



Technical scheme of Tank Blanking and Handling Project

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I. Project Overview



1. Project Overview

The scheme mainly selects 2 sets of SDCX-series robots and supporting Shandong Chenxuan series controllers and demonstrator, 2 sets of robot grippers, 1 set of turning transition equipment, 1 set of safety fence, 1 set of ground rail and its supporting electrical control system according to the customer's process flow.

2. Project Design Basis

Loading and blanking objects: Tank Body

Appearance of the workpiece: As shown in the figure below

Individual Product Weight: $\leq 15\text{kg}$

Technical requirements: Coordinate with receiving platform for operation;

With the functions of accurate grasping of robots and not falling in case of power failure;

Working system: 8h;

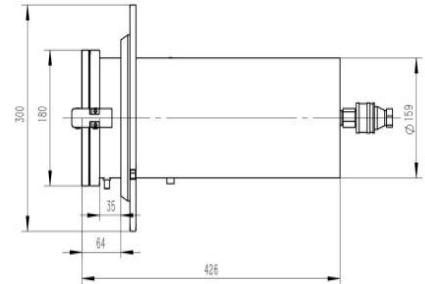
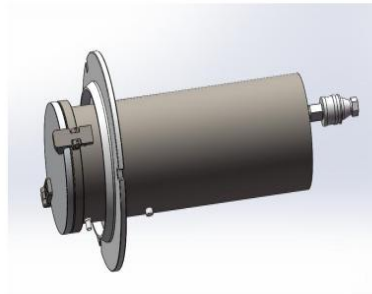
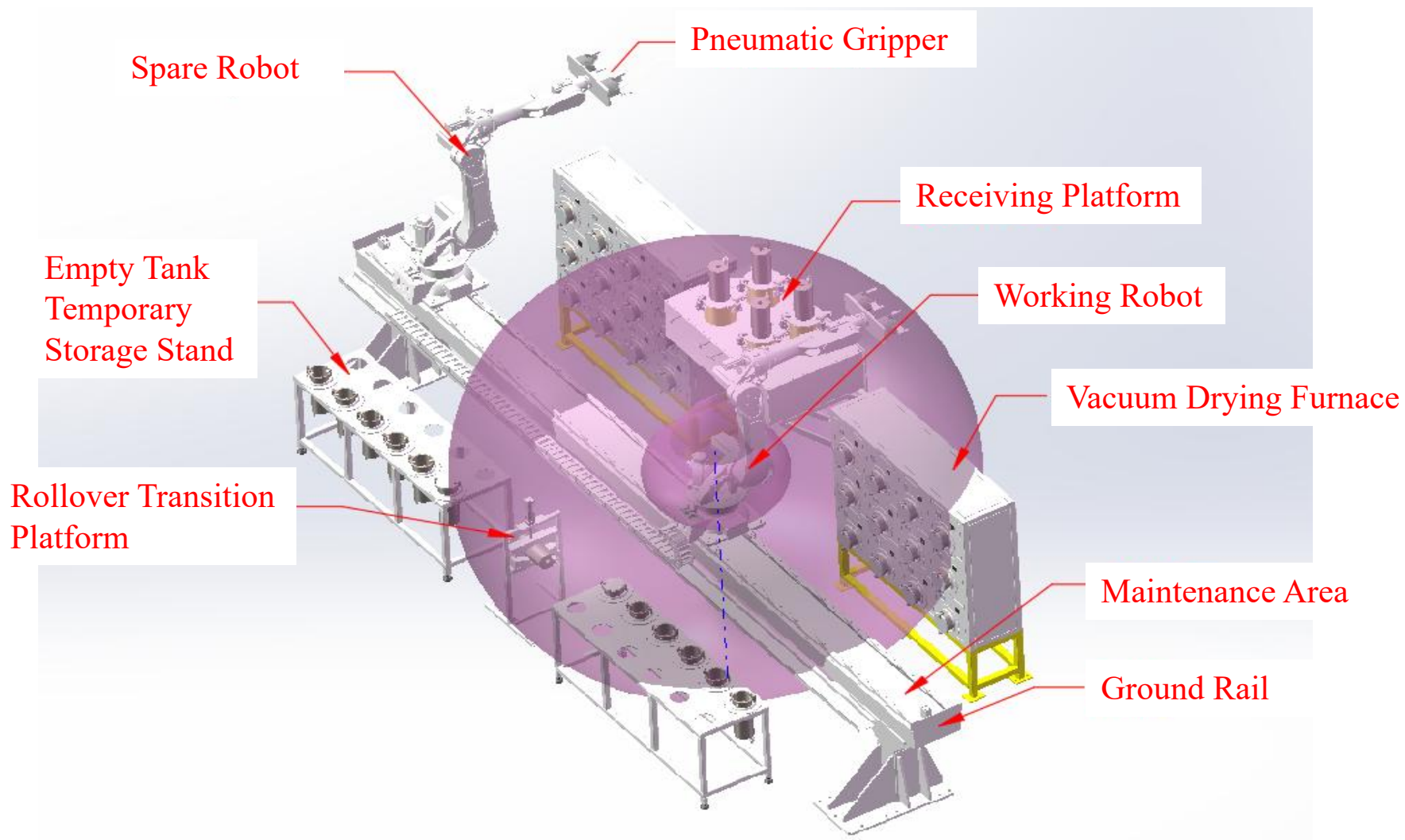
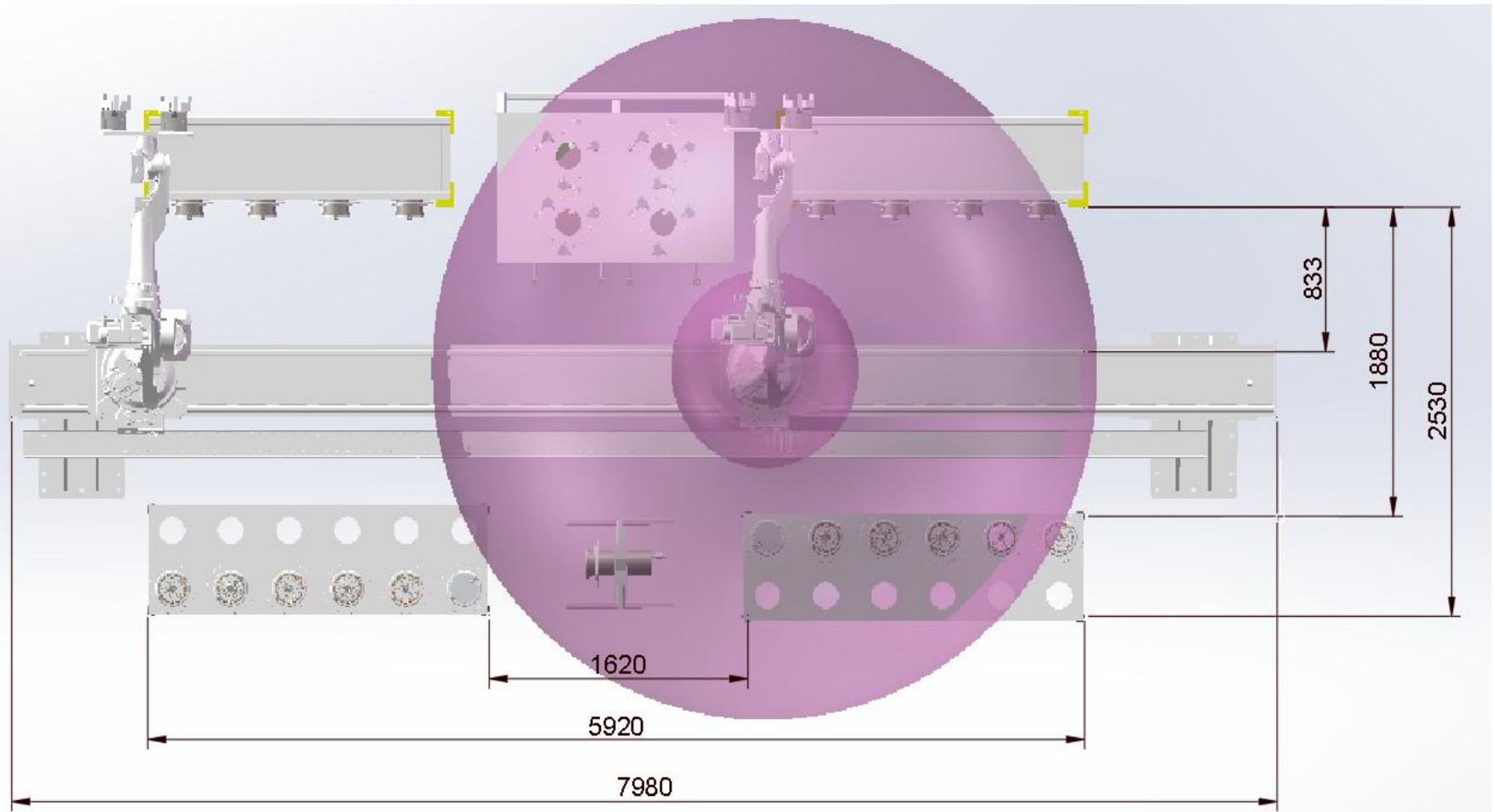


图 1-1-11

II. Scheme Layout



II. Scheme Layout



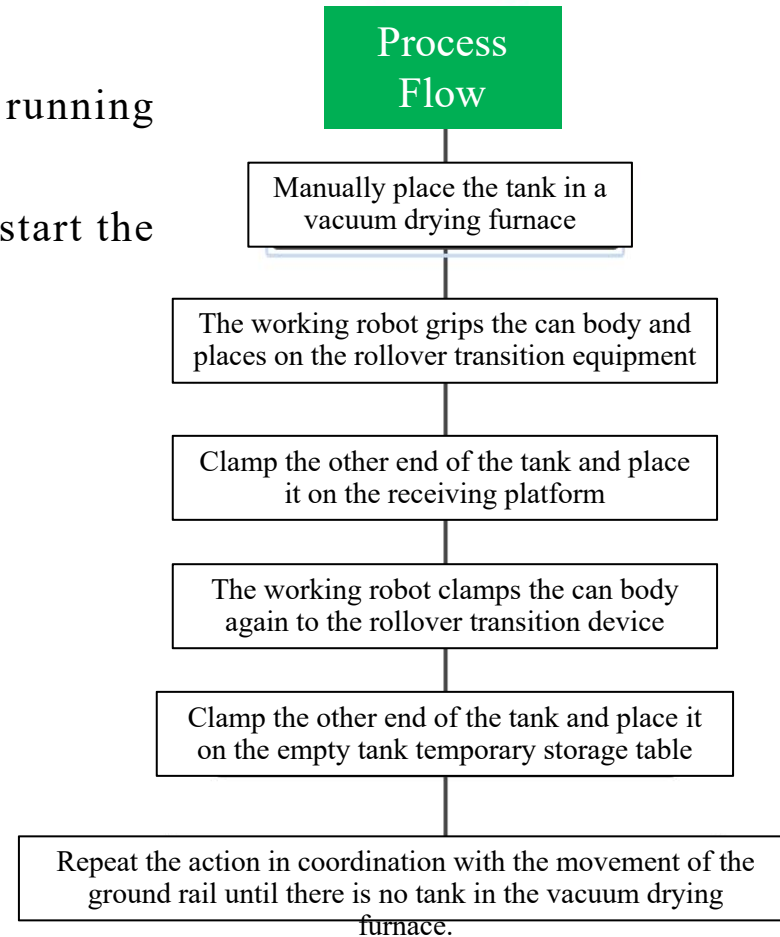
III. Workflow



4.1 Conditions for workstation operation

- (1) There is no alarm prompt after the equipment is powered on and the equipment is ready;
- (2) The robot stops at the work origin, and the robot running program is the corresponding production program.
- (3) Confirm safety door/lock show safety signal and start the workstation.

4.2 Description of workflow (as shown at right)



IV. Equipment List

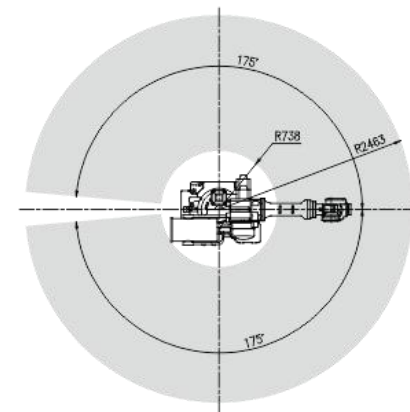
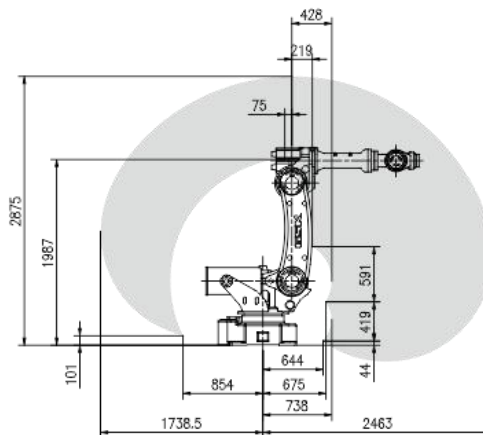


Projects	S/N	Name	Quantity.	Remarks
Robots	1	SDCX-RB210 Robots	2 Sets	(Including body, demonstrator and control cabinet)
	2	Gripper Device	2 Sets	Provided by Chenxuan
	3	Raised base and walking ground rail	1 Set	
	4	Rollover transition mechanism	1 Set	
	5	Safety fence	1 Set	Optional
Related Services	6	Installation and Commissioning	1 item	
	7	Packaging and Transportation	1 item	
	8	Technical Training	1 item	



V. Technical Description

5.1 SDCX-RB210 Robots

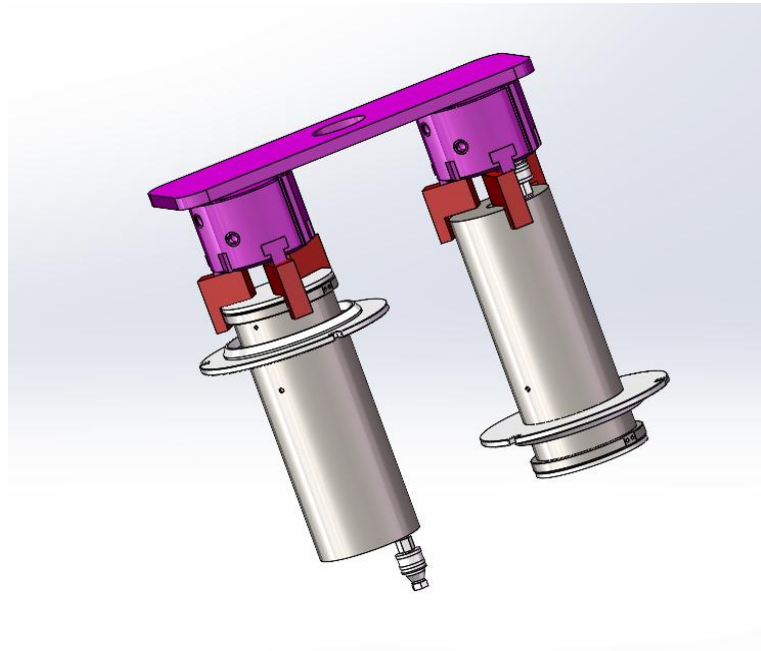




VI. Technical Description

5.2 Robot Gripper Device

- (1) Two-position pneumatic hand grippers are used to grasp accurately and firmly.**
 - (2) The maximum weight of a single workpiece to be transported shall not exceed 15 kg.**
- The pictures are for reference only, subject to final design.**

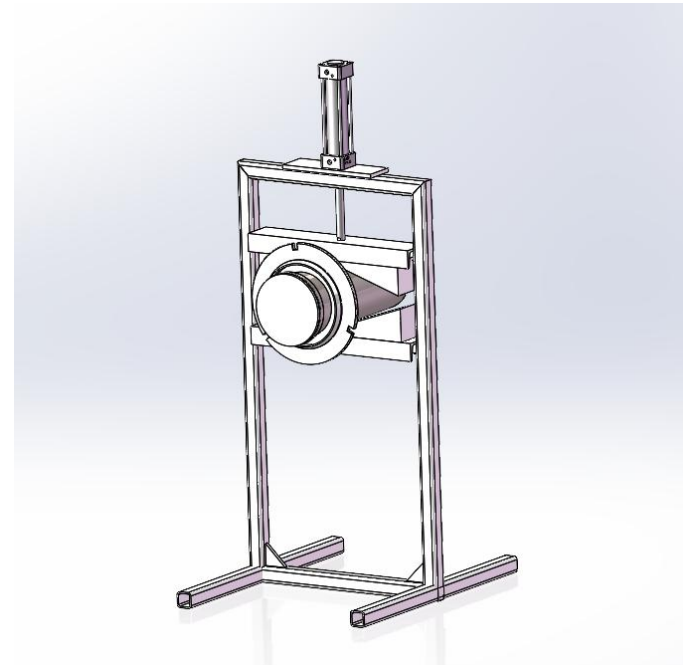




V. Technical Description

5.3 Turnover transition equipment

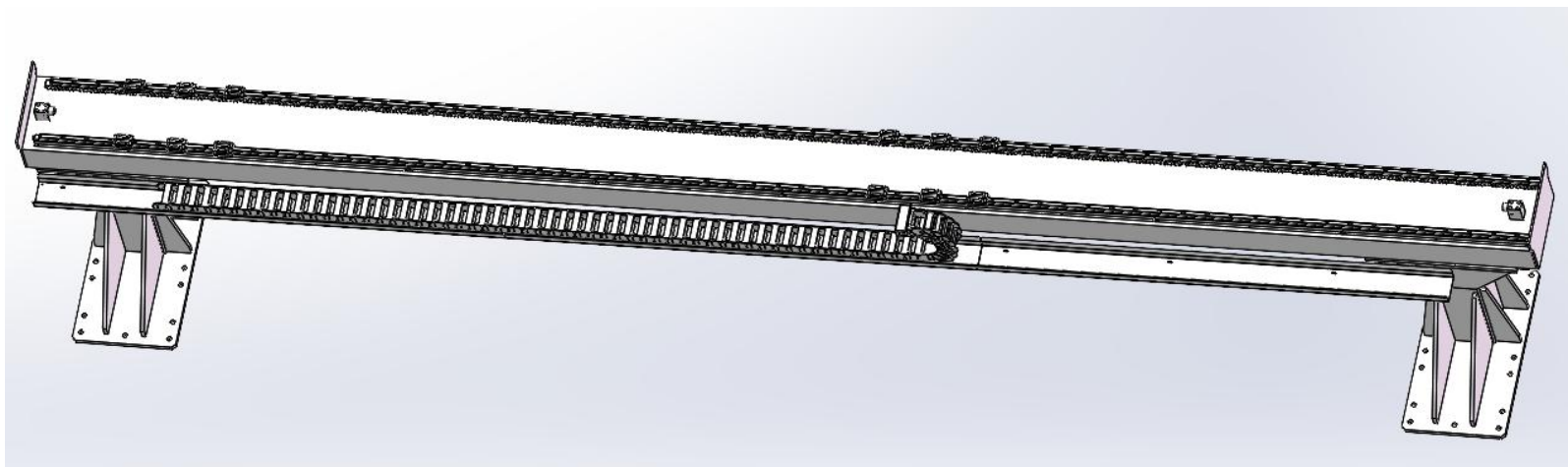
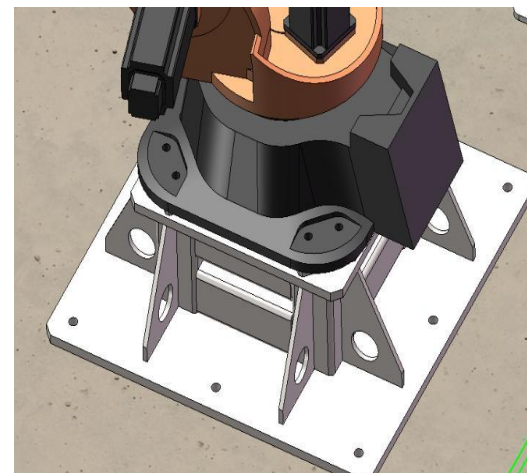
- (1) The overturning table adopts the clamping workpiece outer diameter, and the robot grasps the workpiece on both sides respectively to complete the workpiece turning work.
 - (2) The maximum weight of a single workpiece to be transported shall not exceed 15 kg.
- The pictures are for reference only, subject to final design.



V. Technical Description

5.4 Robot Raised Base and Ground Rail

The robot base is used to adjust the installation height of the robot, and the ground rail is used to move the robot horizontally to expand the working coverage area and ensure that the robot stably covers the working point;
The pictures are for reference only, subject to final design





V. Technical Description

5.5 SDCX-RB210 Series Controller and Demonstrator

- 1) With special control system independently developed by Shandong Chenxuan, motion control is high-speed and stable;
- 2) Various communication modes are supported;
- 3) The equipment operating system is simple and improves the convenience of operation;
- 4) Demonstrator is designed according to modern human structural mechanics, the grip is more comfortable;
- 5) The LCD touch screen of the demonstrator capable of point-touch control facilitates human-computer interaction and improves working efficiency;
- 6) The pictures are for reference only, subject to final choice;

V. Technical Description

5.6 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

5.7 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 between running equipment including the robot, gripper and machining tools;



5.8 Operating environment (provided by Party A)

Power supply	<ul style="list-style-type: none">•Power supply: Three-phase four-wire AC380V\pm10%, voltage fluctuation range \pm10%, 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 \pm3mm.
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.