

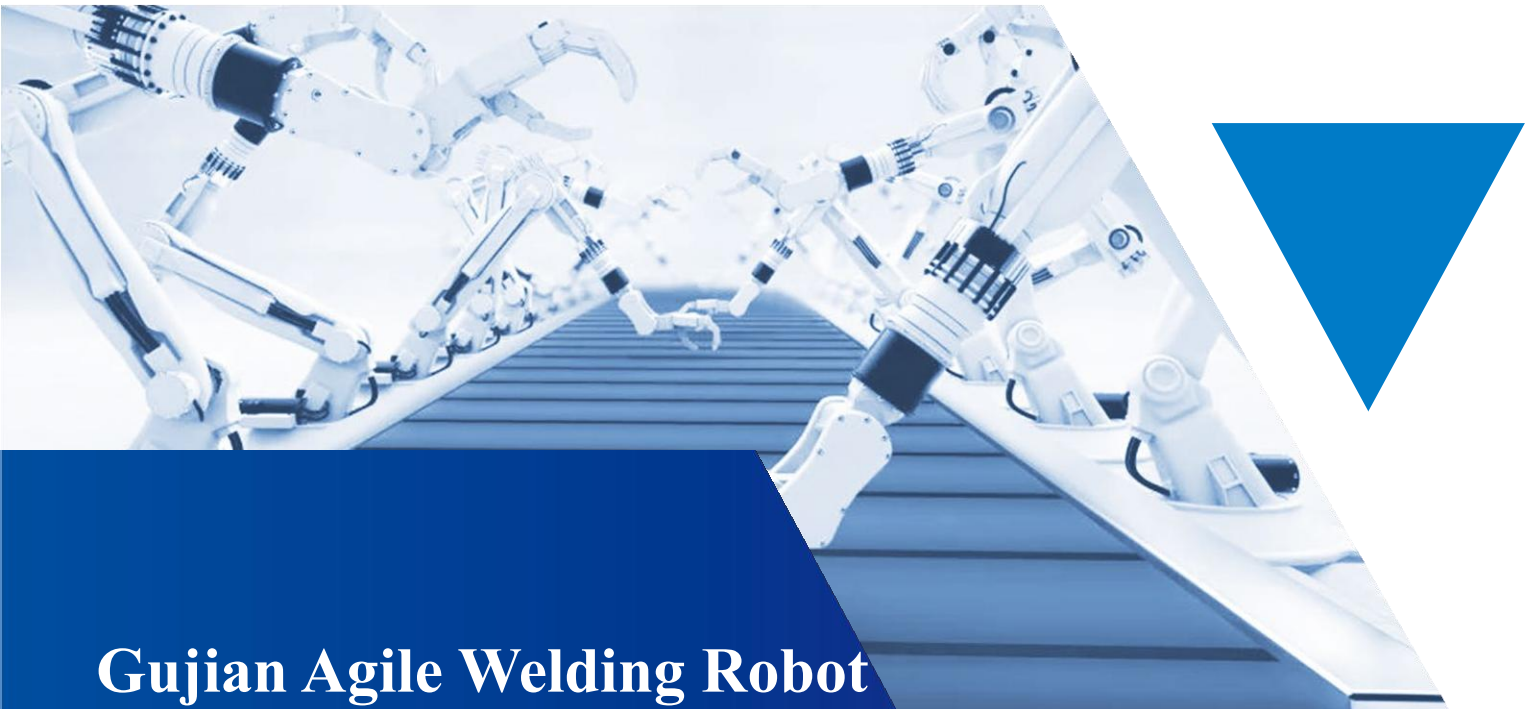


固建机器人
Smart Construction

Marketed by :
Chuan Leong Metalimpex



Welding Made Easy



Gujian Agile Welding Robot Product Presentation

First agile adaptive welding system platform

Robot Technology/ Machine Vision/ Industrial Networking/
Artificial Intelligence/ Automatic Welding Application Technology

Designed and serviced entirely for your requirements.

Contents

01 Company Introduction

03 Application Fields

04 Features

05 Analysis and Comparison

06 Technical Parameters and

Operating Interface

07 Configuration List

08 Products Catalogue

09 Installation

10 Application Cases

13 Strategic Partners



COMPANY Introduction

Originated from the robotics research team of the Hong Kong University of Science and Technology led by Professor Li Zexiang and Googol Technology (Shenzhen) Co., Ltd., Hangzhou Gujian Robotics Technology Co., Ltd. boasts a number of experts in the fields of robot and motion control technology, mechanical optimization, IoT big data technology, and welding process technology.

As a national high-tech enterprise and a science and technology SME in Zhejiang Province, the company consistently focuses on innovation, having applied for 4 invention patents, 33 utility models, and 5 software copyrights, setting 2 enterprise standards and the “Made in Zhejiang” group standard. The company has formed a synergistic innovation mechanism with research institutions like Zhejiang Paton Welding Technology Research Institute, Zhejiang Lab, the Advanced Institute of Information Technology at Peking University, Hangzhou Innovation Institute of Beijing University, and the School of Materials Science and Engineering at Shanghai Jiao Tong University. This mechanism continually enhances the integration of industry, academia, research, and application, serving the enhancement of new productivity in China’s engineering construction field. In collaboration with Zhejiang Paton Welding Technology Research Institute, the company co-founded the Joint Laboratory for Intelligent Welding Technology “Gudun Cloud”, linking top domestic and international materials and welding technologies, making it the first industry integration platform in Zhejiang Province for intelligent welding robots and engineering construction. The company hosted the 6th West Lake International Robot Forum, with a special session on Robotics and Intelligent Construction, initiating the establishment of the Construction Robot Industry Promotion Committee. This committee includes core members such as Zhejiang Construction Engineering, Hangzhou Gujian, Hangxiao Steel Structure, Jinggong Steel Structure, Huahui Group, Pinming Software, Xizi Intelligence, Zhejiang University Civil Engineering Research Institute, Zhejiang College of Construction, and Jiangnan Engineering among other enterprises and academic research institutions, marking the beginning of Zhejiang’s efforts to create a leading construction robot industry hub. The company is a governing member of the Intelligent Construction and New Building Industrialization Committee under the China Steel Construction Society, a member of the Construction Robot Committee of the Chinese Association of Automation, a member of the Construction Robot Committee of the China Association for Engineering Construction Standardization, and a director of the Zhejiang Robot Industry Development Association.

In partnership with Zhejiang Construction Engineering Group, the company developed a key R&D program approved by Zhejiang Science and Technology Department in 2019, “Research and

Application of Key Technology of Intelligent Automatic Production Line for H-Shaped Steel Based on BIM and Robotics”-Steel Structure Intelligent Production Line Project, with a total investment of about RMB 38 million, which entered pilot production in January 2021. This project, integrating cutting-edge technologies such as motion control, machine vision, AI, robotics, and industrial networking, attracted significant attention from the Zhejiang Provincial Department of Housing and Urban-Rural Development, and major construction and steel structure companies due to its advanced technology, high intelligence, efficiency, and precision. The “Steel Structure Digital Workshop Based on BIM and Robotics” was recognized by the Zhejiang Provincial Department of Economy and Information Technology as a digital workshop/intelligent factory. The project won the highest honor in the comprehensive innovation group, the “Intelligent Equipment and Robotics Special Award”, at the 3rd Co-Creation Cup National Intelligent Construction Technology Innovation Competition held by the Chinese Technological Entrepreneurship Association. The Department of Housing and Urban-Rural Development included it as a typical case in the innovative service of new technologies and products in intelligent construction.

With R&D in Shenzhen, manufacturing in Foshan, and engineering capabilities in Changsha, combined with Hangzhou’s market and talent resources, the company has a national and international sales and service network. Relying on its three product series, the company has established cooperative relationships with numerous enterprises and institutions. The company has established a nationwide sales and service network, expanding globally. Relying on its “Agile, Smart, and Wisdom” product series, the company has established partnerships with numerous entities, including China Construction Second Engineering Bureau, China Construction Science and Industry Corporation, China Construction Third Engineering Bureau, China Construction Eighth Engineering Division, China Construction Fourth Engineering Division, CRBBG, CCCC Second Harbor Engineering Company, Wuhan Shipbuilding Industry Corporation, Honglu Steel Construction, Hangxiao Steel Structure, Jinggong Steel Structure, Jiangnan Shipyard, Chengxi Shipyard, China Merchants Jinling Shipyard, Zhenhua Port Machinery, Weihua Group, China National Nuclear Corporation, and Classic Group.

As a provider of agile welding robot technology platform and comprehensive solutions, the company adheres to the mission of “make welding easier”, with values of “co-creation, shared responsibility, sharing and win-win”, and the philosophy of “ensuring the happiness of all partners and empowering intelligent welding”, striving to be a leader in the field of intelligent welding robots.

Strategic Partners



APPLICATION FIELDS



Agile welding robots are suitable for welding various non-standard parts of steel structures, and the welding of ribbed plates, and partition plates of large components such as beams and columns, especially advantaging in areas with concentrated welds,— large welding quantity, and irregular structures. They are widely used in steel structures (construction, shipbuilding, bridges, offshore engineering, equipment, etc.), automotive parts, steel furniture, kitchen appliances and gym equipment, power towers, new energy, medical devices, construction machinery, building templates, electric and high-speed vehicles, and other medium to thick plate welding fields.

Portable Agile Welding Robot

The portable agile welding robot is primarily for on-site construction, large immovable components, and welding in narrow, semi-enclosed spaces.

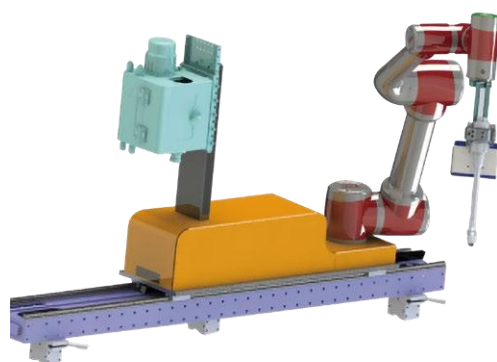
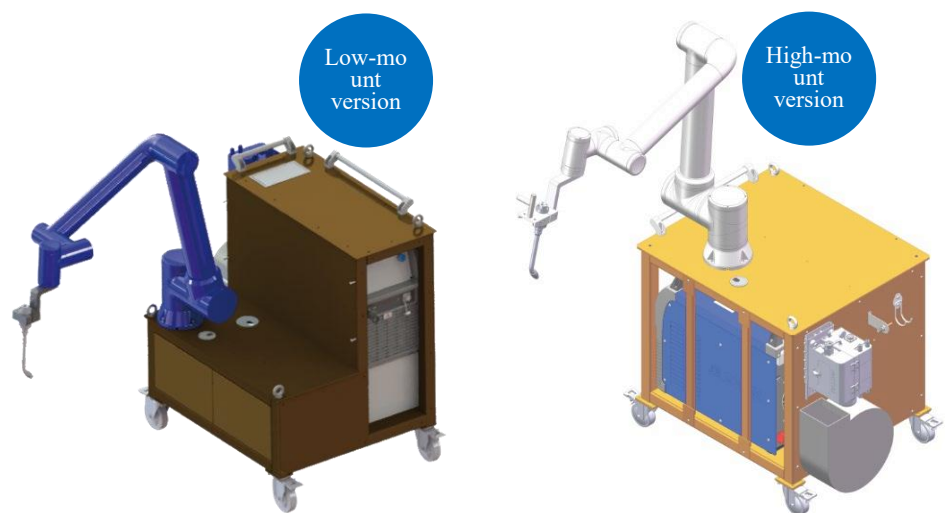
The portable arm can be moved flexibly, with a magnetic base supporting various installation types like floor, side, and suspended mounted.





Mobile Agile Welding Robot

The mobile agile welding robot is mainly suitable for large-scale operations with long single welds and work piece surfaces difficult to adhere to.



Light Rail Agile Welding Robot

The light rail agile welding robot configures a customizable track, pushed manually or servo-driven, suitable for wide-area welding, reducing the frequency of the robot moving.

FEATURES



Core Principle: Make Welding Easier

Three Key Features:

1. Lightweight Integrated Design: The Cobot weighs between 13-23 kg, with the Welding Power Source, wire feeder-cooling system, welding torch, industrial PC, and all hardware and software integrated onto a mobile cart. It is ready to operate with power and gas supply connected.

2. Guided No-Code Operation: The touch screen offers a fully Chinese-guided menu for operations. Operators can manually drag to set the weld seam position without code programming or visual calibration. The system comes with a comprehensive set of welding processes.

3. Digital Platform Management: The software algorithms are entirely self-developed, supporting cloud-based process delivery and cluster management. It is compatible with major welding machine brands (open protocol) through the software platform, suitable for various welding processes.

Eight Advantages:

1. Portable and Mobile:

No fixed space required, easily movable to any location in a factory or construction site. The entire unit can be hoisted or wheeled, and parts like the mechanical arm, controller, and wire feeder can be moved separately. Welding cables can extend up to 20-30 meters. All movable parts weigh no more than 25 kg and can be transported through a manhole with a diameter of at least 300mm. The portable mechanical arm has a switchable permanent magnet base for attachment to any steel plate, supporting front mounting, side mounting and inverted mounting.

2. Ease of Use Operation:

The system operates in a human-robot collaboration mode, maximizing human flexibility and robotic endurance. The operation of agile welding robot requires no professional skills or physical strength. New hands can operate it after brief training, becoming proficient in 3-5 days. Operators set the weld seam location by dragging the welding torch and select and save welding processes through the touchscreen, with one-button start and automatic welding.

3. Efficiency and Intelligence:

A single operator can manage 2-4 robots simultaneously, greatly improving labor efficiency and productivity with a high rate of return on investment. The process software system adapts to welding tasks and can push welding parameters based on set positions and fillet sizes. Capable of flat, vertical, overhead, and horizontal welding; tack, continuous, and intermittent welding; using solid or flux-cored wire, CO₂, or mixed shielding gas. It supports various torch oscillation processes and multi-layer and multi-pass automatic welding under agreed conditions, especially efficient in dense welding areas.

4. Flexible Configuration:

The mechanical arm can be fixed using magnetic base or equipped with light rails, ground rails, cantilevers, or gantries to accommodate different sizes of welding components. Optional equipment includes vision and force sensors, supporting maximum four external axis.

5. Cloud Service:

The system comprises a motion controller (the “small brain”), an industrial PC (the “big brain”), and a cloud server (the “cloud brain”) working in tandem, capable of standalone operation or remote monitoring. It provides users with cloud process and management platforms, offering edge-cloud collaborative services. Open communication interfaces allow integration with MES, ERP, and other information systems, supporting cluster control.

6. Safe and Reliable:

The mechanical arm features a collision stop function, preventing damage to people, components, and the robot itself. It uses safe voltage for power, facilitating human-robot collaboration. The robot consistently delivers high-quality welds with good appearance and uniformity, and in some cases, no post-weld grinding requirement.

7. Wide Application:

Ideal for large immovable welding objects, narrow spaces (minimum width 600mm), and non-standard welding structures. Suitable for production modes with multi-varieties and small batch. Widely used in industries like construction, bridge building, shipbuilding, marine engineering, transportation, energy, heavy equipment manufacturing, and engineering construction. It has served many large state-owned enterprises and listed groups, with single customers using over 50 units in one year.

8. Convenient Maintenance:

The robot can work continuously 24 hours without special environmental requirements. Consumables like electricity, gas, welding wire, and welding torch are similar to manual welding, with no additional non-standard consumables. Regular maintenance is simple, and no disassembly is required for upkeep under normal usage conditions for up to three years.

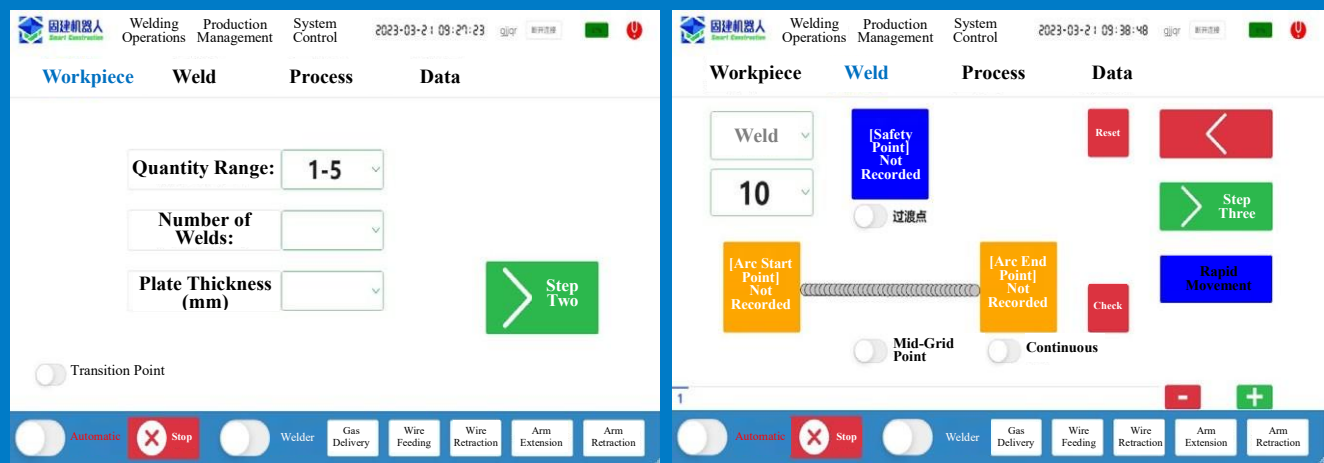
ANALYSIS AND COMPARISON

Comparison Category	Comparison Item	Welder (Manual Welding)	Traditional Industrial Robot	Conventional Teach-Free Industrial Robot	Agile Welding Robot
Motion Principle	Welding Motion Execution	Human Hand	Industrial Mechanical Arm	Industrial Mechanical Arm	Collaborative Mechanical Arm
	Seam Positioning	Eyes (Human)	None	Machine Vision (3D Camera or Line Laser)	Eyes (Human) / Machine Vision (3D Camera or Line Laser)
Applicable Component Type & Programming Mode	Multi-spec Component Adaptability	Highest	Not Applicable	Applicable within Certain Rules	Mostly Applicable
	Programming Mode	No Programming Required	Teach Pendant Programming	Computer Offline Programming	Drag Programming, Touch Screen Operation
	Drawing Dependency	No Drawings Needed	No Such Function	Requires 3D Model	No Drawings Needed
	Welding Process Selection	Based on Welder's Experience	Set by Robot Programmer	System Set	Database Automatic Adaptation
Environmental Friendliness	Mobility	(Human) Feet, High Flexibility	Tracks, Low Flexibility	Tracks, Low Flexibility	Manually Portable, Can Move via Wheels or Tracks, Hoistable, High Flexibility
	Occupation of Production Area	Lowest	Higher	Higher	Low
	Requirements of Work Environment (High and Low Temperature, High Altitude, etc.)	High	Low	Low	Lower
	Environmental Protection (Dust Handling)	More Difficult to Remove Dust	Centralized Dust Removal	Centralized Dust Removal	Centralized Dust Removal
Human Factors	Skill Requirements	Skilled Welder (High, Requires Long-term Practice)	Robot Technician (Medium, Must Know Computers)	Robot Technician (Medium, Must Know Computers)	General Operator or Beginner Welder (Low, No Computer or Welding Process Knowledge Required)
	Labor Intensity	Highest	Higher	Lower	Medium
	Safety	Low	Higher	Higher	Highest (Cooperation between Human and Machine)
Quality & Efficiency	Welding Quality	Unstable (Dependent on Human)	Stable	Stable	Stable
	Preparation Time	Shortest	Longest	Longer	Shorter
	Operation Sustainability	Short-term Operation	Long-term Operation	Long-term Operation	Longer-term Operation
	Overall Operational Efficiency	Highest	Lowest	Higher	High
Investment Returns	Return on Investment Ratio	Low Initial Investment, High Long-term Costs	Low Initial Investment, High Long-term Costs	High Initial Investment, Low Long-term Costs	Low Initial Investment, Low Long-term Costs

MAIN TECHNICAL PARAMETERS AND OPERATION INTERFACE

SN.	Item	Technical Parameters
1	Equipment Dimensions: LxWxH (mm)	Mobile type: High-mount version: 1000x800x1400 (mm) Low-mount version: 1100x800x1100 (mm) Portable type: Permanent magnet adsorption surface 280x280 (mm) Vacuum adsorption surface 300x300 (mm) Ground space when stored 1560x700 (mm)
2	Equipment Weight (kg)	Mobile unit $\leq 200\text{kg}$ 、Portable mechanical arm $\leq 23\text{kg}$ 、 Light rail moving part $\leq 93\text{kg}$ 、Single light rail $\leq 15\text{kg}$
3	Welding Type	Gas shielded welding (CO ₂ /mixed gas) 、solid wire/flux-cored wire
4	Programming Mode	Drag teaching, human-machine interface interactive programming
5	Software Functions	<p>Welding Process Management: Set, modify, invoke, and store welding processes</p> <p>Production Operation: Efficient programming through human-machine collaboration based on the interface operation process</p> <p>Agile Series One Basic Functions: Support marking up to 20 welds, efficient programming with human-machine collaboration, automatic welding by robot. Set, modify, save, and invoke welding parameters. Connect to the cloud-based process library, automatically selecting suitable welding parameters based on material type and thickness, and welding position to achieve automated welding, improving productivity and quality.</p> <p>Agile Series Three Expanded Functions: Multi-layer multi-pass automatic welding, linear laser scanning tracking, arc voltage tracking, etc.</p> <p>Agile Series Five Expanded Functions: 3D vision scanning for weld seam correction, light rail mobility, expanded external axis functions, etc.</p>

Operation Interface:



Configuration List

Item	Name	Description	Quantity	Remarks
Welding System	Welding Power Source	Customized by Gujian	1 set	500A
	Wire Feeder	Customized by Gujian	1 set	Optional dual-head configuration
	Welding Torch	Customized by Gujian	1 set	Water-cooled/Air-cooled
Welding Mechanical Arm	Six-Axis Collaborative Mechanical Arm	Portable working radius 600mm/900mm Mobile working radius 1200mm/1400mm/1800mm	1 set	Portable with magnetic base and fall protection hook
Electrical Control	Control system, electrical components, integrated pipelines, etc.		1 set	
Loading Mechanism	Loading Trolley	Portable loading trolley, mobile trolley	1 set	Optional light rail moving mechanism
Software System	Industrial PC	8 inch/10 inch	1 set	
	Agile Welding Process Software System		1 set	
	Cloud-based Process Database Support	Includes AI Agile Welding Assistant	1 set	
	Agile Welding Cloud Management Platform	Process Management/Production Management/Equipment Management	1 set	

Products Catalogue

Product Code	GJLQ001	GJLQ002	GJLQ003	GJLQ004	GJLQ005	GJLQ006	GJLQ007	GJLQ010	GJLQ009
Standard Product Model	GJLQB1-FA-AT-D-06	GJLQB1-DZ-A T-D-06	GJLQB1-JK-A T-D-06	GJLQY1-FA-A T-X-14	GJLQY1-JK-A T-X-12	GJLQB3-JK-A T-D-06	GJLQY3-JK-A T-X-12	GJLQB5-JK-AT-C-06-ZX	GJLQB5-JK-AT-C-09-ZX
Product Name	Portable Agile Series One FA Standard Model	Portable Agile Series One DZ Standard Model	Portable Agile Series One JK Standard Model	Mobile Agile Series One FA Standard Model	Mobile Agile Series One JK Standard Model	Portable Agile Series Three JK Standard Model	Mobile Agile Series Three JK Standard Model	Portable Agile Series Five JK Standard Model	Light Rail Agile Series Five JK Standard Model
Mechanical Arm Extension (mm)	622	590	626	1400	1210	626	1210	626	954
Mechanical Arm Weight (KG)	18	18	13	40	25	13	25	13	23
Mechanical Arm Options	920mm Weight 22KG			1850mm		950mm Weight 23KG			
Welding Torch Cooling Mode	Air-cooled/Water-cooled	Water-cooled	Water-cooled	Water-cooled	Water-cooled	Water-cooled	Water-cooled	Air-cooled/Water-cooled	Air-cooled/Water-cooled
Usage Mode	Portable	Portable	Portable	Mobile	Mobile	Portable	Mobile	Portable	Light Rail
Industrial PC Size	8"	8"	8"	8"	8"	10 "	10 "	10 "	10 "
Multi-layer Multi-pass Automatic	-	-	-	-	-	Yes	Yes	Yes	Yes
Lane Function									
3D Vision Weld Scanning Module	-	-	-	-	-	-	-	Yes	Yes
Servo Light Rail	-	-	-	-	-	-	-	Optional	Yes
Slide Module									

EQUIPMENT INSTALLATION

TYPE

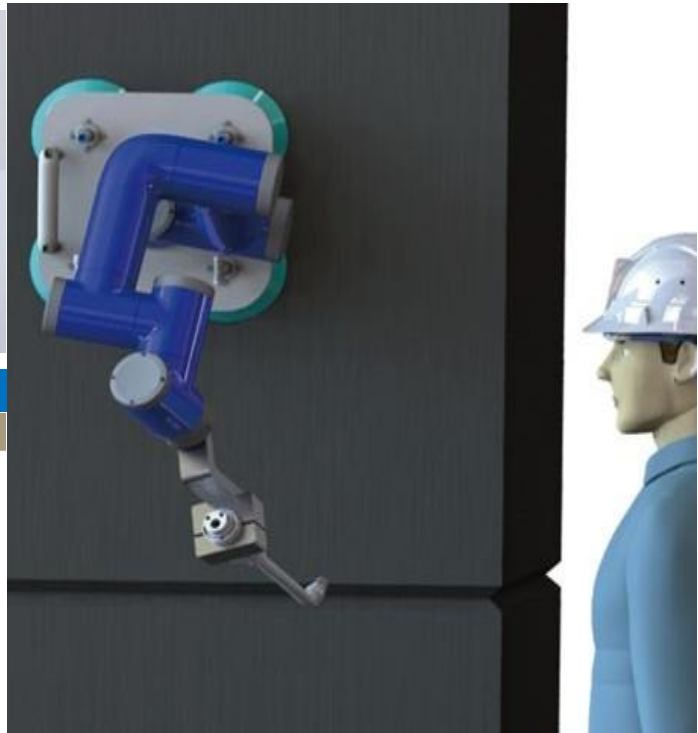
Three Portable Installation
Methods



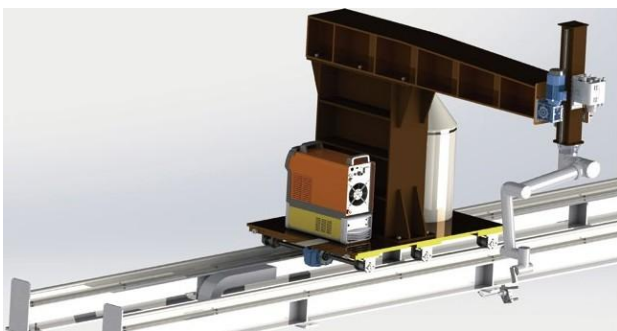
Upright Installation



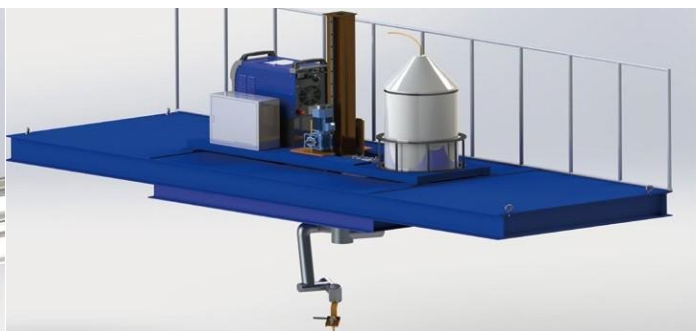
Inverted Installation



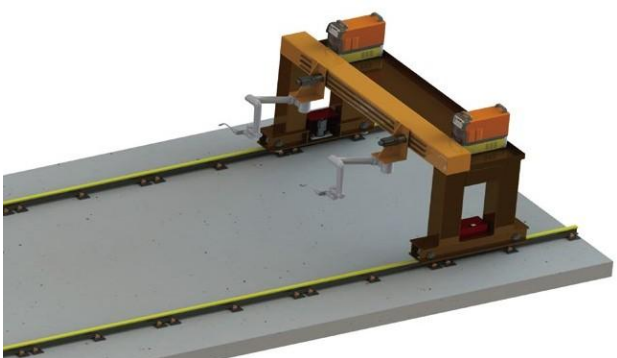
Side Installation



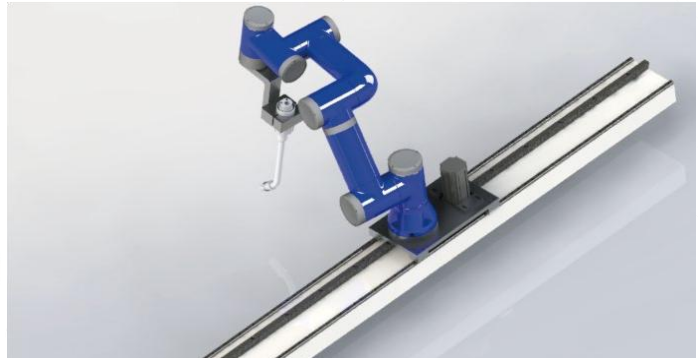
Arm Type: Suitable for medium-sized open and plate unit components



Tray Type: Suitable for trough-type components such as ship cabins



Gantry Type: Suitable for large components



Light Rail Type: Suitable for components with long welds

Application Cases



Ship building



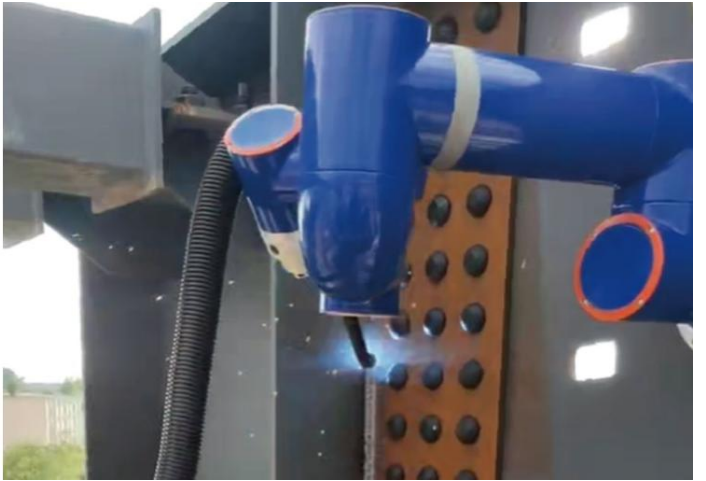
Bridge building



Architecture steel structure



On-site welding



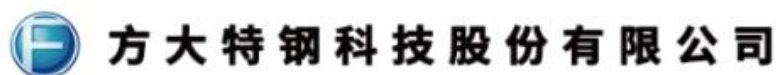
Heavy industrial equipment



APPLICATION CASES



Satisfied Customers



Marketing by :

Chuan Leong Metalimpex

Address : 51 Tuas Bay Drive , singapore 637309

Tel : 6298 6231

Email : mailbox@clmetal.com

<https://www.clmetal.com>