ELITE ROBOT
艾利特机器人

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ELITE Robot Ltd. (Elite), is an innovative elite enterprise that was founded in 2016 by a group of PhDs from Beijing University of Aeronautics and Astronautics, Tsinghua University and Columbia University. ELITE Robot's R&D Center is located in Zhongguancun, Beijing's central area, with about 50 R&D personnel, among which more than 90% are holding a master's degree or above, all from renowned universities at home and abroad. The core team has more than 15 years of R&D experience in robotics. At the same time, Elite has nearly 10,000 square meters in Suzhou Industrial Park as its production R&D base. The base has been put into production of all types of industrial robots since March 2018 and its annual output can reach 5000 units.

As a robotics company focusing on R&D, production integration, sales, and customer service, ELITE is pioneering domestically in the fields of robot core component control system / servo drive system, intelligent vision, as well as R&D of collaborative robots and various industrial robots, among which the robot control technology and intelligent vision technology are currently at an internationally advanced level.

ELITE has invested itself deeply in the field of intelligent manufacturing and has now completed the deployment of a full range of collaborative robot product line, including 3kg, 6kg and 12kg.

In order to improve the automation level of domestic enterprises and lower the threshold for automation, ELITE is committed to providing users with collaborative robot products with control capabilities via common platform, as well as top-notched strategies that can compete with foreign brands to offer users with cost-effective solutions.

As of now, ELITE Robot has gained positive reputation among its users in the fields of automobile and auto parts, construction machinery, 3C electronics, packaging logistics, metals processing, rubber and plastics, chemical raw materials and chemicals.

ELITE takes full advantage of the collaborative robot category——lightweight and more flexible collaborative robots for assembly, tightening, machine loading and unloading, material detection, item picking, stacking and destacking, grinding and polishing, and so on. In the future, ELITE will continue to provide cost-effective and professional industry-reliable robot product solutions, while adhering to the notion of "easy to use" as a core value of its user experience and leading the technological revolution of domestic robots.
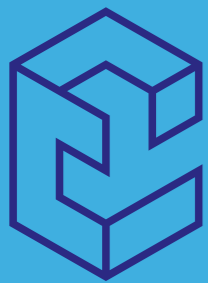
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Safe, easy to use, flexible and efficient collaborative robot

Safe
Can work side by side with humans without a safety fence, possesses high level of reliability and safety

Lightweight
The most lightweight and flexible collaborative robot in the world, weighs less and loads more. Take the 6kg robot as an example: the robot self weighs 16.5kg, but can load up to 6kg

Easy to use
Can be easily lifted by hand, easy to transport, assemble and disassemble, supported and powered by 220V and direct 48V

Efficient
Fastest straight-line speed up to 2.8m/s, high working efficiency, smooth trajectory and coherent action

Intelligent
Paired with the robot's Elite Vision system, the robot is not only good looking, but intelligent

Good-looking
A good-looking collaborative robot, elegant industrial design, the hidden-screw design presents a simple and streamlined shape

EC63

Intelligence Deduction,
Infinite Motion

Six-axis collaborative robot EC63

- Capable of conducting automated tasks with light loads
- Effective working radius up to 624 mm
- Product with the smallest area occupation among ELITE's collaborative robot product line
- Can be adapted to installation in small spaces, and cooperate with humans to complete high-precision tasks
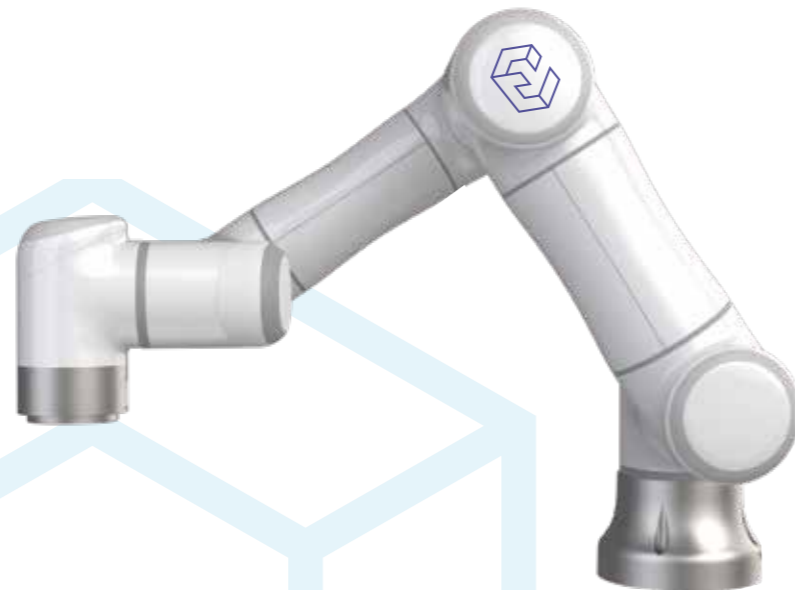
/ Suitable industries

3C electronics, new consumption/ new retail, precise processing, higher education

/ Suitable applications

Taking and placing lightweight materials, testing, tightening with small torque,assembly and deployment of AGV composite applications

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for more details

Payload 3kg

Working radius 624mm

Repeat positioning accuracy ± 0.03mm

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EC66

Payload 6kg

Working radius 914mm

Repeat positioning accuracy ± 0.03mm

Six-axis collaborative robot EC66

- Can meet most industry and application loads and realize various station automation
- Effective working radius up to 914 mm
- Manifestation of comprehensive integration of control, servo, encoder, machinery, structure, and industrial design

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Collision Detection
Realize the safe human-robot interaction, detect the collision between the robot and the staff in real time and ensure that the collision will not harm the staff through corresponding control strategies

Free Drive
Super-sensitive drag teaching function, and complete reproduction of the drag track, what you see is what you get

/ Suitable industries

3C electronics, new consumer, metal processing, home appliances, furniture, auto parts, food chemicals

/ Suitable applications

Pick and place, machine loading and unloading, screw locking, item sorting, conveyor tracking palletizing, material removal (grinding and removal of burrs)

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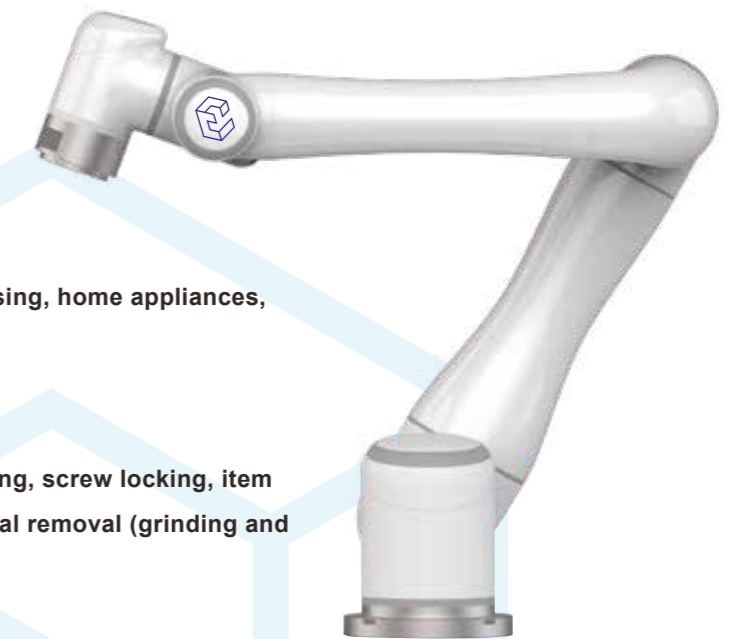
EC612

Intelligence Deduction, Infinite Motion

Six-axis collaborative robot EC612

- Capable of completing automating tasks with heavy loads
- Effective working radius up to 1304 mm
- Has the longest arm length and the heaviest load among the six axis series
- Can satisfy a wide range and heavy load working scenarios

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/ Suitable industries

Metal processing, logistics packaging, auto parts, food chemicals

/ Suitable applications

Loading and unloading of machine tools, high torque tightening, picking and placing of heavy load materials, demolition, palletizing, material removal (grinding, deburring)
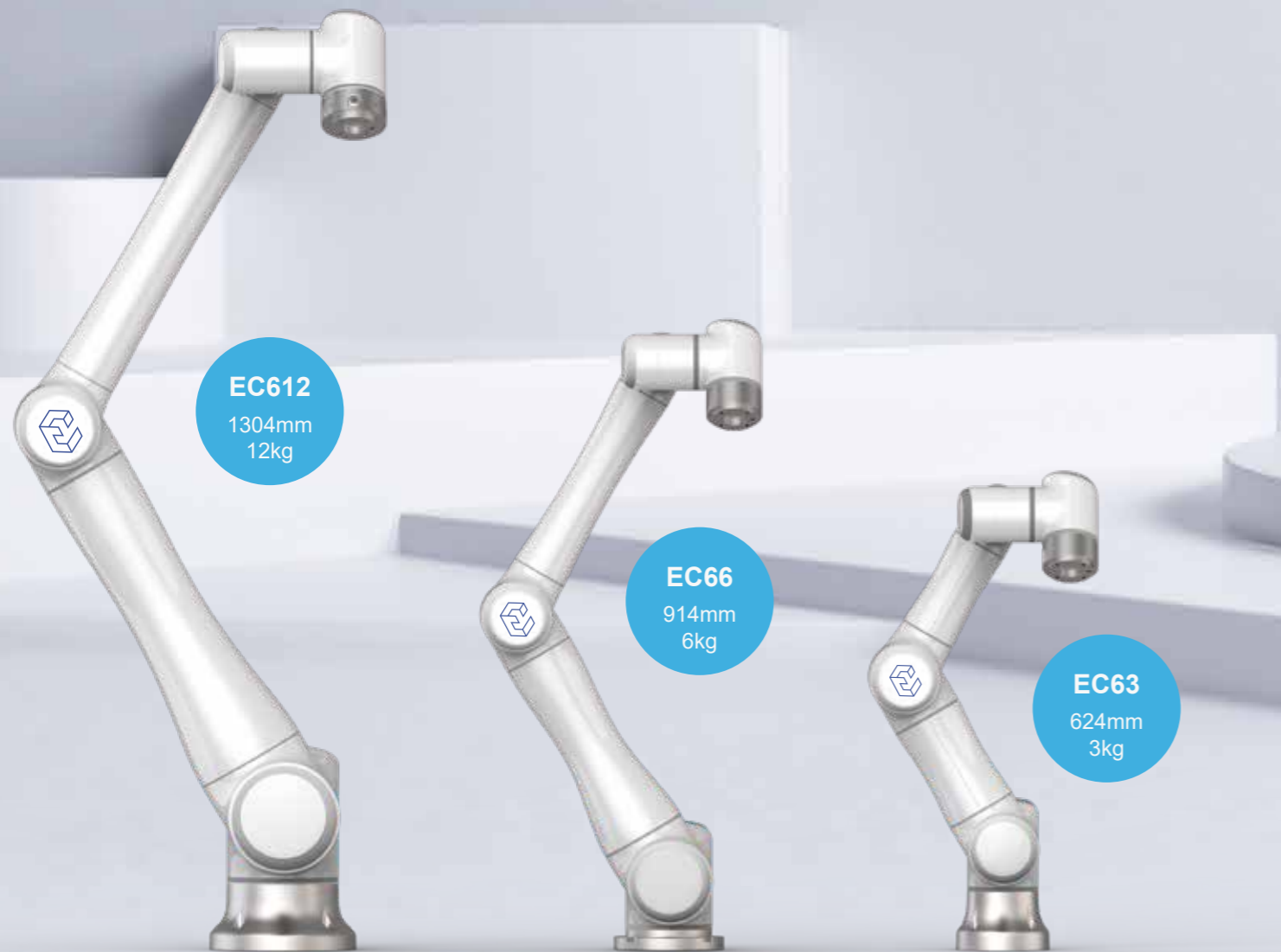
Payload 12kg

Working radius 1304mm

Repeat positioning accuracy ± 0.03mm

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Product specifications and parameters

EC612
1304mm
12kg

EC66
914mm
6kg

EC63
624mm
3kg

	Model	EC63/EC63M	EC66/EC66M	EC612/EC612M
Robotic arm	dead weight	13kg	17.5kg	33.5kg
	payload	3kg	6kg	12kg
	degree of freedom	6	6	6
	working radius	624mm	914mm	1304mm
	joint range	+/-360°	+/-360°	+/-360°
	maximum tool speed	2.0m/s	2.8m/s	3.2m/s
	repeat positioning accuracy	+/-0.03mm	+/-0.03mm	+/-0.03mm
	tool side IO	2 x DI, 2 x DO, 1 x 24V, 1 x AI, 1 x AO, 1 x RS485		
	cobot arm power supply	48V	48V	48V
	length of cable	5.5m	5.5m	5.5m
	installation method	Any angle	Any angle	Any angle
	ISO certification	EN ISO 10218-1:2011	EN ISO 10218-1:2011	EN ISO 10218-1:2011
	power consumption	about 150W under normal working conditions	about 250W under normal working conditions	about 500W under normal working conditions
	material	aluminum alloy	aluminum alloy	aluminum alloy
	operating ambient temperature	0-50°C	0-50°C	0-50°C
	operating ambient humidity	5% ~ 95%(non-condensing)	5% ~ 95%(non-condensing)	5% ~ 95%(non-condensing)
	protection grade	IP54	IP54	IP54
Controller	communication interface	16 x DI, 20 x DO, 2 x AI, 4 x AO. Ethernet TCP/IP, UDP, ModbusTCP. RS485/RS232, ModbusRTU. Profinet（optional）, EthernetIP（optional）, CCLink（optional)		
	dimension of controller	478*380*120 mm	478*380*120 mm	478*380*138 mm
	protection grade	IP20	IP20	IP20
	weight	15Kg	15Kg	17Kg
	electricity of controller	220/110VAC(M:19-72VDC)	220/110VAC(M:19-72VDC)	220/110VAC(M:19-72VDC)
	operating ambient temperature	0-50°C	0-50°C	0-50°C
	operating ambient humidity	5% ~ 95%(non-condensing)	5% ~ 95%(non-condensing)	5% ~ 95%(non-condensing)
Teaching pendant	protection grade	IP65	IP65	IP65
	operating ambient temperature	0-50°C	0-50°C	0-50°C
	operating ambient humidity	5% ~ 95%(non-condensing)	5% ~ 95%(non-condensing)	5% ~ 95%(non-condensing)
	weight	1.8Kg	1.8Kg	1.8Kg
	resolution	1280 x 800	1280 x 800	1280 x 800
	dimension	290 x 225 x118	290 x 225 x118	290 x 225 x118
	length of circuit	5.5m	5.5m	5.5m

* M version is for DC power supply with 48V/ 24V

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3C Electronics Industry Application

The 3C industry is a collective term for Computer, Communication, and Consumer Electronics.

In China, the industry's production has gradually shifted from large-scale, batch-standard product production to flexible, customized small-batch production. Many factories produce a single type of product in a short period of time and then switch to producing some other products.A highly flexible production method like that places new requirements not only on personnel but also on the automation equipment. Taking the inspection station as an example, some clients demand that production lines to be switched once every few hours. The traditional mechanical platform used for loading and unloading is not capable of meeting that requirement. As a result, for these applications, we need to come up with solutions with high compatibility and fast switching capabilities.

During the actual operation of the program, a simple "loading and unloading" action done by the robot does not come close to meeting the needs of users. The robot also needs to be able to solve the following difficulties:
1. Adapt to working platforms with small space and change ability
2. Quickly set up programs when switching between production lines
3. Guarantee production safety

The characteristics of a collaborative robot allow its type to solve the above pain points: compact structure, no need for safety fence, maximum space efficiency paired with AGV trolley, guide rail or lifting column, and a bigger expandable workspace. The robotic drag and drop programming simplifies path planning, and the robot arm body integrates a modular program. Thus, the operator only needs to perform drag and teach to edit the program. When the production line is switched, the user can directly pull out the program and give execution instructions to the robot, which greatly reduces the time spent on switching and debugging.

In addition, the safety stop function of the collaborative robot and its comprehensive safety interface can easily adapt to peripheral safety sensors, allowing the robot arm to work with security while moving.

Pick and place   Assembly   Tightening

Testing   Dispensing   Welding

Automotive industry applications

The development of manufacturing has created the demand for human-robot collaborative robots. As the internal and external environments of manufacturing go through changes, major transformations have taken place in terms of production conditions and models. Price pressure, challenges of production line management, flexibility and switching, increasing global competition, labor shortages, increased productivity demand, and product quality requirements have become the constraints for many companies' production line upgrades and structural transformations. These factors also have set higher requirements for enterprises to adapt to changes in industry and the market.

Tightening   Machine loading and unloading   Gluing

Lnspection   Assembly   Palletizing

As an industry with high added value and high level of automation, the automobile industry entered the eyesight of collaborative robot companies a long time ago. Combining the characteristics of light load and high flexibility of the products, the auto parts industry has become the most suitable entry point for these businesses. In recent years, the major collaborative robot manufacturers have, without exception, taken this vertical industry as the direction of key cultivation. For a long time, the automotive industry is known for strict standards and thorough systems, as well as emphases on efficiency and standardization. The safety of collaborative robots can precisely provide users with a "safe" and "efficient" solution, allowing humans and robots to coexist and collaborate. Users in the automotive industry are very concerned about ensuring the safety of operators while improving efficiency.

Elite 3kg, 6kg, 12kg collaborative robots can be used in automation scenarios of automotive parts and automotive electronics, including: engine tightening, car seat tightening, reducer gluing, window gluing, headlight welding, instrument panel and PCB board detection loading and unloading, flywheel pick-up and assembly, palletizing, machine tool loading and unloading, and so on.

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New consumption and new retail applications

Under the wave of new consumption and new retail, concepts such as unmanned supermarkets, vending machines, facial recognition, and sensorless payment have emerged. All of these trends are realized through the "close-scene" human-computer interaction done by devices and software. With the rapid growth of the entire industry, both developers and manufacturers in the "new retail" industry and upstream equipment manufacturers have noticed the huge market potential and the unique demand.
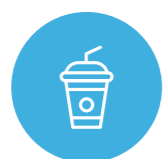
Coffee   Milk tea   Convenience store

Babysitting   Chef   Restaurant

ELITE and its clients work together to "let robots serve humanity" and promote robots to enter more commercial scenarios. Since 2017, ELITE has participated in the development of automatic coffee stations, ice cream stations, milk tea stations and unmanned restaurants. No matter it is "unattended" or "human-machine collaboration" scenario, collaborative robots have become the ideal tool for new consumption and new retail industries due to its programming and visual visibility that are much simpler than traditional industrial robots, on top of its compact structure and small area occupation. We believe that in the near future, after combining various sensors and mobile platforms, in addition to industrial scenarios, collaborative robots will gradually enter into people's everyday life, and bring various new experiences to consumers.

Application of logistics packaging industry

Using collaborative robots can simplify packaging and stacking operations, making the process simpler, faster, and more efficient. The addition of collaborative robots frees workers from the burdensome and repetitive bending and carrying movements, and the 7x24-hour working time improves system efficiency. The free drive teaching and interactive programming of the teaching pendant allow users to easily cope with small batches and multiple varieties. Compared to traditional industrial robots, the programming difficulty of collaborative robots is also reduced. Therefore, the application debugging time can be shortened when dealing with different packaging box, and thus the disruption of normal production processes can also be reduced during switching. The 3kg, 6kg, 12kg load and arm length range can cover the sorting, packaging, stacking, and dismantling requirements from small items to large boxes. Together with AGV, moving rails or lifting columns, the robot's motion range can be expanded and meet various packaging automation requirements.

Box   Metal parts   Welding   Sorting

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Metal processing industry applications

Whether it is welding, machine loading/unloading, or irregular metal parts grinding, collaborative robots are useful in different scenarios of the metal processing industry. Although the processes, materials, and specialty products may vary, the common features of collaborative robots can help factories increase efficiency. Precision——The precision of a cooperative robot can reach + -0.03mm, thus it can easily meet the positioning accuracy requirements of various machining processes.

Rapid deployment——The deployment of a lightweight collaborative robot is flexible, and the requirements for installation position are not high. It is suitable for various installation modes, such as front installation, inverted installation, and side installation. As a consequence, it is simple and easy to reconstruct the existing production line. The working area of the compact robot does not need to be equipped with a safety fence. Therefore, in addition to the small area occupation of the robotic arm, the working area of the robot does not need to be isolated from the safety area. A co-working space between humans and robots can be achieved when the system risk assessment is passed. Easy programming——The interactive programming method of the teaching pendant allows the engineer to be more efficient when editing the robot trajectory, thereby shortening the project integration and debugging cycle.

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Process application

Pick and place

- Product pick and place, machine loading and unloading
- PCB board or electronic component inspection (a type of loading and unloading)
- Robotic arm carries vision camera for object surface inspection
- A GV for carrying goods
- 2D or 3D camera for random sorting

For collaborative robots, picking and placing parts is the most common application, accounting for more than 60% of the total application. For many factories, the process of loading and unloading the machine and the process of linking the working islands include a large number of pick-and-place actions, and this action is undoubtedly of very low added value if performed manually by human.

Collaborative robots can achieve pick-and-place automation for different materials. They are small and lightweight and can be easily moved and deployed in different stations of the workshop. They are easy to program and users can save programs for reuse. Therefore, for materials of different specifications and shapes, the collaborative robot can be quickly put into use after teaching and planning the motion trajectory to minimize the loss of downtime caused by product switching.

Assembly

- Insert USD and cardinal plate memory
- PCB board insert shaped parts
- 3C electronics industry small torque screw tightening (ex. tablet PC, router)
- Auto parts industry high torque screw tightening (ex. engine, lights, car seats)

Many scenarios must have a human, because humans are not only flexible, but can also solve complex problems. For example, assembly applications require operators to perform a series of complex and delicate actions during the product manufacturing process and handing these tasks that can be easily completed by human hands over to traditional industrial robots can make executions quite difficult.

The original idea behind the design of collaborative robots is to replace the labor that can be done by human hands with mechanized equipment. Therefore, the stability and repeatability of machinery and the flexibility of manpower are taken into thorough consideration. ELITE collaborative robots have an accuracy of +/- 0.03mm and a maximum linear speed of 3.2m / s, which can meet the beat and accuracy requirements of most manual assembly stations. The open and diverse interfaces are suitable for pairing with various types of end effectors and sensors (including vision camera, force control sensor, clamping jaw, screw-tightening gun, welding gun, etc.).

Material Removal

- Bathroom products plastic parts degating
- Sanding of metal parts
- Polishing of metal parts
- Polishing furniture and household equipment

Whether it is plastic gates, deburring, metal sanding, or wood polishing, many factories still use manual operations. For industry workers, many of these materials removal processes produce dust, debris, and noise, and working in such contaminated environments for a long time pose a huge threat to their health. For enterprises, not only do these positions have a high turnover rate, but also the consistency of products operated by humans is not ideal.

Collaborative robots with integrated force sensors ensure consistent grinding and polishing results, even on curved and rough surfaces. The robotic arm can automatically adjust the position according to the shape of the surface of the object and perform fine material removal tasks with appropriate strength. The interactive programming mode of the Elite collaborative robot's teaching pendant is simple and visual. The main trajectory of the robot can be calibrated by dragging the teaching function, thereby helping system integrators shorten the project cycle.

Moving

- Visual sorting of medicines
- Food packaging
- Palletizing of boxes
- Disassembly of packing box

ELITE collaborative robots can be used in most packaging and stacking applications. The installation space of the collaborative robot is small, the programming and operation movement can be quickly modified, and it can be used with many different devices at the same time. After setting the program for the robot, the robotic arm will count and travel accurately according to the instructions, ensuring that the user always delivers the correct quantity and consistent state of the goods.

The collaborative robot's simple programming method simplifies the packaging and stacking operations. During the robot's working session, if the user needs to change the robot's running trajectory or increase or decrease the movement (such as the size of the packaging box, the number of stacking layers and the number of each layer), the robot can resume work again after quick commissioning and modification of points.