MOBILE ROBOT PRODUCT CATALOG

Go Beyond the Reachable and Strive for Symbiotic Value

Hikrobotics.com

HIKROBOT

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Hikrobot

Hikrobot is a global product and solution provider specialized in machine vision and autonomous mobile robot. Focusing on industrial internet of things (IIoT), smart logistics, and intelligent manufacturing, we build an open cooperation ecosystem, provide service to customers in industry and logistics, and commit to continuously promoting the intelligentization and leading the intelligent manufacturing process.

Autonomous Mobile Robot

With efforts in robotic technologies, Hikrobot provides global customers with leading autonomous mobile robot products and solutions. The company has developed the robot-based warehouse automation system since 2015. Focused on autonomous mobile robots, we have launched a series of products, including Latent Mobile Robot (LMR), Conveyor/Heavy-duty Mobile Robot (CMR/HMR), Forklift Mobile Robot (FMR), and Carton Transfer Unit (CTU). These products are widely applied in consumer electronics, automobile, e-commerce, third-party logistics (3PL), retail, food, photovoltaics, pharmaceuticals, tobacco, and garment. Hikrobot's intelligent robot solutions help you simplify intralogistics flow, reduce the costs, and reform the logistics process.

50,000+
Market Volume

3,000+
Customers

200+
Industry Applications

* Data as of September 2023.

Mission

Leading the development of industrial intelligence and creating a new future for intelligent manufacturing.

Vision

Enabling the industrial internet of things and creating sustainable social value.

Values

Professional, courageous, honest, and pragmatic.

China's First Full Directive CE Marking Certification

CB Certification

KC Certification

RCM Certification

WPC Certification

China Robot Certification

Red Dot Design Award

National High-Tech Enterprise

CIIF Gold Award

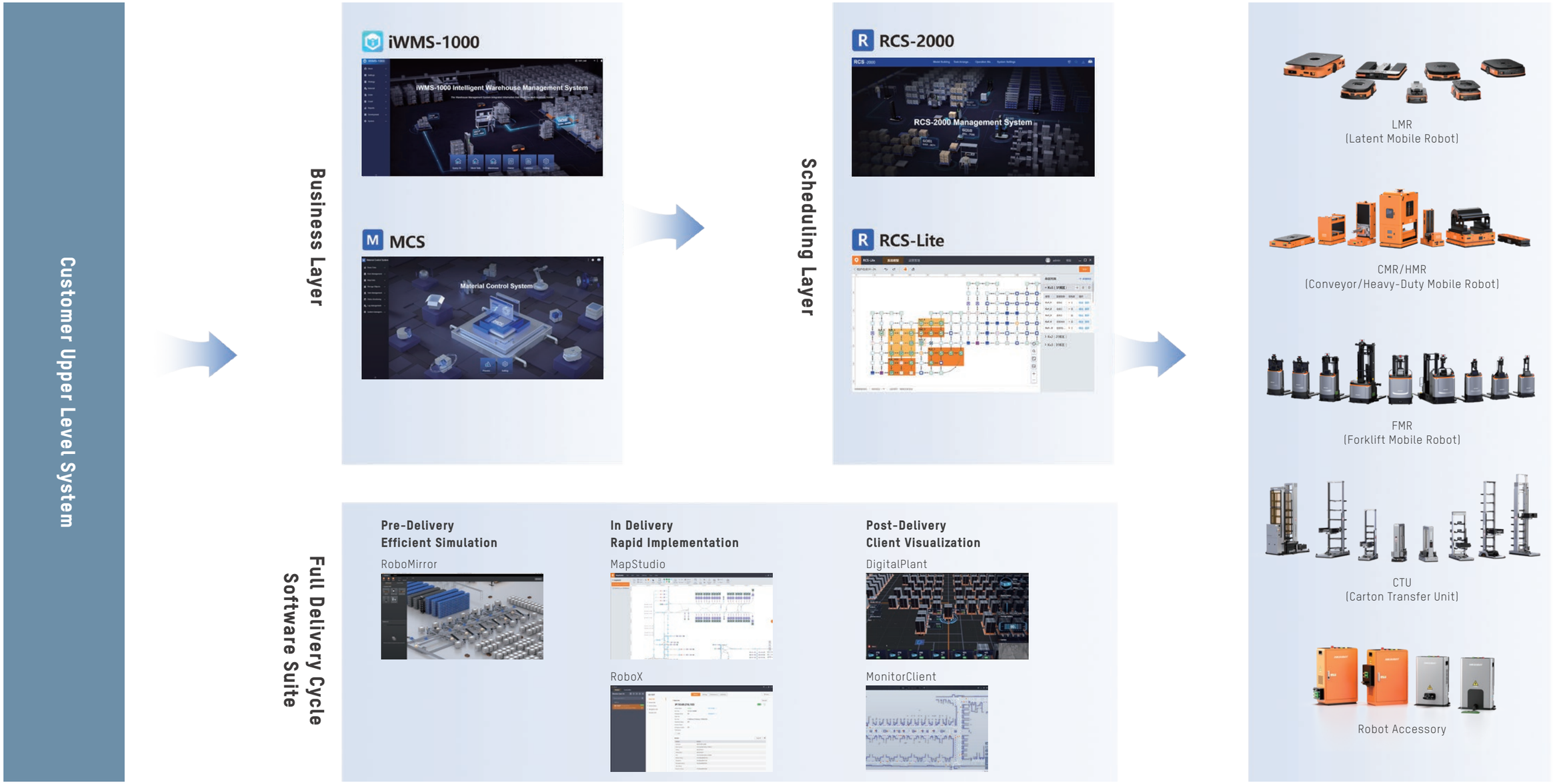
Product and Solution Provider Specialized in Autonomous Mobile Robot

From warehousing logistics to production logistics, our robot-based systems simplify your in-plant logistic processes, reduce costs to increase benefit, and lead intralogistics reform with AI.

Product System

Hikrobot intelligent intralogistics system has formed a "5+2" layout. "5" refers to LMR (Latent Mobile Robot), CMR/HMR (Conveyor/Heavy-duty Mobile Robot), FMR (Forklift Mobile Robot), CTU (Carton Transfer Unit), and robot accessory; "2" refers to iWMS-1000 (Intelligent Warehouse System) and RCS-2000 (Robot Control System). iWMS-1000, RCS-2000, and other application software systems can be combined on demand, seamlessly connecting to customer's upper level system, managing business data, task instructions, etc., and scheduling the whole series of autonomous mobile robots to operate in an orderly, coordinated, and cluster way to meet the intelligentization needs of intralogistics in various industries.

Hikrobot has developed a series of tools for all stages of the project, including business simulation in the early stage, deployment and implementation in the middle stage, and monitoring of operation and maintenance in the later stage. By using these tools, the efficiency of pre-project planning can be effectively improved to ensure the landing quality and rapid delivery, and reduce the difficulty of later operation and maintenance.



IBASE

Intelligent Base is the fourth-generation AMR architecture platform developed by Hikrobot. AMR based on Intelligent Base has higher security standards and more flexibility, and can also support faster delivery and more convenient operation and maintenance, so as to efficiently respond to complex scenarios of real business.

1+N+X

Based on one intelligent base, Hikrobot derives N types of AMRs, covering X scenarios.

BEST-FIT HARDWARE

The modular design, combined with rich hardware configurations and integrated multi-navigation algorithms, further simplifies the development for product expansion and enables adaptation to complex customization needs in various scenarios.

Computing power 60 %

ALGORITHM POWERFUL

Rich perception, intelligent scheduling algorithms, powerful drive assemblies, and multi-sensor configurations enable AMR applications in complex environments.

Perceptual ability 70 %

SOFTWARE UNIFIED

A unified software architecture for all types of AMRs reduces time for secondary development, satisfying the needs for faster project delivery and easier maintenance.

Development efficiency 50 %

ENHANCED SAFETY

Our AMR adopts fully independent safety assemblies to achieve three levels of safety assurance from assemblies, the whole machine to the system, ensuring the safety and reliability of products from the source.

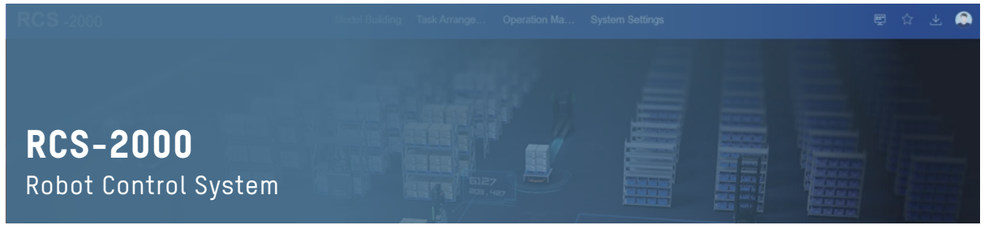
Shape Our Future Intelligently

Supported by dual-wheel driving, fueling hardware and software with self-developed technology

Focusing on technological innovation, Hikrobot has continued to develop self-research capabilities at the algorithm, software, structure, and hardware levels, to achieve full range of technological support. In the field of autonomous mobile robot, different types of products have varying structures and hardware configurations, and are equipped with software applications tailored for various scenarios. Moreover, they can also collaborate and work together in synergy. With a wide range of product varieties, coupled with strong technological support, our company can meet full scope of needs.

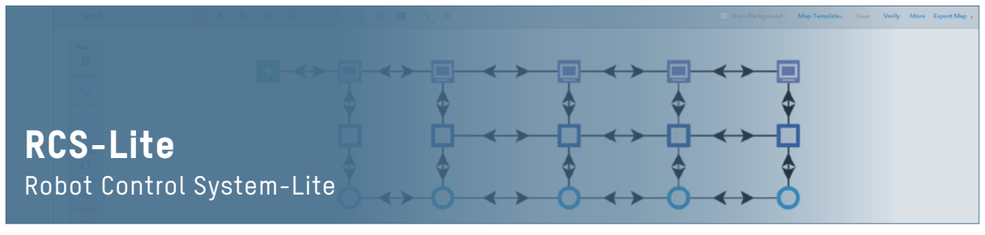
Software Platform

iWMS-1000
Intelligent Warehouse Management System



RCS-2000
Robot Control System

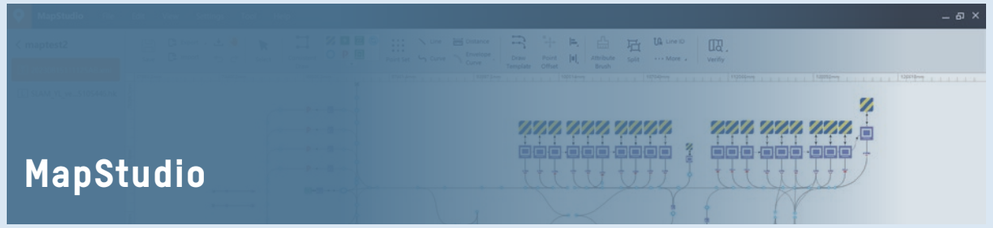
MCS
Material Control System



RCS-Lite
Robot Control System-Lite

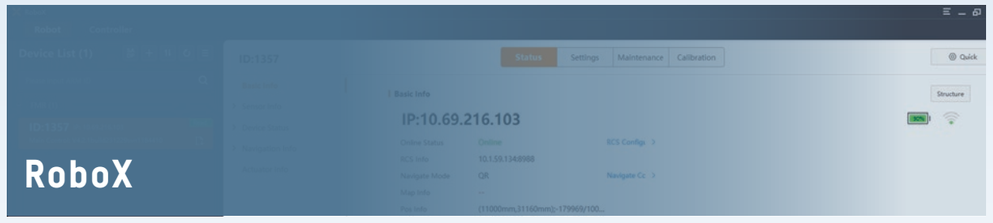
Full Delivery Cycle Software Suite

RoboMirror

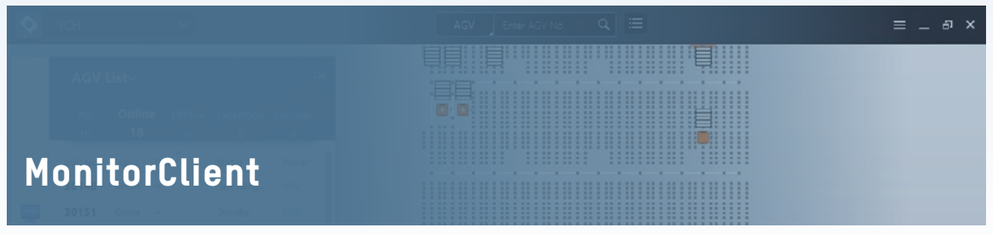


MapStudio

DigitalPlant



RoboX



MonitorClient

Intelligent Warehouse Management System

iWMS-1000

iWMS is an intelligent warehouse management system that can adapt to business differences of various industries and quickly respond to the needs of subsequent development for enterprises. It features 4 development elements, 3 extensible resource libraries, and N industry systems with task elements as its cornerstone, capability development as the center, and low-code elements as the engine.

Business Support

Consumer Electronics | Automobile | Machinery | E-commerce | Medicine | Shoes and Clothing

iWMS Intelligent Warehouse Management System

Task Management

Receiving Order	Inbound Order	Outbound Order	Tallying Order	Counting Order
Putaway Task	Picking Task	Tallying Task	Counting Task	Carrying Task
Inventory Search	Frozen Inventory	Transfer Posting	Inventory Transfer Record	Management by Virtual Box
Safety Inventory	Dull Product Search	Order Monitoring	Workload Counting	

Task Strategy

Putaway Strategy	Mixing Strategy	Picking Strategy	Returning Strategy	Carrying Strategy
Replenishing Strategy	Turnover Strategy	Wave Strategy	Task Parameter	

Basic Data

Warehouse	Warehouse Area	Aisle	Roadway	Rack
Bin	Container	Site	PTL	
Owner	Customer	Material	Package Specification	

Operation Scenes

Putaway	Picking	Counting	Others
Loaded Carrier Putaway	Picking by Order	Inventory Counting	Initialization
Cycle Putaway	Picking by Material	Counting Without Order	Receiving
Recommended Putaway	Picking in Start Mode	**Tallying**	Random Carrying
Manual Putaway	Picking and Distributing	Tallying by Inventory	Inventory Adjustment
	Manual Picking	Manual Tallying	Drug Maintenance

Task Algorithm

Bin Recommendation Algorithm	Intelligent Carrier Tallying Algorithm	Map Analysis Algorithm	Intelligent Wave Algorithm
Inventory Allocation Algorithm	Storage Location Recommendation Algorithm	Intelligent Inventory Tallying Algorithm	SKU Velocity Algorithm for Carrier

Task Elements

General	Warehouse	Material	Strategy	Plug-In
Inventory	Algorithm	Order	Task	WES

Development Engine

iData Low-Code Development Element

iDataBus for Data Fusion

Service Configuration | API Configuration | Message Parsing | Message Conversion | Message Building

iDataView for Data Visualization

Business Report | Dashboard | Adding, Deleting, Editing, and Checking | Report Exporting | Supported Decision-Making

iClientView for Human-Machine Interaction

Interface Design | Pop-Up Design | Script Development | Menu Management | Printing Template

iDataFlow for Task Arrangement

Process Orchestration | Online Debugging | API Triggering | Scheduled Task | Resource Management

Key Features

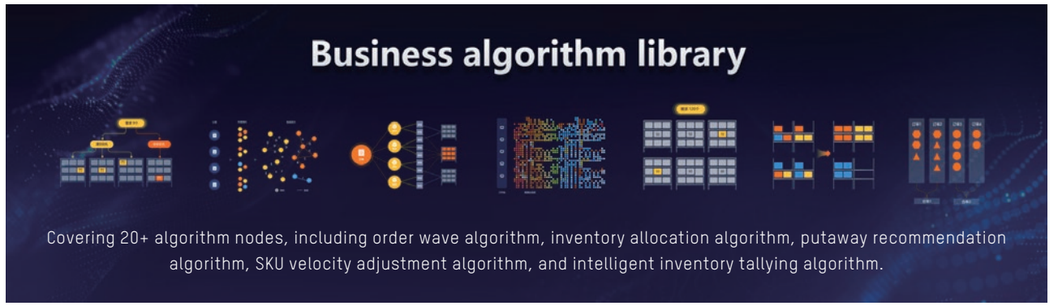
iWMS establishes an open ecosystem based on 4 low-code development elements and 3 resource libraries. Through flexible configuration combined with low-code development, the system can respond to the demands flexibly and provide non-standard solutions to adapt to changes in the business quickly.

Secondary development ecosystem

iWMS empowers users for development on the basis of 4 open elements to achieve intelligent manufacturing comprehensively.

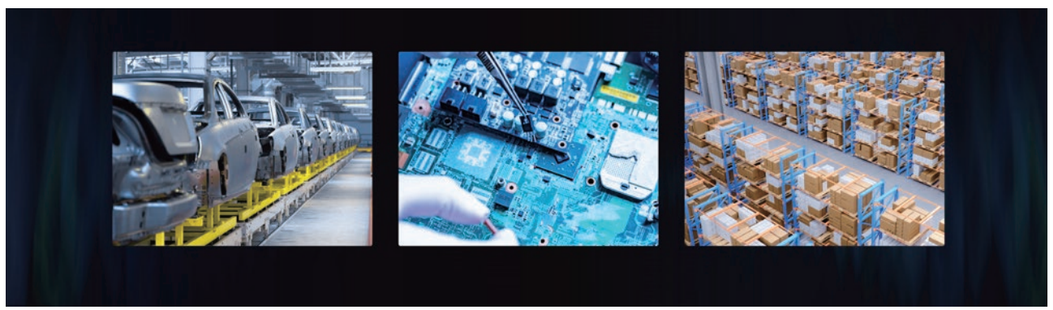
Resource libraries

Provided with 3 reusable resource libraries that can be accumulated, iWMS supports orchestrating 100+ industry applications.



Industrial adaptation

By employing low-code elements, iWMS supports process orchestration of different industries to meet requirements.



Application Cases

Hikrobot has developed many benchmark cases for various industries, including consumer electronics, automobile, manufacturing, logistics, pharmaceuticals, shoes and clothing.

FAW Jiefang Carrying Project

AMR type: 200+ LMRs

Inbound: Detecting goods, carrying, and inbound via RFID and AMR

Materials preparation: Picking and getting the materials ready for small materials, and managing inventory of materials preparation.

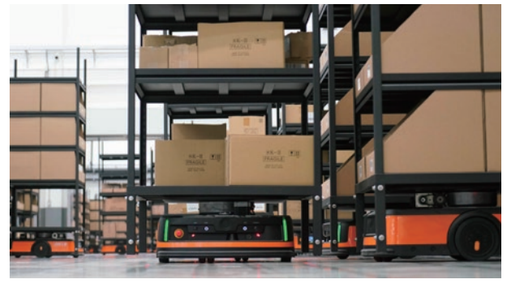
Lineside delivery: Delivering large materials to the production line directly and performing outbound tasks in sequence. Delivering small materials to the specified rack for materials preparation.

Returning empty: Manually or automatically replenishing containers that returns empty from the production line to the inbound dock.

Sunrise Smart Logistics Project

AMR type: 325 LMRs and 3 battery swap stations

With an overall area of about 11,000 square meters, the intelligent warehouse management system (iWMS-1000) docks with the general control system of Sunrise Duty Free seamlessly to perform goods-to-person picking, putaway, and counting tasks, comprehensively improving warehouse picking efficiency, and enabling rapid response to massive and fluctuating business demands, handling approximately 150,000 order lines per day and 250+ per hour by each workstation.

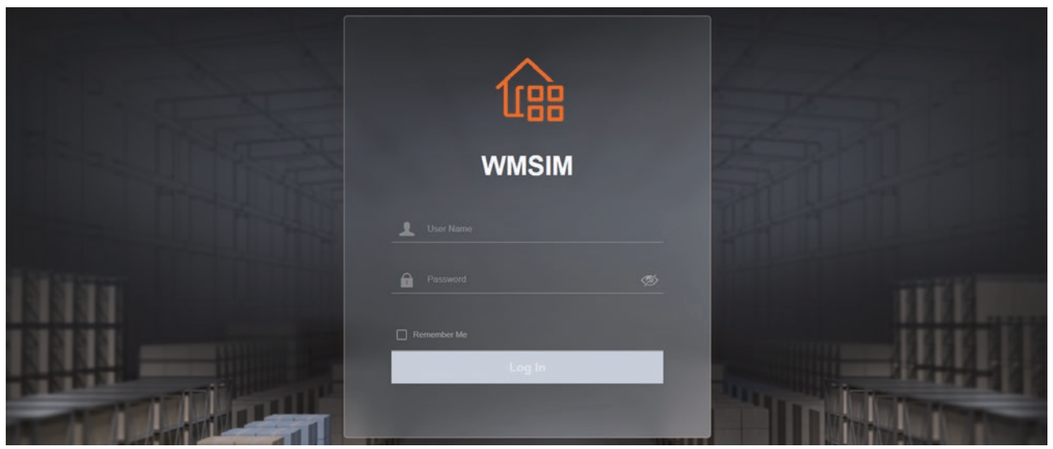


Guilin Kaifa Technology Intelligent Logistics Project

The project covers the typical and full-scope business processes of the whole factory in consumer electronics manufacturing, including raw material inbound (purchasing, allocation, transferring, and production return), raw material outbound (production, allocation, and transferring), production handling (raw material handling and delivery, temporary storage/handling of semi-finished products, and finished products out of production line), and finished products inbound and outbound. With intelligent warehouse management system (iWMS), the project greatly reduces the work intensity of workers and improves the efficiency of picking and distribution, increasing the picking efficiency of single work order by 30% and saving 40% of the workload of logistics personnel in factory.

Business Simulation

Warehouse business simulation platform can restore the on-site business process and simulate the real operation system. Both simulation execution and quantitative data analysis of the business process under the solution can be carried out through different configurations such as site layout, route planning, task parameter, order structure, and AMR operating parameter. The simulation platform helps customers seek the optimal configuration during the project implementation cycle, so that they can evaluate effectively and make decisions on the overall solution.



Key Features

Robot system simulation

iWMS provides a simulation of the real system that can be used to control the robot to perform tasks and monitor robot status.

Picking simulation

iWMS supports simulating multiple picking forms and equipment, equipment processing time, and overall time of inbound and outbound tasks.

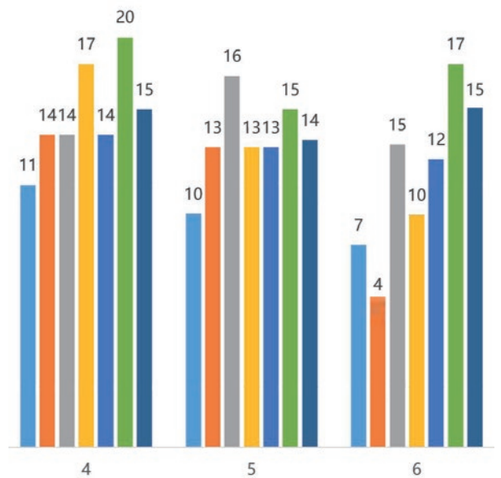
Data statistics and report

iWMS enables analysis of key indicators of business operations to provide accurate data support.

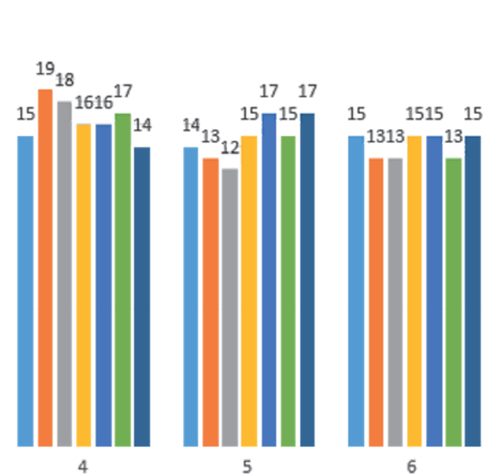
Application Cases

Dashenlin Project

The project has deployed 26 CTUs and 7 manual picking stations. After the project was implemented, it was found that the number of picking tasks varied between manual picking stations, resulting in a loss of overall picking efficiency. Finally, order applying and allocation strategy were optimized through simulation analysis to keep the tasks of each picking station balanced and raise the upper limit of efficiency.



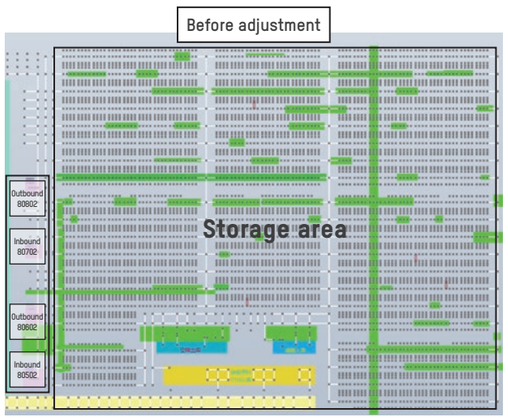
Differences in picking station tasks

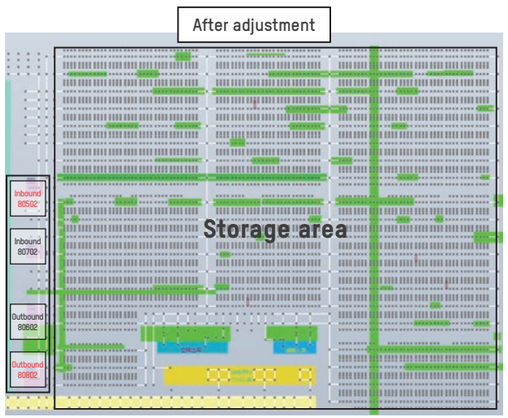


Picking station tasks are balanced

Shunde VMI Smart Warehouse Project

Different combinations of inbound and outbound docks lead to differences in efficiency. The project has deployed 2 inbound docks and 2 outbound docks. At the project appraisal stage, the optimal layout of the inbound and outbound docks was determined according to the simulation analysis of the onsite map.





Material Control System

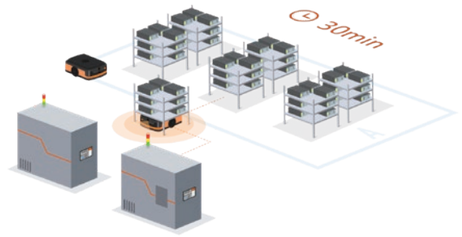
MCS

MCS is a material control system that serves highly automated industries such as lithium battery and photovoltaics. It can collect loading and unloading signals of machines based on the WCS system, and receive demands by seamlessly connecting to the MES system and other upper level systems. By flexibly configuring the parsing rules of calling/unloading tasks in the process, materials, storage locations, or bins that meet the demands are parsed. Finally, the MCS system applies carrying tasks to the scheduling system to call appropriate AMRs to perform tasks, enabling material transferring between processes.

Key Features

Material management and storage location / bin management

MCS enables managing and displaying the material information of buffer storage locations or bins to provide data support for machines to match the demanded material.



Loading and unloading demand receiving of machines and task management

MCS supports setting up loading and unloading rules, parsing target materials and storage locations / bins, and automatically generating carrying tasks to enable material transferring.

Dynamic optimization

Task triggering in advance and task reprioritizing are provided by the MCS system to improve efficiency.

Application Cases

Post-Processing Project of a Leading Company in New Energy Industry

Pain points: Lineside buffer areas in the factory of lithium battery cannot be systematically managed. Manual counting and bookkeeping are time-consuming and laborious. Different processes of lithium battery requires different AMR types. Many kinds of materials and expiration dates need to be managed.

Solution: Based on site rule setting, buffer area management, and monitoring dashboard, the MCS system supports automatic operations such as automatic loading/unloading of machines and transferring of electrode rolls between processes, improving the timeliness and safety of logistics and delivery, and enabling digitalized management of intralogistics in the workshop.

Photovoltaic Cell Project

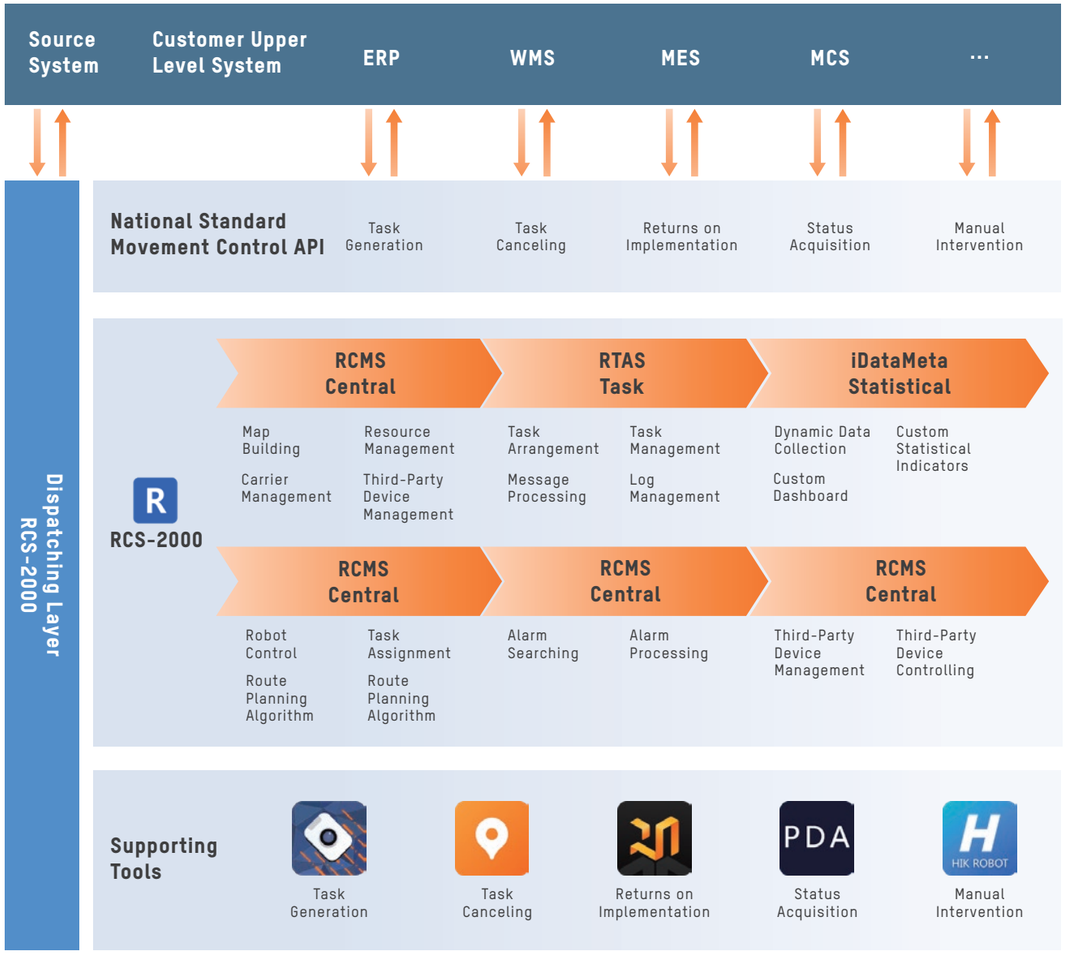
Pain points: The processes in photovoltaics are complex. Expiration dates need to be managed. Logistics efficiency is required.

Solution: Based on route setting, buffer area management, multi-priority rule setting, and monitoring dashboard, the MCS system supports intelligent material transferring, automatic docking of production equipment, and data visualization, which help the company reduce costs to increase benefit, and achieve digital and intelligent logistics in production.

Robot Control System

RCS-2000

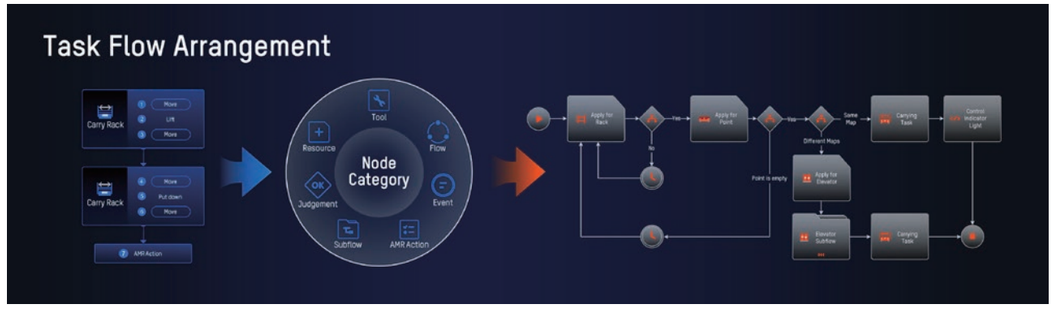
Robot Control System (RCS) is a centralized system for task assignment, AMR scheduling, and route planning for infield logistics robots. Externally, as a downstream system of the order system, the RCS system undertakes the processing of orders. Internally, the RCS system communicates and interacts with access control, elevators, and other equipment within the environment to complete full-field traffic automation. Finally, the RCS system provides complete robot queue exception monitoring and management.



Key Features

Flexible task flow arrangement to cover business scenarios

Multi-branch flows, and adapting to complex business scheduling.



Intelligent Decision Making / Cluster Operation

Accommodates up to 1,200+ robots in one map, supports assigning tasks to 1,000 AMRs in 1 second, and supports 300 different models of AMR to perform tasks.

Mixed scheduling of multiple AMR types

To cope with more complex scenes of multiple robots working together, it supports same-field coexistence of and transferring between multiple types of robots, such as LMR, FMR, CTU, and CMR.

Service visualization

System configuration is visualized to improve implementation and deployment efficiency, and statistical data is visualized to simplify operational analysis process.

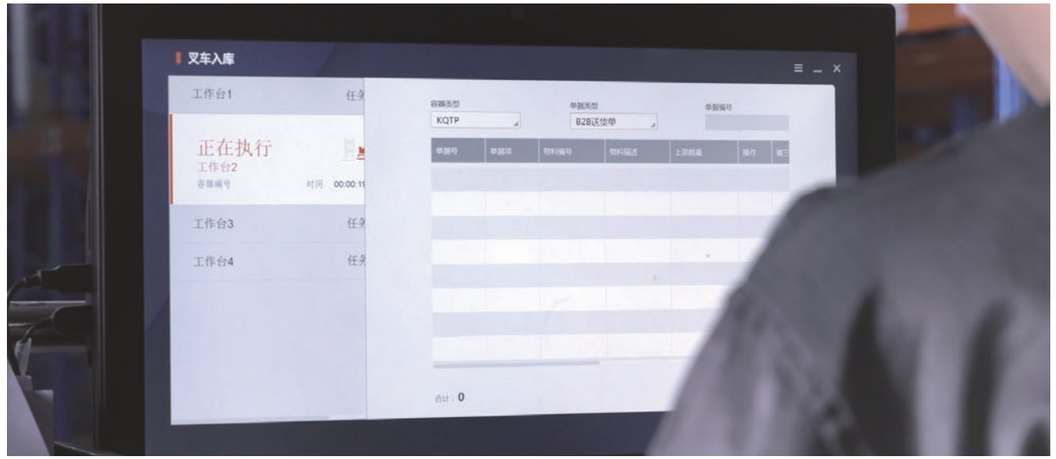
Application Cases

The system serves such industries as manufacturing, consumer electronics, automobile, logistics, food and pharmaceuticals, and fast-moving consumer goods. Through the controlling and scheduling of robots, it realizes the handling automation of raw materials, semi-finished products, and finished products between production lines, between production lines and warehouses, and within warehouses, reducing labor costs and improving work efficiency.

Tianjin FAW Toyota NEV Plant

Pain points: Huge production scale, with 1100+ AMRs of multiple models and with different navigation modes in a single layer; small space for material transportation, and high requirements for timeliness and accuracy of material distribution.

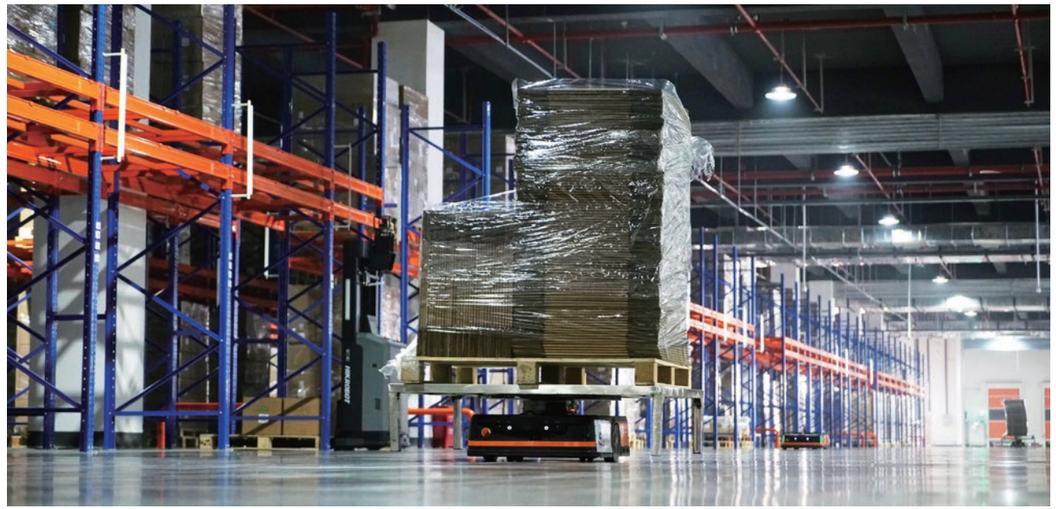
Solution: RCS-2000 enables scheduling in ultra-large-scale cluster, supporting intelligent operation of thousands of AMRs; with successive carrying mode, it helps timely delivery of materials to the production line and makes reasonable use of the limited space; it controls the materials to be delivered in strict order without errors through intelligent algorithms.



Hikvision Tonglu Manufacturing Plant

Pain points: Large scale manufacturing facility, with multiple production scenarios and logistics links; low delivery efficiency due to manual operation; non-intuitive production data causing lack of data basis for improving production efficiency.

Solution: The system is deployed in clusters to expand performance and support phased on-line operation of many factories. It provides scheduling of multiple types of robots for collaborative operation in complex carrying scenarios, and reduces manual working intensity through calling robots to perform long-distance transportation. It can seamlessly dock with the production system of the factory to realize onlineization of order processing and delivery task performance. It provides visualized task dashboards to present the production status in real time, and output data reports to provide data support for decision-making.



Xuchang Yuto Whole Factory Logistics Project

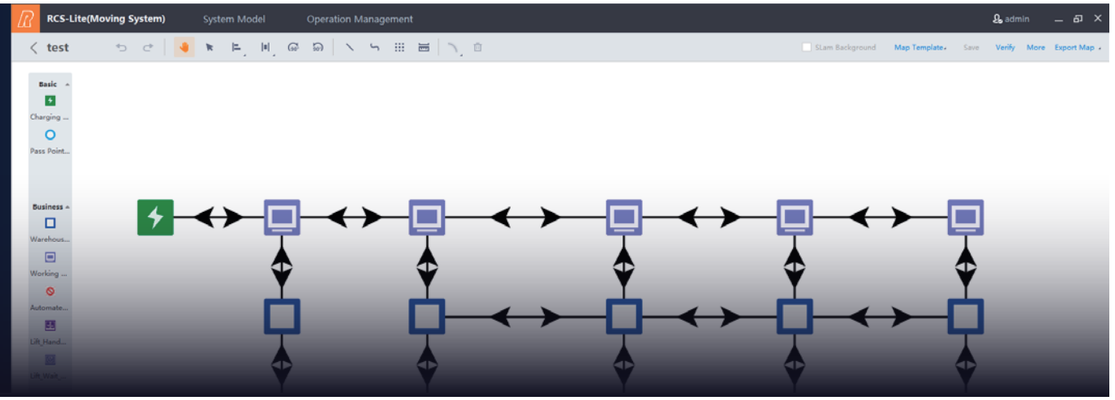
Pain points: High requirements for delivery tempo, with large tempo fluctuations in the same day; fast turnover of materials, with high demands for storage space and pursuit of high-level rack storage; long-distance delivery, with the need to transfer across floors.

Solution: FMRs and LMRs cooperate to perform transferring inbound and outbound efficiently; FMRs run in warehouse areas to perform picking from and putaway to multi-level racks to improve the utilization of storage space; LMRs perform long-distance or cross-floor delivery.

Robot Control System-Lite

RCS-Lite

Robot Control System-Lite (RCS-Lite) is designed for AMR projects with a robot count of around 10, aiming at the small and medium-sized robotics market. It advances low requirements for hardware and software. The system has the advantages of rapid deployment, suggested configuration, full-link task flow display, and fast troubleshooting to improve implementation efficiency. It can seamlessly connect to WMS, MES, WCS, and other enterprise systems through flexible management to achieve transparency, integration and intelligence in production and logistics management. The draggable interface helps to combine task actions and configure algorithm for allocating optimal routes for AMR. APP, PDA, caller, and other developed clients makes task application more convenient.



Key Features

Low hardware requirement, reducing project costs

Use of industrial computers or all-in-one computers, reducing project costs

Easy installation and configuration

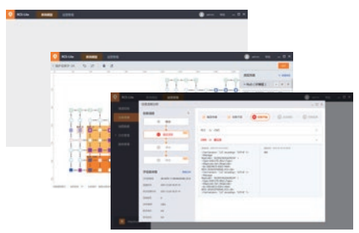
Supports one-click installation, process chaining configuration, and third-party device access

Easy to operate, and quick to troubleshoot exceptions

Supports interactive information visualization, special marking of abnormal status, and fast issue analysis and solving, improving efficiency of implementation

Low learning threshold

Supports quick start for novices, and Helps users understand the system



Application Cases

Since its development and promotion, RCS-Lite has undergone multiple iterations, and it has been applied in 100+ projects to meet the urgent needs of customers for small and medium-sized AMR carrying projects, helping industries develop in a rapid pace.

3C Electronics Manufacturing Plant Project

Pain points: In the initial stage of enterprise automation upgrading, based on costs and business process integration, experimental and phased transformation approach is preferred. The enterprise hopes to introduce cost-effective and phased AMR solution to save costs.

Solution: Reducing hardware and software costs by using industrial computers or all-in-one computers as the hardware devices to support the scheduling system. The plant has 230 pallets, with an operating area of 2,000 square meters and an average of 200+ tasks per day. Three AMRs have been put into operation to realize PCB board loading and unloading process.

Photovoltaic Company Factory Project

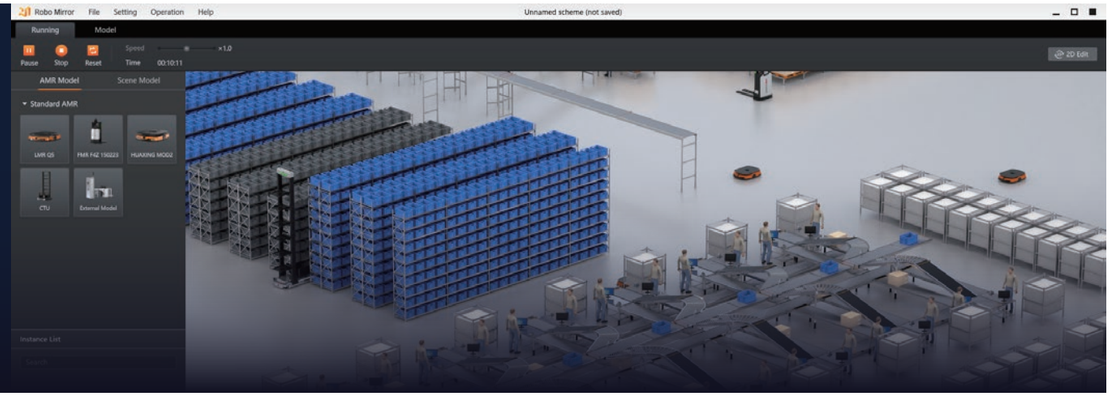
Pain points: Cross-floor carrying via elevator is required, bringing difficulty to the transformation from manual forklift operation to FMR operation. In the process of implementation and use, it is found that the transformation cycle is too long, and systematic learning of automation equipment is difficult.

Solution: The RCS-Lite system is used with two automated FMRs to transform to automation operation mode; roadways are adopted to increase pallet storage capacity. The system helps to perform efficient automated carrying in the case of low business volume and limited number of robots. After one week of implementation by the new integrator's staff, the project can be launched and delivered to the customer.

Full Delivery Cycle Software Suite

RoboMirror

RoboMirror, also known as mobile robot simulation software, is used to provide 3D visualization simulation of AMR operation model, operation environment, and operation logic. Users can use RoboMirror to build virtual AMR and AMR operation environment, execute the tasks issued by the scheduling system, and realize the whole business simulation.



Key Features

AMR rapid autonomous building

Choosing common chassis driver and combining multiple execution structures to build an AMR quickly.

Virtual sensors empowering intelligent innovation

Virtual sensor technology and multi-dimensional spatial perception capability empowering AMR intelligence.

AMR application scenario reconstruction

Reconstructing virtual scenarios and presenting business processes.

Application Cases

AMR rapid autonomous building

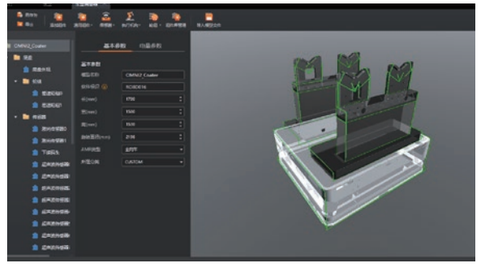
1. It can rapidly build a simulation AMR for design verification based on the design prototype, significantly shortening the delivery cycle.

2. It deeply optimizes navigation perception algorithms through virtual sensor information, covering more industry scenarios.

3. It realizes 1:1 restoration of on-site task scenes and flows, and deep customization of optimization strategies, tapping the upper limit of business efficiency.

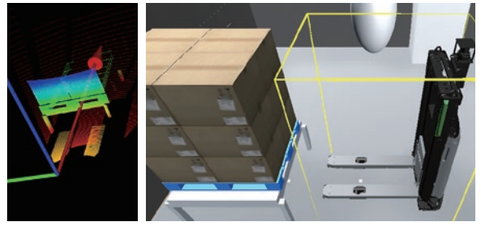
New Energy Industry Project Case

The new model designs in this project are verified through simulation, shortening the delivery time by about 4 to 6 weeks.



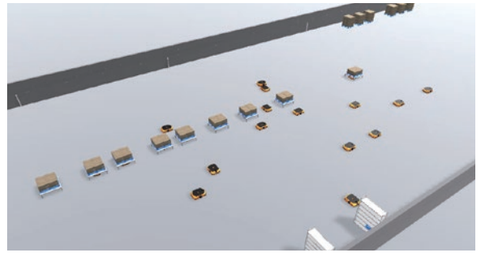
Smart Logistics Project Case

For different working conditions, the pallet recognition dataset is built through virtual simulation data to improve the success rate of the recognition algorithm.



In-Plant Carrying Project Case

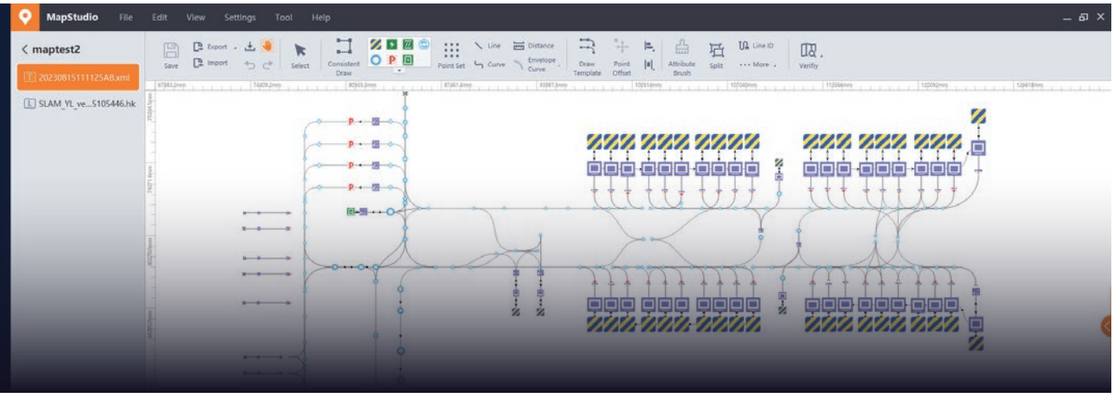
In the project, efficiency bottlenecks are analyzed through simulation, and buffer area is redesigned to improve timeliness rate of carrying by 20%.



Full Delivery Cycle Software Suite

MapStudio

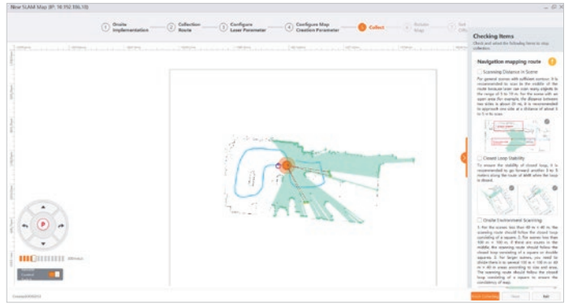
MapStudio is a mapping management software, which is used to manage and draw navigation maps, and can be used with RCS-2000 to realize online management and updating of maps. It is designed with such functions as topological map drawing, navigation map data editing, map splicing, map verification, map coordinates mapping, feature area management. The navigation maps include 2D LSLAM map, 3D LSLAM map, VSLAM map, and 2D barcode map.



Key Features

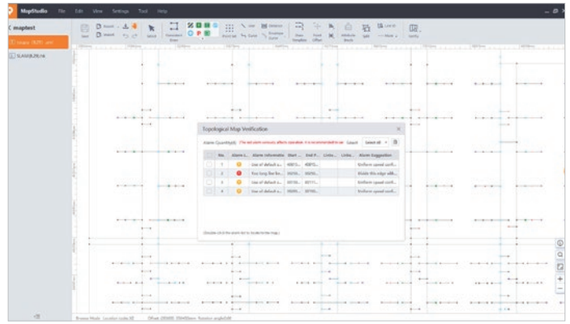
A one-stop guide to map building

It displays functions on interface, and supports ordered steps.



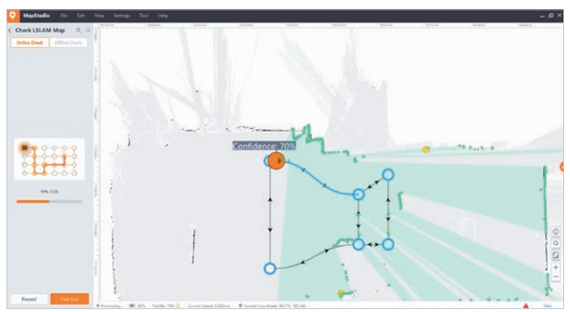
Easy and efficient topological map editing

Supports batch configuration of elements, and map legality check.



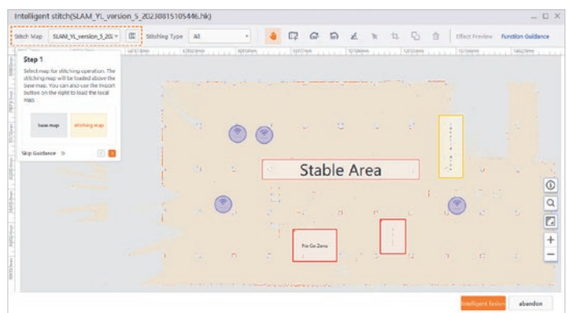
Automated scheduling of AMR for map quality reviews

Supports automatic assessment of maps, automatic online verification, and fast maintenance of maps.



Automatic calibration and optimization of maps

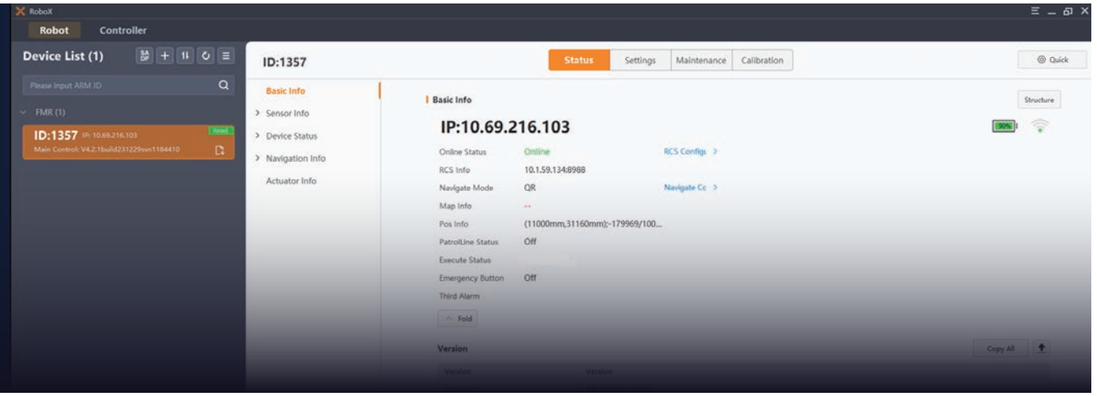
Supports optimizing maps with intelligent algorithm, automatically removing interference content, and easy accessing to high-quality maps.



Full Delivery Cycle Software Suite

RoboX

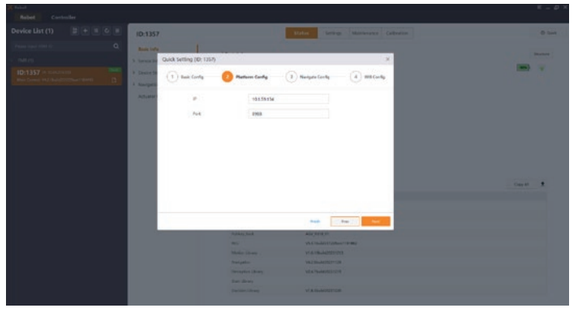
RoboX is a mobile robot management tool, with such functions as robot parameters viewing and configuration, robot implementation status viewing, and robot upgrading and maintenances.



Key Features

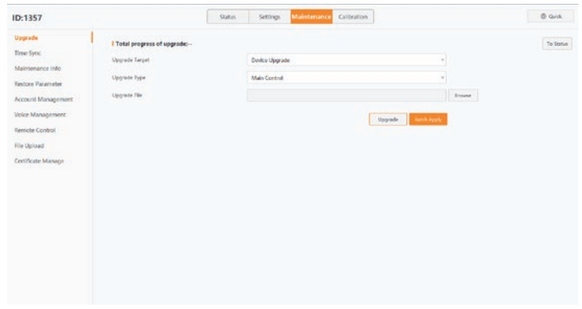
Quick configuration guide

Supports easy configuration of basic parameters; accelerating the path of putting robots into operation.



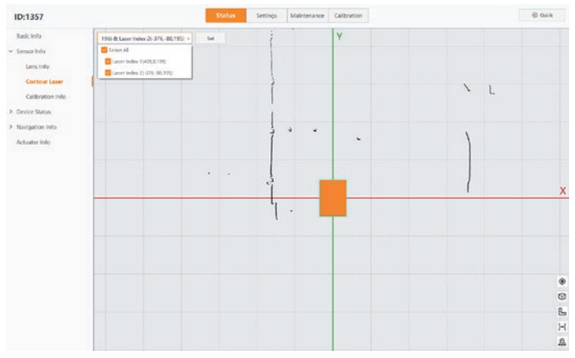
Providing rich and convenient system maintenance functions

Supports displaying regular functions on interface and batch applying functions to improve system maintenance efficiency.



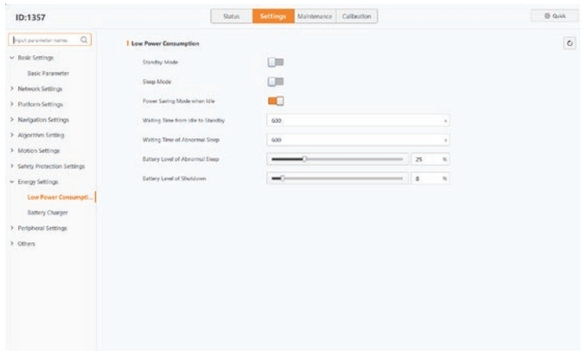
Visualization of perceptual information

Supports graphicization of sensory information, and high precision in field operations.



Self-adaption to AMR extended parameters

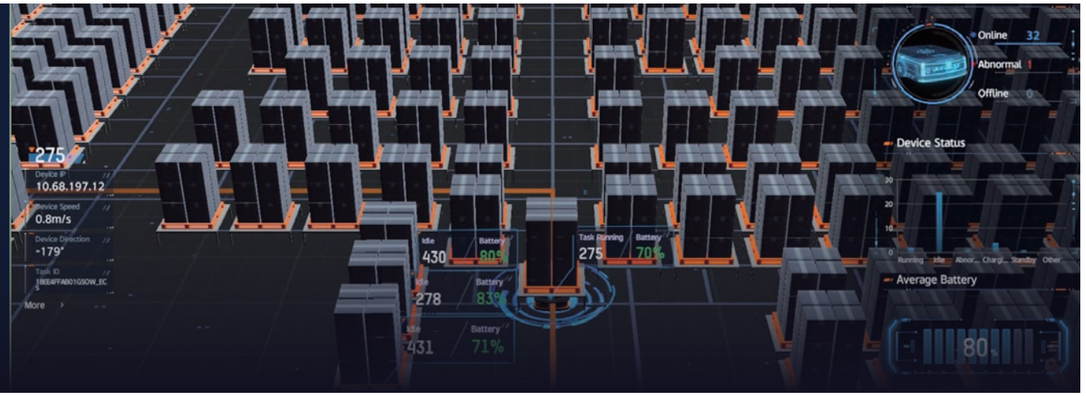
Supports self-adaption to extended parameters to fast response to configuration needs.



Full Delivery Cycle Software Suite

DigitalPlant

DigitalPlant dynamically displays the actual operations of robots, carriers, and machines in 3D form, and presents the real-time process status and exceptions through statistical analysis. It supports 3D display, robot status display, alarm display, statistics display, map switching, customized cruising mode, and customized addition of static models. On this basis, it can also be connected to security monitoring device for full-angle viewing.



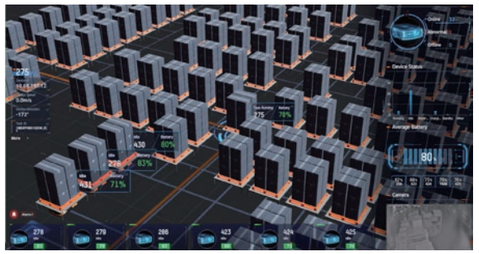
Key Features

Model simulation

Supports physical device twin simulation.

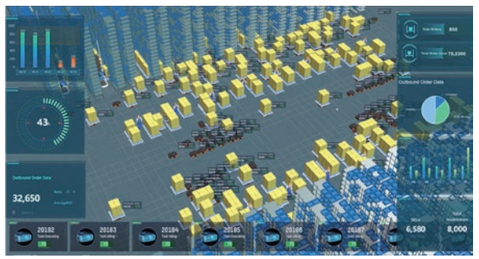
Tracking from multiple angles

Supports displaying images in multiple angles, and robot tracking mode.



Statistics and report

Supports analysis of task execution status.



Application Cases

DigitalPlant enables a first-hand view of the entire business and visualization of business details.

Photovoltaic Industry Project Case

300+ AMRs are deployed on the project site, docking to the machines and racks to perform tasks. DigitalTwin is adopted to present the robot docking process by showing the task execution status as well as the AMR status in real time.

Autonomous Mobile Robot

LMR

Latent Mobile Robot

LMR is a leading mobile robot product characterized by its lifting mechanism. LMR has an optimized motion performance and enhanced safety protection.

FMR

Forklift Mobile Robot

FMR focuses on the automatic transportation of standard pallets. Various series of unmanned products are involved, such as omnidirectional stacking, carrying, and forward series.

CMR/HMR

Conveyor/Heavy-Duty Mobile Robot

CMR/HMR covers caries series, such as conveyor & transmission, traction, lifting, and coating series. With high customization mechanism, it can fulfill auto transferring requirements in different scenes.

CTU

Carton Transfer Unit

CTU has outstanding performance in transportation and storage of single/multiple totes, and precise delivery / inbound and outbound. It effectively improves the picking efficiency for scenes such as multi-level deep storage and operation in narrow roadways.

Accessory

Accessory

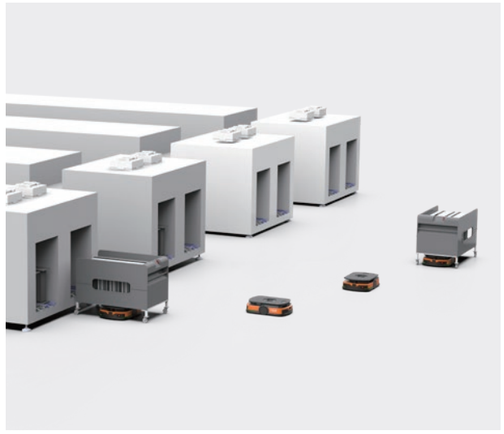
The charging station is flexibly docked with the mobile robot for fast charging without manual intervention.

Latent Mobile Robot (LMR)

Backpack Latent Mobile Robot - Lifting Type

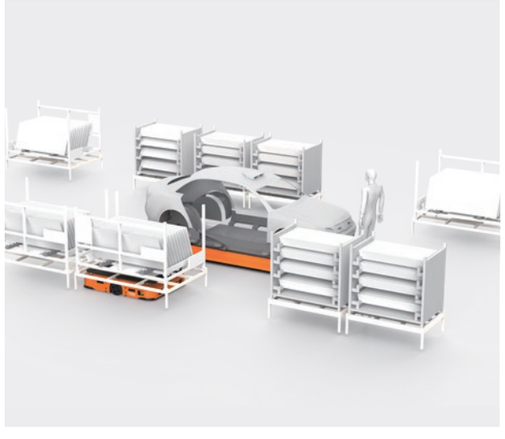
A lifting LMR is an automated logistics device capable of autonomous loading, lifting, and transportation. Characterized with a lifting device, it can lift goods from the ground to a higher position to perform carrying and storage tasks. It is commonly used in industrial and warehousing logistics scenes to effectively improve productivity and reduce logistics costs.

Application Cases



Photovoltaic cell carrying

Lithium PACK line carrying



Automotive parts carrying

3C warehouse carrying

Key Features

High extensibility

- Extension modules and assemblies: supports rapid delivery and convenient operation
- Various hardware third-party devices: one-stop configurable third-party devices

High flexibility

- Intelligent integrated sensing: integrated sensing with data from multiple sensors
- Precise controlling: high-accuracy motions and docking
- Multiple navigation modes switching: switching among V-SLAM, L-SLAM, and 2D barcode navigation modes
- Multi-safety protection: multi-directional stereoscopic protection and multiple safety protection measures

Strong adaptability to scenes

- High load/weight ratio: outstanding loading capacity
- Long endurance: high transmission efficiency and long battery life
- Strong adaptability to carriers: flexibly transfers carriers in various sizes
- Cluster collaboration: provides scheduling and carrying in large scale clusters

Specification

Model					
		Q2-400D	**Q3-600D**	**Q7-1000E**	**Q8-2000A**
Basic Parameter	Navigation mode	2D barcode / L-SLAM / V-SLAM	2D barcode / L-SLAM / V-SLAM	2D barcode / L-SLAM / V-SLAM	2D barcode / L-SLAM / V-SLAM
	Dimension (L × W × H) (mm)	780*545*300	950*650*250	1150*820*254	1523*1150*327
	Rotation diameter (mm)	820	995	1200	1780
	Chassis above ground (mm)	30	25	25	25
	Lifting platform dimension (mm)	724*504	850*600	1030*770	1250*1000
	Lifting stroke (mm)	60	60	60	100
	Lifting structure type	Electric	Electric	Electric	Hydraulic
	Weight (kg)	93	132	172	550
	Rated load (kg)	400	600	1000	2000
	Human-machine interaction	Touchscreen	Touchscreen	Touchscreen	Touchscreen
Safety Protection	Front protection	Laser	Laser	Laser	Laser
	Rear protection	-	-	-	-
	Side protection	-	-	-	-
	Sound and light alarm	Support	Support	Support	Support
	Laser clearance lamp	-	-	-	-
	Bumper strip	Support	Support	Support	Support
	Emergency stop button	Support	Support	Support	Support
Motion Performance	Rated running speed (empty) (mm/s)	2000	2000	2000	940
	Rated acceleration (empty) (mm/s^2)	800	1200	1000	500
	Positioning accuracy (mm)/(°)	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1
Battery Performance	Run time (h)	6-8	6-8	6-8	6-8
	Charging time (h)	⩽ 1.5	⩽ 1.5	⩽ 1.5	⩽ 1.5

LMR

Backpack Latent Mobile Robot - Chassis Type

A chassis LMR is a mobile robot supporting upper-level extension and chassis mobility. Integrated with upper-layer mounting holes and interface boards for upper-level structures acquiring port, it can connect with various upper-level extension structures, such as rollers, small mechanical arms, patrolling cameras, and environmental testing equipment. With strong secondary development capabilities, it can be widely used in industrial, warehousing logistics, intelligent manufacturing, and other scenes.

Application Cases

Upper-layer roller equipment

Upper-layer mechanical arm equipment

Upper-layer lifting equipment

Upper-layer belt equipment

Key Features

High extensibility

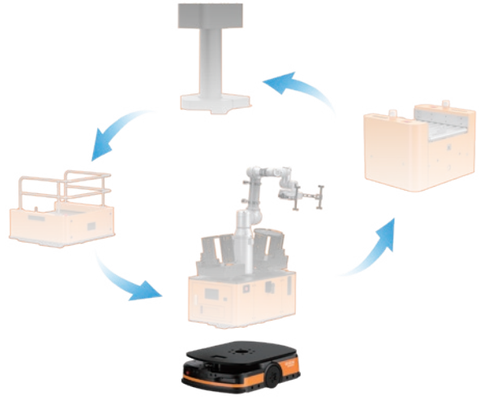
- Compatible with various upper-level structures, including rollers, small mechanical arms, and patrolling equipment
- Supports hardware interface requirements such as power supply, communication, and I/O from upper-level structures

Rich products

- Its products include Q3B, Q7B, and other series, with loading capacity ranging from 0 kg to 1000 kg
- Developed by the same platform as the lifting LMR, it is characterized with modules and assemblies, and rich hardware third-party devices

High flexibility

- Intelligent integrated sensing: integrated sensing with data from multiple sensors
- Precise controlling: high-accuracy motions and docking
- Multiple navigation modes switching: switching among V-SLAM, L-SLAM, and 2D barcode navigation modes. Multi-safety
- Protection: multi-directional stereoscopic protection and multiple safety protection measures



Specification

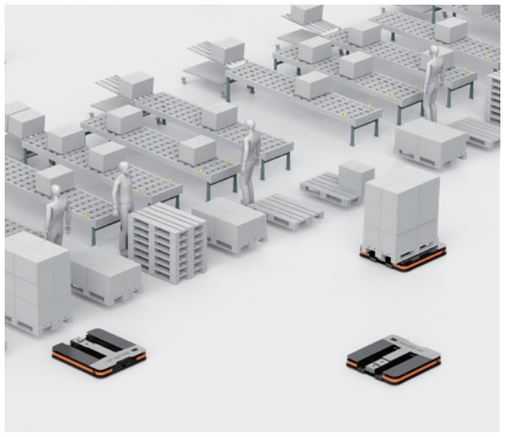
Model			
		Q3B-600D	**Q7B-1000E**
Basic Parameter	Navigation mode	2D barcode / L-SLAM / V-SLAM	2D barcode / L-SLAM / V-SLAM
	Dimension (L × W × H) (mm)	950*650*300	1150*820*300
	Rotation diameter (mm)	995	1200
	Chassis above ground (mm)	25	25
	Lifting platform dimension (mm)	/	/
	Lifting stroke (mm)	/	/
	Lifting structure type	/	/
	Weight (kg)	126	184
	Rated load (kg)	600	1000
	Human-machine interaction	Digital tube	Digital tube
Safety Protection	Front protection	Laser	Laser
	Rear protection	-	-
	Side protection	-	-
	Sound and light alarm	Support	Support
	Laser clearance lamp	-	-
	Bumper strip	Support	Support
	Emergency stop button	Support	Support
Motion Performance	Rated running speed (empty) (mm/s)	2000	2000
	Rated acceleration (empty) (mm/s^2)	1000	1000
	Positioning accuracy (mm)/(°)	± 10 / ± 1	± 10 / ± 1
Battery Performance	Run time (h)	6-8	6-8
	Charging time (h)	⩽ 1.5	⩽ 1.5

LMR

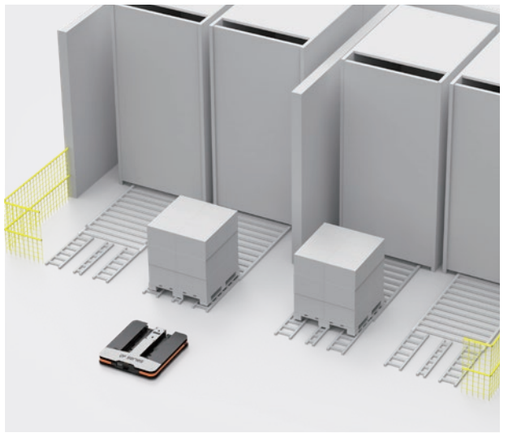
Forklift Latent Mobile Robot

Forklift LMR combines the advantages of LMR and FMR. Equipped with both the chassis and forks, it retains the flexibility of LMR while being able to directly carry pallets. It addresses the pain points of existing FMR such as large turning radius and slow moving speed, and those of LMR such as requiring additional single-layer racks when LMR carries pallets.

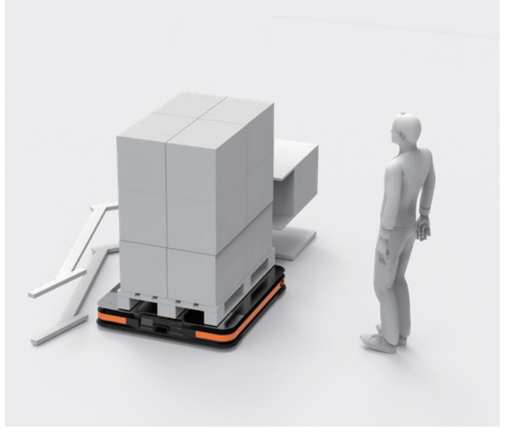
Application Cases



Material distribution



Ground roller conveyor docking



Pallet-to-person

Unstacker crane automatic docking

Key Features

Rich product lines

- Various types of carriers: national standard pallets (ISO6780: 2003), non-standard pallets, and non-standard racks
- Extension modules and assemblies: supports rapid delivery and convenient operation

Product competitiveness

- Max. running speed for differential AMR type is 2 m/s
- Rich third-party devices for docking: supports direct interaction with third-party devices such as ground roller conveyors, elevators, freight elevators, air shower gates, etc
- Multiple navigation modes switching: switching among V-SLAM, L-SLAM, and 2D barcode navigation modes
- Multi-safety protection: multi-directional stereoscopic protection and multiple safety protection measures

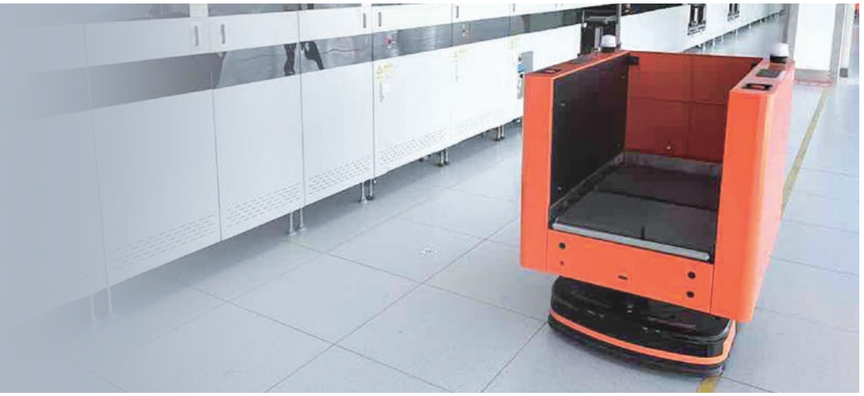
Specification

Model			
		QF-600CD	QF-1000CD
Basic Parameter	Dimension (L × W × H) (mm)	1250*1200*190	1250*1200*190
	Weight (with battery) (kg)	335	335
	Rated load (kg)	600	1000
	Lifting stroke (mm)	333	333
	Applicable pallet entry height (mm)	100-130	100-130
	Applicable pallet entry inner width (mm)	⩽ 190	⩽ 190
	Applicable pallet entry outer width (mm)	⩾ 690	⩾ 690
	Pallet length (mm)	600-1400	600-1400
Motion Performance	Drive method	Differential	Differential
	Rated running speed (mm/s)	1800	1800
	Positioning accuracy (mm)/(°)	± 10 / ± 1	± 10 / ± 1
	Rotation diameter (mm)	1640	1640
	Min. aisle width (1200 × 1000 pallet)(mm)	1800	1800
Power Lithium Battery Performance	Run time (h)	6-8	6-8
	Charging time (h)	⩽ 1.5	⩽ 1.5
Safety Protection	Laser obstacle avoidance	Support	Support
	Laser clearance lamp	Customizable	Customizable
	Bumper strip	Support	Support
	Pallet in-position detection	Support	Support
	Fork collision detection	Customizable	Customizable
	Emergency stop button	Support	Support
	Low obstacles detection	Customizable	Customizable
	Sound and light alarm	Support	Support

Conveyor/Heavy-Duty Mobile Robot (CMR/HMR)

Conveyor & Transmission Series

Conveyor & transmission series robots are based on standard chassis and equipped with upper-level assemblies. Multiple models of the series are developed according to different layers and bins. They can be docked with machines, conveyors, tools, etc. to transfer carriers or materials, so as to meet the needs of intelligent production.



Application Cases

Power machine docking

Conveyor / Buffer conveyor docking

Carrying among Lines

Full and empty totes exchanging

Key Features

- Wide scope of loading capacity, ranging from 15 kg to 1.5 t
- Supports multiple navigation modes, including 2D barcode, L-SLAM, V-SLAM, and tape navigation
- Supports omnidirectional drive
- Max. speed ranges from 1.2 m/s to 1.5 m/s
- Supports seamless switching between multi-robot collaboration and single-robot operation modes
- High-precision docking. The docking accuracy of secondary positioning models reaches ± 5 mm
- Meets the customized needs of various carriers and dimensions
- Supports response to all kinds of structure customization / hardware customization / software business logic customization
- Supports data interface openness (XML/ROBTX) for efficient function configuration and secondary development

Specification

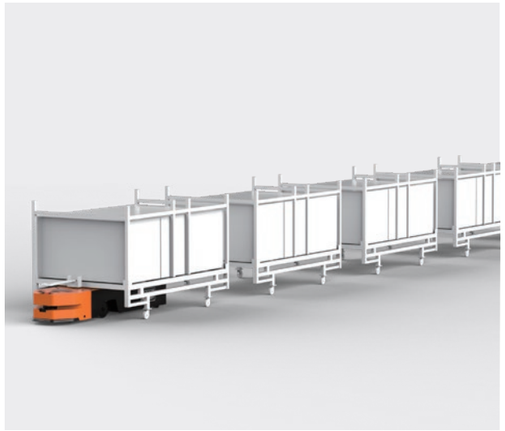
Model								
		CU1-400C	CU1-1500C	CU1-600L	CU1-1000L	CU2-120L	CU2-10L	CU4-200L
Basic Parameter	Dimension (L × W × H)(mm)	950*840*700	1750*1500*1404	1400*1115*1230	1680*1300*1981	1150*824*1119	1480*743*1006	1250*730*1344
	Rotation diameter (mm)	1218	2230	1740	2074	1337	1607	1410
	Conveying type	Single roller	Chain	Single roller	Single roller	Double roller	Double roller	Quad-Roller
	Chassis above ground (mm)	25	30	25	40	25	25	25
	Weight (kg)	550	1050	701	1412	478	460	412
	Rated load (kg)	400	1500	600	1000	120	10	200
	Navigation mode	2D barcode / L-SLAM	2D barcode	2D barcode / L-SLAM	2D barcode / L-SLAM	2D barcode / L-SLAM	2D barcode / L-SLAM	2D barcode / L-SLAM
	Human-machine interaction	Touchscreen	Touchscreen	Touchscreen	Touchscreen	Touchscreen	Touchscreen	Touchscreen
Execution Structure	Conveying speed (mm/s)	200	150	200	238	200	417	200
	Working surface height (from ground) (mm)	500	800	650	700	450/850	700	450/1150
Safety Protection	Front protection	Laser	Laser	Laser	Laser	Laser	Laser	Laser
	Rear protection	Laser	Laser	Laser	Laser	Laser	Laser	Laser
	Side protection	-	Ultrasound and ToF	-	Binocular	-	-	-
	Bumper strip	Support	Support	Support	Support	Support	Support	Support
	Emergency stop button	Support	Support	Support	Support	Support	Support	Support
	Sound and light alarm	Support	Support	Support	Support	Support	Support	Support
Motion Performance	Rated running speed (empty) (mm/s)	1200	1000	1200	1200	1200	1200	1200
	Rated acceleration (empty) (mm/s^2)	400	400	400	400	400	400	500
	Positioning accuracy (mm)/(°)	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1
	Docking accuracy (mm)	± 10	± 10	± 2	± 2	± 2	± 10	± 10
	Driving direction	Bi-directional driving	Bi-directional driving	Omnidirectional driving	Omnidirectional driving	Bi-directional driving	Bi-directional driving	Bi-directional driving
	Other capability	360° in-place rotation	360° in-place rotation	360° in-place rotation	360° in-place rotation	360° in-place rotation	360° in-place rotation	360° in-place rotation
Battery Performance	Run time (h)	6-8	6-8	6-8	6-8	6-8	6-8	6-8
	Charging time (h)	⩽ 1.5	⩽ 2	⩽ 2	⩽ 2	⩽ 2	⩽ 1.5	⩽ 1.5

CMR

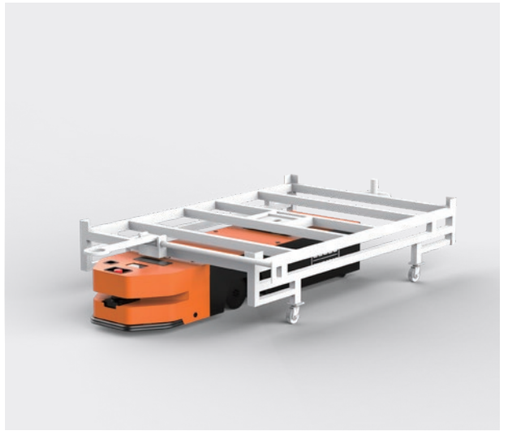
Conveyor & Transmission Series

Conveyor & transmission series robots are based on standard chassis and equipped with upper-level assemblies. Multiple models of the series are developed according to different layers and bins. They can be docked with machines, conveyors, tools, etc. to transfer carriers or materials, so as to meet the needs of intelligent production.

Application Cases

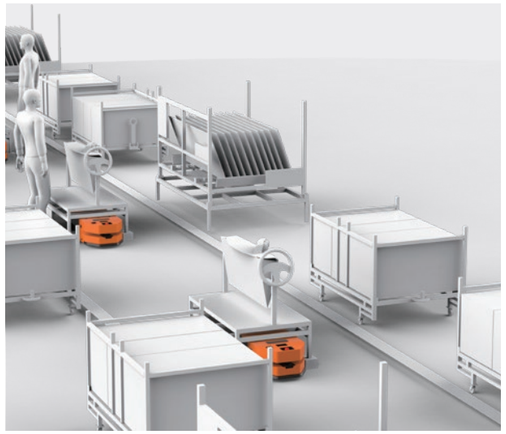


Pulling multiple racks with one AMR



Automatic hook

Lithium PACK assembly line



Automotive final assembly SPS & subassembly

Key Features

- Load includes 500 kg, 1 t, and 1.5 t
- Supports multiple navigation modes, including 2D barcode, L-SLAM, V-SLAM, and tape navigation
- Supports single-directional and bi-directional driving
- Maximum running speed (fully loaded) is 1.0 m/s
- Supports seamless switching between multi-robot collaboration and single-robot operation modes
- A compact body and small turning radius
- Multi-safety protection, with laser detection, electronic bumper strip, emergency stop and optional 3D obstacle avoidance
- Optional ground and side charging assemblies
- Configurable wireless App and wired manual controller
- Supports data interface openness (XML/ROBTX) for efficient function configuration and secondary development
- Well-developed product baselines and series, contributing to shorter delivery time

Specification

Model				
		CT5-1000L	**CT5-1500L**	**CT7-1500L**
Basic Parameter	Dimension (L × W × H) (mm)	1615*470*285	1600*540*320	2000*520*320
	Arc turning radius (mm)	1000	1200	1200
	Conveying type	Traction	Traction	Traction
	Chassis above ground (mm)	30	30	30
	Weight (kg)	225	410	490
	Rated load (kg)	1000	1500	1500
	Navigation mode	2D barcode / L-SLAM / V-SLAM	2D barcode / L-SLAM / V-SLAM	2D barcode / L-SLAM / V-SLAM
	Human-machine interaction	Touchscreen	Touchscreen	Touchscreen
Execution Structure	Traction pin jacking speed (mm/s)	⩾ 20	⩾ 20	⩾ 20
	Traction pin stroke (mm)	50	60	60
Safety Protection	Front protection	Laser	Laser	Laser
	Rear protection	-	-	Laser
	Side protection	-	-	Optional
	Bumper strip	Support	Support	Support
	Emergency stop button	Support	Support	Support
	Sound and light alarm	Support	Support	Support
Motion Performance	Rated running speed (empty) (mm/s)	1000	1000	1000
	Rated acceleration (empty) (mm/s^2)	400	400	400
	Positioning accuracy (mm)/(°)	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1
	Driving direction	Forward	Forward	Bi-directional driving
	Other capability	Arc turning	Arc turning	Arc turning and half-loaded sidesway
Battery Performance	Run time (h)	6-8	6-8	6-8
	Charging time (h)	⩽ 1.5	⩽ 2	⩽ 2

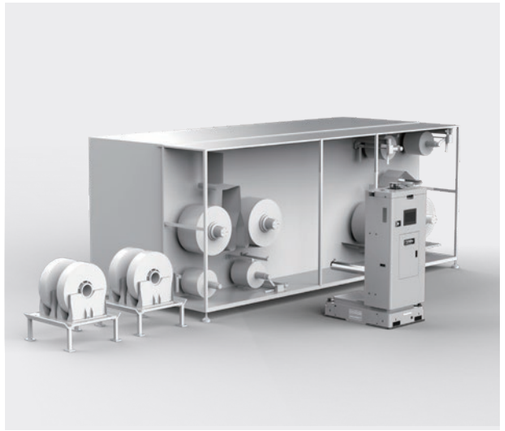
CMR

Lifting Series

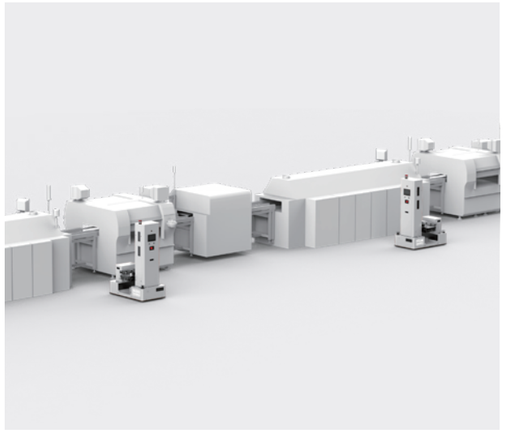
Lifting series robots are based on the lifting structure, combining roller, cantilever, clamping arm and other execution structures to realize more composite application functions. They can be docked with machines or tools of different heights, depths and types to transfer carriers or materials, so as to meet the needs of complex application scenarios in smart factories.

Application Cases

Photovoltaic slicing process



Lithium battery-die cutting & winding processes of cells



SMT workshops

Other application scenarios

Key Features

- Supports multiple types of execution structures, including transmission, sidesway, cantilever, clamping, telescopic structure, etc
- Supports multiple navigation modes, including 2D barcode, L-SLAM, V-SLAM, and tape navigation
- Maximum running speed of 1.2 m/s
- Supports seamless switching between multi-robot collaboration and single-robot operation modes
- Supports high-precision docking with secondary docking accuracy up to ± 2 mm
- Supports abundant customized derivative products to meet the customized needs of various industries
- Supports responses to all kinds of structure customization / hardware customization / software business logic customization
- Supports data interface openness (XML/ROBTX)
- Supports efficient function configuration and secondary development

Specification

Model							
		CHU1-50L	**CHG-150L**	**C3-50LF1**	**CHG-300L**	**CHA-300L**	**CHA-600L**
Basic Parameter	Dimension (L × W × H) (mm)	1100*650*1650	1500*1150*2150	980*870*1545	1852*1224.5*2718	1387*808*1955	1705*985*2200
	Rotation diameter (mm)	1236	1828	1220	2200	1550	1774
	Conveying type	SMT plate chain	Telescopic fork	Telescopic fork	Clamping arm	Single cantilever	Double cantilever
	Chassis above ground (mm)	25	25	25	40	30	20
	Weight (kg)	335	1010	620	1100	800	1070
	Rated load (kg)	50	150	50	300	300	600
	Navigation mode	L-SLAM/ 2D barcode	L-SLAM/ 2D barcode	L-SLAM/ 2D barcode	L-SLAM/ 2D barcode	L-SLAM/ 2D barcode	L-SLAM/ 2D barcode
	Human-machine interaction	Touchscreen	Touchscreen	Touchscreen	Touchscreen	Touchscreen	Touchscreen
Execution Structure	Conveying speed (mm/s)	250	Lifting 50	Lifting 50	200	-	-
	Working surface height (from ground) (mm)	260	1100	550	816-1756	680-1400	700-1700
Safety Protection	Top protection	-	-	-	Laser	Laser	Laser
	Front protection	Laser and binocular	Laser and binocular	Laser	Laser and binocular	Laser and binocular	Laser
	Rear protection	Laser	Laser and binocular	Laser	Laser and binocular	Laser	Laser
	Side protection	-	Ultrasound	-	Laser	Laser	Laser
	Bumper strip	Support	Support	Support	Support	Support	Support
	Emergency stop button	Support	Support	Support	Support	Support	Support
	Sound and light alarm	Support	Support	Support	Support	Support	Support
Motion Performance	Rated running speed (empty) (mm/s)	1400	1200	1200	1000	1200	1000
	Rated acceleration (empty) (mm/s^2)	500	500	400	300	500	400
	Positioning accuracy (mm)/(°)	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1
	Docking accuracy (mm)	± 5 / ± 2.5	± 2	± 2	± 2	± 2	± 2
	Driving direction	Omnidirectional drive	Omnidirectional drive	Omnidirectional drive	Omnidirectional drive	Omnidirectional drive	Bi-directional driving
	Other capability	360° in-place rotation	360° in-place rotation	360° in-place rotation	360° in-place rotation	360° in-place rotation	360° in-place rotation
Battery Performance	Run time (h)	6-8	6-8	6-8	6-8	6-8	6-8
	Charging time (h)	⩽ 1.5	⩽ 2	⩽ 1.5	⩽ 2	⩽ 2	⩽ 2

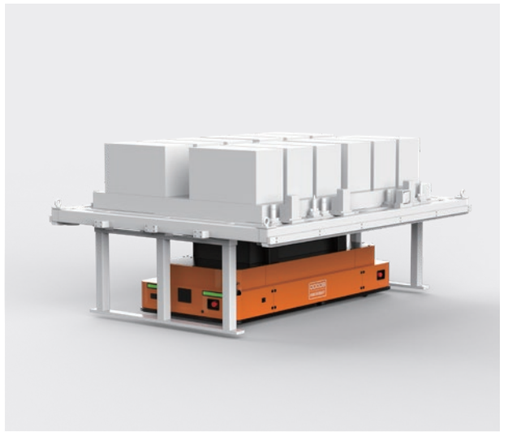
HMR

Heavy-Duty Lifting Series

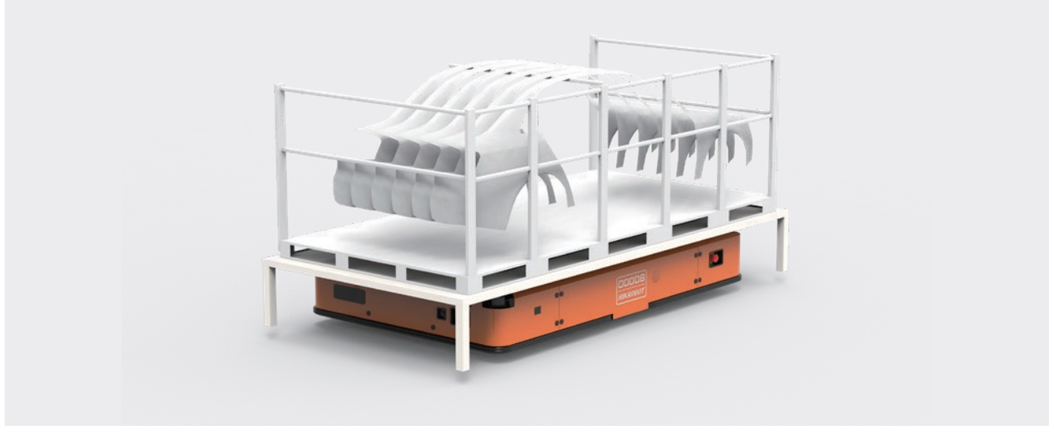
Heavy-duty lifting series robots are used to realize the docking of large materials with production lines or tools, transferring carriers or materials, so as to meet the needs of industrial or logistics automation. They can be used for the carrying of medium and large materials in industries such as lithium battery, photovoltaic, automobile, and construction machinery.

Application Cases

Point-to-point carrying operations



The assembly and testing process of PACK



Point-to-point carrying operations

Key Features

Rich product weights

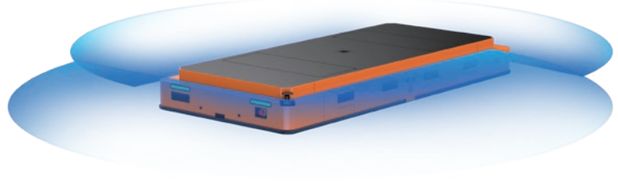
- Supports wide scope of loading capacity, ranging from 0 t to 10 t
- Supports multiple navigation modes, including 2D barcode, L-SLAM, V-SLAM, and tape navigation

Highly innovative

- The maximum traveling speed of 1.2 m/s leads the world
- Supports seamless switching between multi-robot collaboration and single-robot operation modes

Rich derivative products

- Single or double lifting models can be configured based on the size and weight of the carried object
- The business scope covers PACK line models of the lithium battery industry, silicon ingot carrying models and silicon material carrying explosion-proof models of the photovoltaic industry, stamping, welding and assembly line models of the automobile industry, and logistics line models of the construction machinery industry
- The core components are all self-developed, and support responses to all kinds of structure, hardware and software customization
- Supports data interface openness (XML/ROBTX) for efficient function configuration and secondary development



Specification

Model										
		H7-1500A	H8-2000B	H9-3000B	H10-4000A	H10-5000A	H7-1500A	H8-2000B	H9-3000A	H10-5000B
AMR Type Attribute		Baseline	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline	Baseline
Basic Parameter	Dimension (L × W × H) (mm)	1600*1000*370	1900*1200*370	2000*1400*400	2200*1500*400	2200*1500*410	2500*1100*370	3000*1400*370	2800*1300*370	3200*1500*400
	Rotation diameter (mm)	1822	2182	2374	2596	2596	2674	3255	3019	3479
	Lifting stroke (mm)	100	100	100	150	150	100	150	100	100
	Chassis above ground (mm)	40	40	40	40	40	40	40	40	40
	Lifting platform dimension (mm)	1330*730	1600*900	1700*1100	1800*1100	1800*1100	240*810	1030*430	1010*356	1250*510
	Lifting structure type	Single hydraulic lifting	Single hydraulic lifting	Single hydraulic lifting	Single hydraulic lifting	Single hydraulic lifting	Double lifting	Double lifting	Double lifting	Double lifting
	Weight (kg)	600	685	1000	1529	1350	800	1000	1200	1995
	Rated load (kg)	1500	2000	3000	4000	5000	1500	2000	3000	5000
	Navigation mode	L-SLAM	2D barcode	2D barcode	L-SLAM	L-SLAM	2D barcode / L-SLAM	2D barcode / L-SLAM	L-SLAM	2D barcode / L-SLAM
	Human-machine interaction	Touchscreen	Touchscreen	Touchscreen	Touchscreen	Touchscreen	Touchscreen	Touchscreen	Touchscreen	Touchscreen
Safety Protection	Front protection	360° laser	360° laser	360° laser	360° laser	360° laser	360° laser	360° laser	360° laser	360° laser
	Rear protection	360° laser	360° laser	360° laser	360° laser	360° laser	360° laser	360° laser	360° laser	360° laser
	Side protection	360° laser	360° laser	360° laser	360° laser	360° laser	360° laser	360° laser	360° laser	360° laser
	Sound and light alarm	Support	Support	Support	Support	Support	Support	Support	Support	Support
	Bumper strip	Support	Support	Support	Support	Support	Support	Support	Support	Support
	Emergency stop button	Support	Support	Support	Support	Support	Support	Support	Support	Support
Motion Performance	Rated running speed (empty) (mm/s)	1200	1200	1200	1200	1000	1500	1000	1200	1200
	Rated acceleration (empty) (mm/s^2)	500	500	500	500	500	500	500	500	500
	Positioning accuracy (mm)/(°)	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1
	Driving direction	Omnidirectional drive	Omnidirectional drive	Omnidirectional drive	Omnidirectional drive	Omnidirectional drive	Omnidirectional drive	Omnidirectional drive	Omnidirectional drive	Omnidirectional drive
Battery Performance	Run time (h)	6-8	6-8	6-8	6-8	6-8	6-8	6-8	6-8	6-8
	Charging time (h)	⩽ 1.5	⩽ 2	⩽ 2	⩽ 2.5	⩽ 2	⩽ 1.5	⩽ 2	⩽ 2	⩽ 2.5

HMR

Heavy-Duty Lifting Series

Focusing on the docking characteristics of the pre-process (loading, unloading, calendering and slitting of coating) in the lithium battery industry, Hikrobot has combined the structural forms of machines, the characteristics of electrode rolls and the demand for high-precision docking, and has developed coating CMR models for lithium battery industry. The models are based on the chassis of heavy-duty lifting robots, equipped with a flexible and efficient multi-axle double-fork lifting assembly, with a secondary positioning function, to achieve docking accuracy within ± 1 mm.

Application Cases

The loading of coating (replace the empty shaft with the loaded rob)

High-precision docking of AMRs to coating CMRs

Rolls buffer area

Key Features

Rich product weights and wide range of applications

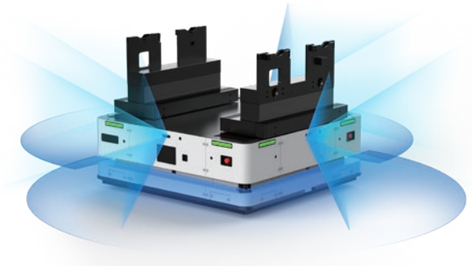
- The whole machine load ranges from 1 t to 4 t, covering the whole series of demand for electrode rolls carrying in lithium battery industry
- They can be applied to the electrode rolls carrying of all kinds of batteries in 3C / power / energy storage industries

Highly innovative

- Supports high-precision docking with secondary docking accuracy up to ± 1mm
- Supports the empty-full exchange of double bin without using any machines to improve efficiency

Rich derivative products

- The core components are all self-developed, and support responses to all kinds of structure, hardware and software customization
- Supports data interface openness (XML/ROBTX) for efficient function configuration and secondary development



Specification

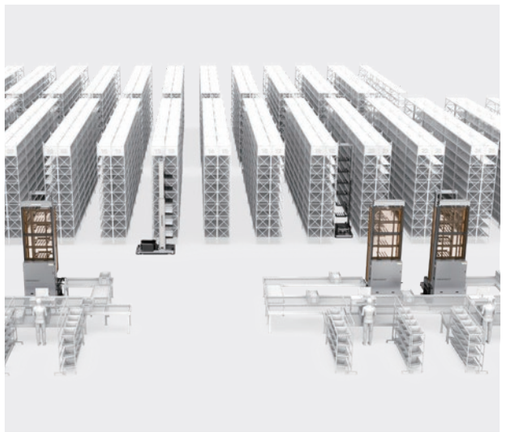
Model					
		HC7-1000	HC8-2000	HC9-3000	HC10-4000
Basic Parameter	Dimension (L × W × H) (mm)	1700*1500*1530	1700*1600*1230	1900*1800*1590	2200*1800*1595
	Rotation diameter (mm)	2196	2263	2546	2772
	Lifting stroke (mm)	200	200	200	200
	Chassis above ground (mm)	40	40	40	30
	Lifting structure type	Electric	Electric	Electric	Electric
	Weight (kg)	1351	1500	1638	3342
	Rated load (kg)	1000	2000	3000	4000
	Navigation mode	L-SLAM	L-SLAM	L-SLAM	L-SLAM
	Human-machine interaction	Touchscreen	Touchscreen	Touchscreen	Touchscreen
Safety Protection	Stereoscopic obstacle avoidance	Support	Support	Support	Support
	Sound and light alarm	Support	Support	Support	Support
	Bumper strip	Support	Support	Support	Support
	Emergency stop button	Support	Support	Support	Support
Motion Performance	Rated running speed (empty) (mm/s)	1200	1200	1200	1200
	Rated acceleration (empty) (mm/s^2)	500	500	500	500
	Positioning accuracy (mm)/(°)	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1
	Secondary docking accuracy (mm)	± 1	± 1	± 1	± 1
	Driving direction	Omnidirectional drive	Omnidirectional drive	Omnidirectional drive	Omnidirectional drive
Battery Performance	Run time (h)	6-8	6-8	6-8	6-8
	Charging time (h)	⩽ 2	⩽ 2	⩽ 3	⩽ 2

Carton Transfer Unit (CTU)

Clamping C Series

Supports different types and sizes of carriers such as standard totes, cartons, etc., adapting to typical circulation logistics and warehousing applications, covering 0.3m to 10 m height of access.

Application Cases



FlashStation solution (CTU + FlashStation)

ToteRelayPick solution (CTU + Q1P)

VarialPick (CTU + Q3)

CTU + conveyor docking

Key Features

High storage rates

- High proportion of reservoir capacity area: small product width and narrow operation aisle
- Height storage space: supports up to 10 m rack storage
- Assembly can be customized: supports the customization of double deep assembly and distance adjustment assembly, significantly improving the reservoir capacity

Highly efficient circulation

- High outbound and inbound efficiency: the FlashStation docks 8 boxes at a time
- Efficient inventory management: the intelligent WMS algorithms optimizes storage strategies
- Fastest transfer: the efficient RCS scheduling algorithm plans the optimal route for fastest transfer

Safety protection

- Stereoscopic protection: the chassis is equipped with 360° laser as standard to achieve full perimeter protection; both low and suspended obstacles can be protected
- Safety protection: the material protrusion detection and telescopic obstacle avoidance detection meets the safety needs of personnel and materials

Convenient and easy-to-use

- Touchscreen control: the equipment status is clearly visualized, and the touchscreen controls various actions of execution structures, such as lifting, telescoping, etc
- V-SLAM navigation: high-precision visual navigation without coding on textured grounds

Adapted Carrier

Tote

Cart

Specification

Model								
		TP1-50DC	TP5-50DCN	TP5-50DC	TP5-50DCH	TP5-50DCH(T)	TP5-50DCP/ TP5-50DCP(T)	TP5-50DCW/ TP5-50DCW(T)
Basic Parameter	Dimension (L × W × H) (mm)	950*690*2000	1250*700*2740	1600*900*4320	1730*950*6350	1882*950*6560	1850*1050*6355/	2050*1150*6445/ 2240*1150*6560
	Weight (with battery) (kg)	310	450	475	640	1150	680/1200	700/1250
	Robot rated load (kg)	50	180	300	300	300	300	300
	Execution structure load (kg)	50	30	50	50	50	50	50
	Execution structure type	Clamp and single deep	Clamp and single deep	Clamp and single deep	Clamp and single deep	Clamp and single deep	Clamp and single deep	Clamp and single deep
	Picking height (mm)	350-1485	320-2420	200-4000	300-6000	370-10240	(300-6000)/(370-10240)	(300-6000)/(370-10240)
	Goods size (L × W × H) (mm) / customizable	600*400*280	400*300*230	600*400*(100-330)	600*400*(100-300)	600*400*(100-320)	650*550*300/600*400*300	800*600*450/600*400*300
Motion Performance	Rated running speed (m/s)	1.8	1.8	1.6	1.8	1.8	1.8	1.8
	Travel stopping accuracy (mm)/(°)	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1
	Lifting/lowering stopping accuracy (mm)	± 2	± 2	± 2	± 2	± 2	± 2	± 2
	Aisle width (mm)	840	850	1050	1100	1100	1200	1300
	Rotation diameter (mm)	1000	1360	1600	1850	1975	1980/2070	2225/2400
Battery Performance	Run time (h)	6-8	6-8	6-8	6-8	6-8	6-8	6-8
	Charging time (h)	⩽ 1.5	⩽ 1.5	⩽ 1.5	⩽ 2	⩽ 2	⩽ 2	⩽ 2
Safety Protection	Laser obstacle avoidance	Support	Support	Support	Support	Support	Support	Support
	Surrounding bumper strip detection	Support	Support	Support	Support	Support	Support	Support
	Emergency stop button	Support	Support	Support	Support	Support	Support	Support
	Sound and light alarm	Support	Support	Support	Support	Support	Support	Support
	Gantry tote protrusion detection	-	Support	Support	Support	Support	Support	Support
Others	Drive method	Differential	Differential	Differential	Differential	Differential	Differential	Differential
	Human-machine interaction	Touchscreen	Touchscreen	Touchscreen	Touchscreen	Touchscreen	Touchscreen	Touchscreen
	Navigation mode	V-SLAM / 2D barcode / L-SLAM	V-SLAM / 2D barcode / L-SLAM	V-SLAM / 2D barcode / L-SLAM	V-SLAM / 2D barcode / L-SLAM	V-SLAM / 2D barcode / L-SLAM	V-SLAM / 2D barcode / L-SLAM	V-SLAM / 2D barcode / L-SLAM

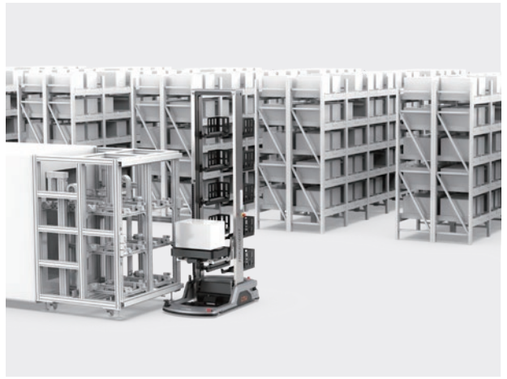
CTU

Lifting T Series

T series CTUs are suitable for all kinds of special carriers, such as trays in the 3C industry, lines and tools in the manufacturing industry, and battery magazines in the new energy industry, which can meet the scenarios needs of loading/unloading and lineside buffer for all kinds of machines. For human-machine mixed traffic scenarios, the T series CTUs are equipped with multiple safety protections to achieve dual safety for personnel and materials. Flexible customized fork plates are available to meet the storage needs of materials of all sizes, with loads up to 100kg per box.

Application Cases

T series CTUs are commonly used for automatic loading/unloading of machines and lineside buffer scenarios in the 3C industry, semi-finished and finished products testing scenarios of the battery back-end process in the new energy industry, automatic loading of silicon raw materials for monocrystalline silicon production in the photovoltaic industry, and so on. At the same time, the robots can also meet the material warehousing scenarios in various industries, and can replace the traditional palletizer solution, with low cost and high transformation flexibility.



Automatic loading and unloading of machines

Lineside buffer

Multi-level rack storage

Key Features

High adaptability

- Flexibly adapts to typical carriers in various industries, covering all kinds of operational needs
- Lifting and placing is frictionless, adapting to high-cleanliness manufacturing scenarios
- Mixes clamping and centering function for high-precision docking
- A single box load is 50 kg as standard, and 100 kg is optional

Efficient docking

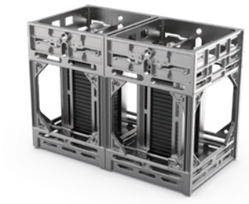
- High outbound and inbound efficiency: the FlashStation docks 8 boxes at a time

High security

- Telescopic obstacle avoidance detection, material deviation detection, material presence detection, etc. achieve material safety
- The detection of low and suspended obstacles improves the safety of human-machine mixed traffic, and can protect the abnormal door opening scenarios of the machine

Adapted Carrier

Tray



Battery magazine

Tote

Specification

Model					
		TP1-50DT	TP5-50DTN	TP5-50DT	TP5-50DTH
Basic Parameter	Dimension (L × W × H) (mm)	950*690*2200	1250*700*2300	1600*900*3275	1730*950*3265
	Weight (with battery) (kg)	350	450	650	668
	Robot rated load (kg)	50	180	300	300
	Execution structure load (kg)	50	50	50	100
	Execution structure type	pallet	pallet	pallet	pallet
	Picking height (mm)	450-1670	380-2000	350-3000	380-3000
	Goods size (L × W × H) (mm) / customizable	600*400*300	400*300*300	600*400*300	690*520*300
Motion Performance	Rated running speed (m/s)	1.8	1.8	1.6	1.8
	Travel stopping accuracy (mm)/(°)	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1	± 10 / ± 1
	Lifting/lowering stopping accuracy (mm)	± 2	± 2	± 2	± 2
	Aisle width (mm)	840	850	1050	1100
	Rotation diameter (mm)	1000	1360	1600	1850
Battery Performance	Run time (h)	6-8	6-8	6-8	6-8
	Charging time (h)	⩽ 1.5	⩽ 1.5	⩽ 2	⩽ 2
Safety Protection	Laser obstacle avoidance	Support	Support	Support	Support
	Surrounding bumper strip detection	Support	Support	Support	Support
	Emergency stop button	Support	Support	Support	Support
	Sound and light alarm	Support	Support	Support	Support
	Gantry tote protrusion detection	Support	Support	Support	Support
Others	Drive method	Differential	Differential	Differential	Differential
	Human-machine interaction	Touchscreen	Touchscreen	Touchscreen	Touchscreen
	Navigation mode	V-SLAM / 2D barcode / L-SLAM	V-SLAM / 2D barcode / L-SLAM	V-SLAM / 2D barcode / L-SLAM	V-SLAM / 2D barcode / L-SLAM

CTU

Composite M Series

The M series robots are new products developed by Hikrobot for characteristics of the 3C industry. They support omnidirectional panning, diagonal and arc motion. They also support the customization of various types of execution structure assemblies such as clamping assemblies, lifting telescopic forks, and composite assemblies, among which the composite execution structures support the docking of rollers and clamping assemblies, and are suitable for the docking of power conveyor line machines and the docking of non-powered racks / buffer racks, with docking accuracy can reach mm level.

Application Cases

The M series robots are designed for the docking scenario of upper and lower plate stackers and the lineside buffering scenario in the 3C industry. They are suitable for the transfer of PCB frames of various sizes. The single-box model is suitable for the production line scenario with narrow aisles, and the multi-box model can carry multiple boxes at one time, which is suitable for the scenario with efficient transfer requirements, and is often used for delivering totes to the flow rack beside the line.

Docks SMT upper and lower plate stackers

Docks lineside buffer pallet racks

Delivers totes to the flow rack beside the production line

Application Cases

PCB frame + standard tote

Key Features

Omnidirectional motion

- Supports omnidirectional, diagonal, arc and other types of motion, adapting to complex production line layouts such as non-flush machines and narrow aisles

High adaptability

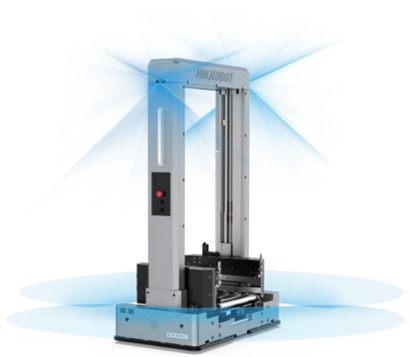
- Equipped with a high-precision lifting structure to adapt to different docking heights, with a minimum docking height of 260 mm and a maximum docking height that can be customized
- Visual texture navigation is standard, and 3C anti-static ground can achieve high-precision navigation without coding

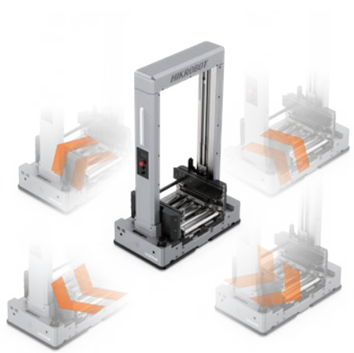
Composite assembly

- The roller docks SMT upper and lower plate stackers, power conveyor lines, etc., reducing equipment transformation
- The clamping and docking of general pallet racks / unpowered buffer racks, etc., reduces the cost of lineside buffer
- Supports left and right bi-directional docking
- Supports code reading on the top of the PCB frame for full-process management of material information

High security

- Diagonal laser 360° obstacle detection + front and rear suspended obstacle detection protect the safety of personnel and equipment
- Supports the foolproof material presence detection in putaway bins





Specification

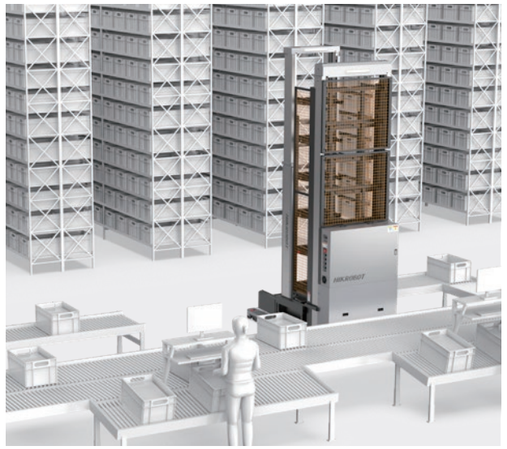
Model			
		TP1-50UM	**TP5-50DM**
Basic Parameter	Dimension (L × W × H) (mm)	1250*730*1890	1600*900*3370
	Weight (with battery) (kg)	520	600
	Rated load (kg)	50	250
	Execution structure load (kg)	50	50
	Execution structure type	Roller clamping	Roller clamping
	Picking height (mm)	260-1000	370-3000
	Compatible goods size (L × W × H) (mm)	(535-320)*(535-320)*570	400*380*563
Motion Performance	Rated running speed (m/s)	1.2	1.6
	Travel stopping accuracy (mm)/(°)	± 10 / ± 1	± 10 / ± 1
	Lifting/lowering stopping accuracy (mm)	± 2	± 2
	Aisle width (mm)	850	1050
	Rotation diameter (mm)	1360	1600
Battery Performance	Run time (h)	6-8	6-8
	Charging time (h)	⩽ 1.5	⩽ 2
Safety Protection	Laser obstacle avoidance	Support	Support
	Surrounding bumper strip detection	Support	Support
	Emergency stop button	Support	Support
	Sound and light alarm	Support	Support
	Gantry tote protrusion detection	Support	Support
Others	Drive method	Omnidirectional	Differential
	Human-machine interaction	Touchscreen	Touchscreen
	Navigation mode	V-SLAM / 2D barcode / L-SLAM	V-SLAM / 2D barcode / L-SLAM

CTU

FlashStation ST Series

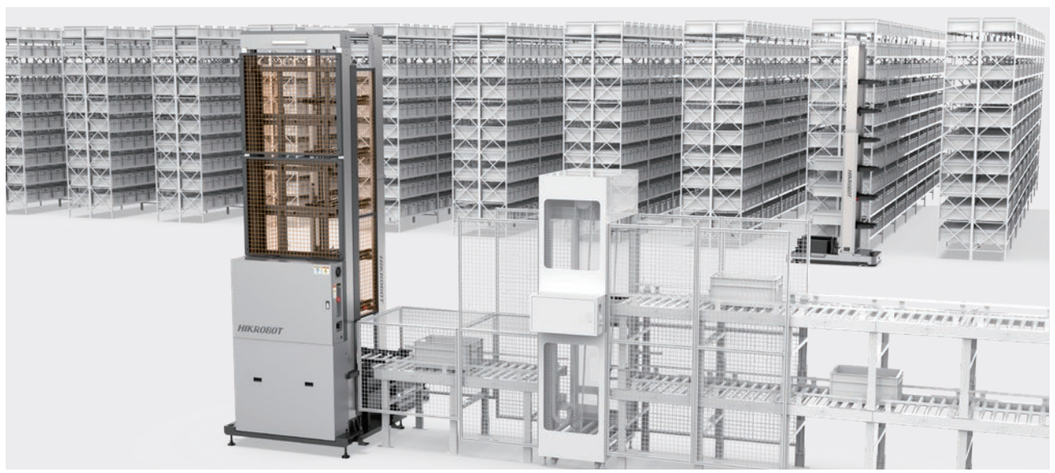
For high tempo material transferring scenes, Hikrobot developed FlashStation products which support carton transfer unit (CTU), and can realize a single docking of 8 boxes, significantly improving the inbound and outbound efficiency of the system, and reducing the cost of the program. The products are widely used in different industry scenes, including e-commerce logistics warehouse, shoes and clothing warehouse, automotive warehouse, and medical center warehouse.

Application Cases



Sorting application scenario with circular conveyor of FlashStation

Whole tote in and out of the warehouse through conveyor



Delivers totes to the flow rack beside the production line

Key Features

Simple, reliable, flexible and scalable

- Innovative comb design with small occupation and flexible extension
- Supports customization of conveyor docking heights
- Optional non-passenger freight lifters to dock with double-layer conveyors

Multi-box docking, stable and efficient

- Supports transferring 6 to 8 boxes each time, picking and putaway within 2 seconds, and work efficiency can be up to 800 boxes per hour
- Single box loaded weight can be up to 50 kg and device loaded weight up to 300 kg
- Supports clamping and lifting devices for docking

Multi-function machine, reducing cost and increasing efficiency

- Intelligent switching of outbound/inbound modes on the same workstation, reducing workstation deployment

Human-machine safety with protection certification

- Obtains CE marking and SEMI certification

Specification

Model			
		TP7-FH	**TP7-FW**
Basic Parameter	Dimension (L × W × H) (mm)	1570*1385*4100	1940*1485*4825
	Weight (kg)	700	750
	Inbound/outbound efficiency (boxes/h)	600-800	
	Standard tote dimension (L × W × H) (mm)	600*400*300	800*600*420
	Ground load bearing (kg/m^2)	800	850
	Number of layers	6 (can be customized to 8 layers)	
Motion Performance	Single layer loaded weight (kg)	⩽ 50	
	Max. loaded weight (kg)	300	
	Rated power (kW)	3	
	Supply voltage (VAC)	220	
	Loading/unloading time (s)	⩽ 2	

Forklift Mobile Robot

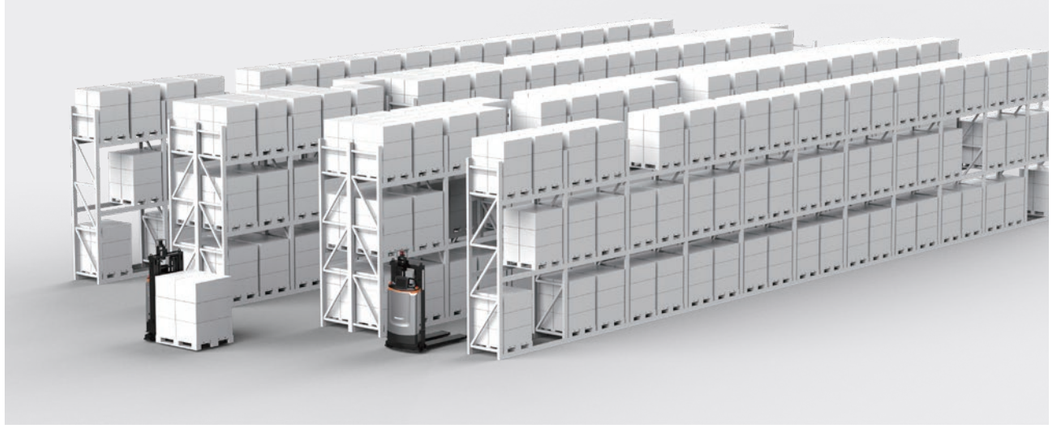
Omnidirectional Series

Omnidirectional series FMRs are unique products in the industry, covering loads ranging from 300kg to 1,400kg. By designing different steering drive wheels nested in the FMR body, omnidirectional movement of different sizes of FMRs can be realized, occupying little space in the passageway with flexible route planning, to support skew, arc, and traverse movements, which solves the customer's pain points of high storage capacity and narrow passageway planning, covering industries such as 3C, new energy, automotive parts, and tobacco.

Application Cases

Deep storage warehouse

Conveyor docking



Multi-level rack (low level transferring)

Key Features

Superior performance

- Efficient transportation: maximum steady running speed up to 1.5m/s
- Wide load coverage: fully independent design, with load ranging from 300kg to 1,400kg
- Safe and reliable: 360° stereo sensing, recognizing various environments and objects
- Precise positioning: millimeter-level positioning accuracy, combining laser and vision positioning

Full-featured

- Arbitrary attitude movement: straight line, skew, arc, in-place rotation
- Carrier recognition: autonomous fork picking based on carrier offset
- Suspended low detection: supports detecting suspended obstacles and low obstacles

Rich models

- Human-machine collaboration: organic synergy between manual and autonomous operations
- Rich scenarios: covering a variety of storage forms such as lineside carrying, material stacking, and deep storage
- Diversified docking devices: dock with other types of AMRs, elevators, automatic doors, conveyors, and other third-party devices

Specification

Model					
		F1-300T	F1-500T	F1-600U	F1-1000U
Basic Parameter	Dimension (L × W × H) (mm)	1093*745*1932	1257*800*1545	1656*990*1984	1650*990*1984
	Weight (with battery) (kg)	300	350	700	825
	Rated load (kg)	300	500	600	1000
	Load center distance (C) (mm)	381.5	480	600	600
	Fork lifting height (h3+h13) (mm)	438	510	1344	2049
	Fork above ground after lowering (h13) (mm)	100	115	94	99
	Fork dimension (s/e/l) (mm)	47/270/744	74/380/720	60/210/1215	60/255/1215
	Fork outer width (b5) (mm)	/	/	680	720
	Applicable pallet dimension (mm)	800*593	705*610	1200*1200	1200*1200
Motion Performance	Rated running speed (m/s)	1	1	1.2	1.2
	Positioning accuracy (mm)/(°)	±10/1	±10/±1	±10/±1	±10/±1
	Min. rotation radius (Wa) (mm)	585	727	933	933
	Motion method	Omnidirectional driving	Omnidirectional driving	Omnidirectional driving	Omnidirectional driving
	Min. aisle width (Ast) (mm)	1370	1754	1866	1866
Battery Performance	Run time (h)	6-8	6-8	6-8	6-8
	Charging time (h)	⩽ 1.5	⩽ 1.5	⩽ 1.5	⩽ 2
Safety Configuration	Laser obstacle avoidance	Support	Support	Support	Support
	Recorder	Optional	Optional	Optional	Optional
	Bumper Strip Detection	Support	Support	Support	Support
	Pallet in-position detection	Support	Support	Support	Support
	Fork collision detection	Support	Support	Support	Support
	Emergency stop button	Support	Support	Support	Support
	Indication light	Support	Support	Support	Support
	Sound and light alarm	Support	Support	Support	Support
Other Functions	Human-machine interaction	Touchscreen	Touchscreen	Touchscreen	Touchscreen
	Navigation Mode	L-SLAM/ 3D L-SLAM (Customizable)	L-SLAM/ 3D L-SLAM (Customizable)	L-SLAM/ 3D L-SLAM (Customizable)	L-SLAM/ 3D L-SLAM (Customizable)
	Fork size customization	Customizable	Customizable	Customizable	Customizable
	Pallet attitude recognition	Customizable	Customizable	Customizable	Customizable
	Pallet binding recognition	Customizable	Customizable	Customizable	Customizable

FMR

Stacking Series

Stacking series FMRs cover the load ranging from 1,000kg to 3,000kg, with the highest lifting height being customized up to 4.5m. The specially designed thickness of the FMR body greatly reduces the operation aisle width, and effectively improves the storage space of materials. Adopting iconic robot head design and modular components, 80% of the components can be used in different scenarios. The whole series obtains full directive CE marking, which are the preferred product series for logistics solutions.

Application Cases

Logistics warehouse

Stereoscopic warehouse conveyor

Upper and lower floor transferring

Deep storage warehouse

Key Features

Superior performance

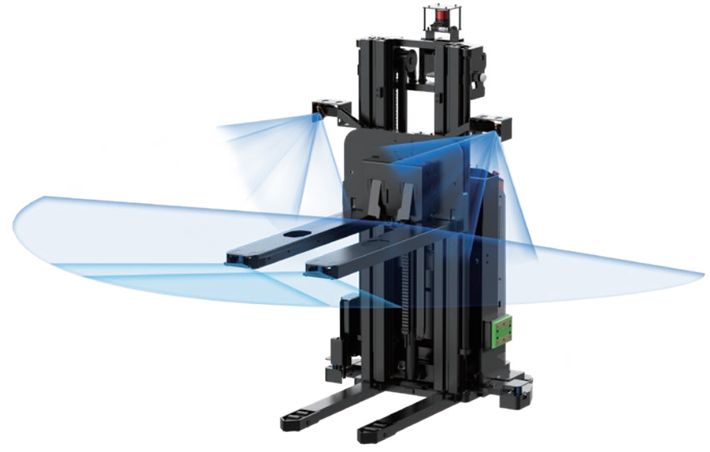
- Efficient transportation: maximum steady running speed up to 1.5m/s
- Wide load coverage: fully independent design, with load ranging from 300kg to 1,400kg
- Safe and reliable: 360° stereo sensing, recognizing various environments and objects
- Precise positioning: millimeter-level positioning accuracy, combining laser and vision positioning

Full-featured

- Carrier recognition: autonomous fork picking based on carrier offset
- Storage location identification: identify storage location with goods, spaces, its height and offset
- Suspended low detection: supports detecting suspended objects and low obstacles

Rich models

- Rich scenarios: covering a variety of storage forms such as multi-level storage, material stacking, and deep storage
- Diversified docking devices: dock with other types of AMRs, elevators, automatic doors, conveyors, and other third-party devices
- Various types of materials/carriers: multiple types of pallets, frames, cage trolleys, flexible packages, rolls, barrels, and irregularly shaped objects at home and abroad



Specification

Model							
		F4-1000C	F4-1000C	F4-1500	F4-2000 (3m)	F4-2000 (4.5m)	F4-3000
Basic Parameter	Dimension (L × W × H) (mm)	1692*990*1983	1692*990*1983	1883*940*2165	1914*1009*2219	1914*1009*2219	2378*1170*1983
	Weight (with battery) (kg)	820	700	920	1150	1320	1500
	Rated load (kg)	1000	1000	1500	2000	2000	3000
	Load center distance (C) (mm)	600	600	600	600	600	600
	Fork lifting height (h3+h13) (mm)	2031	1331	3000	3017	4517	5500
	Fork above ground after lowering (h13) (mm)	81	81	86	87	87	107
	Fork dimension (s/e/l) (mm)	65/180/1233	65/180/1233	60/170/1232	75/200/1220	75/200/1220	60/225/1235
	Fork outer width (b5) (mm)	680	680	600	680	680	680
	Applicable pallet dimension (mm)	1200*1000	1200*1000	1200*1000	1200*1000	1200*1000	1200*1000
Motion Performance	Rated running speed (m/s)	1.2	1.2	1.2	1.2	1.2	1.5
	Positioning accuracy (mm)/(°)	±10/±1	±10/±1	±10/±1	±10/±1	±10/±1	±10/±1
	Min. rotation radius (Wa) (mm)	1183	1183	1316	1400	1400	1891
	Motion method	Forward, backward, arc, rotate in place	Forward, backward, arc, rotate in place	Forward, backward, arc, rotate in place	Forward, backward, arc, rotate in place	Forward, backward, arc, rotate in place	Forward, backward, arc, rotate in place
	Min. aisle width (Ast) (mm)	2062	2062	2490	2065	2065	2864
Battery Performance	Run time (h)	6-8	6-8	6-8	6-8	6-8	6-8
	Charging time (h)	⩽ 2	⩽ 2	⩽ 2	⩽ 2	⩽ 2	⩽ 2
Safety Configuration	Laser obstacle avoidance	Support	Support	Support	Support	Support	Support
	Recorder	Optional	Optional	Optional	Optional	Optional	Optional
	Bumper Strip Detection	Support	Support	Support	Support	Support	Support
	Pallet in-position detection	Support	Support	Support	Support	Support	Support
	Fork collision detection	Support	Support	Support	Support	Support	Support
	Emergency stop button	Support	Support	Support	Support	Support	Support
	Indication light	Support	Support	Support	Support	Support	Support
	Sound and light alarm	Support	Support	Support	Support	Support	Support
Other Functions	Human-machine interaction	Touchscreen	Touchscreen	Touchscreen	Touchscreen	Touchscreen	Touchscreen
	Navigation Mode	L-SLAM/ 3D L-SLAM (Customizable)	L-SLAM/ 3D L-SLAM (Customizable)	L-SLAM/ 3D L-SLAM (Customizable)	L-SLAM/ 3D L-SLAM (Customizable)	L-SLAM/ 3D L-SLAM (Customizable)	L-SLAM/ 3D L-SLAM (Customizable)
	Fork size customization	Customizable	Customizable	Customizable	Customizable	Customizable	Customizable
	Pallet attitude recognition	Customizable	Customizable	Customizable	Customizable	Customizable	Customizable
	Pallet binding recognition	Customizable	Customizable	Customizable	Customizable	Customizable	Customizable

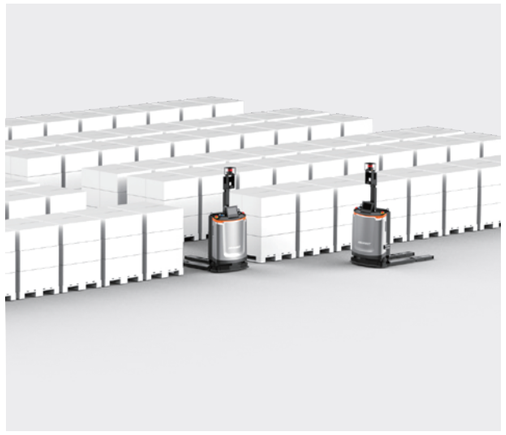
FMR

Carrying Series

Carrying series FMRs cover load ranging from 1,000kg to 3,000kg, with a maximum running speed of 2m/s. The lightweight FMR body is equipped with high-capacity batteries, which can be selected according to the needs of the right size, reducing redundancy with precise requirements. The specially designed thickness of the FMR body greatly reduces the width of the running aisle and improves the material storage space. The whole series adopts environmental contour navigation method and supports texture navigation, which makes full use of environmental information for localization and facilitates deployment and implementation.

Application Cases

Lineside carrying



Finished goods inventory storage

Non-passenger freight lifter docking

Floor-to-floor transferring

Key Features

Superior performance

- Efficient transportation: maximum steady running speed up to 2m/s
- Wide load coverage: fully independent design, with load ranging from 300kg to 3T
- Safe and reliable: 360° stereo sensing, recognizing various environments and objects
- Precise positioning: millimeter-level positioning accuracy, combining laser and vision positioning

Full-featured

- Pallet recognition: automatic fork picking based on carrier offset
- Suspended low detection: supports detecting suspended objects and low obstacles
- Supports full directive CE architecture design, including mechanical, wireless, and electromagnetic directives

Rich models

- Rich scenarios: multiple forms of storage, including lineside carrying, deep storage, alleyway storage
- Diversified docking devices: dock with other types of AMRs, elevators, automatic doors, conveyors, and other third-party devices
- Various types of materials/carriers: multiple types of pallets, frames, cage trolleys, flexible packages, and rolls

Specification

Model					
		F3-1000	F3-1500	F3-2000	F3-3000
Basic Parameter	Dimension (L × W × H) (mm)	2245*806*2040	1645*870*1984	1716*950*1906	1712*950*1985
	Weight (with battery) (kg)	440	500	545	750
	Rated load (kg)	1000	1500	2300	3000
	Load center distance (C) (mm)	600	600	600	600
	Fork lifting height (h3+h13) (mm)	215	200	200	200
	Fork above ground after lowering (h13) (mm)	90	75	75	75
	Fork dimension (s/e/l) (mm)	85/180/1441	70/175/1232	70/200/1235	70/210/1230
	Fork outer width (b5) (mm)	680	680	720	700
	Applicable pallet dimension (mm)	1800*1200	1200*1000	1200*1200	1200*1000
Motion Performance	Rated running speed (m/s)	2.5	1.2	1.2	1.6
	Positioning accuracy (mm)/(°)	±10/±1	±10/±1	±10/±1	±10/±1
	Min. rotation radius (Wa) (mm)	1701	1297	1377	1480
	Motion method	Forward, backward, arc, rotate in place	Forward, backward, arc, rotate in place	Forward, backward, arc, rotate in place	Forward, backward, arc, rotate in place
	Min. aisle width (Ast) (mm)	2525	2191	2277	2230
Battery Performance	Run time (h)	6-8	6-8	6-8	6-8
	Charging time (h)	⩽ 2	⩽ 2	⩽ 2	⩽ 3
Safety Configuration	Laser obstacle avoidance	Support	Support	Support	Support
	Recorder	Optional	Optional	Optional	Optional
	Bumper Strip Detection	Support	Support	Support	Support
	Pallet in-position detection	Support	Support	Support	Support
	Fork collision detection	Support	Support	Support	Support
	Emergency stop button	Support	Support	Support	Support
	Indication light	Support	Support	Support	Support
	Sound and light alarm	Support	Support	Support	Support
Other Functions	Human-machine interaction	Touchscreen	Touchscreen	Touchscreen	Touchscreen
	Navigation Mode	L-SLAM/ 3D SLAM (Customizable)	L-SLAM/ 3D L-SLAM (Customizable)	L-SLAM/ 3D L-SLAM (Customizable)	L-SLAM/ 3D L-SLAM (Customizable)
	Fork size customization	Customizable	Customizable	Customizable	Customizable
	Pallet attitude recognition	Customizable	Customizable	Customizable	Customizable
	Pallet binding recognition	Customizable	Customizable	Customizable	Customizable

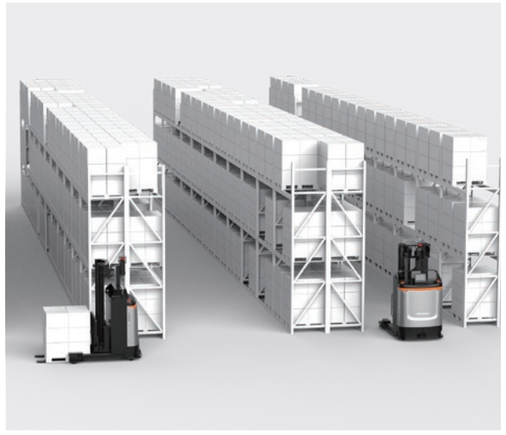
FMR

Forward/Counterweight Series

Adopting an autonomous body design, compatible with the design of the forward and counterweight modules, FMRs of the series are mainly used for indoor carrying scenes with tian word mesh plastic trays, European standard pallets, and small fork space carriers. These FMRs are widely used in industries including lithium battery, beverage, home appliances, and panels. As one of the product series with strong scalability, they also reserve a wealth of attachment interfaces to facilitate the customization of non-standard carrier businesses, such as distance adjustment and clamping.

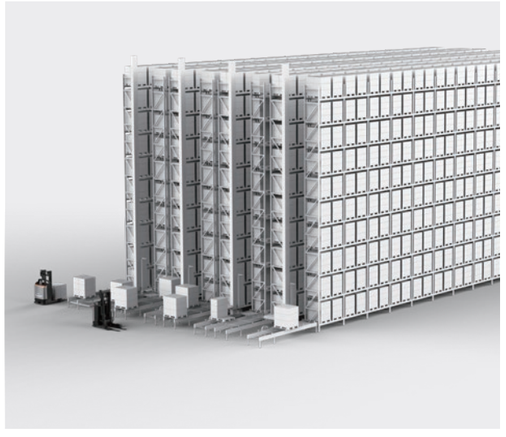
Application Cases

Intensive stacking



Multi-level rack

Drive-in rack



Conveyor docking

Key Features

Superior performance

- Efficient transportation: maximum steady running speed up to 1.5m/s
- Safe and reliable: 360° stereo sensing, recognizing various environments and objects
- Precise positioning: millimeter-level positioning accuracy, combining laser and vision positioning

Full-featured

- Roadway mode: When the laser navigation is blocked, the downward-looking navigation can be used to go straight line
- Carrier recognition: autonomous fork picking based on carrier offset
- Storage location identification: identify storage location with goods, spaces, its height and offset
- Suspended low detection: supports detecting suspended objects and low obstacles

Rich models

- Rich scenarios: covering a variety of storage forms such as multi-level storage, material stacking, and deep storage
- Diversified docking devices: dock with other types of AMRs, automatic doors, conveyors, and other third-party devices
- Various types of materials/carriers: multiple types of pallets, frames, cage trolleys, rolls, barrels, and irregularly shaped objects at home and abroad

Specification

Model		 F5-1600 (3m)	 F6-2000 (3m)	 F5-1600 (4.5m)	 F6-2000 (4.5m)
Basic Parameter	Dimension (L × W × H) (mm)	2305*1200*2219	3260*1206*1978	2287*1200*2219	3260*1206*1978
	Weight (with battery) (kg)	2600	2750	2400	2850
	Rated load (kg)	1600	2000	1600	2000
	Load center distance (C) (mm)	600	600	600	600
	Fork lifting height (h3+h13) (mm)	3000	3000	4500	4500
	Fork above ground after lowering (h13) (mm)	54.5	60	54.5	60
	Fork dimension (s/e/l) (mm)	40/125/1237	45/132/1237	40/125/1237	45/132/1237
	Fork outer width (b5) (mm)	650	690	650	690
	Applicable pallet dimension (mm)	1200*1000	1200*1000	1200*1000	1200*1000
Motion Performance	Rated running speed (m/s)	1.5	1.5	1.5	1.5
	Positioning accuracy (mm)/(°)	±10/±1	±10/±1	±10/±1	±10/±1
	Min. rotation radius (Wa) (mm)	1511	1897	1511	1897
	Motion method	Forward, backward, arc, rotate in place	Forward, backward, arc, rotate in place	Forward, backward, arc, rotate in place	Forward, backward, arc, rotate in place
	Min. aisle width (Ast) (mm)	2705	3665	2705	3700
Battery Performance	Run time (h)	6-8	6-8	6-8	6-8
	Charging time (h)	⩽ 3	⩽ 2	⩽ 3	⩽ 2
Safety Configuration	Laser obstacle avoidance	Support	Support	Support	Support
	Recorder	Optional	Optional	Optional	Optional
	Bumper Strip Detection	Support	Support	Support	Support
	Pallet in-position detection	Support	Support	Support	Support
	Fork collision detection	Support	Support	Support	Support
	Emergency stop button	Support	Support	Support	Support
	Indication light	Support	Support	Support	Support
	Sound and light alarm	Support	Support	Support	Support
Other Functions	Human-machine interaction	Touchscreen	Touchscreen	Touchscreen	Touchscreen
	Navigation Mode	L-SLAM/ 3D L-SLAM (Customizable)	L-SLAM/ 3D L-SLAM (Customizable)	L-SLAM/ 3D L-SLAM (Customizable)	L-SLAM/ 3D L-SLAM (Customizable)
	Fork size customization	Customizable	Customizable	Customizable	Customizable
	Pallet attitude recognition	Customizable	Customizable	Customizable	Customizable
	Pallet binding recognition	Customizable	Customizable	Customizable	Customizable

Accessory

Robot Accessory

Charging Station

The charging station is in the auto charging mode by default. Manual intervention is not needed in this mode. The mobile robot can auto move to the charging station for charging when it is lying idle according to working status and remaining battery capacity. It takes 1.5 to 2.5 hours to charge to full capacity, and the mobile robot can auto return to work.

Application Cases

- Adopts self-developed battery management system to monitor battery changes in real time and cut off the power supply immediately if exception occurs
- Satisfies different charging needs with 2 charging modes: auto charging and manual charging
- Adopts human-machine interaction interface to display information such as the charging voltage, current, working status, and alarm via touchscreen
- Provides self-protection functions: input overvoltage protection, input under voltage protection, output overvoltage protection, output overcurrent protection, short circuit protection, and over-temperature protection
- Uses the first-level spring buffer to flexibly dock with the mobile robot

Rear

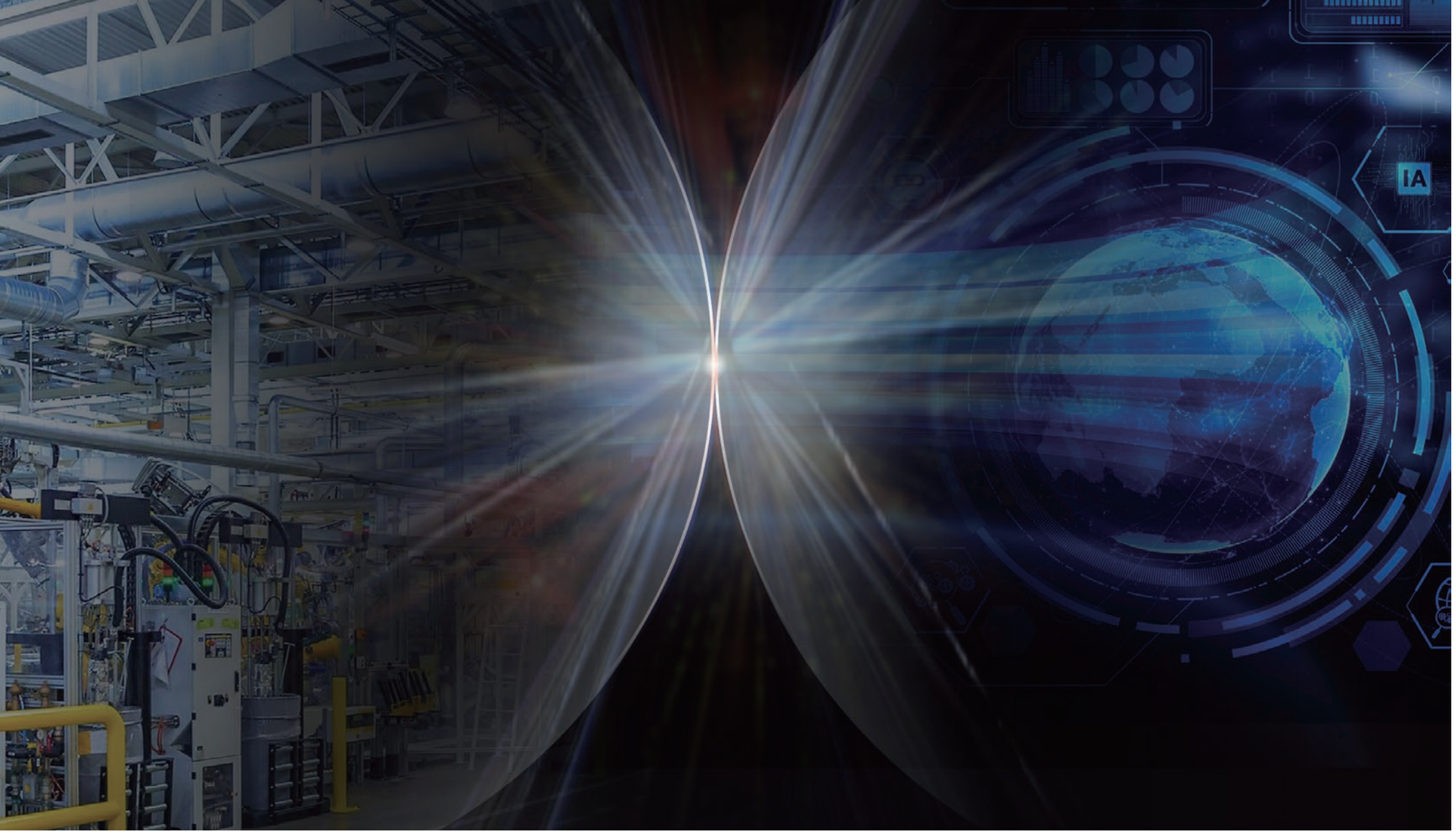
Side

Ground

Specification

Model			
		CH-48/30S	CH-48/60S
Basic Parameter	Charging method	Side	Side
	Dimension (L × W × H) (mm)	649*291*783	649*291*783
	Weight (kg)	40	39
Basic Parameter	AC input voltage (V)	176-264	176-264
	AC input frequency (Hz)	50/60	50/60
	Max. input current (A)	10	10
	DC output voltage (V)	48	48
	Max. output current (A)	30	60

Model					
		CH-48/30S	CH-48/30B	CH-48/56B	CH-48/30G
Basic Parameter	Charging method	Side	Caudal	Caudal	Ground
	Dimension (L × W × H) (mm)	633*360*805	410*440*670	485*335*670	485*210*630
	Weight (kg)	40	27	27	29
Basic Parameter	AC input voltage (V)	100-240	90-264	176-264	90-264
	AC input frequency (Hz)	50/60	50/60	50/60	50/60
	Max. input current (A)	16.5	10	25	10
	DC output voltage (V)	59	48	48	48
	Max. output current (A)	30	30	52	30

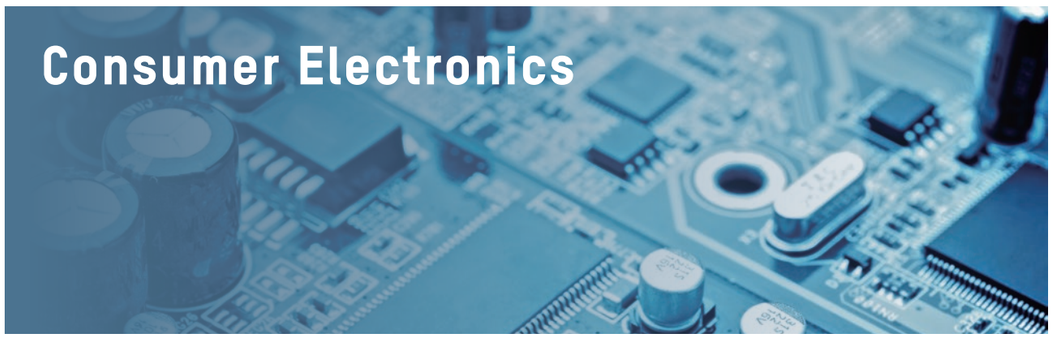


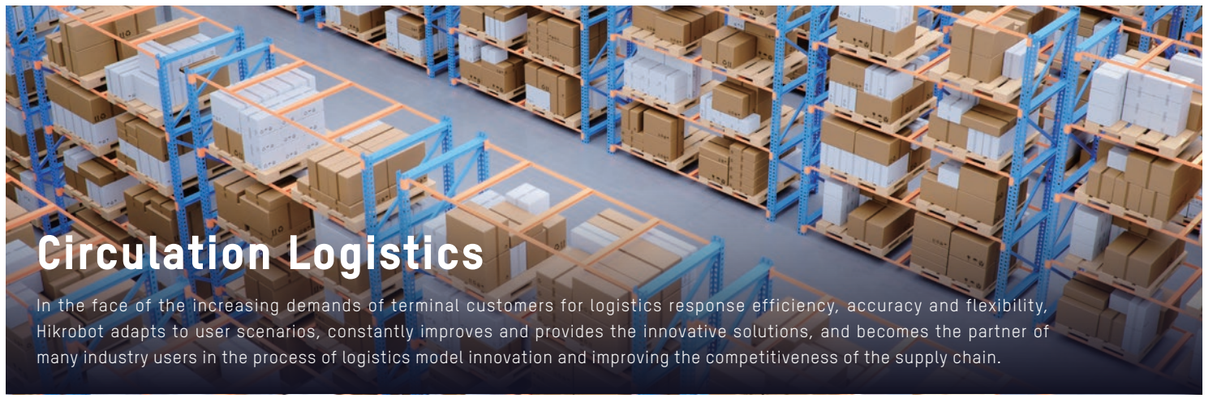
Making Intelligence More Inclusive

Let technology benefit all and manufacture a new future

Hikrobot is committed to benefiting people from technology and making industries more intelligent. Our mission is to make technology accessible to people from all walks of life and make a difference in human society by devoting to application standardization, end-to-end services, ecosystem development and the reduction of technical costs. We hope to make intelligence more inclusive, bring convenience to production and life, and facilitate industrial transformation and upgrading.

Industry Solution





Circulation Logistics

In the face of the increasing demands of terminal customers for logistics response efficiency, accuracy and flexibility, Hikrobot adapts to user scenarios, constantly improves and provides the innovative solutions, and becomes the partner of many industry users in the process of logistics model innovation and improving the competitiveness of the supply chain.

Challenges

Large fluctuation in business volume

Different industries and scenes need specific management that needs to be addressed with a variety of solutions.

Large reservoir capacity

It is necessary to take high-density storage and high-efficiency picking into account to reduce logistics cost.

Low fault tolerance

Large business volume and low fault tolerance, accompanied by diverse storages and high requirements for timeliness.

High flexibility

High requirements for flexibility to support flexible expansion and quick replication according to business changes.

Solution Overview

In circulation logistics industries including retail, medicine, shoes and clothing, books, and tobacco, Hikrobot integrates with technologies such as robots, artificial intelligence, and Internet of Things, and provides the robot control system (RCS-2000) and intelligent warehouse management system (iWMS-1000) to create scene application solutions such as warehousing receiving, putaway, picking, distribution, collection, and cross-docking, effectively improving the flexibility, efficiency and automation of all stages of

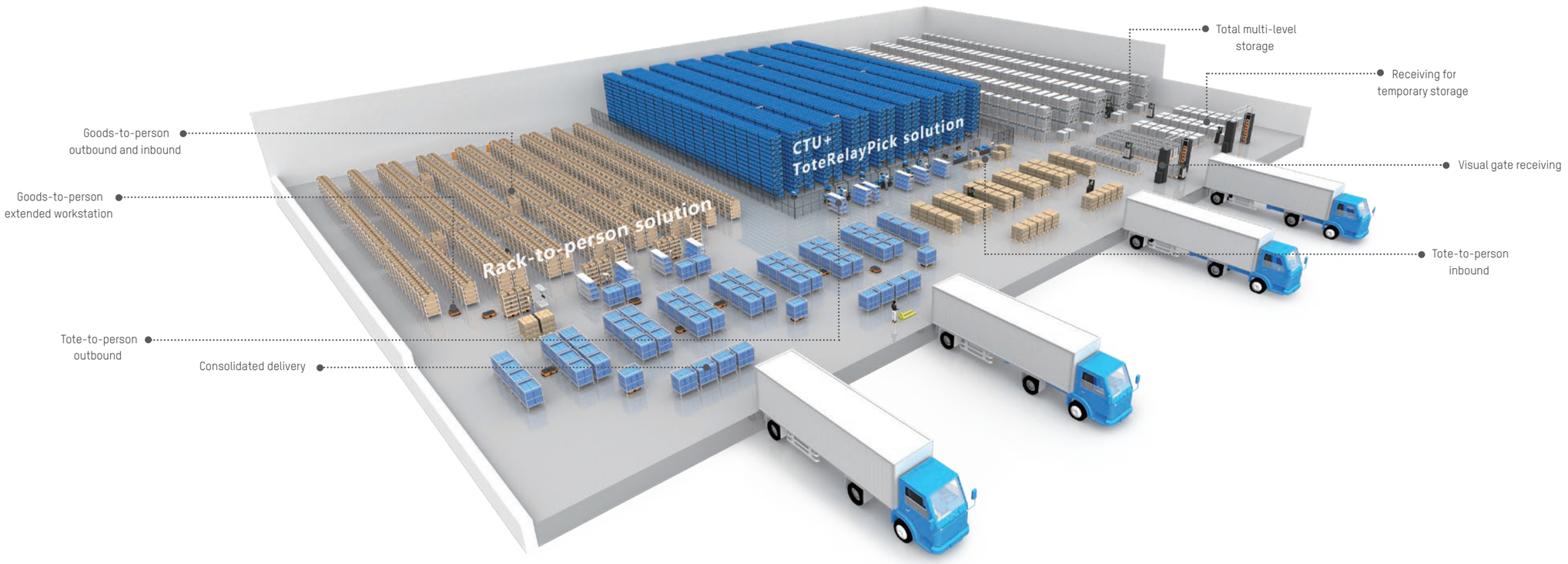
Solution Highlights

Goods-to-person mode can improve operational accuracy and picking efficiency

Order breakdown and consolidation can improve sorting efficiency

Supports different kinds of strategies and flexible strategy switching

Intelligent SKU velocity algorithm supports dynamic allocation of racks



The flexible robot system integrates wave optimization algorithms to cover various warehousing and logistics scenarios. Hikrobot has built many benchmark projects like Sunrise Duty Free, PARKnSHOP, DHL North Asia Hub Transit Center Logistics, and Bestore, which improves efficiency of industries.

Shanghai Sunrise Smart Logistics Project

Background

Sunrise Duty Free (Shanghai) Co., Ltd. specializes in airport duty-free shops. It covers airports like Beijing Capital International Airport, Shanghai Pudong International Airport, and Shanghai Hongqiao International Airport. To optimize processes and improve efficiency, Shanghai Sunrise has adopted the comprehensive intelligent robot solution by Hikrobot.

Solutions

The project covers an area of approximately 11,000 square meters, with a total of more than 300 AMRs and 3 battery swap stations. Hikrobot iWMS-1000 system seamlessly docks with the Sunrise general control system to complete goods-to-person picking, putaway, and counting operations, improving warehouse picking efficiency, and enabling the rapid response to massive and fluctuating business demands, handling approximately 150,000 orders lines per day.

Benefits

Double picking bin mode

Eliminates waiting times during picking, effectively improving work efficiency.

Auto swapping of battery

Installs 3 battery swap stations to increase the utilization rate of a single device, and reduce the project equipment cost by 12%

Order wave optimization

Optimizes order waves by using total picking and distribution to improve the overall operational efficiency.

DHL Smart Logistics Project

Background

DHL is a leading brand in the global logistics industry, offering a complete range of logistics services across its divisions, and DHL Express China is the earliest established and most experienced international air express leader in China. DHL North Asia Hub in Shanghai is DHL's largest express forwarding center in the Asia-Pacific region, with a daily handling capacity of more than 120,000 shipments. It introduces Hikrobot intelligent warehousing solutions in the customs inspection and goods tallying process, and becomes the first international express company in China to adopt AGV intelligent warehousing solutions.

Solutions

Customs daily inspection of goods with high timeliness requirements and a wide variety of items. The traditional work efficiency of checking express cargo is limited and labor intensity is high. In order to continuously improve the service quality and operational efficiency, the project puts into use the LMR, together with Hikrobot RCS-2000 system and iWMS-1000 system, to realize the rapid searching of goods, automated carrying, and intelligent management of warehousing information.

Benefits

The robots automatically carry the express goods to the specified workstations, increasing the overall checking and searching capacity by 33%.

The management of express putaway increases space utilization rate by 40%, and reduces stacking of goods to keep well-organized work area.

Eliminates manual access to the buffer area to find the goods, reducing the intensity of manual work. Through the system docking to realize the digital management of warehousing information, to quickly export the report of goods to be checked, convenient for business counting and statistics.

Humanwell Pharmaceutical Smart Logistics Project

Background

Humanwell Pharmaceutical is a comprehensive pharmaceutical industry group, with 10 pharmaceutical production enterprises and 5 pharmaceutical commercial enterprises under its umbrella, and is a leading enterprise in the pharmaceutical industry in Hubei province. In order to meet the needs of business development, Humanwell Pharmaceutical and Hikrobot adopted a comprehensive solution of intelligent robots to achieve process optimization and efficiency improvement.

Solutions

In order to solve the problems of long walking routes, low efficiency, and error-prone picking operations, a comprehensive solution with CTU and LMR is adopted to realize the goods-to-people, tote-to-person, and automatic replenishment function. The system integrates with fast scanning equipment to improve overall operation efficiency.

Benefits

Multi-vehicle mixed scheduling.

Multi-vehicle running and collaboration on the same map to realize automatic replenishment.

Integrated with fast scanning equipment to realize fast collection of electronic monitoring codes.

Intelligent Warehousing Project of Sinopharm Lerentang

Background

Sinopharm Lerentang Ltd. is a large-scale pharmaceutical commercial enterprise mainly focusing on drug logistics and delivery, and is the first GSP and ISO9000 double-certified unit in Hebei province. With the continuous development of business, the demand for breakpack business in the logistics center has been increasing, and Sinopharm Lerentang has been exploring and innovating to seek for a better logistics solution to achieve the goal of improving the efficiency and reducing the cost.

Solutions

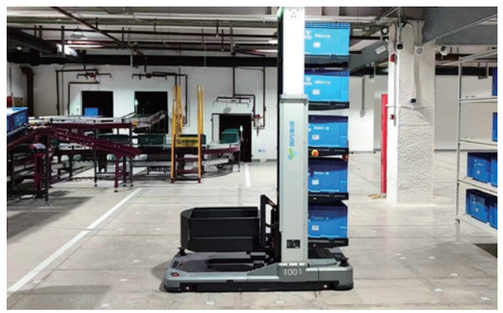
In order to meet the growing business needs of the logistics center, Sinopharm Lerentang introduces Hikrobot Goods-to-Person intelligent warehousing system, together with the stereoscopic warehouse, conveyor, mechanical arm, and other equipment, which realizes the automation of the entire logistics center, reduces manual operation, and improves the overall operational efficiency. This project puts into use 46 AMRs to meet the business of breakpack and whole tote outbound and inbound. Combined with the actual needs, the project adopts a multi-vehicle linkage mode to realize the functions of automatic breakpack putaway and automatic total inbound, reducing the cost and increasing the efficiency.

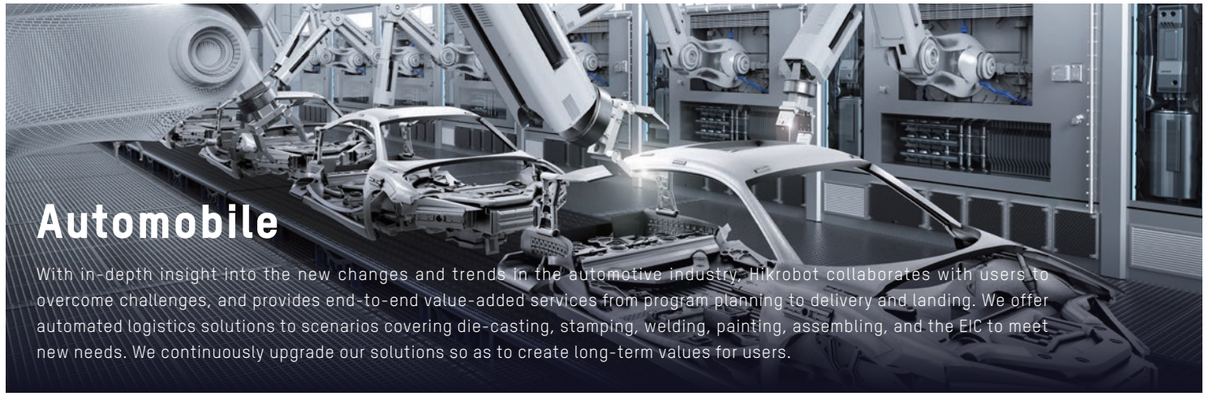
Benefits

System customization service: Based on the characteristics of the pharmaceutical circulation logistics industry and the actual needs of users, the project provides system customization services to meet the needs of maintenance, counting, emergency outbound.

High flexibility, and scalability: The project is divided into multiple phases to launch, with the flexibility to adjust the layout solution and add or delete workstations. The project is easy to expand and has a short implementation cycle.

Multiple product linkage: it adopts CTU and LMR linkage mode to realize automated breakpack putaway, and adopts FMR and LMR linkage mode to realize automated total putaway.





Automobile

With in-depth insight into the new changes and trends in the automotive industry, Hikrobot collaborates with users to overcome challenges, and provides end-to-end value-added services from program planning to delivery and landing. We offer automated logistics solutions to scenarios covering die-casting, stamping, welding, painting, assembling, and the EIC to meet new needs. We continuously upgrade our solutions so as to create long-term values for users.

Application Cases

Increasing labor cost

Fewer experienced and capable workers, changing attitudes to labor, and higher minimum wages around the world have increased the labor cost in the automotive industry.

Unsafe production

Under the traditional logistics mode, a mix operation of labor and equipment brings potential dangers.

Unsafe production

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Urgent de-empiricalization

The complexity of automobile and component manufacturing leads to a high dependence on the experience of intralogistics staff.

Increasing demand for coordinated logistics

As automobile consumption and personalized production drive the production model toward mass customization, coordinated and flexible logistics have become a must

The “last 100 meters” in automotive production

Complex working conditions, diverse carriers, and tight schedules have exacerbated the “last 100 meters” logistics problem in automobile production.

Solution Overview

Taking full advantage of autonomous mobile robots and system platforms, Hikrobot provides solutions to die-casting, stamping, welding, painting, assembling, and the EIC based on our rich experience and deep understanding of automotive industry, especially new energy vehicles. We offer standardized scenario solutions and support advanced customization to realize rapid upgrading and delivery, thus meeting the needs of the automotive industry for mass customization manufacturing mode of intralogistics.

Having a wide range of products, we provide optimal hardware solutions according to concrete situations

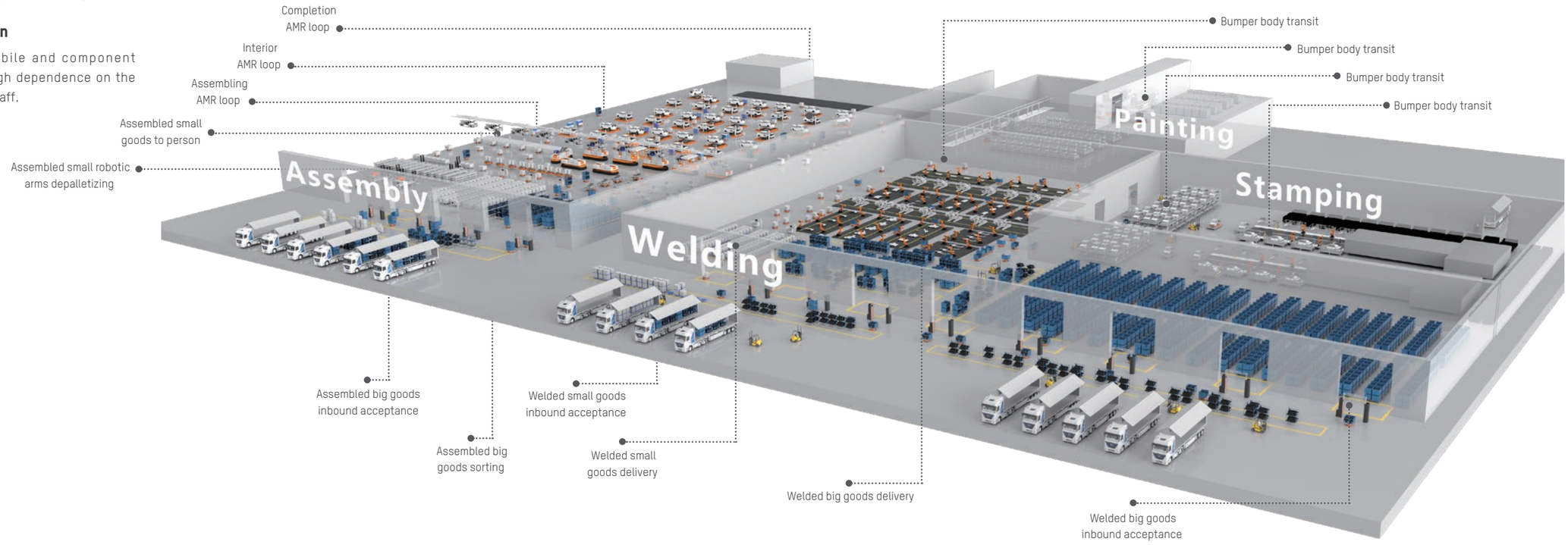
Powerful system supports large-scale scheduling of multiple vehicles

Applicable to all scenarios in logistics and manufacturing process

With rich experience, we serve leading automobile companies in the world

Standardized solutions fit various scenarios

Flexible customization of products and solutions



With a wide range of AMRs and supporting system platforms, combined with intelligent algorithms, we create innovative solutions for the industry. Our solutions are applied to stamping, welding, painting, final assembly and the EIC. Data integration, coordinated logistics, agile manufacturing, sophisticated management helps Geely Automobile, Tianjin FAW Toyota, NIO, Nanjing Changan Automobile and many other leading brands achieve intelligent manufacturing.

Tianjin FAW Toyota Project

Background

As a large Sino-foreign joint venture approved by the Ministry of Commerce of the People's Republic of China, FAW Toyota Motor Co., Ltd. has three production bases in China, located respectively in Tianjin, Changchun and Chengdu. Its production lineup includes VIOS, COROLLA, ALLION, AVALON, IZOA, RAV4, CROWN KLUGER SUVs, and passenger vehicle COASTER, and its annual production is approximately 900,000 units.

Solutions

Hikrobot anticipated and finished the construction of several FAW Toyota digital intelligent factories. Investing more than 2,000 AMRs, we helped the company realize the digital intelligence upgrading of logistics. For the first time in the automotive industry, Hikrobot employed more than 1,000 AMRs in a single factory, replacing all manual forklifts and tractor-trailers in the factory; for the first time in the industry, Hikrobot realized the seamless switching of AMRs across the maps, and the scheduling of super-large-scale AMR clusters, and handled other difficult technical requirements.

Benefits

Achieving intelligent intralogistics in Toyota

Our hardware products and software intelligent platforms contribute to constructing smart logistics through goods receiving via visual products, robots and vision products integration, AMR intelligent warehousing, unmanned delivery of goods, etc. Inbound, storage, transportation, returning empty, and exception response are covered.

Improving intelligence and automation

Given that the new generation of automobile manufacturing is characterized by various components, small batch production and rapid upgrading of models, we cooperate with partners to meet customized needs and design intelligent logistics delivery program on the basis of the new generation of Hikrobot hardware products and intelligent software platforms. By doing so, we help Geely achieve intelligent, automated and digital transformation along the production line side.

Geely Automobile Assembly

Background

Geely Automobile is a leading self-owned Chinese auto brand, integrating design, R&D, production, sales and service of vehicles, powertrains and key parts. It has ranked first in the sales of China's passenger vehicles for five consecutive years, and owns brands such as Geely, Lynk & Co, and Geome. In addition, it also holds 49.9% of shares and all management rights in Proton, as well as 51% of shares in Lotus, a luxury sports car brand.

Solutions

Since 2021, Hikrobot productions have been employed in many digital factories and smart workshops of Geely Automobile, involving nearly 2,500 AMRs. Hikrobot iWMS-1000 and RCS-2000 systems connecting with Geely GLES have been widely applied to smart logistics scenarios such as receiving via visual products, intelligent storage and "goods-to-person" picking in stamping, welding, painting, assembling workshops, and unmanned delivery along the production line.

Benefits

Increasing work efficiency

Work efficiency is greatly improved, such as 50% increase of efficiency in workshop's productivity, 20% in overall efficiency and 40% in small materials picking.

Improving logistics management in workshops

Goods are placed more orderly and standard, and the separation of people and vehicles is achieved.

Reducing labor intensity and improving data accuracy

"Goods-to-person" mode solves the problems of traditional modes, such as difficulty in finding goods and counting stock.

Digital warehouse management

Data sharing, real-time feedback, and intelligent operation & maintenance are realized.

NIO Inc. Project

Background

NIO is a globalized intelligent electric vehicle company dedicated to creating a pleasant lifestyle for its users by providing high-performance cars and ultimate user experience. It is one of the world's leading high-end intelligent electric vehicle companies. Focusing on forward research and development of core technologies, NIO has established independent R&D systems, including batteries, electric drive systems, intelligent systems, intelligent chassis domain controllers, and battery replacement technologies, etc. Its sales and service system covers customers in more than 300 cities around the world.

Solutions

Since April 2022, Hikrobot products have been put into operation in the intelligent workshop of NIO Auto, and nearly 200 AMRs have been employed in the workshop. Hikrobot iWMS-1000 and RCS-2000 systems connecting with NIO LES have been widely applied to smart logistics scenarios, such as stamping parts auto out of production line, automatic delivery of body parts, automatic delivery of assembly parts, SPS delivery, and EDS intelligent carrying.

Benefits

Reducing safety risks in the stamping parts out of production line area

Manual forklift operations in the area is replaced, which significantly reduces operation risks.

Reducing labor intensity

Unmanned line-side delivery docked with production line robotic arms avoids manual pushing of shelves into work stations.

Reducing manual operation and increasing efficiency

Automatic SPS mode solves the problems of traditional mode, such as difficulties in pushing and pulling material trolleys.

Digital management of delivery

Data sharing, real-time monitoring, and intelligent operation & maintenance are realized.

Nanjing Changan Automobile Project

Background

Changan Automobile Co., ltd. is a leading enterprise of Chinese automobile brand, integrating design, R&D, production, sales and service of vehicle, powertrain and key components, and is one of the four major Chinese automobile groups. It ranks steadily in the top three of China's passenger car sales, and owns brands such as Changan, OSHAN, AVATR, Deepal, etc., among which Deepal is a world-class intelligent EV brand that Changan Automobile is focusing on. Nanjing Changan Automobile has undertaken the first mid-to high-end new energy SUV model of Deepal, the Deepal S7.

Solutions

Hikrobot products have been adopted in Changan's stamping, welding, assembly and battery workshops since October 2022, with more than 460 AMRs employed. Due to Hikrobot iWMS-1000 and RCS-2000 connecting with Changan's industrial control system and LMS, Changan has achieved intelligent processes and logistics, such as stamping parts auto out of production line, intelligent storage and delivery, the AMR line of the final assembly process, receiving via visual products, etc.

Benefits

More flexible production line

AMR greatly improves the flexibility of production process and shortens delivery cycle.

Intelligent scheduling and orderly queuing

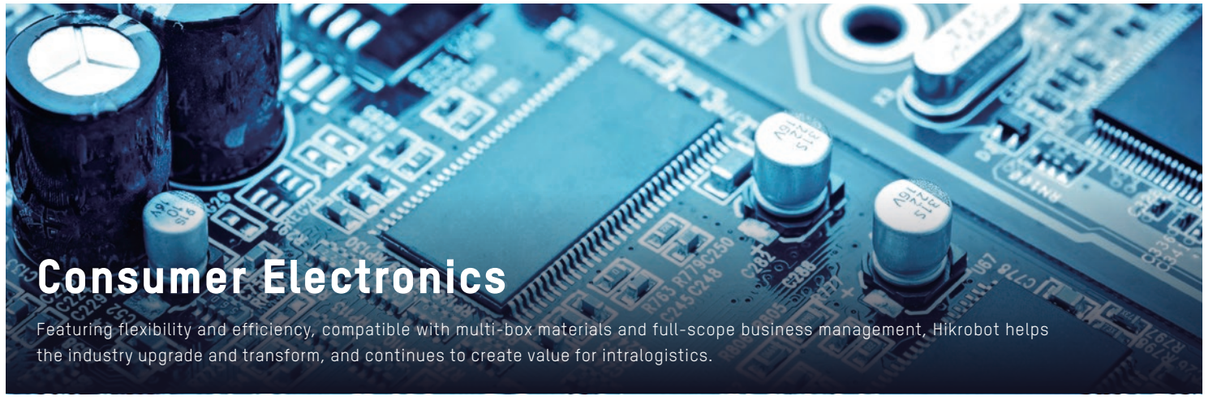
AMRs in the production line, together with AMRs in the logistics delivery, achieve intelligent scheduling and orderly passage.

Reducing labor intensity and improving data accuracy

The "goods-to-person" mode solves the difficulties in traditional mode and visual scanning improves the accuracy of inventory data.

Digital warehouse management

Data integration and visual monitoring are realized.



Consumer Electronics

Featuring flexibility and efficiency, compatible with multi-box materials and full-scope business management, Hikrobot helps the industry upgrade and transform, and continues to create value for intralogistics.

Challenges

Stringent environmental requirement

Production line processing requirements are extremely demanding. Equipment must be anti-static and dustproof.

Varied production equipment

In certain processes, substances such as copper, zinc, dust and moisture are prohibited to prevent any adverse effects on the quality of cell products.

Complicated technological processes

Transforming raw materials into finished products involves dozens of processes. Sometimes, secondary processing is required. Logistics flows and devices should be taken into consideration comprehensively.

Complicated business application

Massive SKU management, high accuracy and timeliness of kitting production and delivery, and complicated warehouse management require high industry experience of suppliers.

Solution Overview

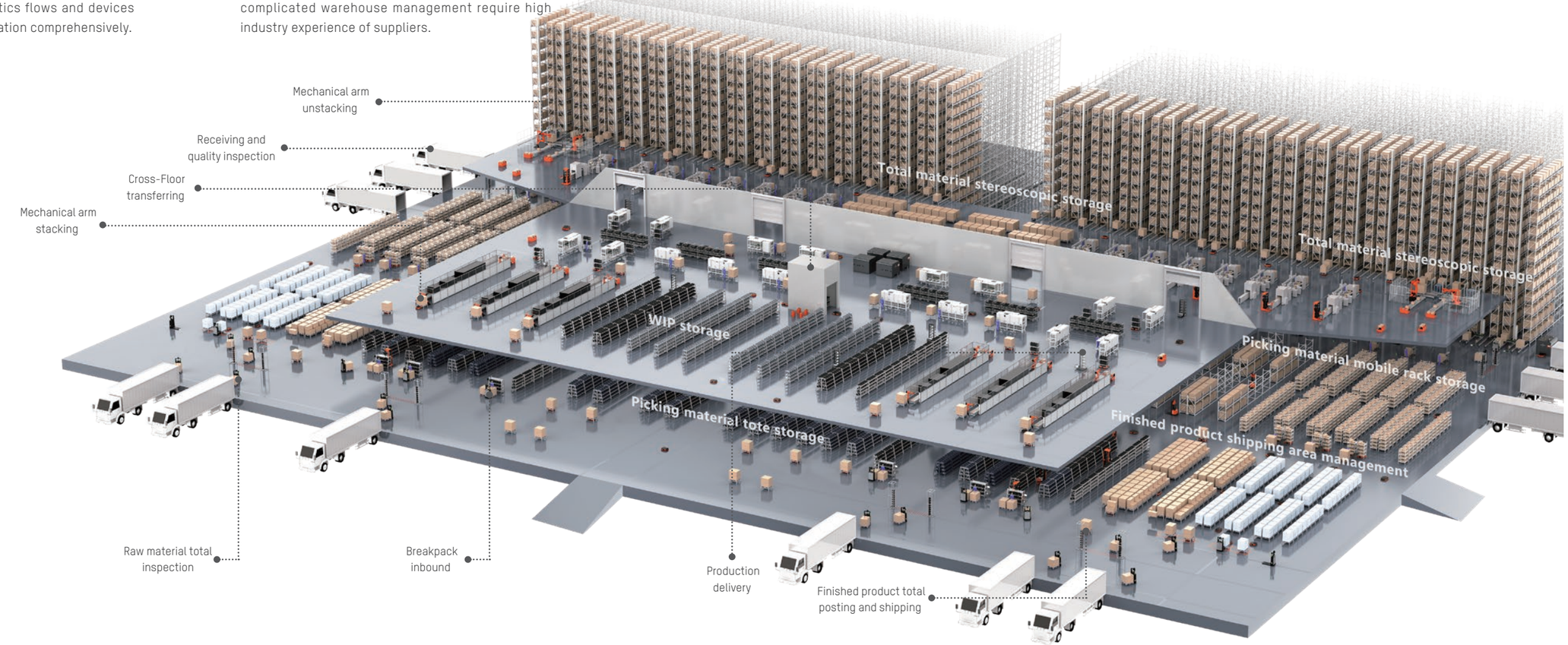
Given the operation processes, machine and material types, customized high-precision LMRs, FMRs, and CMRs are involved. RCS-2000 and MCS are integrated with upper-level systems, and therefore collaborative production is achieved.

Solution Highlights

Provides full-scope intralogistics solutions

Supports flexible manufacturing

Improves industry business management



The intelligent and flexible mobile robot system is designed for the specific requirements of consumer electronics industry. For example, fast-paced production with high-mix and low-volume. Hikrobot has already facilitated a number of leading Consumer Electronics companies, including Longcheer, Xinbao Electrical Appliances Holdings, Zhuhai Chongda Circuit Technology, Zhangzhou Hongfa, Sun&Lynn Circuits, BOE Technology, and other packaging and testing enterprises to increase their productivity.

Longcheer Group Huizhou / Nanchang Production Base Project

Background

Longcheer Technology is a company that focuses on the design, development, manufacturing and service of terminal products such as smart phones, tablets, and smart wearables. Its business covers many countries and regions around the world, and it provides professional smart product overall solutions for global top customers. The base launched the intelligent warehousing construction project in 2021, introducing Hikrobot intelligent warehouse and intralogistics solutions.

Solutions

The project covers intralogistics applications such as raw material warehouses, SMT workshops, glue dispensing workshops, assembly workshops, and packaging workshops. A total of 60 LMRs and 5 CTUs have been put into use. It realizes dynamic inventory management and automated delivery to the production line, greatly improving intralogistics flexibility and efficiency.

Benefits

Reduction in manual working intensity

Changes to "goods-to-person" picking mode from the working mode of walking 20,000 steps per day.

Improvement of operation accuracy

iWMS-1000 system supports anti-error reminders, greatly reducing wrong/missed delivery ratio.

Energy saving in production

Realizes plant-wide automated material delivery, which can realize light-free operation, and reduce production energy consumption.

Leading Household Appliance Manufacturer Intelligent Plant Project

Background

A leading small home appliance enterprise, with products covering electric kettles, coffee makers and other appliances, is one of the world's largest ODM/OBM manufacturers of small home appliance products. Facing the challenges of rising raw material and labor costs, the customer chooses Hikrobot as its intelligent manufacturing partner, providing it with various AMRs such as LMR, forklift LMR, unmanned forklift, and CTU. Working with Hikrobot system platform, it can realize its intelligent storage and distribution of materials and finished products with high storage capacity and efficiency.

Solutions

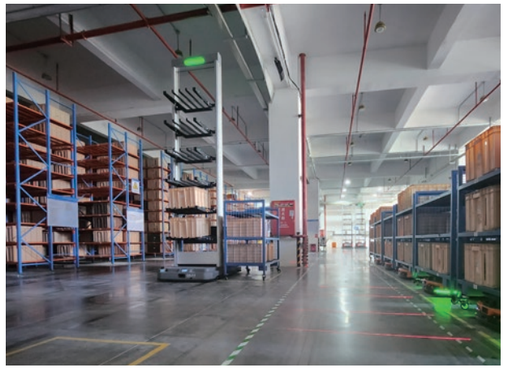
The project covers full-process intralogistics scenarios from raw material receiving, quality inspection, inbound, sorting, cross-floor production and delivery, and finished product inbound.

The AMR operation area in the third phase of the project covers a total area of more than 20,000 square meters.

Realizes the seamless docking among iWMS-1000, RCS-2000, ERP, QMS, APS, and SRM systems.

RCS system docks with the elevator system, automatically realizing the interaction between AMR and the elevator, and realizing the operational linkage of cross-floor transferring.

Nearly 100 AMRs, such as LMR, forklift LMR, unmanned forklift, and CTU are put into use.



Benefits

The final assembly workshop realizes the automated delivery from raw material warehouse to calling point of production workshops, which greatly reduces the cost and improves the efficiency.

Narrow unmanned forklift is improved with its stacking height, with the narrowest right angled stacking aisle width of 2,500 mm, lifting height up to 3m, and reservoir capacity increased by 30%.

CTU solution is used in the stereoscopic warehouse, utilizing the upper floor space, and increasing reservoir capacity.

Simplifies business process, such as ground floor receiving, and AMR cross-floor carrying via non-passenger freight lifter to avoid long waiting for the elevator.

The introduction of Hikrobot software systems in the entire process reduces the dependency on manual operation, prevents the system from errors, and reduces the actual stock and inventory record mismatch.

Zhuhai Chongda Circuit Technology Intelligent Logistics Carrying Project

Background

Zhuhai Chongda Circuit Technology is a high-tech listed company specializing in the production of circuit boards. The company owns 8 high-tech intelligent circuit board manufacturing plants in Shenzhen, Jiangmen, Zhuhai, Dalian, and Suzhou, with products used in cell phones, computers, automobiles, communication equipment, servers, industrial control, and other electronic information fields. Among them, Jiangmen, Dalian, and Zhuhai bases have introduced Hikrobot intelligent warehousing and intralogistics solutions since 2020.

Solutions

The project covers the whole process of material cutting, inner layer processing, coating, exposure, etching, internal inspection, brown oxide coating, pre-stacking, fusion and lamination, cutting and grinding, drilling, copper deposition, board electroplating, electroplating, outer layer processing, soldermasking, marking, molding, electrical testing, and quality inspection, and more than 60 AMRs are put into use. RCS-2000 system controls and manages multiple third-party equipment, including automatic gates, elevators, safety warning lights, and plate stackers, and docks with the upper-level MES system of Chongda to realize automation and flexibility of intralogistics.

Benefits

Intelligent carrying project reduces logistics personnel by 30%, and improves operational efficiency by 35%.

Realizes digital intelligence, which improves the operational accuracy, reduces the cost and improves the efficiency in the logistics process.

Realizes the automated material delivery to the production line in different scenarios, which greatly improves flexibility and stability of production.

Zhangzhou Hongfa Electroacoustic Logistics and Delivery Project

Background

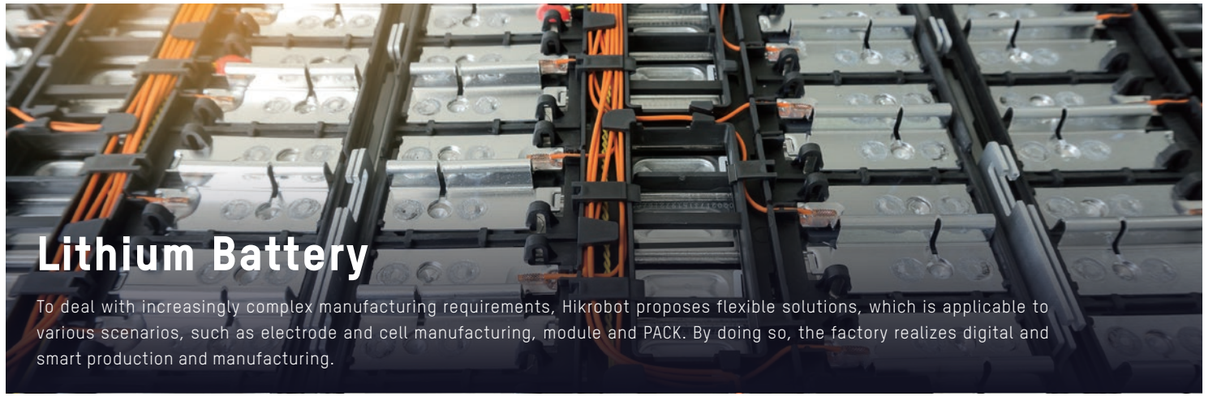
Hongfa group is the world's largest provider of relay products and solutions, mainly developing and producing relays, low-voltage electrical appliances, automation equipment, and related electronic components and assemblies. It is the only enterprise in the domestic relay industry to be selected as one of the top 100 electronic information enterprises in China. Its wholly-owned subsidiary Zhangzhou Hongfa Electroacoustic Co., Ltd. has built the world's largest general-purpose relay production, manufacturing, R & D base, and has become one of national key high-tech enterprises. Zhangzhou Hongfa has introduced nearly 100 AMRs in 2 phases, and the project covers multiple intelligent warehousing and kitting delivery scenarios.

Solutions

The project includes receiving, storage, and delivery of raw materials, parts, semi-finished products, and finished products. It achieves the integrated and flexible automation project in logistics via cross-floor carrying of raw materials, coils, and finished products and auto inbound and outbound transferring of finished product warehouse. AMR also can dock with air shower gates, automatic doors, and other third-party hardware equipment. Software systems can seamlessly dock with the WMS system to complete the warehouse management of raw material warehouse, kitting warehouse, WIP warehouse and finished product warehouse.

Benefits

The Hikrobot intelligent AMR carrying and warehousing project realizes the intelligent carrying, auto inbound, and delivery of raw materials, package materials, and finished products from point to point and from point to area, which improves the intelligence and informatization of intralogistics, and realizes the expected purpose of reducing cost and increasing efficiency.



Lithium Battery

To deal with increasingly complex manufacturing requirements, Hikrobot proposes flexible solutions, which is applicable to various scenarios, such as electrode and cell manufacturing, module and PACK. By doing so, the factory realizes digital and smart production and manufacturing.

Challenges

High labor cost

A quick expansion of production capacity and high labor intensity lead to challenges in hiring and high labor cost.

Strict environmental requirements

In certain processes, substances such as copper, zinc, dust and moisture are prohibited to prevent any adverse effects on the quality of cell products.

High difficulty in machine docking

Given that different and heavy rolls need precise machine docking, it is difficult to load and unload materials.

Weak information management

Information flow cannot be retrieved due to the complex production process and frequent errors in material transfer.

Solution Overview

Given the operation processes, machine and material types, customized high-precision LMRs, FMRs, and CMRs are involved. RCS-2000 and MCS are integrated with upper-level systems, and therefore collaborative production is achieved.

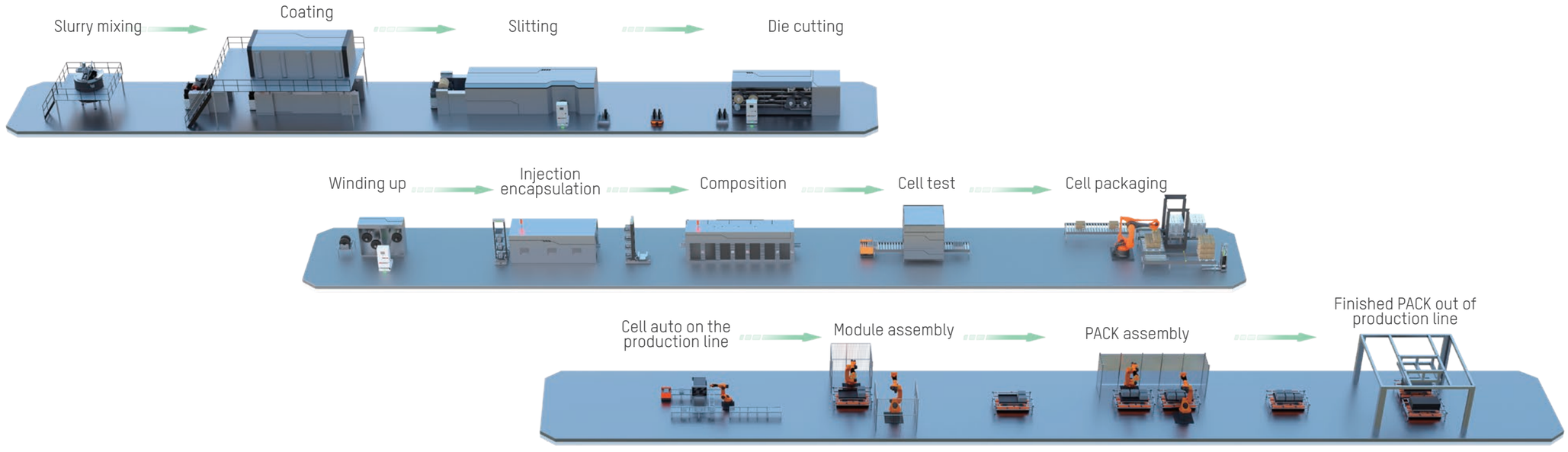
Solution Highlights

Automated robots in the process of crystal pulling, slicing, cells, and modules can adapt to complex production environments

Different robot navigation techniques such as VSLAM and LSLAM can deal with complex environment

The connection of RCS-2000 and MCS with upper-level systems as well as machines facilitates the circulation of information

Automated equipment such as elevators, conveyors, automated gates and air shower gates can be integrated



In the lithium battery production processes, such as coating, slitting, die cutting, winding, cell assembly, and module PACK assembly, mobile robots automatically dock with the production line equipment, effectively improving the automation of intralogistics and significantly reducing labor costs of enterprises. Currently, there are landing cases in BYD, CALB Group, EVE Energy, and other head users.

Power Battery PACK Workshop

Background

A leading Chinese power battery company has landed more than 10 projects, which involve scenarios such as electrode manufacturing, cell manufacturing, module and PACK, and has introduced different types of AMRs, such as LMR, omnidirectional HMR, reach forklift truck, and cantilever AMR. As of June 2022, more than 400 AMRs are involved, out of which around 250 AMRs are for the PACK line.

Solutions

In the testing of PACK assembly, the innovative omnidirectional HMR is capable of 4-way movement, improving the aisle utilization.

Customized carriers are adapted to different sizes of PACK packages from various workshops, and quickly made based on 3D skeleton modeling and modular component design to ensure a rapid delivery.

Benefits

Increase in site utilization

Site utilization rate is increased by 30%.

Improving flexibility of PACK line

Adjusts the points in RCS for easier route changing.

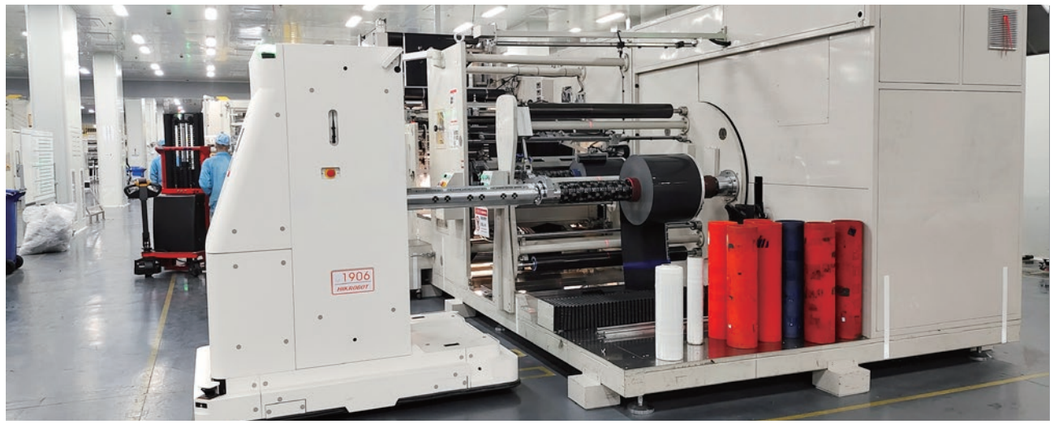
Increase in working efficiency

Single faulty AMR can move to maintenance area to avoid a large-scale shutdown.

Lithium Battery Cell Workshop

Background

A leading lithium battery enterprise has optimized transportation with AMRs in electrode, cell manufacturing, and cell testing workshops. Starting from 2020 when the first project was launched, as of July 2022, more than 10 projects has been landed, involving more than 400 AMRs including LMR, CMR, FMR, and CTU.



Solutions

Digital twin: establishes a virtual factory in 1:1 scale in planning phase to avoid any problems in solutions design, product development, delivery and implementation in advance.

High flexibility in software: Based on SLAM navigation, adjusts points on the server for easier route changes. Real-time data exchange can be set up among RCS-2000, MES, and the upper system, and the automation rate of material transferring is able to reach 100% to realize the traceability of the entire information flow.

Powerful hardware performance: The AMR body features a modular design to guarantee the equipment delivery and spare parts operation and maintenance. Relying on industry-leading 3D visual positioning technologies and multi-sensor fusion technologies, it can meet the docking accuracy of ± 1 mm for inflatable shafts and winding/stacking equipment. The innovative telescopic fork CTU was developed for the formation and grading workshop, which is adapted to different sizes of clips and totes, and is docked with machines and static racks, which is more flexible than the traditional conveyor mode.

Benefits

Staff reduction

Workshop staff are decreased by 20% to 30%, reducing manual working intensity.

Increase in working efficiency

Production efficiency in workshop is increased by 25%.

Digitalized information management

Reduce error rate of material transferring, and trace the entire information flow to improve working efficiency.

Consumer Battery Cell Workshop Project

Background

A lithium battery enterprise has adopted AMRs for logistics planning in electrode manufacturing, cell manufacturing, and cell testing workshops of the consumer battery. More than 200 AMRs are involved, such as LMR, HMR, FMR, and CTU.

Solutions

Develops the customized machines and AMR for the electrode roll loading, unloading and transferring, with the use of double-bin machine for the empty-full exchange of electrode rolls and reels, and high-precision docking with the machine with an accuracy of ± 1 mm.

Develops the innovative single cantilever AMR for roll slitting and unloading, and docking with winding machine to realize auto loading and unloading of electrode rolls.

Uses high-temperature-resistant, high-security CTU to dock with the baking machine to realize the loading and unloading docking of trays and clips. Uses iWMS system to realize the warehousing management of materials.

Benefits

Docks with the roll coating machine to realize auto loading and unloading of electrode rolls, and save labor force.

Adopts cantilever AMR, and realizing high precision docking with the machine with an accuracy of ± 1 mm. Innovative tilt adjustment structure of cantilever shaft can solve the docking height deviation caused by uneven ground area, and can ensure the safety of rolls.

Realizes auto loading and unloading (cutting and stacking) of machines, structural parts delivery, and finished cells transferring in the assembly workshop.

Realizes auto delivery of cells, module raw materials, and finished products in the module workshop.

Copper Foil Workshop Automation Project for Lithium Industry

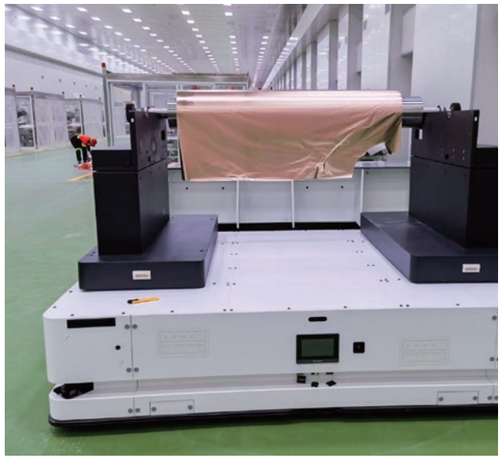
Background

The company is a large-scale multinational mining group engaged in the exploration and development of copper, gold, zinc, lithium and other metal mineral resources, as well as engineering design and technology application research in the world. In the new-built workshop project, Hikrobot has introduced HMR to provide a complete solution for copper foil unloading and transferring.

Solutions

Introduces the customized double-lifting CMR and LMR to achieve high-precision docking with equipment, machines, and buffer racks, and to reduce the logistics pressure.

AMR supports docking with various automation equipment such as automatic doors, air shower gates, and elevators to break information isolated island and realize full-process automation services.



Benefits

The first breakthrough in the upstream lithium industry (copper foil plant): including non-standard equipment such as automatic trusses, ovens, weighing buffer racks, and elevators.

Provides the automation process solution of upstream lithium industry, and coordinates the animated simulation produced by the simulation team, effectively improving the implementation accuracy. Realizes foil unpacking, storage, delivery, and storage out of production line services.

Photovoltaic

The photovoltaic industry is a strategic emerging industry supported by China. The industry is flourishing to achieve carbon neutrality so that photovoltaic factories are desired to introduce automated intelligent equipment to replace manual operations.

Challenges

Complex operating environment

The material morphology of the crystal pulling plant changes greatly, the operating environment is complex, and the safety risk is high.

High efficiency requirements

Limited space of solar cell factory, burdensome production tasks and timely delivery are waiting to be addressed.

High requirements of machine docking

High precision of machine docking in the slicing factory poses a heavy burden on employees to load or unload materials.

High labor intensity

Bulky materials in the component factory lead to high labor intensity.

Solution Overview

Taking photovoltaic crystal pulling, slicing, cells, on-site process machines for components, materials and equipment to be transported into consideration, we customize AMRs to realize high-precision auto material loading/unloading, optimize software scheduling, and improve operating efficiency so as to meet different auto logistics requirements. In the end, the company achieves efficient, economical, flexible and intelligent production.

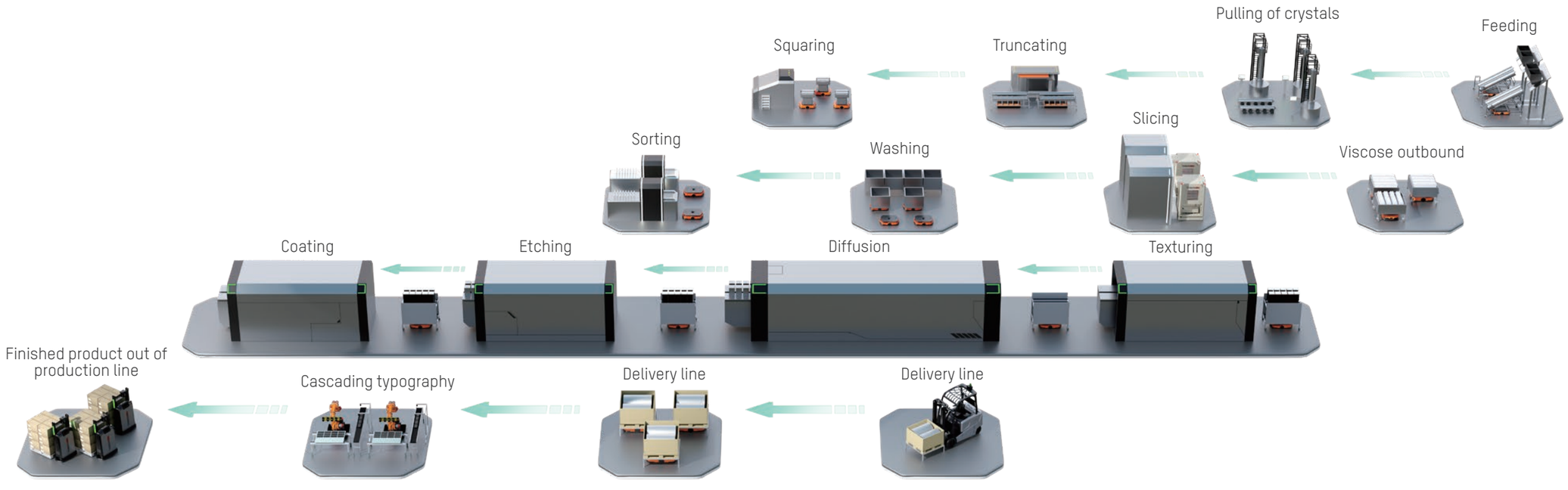
Solution Highlights

Automated robots in the process of crystal pulling, slicing, cells, and modules can adapt to complex production environments

Our VSLAM and LSLAM navigation technology and 5G communication technology take the lead in this industry

Our robots meet the high-precision docking requirements of different machines

The burden of loading/unloading materials and logistics transfer is lowered



When it comes to silicon materials, crystal pulling, slicing, solar cells and components, AMRs can automatically dock to production line machines to replace manual loading/unloading and transfer, effectively improving logistics and production efficiency in the factory, and greatly reducing labor intensity. At present, our AMRs are also applied to many leading photovoltaic companies.

A leading photovoltaic cell factory

Background

It is the world's largest manufacturer of crystalline silicon cells, and now boasts several bases worldwide. The case base is located in a core industrial park, with an annual production capacity of 10GW high-efficiency crystalline silicon solar cells.

Solutions

The construction of smart factories was launched in 2019. The project aims to build 50 new high-efficiency crystalline silicon cell production lines, related production equipment and supporting facilities, all of which are handled by intelligent transportation robots for internal material handling and machine docking. The project is aimed to create the world's most intelligent and mass-produced green factory with the highest conversion efficiency.

Benefits

99.7% of production handling rate

Materials can be automatically transferred within workshops in a safe and steady way.

20% increase in production efficiency

Production capacity is improved quickly.

More than 50% reduction in labor costs

The condition of the production line is improved, and the on-site management is orderly.

A large-scale photovoltaic module smart factory

Background

Focusing on technological innovation, it takes the lead in product transformation and cost-of-kWh optimization with breakthrough technologies, creating green products and solutions to support global zero-carbon development. It is the solar energy company with the largest market value in the world.

Solutions

To address problems such as high labor costs and low work efficiency, the factory introduces AMRs to achieve intelligent process management.

Benefits

Automatic handling and loading of various auxiliary materials in the component factory is realized. Peripheral devices, such as automatic doors and guard gates, connecting with Hikrobot controllers in real time achieve automatic docking of machines.

A large-scale photovoltaic slicing AMR project

Background

A silicon stick slicing factory realizes automated crystal rods transfer, feeding, and de-gluing frame transfer. To cope with harsh operating environment, customized sensors and protective measures support efficient and stable operation of AMRs, ensuring continuous and high-quality production.

Solutions

Customized AMRs are utilized to send square-crystal rods into slicing machines and transfer sliced silicon wafers to LMRs.

Benefits

AMRs replace workers to operate in harsh production environment and works steadily and efficiently, reducing workers' exposure to terrible situations. Therefore, it can be said that the introduction of AMRs contributes to sustainable development of the company.

Automated operation cuts down manual mistakes.

A large-scale photovoltaic crystal pulling intelligent factory

Background

A leading enterprise established its smart lighthouse factory in 2020. After its completion, logistics equipment was introduced. Digital and intelligent transformation reduces employees to 2,000, which greatly saves labor cost.

Solutions

Our FMRs are docked to the single crystal furnace to realize crystal bar discharging and docking. Hikrobot Q7 robots are involved in front and rear channel dismantling and clearing, crucible, and re-casting cylinder handling.

The Q8-LMRs connect to the finished crystal rods discharging from the single crystal furnace, realizing long-distance handling, inbound, etc. After truncating, round bars are carried by our CMRs. During squaring, grinding, and quality inspection, CMRs together with three-axis manipulators transfer materials. Appearance inspection, visual guidance and positioning of manipulators are also applied by Hikrobot machine vision products.

Benefits

Using about 400 AMRs, the factory realizes intelligence and automation in production and intralogistics transshipment. The project initially plans to employ nearly 5,000 people, but in the end, labor cost is cut down by 50%.

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