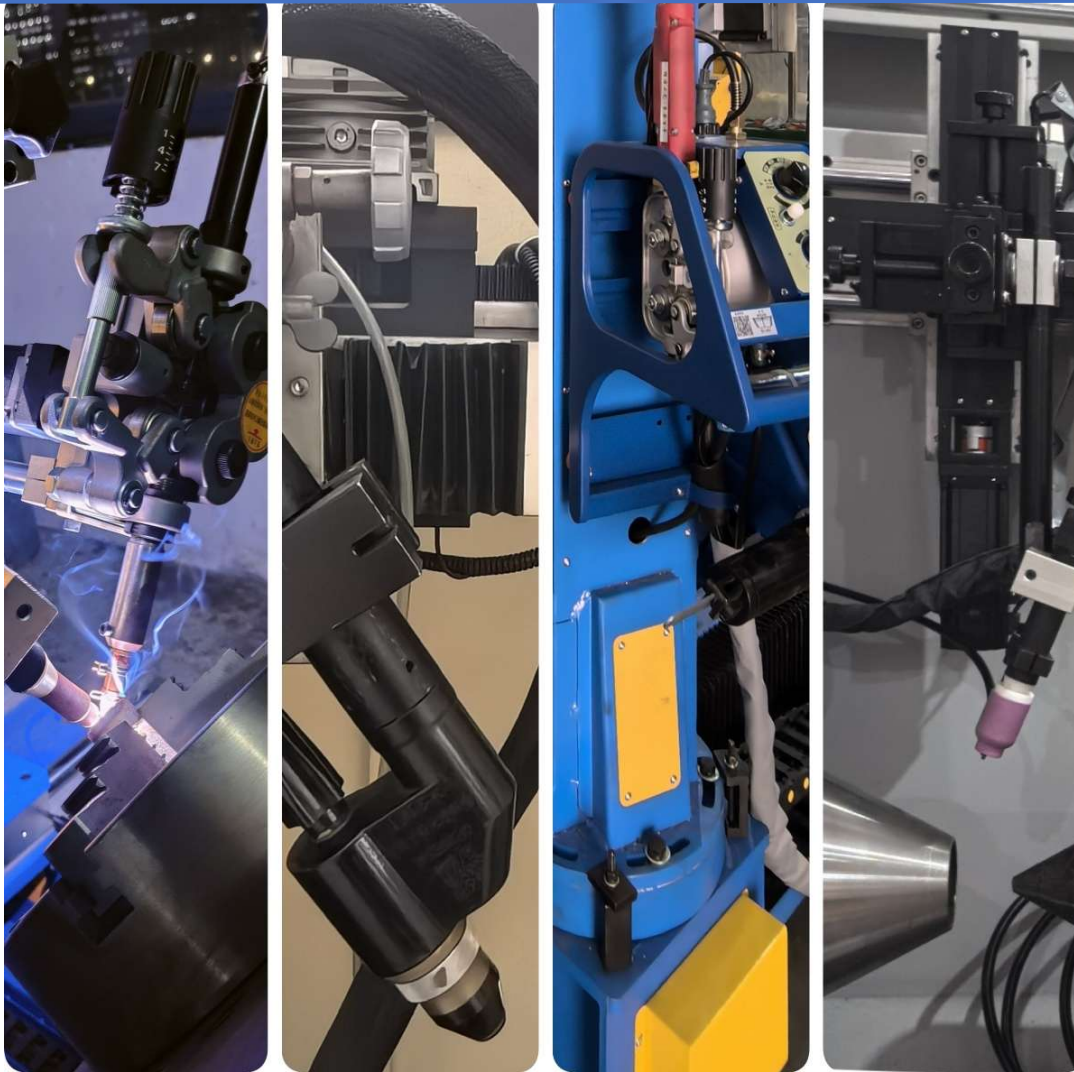




Since 2006



华研科技

HUAYAN WELD TECH CO., LTD

Automatic welding expert

2026.6

www.huayanweldtech.com

Full range innovation of automatic welding



About us

HUAYAN Weld Tech Co., Ltd. is an ISO 9001 certified national high-tech enterprise under China's Torch Program, pioneering automated welding technology since 2006.

We develop and manufacture high-efficiency automatic welding equipment, offering full technical support for MIG, TIG, plasma, laser welding, surfacing and cladding applications across diverse industries. Driven by continuous innovation and modular design concepts, we provide authoritative, high-end welding automation solutions.

Boasting 20 years of experience and professional mechanical & software R&D teams, we rank among China's front runners in automated and robotic welding industries.



Collaborate together to win the future

Our customer

We provide customized welding solutions to variety industrial as, shipbuilding, pressure vessels, control valve, hardware, heat exchanger, auto parts...

Our partner

We design and manufacture machine with support of quality components.



浙江石油化工有限公司
Zhejiang Petroleum & Chemical Co., Ltd.



Mastering core technologies software and hardware



Our teams: Three key R&D engineer teams (welding, software, and mechanical).

I. Welding Engineer Team: Professional Supports, Overcoming Process Pain Points

Team core of national certificated welding expert, with both theoretical knowledge and practical experience. They offer professional technical support to address customers' pain points—such as "unclear about optimal welding processes," welding deformation control, and material fusion—by accurately matching process solutions. improve efficiency, reduce costs, and overcome process challenges.

II. Software Engineer Team: own patent Empowering Intelligent Upgrading

Software developing ability meets various customized needs of smart factory. Control system supports 4G remote networking for remote upgrades, training, and fault diagnosis. Equipped with an IoT module, it seamlessly connects to ERP and MES systems to realize demand and data communication. Build in welding team's process data packages, enabling non-senior operators to stably complete high-quality welding, reducing training costs.

III. Mechanical Engineer Team: Customized R&D Breaking Through Scene Limitations

For scenarios difficult for manual operation (e.g., high temperature, high altitude, narrow spaces), it develops special equipment through structural innovation and automation integration to achieve full-automatic welding. It adapts to welding needs in both traditional and high-end industries

process + software + mechanical: from welding process support, software enables intelligent control, to mechanical ensures equipment implementation. builds a closed-loop chain from demand analysis to service delivery, continuously creating value for customers.

Our mission is to meet our customers' needs

Applications:

- › Valves and valve components
- › Pump body, impellers, shafts
- › Mining tooth & drilling bits
- › industrial roller, cylinder
- › heat exchanger
- › Hydraulic cylinder body and rods
- › Extractor bucket tuning & repairing
- › Wear steel plates
- › nuclear power station components
- › pressure vessels, tank, ship building
- › flange-pipe-plate welding, T pipe
- › hardware, sanitary, bellows
- › other metal work, welding, overlay, cladding, surfacing

Available material:

- › WCB, casting iron, aluminum
- › bronzes, copper and brass
- › tungsten carbide, chrome carbide
- › stainless steels all kinds
- › Nickel alloys
- › cobalt alloys as stellite and triballoy
- › tools steels

Applications and Industries we serve



Ship building



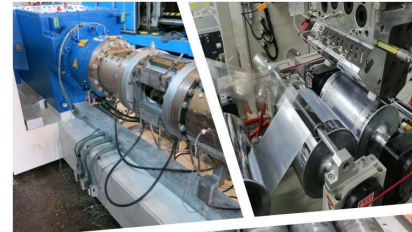
Control valve



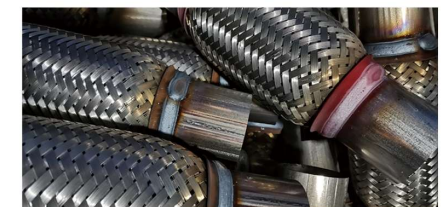
Mining & drilling



Pressure vessel



plastic

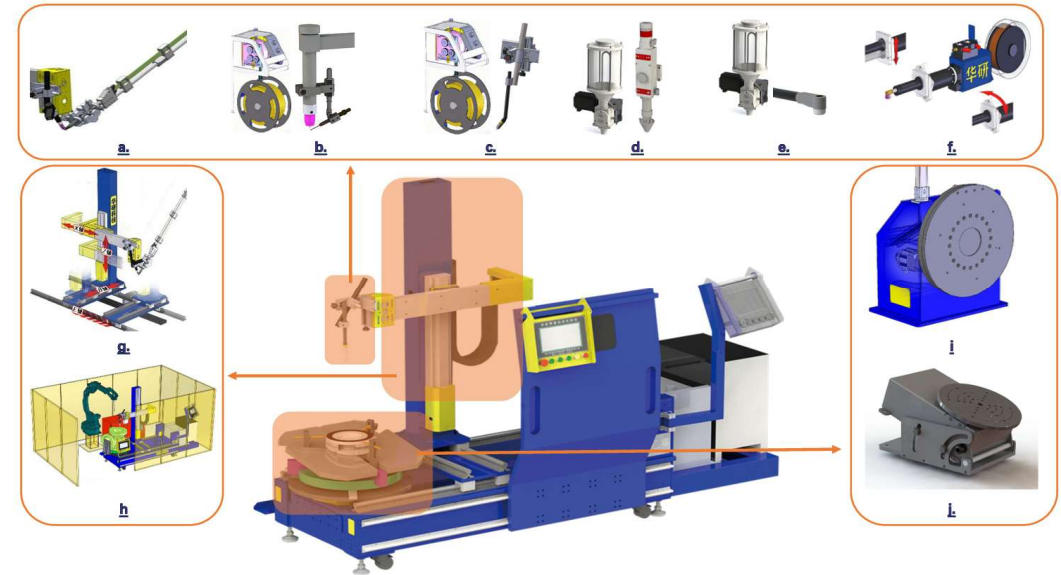


Auto parts

Products overview

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01. Multi-axis automatic welding machine CNC



BWG Series is our core products, it adopts a modular design concept, realizing the generalization of the machine body with a compact and exquisite overall structure. It has strong installation adaptability, facilitating site layout planning. BWG series has rich configuration options. It can adapt to the welding needs of different products by adding or reducing configurations, realizing various functions: the active axis direction, number of axis, size and load capacity of the positioner; the installation method (front-mounted/middle-mounted/rear-mounted), size and active axis of the manipulator; welding torch type, wire feeding mechanism, welding power source and chuck tooling. In addition, the core program can be customized and optimized, and multi-axis robots could be used

- | | |
|---------------------------|----------------------------|
| a. Rod feeder, TIG Torch, | g. Linear rail Manipulator |
| b. Wire feeder, TIG Torch | h. Robotics |
| c. Wire feeder, MIG Torch | i. Single axis positioner |
| d. Powder feeder, Laser | j. Multi axis positioner |
| e. Powder feeder, Plasma | k. And more. |
| f. Oscillator | |

01. Multi-axis automatic welding machine CNC



BWG-300A1 TIG WELD WITH 2 AXIS
POSITIONER



BWG-300A2 TIG WELD WITH 1 AXIS
POSITIONER



BWG-300B1 MAG WELD WITH 2 AXIS
POSITIONER



BWG-300B3 MAG WELD WITH 1 AXIS
POSITIONER



BWG-300C1 MIG WELD WITH 2AXIS
POSITIONER & ROTATOR



BWG-300C3 oscillator MAG weld with 2AXIS
POSITIONER & ROTATOR

01. Multi-axis automatic welding machine CNC

Model	BWG-A1	BWG-A2	BWG-B1	BWG-B2	BWG-B3	BWG-C1	BWG-C2	BWG-C3
Clamper out-dia.	Φ10-Φ400 as standard, customized available							
Workpieces thickness	Start from 0.2mm.							
Welder brand	Huayuan/Panasonic/aotai							
Radius of rotation	400mm as standard, customized available							
Positioner center	Through hole diameter 170mm							
Welding torch adjustable	X-axis: effective stroke 100- 400mm Z-axis: effective stroke 400-1000 mm							
Welding Column (Manipulator)	Torch rack Central mount E:1200mm×B:600mm(manual)					Torch rack Side mount M axis: 1000mm		
Suitable for workpiece	Gate, valve seat ring, regulating valve disc, stop valve bonnet, pipe body, etc.		Gate valve body, stop valve body, check valve body, air valve body, valve plate, valve guard, etc. Wear-resistant hard surfacing			Structural welding of various pipe fittings, pipe flanges, pressure vessels, saddle-mouth, square workpieces, special-shaped workpiece welds, etc.		
Suitable for welding materials	Stellite, argon arc welding wire		Stellite, SS507, 507 molybdenum, 304, 310, 625, carbon steel, aluminum alloy, aluminum bronze, etc.					
Weld torch displacement	3D micro adjustment stroke XYZ: 100mm+100mm+50mm							
Machine size	Length 2700 x width 2000 x height 2050 (mm)							
Machine weight	800KG					1000KG		
	Optional							
Control system	Touch screen HMI and motion controller		Monoblock Mirco controller					
Welding type	TIG/GTAW	MIG/MAG/GMAW	Plasma/PAW	Laser/LBW				
	submerged arc welding /SAW							
Positioner type	Vertical	Horizontal	Head & tailstock	Pipe positioner(rotator)				
Positioner axis	1axis horizontal	1axis vertical	2axis	Multi-axis				
Consumables load	Bar feeder	Wire in roller feeder	Powder feeder					
Manipulator	Fixed column	Moveable column	6axis robot					
Additional function	Welding oscillator	wire preheat TIG	Arc length tracker	Seam laser tracker	Point laser tracker	Welding pool camera		Safety guards

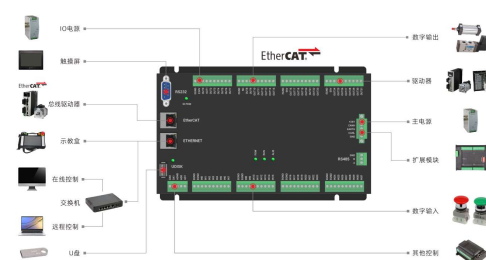


01. Multi-axis automatic welding machine CNC

Control system and operation software



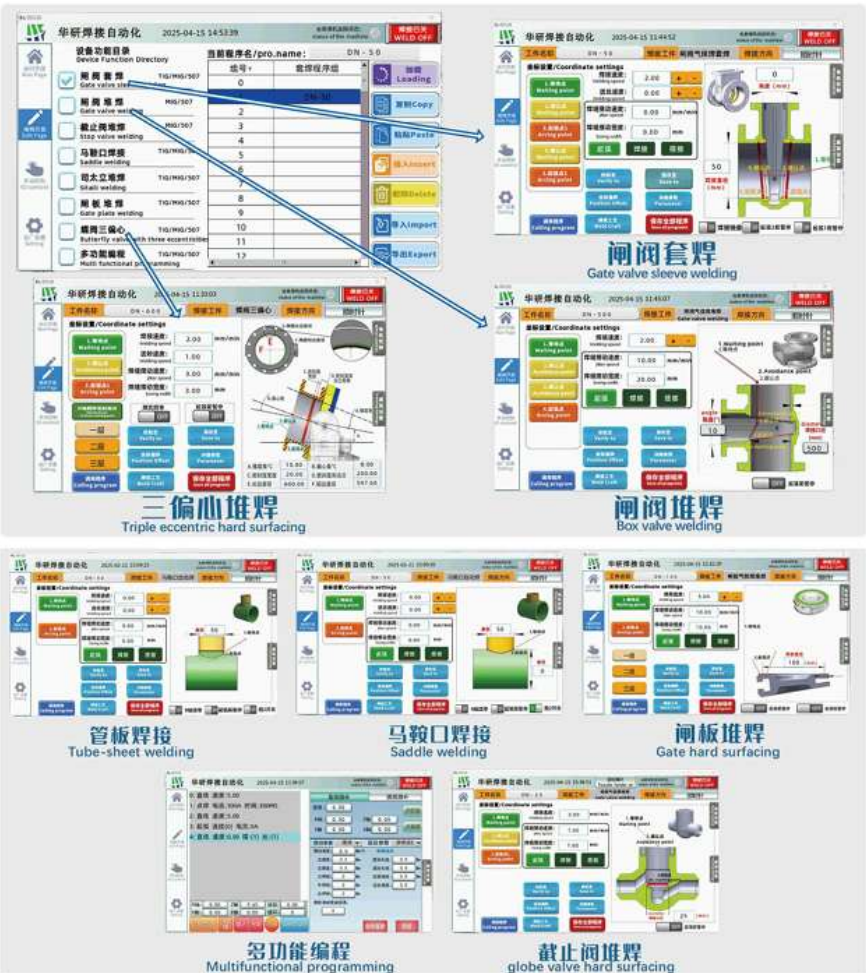
High performance 10-inch TFT LCD HMI with IoT capability, enabling seamless data forwarding and pushing from devices; and driving the advancement of Industry 4.0.
CE, RoHS, UL, FCC certified
Life time 50000hours



XPLC multi-axis motion controller. support up to 12-axis motion control. High-precision synchronous clock with jitter less than 1μs.
Supports EtherCAT interface, RS232 serial port, RS485 serial port, and Ethernet interface.



Own software team, deep customize operation system available.
free programing welding automated system. only required simple parameter to create an automatic welding new project. built-in data package of welding process, help you complete welding work with high quality and high efficiency without superb welding skills.



01. Multi-axis automatic welding machine CNC



01. Multi-axis automatic welding machine CNC



02. Universal positioner



BW Series designed as economic universal positioner, for realizing the automation of small and medium-sized circular workpiece processing. Through structural optimization and technological innovation, it balances operational requirements and cost control.

1. single active axis drive by step motor, 0.01-15 Rpm. 2. all-steel structure, offers excellent durability and high strength to bear workpiece loads and operate stably.

Cost control does not compromise core performance. The dedicated microcomputer CNC welding controller still boasts powerful functions. When processing simple workpieces, some models can match the automation level of the high-end BWG series CNC automatic welding machines. The controller is equipped with standard overcurrent and overvoltage protection. It also supports storing 20 sets of welding data, eliminating the need for repeated parameter setting when changing workpieces and greatly improving production efficiency.



BW-A50/100/300



BW-B50/100/300



BW-C50/100/300



BW-D50/100/300

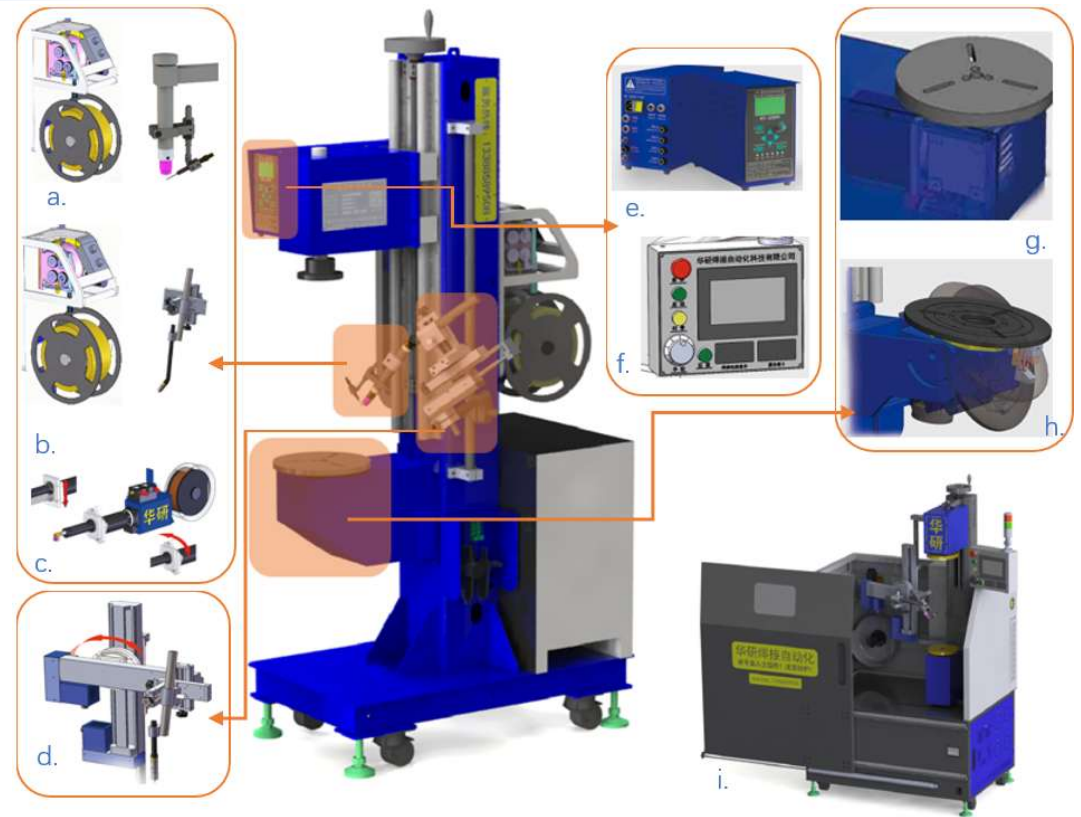
02.Universal positioner

<i>model</i>	<i>BW-A50</i>	<i>BW-A100</i>	<i>BW-A300</i>	<i>BW-B50</i>	<i>BW-B100</i>	<i>BW-B300</i>
loading capacity	50kgs	100kgs	300kgs	50kgs	100kgs	300kgs
table dia.	300mm	380mm	500mm	300mm	380mm	500mm
drive motor	#57step motor 1.2	#86step motor 12	#86step motor 12	#57step motor 1.2	#86step motor 12	#86step motor 12
Center hole dia.	65mm	100mm	170mm	65mm	100mm	170mm
table height	380mm	425mm	530mm	380mm	425mm	530mm
tilt angle	0-90°manual	0-90°manual	0-90°manual	0-90°manual	0-90°manual	0-90°manual
Rotary speed	0.01-10rpm	0.01-15rpm	0.01-15rpm	0.01-10rpm	0.01-15rpm	0.01-15rpm
others	1.automatic welding controller. 2.foot switch			1.automatic welding controller. 2.welding torch air cylinder drive		
<i>model</i>	<i>BW-C50</i>	<i>BW-C100</i>	<i>BW-C300</i>	<i>BW-D50</i>	<i>BW-D100</i>	<i>BW-D300</i>
loading capacity	50kgs	100kgs	300kgs	50kgs	100kgs	300kgs
Table dia.	300mm	380mm	500mm	300mm	380mm	500mm
drive motor	#86step motor 12	#86step motor 12	#86step motor 12	#86step motor 12	#86step motor 12	#86step motor 12
Center hole dia.	65mm	100mm	170mm	65mm	100mm	170mm
table height	380mm	425mm	530mm	205mm	230mm	410mm
tilt angle	0-90°manual	0-90°manual	0-90°manual	0-90°manual	0-90°manual	0-90°manual
Rotary speed	0.01-15rpm	0.01-15rpm	0.01-15rpm	0.01-15rpm	0.01-15rpm	0.01-15rpm
others	1.automatic welding controller. 2.welding torch air cylinder drive. 3.Torch Mirco adjustment 3D.			1. automatic welding controller. 2.Torch air welding solution. 3. 3DTorch Mirco adjustment. 4.air cylinder drive tailstock. 5.horizontal Torch rack.		

03.Girth/circumferential welding machine vertical headstock



LS series vertical circumferential welding machine is a high-efficiency automatic welding equipment specifically designed for welding circular workpieces. It can be used in the manufacture of pipes, discs, and flanges, such as hydraulic cylinders, automotive steering frames, drive shafts, and storage tanks.



- a Wire feeder, TIG torch
- b Wire feeder, MIG torch
- c Oscillator
- d Linear rail Manipulator
- e Monoblock microcontroller

- f Motion controller & touch screen
- g Single axis positioner
- h Multi axis positioner
- i Safety guards type
- j And more.

03.Girth/circumferential welding machine vertical headstock

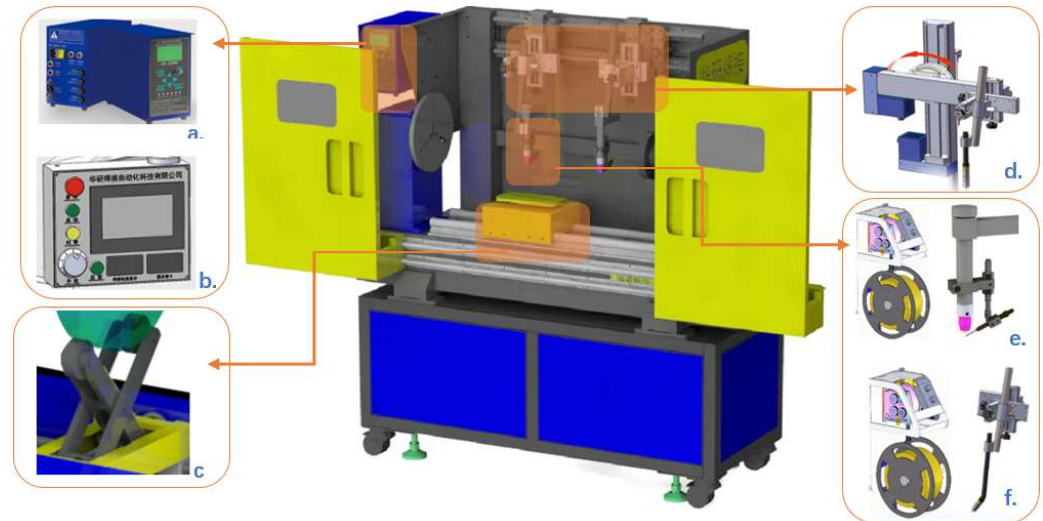


Model	LS Series			
Clamper out-dia.	Φ10-Φ400 as standard, customized available			
Workpieces thickness	Normally start from 0.5mm, with optional for thin wall bellows could be 0.2mm.			
Welder brand	Huayuan/Panasonic/Aotai			
Radius of rotation	Max. 190mm /260mm /300mm			
Workpiece length	No more than 800mm			
Welding torch adjustable	X-axis: effective stroke 100- 400mm Z-axis: effective stroke 400-1000 mm			
	Optional			
Control system	HMI and motion controller	Monoblock Mirco controller		
Welding type	TIG/GTAW	MIG/MAG/GMAW	Plasma/PAW	Laser/LBW
Positioner type	Vertical headstock	Head & tailstock		
Workbench type	1axis horizontal	2axis	Multi-axis	Fixed workbench
Consumables load	Wire in roller feeder	Powder feeder		
Manipulator	Fixed column	Moveable column	6axis robot	
Additional function	Welding oscillator	wire preheat TIG	Arc length tracker	Seam laser tracker
	Point laser tracker	Welding pool camera	Safety guards	

04.Girth/circumferential welding machine horizontal headstock



WS series horizontal circumferential welding machine is a high-efficiency automatic welding equipment specifically designed for welding circular workpieces. It can be used in the manufacture of long size workpieces pipes, discs, and flanges, such as hydraulic cylinders, automotive steering frames, drive shafts, and storage tanks.



- a. Monoblock microcontroller
- b. Motion controller & touch screen
- c. Rotator

- e. Wire feeder, TIG torch
- f. Wire feeder, MIG torch
- g. and more.

04.Girth/circumferential welding machine horizontal headstock



Model	WS series			
Clamper out-dia.	10-520mm as standard, customize available.			
Workpieces thickness	Normally start from 0.5mm, with optional for thin wall bellows could be 0.2mm.			
Welder brand	Huayuan/Panasonic/aotai			
Radius of rotation	Max. 260mm			
Weld torch adjustable	X-axis: effective stroke 100- 400mm Z-axis: effective stroke 400-1000 mm			
	Optional			
Control system	Touch screen HMI and motion controller	Monoblock Mirco controller		
Welding type	TIG/GTAW	MIG/MAG/GMAW	Plasma/PAW	Laser/LBW
Positioner type	Horizontal headstock	Head & tailstock		
Workbench type	1axis horizontal	2axis	Multi-axis	Fixed workbench
Consumables load	Wire in roller feeder	Powder feeder		
Manipulator	Fixed column	Moveable column	6axis robot	
Additional function	Welding oscillator	wire preheat TIG	Arc length tracker	Seam laser tracker
	Point laser tracker	Welding pool camera	Safety guards	

05. Customize equipment



CZ-LASER Fiber laser high speed cladding system

Laser cladding is an advanced surface strengthening and repair technology. Its core principle involves using metal wire or metal powder as the coating material, with a high-energy-density focused laser beam as the heat source to simultaneously melt the coating material and a thin surface layer of the workpiece, forming a uniform and stable molten pool. After the molten pool solidifies rapidly, it forms a dense, pore-free, and metallurgically bonded high-performance coating.

II. Core Technical Advantages

Based on its unique processing principle, the laser cladding process boasts three core advantages:

1. **Superior Performance:** The coating features high density without defects such as oxidation or porosity, while possessing excellent corrosion resistance, wear resistance, and high-temperature resistance. It can significantly improve the surface hardness and service life of workpieces;
2. **Precise Control:** The laser beam offers high focusing accuracy and a small heat-affected zone, avoiding damage to the internal structure and mechanical properties of the workpiece substrate. It is suitable for the processing and repair of precision components;
3. **Wide Applicability:** Metal wire or powder materials (such as stainless steel, cobalt-based alloys, nickel-based alloys, etc.) can be flexibly selected according to different working condition requirements, adapting to the surface strengthening needs of workpieces made of various materials.





III. Multi-Field Application Scenarios

With its core advantages of corrosion resistance and wear resistance, laser cladding technology has been widely applied in various key fields including agriculture, forestry, mining, offshore operations, and power plants. It has become a core technical means to extend the service life of mechanical components and reduce operation and maintenance costs. application scenarios are as follows:

1. General Machinery Field

Surface strengthening of mechanical force-bearing structural components; key shaft components such as rolls and hydraulic supports, enhancing their fatigue resistance and wear resistance.

2. Coal Machinery Field

Cutting picks (core components for excavation and coal mining, subject to severe friction and impact);

Scraper conveyor troughs (easily worn parts during coal transportation);

Transmission components such as gears and shafts;

Hydraulic support column cylinders and piston rods (requiring both corrosion resistance and wear resistance under high-pressure working conditions).

3. Oil Drilling and Production Field

Journals, discs, sleeves, and bearings of rotors (operating at high speeds under heavy loads, requiring wear and corrosion resistance);

Oil drill collars (working deep underground in drilling operations, exposed to corrosion and friction from complex media).

4. Construction Machinery Field

Buckets and bucket teeth (directly contacting rock and soil during excavation, suffering severe wear);

Transmission shafts and hydraulic shafts (core power transmission components, requiring high strength and wear resistance).

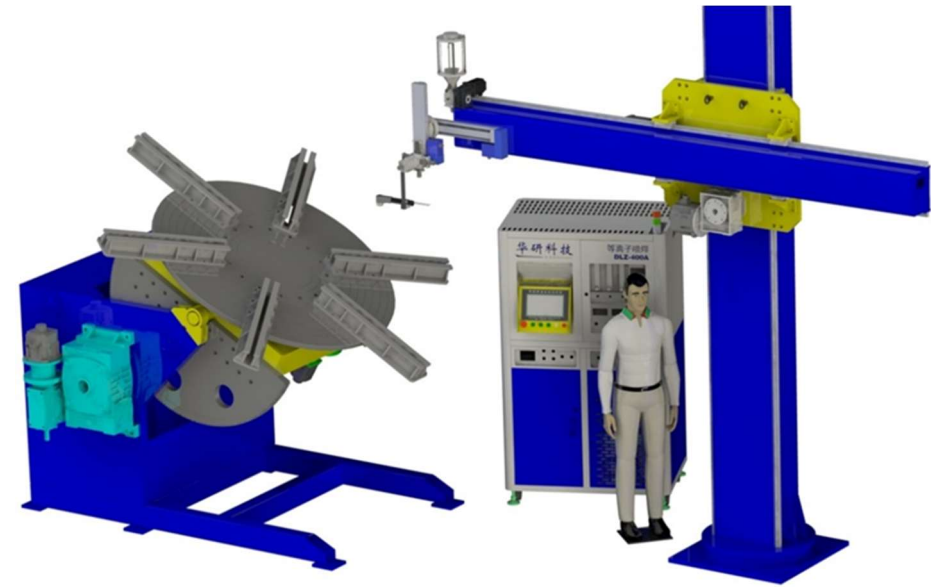
5. Agricultural and Printing Machinery Fields

Agricultural machinery cutters (frequently cutting during tillage and harvesting operations, requiring sharpness and wear resistance);

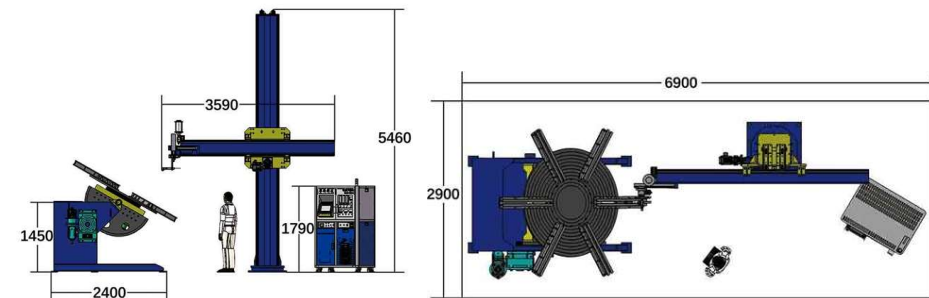
6. Roller components of printing machinery (in long-term contact with ink and paper, requiring corrosion resistance and wear resistance to ensure printing precision).

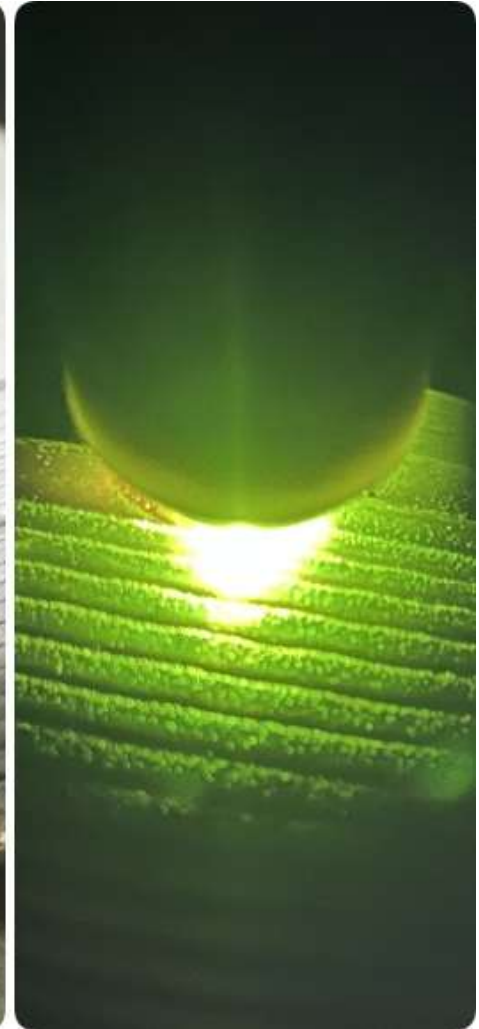
05. Customize equipment

CZ-PAW Plasma cladding system



CZ-PAW Plasma cladding system with positioner & manipulator is a customized proposal for large size triple-eccentric valve which required hard seal for high temperature & pressure performance. Fully automatic system, including plasma cladding torch, powder dosing, multi axis manipulator, and heavy-duty servo drive 2axis positioner. Which great support end user during fabrication of heavy and large workpiece rotary diameter 6m, weight 5T. we can make more than this machine if required.



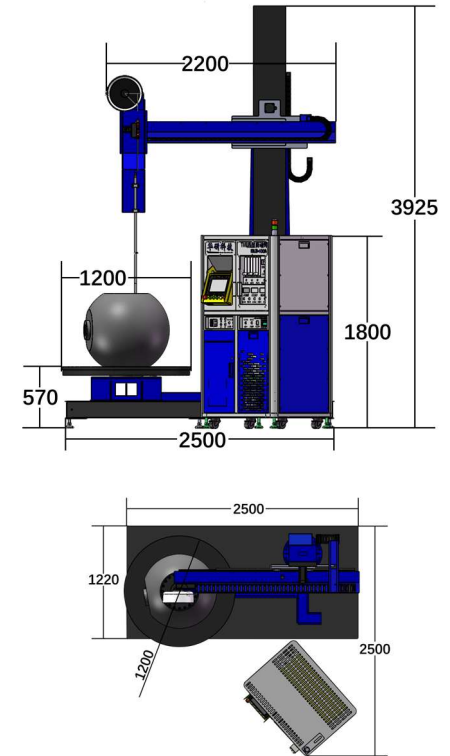


05. Customize equipment

CZ-HTIG hot wire TIG cladding system



Hot wire tungsten inert gas (TIG) welding is a classical workpiece overlayer technology. This method preheats the wire, enabling it to melt and easily flow into the weld pool, thereby enhancing deposition rate and weld penetration. Hot wire TIG welding is widely applied in valves, pipe fittings, and internal/external surface coating of pipelines, meeting the requirements of wear resistance, corrosion resistance, lubrication, high-temperature resistance, and other high-performance needs



Compared with laser cladding and plasma cladding, hot wire cladding boasts significant cost advantages, with lower equipment and consumable costs. Its impact on workpiece deformation falls between the two, enabling controllable precision. Featuring strong applicability, it is compatible with small, medium and large workpieces. As a technical extension of traditional tungsten inert gas (TIG) welding, it has lower requirements for operators and is easy to get started with and implement.

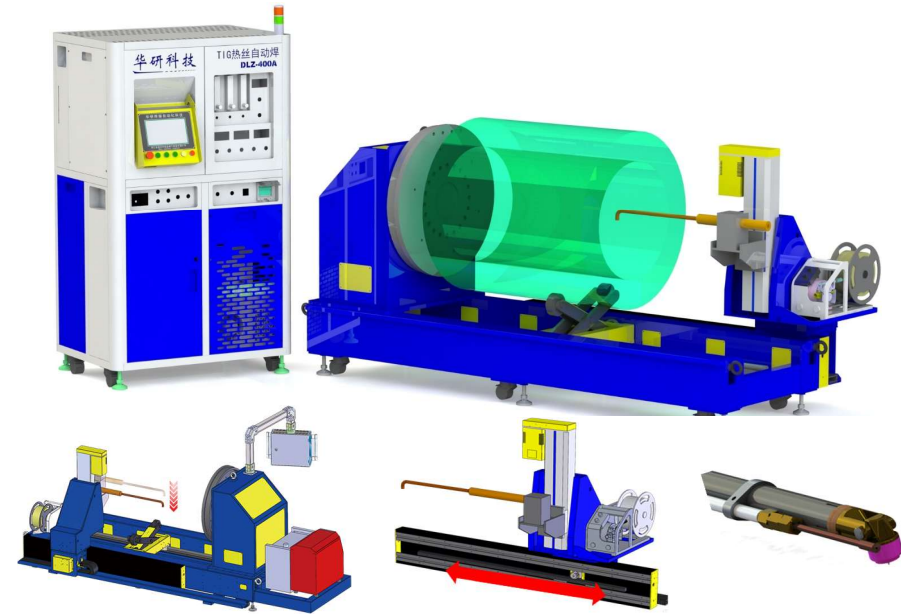


05. Customize equipment

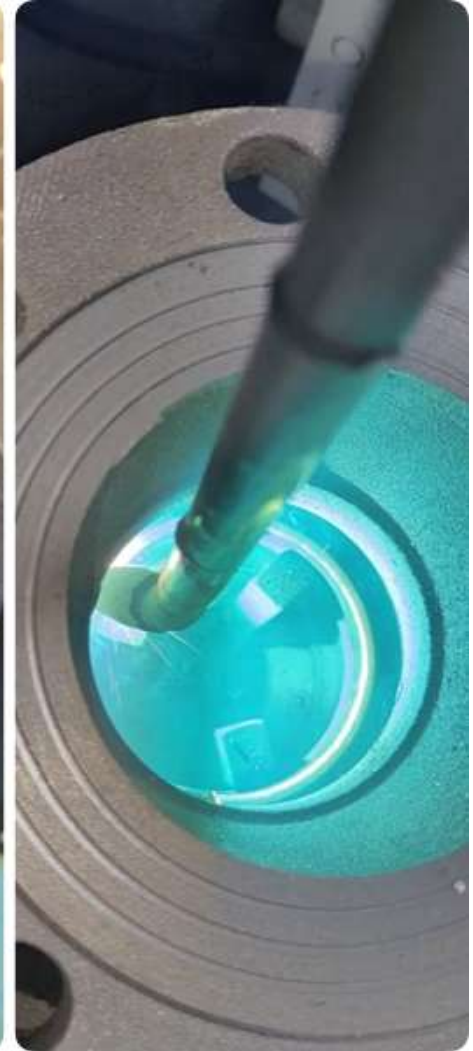
CZ-IN pipe inner cladding & socket welding system

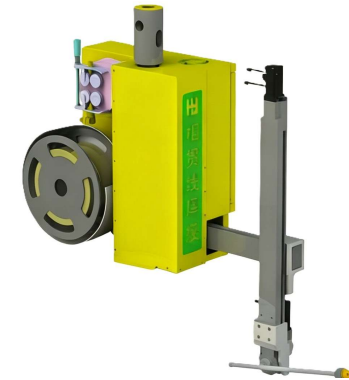


This equipment integrates spiral oscillating surfacing and pitch-adjustable oscillating surfacing, especially for straight pipe inner wall surfacing (supporting pipe reversing welding). Specifications: Inner diameter after surfacing: $\phi 46 \sim \phi 800\text{mm}$; Max. weldable pipe length: 2400mm. Process matching: TIG filler wire welding with solid wire for small-diameter pipes; CO_2/MAG welding with solid or flux-cored wire for pipes with inner diameter $> 150\text{mm}$.



1. Servo motor with precision reducer drive minimizes transmission backlash, enhancing accuracy and stability.
2. Intelligent trajectory generation: Input pipe diameter and welding speed, the built-in algorithm drives coordinated movement of rotation and torch travel mechanisms to generate precise spiral trajectory; lap amount (pitch) adjustable $5 \sim 8\text{mm}$ for different surfacing thicknesses.
3. Arc stop memory function accurately records the arc position, enabling resumption from the stop point to avoid joint defects and improve efficiency and integrity.

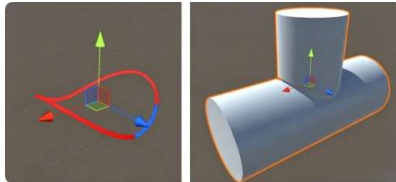




The saddle weld (saddle mouth weld seam) is formed by the curved intersection of the main pipe cylinder and the branch pipe, creating a saddle-like shape. Traditional manual welding is extremely difficult and results in unstable quality.

The **CZ-MA** was specially developed for this type of saddle joint fabrication. It is a compact CNC multi-axis automatic welding machine, also known as an intersecting line welding special machine.

The improved version can adapt to various welding processes, such as submerged arc welding (SAW), gas shielded welding (MIG/MAG), argon arc welding (TIG), and others.



CZ-MA Saddle Welding System – Key features:

Superior Adaptation to Complex 3D Saddle Welds

The CZ-MA features multi-axis servo linkage control, enabling synchronized motion of rotation, radial extension/retraction, vertical lift, and torch oscillation. It dynamically adjusts the welding torch angle throughout the process to counteract molten pool sagging on uphill and downhill sections, effectively eliminating common defects such as lack of sidewall fusion, weld bead overlap, and undercut.

Exceptional Welding Quality and Consistency

Travel speed, welding current, voltage, and wire feed speed are all maintained under closed-loop precise control, completely independent of operator skill. This results in highly uniform weld width and penetration across batches. First-time non-destructive testing (NDT) pass rates approach 100%, with defect rates reduced by over 80% compared to manual welding.

Simple and Intelligent Programming

Operators only need to input key parameters — main pipe outer diameter, branch pipe diameter, intersection angle, cylinder curvature, and material thickness. The system then automatically calculates the saddle-shaped welding trajectory and generates the machining program. It also includes breakpoint memory, fault recovery, and automatic repositioning functions for maximum reliability.

Automatic Multi-Layer Multi-Pass Welding

The system supports both single-layer and multi-layer multi-pass filling and capping, with intelligent allocation of bead overlap. Thick-walled pressure vessels and heavy boiler nozzles can be welded in a single operation without manual layering or scribing, significantly improving efficiency.

Wide Material and Application Compatibility Compatible Materials:

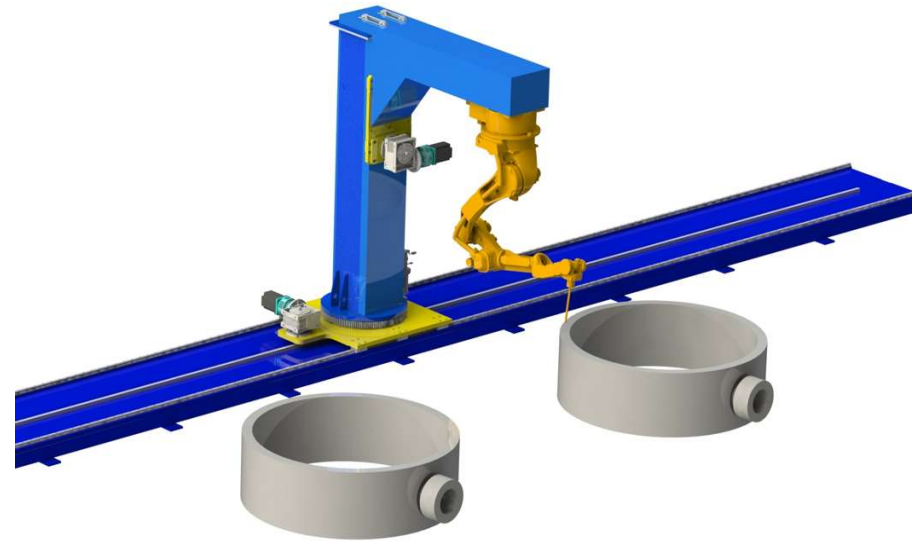
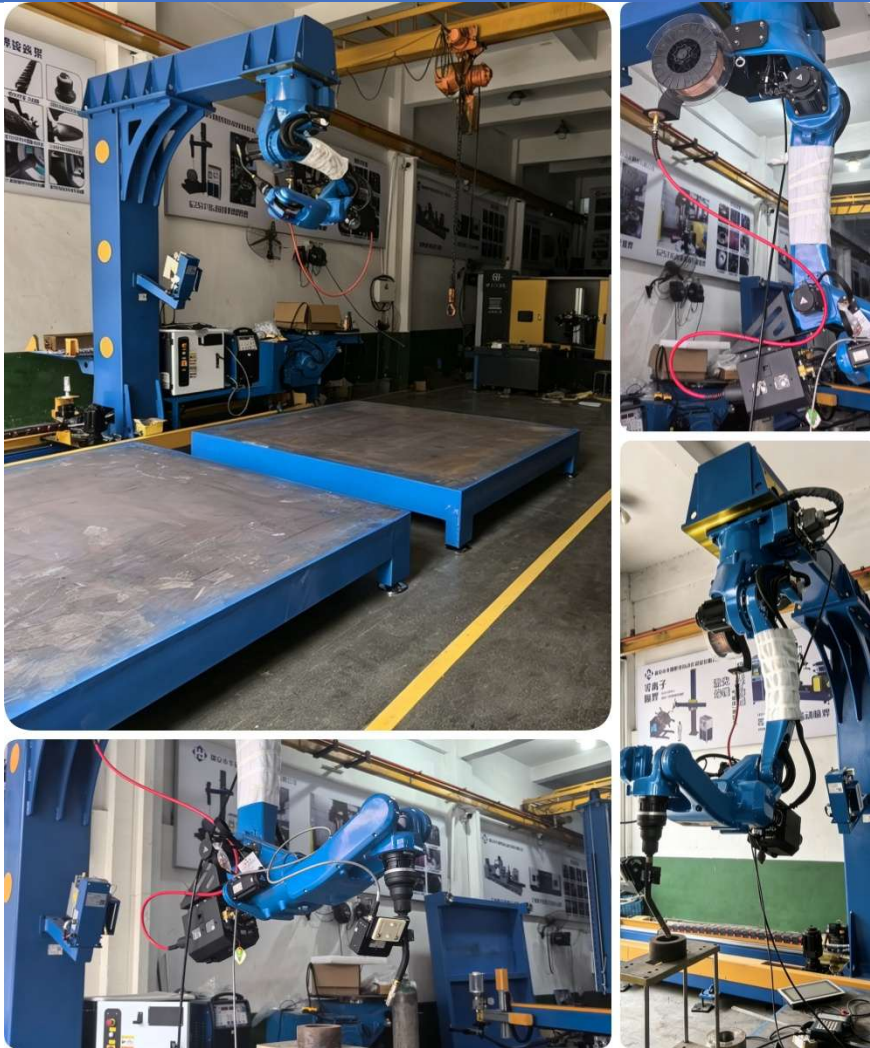
Carbon steel, low-alloy steel, stainless steel, aluminum alloy, heat-resistant steel.

Compatible Conditions: 90° orthogonal intersections, 30°–75° oblique intersections, flanged nozzles, head pipe seats, and eccentric saddle welds.

Broad Range of Applications Widely used in various pipelines and pressure vessels, including heat exchanger shells, storage tanks, reactors, manholes for high/low-pressure vessels, steel pipe tees, pipeline branch connections, boiler pipe seats, tube-sheet joints, photovoltaic brackets, wind power towers, and more.

05. Customize equipment

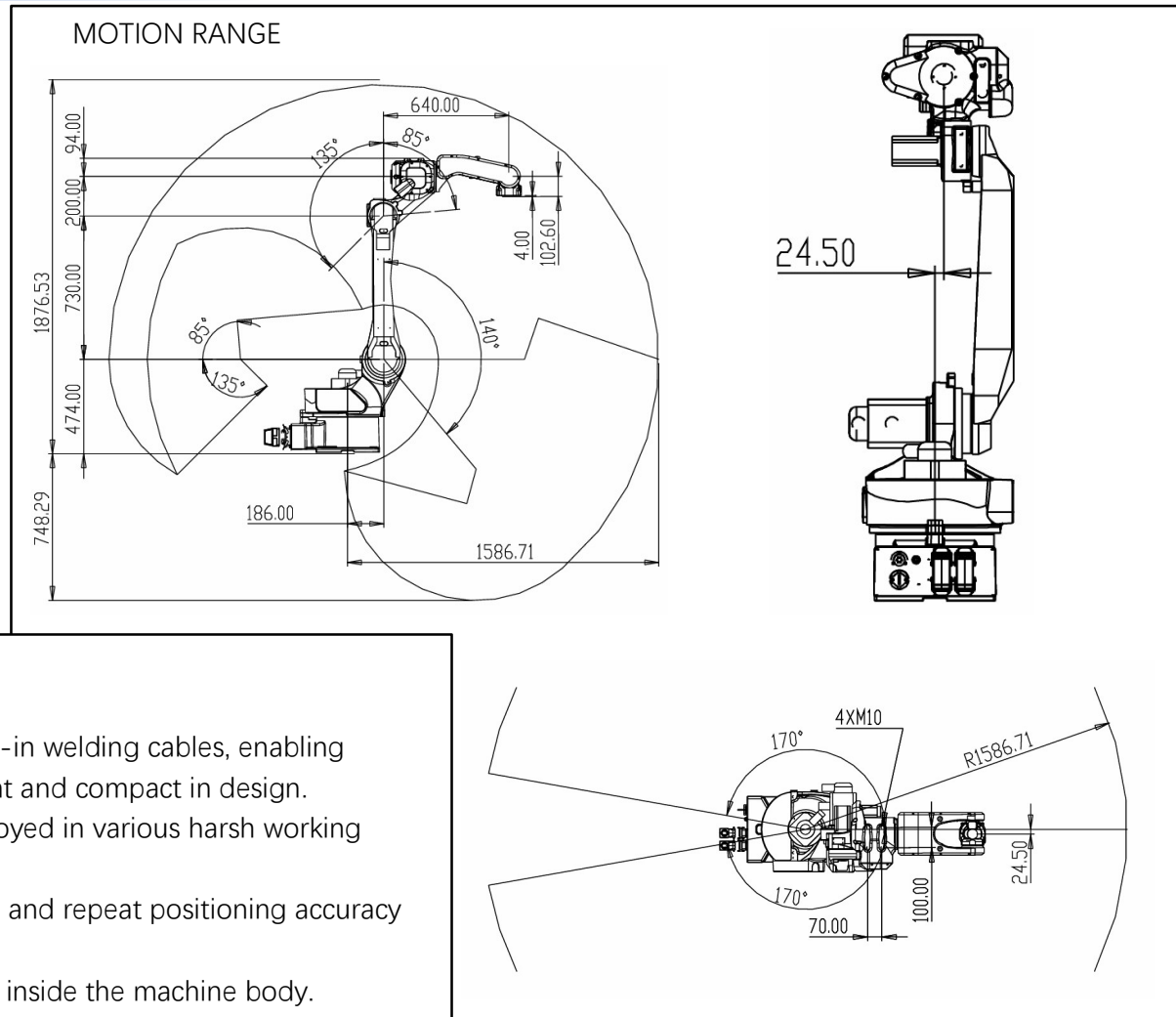
CZ-MX Robot welding workstation



CZ-MX is gantry 6-axis robotic welding station, it is composed of dual worktables, electric rails, gantry frame and 6-axis robots for heavy large workpieces.

Equipped with multiple seam tracking systems, it requires no precise positioning or custom fixtures. Simply place workpieces on tables, and the robot adjusts posture to reach weld seams, cutting positioning labor time.

Automatic seam tracking offsets cutting tolerance, placement offset and welding deformation, adaptively correcting paths for consistent weld formation.



Features:

Adopts hollow-structured arm and wrist with built-in welding cables, enabling welding operations in confined spaces. Lightweight and compact in design. Fitted with full body covers, it can be reliably deployed in various harsh working environments.

Boasts ample working range, fast operating speed and repeat positioning accuracy up to ± 0.05 mm, ideal for welding applications.

High-flexibility robot-dedicated cables are routed inside the machine body.

model	CH1600-6			Vibration Acceleration		4.9m/s ²
axes	6Axis			noise level		<80dB (A)
max. reach	1587mm			protection class		IP54
repeatability	±0.05mm			robot weight		190kg
wrist rated payload	10	Kg		mounting		floor mounted
Category	J1Axis	J2Axis	J3Axis	J4Axis	J5Axis	J6Axis
Motion Speed	148% _s	148% _s	247s	385% _s	444% _s	790% _s
Motion Range	±170°	-90°~+140°	-135°~+85°	±180°	±105°	±210°
Allowable Wrist Torque	/	/	/	20N.m	20N.m	10.47N.m
Max Allowable Wrist Inertia	/	/	/	0.28kg.m ²	0.28kg.m ²	0.096kg.m ²



CXR M5 Robot Control system & Teach Pendant

- **Easy Programming:** Dialogue-based operation, no professional robot coding required.
- **Full IO Functions:** PLC-free operation; no speed drop during signal input, and output signals are available during robot motion.
- **Safe & Stable Operation:** Built-in anti-collision zone protection; automatically crosses singular points without extra programming.
- **Professional Welding Process Package:** Integrates arc welding functions including swing welding, spot welding, cooperative welding, seam tracking and multi-layer welding. The laser welding module features adjustable time, speed and power, with standard interfaces compatible with mainstream laser sources.
- **Laser Seam Tracking:** Comes with calibration, positioning and real-time tracking functions. It compensates welding trajectories via vision sensing to improve processing quality and yield.

05. Customize equipment

CZ-VESL straight & circular seam welding gantry workstation



The CZ-VESL is developed for pressure vessel manufacturing. Integrating a side beam gantry and cross manipulator. single machine is capable of automated longitudinal and circumferential seam welding for shells. One-Sided Welding Double-Sided Forming. Standard machine configurations consist of: side beam welding manipulator, back gas shield manipulator, adjustable turning roller bed, AVC, oscillator, welding torch, wire feeder bracket, welding visual monitoring system, torch cooling system, PLC and touch screen HMI.

06. Robotic automatic welding Collaboration system



Per operational requirements, special valves require hard surfacing at hard-seal areas and mechanical joints. Differences in mechanical properties (e.g., toughness, plasticity) between the valve body and cladding materials can easily cause cladding layer cracks if the process is improper. Thus, valve body preheating is mandatory before weld-depositing.

However, the preheated valve body has extremely high surface temperature. Traditional manual operations pose risks of scalds and other accidents; moreover, heat loss during manual transfer causes rapid temperature drop, failing to meet the process temperature requirement for subsequent inner hole weld-depositing and directly affecting welding quality and product qualification rate.



Leveraging our technical accumulation in independent software development and professional experience in welding automation, we customized a "multi-functional integrated manufacturing system with robot-automatic welding equipment linkage" to address these pain points. The system enables full-process automatic and unmanned operation of high-temperature valve body transfer, positioning and welding, accurately resolving technical challenges in special material valve manufacturing. With "**precision linkage, stability and high efficiency**" as the core design concept, the system comprises four key modules: industrial robot system, automatic welding machine system, high-frequency electromagnetic heating equipment, and central control system. All modules collaborate to complete the entire valve manufacturing process.

07. economic micro controller

HE/HL/HP series microcontrollers integrate drive, control and display functions, developed based on a differentiated stepper motor drive system. Compact and high-performance, they offer efficient, reliable solutions for various industrial stepper motor control needs.

1.Core Adaptability & Driving Performance

Compatible with 42/57/86-type stepper motors (no extra adapters, cost-saving); 0.5-10A adjustable current (matches motors/loads, balances power/energy saving); strong anti-interference for stable operation in complex industrial environments.

2.Comprehensive Safety Protection

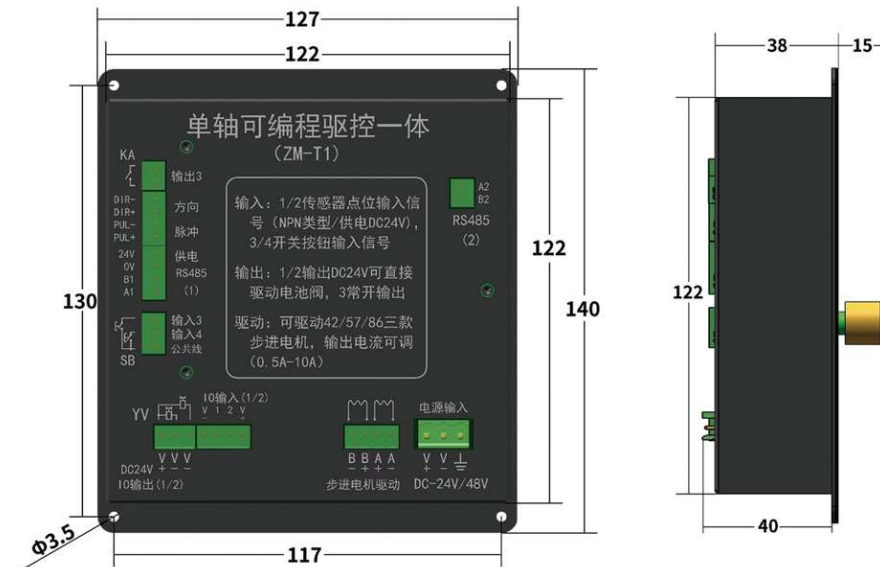
Built-in overcurrent, overvoltage and reverse connection protection; prevents component damage, extends service life and enhances operational safety.

3.Rich Interfaces & Expansion Capabilities

Rich interfaces: limit sensor support (precise positioning); 4-channel optocoupler inputs (anti-interference); PUL/DIR pulse output (speed/direction control); 1-channel relay (peripheral linkage); 2 RS485 interfaces (docks with PLC for multi-device collaboration/data interaction).

4.Core Hardware & System Advantages

32-bit high-performance core chip (fast operation, strong processing); stable system, rapid command response; high-quality hardware ensures long life, low failure rate, low maintenance cost, suitable for long-term industrial operation.



07. economic micro controller



HE-1 Positioner controller



HE-2 Girth welding controller I



HE-3 Girth welding controller II



HL-5 oscillator controller



HL-6 wire feeder controller



HP-7 TIG welding height tracker

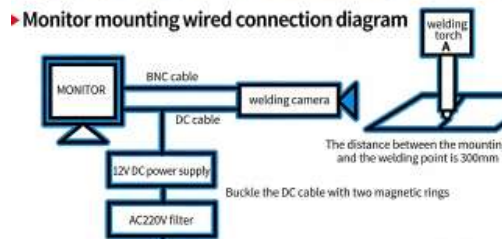


HP-8 MIG welding height tracker



HP-9 welding seam laser tracker

08.molten pool monitoring system



Why Use a Molten Pool Camera?

Welding operations often face quality and efficiency challenges, making molten pool cameras essential.

Overcome harsh environment limitations: Replace difficult manual observation under high temperature/strong glare with clear visual feedback, eliminating blind operations.

Adapt to special scenarios: Enable real-time monitoring for internal pipeline welding and large workpieces (where traditional methods fail) to ensure quality.

Simplify quality traceability: Recording/playback functions provide complete data support for tracing issues caused by complex parameters.

Ensure welding accuracy: Real-time positioning assistance controls torch-weld deviation from thermal deformation.

In summary, it enhances automated welding efficiency, reduces costs, and guarantees consistent quality.

System Overview

The **LF series arc and Molten Pool Monitoring System** adopts high-dynamic spectral camera imaging technology, enabling full-process online monitoring of arcs, molten pools, and weld beads. It captures arc status, molten pool morphology, and torch-weld relative position in real time, with clear visualizations via a decoding display system.

Key Functions

Full-Process Visualization: Clear display of arcs, molten pools, and weld beads (pre-/post-arc striking) for calibration, parameter adjustment, and quality inspection.

Special Scene Adaptation: Real-time monitoring for internal pipeline and large workpiece welding, covering full operating conditions.

Process Recording & Traceability: Supports real-time display, recording, and playback for production supervision.

Broad Compatibility: Works with all open-arc welding processes (MIG/MAG, TIG, plasma, laser, electron beam, etc.).

Multi-Channel Monitoring: Up to 32 channels on one screen, suitable for large factory control rooms.

Long-Distance Transmission: 50m via coaxial cable; 20km via fiber optic box, adapting to diverse factory layouts.

Precision Positioning: Single-channel crosshair for torch-weld alignment, improving accuracy.

08.molten pool monitoring system

LF series molten pool cameras are specially developed for professional observation needs in the welding field. They can real-time and clearly present key states during the welding process (such as torch/wire position, arc status, weld pool melting shape, etc.) through a digital decoding or decoding algorithm system, and are compatible with various welding methods such as TIG, MIG, and PAW. The products are designed differently according to application scenarios (such as open environment, pipeline inner hole, narrow gap, plate splicing, etc.), cooling methods (water cooling/air cooling), temperature resistance performance, and installation and commissioning requirements.

Model	Application	Cooling Method	Temp.	Features	Out dimension	photo
C09G-YS	Submerged arc welding, argon arc welding	Water cooling (external interface, internal full channel)	$\leq 200^{\circ}\text{C}$	Full-color switchable	82*36*49mm	
L08G-YS	Pipeline inner hole welding (min $\phi 55\text{mm}$); special metal inner wall, oil drill pipe internal surfacing	Water cooling (external interface, full-body structure)	$\leq 300^{\circ}\text{C}$	Suitable for narrow inner hole	140*43*30mm	
L12G-YS/ L12H-YS	Open environment: circumferential/straight/vertical seam torch welding	Water cooling (standard interface)	$\leq 200^{\circ}\text{C}$	Compact, easy installation; plug and play	100*30*50mm	
01B-FT	High-intensity light welding	Air cooling	/	hanger height:80mm; observation range:20-35mm; object distance:100-250mm	45*65*80mm	

HUAYAN WELD TECH CO.,LTD

Since 2006

Headquarters

leo@huayanweldtech.com

+86 13353366340

WhatsApp: +8613958833619

shanghai branch

shanghai@huayanweldtech.com

+86 19906697380

WhatsApp: +86 19906697380

Wenzhou branch (for domestic only)

wz@huayanweldtech.com

+86 15888776244

www.huayanweldtech.com

TikTok: @Ed_Liam

YouTube: @AidenChou-p3g5x