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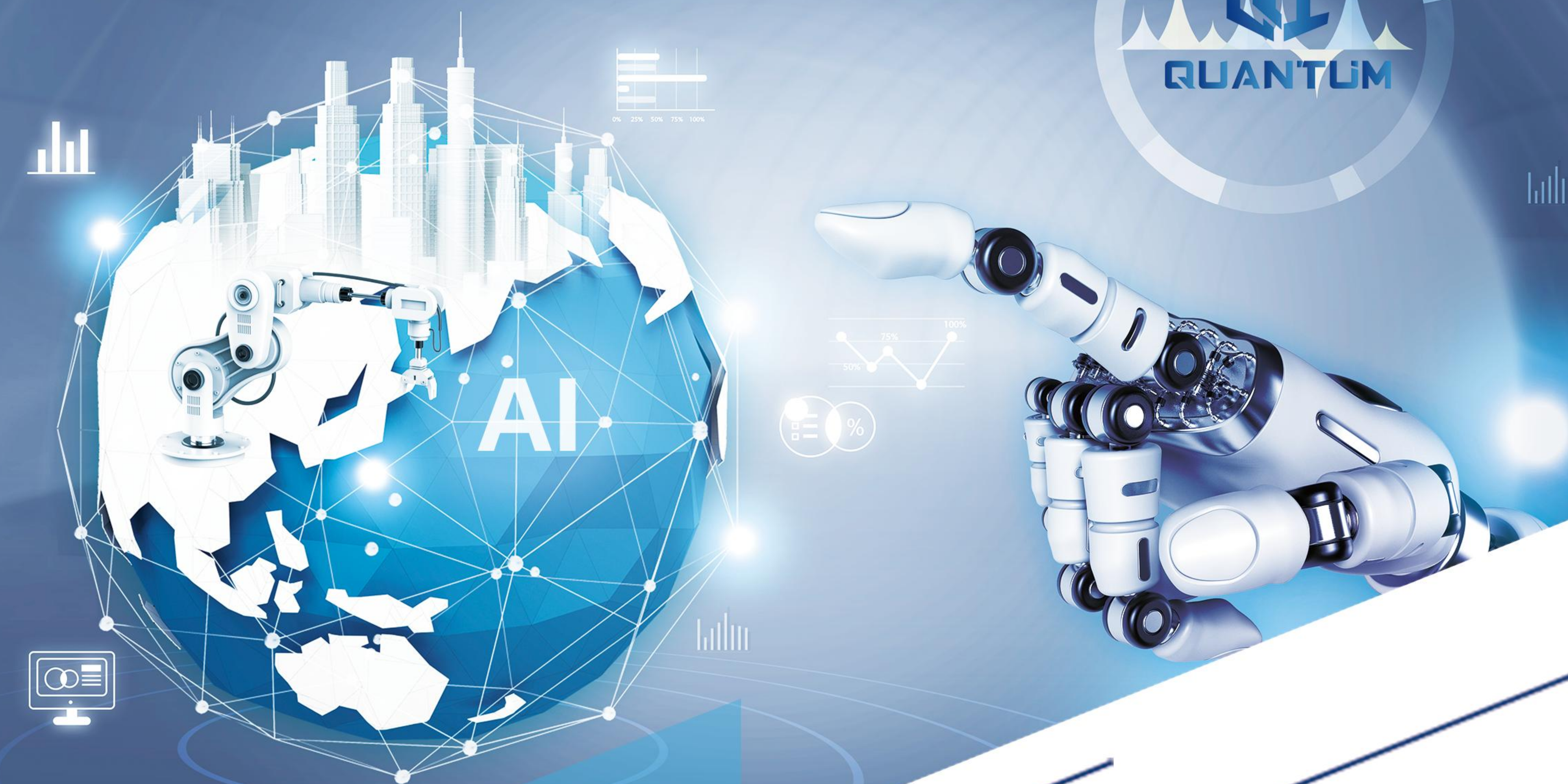
XI 'AN, CHINA

TECHNOLOGY SERVES HUMANITY AND KEEPS PEOPLE AWAY FROM DANGEROUS JOBS

SERVICE HOTLINE: 400-663-0899

ADD: 4455 SHAOLING ROAD, XI 'AN AEROSPACE BASE, SHAANXI PROVINCE

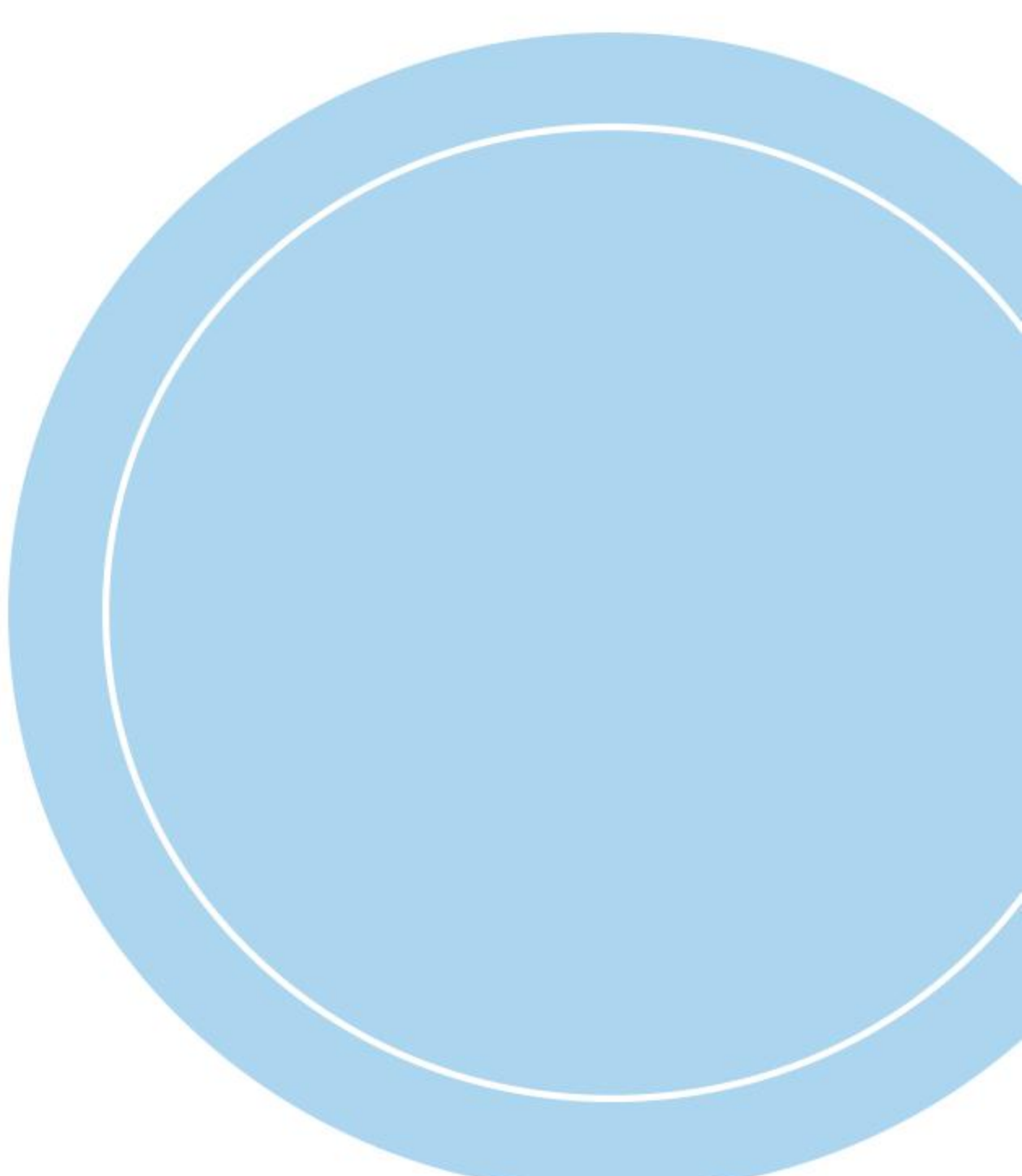
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Hazardous Environment Intelligent Working Robot
AND SCENARIO SOLUTION PROVIDERS

XI 'AN QUANTUM INTELLIGENT TECHNOLOGY CO., LTD

Company's Introduction



SCIENCE AND TECHNOLOGY SERVE MANKIND
KEEP HUMANS AWAY FROM DANGEROUS WORK

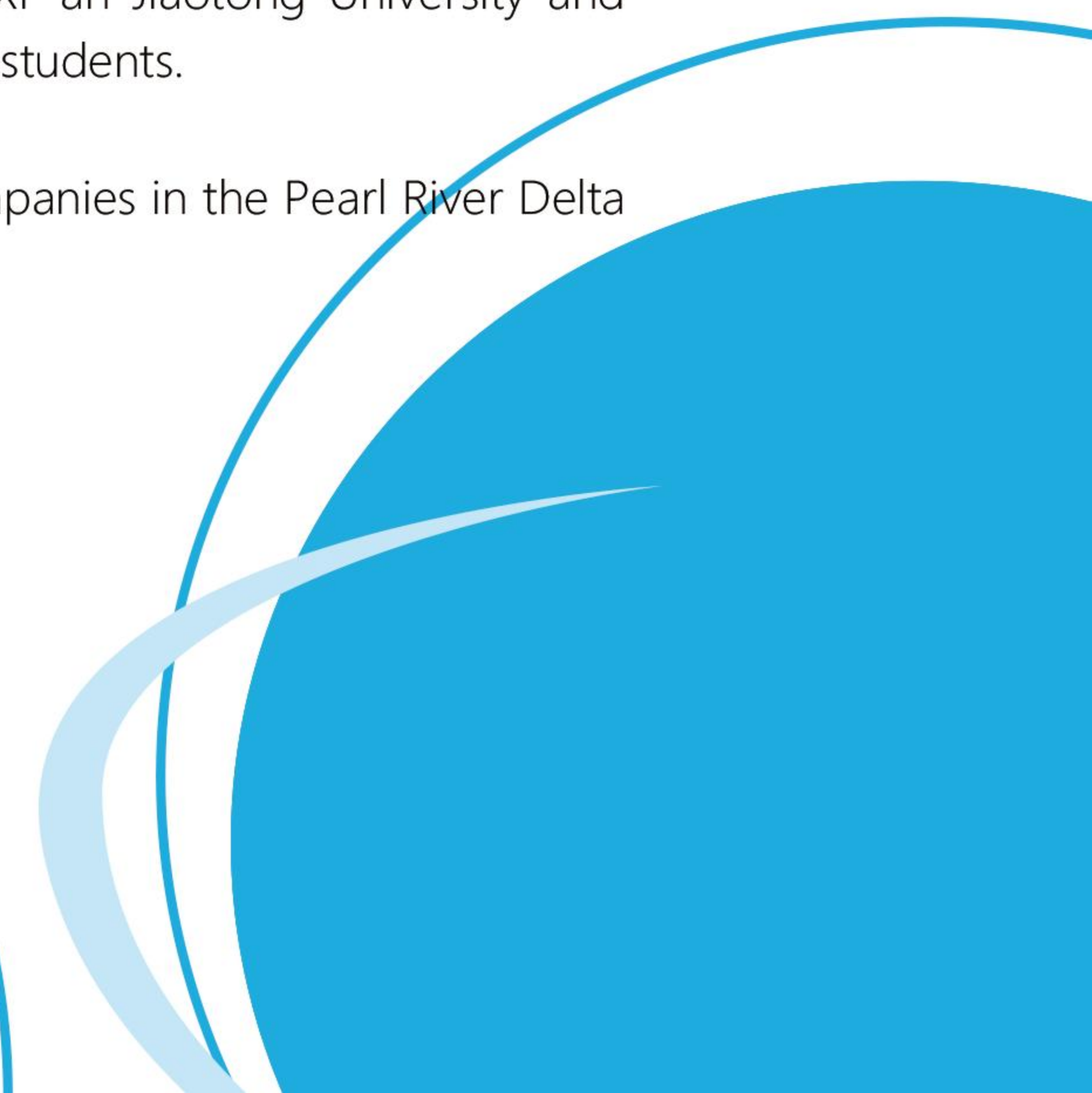
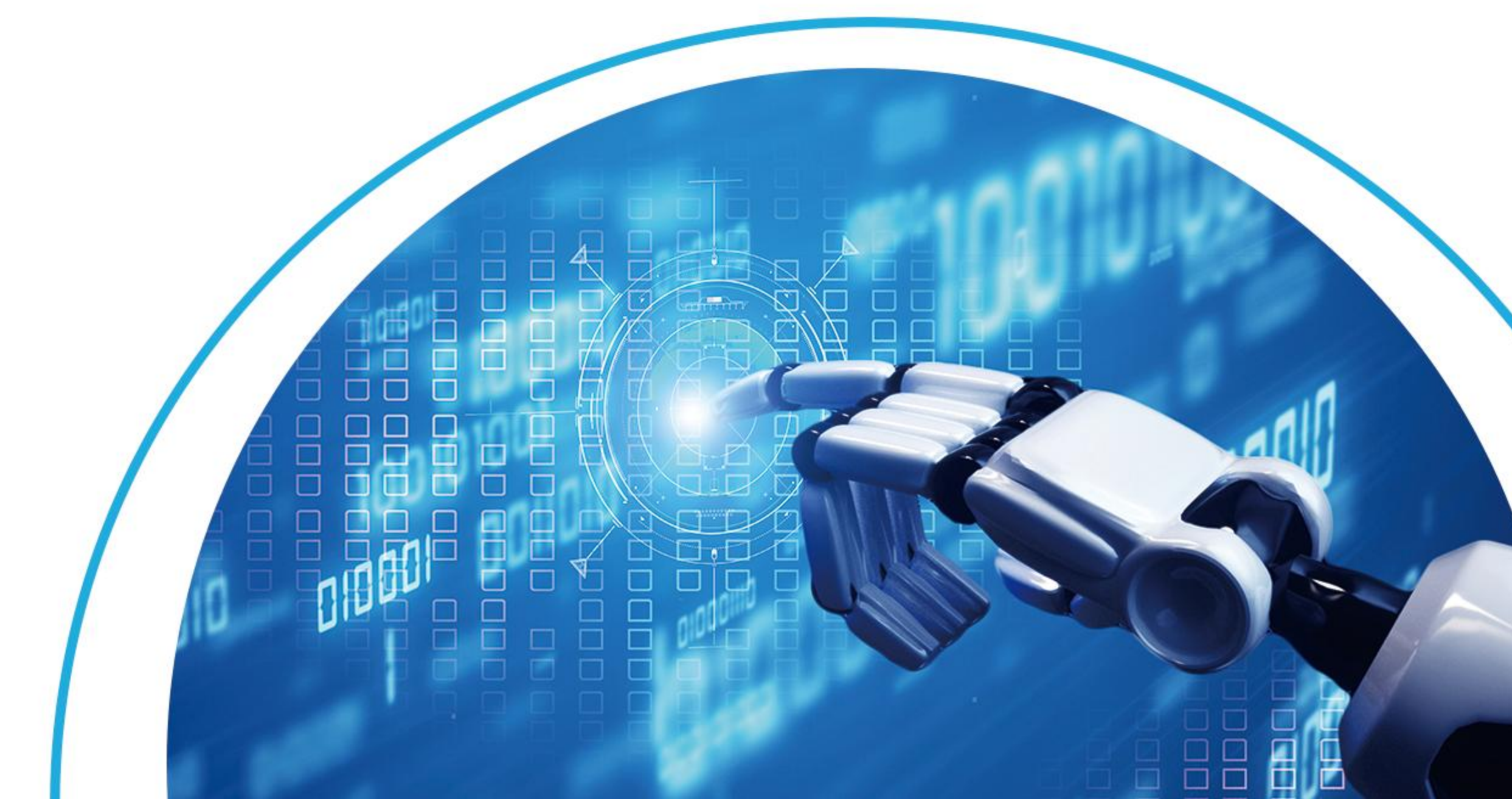
XIAN QUANTUM INTELLIGENCE TECHNOLOGY CO., LTD

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Xi 'an Quanta Intelligent Technology Co., Ltd. was established in 2016 and is positioned as a provider of intelligent robots and scene solutions for dangerous environments. The core backbone is a group of experts from aerospace science and technology and Chinese weapons, who have been engaged in the development of industrial robots, artificial intelligence and intelligent perception for many years. Now focus on the layout of new energy, mining, smelting, petrochemical, power and other industries.

The company is located in Xi 'an Aerospace Base, R & D and production area of 2000 square meters, the current team of more than 50 people, including one professor level senior engineer, two doctors, three masters, the company has passed the ISO9001, ISO14001, ISO45001 three system certification in 2019. It has won honorary titles such as "National High-tech Enterprise" and "Shaanxi Independent Innovation Enterprise". At present, it is a joint training base for master students of Xi 'an Jiaotong University and Northwestern Polytechnical University, and has trained a number of master students.

The company has completed the Pre-A round of financing and set up companies in the Pearl River Delta and Yangtze River Delta.



COMPANY DEVELOPMENT HISTORY

- 2016: The company was established
- 2016-2018: Cut into the mining and construction fields
Mine base station (mine application); Drilling robot (application of Qianzhangchang Railway); Silver marking system.....
- 2019-2020: Exploring drilling robots, software robots, and inspection robots
The world's first "blockchain + pipe corridor robot" application; Large mine belt inspection robot application.....
- 2021: Determine the development direction of hazardous environment operation robots, and obtain two national high-tech enterprise certification and provincial scientific research funding projects in the same year
Pipe corridor inspection robot application + complete solution; Belt gallery inspection robot application + Complete solution.....
- 2022: Improve the rigidity of existing products and develop intelligent working robots
Ex db ib IIC T4 Gb inspection robot system has obtained 13 explosion-proof certificates; Wind power tower cylinder high-altitude polishing and painting robot successfully developed.....
- 2023: Expand application scenarios and accelerate application promotion
With National energy - Shaanxi Longyuan New Energy joint establishment of new energy special operation robot R & D center, and Jifeng New Energy technology (Guangdong) signed a strategic cooperation agreement, aerial work robot on the CGN mall, in-depth docking Shandong Energy Group, Shenzhen Energy Group, Yantai Port, Dongying Port, Wanhua, etc...



JOINT ESTABLISHMENT OF SPECIAL ROBOT RESEARCH AND DEVELOPMENT CENTER

Quantum Intelligence and Beijing Shaanxi Coal New Energy Technology Co., Ltd. jointly established a special robot research and development center to introduce new technology fields such as computer vision and artificial intelligence, strengthen the deep integration of cooperation between enterprises, provide technical support for related products and businesses of enterprises, improve the level of production and operation and industrial chain of enterprises, and enhance the international competitiveness of enterprises.

BUILD PIPE CORRIDOR ROBOT INSPECTION SYSTEM

The robot inspection and monitoring system of the urban pipeline corridor has reached the domestic leading level in the three technical levels of intelligent monitoring, artificial intelligence and three-dimensional BIM imaging, and has also built a three-dimensional underground pipe network application system integrating robots, intelligent manhole covers, fire protection systems and data service engines, gradually realizing the digitalization of global assets.



PARTICIPATE IN THE FORMULATION INDUSTRY GROUP STANDARD

Artificial Intelligence Technology Innovation series Summit forum, the content of this forum is the service robot industry and application seminar and the release of the group standard of "Robot Autonomous positioning and Navigation Technical Specifications". In this forum, our company is an important participant in the formulation of the group standard (T/AIIA 001-2020) of the "Mobile Robot positioning and Navigation Performance Evaluation Specification".



AI PLATFORM

The inspection robot AI platform is an integrated platform based on artificial intelligence technology, which realizes the management, control and optimization of inspection robots. Provides functions such as remote monitoring, task scheduling, path planning, data analysis and early warning to sense failures in real time and provide data-driven decision support to optimize maintenance plans and reduce operating costs.

ORBITAL INSPECTION ROBOT

Orbital intelligent inspection robot is mainly composed of mobile inspection platform, wireless communication system, wireless charging device, double spectrum video, a variety of signal acquisition equipment and track system, etc., which is suitable for mobile inspection of belt conveyor line, coke oven smelting, petrochemical industry, integrated pipe gallery, power distribution room and so on.

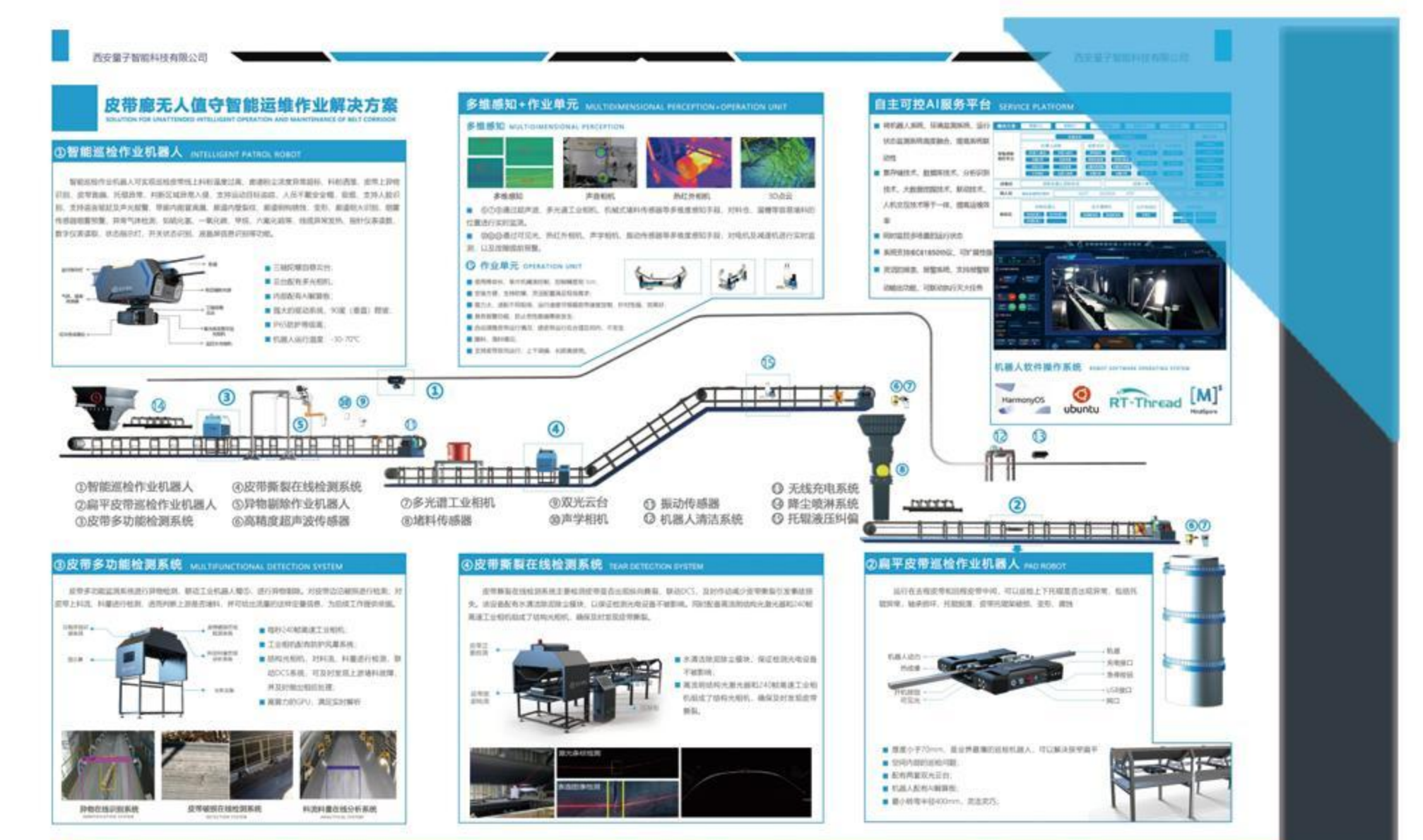


INTELLIGENT WHEELED ROBOT

Intelligent wheeled robot is a four-wheel drive four-turn mobile robot with autonomous navigation system. Each driving wheel of its chassis adopts multi-link independent suspension, which can realize in-situ steering and small turning radius steering, and improve the stability under bumpy road conditions. It is suitable for petroleum, coal chemical industry, fine chemical industry, booster station, natural gas station and other scenarios.

COMPLETE SCENARIO SOLUTION

Focus on the scene, in-depth analysis of customer needs, provide a full set of solutions, to achieve multi-machine integration, multi-dimensional perception. Combined with IOT acquisition devices, fixed end devices, intelligent inspection robots, original equipment systems, industrial Internet platforms and other systems, to achieve a complete solution of perception, decision, and execution.



TRANSFORM SCIENTIFIC AND TECHNOLOGICAL ACHIEVEMENTS INTO REAL PRODUCTIVE FORCES

- In 2019, a joint training base for postgraduates of Northwestern Polytechnical University will be established
- In 2020, Xi 'an Jiaotong University will establish a joint training base for master's students
- In 2021, a special robot R&D center was established with Beijing Shaanxi Coal New Energy Technology Co., LTD



- National high-tech enterprises
- Quality management system certification
- Environmental management system certification
- Occupational health and safety management system certification



ENTERPRISE QUALIFICATION

- Selected as Xi 'an Independent Innovation Enterprise in 2020
- In 2020, we will obtain the safety mark certificate of mining products
- In 2020, it will be selected as a member of Shenzhen Artificial Intelligence Industry Association
- In 2021, it was selected as the first batch of recommended projects of safety emergency equipment application pilot demonstration project of Guangdong Provincial Department of Industry and Information Technology
- In 2021, it will be selected as Xi 'an Science and Technology Plan project



INVENTION PATENT

• Edited 1 industry standard, 6 utility model patents, 11 invention patents 5 appearance patents and 13 software Copyrights



BUSINESS PARTNER

Quantum intelligent products have been successfully applied in mining, smelting, rail transportation, electric power, new energy and other industries, providing intelligent inspection solutions for many customers.



HARDWARE PRODUCT MATRIX

Robot series products are integrated with artificial intelligence, edge computing, big data, AI identification, 5G and other cutting-edge technologies, and the operation is safe and reliable.

SOFTWARE PRODUCT SHELF SYSTEM

Focus on industrial application scenarios, stable, reliable, intelligent and efficient. Model optimization algorithm and edge recognition optimization algorithm based on machine learning.

Q-I²P SCENARIO-LEVEL INDUSTRIAL INTERNET PLATFORM

Q-IAT

IMAGE ALGORITHM TOOL SET

Image detection, behavior recognition, defect detection, visual measurement

Q-DLC

DEEP LEARNING DEPLOYMENT TOOLCHAIN

Edge AI deployment, server AI deployment, model lightweight, model stress testing

Q-DCS

DISTRIBUTED CONTROL SYSTEM

Server centralized control mode, edge side control mode, kubernetes, remote parallel control

Q-ICP

INDUSTRIAL IOT COMMUNICATION PROTOCOL

Modbus, MQTT, OPCUA, Profibus

Q-TAT

TIMING ALGORITHM TOOL SET

Clapping classification, anomaly detection, trend prediction

Q-DTS

DIGITAL TWIN SYSTEM

3D visualization, data twin, B/S architecture, C/S architecture

Q-MCP

MULTIMODAL FUSION SENSING SYSTEM

Acoustic imaging, point cloud imaging, multi-dimensional time series fusion

Q-ISM

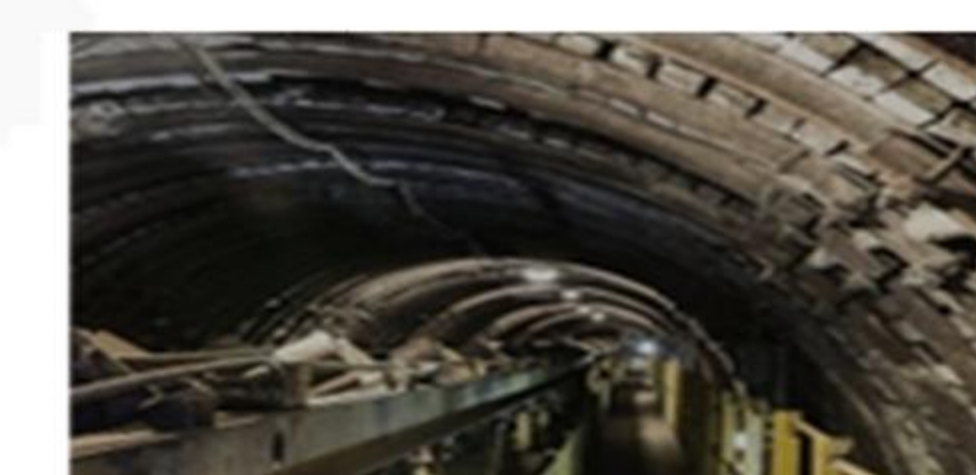
INFORMATION SECURITY MANAGEMENT SYSTEM

Trusted computing, algorithmic encryption, communication encryption, data encryption

SCENARIO LEVEL DIGITAL MANAGEMENT PLATFORM



Substation operation



Belt corridor pipe belt machine operation



Pipe gallery tunnel operation



Wind turbine room



Metallurgical coke ovens oil and gas operations



Scene operation in coal mine



Aerial work

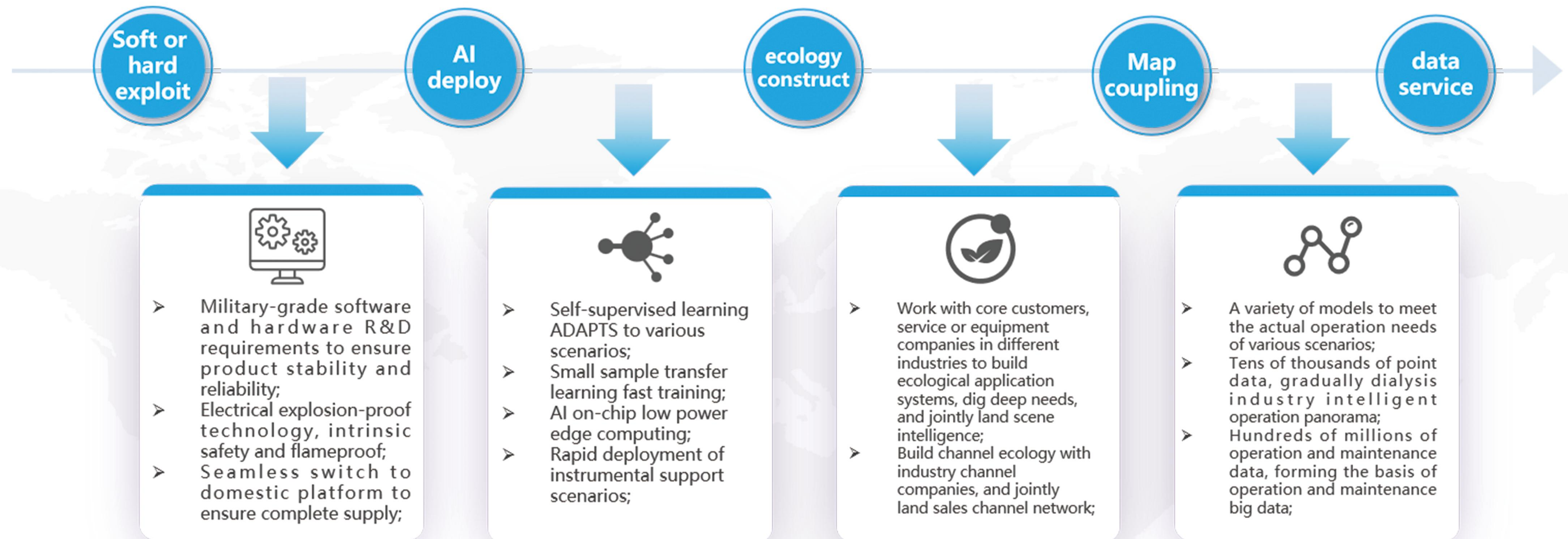


Industrial scene operation



FIVE CORE COMPETENCIES + INDUSTRIAL OPERATION AND MAINTENANCE SCENARIO DATA ASSETS

- Software and hardware development, ensure product stability and reliability, tool support scenario rapid deployment, jointly build an ecological application system, multiple models, to meet the actual operation needs of various scenarios.
- Through self-supervised learning and large-scale small sample model, the "teacher" model is trained, which has the characteristics of high accuracy and strong adaptability. Under normal circumstances, the "teacher" model is large and complete and does not have the deployment ability. However, we can independently train the small but fine "student" model through the "teacher" model, which can achieve automatic labeling and training and save human computing power.



Algorithm recognition: 88 kinds

Pointer table LED digital display liquidometer Horse race lamp Belt tear detection Coal leakage detection Large stone detection Rod lift down Gas escape
 Exchange cylinder running Equipment abnormal noise Infrared location recognition Face recognition Open flame monitoring Smoking identification Foreign body recognition



PRODUCT CERTIFICATE

Explosion-proof double spectrum, large moment of inertia gyroscopic self-stabilizing head, the robot can capture clear images in the process of movement, equipped with AI resolution board, and deeply optimize the AI model to reduce the power consumption of the core computing unit "end".



- Smaller size, lighter weight
- Explosion-proof three-axis gyroscopic self-stabilizing head, more
- Not less than 8Km endurance, 30° climbing ability
- stable picture, more clear imaging
- Environmental adaptability: -30~80°C
- Support independent power generation or wireless charging
- Supports visual AI algorithm customization in special scenarios

SELF-CHARGING PATENTED TECHNOLOGY

PRODUCT CERTIFICATE

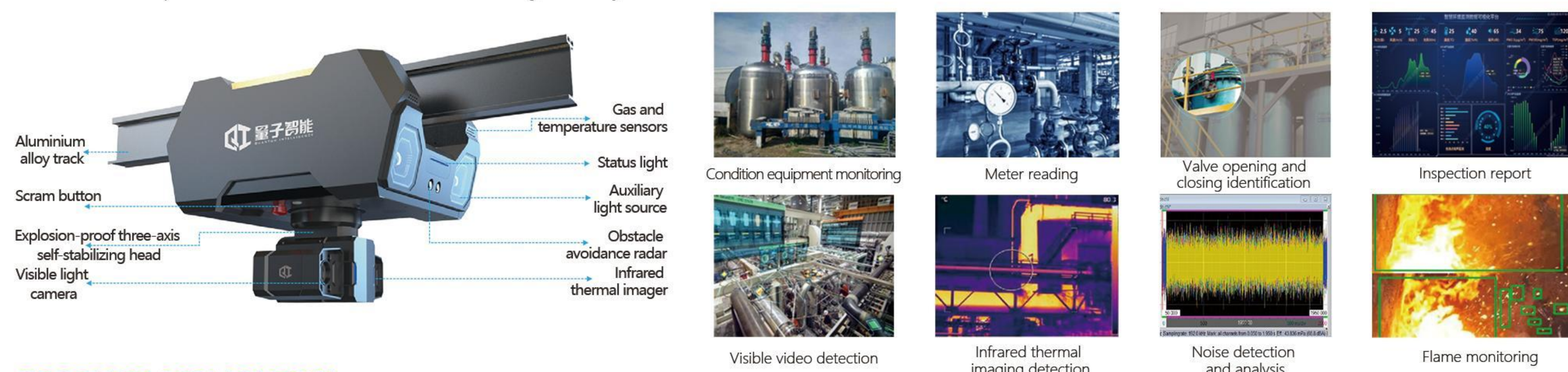
At present, 13 Ex db ib IIC T4 Gb explosion-proof certificates have been obtained

ORBITAL EXPLOSION-PROOF INTELLIGENT INSPECTION ROBOT - KJXX24C

EXPLOSION-PROOF CLASS: Ex db ib IIC T4 Gb

PRODUCT INTRODUCTION

The orbital explosion-proof intelligent inspection robot is mainly composed of a mobile inspection platform, an intrinsically safe wireless communication system, a safety charging device, a three-axis self-stabilized explosion-proof head, a variety of signal acquisition equipment and a track system, and a comprehensive use of visual recognition, deep learning, edge algorithm, big data analysis and other technical means to achieve automatic or manual control of the robot on the track. Real-time acquisition, return, analysis and storage of equipment monitoring, sound, image, gas and other parameters in the entire trajectory.



PRODUCT APPLICATION



Explosion-proof inspection robot + explosion-proof head application

Explosion-proof inspection robot + explosion-proof charging application

APPLICABLE SCENE



CHEMICAL PLANT

SMELTERS, COKE OVENS

OIL AND GAS FIELD





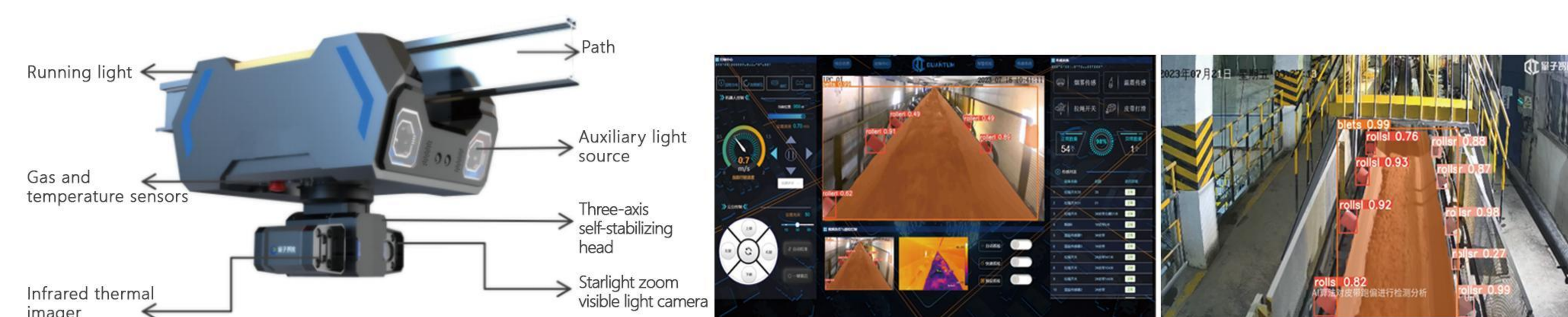
ORBITAL INTELLIGENT INSPECTION ROBOT - Qi-1-G

PRODUCT INTRODUCTION

The orbital intelligent inspection robot can replace the inspection workers to complete the inspection work, and has functions such as transmission of on-site images and sounds, detection of on-site equipment temperature, smoke smoke, harmful gas concentration, etc. By analyzing the data, it can determine whether there is equipment fault and locate the fault, reduce the labor intensity of the staff, reduce the labor risk, and find out the problems in time. Avoid the expansion of accidents and greatly reduce the abnormal downtime in the production process.

SYSTEM COMPOSITION

Orbital intelligent inspection robot is mainly composed of mobile inspection platform, wireless communication system, wireless charging device, double spectrum video, a variety of signal acquisition equipment and track system, which is suitable for mobile inspection of belt conveyor line and integrated pipe corridor. The robot adopts advanced wireless charging, wireless data transmission and other technologies to realize automatic or manual control of the robot on the orbit, and realize real-time acquisition, return, analysis and storage of parameters such as sound, image and gas concentration in the entire trajectory.



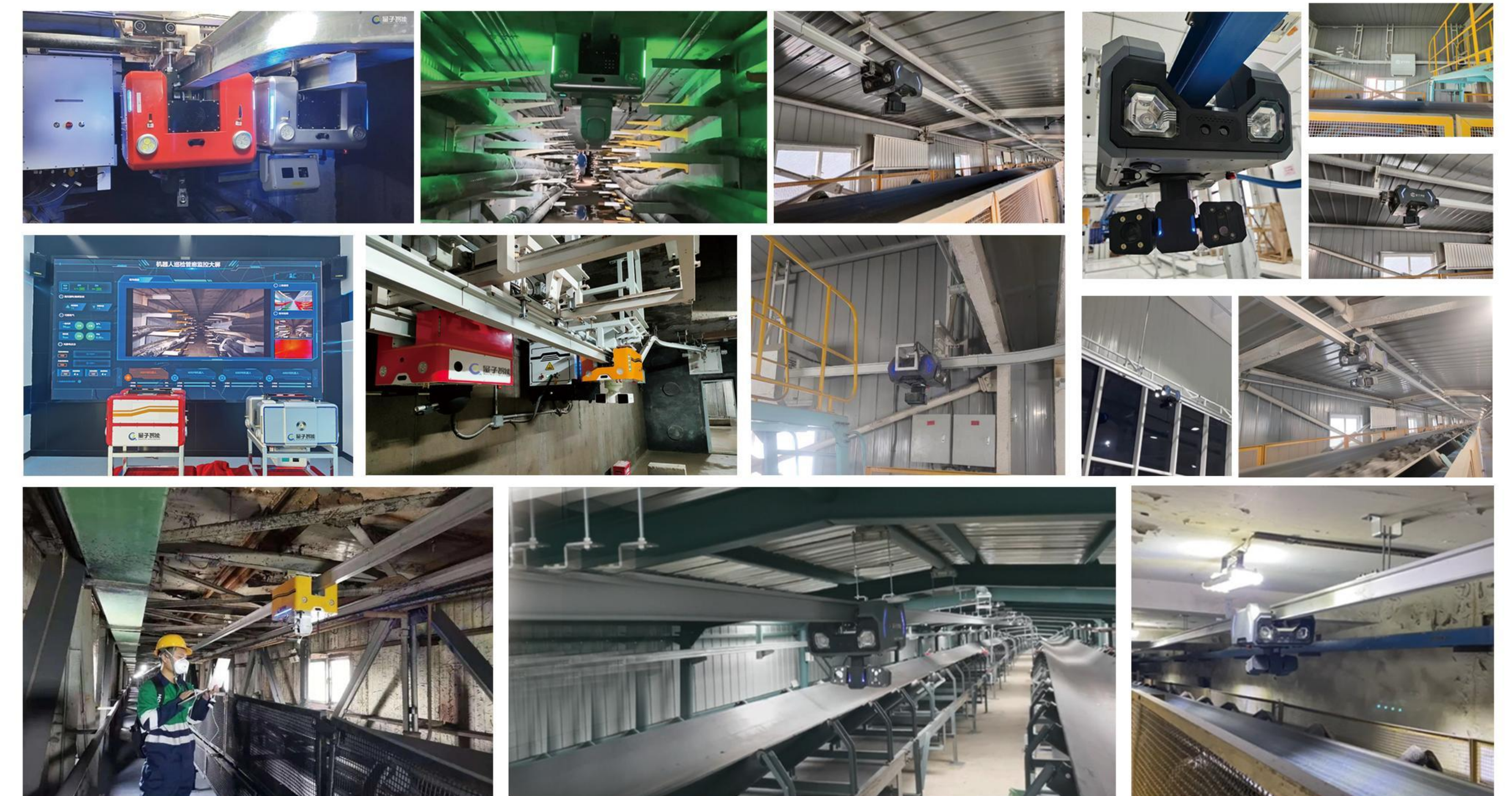
PRODUCT FUNCTION

- Core components independently designed and developed, smaller volume, lighter weight
- Not less than 12Km endurance, 0-90° climbing ability
- Environmental adaptability: -30~60°C
- Supports visual AI algorithm customization in special scenarios
- Supports the type of inspection model: timing, preset, fixed point
- Three-axis gyroscopic self-stabilizing head, the picture is more stable and the image is clearer



PRODUT CASE

Intelligent inspection robots have been delivered and used in many urban pipe corridor inspection projects in Xi'an, Qingdao and other cities, and have obtained efficient operation results and good customer reputation in the operation and maintenance supervision system of non-ferrous metal mines and sand belt corridors such as Jinchuan Group and Xichang Mining.



Inspection robot belt corridor, pipe corridor application cases

APPLICABLE SCENE



Pipe gallery

Belt corridor

The computer room



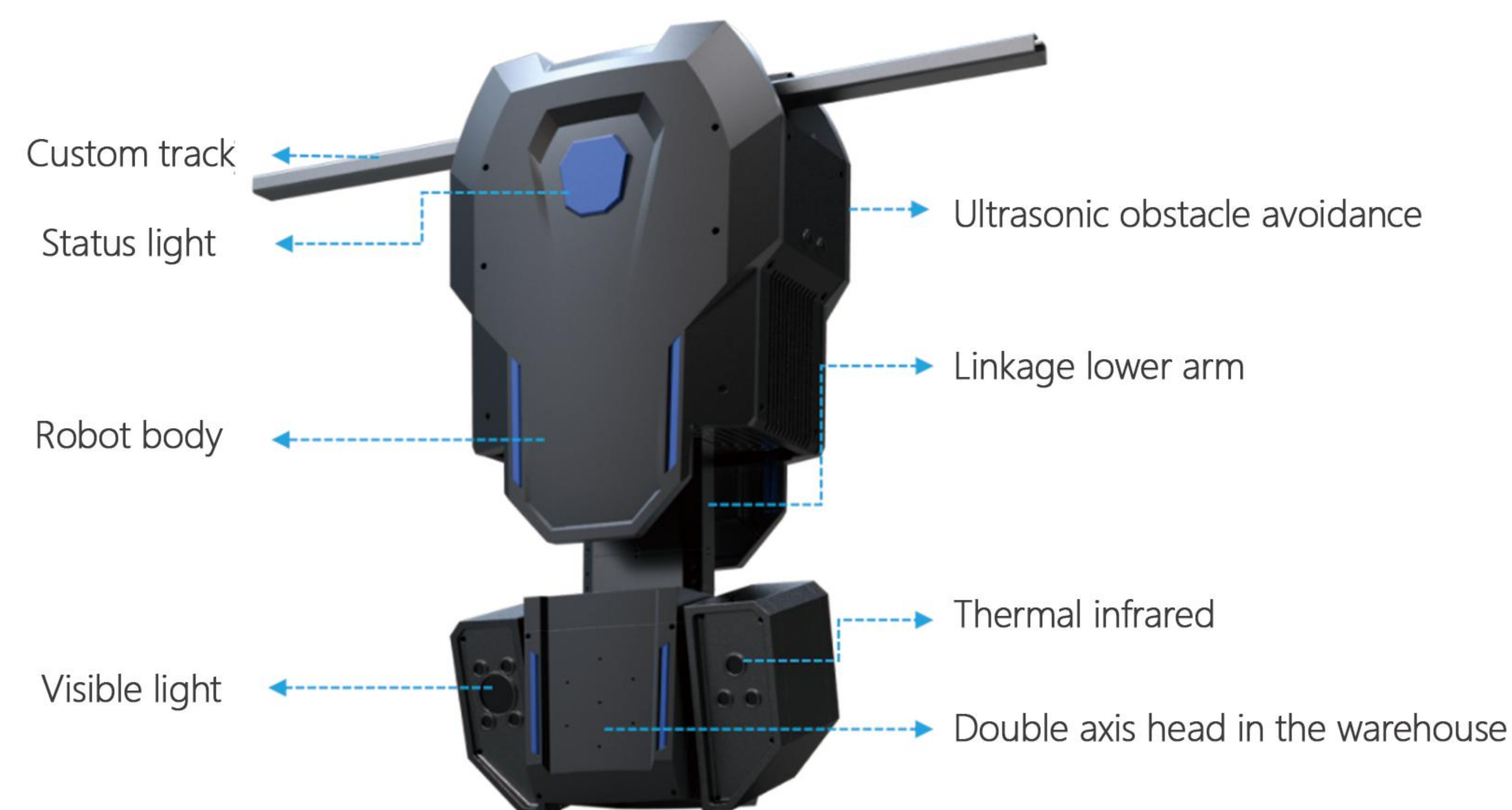
LOWER ARM INSPECTION ROBOT - Qi-1-PD

PRODUCT INTRODUCTION

The lower arm inspection robot has the smaller size in the industry and can perform inspection tasks in small Spaces. Relying on the visible light camera, infrared thermal imager, environmental monitoring sensor and other modules carried by the robot, it accurately collects, detects and monitors the field equipment status and environmental information. The inspection operation and maintenance control closed-loop system realizes all-weather fast data collection, real-time information transmission, intelligent analysis and early warning to fast decision feedback

SYSTEM COMPONENTS

The lower arm intelligent inspection robot system is mainly composed of mobile inspection platform, wireless communication system, linkage lower arm device, high resolution pinion, a variety of signal acquisition equipment and track system.



PRODUCT FUNCTION

Intelligent algorithm and visual perception technology, with visible video image, infrared thermal imaging temperature measurement, temperature and humidity detection, gas concentration detection, sound anomaly analysis and other detection methods, with the inspection area of instrument identification and analysis, valve status recognition, leakage detection, real-time collection, storage and other functions.

- | | | | |
|---|---|---|---|
| Video recognition <ul style="list-style-type: none"> ■ The area abnormal intrusion is detected ■ Support moving target tracking ■ Support face recognition | Infrared temperature measurement <ul style="list-style-type: none"> ■ Monitor real-time temperature data of equipment in the cabin ■ Automatically notify maintenance personnel for trouble-shooting | Steady down <ul style="list-style-type: none"> ■ The monitoring range extends up to 2 meters below the robot ■ The PTZ can still provide stable and clear images during the exploration | Voiceprint recognition <ul style="list-style-type: none"> ■ Collect the voice print information of the corresponding device in real time ■ The collected voiceprint information is compared with the voiceprint database |
| Environmental monitoring <ul style="list-style-type: none"> ■ Monitoring ambient temperature and humidity ■ Monitoring the concentration of harmful gases such as carbon monoxide in the environment | Bidirectional speech <ul style="list-style-type: none"> ■ It can realize the remote command of the monitoring center staff to the field personnel ■ In the event of danger, can quickly notify the field staff to evacuate quickly | Instrument valve identification <ul style="list-style-type: none"> ■ Intelligent analysis diagnostic meter takes readings ■ Valve switch identification ■ Manometer identification with high-definition intelligent video | Data statistics <ul style="list-style-type: none"> ■ Organize and sort data, produce reports ■ Keep the daily test record, so as to be well documented |



Advantages: Stable linkage structure probe module (self-developed)

Function: The inspection range of the longitudinal axis of the inspection robot is increased, and the maximum detection can be 2 meters below, so that the inspection robot can detect more positions;

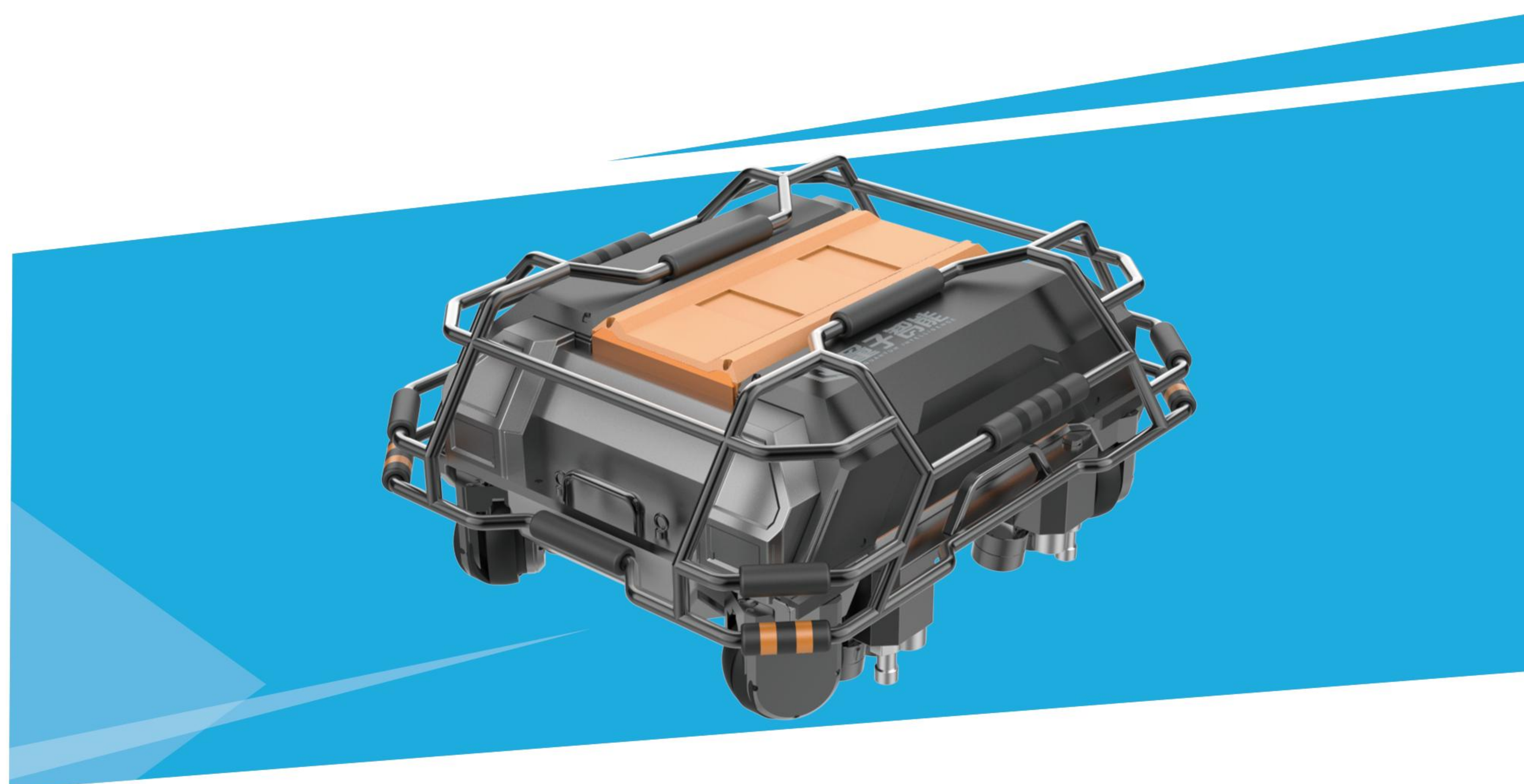
Function: The inspection robot can detect any detection point within 2 meters below; The lower arm is mainly stable as a whole, and will not shake during the lower arm. Even after the robot is motion-stopped, it can remain stable after a short time, so that the head can collect clear images.

Advanced nature: Inspection robot products rarely have a 2-meter probing distance and linkage probing mode of the lower arm, and can still ensure stability during the probing process.

APPLICABLE SCENE

It is applicable to scenarios inside the wind power engine room and power room, and scenarios that require probing



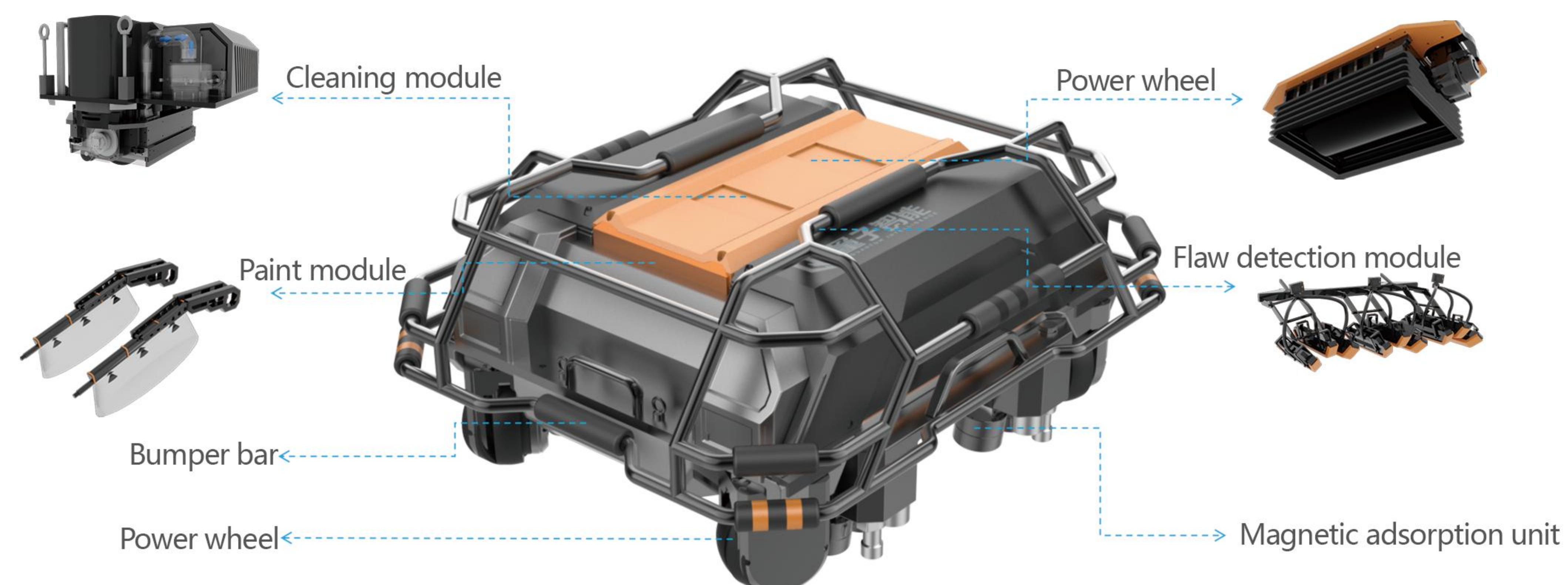


AERIAL WORK ROBOT - Qne-1-WP

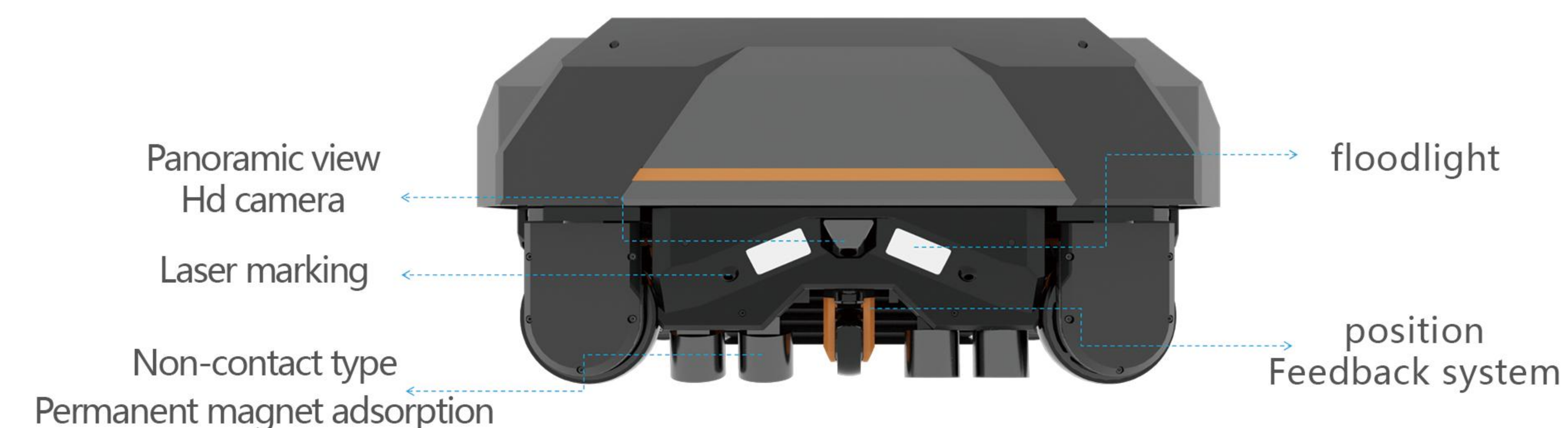
PRODUCT INTRODUCTION

Aerial work robot is an intelligent maintenance operation device for high-altitude anti-corrosion and paint repair. It loads rust removal, spraying and other maintenance accessories to solve the pain points of high risk, high cost and low efficiency of traditional manual operation. The robot uses a general walking chassis and multi-function operation to realize a machine with multiple functions, which can replace the aerial workers to complete the operation. Users can replace different functional modules according to needs, and customize modules to achieve other functions such as tower cleaning.

SYSTEM COMPONENTS



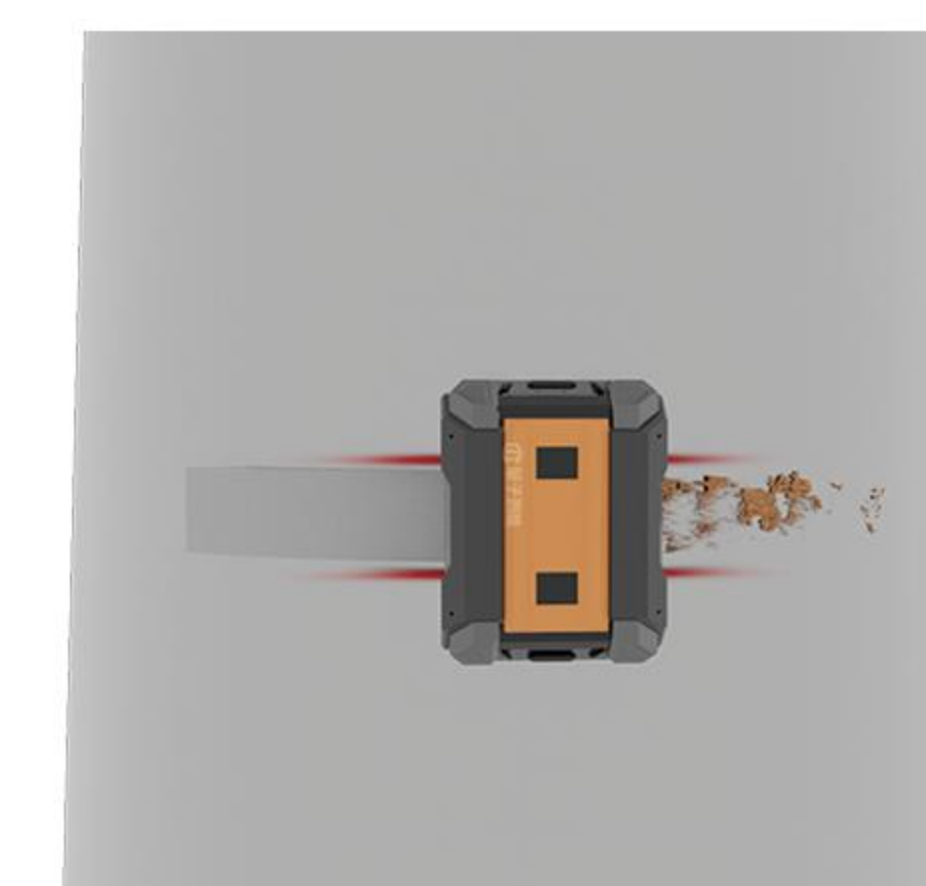
PRODUCT ADVANTAGE



- **Modular design:** universal walking chassis plus working module, one machine with multiple capabilities, through the walking chassis equipped with different functional modules to achieve rust grinding, spraying, tower cleaning and other functions;
- **Lightweight and high load rate:** body weight 30kg, load 70kg, can be carried and deployed by a single person;
- **Highly flexible chassis:** The chassis adopts patented technology, based on the four-link four-wheel drive chassis system, to achieve horizontal and vertical decoupling, suitable for large curvature, variable radius complex scenes;
- **Electric grinding system:** Self-developed electric grinding system based on force feedback, self-developed metal skeleton composite material grinding head, suitable for grinding super thick, super hard metal paint. Non-high pressure water grinding system, no need to deploy complex auxiliary systems, no need to rely on water medium, suitable for field deployment, reduce the industry window period requirements.
- **Dust recovery system:** Equipped with self-developed high-efficiency metal dust recovery system, no dust escape, meet the requirements of environmental protection;
- **Easy to control:** the overall deployment is convenient, manual planning of the work area, independent work.



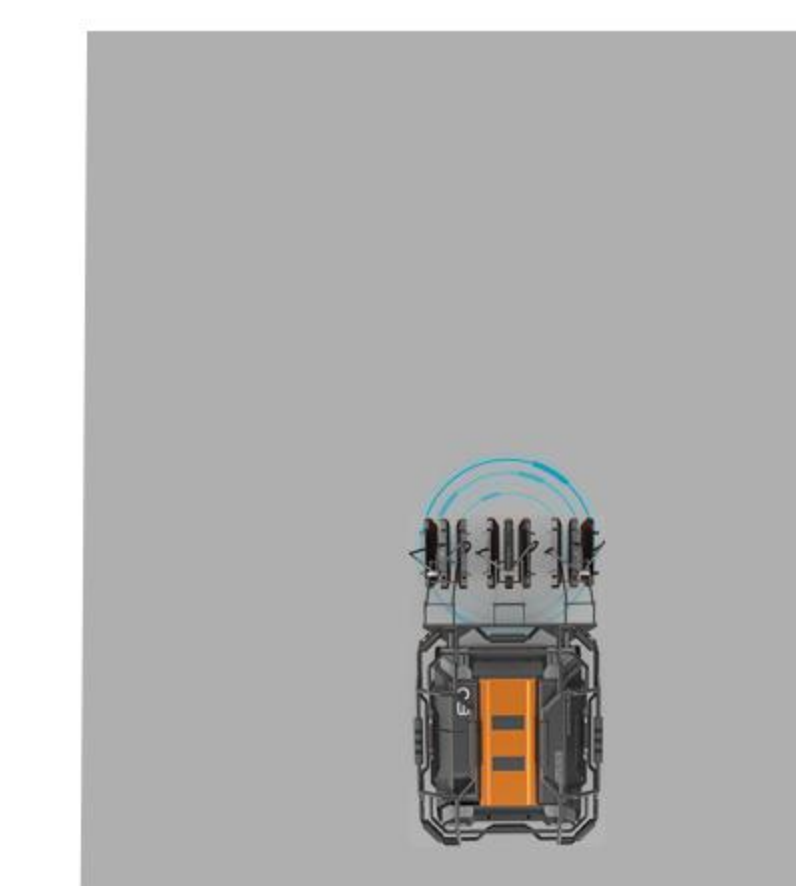
Inner wall operation



Precision grinding operation



Painting job



Flaw detection

APPLICABLE SCENE

The high-altitude working robot solves the problems of low operation rate of anti-corrosion coating repair, difficulty of offshore operation and high safety risk of operators, and can also be practically applied to ships, oil and gas storage tanks and other scenarios except offshore wind power.





WHEELED EXPLOSION-PROOF INSPECTION ROBOT - Ex-Qi-3G

PRODUCT INTRODUCTION

The explosion-proof wheeled inspection robot can replace front-line high-risk workers in all kinds of inflammable and explosive, toxic and harmful, high-temperature and high-pressure oil, natural gas, chemical environment, and carry out around-the-clock inspection work. The robot is equipped with a variety of intelligent sensing devices to collect and analyze on-site environmental data in real time, realize automatic diagnosis of equipment defects, intelligent operation and maintenance of environmental facilities, production safety, hidden danger investigation and other functions, greatly reduce the risk index and labor intensity of front-line high-risk workers, and comprehensively improve the digital operation and maintenance ability of enterprises.

SYSTEM COMPONENTS

The wheeled explosion-proof inspection robot system is composed of robot chassis, sensor system, navigation and positioning system, control and decision system, data processing and analysis system, remote monitoring and operation interface, etc., to achieve autonomous inspection and monitoring tasks in flammable and explosive environment.



PRODUCT FUNCTION

Wheeled explosion-proof robot is a kind of robot used to perform dangerous tasks. The product is based on the robot chassis as the carrier, equipped with the LiDAR SLAM system to obtain three-dimensional information of the surrounding environment in real time, map construction and robot positioning through SLAM algorithm, so as to achieve autonomous navigation and path planning. With the robot lifting platform, multi-angle shooting of specific targets can be carried out. It can realize instrument meter identification, infrared thermal imaging temperature measurement, leakage detection, personnel labor protection equipment detection and customized algorithms for the site. The system will carry out real-time monitoring, timely warning, induction and statistics of abnormal situations in order to reduce production accidents and optimize production costs.



APPLICABLE SCENE

Applied to all kinds of oil, oil platform, natural gas, chemical industry, smelting and other scene inspection work.





WHEELED COMPOSITE INSPECTION ROBOT - Qi-3-R

PRODUCT INTRODUCTION

Wheeled composite inspection robot has wheeled mobility and manipulator operation function, which is mainly used in power industry, offshore operation platform, rail transit vehicle inspection operations. The robot combines data acquisition and analysis, deep learning algorithms, early warning, remote control and monitoring in one, improving the efficiency, accuracy and safety of inspection tasks.

SYSTEM COMPONENTS

It is composed of robot body, sensor, SLAM positioning and navigation system, control system, data acquisition and analysis system, multi-functional robot arm, image recognition system, etc.



PRODUCT FUNCTION

Security inspection: Reduce personnel entering the risk area and improve work safety.

Real-time monitoring: real-time monitoring of temperature, humidity, smoke, gas concentration, etc., within the inspection range

Equipment maintenance: Equipment inspection and maintenance tasks, such as checking power switches, cable connections, transformer and battery status, instruments, etc., to ensure the normal operation of equipment.

Data acquisition and analysis: The data collected by the robot can be processed and analyzed to ensure the stable operation of the field equipment and improve the maintenance efficiency.

Remote control and management: remote control and monitoring system for real-time control and monitoring, rapid response to abnormal situations and make appropriate processing.

Autonomous navigation and path planning: Autonomous navigation and path planning, based on the preset inspection route or real-time sensing environment, to fully cover the inspection area.

Improve work efficiency: save time, reduce labor costs, and be able to carry out inspection tasks continuously and efficiently.

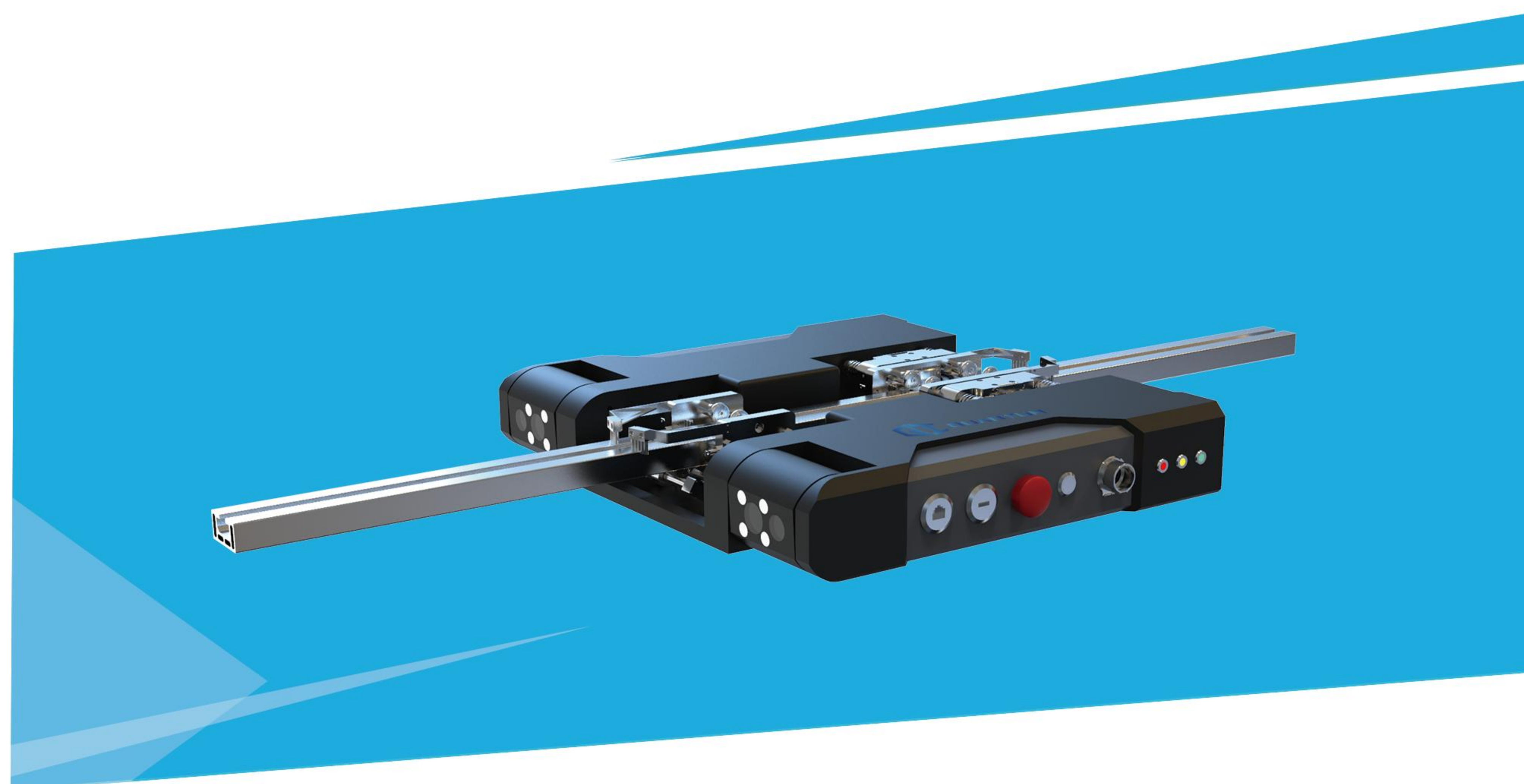
Through the introduction of wheeled composite inspection robots, the operation safety, equipment reliability and work efficiency of enterprises are improved. At the same time, it can provide support for data collection, analysis and fault diagnosis, and help managers to make more scientific and effective decisions.



APPLICABLE SCENE

It can be used for indoor and outdoor inspection in electric power, rail car bottom, booster station and other fields.



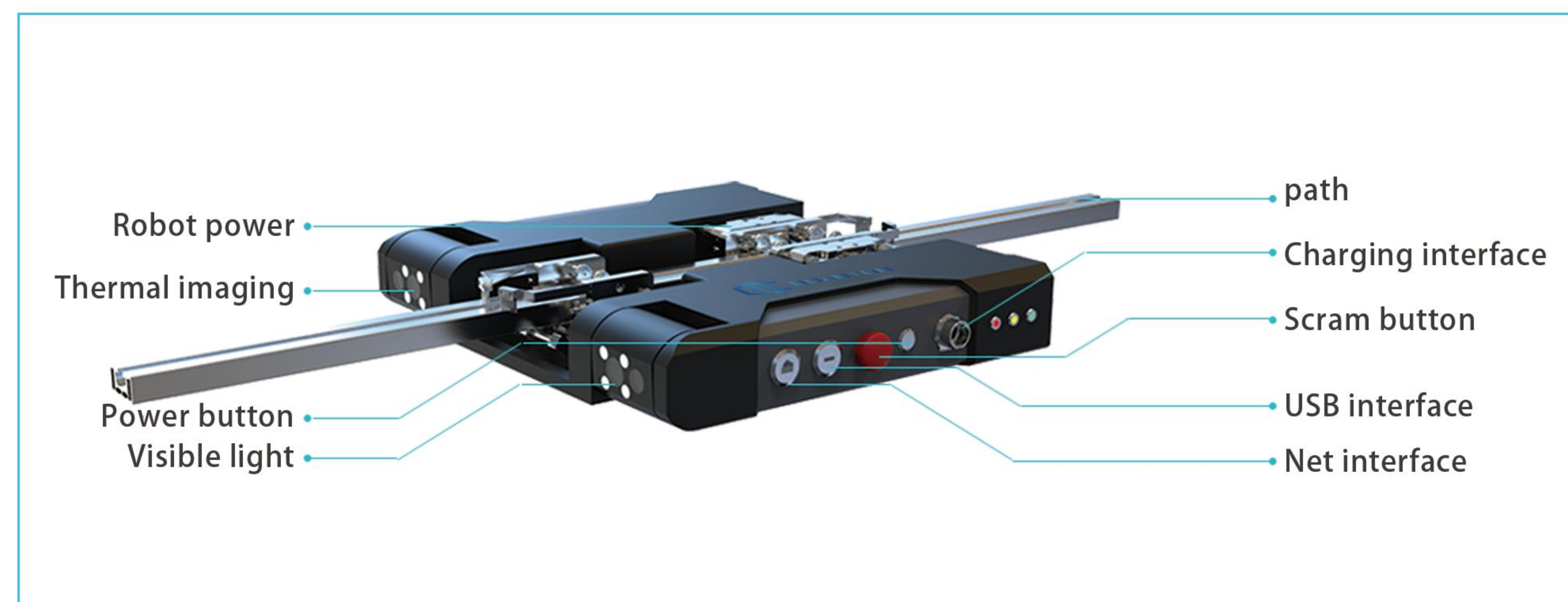


PADINSPECTION ROBOT - Qi-1-P

PRODUCT INTRODUCTION

PAD intelligent inspection robot is a special robot designed for inspection work in narrow Spaces. The machine size is less than 85mm, and it is the thinnest inspection robot in the industry with a minimum turning radius of 400mm. The robot is equipped with two sets of double optical head, equipped with AI settlement board, which can realize the solution function of the "end". Running in the middle of the outbound belt and the return belt, the robot can inspect the upper and lower rollers for abnormalities, including abnormal rollers, bearing damage, roller fall off, belt roller frame damage, deformation and corrosion.

SYSTEM COMPONENTS



PRODUCT FUNCTION

Idler out identification, idler not turning identification, idler wear identification, idler temperature identification, belt damage identification, return belt foreign matter identification



The idler connection cover is faulty



Belt cover wear due to forward tilt of idler



Bottom cover wear caused by ceramic cladding



Underside damage in high contact pressure area



PRODUCT APPLICATION



APPLICABLE SCENE

PAD intelligent inspection robot can be applied to the lower part of the belt conveyor and the closed environment of the underground space (such as sewage plants, biochemical ponds, drinking water sources, etc.) to solve the inspection problem in the narrow and flat space.



Bottom of belt conveyor line



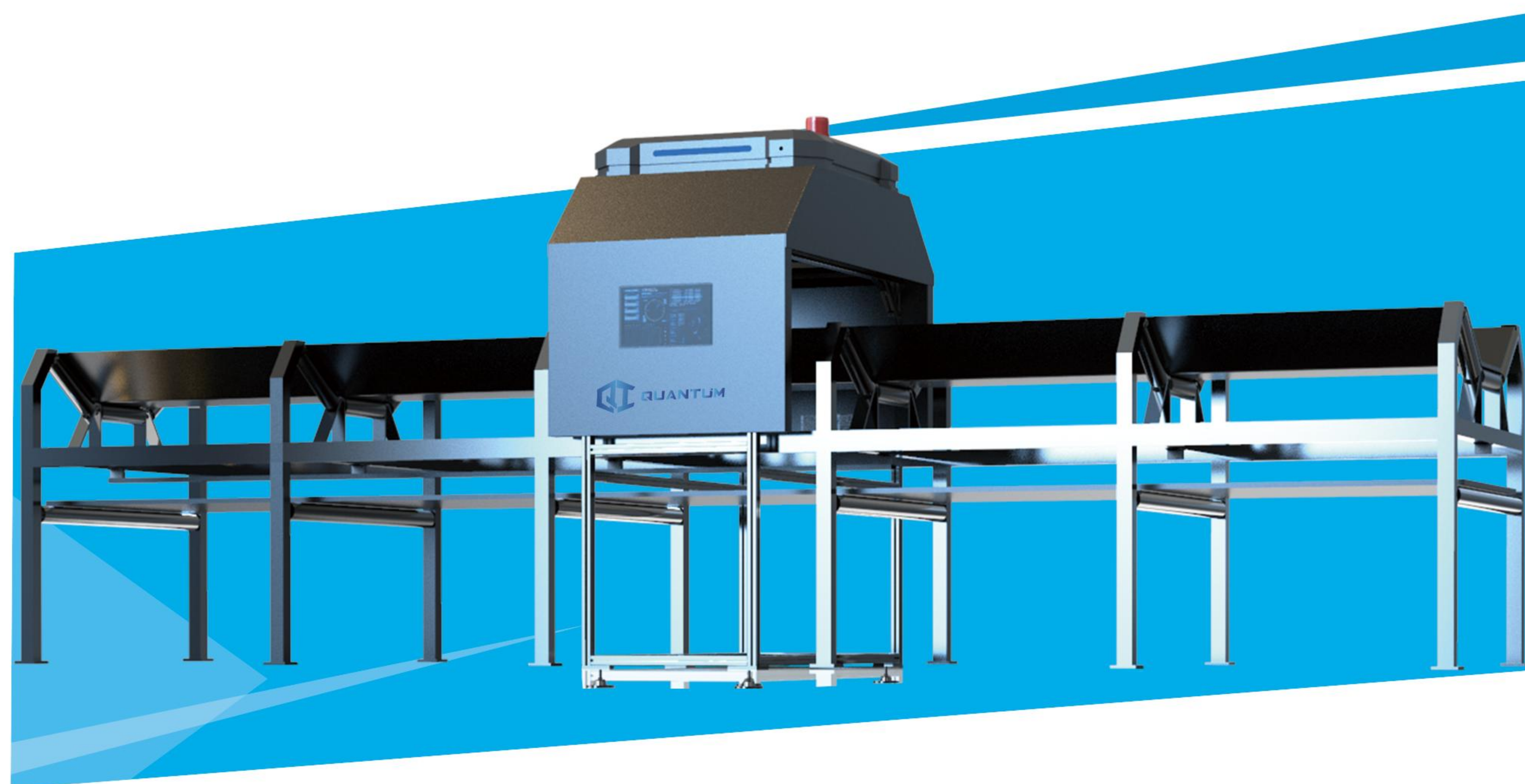
Sewage Treatment Plant



Drinking water source



Biochemical pool



MULTIFUNCTIONAL ON-LINE DETECTION SYSTEM - Qs-5-M

PRODUCT INTRODUCTION

The multi-functional online detection system is an important part of the comprehensive solution of the belt. The industrial camera equipped with the high frame degree can realize different functions by customizing different AI image recognition algorithms. For example, the belt health detection algorithm can recognize the front damage and edge damage of the belt, and timely detect and alarm when the belt is in poor health condition; Through the foreign body recognition algorithm to realize the identification of foreign bodies in conveying materials, reduce the risk of belt damage caused by foreign bodies; The instantaneous and cumulative flow can be calculated through the online identification algorithm of material flow, which has a very effective role in belt energy management, material blocking judgment and other scenarios.

SYSTEM COMPONENTS

The multi-functional online detection system is mainly composed of camera identification module, auxiliary light source and communication control system. The matching number of camera identification module depends on the belt width, and the standard interlock control interface and LAN communication interface.

Support data sharing

Supports online or stand-alone operation

Support software upgrade

Supports lens self-cleaning



PRODUCT FUNCTION

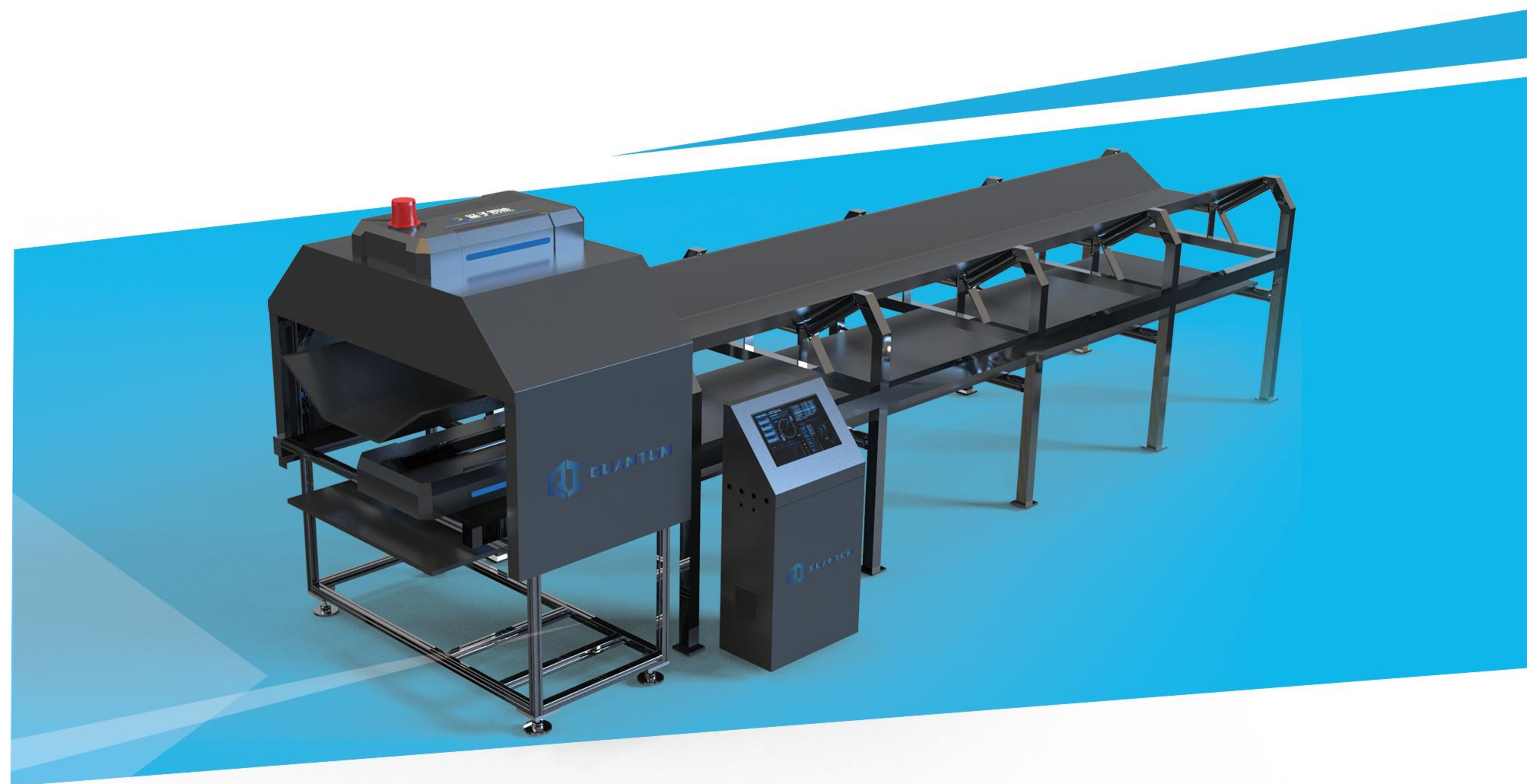
- Multi-functional detection - The equipment is equipped with a high-speed industrial camera of 240 frames per second to detect foreign bodies in the materials transported, including foreign body identification and position measurement;
- linkage downstream industrial robot arms and intelligent hand grasp, and remove foreign bodies;
- Belt health - Industrial cameras can detect belt surface and edge damage when the belt is unloaded;
- Material flow, material quantity detection -- equipped with structured light camera, linkage DCS system, can find the upstream material blocking fault in time, and timely make the corresponding shutdown processing, in addition, can adjust the belt running speed according to the flow rate, improve the service life of the belt conveyor and save energy;



PRODUCT APPLICATION

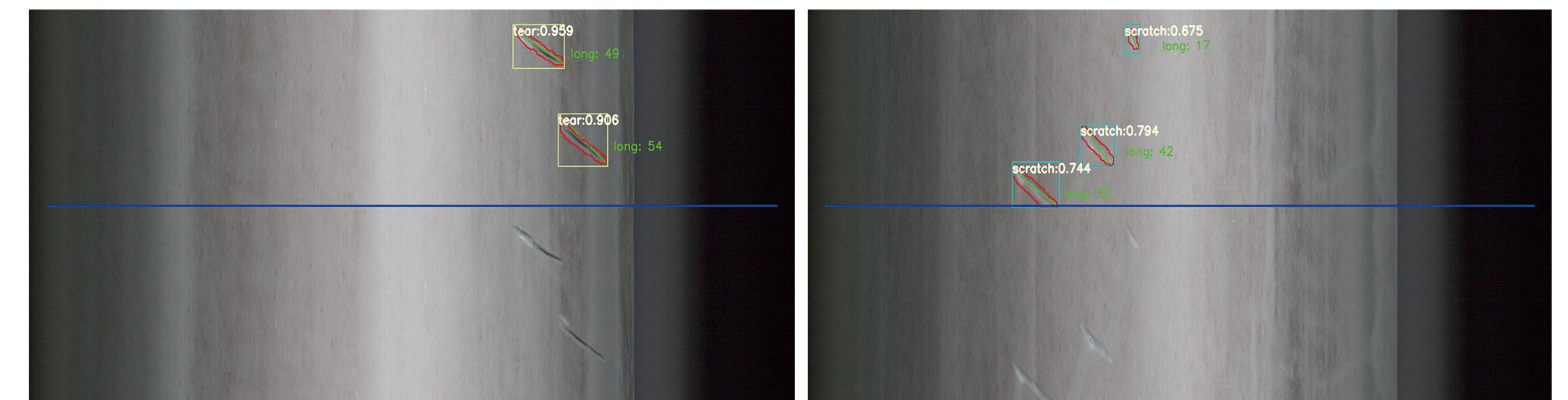
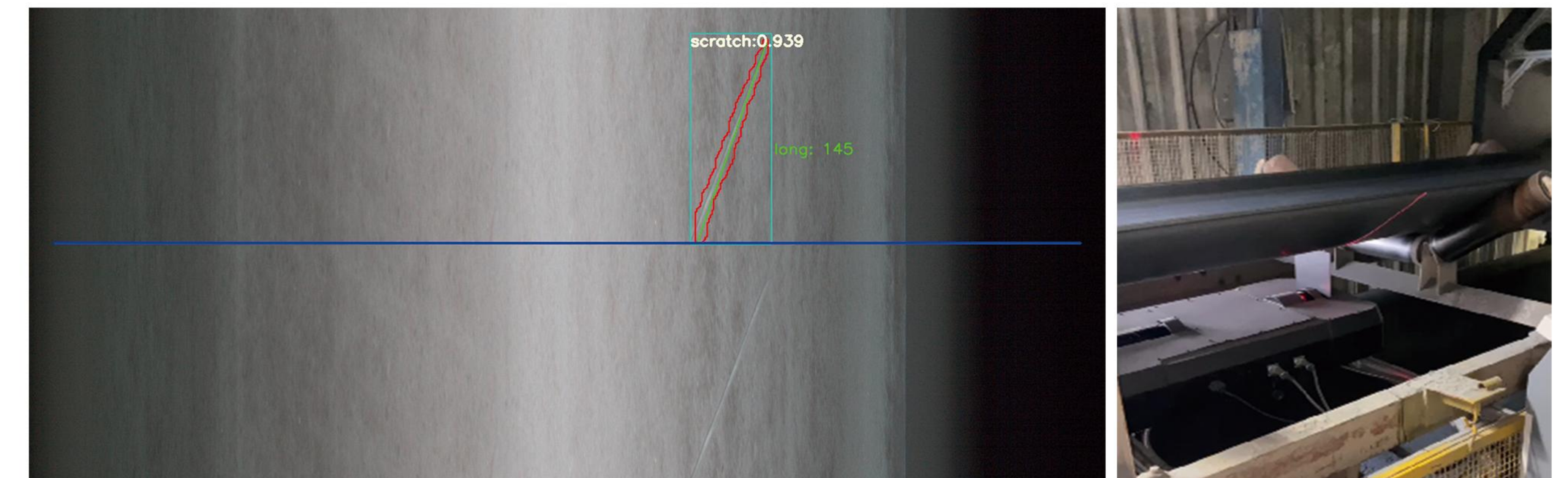
Multi-functional online detection system, linkage industrial robot arm, foreign body removal. Detection of belt edge damage; The material flow and quantity of the belt are detected to determine whether the upstream material is blocked, and such quantitative information of the flow can be given to provide a basis for subsequent work.





PRODUCT FUNCTION

- The water cleaning, mud removal and dust removal system ensures that the detection photoelectric equipment is not affected;
- A structured light camera is composed of a high lumen structured light laser and a 240 frame high-speed industrial camera, which can detect belt tearing in a timely manner during high-speed operation at 6m/s;
- Collaborate with DCS to promptly initiate shutdown and reduce accident losses caused by longitudinal belt tearing;
- Using deep learning and image algorithms to provide damage recognition rate and reduce false alarms;



APPLICABLE SCENE

The online detection system for belt tearing is suitable for belt conveyors, pipe conveyors, and other belt products.



Belt

Pipe belt machine

ONLINE DETECTION SYSTEM FOR BELT TEARING - Qs-5-B

PRODUCT INTRODUCTION

The online detection system for belt tearing supports the identification of belt tearing and belt damage, with an accuracy rate of over 98%. At the same time, it can calculate the length of tearing or damage, with a length error of less than 5mm. Monitor the operation status of the belt 24/7 to minimize the consequences of belt damage or longitudinal tearing.



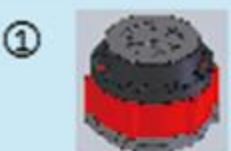


AI SERVICE PLATFORM

PRODUCT INTRODUCTION

The system software algorithms include edge detection, feature extraction, pattern matching, etc., which are used for the recognition and detection of instruments and meters, as well as the recognition of mechanical structural components such as looseness, cracks, and damages. Machine learning or deep learning methods are used to train and build models on a large number of image samples. Design algorithm logic to enable robots to accurately capture, process, and recognize the returned images at different angles and distances.

Real time image capture, processing, and recognition functions are achieved through system data collection and model training, and the results are transmitted to the robot's navigation system or decision algorithm for use. Real time big data monitoring platform, used to display recognition results, adjust parameters, and import new image models, optimize and improve based on detection results, improve recognition accuracy, response time, system stability, and timely warning.

industry	Mining	metallurgy	electricity	new energy (wind power)	shipbuilding	petrochemical	municipal transportation			
Application scene	 Belt gallery/pipe conveyor	 Pipe gallery/intersection tunnel	 Metallurgy/coke oven	 Coal Mine Scene Operations	 Wind turbine nacelle	 new energy	 shipping			
Q-IP Industrial Internet Platform	Q-IAT	Image Algorithm Toolset		Q-TAT	Time series algorithm toolset		Q-NAT	Navigation Algorithm Toolset		
	Q-DLC	Deep learning deployment toolchain		Q-DTS	Digital twin system		Q-ICP	Industrial IoT communication protocol		
	Q-IDCS	Image Algorithm Toolset		Q-MCP	Multimodal fusion perception system		Q-ISM	Information Security Management System		
Quantum Robot	Inspection Robot				Test Equipment		Homework Robot			
	 inspection robot	 explosion-proof inspection robot	 MINI Inspection robot	 pad inspection robot	 Wheeled Inspection robot	 Wheeled explosion-proof Inspection robot	 Belt tear detection equipment	 Multifunctional detection equipment	 Working at heights Robots (Wind Power)	 Working at heights Robots (ships)
Self Developed Assembly	 Control board	 AI Core Board	 Explosion-Proof Motor	 Non explosion-proof motor	 Robot chassis	 Three axis self stabilizing gimbal	 Three axis self stable explosion-proof pan tilt	 MA gimbal	 Regular wireless charging	 Explosion proof charging system
	Data Perception	 body			 image			 perception		