

Pallet-Storage Robotics Pioneer

**ZIKOO
ROBOTICS**
Pallet-Storage Robotics Pioneer

Zikoo Smart Technology Co., Ltd.

- www.zikoo-int.com
- info@zikoo-int.com
- +86 13851470374



LinkedIn: ZIKOO ROBOTICS



YouTube: ZIKOO ROBOTICS



Pallet-Storage Robotics Pioneer

CONTENT

Company Profile **04**

Core Products **08**

R-bot Four-Way Pallet Shuttle

H-bot Vertical Two-Way Shuttle

U-bot Omnidirectional Stacker Robot

PTP Smart Warehouse Software

PTP Storage and Picking Solution **25**

R-bot + H-bot Six-Way Shuttle Dense Storage System

R-bot + H-bot Six-Way Shuttle Storage & Picking System

U-bot Narrow Aisle Storage System

U-bot + AMR Narrow Aisle Picking System

Industrial Case Studies **31**



Pallet-Storage Robotics Pioneer

Founded in 2017, Jiangsu Zikoo Smart Technology Co., Ltd. is a national specialized and new small giant enterprise, focusing on the R&D, design and production and delivery of pallet warehousing robots, with full value chain R&D capabilities, such as robot ontology, business system, core algorithm, delivery system, and so on. The company has launched a variety of pallet warehousing robots and smart warehousing software, robot products include six-way shuttle, omnidirectional stacker AGV, etc., and software systems include PTP smart warehousing software (WMS/RMS (Basic Version/Standard Edition/Professional Edition)).

Zikoo's global headquarters and its manufacturing center are situated in Zhangjiagang, Jiangsu Province, while its operation center is located in Nanjing, Jiangsu. By far, Zikoo has successfully implemented over 500 projects globally. Our products and solutions have been widely used in over 20 industries, and in diverse scenarios, such as electric power, cold chain, new energy, food, industrial manufacturing, pharmaceuticals and third-party logistics.



Our Positioning

Pallet-Storage Robotics Pioneer



Our Vision

Make warehouse and industry smarter


















Core Values

Customer-oriented and talent strategy
Key task first, begin with ultimate goal in mind
Be responsible, open, and honest

<p>40% </p> <p>Percentage of R&D personnel</p>	<p>500+ </p> <p>Projects</p>	<p>200+ </p> <p>Intellectual property rights</p>	<p>20+ </p> <p>Countries covered</p>
--	--	--	--

Accolades and Qualifications

 EU CE Marking certification	 UL certificates	 National High-Tech Enterprise	 "Little Giant" Enterprise Award	 ISO9001 / 14001 / 45001 / 27001 ISO management system certification
 Software Capability Maturity CMMI Level 3	 Logistics Technology Innovation Award Science and Technology Progress Award	 Winner of Innovative Application of the 9th LT China Logistics Technology Award	 Gazelle Enterprises in Jiangsu Province	 Smart Shuttle, an Innovative Product in Artificial Intelligence Integration, Jiangsu Province
 2024 Logistics Renowned Brand Award Shuttle Category	 GGLB Golden Globe Award Innovation Technology Award	 LOG Annual Most Innovative Company in Supply Chain & Logistics Technology	 The Most Popular Technological Innovation of the Golden Ant Award	 Outstanding Case of Supply Chain Logistics in the Manufacturing Sector

Development History

2017

Beginning

Zikoo was founded in December 2017 with a specific focus on the power industry.

2018

10million

We launched our logistics system software, WMS and WCS, and secured nearly 50 projects in the first year, with orders exceeding two million USD, marking rapid success in commercial implementation.

2019-2020

NO.1

As the market leader in smart warehouse services for the power sector, we doubled our revenue from orders for two consecutive years. We introduced four-way shuttles, and achieved comprehensive in-house development of both software and hardware.

2021-2022

TOP3

Our four-way shuttles have been extensively deployed across more than 20 industries, including power, new energy, intelligent manufacturing, food and cold chain logistics. This rapid deployment has propelled us into the top three in market share for four-way shuttles and enabled us to complete tens of millions of yuan in Series A financing.

2023-2024

400+

We introduced the world's first U-shaped Omnidirectional Stacker Robot, offering a diverse range of products for pallet storage, picking and handling across various scenarios. Our alive projects have now surpassed 400, and we have seen rapid growth in our international operations and a significant expansion in the global market.

2025

1000+

The world's first six-way shuttle products, suitable for dense storage and storage-picking scenes, annual sales of 1000+ products, accelerating overseas business and landing large-scale project.

Core Products



PTP Smart Warehouse Software

WMS

RMS (Basic Edition / Standard Edition / Professional Edition)

R-bot Four-Way Pallet Shuttle

R-bot four-way shuttle is an intelligent warehousing robot suitable for “pallet to person” dense storage scenarios, with four-way flexible traveling, intelligent autonomous handling, multi-shuttle collaborative operation and other advantageous features, and H-bot vertical two-way shuttle and other equipment linkage, flexible adaptation to various industries, pallet goods storage and picking scenarios.

- 

125mm
Thickness
- 


1500kg
Rated load
- 


1.6m/s
Maximum speed
- 


2.5s
Reversing time




Technological Innovation


- 


Fully mechanical structure
Full gearbox mechanical transmission, long life and maintenance-free
Thickness of the body is only 125mm, carrying 1500kg
- 


Maximum speed
Empty load speed 1.6m/s,
full load speed 1.2m/s
Lifting time 1.5s
- 


Scene adaptation
Cover -25°C ~45°C temperature environment
Suitable for various pallet sizes, customizable
- 

Network stability
High performance wifi6 for fastest roaming switching

- 

Core brain
Fully self-developed IP67 rated industrial controllers
Higher computing power and faster response speed
- 

Accurate positioning
Positioning accuracy ±1mm, support different size pallets mixing storage in the pallet lane
RFID + magnetic induction + encoder positioning, high robustness
- 

Reliable energy
Double BMS intelligent charging protection, energy security
Extra large battery capacity, 10h long duration time
- 

Safety protection
Ultra-long distance laser obstacle avoidance, STO function in power system
Single 64-point pallet skew detection, tilt angle detection to prevent derailment

Functional modules



- **10-minutes emergency rescue**
With specialized rescue tooling, a malfunctioning shuttle can be lifted, removed from the storage rack and transported to a repair facility by coordinating with other shuttles. This process is both streamlined and efficient, enabling the rapid completion of rescue operations in just 10 minutes. The modular design enables rapid fault diagnosis within 5 minutes. With readily available spare parts, damaged components can be replaced in 20 to 60 minutes, allowing the shuttle to return to service promptly.
- **Safe charging stations**
The charging stations feature a connector designed for over 100,000 plug-in cycles, ensuring safety, stability and reliability. The independently developed charging strategy accommodates a wide range of temperatures, from -25°C to 45°C, enhancing charging safety. Real-time monitoring capabilities cover the status of the charging stations, and include protective measures against short circuits, overload, overheating, overvoltage and overcurrent.
- **Remote control**
Operating independently of WiFi networks, our remote control uses a long-distance communication solution that ensures extended transmission ranges and improved penetration within storage racks. It features a status display and a user-friendly interface for easier interaction. The remote control system can connect to multiple devices and only requires one unit per warehouse to manage them all.

R-bot four-way shuttle product parameters

Type	Item	Unit	Standard type		American type		Japanese type		Heavy-duty type		Heavy load large pallet type	
Parameters	Model	-	R1200B		R1200A		R1500J		R1500B		R2000B	
	Weight	Kg	270		265		270		275		400	
	Rated load	Kg	1200		1200		1500		1500		2000	
	Body dimensions	mm	L1000*W972*H125		L1194*W840*H125		L1194*W900*H125		L1194*W972*H125		L1300*W1250*H150	
	Applicable pallet sizes	mm	1200*800~1000		1016*1219		1100*1100		1200~1600*1000~1200		1600~2000*1200~1400	
Performance Indicators	Navigation	-	RFID + Magnetic Induction + Encoder		RFID + Magnetic Induction + Encoder		RFID + Magnetic Induction + Encoder		RFID + Magnetic Induction + Encoder		RFID + Magnetic Induction + Encoder	
	Positioning accuracy	mm	±1		±1		±1		±1		±1	
	Empty/full load speed	m/s	1.6/1.2		1.6/1.2		1.6/1.2		1.6/1.2		1.35/1.0	
	Maximum acceleration	m/s ²	2		2		2		2		1.5	
	Reversing time	s	2.5		2.5		2.5		2.5		3.5	
	Lifting time	s	1.5		1.5		1.5		1.5		2	
Battery Indicator	Applicable temperature	°C	-15~45	-25~0	-15~45	-25~0	-15~45	-25~0	-15~45	-25~0	-15~45	-25~0
	Battery capacity	V/Ah	51.2V/40Ah	51.2V/30Ah	51.2V/40Ah	51.2V/30Ah	51.2V/40Ah	51.2V/30Ah	51.2V/40Ah	51.2V/30Ah	51.2V/40Ah	51.2V/30Ah
	Duration at full charge	h	8~10	6~8	8~10	6~8	8~10	6~8	8~10	6~8	6~8	5~7
	Fully charging time	h	1.2	2	1.2	2	1.2	2	1.2	2	1.2	2
	Type of batteries	-	Lithium-iron phosphate battery		Lithium-iron phosphate battery		Lithium-iron phosphate battery		Lithium-iron phosphate battery		Lithium-iron phosphate battery	
Product Certification	Certificate type	-										



H-bot Vertical Two-Way Shuttle

H-bot vertical two-way shuttle is an intelligent warehousing robot designed for “pallet to person” dense storage, storage-picking scenario, with vertical lift, flexible layout, fast delivery and other advantages, and R-bot four-way shuttle seamless synergy, to realize the space of six-way shuttle driving. It replaces the traditional elevator and conveyor line in the elevator, and is a comprehensive upgrade product for space utilization and cost reduction.

- 

1800kg
Rated load
- 









-25℃~45℃
Applicable temperature
- 

1m/s
Max lifting speed
- 

±1mm
Positioning accuracy



Technological Innovation

- | | |
|---|--|
| <ul style="list-style-type: none">  <p>Streamlined design
Platform and modular design for high reliability</p>  <p>Extreme speed
Empty load speed 1m/s, full load speed 0.5m/s
Empty load acceleration 1m/s², full-load acceleration 0.3m/s²</p>  <p>Accurate positioning
Rack and pinion drive, positioning accuracy ±1mm</p>  <p>Safety Protection
Multi-protection, electrical interlocks, overrun detection</p> | <ul style="list-style-type: none">  <p>Scene Adaptation
Covering temperature environments from -25℃ to 45℃, and adapting to a variety of pallet sizes.</p>  <p>Ultimate space
Occupies only 1 cargo space for better space utilization</p>  <p>Flexible Planning
Flexible deployment in any location inside or outside of the warehouse</p>  <p>Fast delivery
Dramatically reduced lead times with standard products delivered as soon as they are installed</p> |
|---|--|

Advantage Comparison

	Vertical Two-Way shuttle VS Elevator
Advantage 1	Standardized product design, shorten the delivery cycle by more than 80%, delivery cost is greatly reduced.
Advantage 2	The outer frame borrows the rack column piece, the product cost is more than 30% lower than that of the elevator.
Advantage 3	Occupying only one pallet position, reducing the number of occupied spaces by more than 80%.
Advantage 4	It can be deployed either embedded in the warehouse or external inside of warehouse, which makes the program layout more flexible.

H-bot vertical two-way shuttle product parameters

Type	Item	Unit	Standard type	American type	Japanese type	Heavy load large pallet type
Parameters	Model	-	H1800B	H1800A	H1800J	H1800X
	Body weight	Kg	345	325	335	Customization
	Body size	mm	L1300*W1464*H288	L1300*W1332*H288	L1300*W1392*H288	Customization
	Rated load	Kg	1800	1800	1800	1800
	Applicable pallet	mm	1200*800~1200	1016*1219	1100*1100	Customization
	Applicable temperature	°C	-15~45 -25~0	-15~45 -25~0	-15~45 -25~0	-15~45 -25~0
Performance Indicators	Positioning accuracy	mm	±1	±1	±1	±1
	Empty/full load speed	m/s	1/0.5	1/0.5	1/0.5	1/0.5
	Acceleration	m/s ²	1/0.3	1/0.3	1/0.3	1/0.3
Other Parameters	Total power	KW	16	16	16	16
	Control mode	-	Servo	Servo	Servo	Servo
	Transmission mode	-	rack and pinion	rack and pinion	rack and pinion	rack and pinion
Product Certification	Certificate type	-	CE	CE	CE	CE



U-bot Omnidirectional Stacker Robot

The U-bot Omnidirectional Stacker Robot is an intelligent warehousing robot designed for “pallet-to-person” narrow aisle storage scenarios. It offers a multitude of benefits, including the ability to maneuver around narrow aisles, precise positioning, flexible deployment and adaptable functionality, thus fully addressing complex storage needs across various industries. By working in conjunction with AMR, robotic arms and other devices, it can effortlessly handle sorting, picking, and inbound and outbound operations.

- 0-8 m
Lifting height
- 1000kg
Rated load
- 2100 mm
Minimum aisle width
- 1370 mm
Minimum turning radius



Technological Innovation

- New design**
The enclosed U-shaped body prevents cargo from tipping, falling or sliding off
- Accurate positioning**
Dual-Laser SLAM navigation, optional reflector and QR code are integrated for accurate positioning
- Smart recognition**
A 3D camera is used to ensure the smart recognition and automatic correction of a pallet's position

- Omnidirectional maneuvers**
A new “dual steering wheel” chassis is used for enhanced speed and maneuver stability
- Ultimate lifting capabilities**
High quality steel gantry with an adjustable lifting height from 0m to 8m, ensuring no load loss up to 6m
- Forward mechanism**
Rack and pinion forward gantry increase the forward movement speed by 100%

Advantage Comparison

	Manual + forklift	Counterbalanced stacker AGV	U-bot Omnidirectional Stacker Robot
Maneuver mode	Manual maneuvers, featuring a large turning radius	Two-way maneuvers, featuring a large turning radius	360-degree omnidirectional maneuvers On-the-spot maneuvers, featuring a small turning radius
Storage density	Aisle width≥3.2m Low storage density	Aisle width≥3.2m Relatively low storage density	Aisle width≥2.1m High storage density
Comprehensive efficiency	High efficiency	Low efficiency	High efficiency Increase by more than 40%
Safety	Low	Average	High

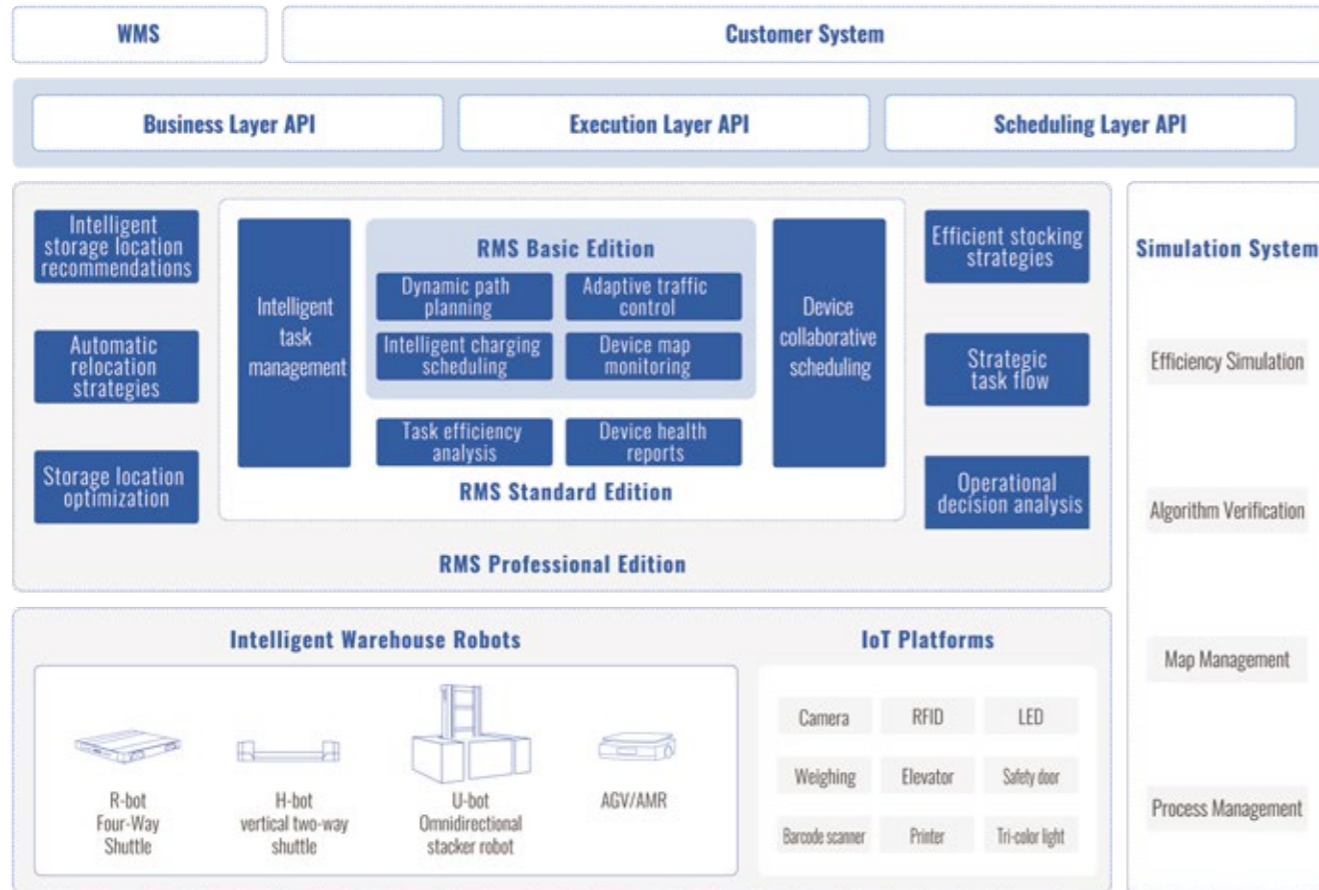
U-bot omnidirectional stacker robot product parameters

Type	Item	Unit	U1045	U1060	U1080
Parameters	Dimensions	mm	2198*1784*2100	2198*1820*2685	2198*1820*3465
	Rated load	Kg	1000	1000	1000
	Weight	Kg	3000	3300	3600
	Lifting height	mm	4500	6000	8000
	Applicable pallet sizes	mm	1000-1200*800-1200	1000-1200*800-1200	1000-1200*800-1200
Performance Indicators	Maximum speed	m/s	1.5	1.5	1.5
	Minimum turning radius	mm	1370	1370	1370
	Minimum aisle width	mm	2100	2140	2140
	Navigation	-	Dual-laser and SLAM hybrid navigation	Dual-laser and SLAM hybrid navigation	Dual-laser and SLAM hybrid navigation
	Operational positioning accuracy	mm	±10	±10	±10
	Lifting speed (empty/full load)	m/s	0.25/0.2	0.25/0.15	0.25/0.15
	Descending speed (empty/full load)	m/s	0.2/0.2	0.2/0.2	0.2/0.2
Battery Indicators	Maximum forward speed	m/s	0.3	0.2	0.2
	Applicable temperature	°C	-10~45	-10~45	-10~45
	Battery capacity	V/Ah	51.2V/210Ah	51.2V/210Ah	51.2V/210Ah
	Duration time	h	8~10	8~10	8~10
	Charging time	h	2~3	2~3	2~3
Product Certification	Battery indicator	-	Lithium-iron phosphate battery	Lithium-iron phosphate battery	Lithium-iron phosphate battery
	Certificate type		CE	CE	CE



PTP Smart Warehouse Software

PTP (Pallet-To-Person) Smart Warehouse Software is a core control platform designed for smart warehouse scenarios. It integrates the WMS Smart Warehouse Management System, RMS Smart Robot Management System (Basic Edition / Standard Edition / Professional Edition), and Data and Simulation Platform to build a unified, collaborative, and flexible smart warehouse architecture. This enables warehouse operations to fully embrace the new era of intelligence and automation.



Core Advantages



Standard Interfaces

The PTP software uses standard interfaces compatible with ERP, MES, SAP and other systems, supporting a variety of automated equipment for stereoscopic warehouses, such as palletizing/de-palletizing robots, robotic arm and AGVs. This integration facilitates data interoperability and enhances operational efficiency.



Smart Algorithms

Our software is equipped with a sophisticated suite of smart algorithms, including those for task distribution, optimum routing and smart charging. It also features business algorithms designed for storage strategy, wave picking strategy, sorting strategy and platform strategy, all aimed at continuously boosting operational efficiency.



System Coupling

The PTP Smart Warehouse Software offers multiple integration methods, catering to customer needs through black-box, gray-box and white-box modes. The system can be deployed either independently or in combination to suit various business scenarios.



Swift deployment

By entering a customer's specific scenario requirements into our simulation system and running tests with simulated robots, we can collect data and validate the warehousing solution in advance. This process enables customers to identify the most efficient warehouse design and achieve quick deployment capabilities.

WMS

Smart Warehouse Management System

Empowers intelligent warehouse material management systems across procurement, production, and sales scenarios. Supports multi-warehouse management, enabling order management, basic data management, dock scheduling, and inventory views. The system offers excellent scalability and flexibility, capable of integrating functions across industries to accommodate diverse requirements. Additionally, WMS provides rich statistical data and BI modules to assist warehouses in making rapid decisions, achieving precise management, and enhancing overall operational efficiency.



RMS

Smart Robot Management System

Basic Edition

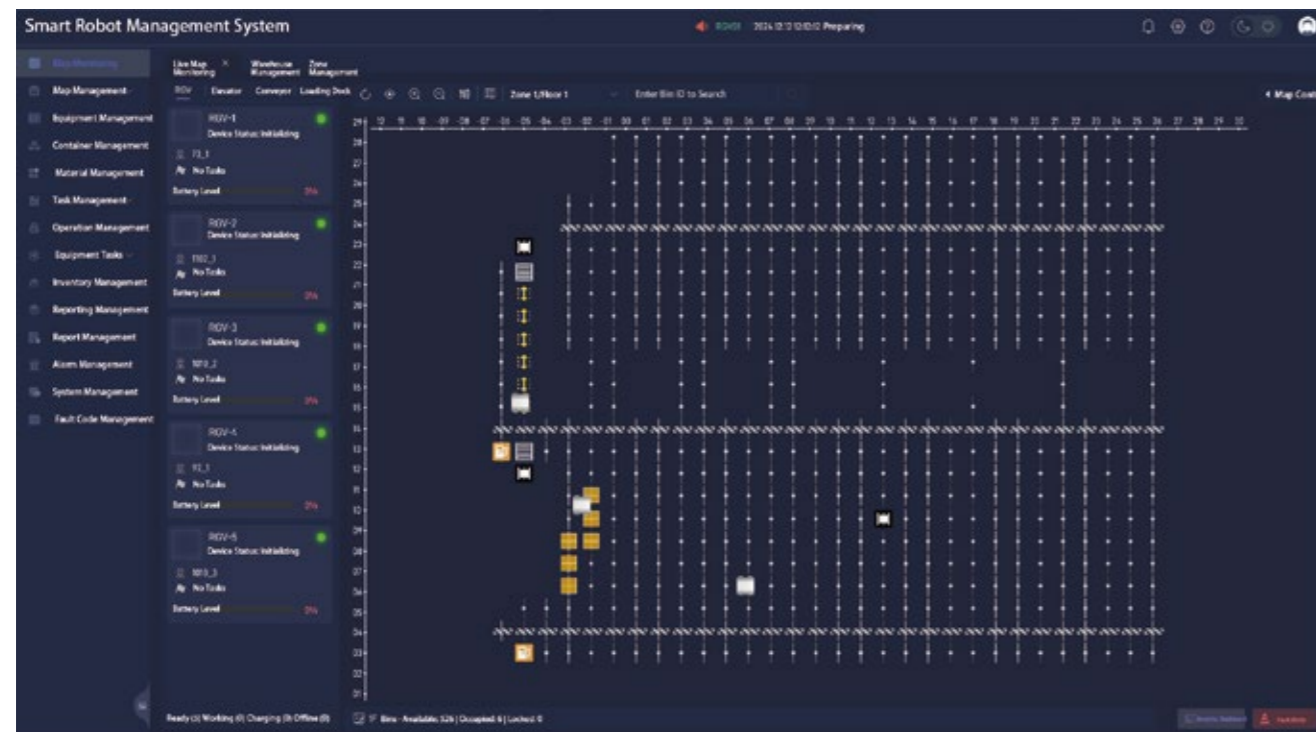
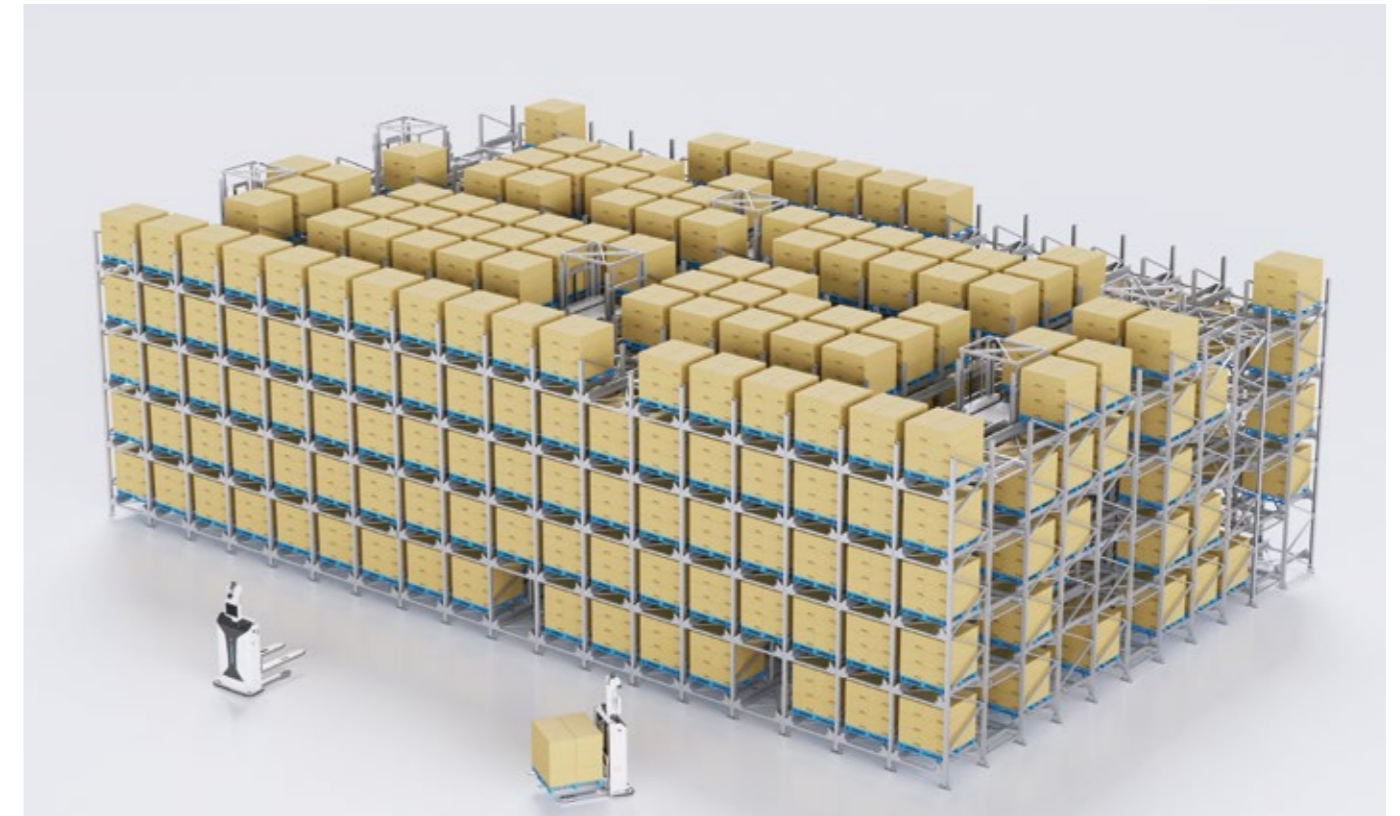
Basic Edition RMS Integrated with the next-generation Smart Robot Control System (RCS), it supports efficient collaborative operations among multiple robots. The system performs collision detection based on spatial models, enabling functions such as vehicle following, obstacle avoidance, congestion detection, and deadlock avoidance. It also uses time window heatmap algorithms to reduce the number of avoidance maneuvers and plan optimal paths. It supports intelligent charging scheduling to ensure continuous and stable operation of equipment.

Standard Edition

Standard Edition RMS Integrates the functions of the Smart Robot Control System (RCS) and the Smart Warehouse Control System (WCS) to build a unified dispatching center. The system supports the global collaborative operation of various types of equipment such as RGVs, elevators, and conveyor lines, and realizes dynamic path optimization, intelligent obstacle avoidance, and charging dispatching through time window algorithms and heat map mechanisms. Combining device status and task priority, it achieves intelligent resource allocation and efficient scheduling, significantly enhancing warehouse operation efficiency and system stability.

Professional Edition

Professional Edition RMS Deeply integrates the three core systems—the Smart Warehouse Execution System (WES), the Smart Warehouse Control System (WCS), and the Smart Robot Control System (RCS)—to create a unified intelligent warehouse equipment management platform. The system adopts a modular architecture and open interface design, supporting seamless integration with various types of robots and warehousing equipment to achieve full process automation from order processing and task decomposition to multi-device collaborative operations. Relying on intelligent algorithms, the platform optimizes storage strategies, path planning, and conflict management, and uniformly dispatches key equipment such as RGVs, conveyor lines, and elevators to achieve an optimal balance between efficiency, stability, and safety, comprehensively improving the level of warehousing automation and overall operational efficiency.



PTP System 1

R-bot + H-bot Six-Way Shuttle Dense Storage System

The innovative combination of R-bot four-way shuttle and H-bot vertical two-way shuttle is suitable for dense storage scenarios of whole pallet inbound and outbound or a small amount of picking inbound and outbound, with significant advantages in cost, efficiency and density. H-bot can be deployed flexibly at any position inside or outside of the warehouse, with even efficiency configuration, fast delivery and easy maintenance, which is the best choice for customers who are in pursuit of the maximum storage density and inbound and outbound efficiency.

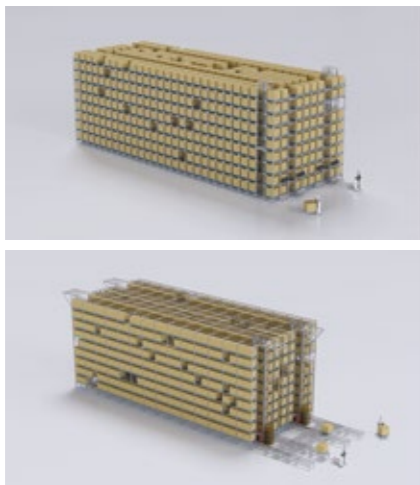
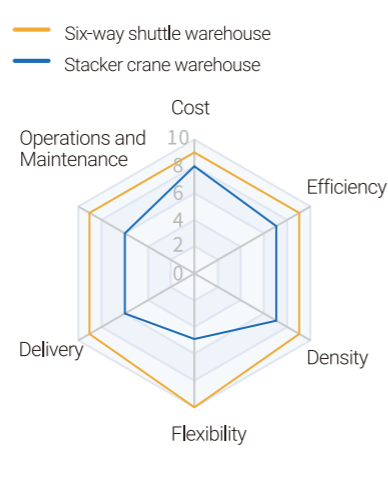
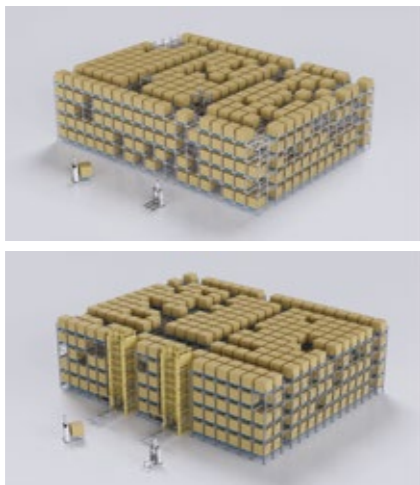
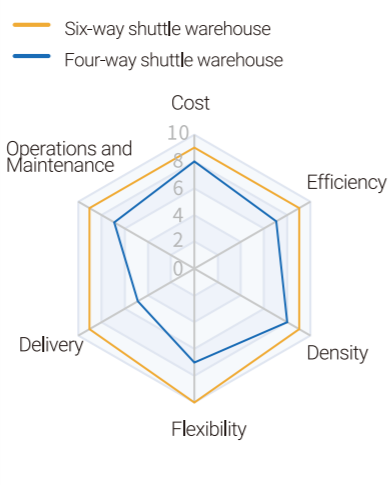
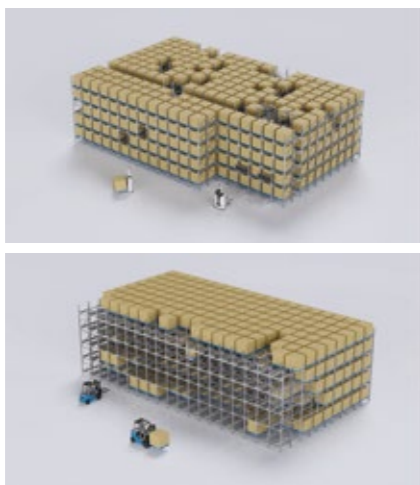
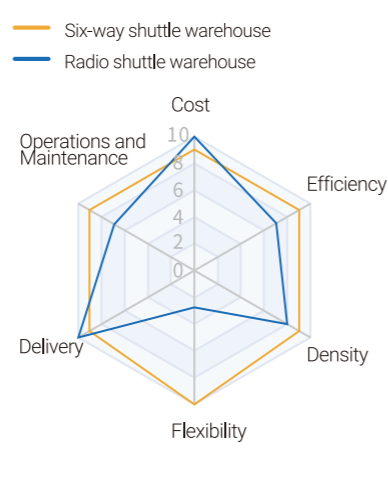
Application scenarios: Warehouse net height ≤ 30m Number of SKUs: Unlimited Storage density: high

Inbound and outbound efficiency: high Picking efficiency: general;

Applicable industries: food, manufacturing, cold chain, energy, chemical industry, building materials, etc.



Advantages Comparison

Layout Comparison		Advantages Comparison	
<p>Six-way shuttle warehouse</p> <p>VS</p> <p>Stacker crane warehouse</p> 	<p>— Six-way shuttle warehouse</p> <p>— Stacker crane warehouse</p> 	<p>Efficiency</p> <p>Integrated cluster scheduling for greater efficiency and uniformity</p>	<p>Flexibility</p> <p>According to the site, flexible planning of storage space According to SKU, flexible planning of deep space According to the efficiency, flexible planning cache position</p>
<p>Six-way shuttle warehouse</p> <p>VS</p> <p>Four-way shuttle warehouse</p> 	<p>— Six-way shuttle warehouse</p> <p>— Four-way shuttle warehouse</p> 	<p>Cost</p> <p>No elevators, no conveyor lines, lower cost per pallet position.</p>	<p>Density</p> <p>Full utilization of space in the front area of the warehouse</p>
<p>Six-way shuttle warehouse</p> <p>VS</p> <p>Radio shuttle warehouse</p> 	<p>— Six-way shuttle warehouse</p> <p>— Radio shuttle warehouse</p> 	<p>Efficiency</p> <p>Integrated cluster scheduling for greater efficiency and uniformity</p>	<p>Flexibility</p> <p>SKUs can be mixed, FIFO</p>
		<p>Operations & Maintenance</p> <p>Digital management, not dependent on people</p>	



PTP System 2

R-bot + H-bot Six-Way Shuttle Storage & Picking System

Through the flexible deployment of H-bot vertical two-way shuttle at any position in the warehouse, R-bot four-way shuttle freely enters and exits the H-bot vertical two-way shuttle to realize cross-floor handling, and set up caching and picking positions as needed at the inbound and outbound, which is more suitable for high-density, high-throughput pallet storage and picking integrated scenarios. Compared with the traditional program, there is no need for conveyor lines in the warehouse, which greatly shortens the delivery cycle and reduces operation and maintenance costs, making it the preferred solution for pallet storage and picking scenarios in the market today.

Application scenarios: Warehouse Net Height ≤ 30m Number of SKUs: Unlimited Storage Density: High

Inbound and Outbound Efficiency: High Picking Efficiency: High

Applicable industries: 3PL, retail, shoes and clothing, supermarkets, e-commerce, food, etc.





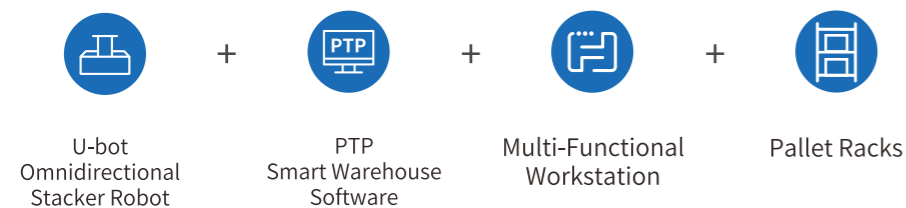
PTP System 3

U-bot Narrow Aisle Storage System

The Narrow Aisle Storage System, featuring the U-bot Omnidirectional Stacker Robot, efficiently manages both entire-pallet storage and split-case picking operations. Compared to traditional counterbalanced stacker AGVs, this system boosts efficiency by 30%. Designed to operate in extremely narrow aisles, it is easy to deploy and delivers rapid results. This makes it an ideal solution for customers aiming to upgrade from conventional manual forklift operations to enhance storage density and overall efficiency.

Application scenarios: Warehouse Clear Height: ≤10m; Number of SKUs: Large; Storage Density: Relatively high; Inbound and Outbound Efficiency: Relatively high; Picking Efficiency: Relatively high;

Applicable industries: supermarkets, retail, 3PL, manufacturing, energy, etc.



PTP System 4

U-bot + AMR Narrow Aisle Picking System

The Narrow Aisle Picking System, featuring U-bot + AMR, facilitates efficient collaborative operations such as “high-rack storage and low-rack buffering” and “high-rack storage and low-rack picking.” It can be integrated with multi-functional workstations to accommodate the picking and outbound requirements of a wide range of item sizes, from large to small. The system can also connect with production lines via AMR to flexibly adapt to various operational scenarios. The PTP Smart Warehouse Software enables multi-vehicle smart scheduling, significantly enhancing overall efficiency.

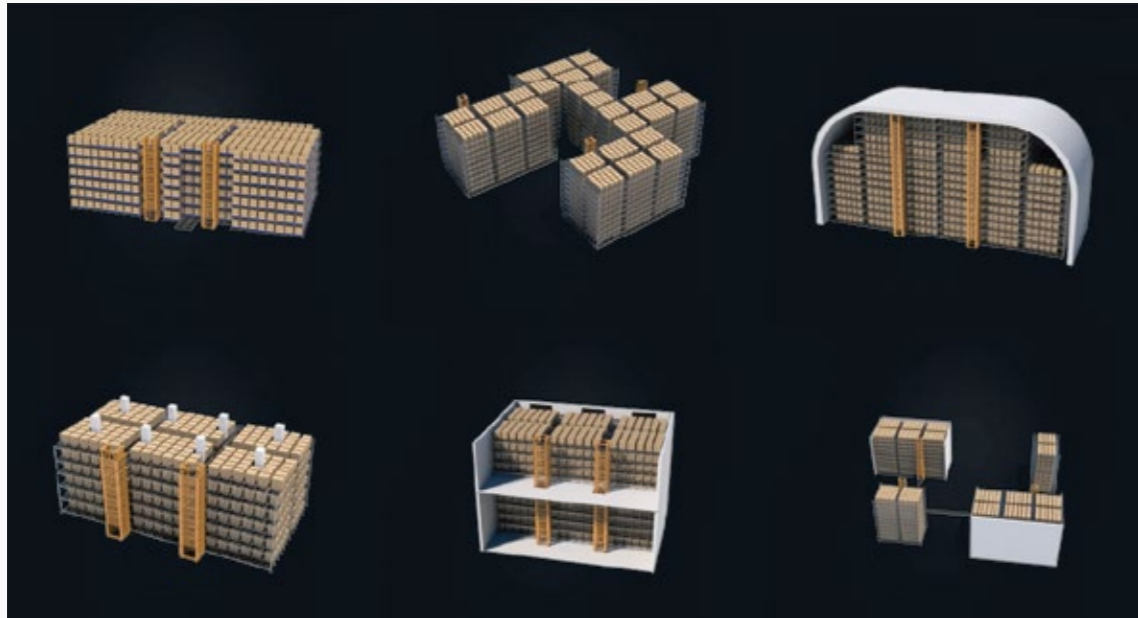
Application scenarios: Warehouse Clear Height: ≤10m; Number of SKUs: Large; Storage Density: Relatively high; Inbound and Outbound Efficiency: High; Picking Efficiency: High

Applicable industries: e-commerce, manufacturing, shoes and clothing, etc.



Rack

- Independent structural design, tailored for four-way shuttles maneuverability
- Multiple tests, proven effective across numerous project applications
- Premium materials, superior manufacturing standards and rigorous quality control inspections
- Standardized procedures for rack installation and acceptance



Pallet

- Customizable pallet sizes with a choice of plastic, steel or wood materials
- Existing pallets can be repurposed, with samples sent to the factory for testing and verification
- Versatile pallet solutions designed to accommodate items of irregular shapes in large, medium and small sizes



Plastic pallet



Wooden pallet



Steel pallet



Single pallet



Pallet storage cage



Pallet rack



Case pallet



Coal Industry-A Coal Group Shenwei Pipeline Transportation Intelligent Material Warehouse in Shanxi

Zikoo Solution

- Upgrading of the spare parts warehouse with two warehouses for small parts and heavy shaped parts, respectively
- 4 sets of 4-way shuttle, 1 set of high-speed elevator, 1 set of stacker crane, AGV, forklift, conveyor line, decoder, etc
- 1 set of WMS, WCS, RCS

Project Achievements

- The system needs to have integrated computer control, network, data communication, automatic identification of material information and other advanced technologies, and all data can be shared to meet the relevant requirements for data access
- The entire material pickup and delivery requirements to achieve the approval of paperless, less manned warehouse, receiving and dispatching operations mechanisation, automation, warehouse management digital, 3D storage unit, information transmission network and security monitoring visualisation





Electric Power industry-A power center warehouse in Anhui

Zikoo Solution

- The stereoscopic warehouse, equipped with a four-way shuttle system, spans an area of 1,260 square meters. It features 3-layer rack with 1,272 storage locations, 6 four-way shuttles, and 2 elevators. It also includes one set of both WMS and WCS systems
- Various smart logistics robots, a wireless network in the warehouse, a handheld operation APP, and other information systems are used to achieve internal connectivity and communication

Project Achievement

- Establish three different types of warehouses along with one storage system to enable smart "goods-to-person" picking
- The Internet of Things and machine vision technology are used to achieve AI facial recognition, automatic matching, and error reporting
- Information management is achieved by using the WMS system, a handheld operation APP, and a smart large display

Electric Power industry-An Electric Power Material Depot Renovation Project in Jiangsu Yancheng

Zikoo Solution

- Adoption of U-bot narrow aisle storage system, conversion of manual forklift warehouse into stacked height AGV warehouse, 5-level crossbeam racking warehouse with single pallet load of 1000kg
- Deployment of U-bot omni-directional stacking AGV (6 metres), PTP smart warehouse software (WMS, WCS, RCS) set. The original beam shelves are used and rebuilt

Project Achievements

- Beam racks were converted from old to new, and the aisle was changed from 4.1m to 2.1m, which greatly improved the space utilisation.
- After the renovation, the warehouse storage density was increased by more than 50%
- After the transformation, the overall operational efficiency of the warehouse increased by more than 150%

Electric Power industry-An Electric Power Material Depot Renovation Project in Shandong Jinan

Zikoo Solution

- The total area of the warehouse is 8300 square metres, and the warehouse is a two-storey building. The ground floor of the warehouse is planned for U-bot narrow aisle storage system, 432 bays of 4-layer beam shelves, 1 U-bot automatic up and down storage, lifting height 6m, load 1t
- The first floor of the warehouse is planned for U-bot+AMR narrow aisle picking system, 1503 bays of 3-layer beam shelves, deploying 2 sets of U-bot and 2 sets of AMR with lifting height of 4.5m and load of 1t

Project Achievements

- It realises intensive storage and efficient picking of standard pallets. The minimum aisle width of the racks is 2100mm, the U-bot on the first floor of the warehouse is used for handling and loading and unloading pallet materials, and the AMR is used to change the layer of pallet materials between the first floor and the ground floor of the warehouse, and realises the automatic layer changing operation by docking with the freight elevator
- Warehouse storage density increased by 300 %, with an efficiency of 70 pallets/hour in and out of the warehouse

Electric Power industry-An Electric Power Material Depot Renovation Project in Zhejiang Huzhou

Zikoo Solution

- Pallet warehouse warehouse area of 800 square metres, to create a 3-layer U-bot narrow aisle three-dimensional warehouse, a total of 177 warehouse position
- Deployment of U-bot omni-directional stacking AGV (6 metres), PTP smart warehouse software (WMS, WCS, RCS) set. The original beam racks are used and rebuilt

Project Achievements

- The U-bot works in conjunction with other automated equipment to form a high level pallet storage + small parts shelf storage operation mode
- The conversion has resulted in a 150 per cent increase in storage capacity compared to a flat floor stacker
- The operating efficiency of U-bot is 2-2.5min/pallet, which is 50% more efficient in accessing the warehouse compared to manual work



Pharmaceutical industry - A medical Package Material Warehouse In Hebei

Zikoo Solution

- Warehouse area: 300 square meters, 248 storage locations
- 1 six-way shuttle, multi-functional workstation, 1 set of WMS and WCS systems
- Multi-functional workstation integrates control cabinet, barcode scanning, pallet guidance, and shape detection functions
- Comprehensive warehouse goods dimensions: 1200mm x 1100mm x 1200/1500mm (including pallet). The first and second floors store goods up to 1500mm in height, while the top floor stores goods up to 1200mm in height

Project Achievements

- Multi-functional workstations are installed at the warehouse entrance to replace traditional conveying equipment. Compared to traditional four-way shuttle solutions, the overall cost is reduced by 10%
- Standardized products are delivered upon on-site installation, reducing the overall installation and commissioning time by 25%
- Flexibly add storage locations and six-way shuttle quantities according to changes in production capacity and SKU numbers

Pharmaceutical industry-A Finished Biopharmaceuticals Warehouse in Chongqing

Zikoo Solution

- Warehouse area: 480 m², 3 layers of warehouse, pallet position: 645
- Deployment of 2 sets of four-way shuttle, 2 sets of high-speed elevator, a number of conveyor lines, software system WCS / RCS set of
- Pallet size 1200*1000mm, cargo height 1200mm and 1550mm, single pallet load 1.2t

Project Achievements

- Meet the requirements of Good Manufacturing Practice (GMP) and Good Manufacturing Practice (GSP), docking with Fuller's WMS for full-process monitoring of materials
- 3D storage replaces flat storage, increasing storage capacity by more than six times
- Goods to the person picking out of the warehouse, according to the order system execution, the full name of the paperless, the accuracy of the rate to improve
- It meets the requirements of 2°C ~8°C temperature and 35%-75% humidity in the storage environment of biological medicine, and the equipment operates stably

Food industry - A Dairy Products Warehouse in Ningxia

Zikoo Solution

- Warehouse area: 4350 m², pallet position: 9760, 4-way shuttle:15, high speed elevator: 5
- Pallet size: 1200*1000*150mm Cargo size: 1200*1000*2100mm
- WMS、WCS、RCS system: 1 set, as well as a customised automated palletising system, forklift dispatch system, and a set of flat storage management systems

Project Achievements

- Planning of a four-way shuttle warehouse to achieve intensive storage of materials, and a customised flat warehouse management system for the 3D warehouse field stacking area to achieve unified management of vertical and non-vertical warehouse product inventories
- Installation of manual operation terminals on forklift trucks, intelligent scheduling of forklift operations, and at the same time the transformation of existing production lines, in conjunction with robotic manipulators, to achieve fully automated material grouping plate

Food industry - A Low-Temperature Cold Storage Warehouse in Beijing

Zikoo Solution

- Warehouse area: 2,400 m², storage locations: 4,015
- 5 cold chain four-way shuttles, 2 elevators, 1 set of WMS and WCS systems
- Warehouse ambient temperature: -20°C

Project Achievements

- Equipped with cold chain-specific four-way shuttle models capable of stable operation at -20°C
- Real-time monitoring of cold storage operation data, timely response to fault alerts, ensuring long-term stable equipment operation
- For future business expansion and warehouse expansion, 4-way shuttle racks can be directly spliced and combined to connect the warehouse area, and the number of 4-way shuttles can also be increased or decreased to adapt to the efficiency requirements of the warehouse
- If the business expands in the future and upper-level production management systems such as MES, SAP, ERP, or other systems are added, interface docking can be performed



Pallet-Storage Robotics Pioneer



ZIKOO

Textile Industry - A Raw Material Warehouse of a Textile Company in Shanghai

Zikoo Solution

- Warehouse area: 1,600 square meters, 883 storage locations, over 4,000 SKUs
- Comprehensive warehouse goods dimensions: Length x Width x Height: 1,600 mm x 1,700 mm x 350/650 mm (including material frames)
- 4 four-way shuttles, 2 elevators, and a WCS system
- 3 inbound and outbound stations, each equipped with 1 PDA + large screen TV

Project Achievements

- Pallets are not removed from the racks, and all inbound and outbound ports are used as picking stations
- WCS flexibly allocates elevator inbound and outbound operations, no longer requiring designated elevators for inbound and outbound operations
- Customized material racks use a three-sided enclosure + one-sided opening design, balancing load capacity and ease of manual operation to meet the efficient storage and retrieval needs of different sizes of fabrics

Textile Industry - A Raw Material Warehouse for a Textile Company in Egypt

Zikoo Solution

- Warehouse area: 804 square meters, net height: approximately 6 meters, 3-layers 3D warehouse, 402 storage locations
- 2 four-way shuttle, 1 vertical two-way shuttle, one set of WCS system

Project Achievements

- Steel material cages are used to store fabric rolls, which are structurally stable, suitable for roll-shaped materials, and improve storage safety and load-bearing capacity
- Compared with the traditional 4-way shuttle solution, the cost (hardware + implementation) is reduced by 10%, and the implementation and installation man-days are reduced by 40%
- Equipped with the WCS system, it supports the accurate scheduling and management of multiple batches of fabrics of different sizes, improving overall operational efficiency

Cold chain industry - A High-Density Frozen Food Warehouse in Taiwan

Zikoo Solution

- Warehouse area: 408m², clear height: 19.4m, storage locations: 1,206 locations
- 4 cold chain four-way shuttles, 2 elevators, 1 set of WMS and WCS systems
- Ambient temperature: Warehouse interior -25°C; Pre-cooling room 5°C; Buffer room -2°C

Project Achievements

- Multi-shuttle coordination achieves overall inbound/outbound throughput of 40 pallets/hour
- Fully automated inbound inspection and intelligent bin allocation significantly boosts operational efficiency and accuracy
- Insulated doors synchronized with conveyor lines ensure seamless material transfer and secure cold chain handling

Cold chain industry - A high-density cold store for food in Guangxi

Zikoo Solution

- The cold store spans an area of 5,194 square meters. It features 12,390 storage locations.
- 10 four-way shuttles (cold chain model), 4 high-speed elevators, and one set of WMS, WCS, and RCS software systems

Project Achievements

- Dense storage enhances space utilization, and automated operations ensure robust security for food storage
- The four-way shuttles (cold chain model) are deployed at -25°C to guarantee safe and stable goods storage and transportation in a low-temperature environment



Precision Manufacturing Industry-A Rubber Precision Manufacturing Lineside Warehouse in Suzhou

Zikoo Solution

- Lineside storage area of 400 square metres, net height of 18m, build 14 layers 3D warehouse about 1,000 cargo space
- 3 sets of 4-way shuttle, 2 sets of embedded elevators, 1 set of WMS, WCS, RCS software system

Project Achievements

- Built 3:1 ratio lineside warehouse, flat warehouse upgraded to 3D warehouse, limited space is fully utilised
- Warehouse upgraded to digital dynamic management, the number of SKUs of goods is large, and FIFO can be realised
- Inbound and outbound docking unmanned AGV, unified scheduling of the entire field, greatly reducing labour costs

Precision Manufacturing Industry-An Automobile Manufacturing 4-way Shuttle Project in Anhui

Zikoo Solution

- 2 warehouses with a total area of 3,840 square meters of 3D warehouses and a total of 10,637 warehousing spaces
- 24 sets of four-way shuttles, 12 sets of elevators, 1 set of WCS and RCS software

Project Achievements

- Automobile industry line-side warehouse, close to the production line, significantly shorten the material turnaround time, improve the continuity and stability of production
- 24 hours a day operation, seamlessly connecting production demand
- Multi-truck cooperative work, inbound and outbound efficiency up to 189 tons/hour



Precision manufacturing industry - A 3D Warehouse for Automotive Parts in Suzhou

Zikoo Solution

- The stereoscopic warehouse spans an area of 2,973 square meters. It has a clear height of 11 meters. The 3D structure features 5-layer racks with 6,350 storage locations, 4 inbound/outbound gates
- 7 four-way shuttles, 6 elevators, several conveyors, and one set of WMS, WCS, and RCS software systems

Project Achievements

- A high-density stereoscopic warehouse is built, allowing the four-way shuttles to flexibly maneuver around columns during operation. The warehouse accommodates two pallet sizes, enabling diverse material management through the use of IWMS, IWCS, and RMS systems
- An overhead corridor is built to connect the warehouse and workshop using conveyor belts, creating a smart, integrated production line
- Scheduling across multiple devices ensures efficient inbound and outbound operations, offering 123 pallets per hour

Intelligent Manufacturing Industry - An Industrial Robot Lineside Warehouse in Jiangsu Province

Zikoo Solution

- Vertical warehouse area of 200m², net warehouse height of more than 6 meters, the number of cargo spaces 630, 2 picking stations
- 5 four-way shuttles, 2 elevators, 1 set of WMS, WCS, RCS software system

Project Achievements

- Storage and picking of 2000+ SKUs of parts and components.
- Reduced the number of operators from 7-8 to 3, reducing the working hours per day by 12.5%
- Efficient storage and retrieval, one cycle takes only 3 minutes, storage and retrieval accuracy 99.99%
- 90 days from project planning to full operation



Intelligent Manufacturing Industry-A Raw Material Warehouse of a Manufacturing Company in Nantong

Zikoo Solution

- Warehouse area: 2,065 square meters, clear height approximately 19 meters, 8-layers 3D warehouse, 2,916 storage locations
- Goods dimensions: L1300 × W1300 × H1260/1660/2500 mm
- Four four-way shuttles, one vertical two-way shuttle, and two elevators, one set of WMS and WCS software systems

Project Achievements

- Double-deck floors are connected to forklift AGVs to achieve automatic transportation
- 20 inbound and outbound stations are designed to directly connect to production machines, improving outbound efficiency
- Supports manual forklifts and AGV forklifts for inbound and outbound operations, enabling automatic supply and stacking of mother pallets and automatic destacking of empty pallets. Supports material cage picking and automatic return of leftover materials and empty material cages to the warehouse. In the later stage, it can be connected to a destacking robotic arm to further improve the level of automation

Building materials industry-A tonne package raw materials 3D warehouse in Anhui

Zikoo Solution

- Tonne package raw material 2-layer ground stack warehouse transformed into a 5-layer 3D warehouse, the number of cargo spaces from 420 to 1208
- 5 four-way shuttles, 2 elevators, more than 20 conveyor lines, 2 destackers, and a set of WMS/ WCS/RCS software systems

Project Achievements

- Upward expansion of storage space, space utilisation rate increased by 2.8 times
- The raw materials of tonnage packages can be loaded onto the production line immediately after outbound, and the efficiency of in and out of the warehouse reaches 65 tph
- Add tonnage weighing, warehousing inspection, quality inspection management and other functions

Third-party logistics industry - A storage and transportation center for home appliance in Tianjin

Zikoo Solution

- The warehouse spans an area of 3,000 square meters, with an available height of 11 meters. The 3D structure features 4-layer racks with 4,700 storage locations
- 6 four-way shuttles, 2 elevators, 2 auto photo scanning OCR systems, and one set of WMS, WCS, and RCS software systems

Project Achievements

- A high-density 3D warehouse is built, with more than 400 types of materials
- The auto photo scanning feature allows for the automatic scanning of various types of products for inbound orders, with an accuracy rate of 99.99%
- Cut down the number of warehouse staff, including handlers and scanners, to save up to 60% on labor costs.
- Efficient collaboration between hardware and software, along with multi-depth planning, results in a comprehensive inbound and outbound efficiency of 90 pallets per hour

Third-party logistics industry - A Kazakhstan Energy 3PL Warehouse

Zikoo Solution

- Warehouse area of 20,000 square meters, with 50,000 storage locations
- 30 four-way shuttle and 14 vertical two-way shuttles
- One set of WCS and RCS software systems

Project Achievements

- 20% reduction in automated equipment costs
- Standardized and modularized equipment, significantly reduced overall project construction cycle, and reduced labor input by 200 man-days
- Maximum inbound and outbound efficiency of 360 pallets/hour, meeting customer requirements for large-volume, multi-batch business processing

Global Services



Cooperative partner

