional methods.
What industries use laser welding?	Industries include automotive, aerospace, electronics, jewelry, medical devices, and manufacturing.
What are the limitations of laserwelding?	It can struggle with thick joints, highly reflective materials, or joints with poor fit-up without filler material.
Is laser welding suitable for high-volume production?	Yes, its speed and automation compatibility make it ideal for large-scale manufacturing.
Does laser welding require fillermaterials?	Not always. Laser welding can work without fillers if the joint fit-up is precise, though fillers can be added if needed.
Is laser welding safe?	Yes, when proper safety measures like protective eyewear, shielding, and training are followed.
What is the heat-affected zone(HAZ) in laser welding?	The HAZ is the area surrounding the weld that experiences thermal stress. Laserwelding minimises this zone.
What is the maintenance requirement for a laser welder?	Maintenance includes cleaning optics, inspecting cables.
Can laser welding replace traditional welding methods?	In many cases, yes, due to its efficiency and quality, but traditional methods may still be better for certain applications.
Does laser welding consume a lot of power?	Modern laser welders are energy-efficient, often consuming 4x less power than traditional arc welding processes.

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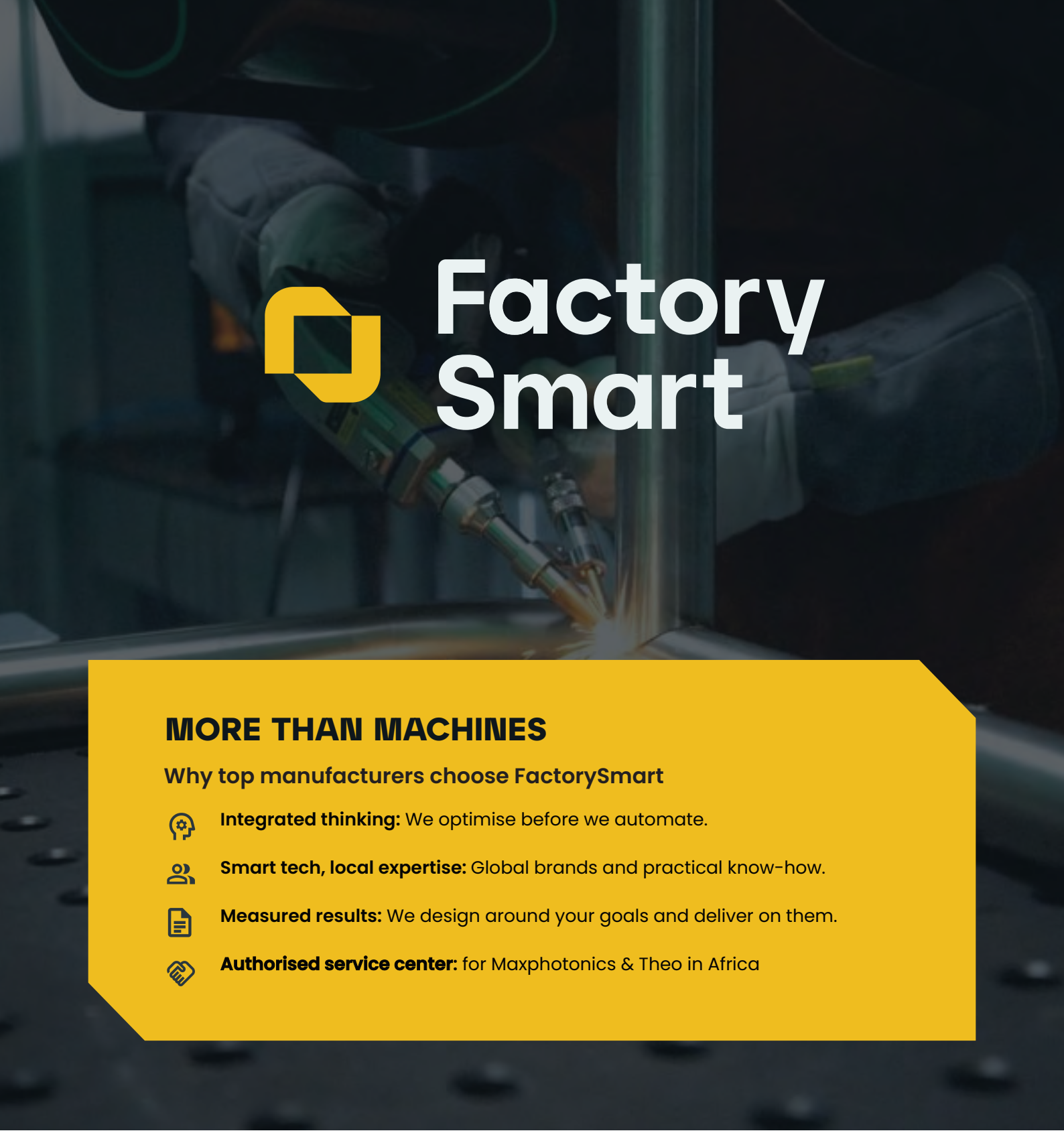

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MORE THAN MACHINES

Why top manufacturers choose FactorySmart

- **Integrated thinking:** We optimise before we automate.
- **Smart tech, local expertise:** Global brands and practical know-how.
- **Measured results:** We design around your goals and deliver on them.
- **Authorised service center:** for Maxphotonics & Theo in Africa

PENTA LASER VN · MicroStep South Africa · MAX PHOTONICS · THEO · Kjellberg FINSTERWALDE · Hypertherm Cut with confidence · KMT WATERJET

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