INTELLIGENT MOBILE ROBOT SOLUTIONS

safer storage systems

Gonvarri Material Handling

HIKROBOT

LEADING ROBOT INTELLIGENCE

Warehouse robotics solutions have emerged as a game-changer in the industrial landscape, improving the way warehouses operate.

With the ability to handle a wide range of tasks, from order picking and inventory management to materials handling and storage optimisation, warehouse robotics solutions have become indispensable in streamlining operations, reducing costs, and maximising profitability.

Hikrobot is a global leader in intelligent mobile robot development and production, focusing on enhancing the efficiency and productivity of warehouse operations. Hikrobot's global network of offices, innovation centres and manufacturing facilities ensures a consistent supply of high-quality equipment.

Featuring advanced sensors, intelligent navigation systems, and exceptional performance, Hikrobot mobile robots are transforming the way warehouses operate, providing a competitive edge in today's fast-paced market.

ABOUT US

Safer Storage Systems (SSS) is an Australian owned and operated storage solutions provider. With decades of experience and specialist teams in place, Safer Storage Systems engineers and implements fully-optimised storage facilities across Australia, New Zealand and the USA.

The SSS team is passionate about developing new and innovative warehouse solutions - all while taking positive steps towards a more sustainable future.

Safer Storage Systems has partnered with Hikrobot to expand our automation offering across a wide range of industries and applications. By integrating automation into material handling tasks with precision and agility, we can create smarter, safer, and more efficient storage facilities.

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HIKROBOT

Product

Hardware Product

AMR

An Autonomous Mobile Robot (AMR) is able to navigate a warehouse autonomously, with optimised motion performance and enhanced safety protection.

Conveyor/Heavy-duty Mobile Robot

CMR/HMR covers the conveyor type, lifting type, traction type and heavy-duty type. Due to the high customisation mechanism, it can fulfill automatic docking requirements in different scenarios.

Accessories

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

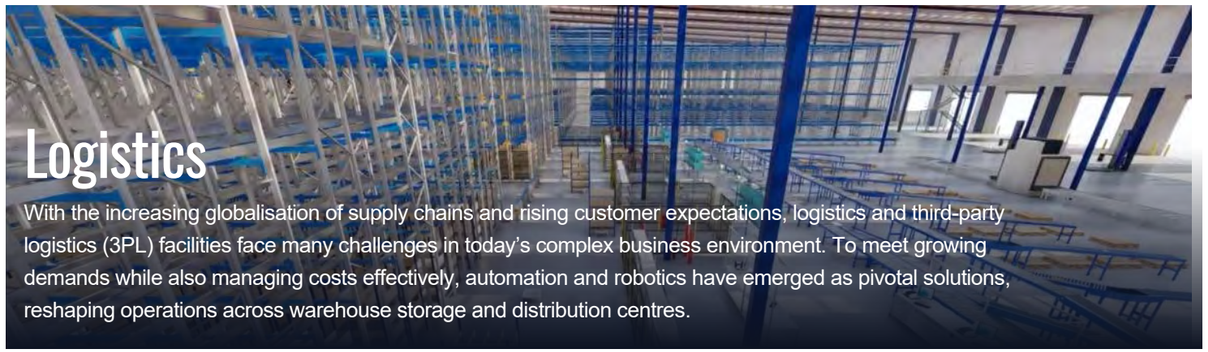
AGV

An Automated Guided Vehicle (AGV) focuses on the automatic transfer of standard bins/pallets. It adopts high precision laser SLAM navigation, vision navigation, etc.

Carton Transfer Unit

CTU can transport or storage single/multiple bins. Precise inbound and outbound with high-density storage, providing efficient picking.

INDUSTRY SOLUTIONS



Logistics

With the increasing globalisation of supply chains and rising customer expectations, logistics and third-party logistics (3PL) facilities face many challenges in today's complex business environment. To meet growing demands while also managing costs effectively, automation and robotics have emerged as pivotal solutions, reshaping operations across warehouse storage and distribution centres.

CHALLENGES

Large fluctuation in volume

Managing seasonal as well as individual business fluctuations across multiple industries.

Maintain high standards

Ensuring customer inventory is managed accurately with the highest level of care.

Varying Carton Sizes

Managing the storage and handling of a diverse range of carton sizes and shapes across multiple customers.

High flexibility

Ability to support flexible expansion and quick replication according to customer changes.

MAINFREIGHT

Mainfreight is a global logistics provider offering managed warehousing, domestic and cross-border transport and international freight forwarding. For this new, purpose-built facility in Sydney, Mainfreight required a complete end-to-end solution addressing the ever-evolving and complex needs of its customers, requiring the highest level of flexibility, efficiency and accuracy.

SOLUTION

With space being at a premium in the 3PL industry, a solution was designed to accommodate a fleet of 45 AMRs operating below a custom-built Pallet Shuttle environment. This maximised the use of space while creating an efficient AMR grid for storage and inbound/outbound operations.

Six inbound stations and six outbound stations are expertly integrated with a series of conveyors to ensure all freight is handled in the most efficient and safest way possible.

FEATURES

Complete End-to-end Solution Design

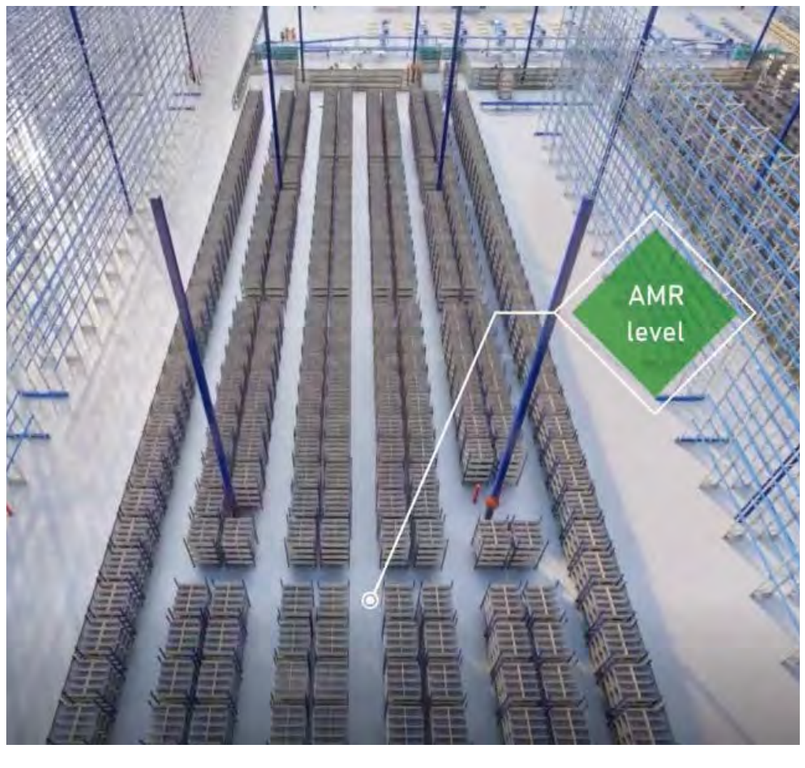
The solution features 45 AMRs, 700 storage racks, 6 inbound stations, 6 outbound stations, conveyors with automated weight check and automated labelling, 8 divert lanes, and a full carton induction lane.

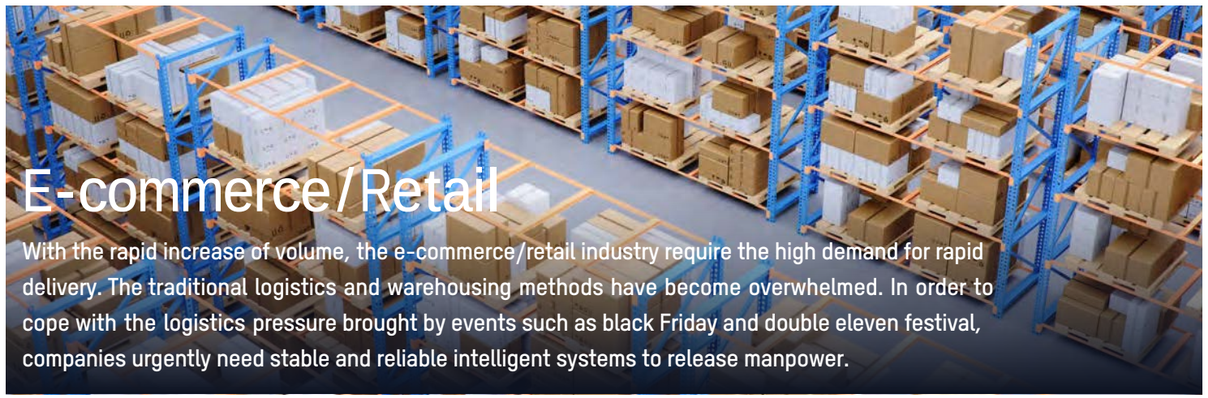
Systems Integration

Innoware WES and integrated with Mainfreight proprietary WMS.

Responsive Routing

All AMR storage locations are managed dynamically, in real-time, to ensure constant optimal routing without needing AMRs to go back to home positions between tasks.





E-commerce/Retail

With the rapid increase of volume, the e-commerce/retail industry require the high demand for rapid delivery. The traditional logistics and warehousing methods have become overwhelmed. In order to cope with the logistics pressure brought by events such as black Friday and double eleven festival, companies urgently need stable and reliable intelligent systems to release manpower.

CHALLENGES

Large fluctuation in business volume

In peak, a large volume of highly time-sensitive orders need to be handled.

Large storage capacity

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

Low fault tolerance

Large volume and low fault tolerance, accompanied by diverse storages and high requirements for time limit.

High flexibility

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

SOLUTION

Aimed at unmanned handling, informatisation of inventory management and high efficiency of picking, Hikrobot solution integrates robots, AI and Internet of things, facilitating goods inbound, sorting and collection with the help of RCS and IWMS, to improve operational efficiency and the level of automation.

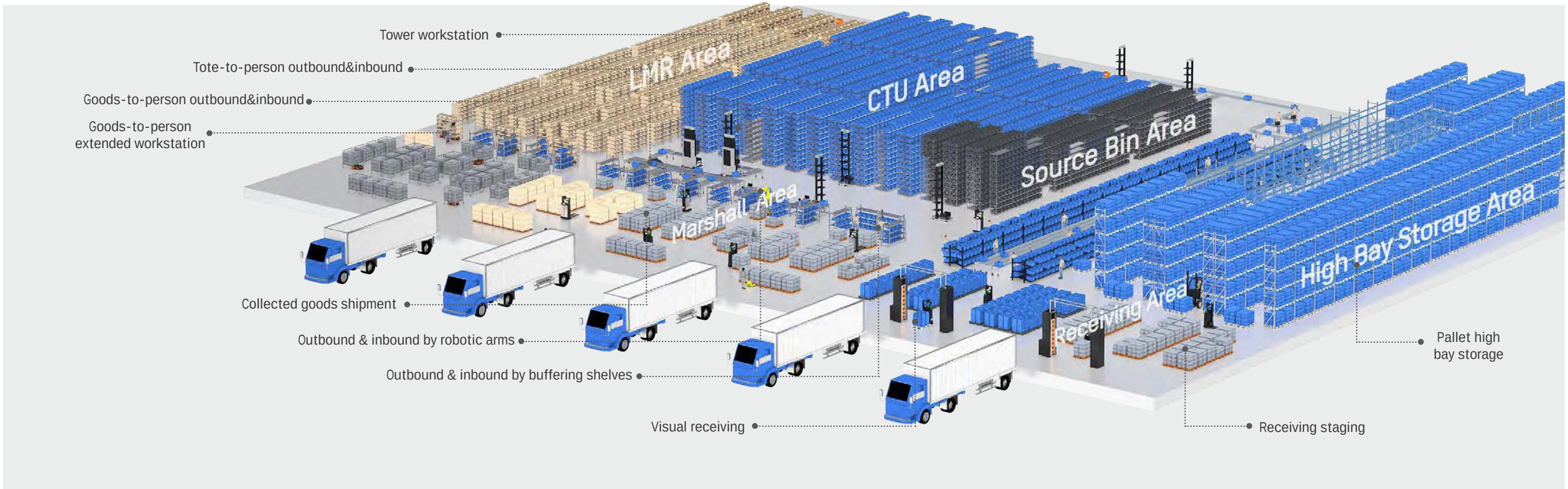
HIGHLIGHTS

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

Order breakdown and consolidation can improve sorting efficiency.

Support different kinds of strategies and flexible strategy switch.

Intelligent SKU velocity algorithm supports dynamic allocation of racks.

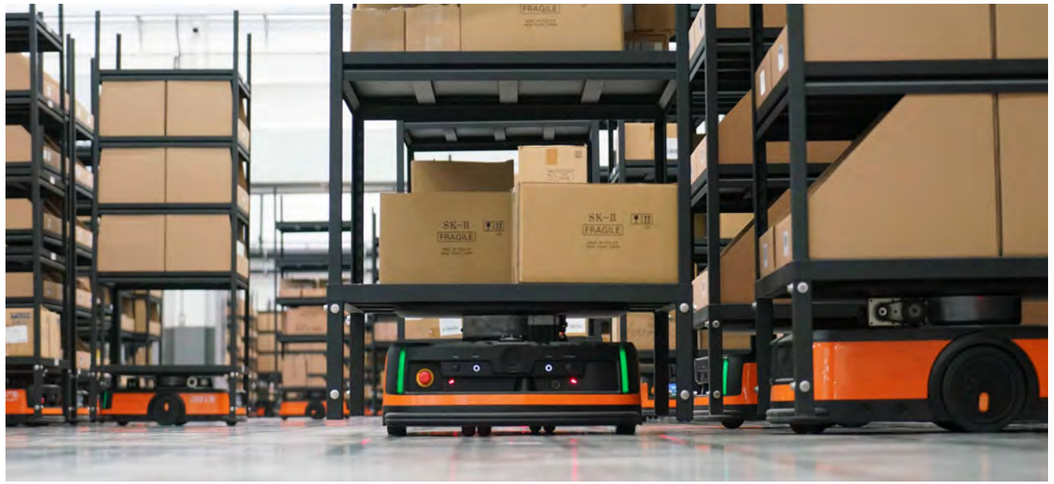


The flexible robot system integrates batch optimisation algorithms to cover various warehousing and logistics scenarios. Projects like Sunshine Duty Free, PARKnSHOP, Yunnan Publishing House, Bestore and many other projects, all utilising user-built benchmarks.

SMART LOGISTICS PROJECT

BACKGROUND

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



SOLUTION

The project covers an area of approximately 11,000 square meters, with a total of more than 300 robots and 3 battery swap stations. Hikrobot iWMS-1000 system seamlessly connected with the Sunshine General Control System to realise picking, put away, and inventory operations. This improves warehouse picking efficiency, and system is able to respond to massive throughput, processing approximately 150,000 orders per day.

PROFITS

Double pick position
eliminates waiting times during picking, effectively improving work efficiency.

Automatic swap of battery
3 battery swap stations were installed, which effectively increased the utilisation rate of a single device and reduced the equipment cost of the project by 12%

Order batch optimisation
Optimise batches by using AI to improve the overall operation efficiency.

MORE CASES

Intelligent warehouse project of A Fashion Brand in Japan

The whole project covers an area of more than 11,000 square meters, covering the returns and proper warehouse, with a capacity of more than 1.2 million pieces. A total of 181 mobile robots and 26 workstations are deployed, to meet the need of seasonal peaks.

Bestore

The project deployed more than 230 AMRs in scenarios such as food warehousing, consumables picking, order picking and packing, as well as flash sales to improve the level of automation.

PARKnSHOP

The project deployed more than 300 AMRs and 6 battery swap stations, achieving 150,000 picks per day from goods to people, which doubled the throughput.

Automobile

Following the new changes and new trends of the automotive manufacturing, especially new energy vehicles, Hikrobot provides safe and efficient mobile robot solutions. The solution is applicable to scenarios including pressing, welding, painting, assembling and the the EIC. Contributing to the transformation and upgrading of logistics management in the automotive industry.

CHALLENGES

Increasing labor cost

Factors such as population aging and changes in work attitudes of young generation have increased the labor cost in the automotive industry.

Unsafe production

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

The “last 100 meters” in automotive production

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

Automotive customisation

The production mode of automobile has been transformed into mass customisation, so flexible logistics has become a must.

SOLUTION

Thanks to many years of experience and deep understanding of the automotive industry, especially the new energy automotive industry, Hikrobot provide solutions to scenarios including pressing, welding, painting, assembling and the EIC. The combination of standardisation and customisation of solutions, rapid iteration and on-time delivery, meets the intra-logistics needs of the automotive industry for mass customisation models.

HIGHLIGHTS

Applicable to all scenarios in logistics and manufacturing process.

Experienced in different industries and abundant in cases.

Flexible customisation of products and solutions.

Standardisation of solutions supports replication to other site.

The safe and reliable mobile robot system is applied to the stamping, welding, painting and final assembly workshops. With the help of an open software platform, better production data allows agile manufacturing and lean management. This has helped Geely Automobile, Bosch China, FAW Toyota, FAW-Volkswagen, GM and many other leading automobile brands to promote intelligent manufacturing.

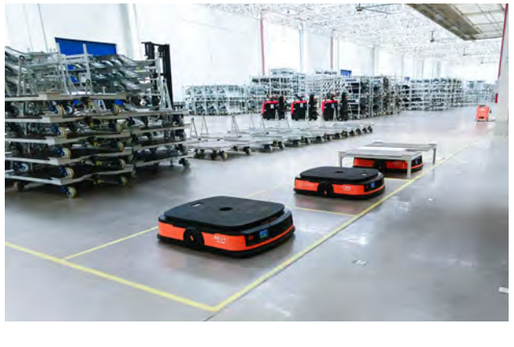
Geely Automobile Assembly

BACKGROUND

Geely Automobile is a leading auto brand, integrating the design, R&D, production, sales and service of complete vehicles, powertrains and key parts. It has ranked first in the sales of Chinese passenger car brands for five consecutive years. It owns the Geely, Lynk & Co and Geometry sub-brands, as well as a 49.9% stake and all management rights in Proton, and a 51% stake in the luxury sports car brand Lotus.

SOLUTION

Starting from 2021, Hikrobot solutions have been put into operation in many digital factories and smart workshops of Geely Automobile, involving nearly 800 AMRs. The integration of Hikrobot iWMS-1000 and RCS-2000 with Geely GLES and other upper systems facilitates a wide application of smart logistics scenarios such as visual receiving, intelligent storage and "goods-to-person" sorting in auto parts warehouses, and unmanned distribution of WIP parts in final assembly workshops, welding workshops, and painting workshops.



FEATURES

Substantial increase in working efficiency
50% in workshop's productivity, 20% in overall efficiency and 40% in parts picking efficiency.

Decrease in energy consumption
Unmanned WIP distribution makes lights-free operation possible.

Reduce manual work intensity and improve accuracy
"Goods-to-person" solves the problems of traditional modes, such as difficulty in finding goods and complexity in stock counting.

Digital warehouse management
Data sharing, real-time feedback and intelligent operation & maintenance.

Bosch Huayu Steering Smart Log

BACKGROUND

Bosch Huayu Steering is an auto parts enterprise, which integrates development with production. It has ranked first in the business size and market share of Chinese passenger car steering systems and served more than 40 OEMs including Volkswagen, GM, Geely, SAIC Motor, Mercedes-Benz, Honda. Bosch Huayu steering systems (Nanjing) co. ltd covers an area of about 93000 square meters and has Volvo, Changan Ford, Chery Jaguar Land Rover, BMW Brilliance, Beijing Benz and so on as its clients.

SOLUTION

Officially launched in March 2021, this project deployed 45 Hikrobot AMRs (LMRs and FMRs), which scope covers production workshops, raw materials warehouse and finished product warehouse in the factory of Nanjing. All logistics scenarios and processes are involved, including supplier delivery, automated raw material storage, picking, distribution and transshipment in warehouse and finished products shipment. Thanks to the RCS-2000-to-WMS integration, the whole production line has been seamlessly connected, meeting the needs of the factory of Nanjing for intelligent material handling and lean production management.

FEATURES

Substantial increase in working efficiency
15 mins reduced in material response time.

Improve site utilization
More than 5000 square meters reduced in warehouse area under the "AMR+3D Warehouse" mode.

Reduce manual work intensity
60 labor saved due to a whole-site automated distribution of goods by AMR

Digital warehouse management
Warehouse information management digitalized with the help of seamless RCS-2000-to-WMS integration.

Solution

Pharmaceuticals

With the accelerated introduction of the national medical reform policy, the pharmaceutical circulation industry has ushered in a series of adjustments. With the diversification of pharmaceutical retail channels, the diversification of end-customer needs such as hospitals and primary medical institutions, and the continuous development of pharmaceutical e-commerce, the picking and sorting work of pharmaceutical logistics centers has attracted much attention.

CHALLENGES

Multiple specifications, multiple batch numbers, high storage capacity requirements.

Drugs have strict batch number management, different batches of the same product, different owners of the same product, or even in batches, and the types of goods are usually tens of thousands.

Electronic supervision code collection

The electronic supervision code needs to be collected for inbound and outbound. Especially in the picking business, each box of medicine needs to be collected and uploaded, which seriously affects the overall operation efficiency of the picking business.

The business is uneven

The difference between the business peak value and the average value ratio is large.

Timeliness requirements are high

There are more and more demands for same-day delivery and limited-time delivery, and there are often urgent orders.

SOLUTION

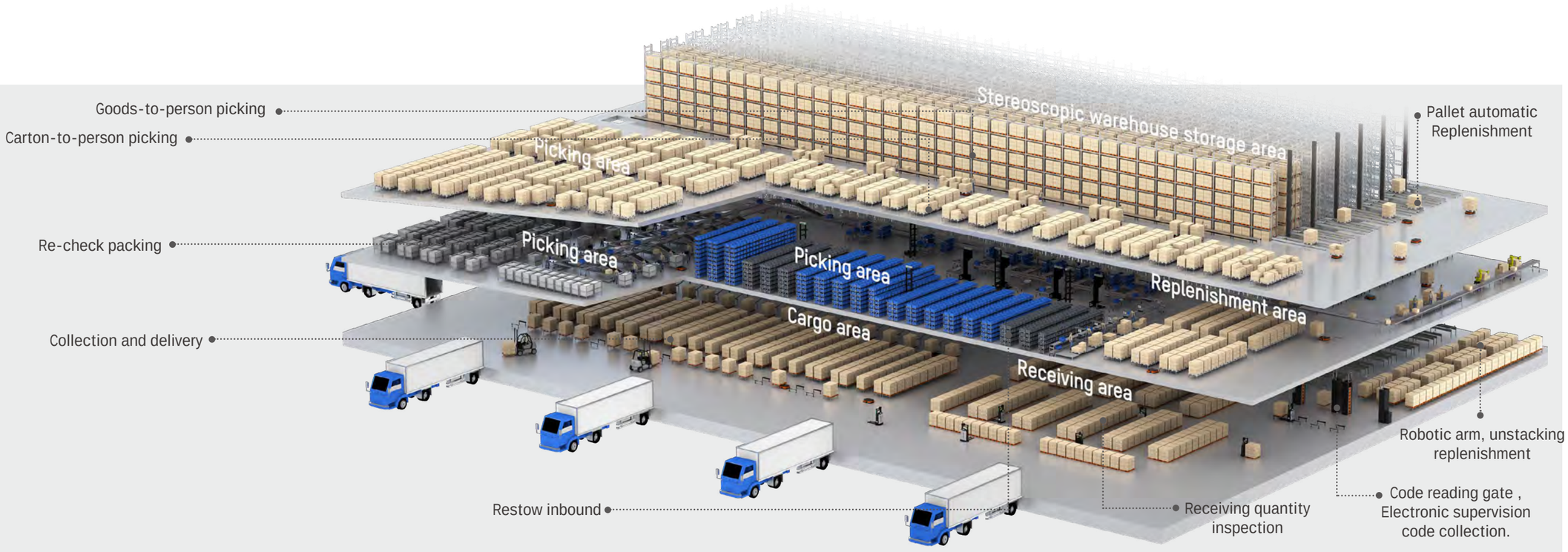
Hikrobot uses intelligent mobile robot goods-to-person technology, combined with intelligent warehouse management system and supporting comprehensive optimisation algorithm, to provide comprehensive solutions for the pharmaceutical distribution industry. Multi-series robot products, combined with machine vision products, solve problems such as handling, collection, and proofreading, liberate manpower, and improve efficiency.

HIGHLIGHTS

Provide system customisation services.

High flexibility, convenient for construction and renovation, easy to expand.

Multi-series products are adapted and coordinated to meet different business needs.



According to the characteristics of the pharmaceutical distribution industry, Hikrobot provides comprehensive solutions, and has implemented many benchmark projects such as Humanwell Pharmaceutical, Dashenlin, and Sinopharm.

HUMANWELL PHARMACEUTICAL INTELLIGENT 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 optimisation and efficiency improvement.

SOLUTION

In order to solve the problems of long walking routes, low efficiency, and error-prone in picking operations, a comprehensive solution of "CTU + LMR" is adopted to realise the functions of goods to people, box-to-person, and automatic replenishment. At the same time, the system Integrate fast scanning equipment to improve overall operation efficiency.

PROFITS

- Muti-vehicle mixed scheduling, running on the same map
- Muti-vehicle collaboration to realise automatic replenishment.
- System was integrated fast scanning equipment to realise fast collection of electronic supervision codes.

MORE CASES

Dashenlin

The CTU system is adopted to realise rapid outbound, and more than 20 CTU can outbound 1,500 totes per hour.

Sinopharm large-scale logistics centre

The project uses a variety of products such as LMR, CTU, and FMR to automate warehouse operations, reduce manpower, and improve efficiency.

The large-scale Pharmaceutical chain project

The goods-to-person mode covers 70% of the picking business, and the efficiency of a single workstation reaches 150 lines/h.

Specification

Specifications

Autonomous Mobile Robot (AMR)

● Available ○ Optional -Unavailable								
Model		Q2-400D	Q3-600D	Q3-600D(CE)	Q7-1000E	Q7-1000E(CE)	Q7-1500D	Q7-1500D(CE)
General	Navigation	2D code / V-SLAM / L-SLAM	2D code / V-SLAM / L-SLAM		2D code / V-SLAM / L-SLAM		2D code / V-SLAM / L-SLAM	
	Dimension L*W*H (mm)	780*545*300	950*650*250		1150*820*256		1180*860*265	
	Rotation diameter (mm)	820	995		1200		1265	
	Lifting height (mm)	60	60		60		60	
	Ground clearance(mm)	30	25		25		25	
	Lifting pad size (mm)	724*504	850*600		1030*770		980*800	
	Lifting structure	Electric	Electric		Electric		Electric	
	Weight (kg)	93	132		185		277	285
	Rated load (kg)	400	600		1000		1500	
Safety Protection	Screen	●	●		●		●	
	Front protection	Laser	Laser		Laser		Laser	
	Rear protection	○	○	●	○	●	○	●
	Side protection	○	○	●	○	●	○	●
	Sound alarm	●	●		●		●	
	Radium spotlight	○	○		○		○	●
	Bumper strip	●	●		●		●	
	Scram button	●	●		●		●	
Motion Performance	Operating speed(empty load) (mm/s)	2000	2000		2000		1400	1500
	Operating acceleration (empty load) (mm/s2)	1000	1200		1000		600	500
	*Position accuracy (mm)(°)	±10/±1	±10/±1		±10/±1		±10/±1	
Battery Performance	*Run time (h)	8	8		8		8	
	Charging time (h)	≤ 1.5	≤ 1.5		≤ 1.5		≤ 1.5	

*The positioning accuracy test under ideal conditions, the actual result is affected by the site environment, rack carrier size, docking matching conditions and other factor.
*Run time tested under rated condition.

Specification

Conveyer Mobile Robot (CMR)

● Available ○ Optional -Unavailable									
Model		CU4-120	C3-200LB2	C3-200LB2	CU1-100	CT5-1000	CHA-1000	CHG-250	CHU1-50
General	Dimension L*W*H (mm)	1590*708*1740	1250*745*935	1250*743*1243	950*840*700	1614*454*285	2172*1265*2026	1650*1160*2320	1130*630*1486
	Rotation diameter (mm)	1683	1415	1415	1203	1000	2529	2022	1256
	Transfer method	Roller	Roller	Roller	Roller	Tractor	Lifting and cantilever	Lifting and clamping	Lifting and plate chain
	Ground clearance(mm)	15	25	25	25	30	40	30	20
	Weight (kg)	600	350	315	400	250	1200	1300	550
	Rated load (kg)	4*30	2*100	2*100	100	1000	1000	250	50
	Navigation	2D code / V-SLAM / L-SLAM	2D code / V-SLAM / L-SLAM	2D code / V-SLAM / L-SLAM	2D code / V-SLAM / L-SLAM	2D code / V-SLAM / L-SLAM	2D code / V-SLAM / L-SLAM	2D code / V-SLAM / L-SLAM	2D code / V-SLAM / L-SLAM
	Display	LCD screen	LCD screen	LCD screen	LCD screen	LCD screen	LCD screen	LCD screen	LCD screen
Actuator	Transfer speed(mm/s)	300	300	300	333	-	-	125	200
	Transfer height (mm)	500-1100	350	540|1116	500	50(pin stroke)	898~1658	835-1605	280-1050
Safety Protection	Top protection	Binocular	-	-	-	-	Ultrasound and binocular	Binocular	-
	Front protection	Laser and ultrasound	Laser and ultrasound	Laser	Laser and ultrasound	Laser	Laser	Laser and ultrasound	Laser, binocular, and ultrasound
	Rear protection	Laser and ultrasound	TOF and ultrasound	Infrared and ultrasound	Ultrasound	-	Laser	Laser and ultrasound	Laser, binocular, and ultrasound
	Side protection	-	-	Ultrasound	-	-	Ultrasound	Ultrasound	Ultrasound
	Bumper strip	Chassis and top	Front and rear	Front and rear	Front and rear	Front	Chassis full surrounded	Front and rear	Front and rear
	Scram button	●	●	●	●	Front	Front, left and right	●	●
	Sound alarm	●	●	●	●	●	●	●	●
Motion Performance	Rated Operating speed(empty load) (mm/s)	1300	1200	1200	1200	1000	1000	1200	1200
	Rated accelerated speed(empty load) (mm/s2)	500	500	500	500	400	400	600	500
	*Position accuracy (mm) (°)	±5/±1	±10/±1	±10/±1	±10/±1	±10/±1	±10/±1	±10/±1	±5/±0.5
	Docking accuracy(mm)	-	-	-	-	-	±2	±2	-
	Driving direction	Omnidirectional	Front and rear	Front and rear	Front and rear	Front	Omnidirectional	Omnidirectional	Omnidirectional
	Other capability	Rotate 360°in place	Rotate 360°in place	Rotate 360°in place	Rotate 360°in place	Arc trunning	Rotate 360°in place	Rotate 360°in place	Rotate 360°in place
Battery Performance	Endurance (h)	8	8	8	8	6-8	8	8	8
	Charging time (h)	2	1.5	1.5	1.5	1.5	2	2	2

* The positioning accuracy test under ideal conditions, the actual result is affected by evironment
* Endurance time tested under rated condition

Automoated Guided Vehicle (AGV)

● Available ○ Optional -Unavailable							
Model		F1-300T	F1-500T	F1-1000U		F3-1500	F3-3000
General	Dimension L*W*H (mm)	1093*745*1940	1567*800*1940	1640*990*1990		1632*870*1990	1716*950*1985
	Weight (kg)	280	300	700	800	500	750
	Rated load (kg)	300	500	600		1500	3000
	Load center (mm)	382	587	600		600	600
	Fork lifting height (mm)	340	400	1344	2044	200	200
	Fork-ground distance after descending (mm)	100	130	94		75	75
	Fork dimension (s/e/l)(mm)	47*270*744	74*420*1162	60*206*1220		70*175*1232	70*190*1232
	Fork spread (mm)	270	420	551 / Customisable		680 / Customisable	680 / Customisable
	Pallet size (mm)	780*590	1000*800	1200*1000		1200*1000	1200*1000
Motion performance	Rated speed(rated/empty load) (mm/s)	1000	1000	1200		1500	1600
	*Position accuracy (mm) (°)	±10/±1	±10/±1	±10/±1		±10/±1	±10/±1
	Min. turning radius (Wa)(mm)	585	830	894		1244 (After lifting)	1380 (After lifting)
	Driving mode	Omni-directional, forward, backward, sideway, skew, rotation, arc		Omni-directional, forward, backward, sideway, skew, rotation, arc		Steering wheel driving, forward, backward, rotation, arc	
	Min. operation aisle (1200*1000 pallet) (mm)	1370	1860	1988		2062	2165
Battery performance	*Run time (h)	6~8	6~8	6~8		6~8	6~8
	Charging time (h)	≤ 1.5	≤ 1.5	≤ 2		≤ 2	≤ 2
Safety protection	Laser obstacle avoidance	●	●	●		●	●
	Driving recorder	○	○	○		○	○
	Bumper strip	●	●	●		●	●
	Pallet in-position detection	●	●	●		●	●
	Fork infrared sensor	●	●	●		●	●
	Scram button	●	●	●		●	●
	Indication light	○	○	●		●	●
	Sound alarm	●	●	●		●	●
Others/ Customization	Display screen (inch)	4.3	4.3	11		11	11
	Navigation mode	L-SLAM/ 3D SLAM (Customizable)	L-SLAM/ 3D SLAM (Customisable)	L-SLAM/ 3D SLAM (Customisable)		L-SLAM/ 3D SLAM (Customisable)	L-SLAM/ 3D SLAM (Customisable)
	Fork size customisation	Customisable	Customisable	Customisable		Customisable	Customisable
	Pallet attitude recognition	Customisable	Customisable	Customisable		Customisable	Customisable
	Pallet binding recognition	Customisable	Customisable	Customisable		Customisable	Customisable

*The positioning accuracy test under ideal conditions, the actual result is affected by the site environment, rack carrier size, docking matching conditions and other factor.
*Run time tested under rated condition.

● Available ○ Optional -Unavailable

Model		F4-1000C		F4-1500A	F4-2000B	F5-1600A
General	Dimension L*W*H (mm)	1640*990*1990		1883*940*2143	1890*1000*2215	2288*1200*2219
	Weight (kg)	715	750	900	1200	2310
	Rated load (kg)	1000		1500	2000	1600
	Load center (mm)	600		600	600	600
	Fork lifting height (rated load) (mm)	1331	2031	2500	2500	3000
	Maximum mast height (rated load) (mm)	1990	2682	3424	3490	3895
	Max. customised lifting height and matching load capacity (mm, kg)	1331, 1400	3000, 600	3900, 600	4500, 500	4500, 500
	Fork dimension (s/e/l)(mm)	65*180*1220		60*170*1232	70*200*1220	42*125*1237
	Fork spread (mm)	680 / Customisable		600 / Customisable	680 / Customisable	650 / Customisable
	Pallet size (mm)	1200*1000		1200*1000	1200*1000	1200*1000
Motion performance	Rated speed(rated/empty load)(mm/s)	1200		1500	1500	1500
	*Position accuracy (mm) (°)	±10/±1		±10/±1	±10/±1	±10/±1
	Min. turning radius (Wa)(mm)	1178		1309	1405	1511
	Driving mode	Steering wheel driving, forward, backward, rotation, arc				
	Min. operation aisle (1200*1000 pallet) (mm)	2052		2241	2405	2705
Battery performance	*Run time (h)	6~8		6~8	6~8	6~8
	Charging time (h)	≤2		≤ 2	≤ 2	≤ 2
Safety protection	Laser obstacle avoidance	●		●	●	●
	Driving recorder	○		○	○	○
	Bumper strip	○		○	○	○
	Pallet in-position detection	●		●	●	●
	Fork infrared sensor	●		●	●	●
	Scram button	●		●	●	●
	Indication light	●		●	●	●
	Sound alarm	●		●	●	●
Others/ Customization	Display screen (inch)	11		11	11	11
	Navigation mode	L-SLAM/ 3D SLAM (Customisable)		L-SLAM/ 3D SLAM (Customisable)	L-SLAM/ 3D SLAM (Customisable)	L-SLAM/ 3D SLAM (Customisable)
	Fork size customisation	Customisable		Customisable	Customisable	Customisable
	Pallet attitude recognition	Customisable		Customisable	Customisable	Customisable
	Pallet binding recognition	Customisable		Customisable	Customisable	Customisable

*The positioning accuracy test under ideal conditions, the actual result is affected by the site environment, rack carrier size, docking matching conditions and other factor.
*Run time tested under rated condition.

Specification

Carton Transfer Unit (CTU)

● Available ○ Optional -Unavailable										
Model		F0-50SC	F0-50DCN	F0-50DC	F0-50DCH	F0-50DCH(T)	F0-50DCP	F0-50DCW	F0-50DTN	F0-50DT
General	Dimension (L*W*H)(mm)	956*680*2000	1250*700*2340	1730*850*2600	1730*950*4565	1730*950*4311	1780*1050*4585	2015*1120*4595	1250*700*2300	1730*850*3600
	Weight (kg)	430	440	620	730	750	760	780	450	620
	Rated load (kg)	50	180	250	250	250	250	250	180	250
	Max. actuator load (kg)	50	30	50	50	50	50	50	30	50
	Actuator type	Clasping	Clasping	Clasping	Clasping	Clasping	Clasping	Clasping	Telescopic fork	Telescopic fork
	Lifting height (mm)	350~1450	320~2000	300~2085	300~4000	320~6500/ Customizable 8~10m	300~4000	300~4000	380~2000	380~3000
	Compatible tote dimension (mm)	(300~600)* (200~460)*(140~340)	(300~400)* (250~300)*(100~300)	(300~620)* (250~400)*(120~500)	(300~620)* (250~460)*(120~500)	(300~620)* (450~250)*(120~500)	(400~670)* (250~550)*(120~500)	(500~800)* (600~400)*(120~500)	(400~300)* (340~250)*(100~300)	(600~350)* (490~250)*(100~500)
	Driving Mode	Dual-wheel differential drive	Dual-wheel differential drive	Dual-wheel differential drive	Dual-wheel differential drive	Dual-wheel differential drive	Dual-wheel differential drive	Dual-wheel differential drive	Dual-wheel differential drive	Dual-wheel differential drive
	Screen	●	●	●	●	●	●	●	●	●
	Navigation	2D code / V-SLAM / L-SLAM	2D code / V-SLAM / L-SLAM	2D code / V-SLAM / L-SLAM	2D code / V-SLAM / L-SLAM	2D code / V-SLAM / L-SLAM	2D code / V-SLAM / L-SLAM	2D code / V-SLAM / L-SLAM	2D code / V-SLAM / L-SLAM	2D code / V-SLAM / L-SLAM
Motion Performance	Rated speed (Empty/Full load) (m/s)	1.5/1.5	1.8/1.5	1.8/1.5	1.8/1.5	1.8/1.5	1.8/1.5	1.8/1.5	1.8/1.5	1.8/1.5
	*Position accuracy (mm) (°)	±10/±1	±10/±1	±10/±1	±10/±1	±10/±1	±10/±1	±10/±1	±10/±1	±10/±1
	Actuator lifting accuracy(mm)	±2	±2	±2	±2	±2	±2	±2	±2	±2
	Aisle Width (mm)	830	850	1000	1100	1100	1200	1270	850	1000
	Rotation diameter (mm)	1000	1360	1850	1850	1850	2180	2395	1360	1850
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	≤ 1.5	≤ 1.5	≤2	≤2	≤ 2	≤ 2	≤ 1.5	≤ 1.5
Safety	Laser obstacle avoidance	●	●	●	●	●	●	●	●	●
Protection	Bumper strip	●	●	●	●	●	●	●	●	●
	Scram button	●	●	●	●	●	●	●	●	●
	Sound alarm	●	●	●	●	●	●	●	●	●

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*Run time tested under rated condition.

Specification

Heavy-Duty Mobile Robot (HMR)

● Available ○ Optional -Unavailable				
Model		H7-1500A	H8-2000B	H9-3000B
General	Dimension L*W*H (mm)	1600*1000*370	1900*1200*370	2000*1400*400
	Rotation diameter (mm)	1822	2167	2374
	Lifting height (mm)	100/150	100/150	100/150
	Ground clearance (mm)	40	40	40
	Lifting pad size (mm)	1330*730	1600*900	1700*1000
	Lifting structure	Hydraulic	Hydraulic	Hydraulic
	Weight (kg)	700	800	1000
	Rated load (kg)	1500	2000	3000
	Navigation	2D code / V-SLAM / L-SLAM	2D code / V-SLAM / L-SLAM	2D code / V-SLAM / L-SLAM
	Screen	●	●	●
Safety Protection	Obstacle protection	360° Laser obstacle avoidance	360° Laser obstacle avoidance	360° Laser obstacle avoidance
	Sound alarm	●	●	●
	Radium spotlight	○	○	○
	Bumper strip	360°Bumper strip detection	360°Bumper strip detection	360°Bumper strip detection
	Scram button	Front, rear, left, right	Front, rear, left, right	Front, rear, left, right
Motion Performance	Rated Operating speed(empty load) (mm/s)	1200	1200	1200
	Rated accelerated speed (empty load) (mm/s2)	500	500	500
	Position accuracy (mm) (°)	±10/±1	±10/±1	±10/±1
	Driving direction	Omnidirectional	Omnidirectional	Omnidirectional
	Rotation capability	Rotate 360°in place	Rotate 360°in place	Rotate 360°in place
Battery Performance	Endurance (h))	8	8	8
	Charging time (h)	2	2	2

*The positioning accuracy test under ideal conditions, the actual result is affected by the site environment, rack carrier size, docking matching conditions and other factor.
*Run time tested under rated condition.

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