

Introduction to technical scheme of sleeve welding

2022-12-15

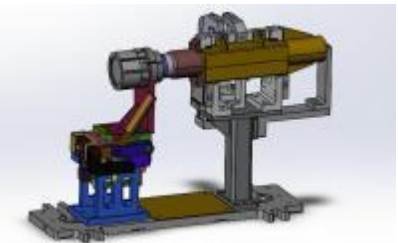
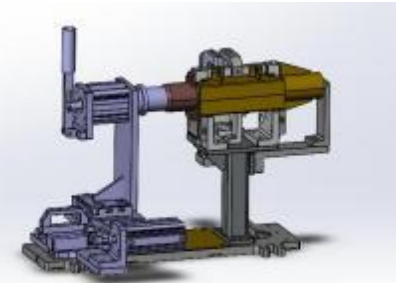
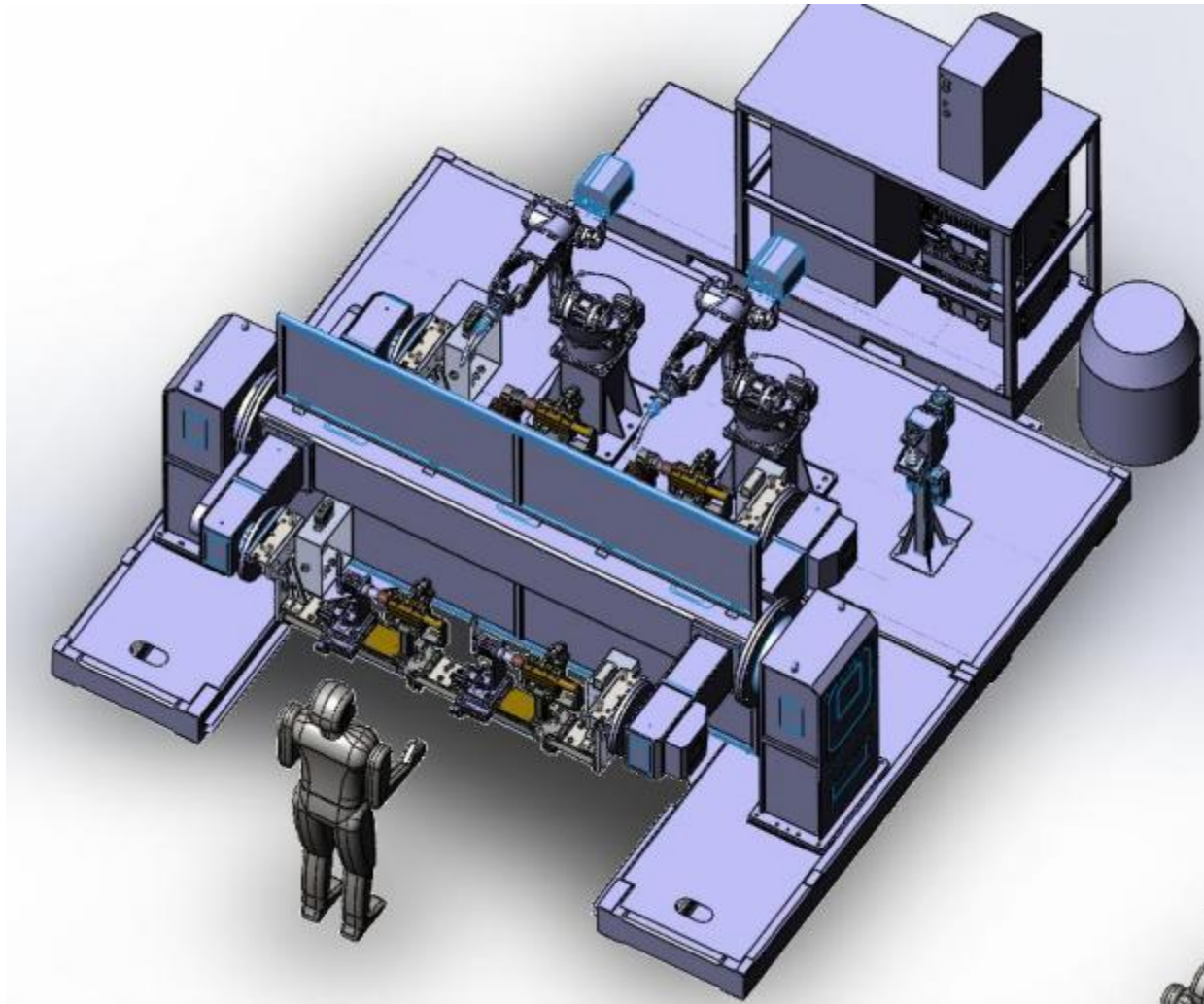
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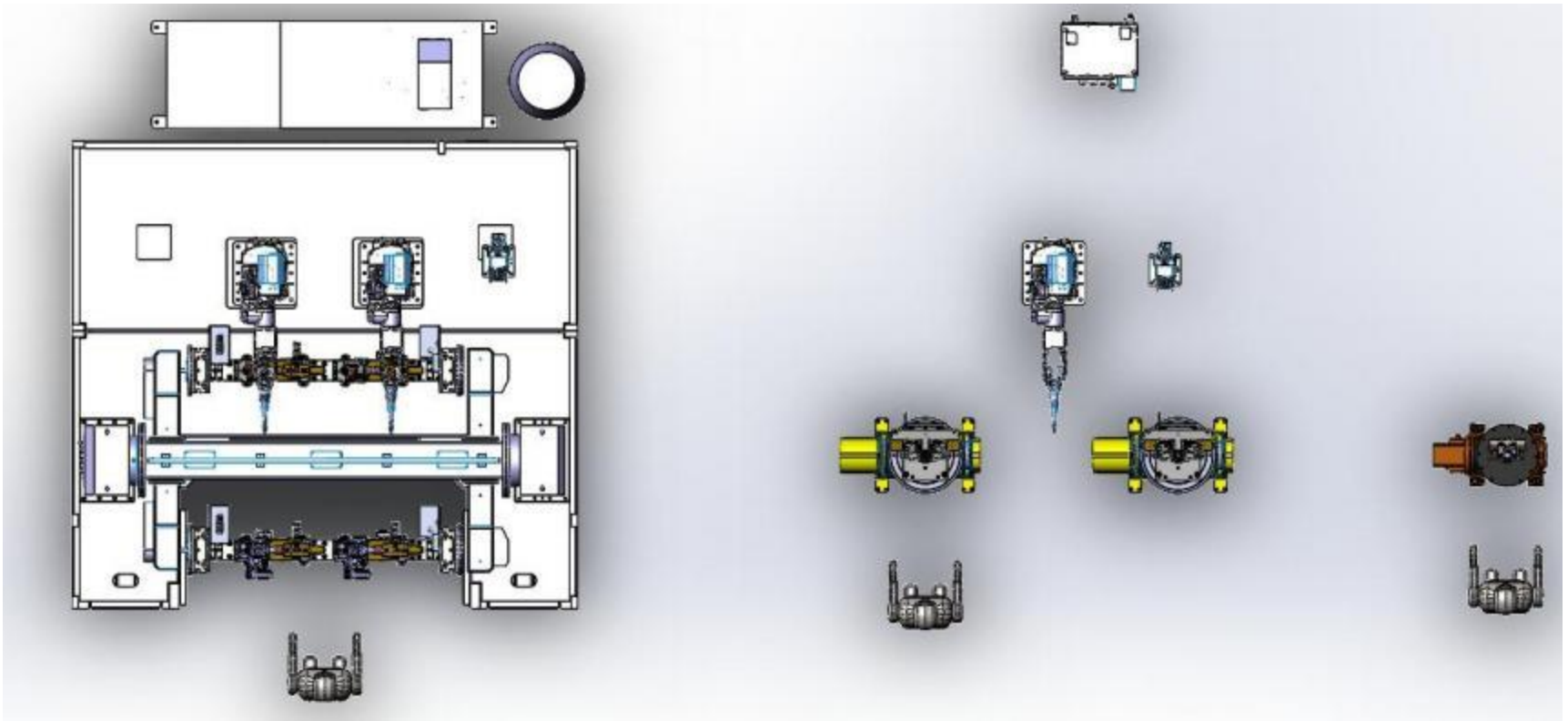
I. Project Overview

1. Real picture & 3D model of the workpiece



I. Project Overview

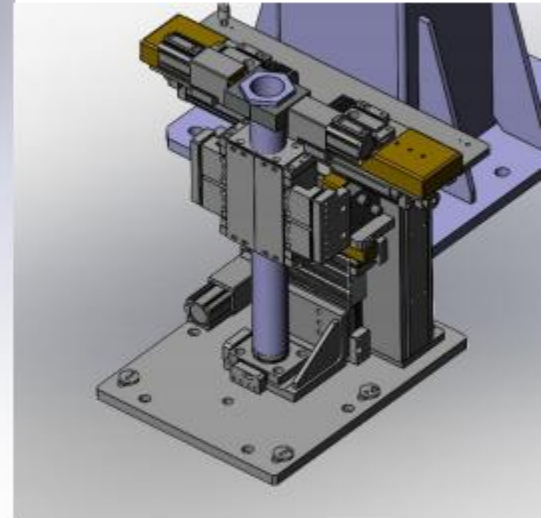
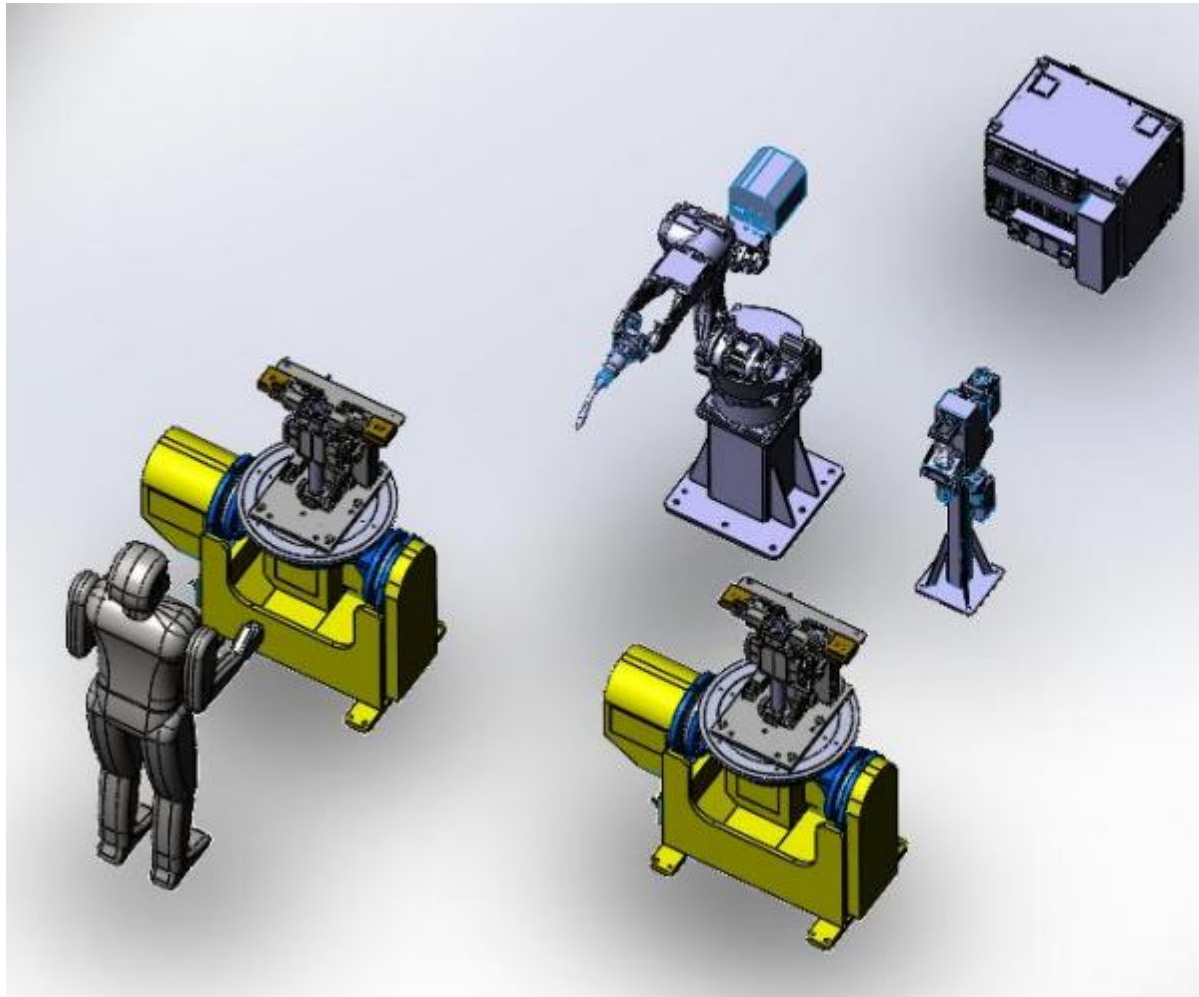
1. Layout



Description: The scheme diagram is only used for layout illustration and does not represent the physical structure of equipment. The specific size shall be determined according to the customer's site conditions.

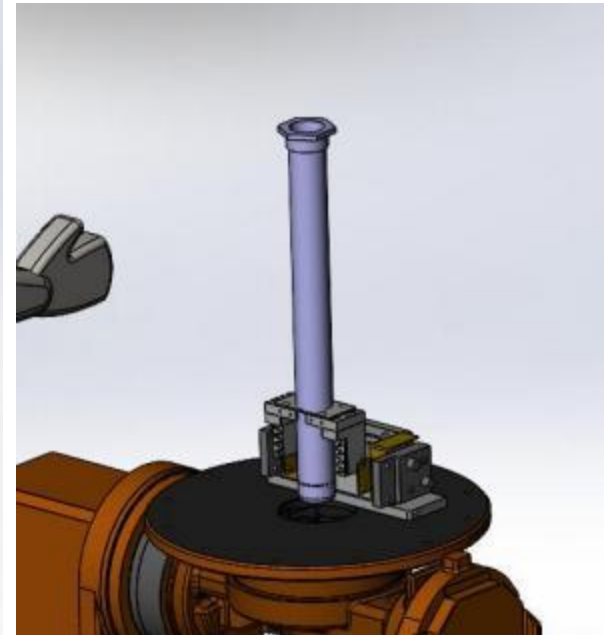
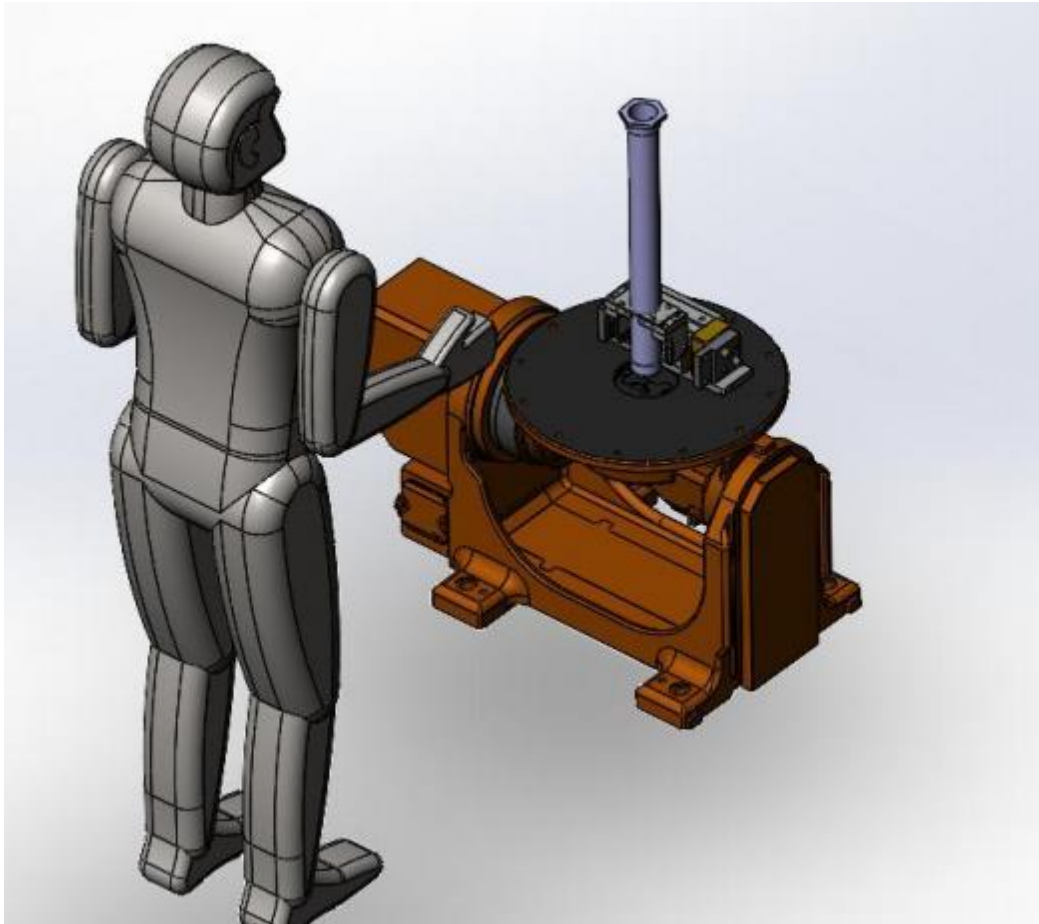
I. Project Overview

1. Real picture&3D model of the workpiece

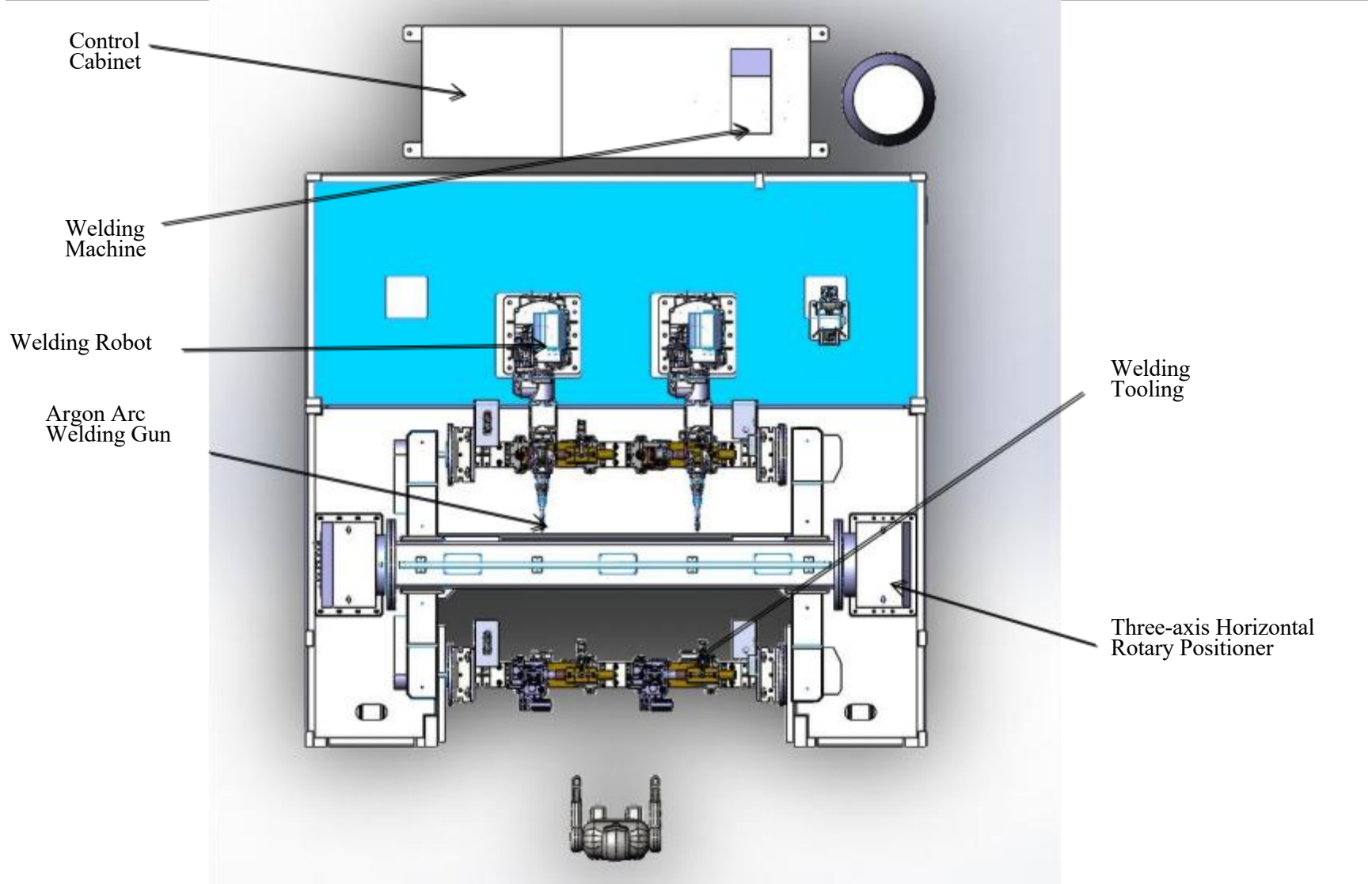


I. Project Overview

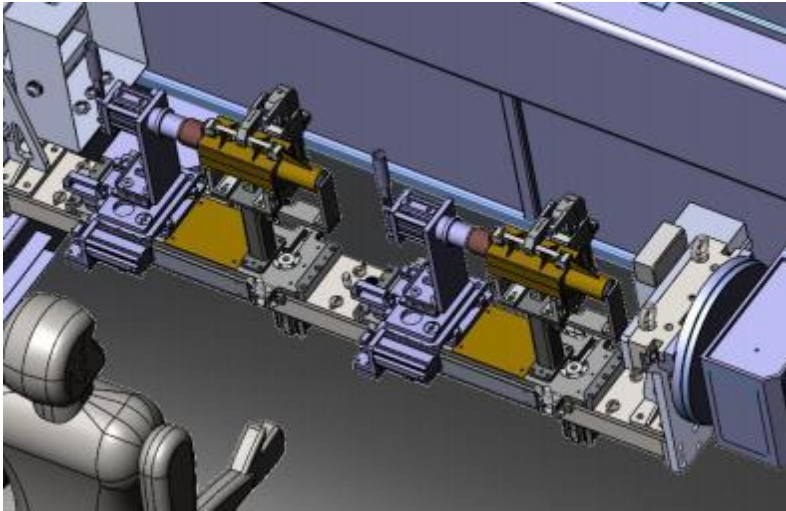
1. Real picture & 3D model of the workpiece



II. Scheme Layout

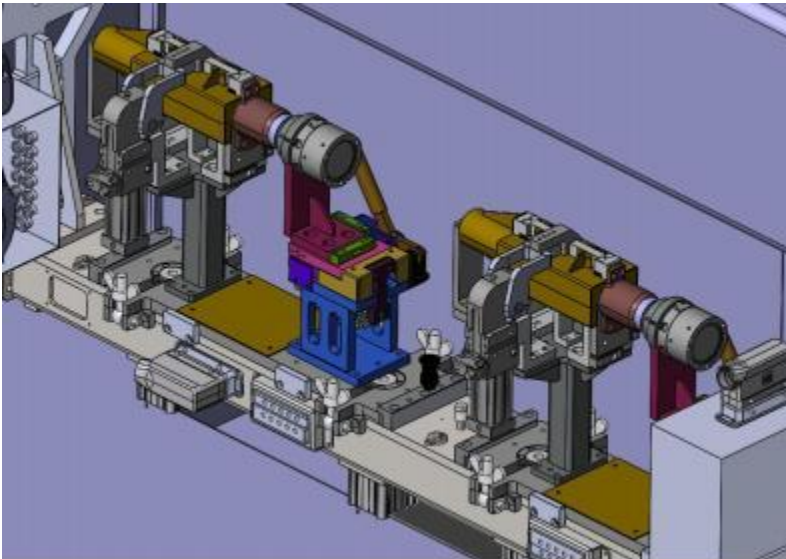


II. Scheme Layout

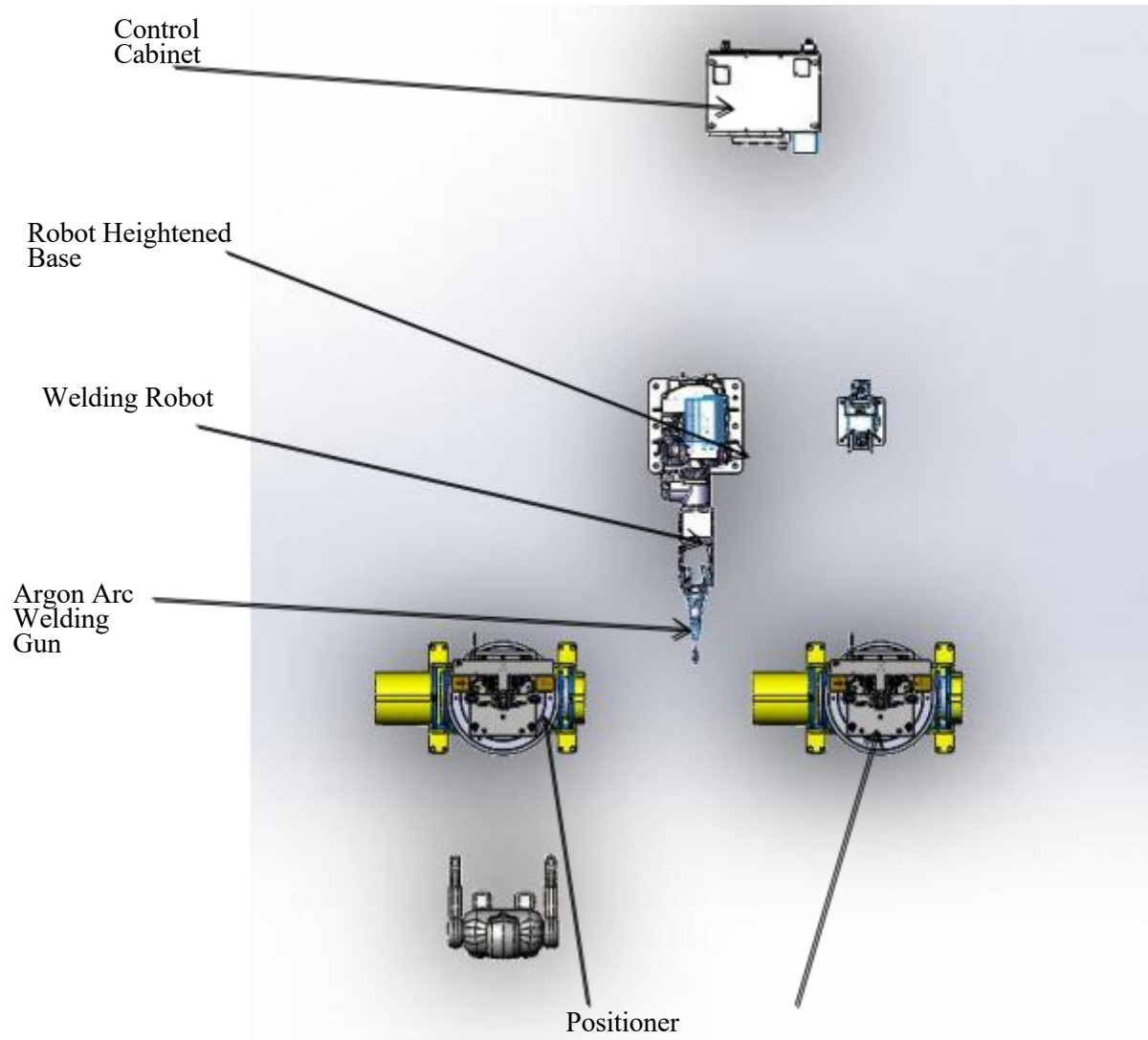


Welding process of sleeve subassembly

1. Manually install 2 sets of sleeve bulk parts on side A (welding of circular pipe + end cover).
2. Return to safety area manually and start button fixture cylinder to tighten workpiece.
3. The positioner rotates until the robot on side B starts welding.
4. Manually remove the workpieces welded on side A, and install 2 sets of bulk parts (sub-assembly welded on side A+external nut welding).
5. Cycle the operation of the above links.



II. Scheme Layout



Sleeve internal welding station process

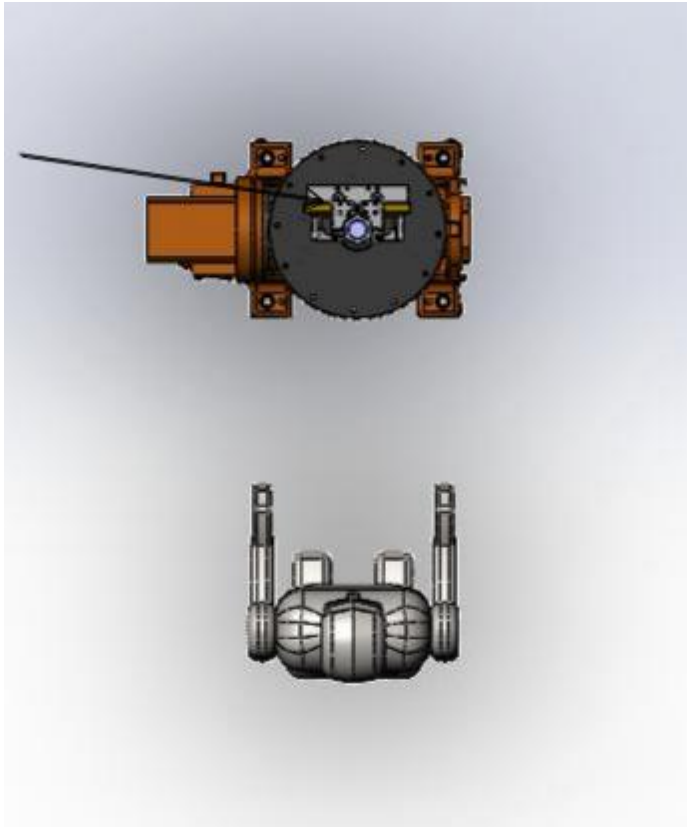
1. Manually install the workpiece to the positioner.
2. Return to safety area manually and start button fixture cylinder to tighten workpiece.
3. Robot welds the workpiece.
4. Manually install the workpiece on the positioner on the other side.
5. Cycle the operation of the above links.

Welding time of each set of sleeve is 30s (including installation time)

II. Scheme Layout

Sleeve grinding station process

Positioner

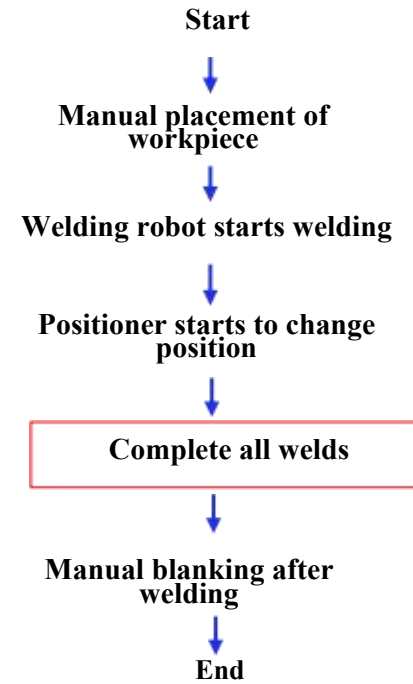


1. Manually install the welded workpiece to the positioner
2. Return to safety area manually and start button fixture cylinder to tighten workpiece.
3. Step on the button, the positioner rotates, and the grinder grinds the work piece.
4. Remove the workpiece manually and turn over the other side and repeat steps 2-3.
5. Cycle the operation of the above links.

III. Workflow

3.1 Conditions for workstation operation

- (1) Manually place the workpiece on the positioner and fix it as required;
- (2) There is no alarm prompt after the equipment is powered on, and the equipment is ready.
- (3) The robot stops at the work origin, and the robot running program is the corresponding production program.



IV. Equipment List

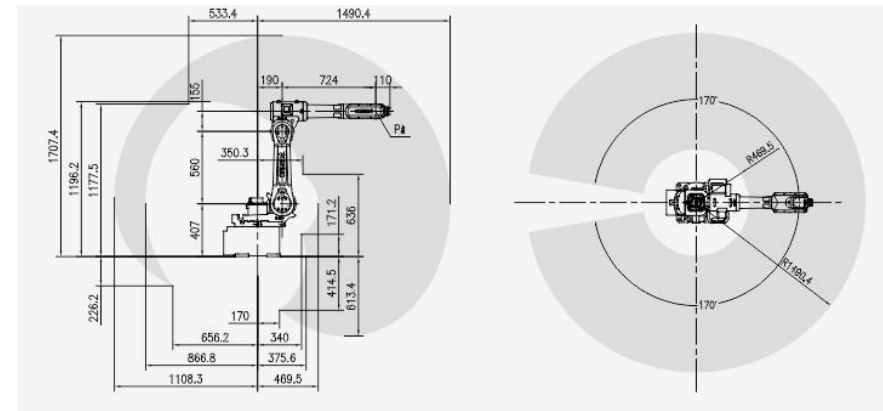
Projects	S/N	Name	Quantity.	Remarks
Robots	1	SDCXRH06A3-1490	3 Sets	Provided by Chenxuan
	2	Robot Control Cabinet	3 Sets	
	3	Robot heightened base	3 Sets	
	4	Argon Arc Welding Gun	3 Sets	
Peripheral Equipment	5	Welding Power Supply MAG-500	3 Sets	Provided by Chenxuan
	6	Double-axis positioner	3 Sets	
	7	Triaxial rotary positioner	1 Set	Provided by Chenxuan
	8	Tooling fixture	6 Sets	
	9	Dust Removal Equipment	3 Sets	Optional
	10	Safety fence	3 Sets	
Related Services	11	Installation and Commissioning	1 item	
	12	Packaging and Transportation	1 item	
	13	Technical Training	1 item	

V. Technical Description

5.1 SDCXRH06A3-1490



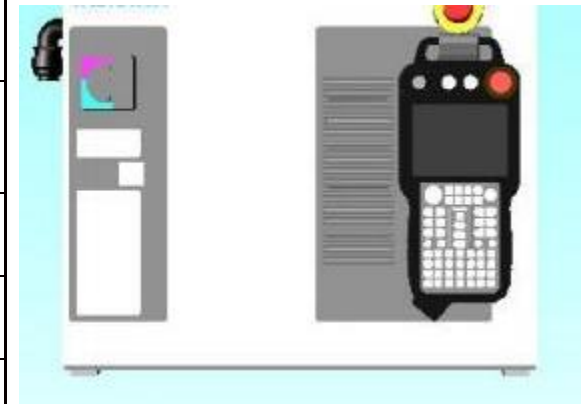
Model No.		RH06A3-1490
Degree of freedom		6
Driving mode		AC servo drive
Payload (kg)		6
Repeated positioning accuracy (mm)		±0.05
Range of motion (°)	J2	+120~-85
	J3	+83~-150
	J4	±180
	J5	±135
	J6	±360
	Maximum speed (°/s)	J1
J2		200
J3		200
J4		400
J5		356
J6		600
Maximum allowable torque (N. m)	J4	14
	J5	12
	J6	7
Radius of motion (mm)		1490
weight (kg)		185



V. Technical Description

5.2 Robot Control Cabinet

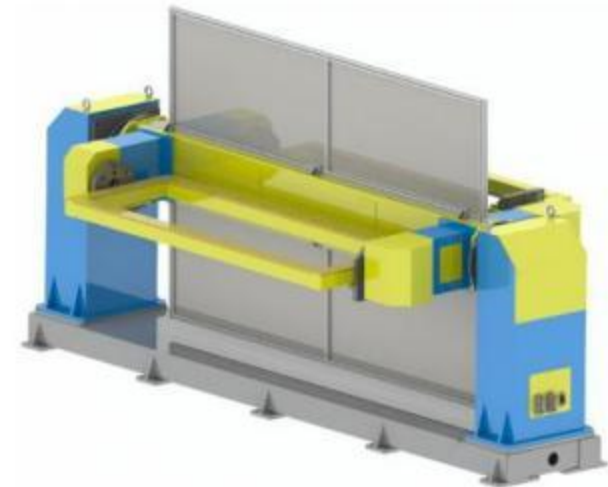
Projects	Specification
Program Capacity	Task: Step 200,000, Program 10,000
Input and Output	Specific: 19 in, 6 out Universal: 40 in, 40 out
Expansion slot	PCI slot; 2
Interface	Two LAN and one RS-232C
Installation Environment	Operating Temperature: 0 to+45°C, storage temperature: -10~60°C humidity <90%RH (no condensation)
Operation Interface	Chinese Interface
Input voltage	3-phase AC380V+10%, -15%50~60Hz
Weight	Weight< =75kg
Safety Level	IP54
Size	598 (W) × 427 (D) × 490 (H)



V. Technical Description

5.3 Three-axis Horizontal Rotary Positioner

- 1) Three-axis horizontal rotary positioner is mainly composed of an integral fixed base, rotary spindle box and tail box, welding frame, servo motor and precision reducer, conductive mechanism, protective cover and electrical control system, etc.
- 2) By configuring different servo motors, the positioner can be operated remotely through the robot demonstrator or external operation box;
- 3) To achieve the required welding and assembly angle by turning the workpiece fixed on the workbench;
- 4) The rotation of the worktable is controlled by servo motor, and the ideal welding speed can be obtained;
- 5) The pictures are for reference only, subject to final design;



V. Technical Description

5.4 Welding Power Supply

It is suitable for splicing, lapping, corner joint, tube plate butt joint, intersection line connection and other joint forms, and can realize all position welding

It is safe and reliable. The welding machine and wire feeder are equipped with overcurrent, overvoltage and over temperature protection, passed the EMC and electrical performance test required by national standard GB/T 15579, and passed the 3C certification to ensure the reliability and safety in use.

Energy conservation and environmental protection, the gas detection time, advance gas supply time and lag gas supply time are adjustable to ensure the reasonable use of gas. When the welding machine is powered on, if it does not enter the welding state within 2 minutes (time adjustable), it will automatically enter the sleep state. Turn off the fan and reduce the energy consumption.

The pictures are for reference only, subject to final choice



V. Technical Description

5.5 Safety fence

1. Set the protective fence, the safety door or the safety grating and the safety lock and other devices and carry out necessary interlocking protection.
2. The safety door shall be set at the proper position of the safety fence. All doors shall be equipped with safety switch and button, the reset button and the emergency stop button.
3. The safety door is interlocked with the system through safety lock (switch). When the safety door is opened abnormally, the system stops and gives an alarm.
4. Safety protection measures guarantee the safety of personnel and equipment through hardware and software.
5. The safety fence can be provided by Party A himself. It is recommended to weld with high-quality grid and paint with yellow warning stoving varnish on the surface.



V. Technical Description

5.6 Electrical Control System

1. Including system control and signal communication between equipment, including sensors, cables, trunking, switches, etc.;
 2. The automatic unit is designed with three-color alarm lamp. During normal operation, the three-color lamp displays green; and if the unit fails, the three-color lamp will display red alarm in time;
 3. There are emergency stop buttons on the control cabinet and the demonstration box of the robot. In case of emergency, the emergency stop button can be pressed to realize the system emergency stop and send out alarm signal at the same time;
 4. Through the demonstrator, we can compile many kinds of application programs, which can meet the requirements of product renewal and adding new products;
 5. All emergency stop signals of the whole control system and the safety interlock signals between the processing equipment and robots are connected to the safety system and the interlocked control is conducted through the control program;
 6. The control system realizes the signal connection among the operating equipment such as robots, loading silos, tongs and machining machine tools;
 7. Machine tool system needs to realize signal exchange with robot system.
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5.7 Operating environment (provided by Party A)

Power supply	<ul style="list-style-type: none">·Power supply: Three-phase four-wire AC380V±10%, voltage fluctuation range ±10%, frequency: 50HZ;·The power supply of robot control cabinet shall be equipped with independent air switch;·Robot control cabinet must be grounded with grounding resistance less than 10Ω;·The effective distance between the power source and the robot electric control cabinet shall be within 5 meters.
Air source	<ul style="list-style-type: none">·The compressed air shall be filtered out of water, gas and impurities, and the output pressure after passing through FRL shall be 0.5~0.8Mpa;·The effective distance between the air source and the robot body shall be within 5 meters.
Foundation	<ul style="list-style-type: none">·Treat with the conventional cement floor of Party A's workshop, and the installation base of each equipment shall be fixed to the ground with expansion bolts;·Strength of concrete: 210 kg/cm²;·Thickness of concrete: More than 150 mm;·Foundation unevenness: Less than ±3 mm.
Environmental Conditions	<ul style="list-style-type: none">·Ambient temperature: 0~45°C;·Relative humidity: 20%~75%RH (no condensation is allowed);·Vibration acceleration: Less than 0.5G
Miscellaneous	<ul style="list-style-type: none">·Avoid flammable and corrosive gases and fluids, and do not splash oil, water, dust, etc.;·Do not approach the source of electrical noise.