

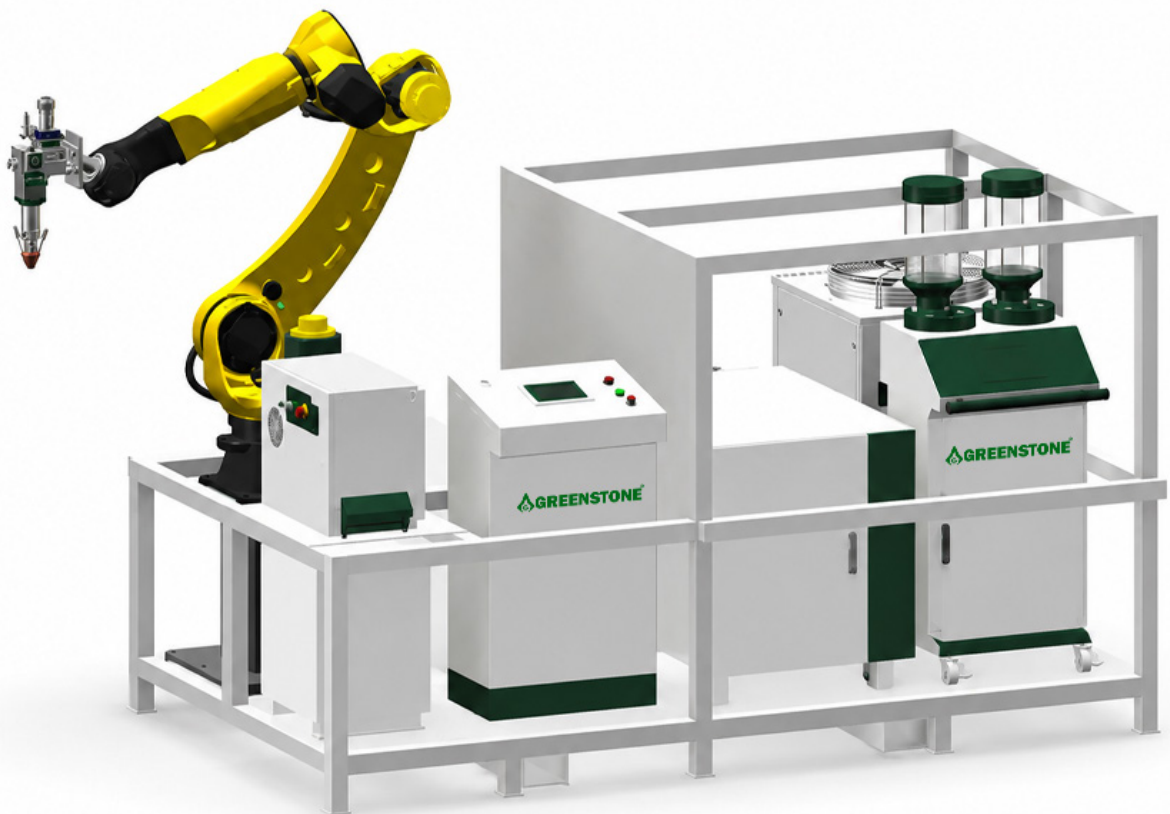


Complete Solutions for High-Performance Metal Additive Manufacturing

Equipment • Engineering • Services • Industrial Applications

Leading the Future of High-Performance Metal Additive Manufacturing.

Advanced Equipment • Engineering Expertise • Industrial Solutions

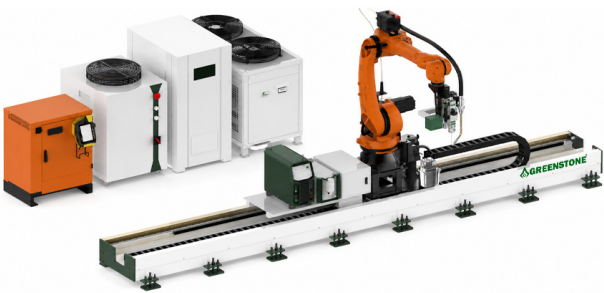


Equipment Type	Flexible Additive & Subtractive Manufacturing System	Maximum Build Size	Ø2000 × 1000 mm
Maximum Payload	2000 kg	Machine Dimensions	4700 × 5000 × 4000 mm
Machine Weight	12 t	Software	Proprietary Additive & Subtractive Path Planning Software
Wire Arc Additive Manufacturing System			
Maximum Deposition Rate	Up to 900 cm³/h	Welding Current Range	MIG/MAG: 3–400 A APlasma Arc: 10–400 A
Laser Powder DED System			
Deposition Rate	120–350 cm³/h	Laser Power	4–10 kW
Powder Utilization	70–80%	-	-
Subtractive Machining System			
Milling Spindle Speed	12,000 rpm	Rated Spindle Power (S1/S6)	8.5 / 10 kW
Rated Spindle Torque (S1/S6)	6.7 / 8 N·m	Tool Magazine Capacity	6 Tools
Motion System			
Robot Payload	500 kg	Maximum Robot Reach	2830 mm
Positioner Travel	Rotation: 360° × NTilting: ±120°	Positioner Table Diameter	Ø2000 mm
Robot Position Repeatability	±0.08 mm		

GLW Series Laser-Arc Hybrid Welding System

The Greenstone GLW Series Laser-Arc Hybrid Welding System integrates advanced laser and MIG arc hybrid welding technology into a single intelligent platform. By combining the high energy density of laser welding with the excellent gap-bridging capability of arc welding, the system significantly improves welding efficiency, penetration depth, weld quality, and process stability while reducing overall manufacturing costs.

Compared with conventional laser or arc welding, the hybrid process delivers higher energy utilization, deeper penetration, and faster welding speeds. Laser stabilization of the welding arc also improves tolerance to joint gaps and fit-up variations, resulting in more stable welding performance and higher production efficiency. The system is ideal for heavy fabrication, shipbuilding, energy equipment, pressure vessels, engineering machinery, and other large metal structure applications.



Laser Source	Fiber Laser	Hybrid Welding Process	Laser + DC MIG Hybrid
Laser Source Capacity	20 kW	Laser Power (Process)	5 kW
Fiber Core Diameter	200 µm	Welding Current	144 A
Collimation / Focal Length	100 / 200 mm	Welding Voltage	16.7 V
Welding Power Source	CMT Welding System	Welding Speed	10 mm/s
Motion System	KUKA KR210 Robot	Weld Width	6.7 mm
Maximum Penetration Depth	9 mm	-	-

Item	GLAM-SL	GLAM-SVL	GLAM-TL	GLAM-TVL
Fiber Interface	QBH, LLK-B/D, LOE			
Optical Axis Adjustment	Precision X/Y Adjustment			
Collimation Focal Length	100 / 150 mm			
Focusing Focal Length	200 / 300 mm			
Circular Spot Diameter	0.5–5.0 mm			
Focus Adjustment	Manual			
Focus Adjustment Range	±5 mm			
Imaging Module	No	Yes	No	Yes
Industrial Camera	No	CCD / CMOS	No	CCD / CMOS
Line Beam Shaping Module	Optional			
Illumination Module	Optional			
Line Beam Dimensions	8×2 mm, 10×2 mm, 12×2 mm, 16×2.5 mm, 20×2 mm, 30×2 mm			
Dimensions (L × W × H)	122 × 102 × 364 mm	200 × 102 × 364 mm	309 × 102 × 258 mm	309 × 102 × 258 mm
Weight	4.5 kg	5.0 kg	6.0 kg	6.5 kg



Coaxial Wide-Beam Laser Cladding Head

- * Optical Path Configuration: Single Right-Angle
- * Lens Configuration: Collimation Lens + Copper Mirror
- * Operating Wavelength: 900–1100 nm
- * Maximum Laser Power: ≤8 kW
- * Optical Axis Adjustment: Precision X/Y Adjustment
- * Collimation Focal Length: 100 mm, 150 mm
- * Focusing Focal Length: 300 mm, 400 mm
- * Rectangular Beam Size: 10 × 2 mm, 16 × 2.5 mm, 20 × 2 mm

Off-Axis Wide-Beam Laser Cladding Head

- * Optical Path Configuration: Single Right-Angle
- * Lens Configuration: Collimation Lens + Copper Mirror
- * Operating Wavelength: 900–1100 nm
- * Maximum Laser Power: ≤8 kW
- * Optical Axis Adjustment: Precision X/Y/Z Adjustment
- * Collimation Focal Length: 100 mm, 150 mm
- * Focusing Focal Length: 300 mm, 400 mm
- * Rectangular Beam Size: 10 × 2 mm, 16 × 2.5 mm, 20 × 2 mm



Off-Axis Wide-Beam Laser Cladding Head

- * Optical Path Configuration: Dual Right-Angle
- * Lens Configuration: Dual Copper Mirrors
- * Operating Wavelength: 900–1100 nm
- * Maximum Laser Power: ≤12 kW
- * Optical Axis Adjustment: Precision X/Y/Z Adjustment
- * Collimation Focal Length: 100 mm, 150 mm
- * Focusing Focal Length: 300 mm, 400 mm
- * Rectangular Beam Size: 10 × 2 mm, 16 × 2.5 mm, 20 × 2 mm, 30 × 2 mm

Internal Bore Laser Cladding Head

- * Maximum Laser Power: 2 kW
- * Operating Wavelength: 900–1100 nm
- * Fiber Interface: QBH
- * Minimum Bore Diameter: 30 mm
- * Maximum Processing Depth: 500 mm
- * Alignment Adjustment: ±2 mm
- * Spot Size: 2–3 mm
- * Powder Feeding Method: Dual-Point Powder Feeding



Internal Bore Laser Cladding Head

- * Maximum Laser Power: 10 kW
- * Operating Wavelength: 900–1100 nm
- * Fiber Interface: QBH, LOE, LLK-D
- * Minimum Bore Diameter: 100 mm
- * Maximum Processing Depth: 1500 mm
- * Alignment Adjustment: ±2 mm
- * Spot Size: 3–4 mm
- * Powder Feeding Method: Annular Powder Feeding

Internal Bore Laser Cladding Head

- * Maximum Laser Power

05. Applications & Success Stories

Industry Solutions and Customer Case Studies

—Aerospace—

—Cutting Tools & Industrial Knives—

—Energy & Power—

—Mold Manufacturing—

—Industrial & Construction Equipment—

—Shipbuilding Industry—

—Metallurgical Industry—

—Rail Transportation—

—Oil & Gas—

06. Material Solutions

Materials for Laser Cladding and DED Manufacturing

Material Family	Typical Materials	Typical Applications
Iron-Based Alloys	316L, 17-4PH, SS410, 420, 400	Stainless steel repair and component restoration
	H13 (SKD61), P20, P21, CPM	Die casting molds, injection molds
	40Cr, 45#, C160, 42CrMo, 40CrMnMo, 30CrMnSiA, 39CrMoAl	Shafts, gears, and wear-resistant components
	INVAR	Low thermal expansion components
Cobalt-Based Alloys	Stellite 6, 21, 31, Co50, 42	Wear-resistant and corrosion-resistant components
Nickel-Based Alloys	INCONEL 718 (GH4169), 625	Aero-engine components, oil & gas drilling equipment
	Waspaloy (GH738), GH4648, GH3030	Aero-engine components
	CMSX-4, Rene N5, DD6	Single-crystal turbine blades
	Rene 80, Rene 142	Aero-engine turbine disks and blades
	Ni60, Deloro 50, Deloro 60	Aero-engine wear-resistant components
Titanium-Based Alloys	Ti-6Al-4V	Biomedical implants, aero-engines, oil & gas industry
	TiAl	Turbine blades
	TiNi	Medical devices
	TA15, TC17, TC2, TC4	Aerospace components
Aluminum Alloys	AlSi, AlCu, AlMg, AlZn	Railway vehicles, aerospace
Metal Matrix Ceramics	WC, SiC	Wear-resistant applications
Copper-Based Alloys	CuSn12, SnSbCu4, QAI9-4	Plain bearings, hydraulic cylinders
Precious Metals & Refractory Metals	Au, Ag, Pt, W, Mo	Power generation and electrical equipment

