HAI ROBOTICS

Next-Gen Warehouse Automation with Autonomous Case-Handling Robotic System

www.hairobotics.com

HAI ROBOTICS

HAI ROBOTICS aspires to help clients optimize warehousing operation with advanced robotics and AI algorithm. We provide efficient, intelligent, flexible and customizable warehouse automation solution and one-stop services. As the pioneer in ACR system, we successfully launched first HAIPICK ACR operation in 2015, and have been perfected our products continuously from that with our ever-expanding customer portfolio.
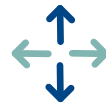
Efficient
Greatly increase warehouse efficiency with a short payback period

Intelligent
Empower warehousing by robotic technology + artificial intelligence

Flexible
Easy to deploy, expand, update and transform, cater for dynamic business changes

Customizable
Customizable solutions for various requirements and applications

▪ Industries for Application

| Apparel | E-commerce | Retail | Manufacture | 3PL |

| Electronics | Pharmaceuticals | Electricity | Automotive | • • • |

▪ One-Stop Services

01 Plan
Requirements Mining, Data Analysis, System Design, Equipment Config, System Simulation

02 System Integration
Design Detailing, System Interfac-ing, Deployment Planning, Business Contracting

03 Manufacturing
Software Development, Hardware Customization, Equipment Design, Equipment

04 Deploy
Equipment Installation, System Testing, Project Pilot Test

05 Cutover
User Training, System Pilot Run, Project Acceptance Test

06 Customer Service
Periodic Visit, System Maintenance,Spare Parts Supply, Service Hotline

HAIPICK System

HAI ROBOTICS successfully invents its first HAIPICK ACR system in 2015, and is the pioneer to put it into mature commercial application. Upgraded to the 4th generation, HAIPICK transforms warehouse operation with automated transportation, retrieval, storage and sortation. HAIPICK System is customizable for a wide variety of environments.

HAIPICK System consists of HAIPICK robots, multifunctional workstations, intelligent charging stations, storage units and HAIQ software platform.

7 DAYS
One week to deploy, one month to go live

3-4 TIMES
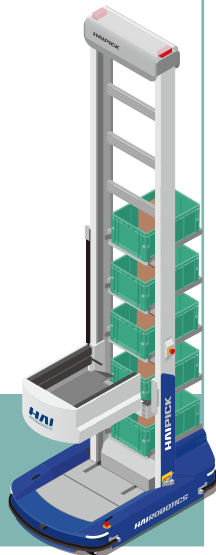Increase operators' working efficiency by 3-4 times

180%
Increase warehouse storage capacity by 80% with 4-meter shelving

HAIPICK Robots

- Max. 4.2-meter height
- Max. 8-case carrying capacity
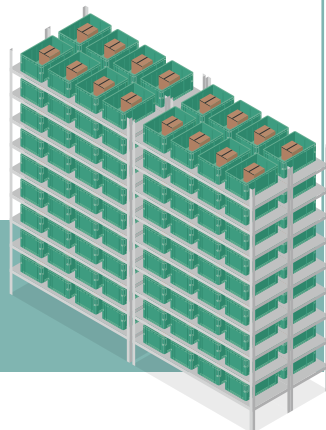- Max. 1.8m/s speed
- Control precision of ±3mm

Multifunctional Workstations

- Daily Tasks Guidance
- GUI Monitoring Terminal
- Support the integration with various logistics equipment, including PTL system, robotic arms, conveyors, rollers etc.
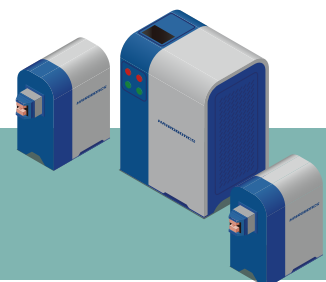
Storage Units

- Compatible with 4-meter shelving and multiple totes/cartons. Easy to deploy and transform.

Intelligent Charging Stations

- 0.7-hour charging for 5-hour operation
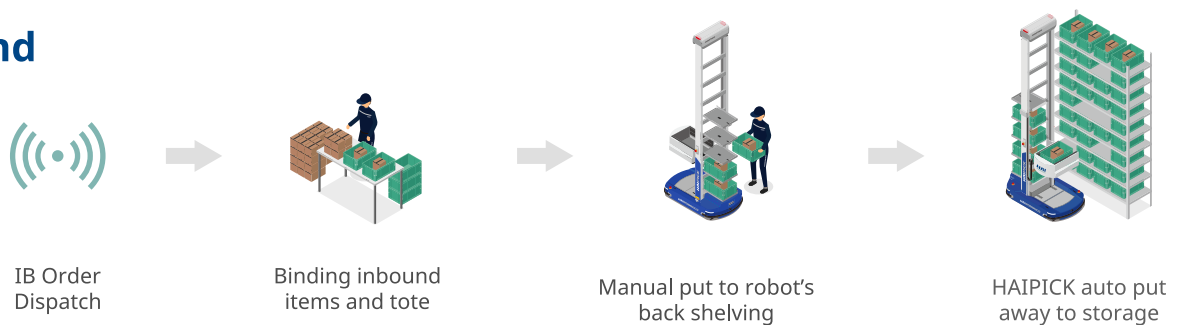- Autonomous charging to ensure the system runs 7x24h
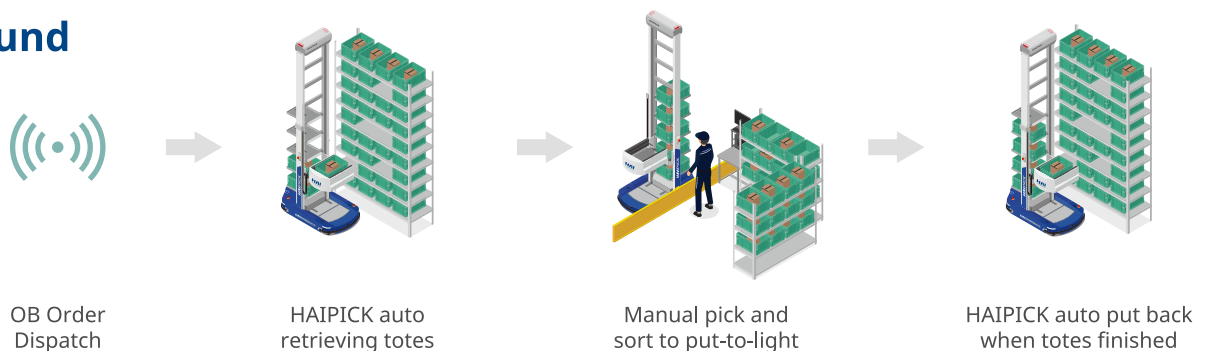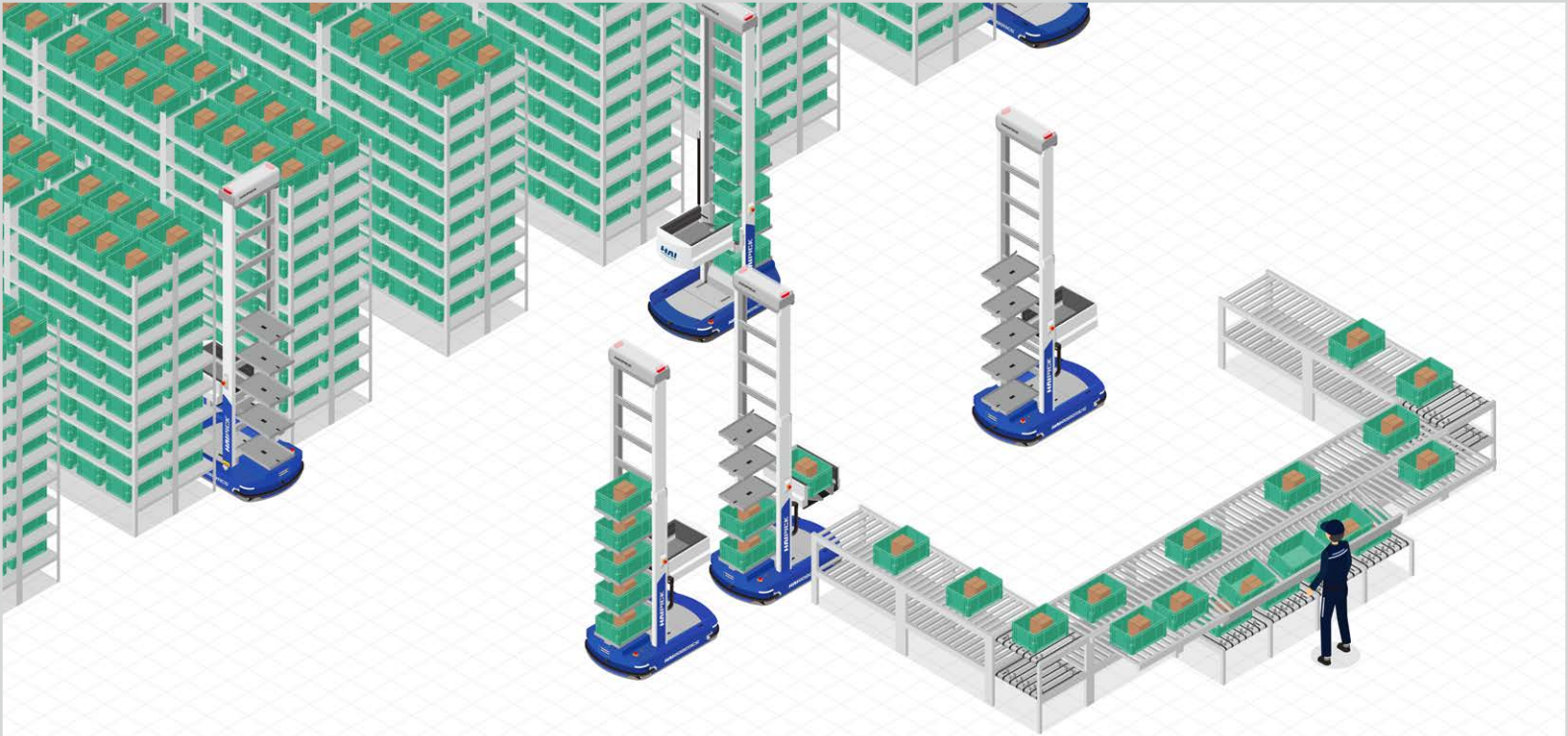
Interact Methods

Manual Workstation

- 25-35 dual cycles/hour/robot, varying due to different operation settings
- The operator picks directly from the HAIPICK trays
- Total 4 cases/robot due to ergonomic concern. Ladders can be added for an additional case
- Sort the units by a put-to-light system to complete orders

▪ Inbound

| IB Order Dispatch | Binding inbound items and tote | Manual put to robot's back shelving | HAIPICK auto put away to storage |

▪ Outbound

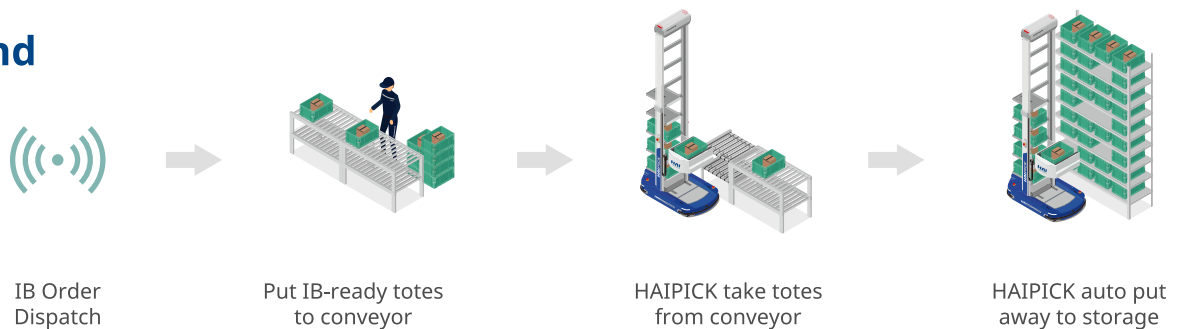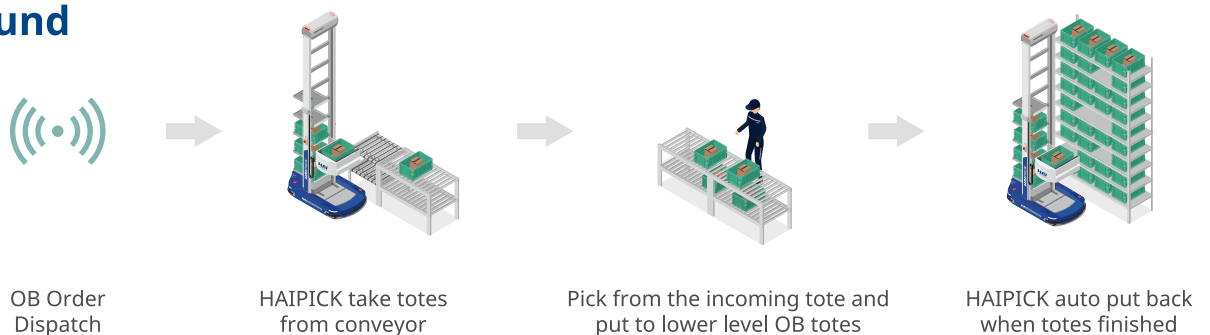| OB Order Dispatch | HAIPICK auto retrieving totes | Manual pick and sort to put-to-light | HAIPICK auto put back when totes finished |

Interact Methods

Conveyor Work Station

- 25 – 30 dual cycles/hour/robot, varying due to different operation settings
- The conveyor creates an ergonomic-friendly picking process: no walk, cases wide open to person. It also provides a buffer between human pickers and robots, reducing waiting time for both sides. Hence, the workstation greatly improves picking efficiency up to 600-700 order lines/hour

▪ Inbound

| IB Order Dispatch | Put IB-ready totes to conveyor | HAIPICK take totes from conveyor | HAIPICK auto put away to storage |

▪ Outbound

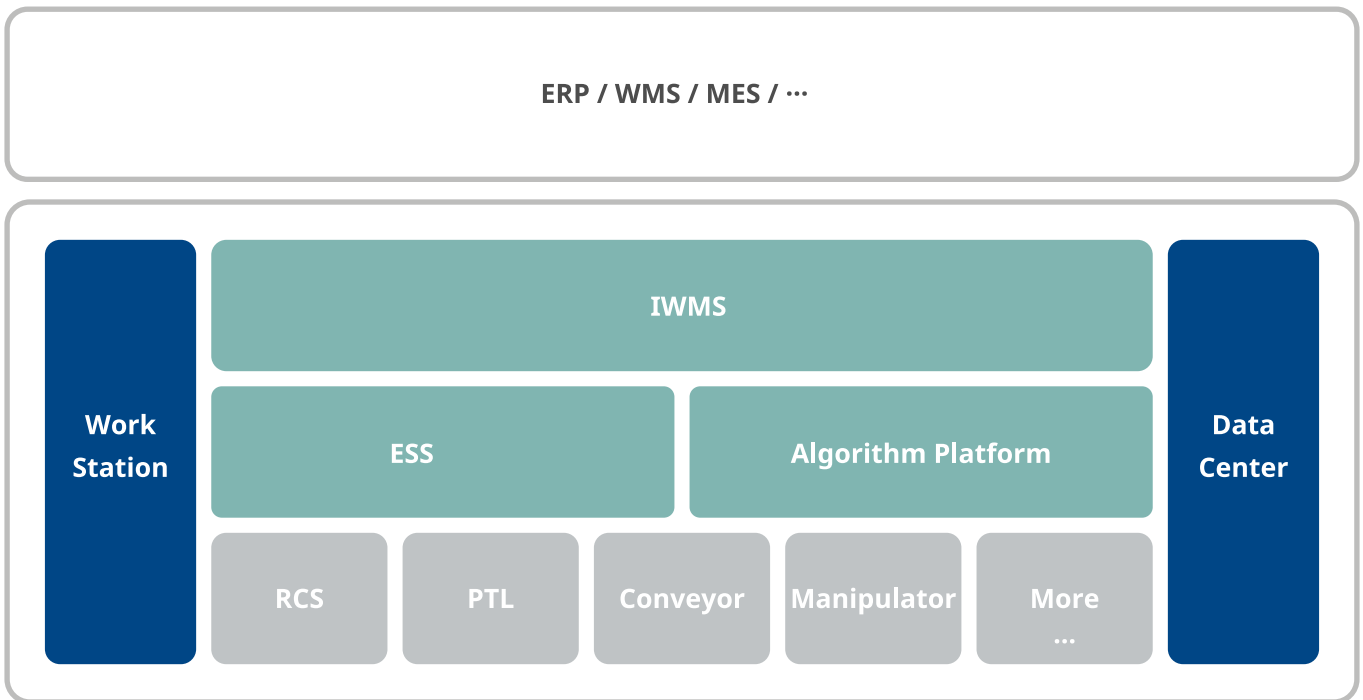| OB Order Dispatch | HAIPICK take totes from conveyor | Pick from the incoming tote and put to lower level OB totes | HAIPICK auto put back when totes finished |

HAIQ Software Platform

HAIQ is the intelligent brain of HAI ROBOTICS smart warehouse system. It connects with clients' business management system and supports daily operation and data analytics, providing visualization management. Based on reinforcement learning and deep learning, HAIQ ensures optimized scheduling of max. 600 robots and other equipment while monitoring the system in real time and pre-alert malfunction.

ERP / WMS / MES / ···

Work Station	IWMS		Data Center
	ESS	Algorithm Platform	
	RCS / PTL / Conveyor / Manipulator / More ...		

iWMS
Intelligent Warehouse Management System

iWMS easily communicates with clients' business and operation management system, accomplishes business data management and warehousing management, manages customized warehouse location system and smart report management, collects data and leverage machine deep learning for future optimization.

ESS
Equipment Schedule System

ESS accomplishes the scheduling management of robots and conveyor systems. It processes order tasks and connects with multifunctional workstation and data center, which realizes intelligent orders allocation, tasks allocation, inbound location allocation and dynamical inventory checking functions.
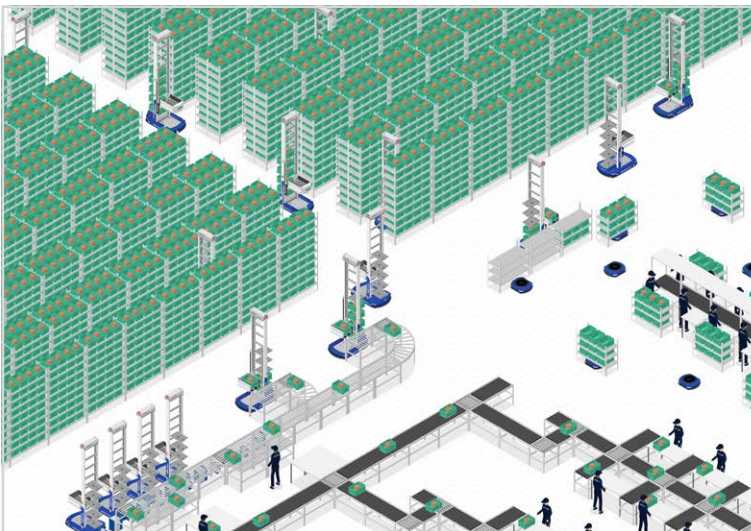
RCS
Robots Control System

Controls the HAIPICK route planning, transportation management, charging/rest management, ensures tasks execution with high-efficiency while forecasting and monitoring the condition of system.
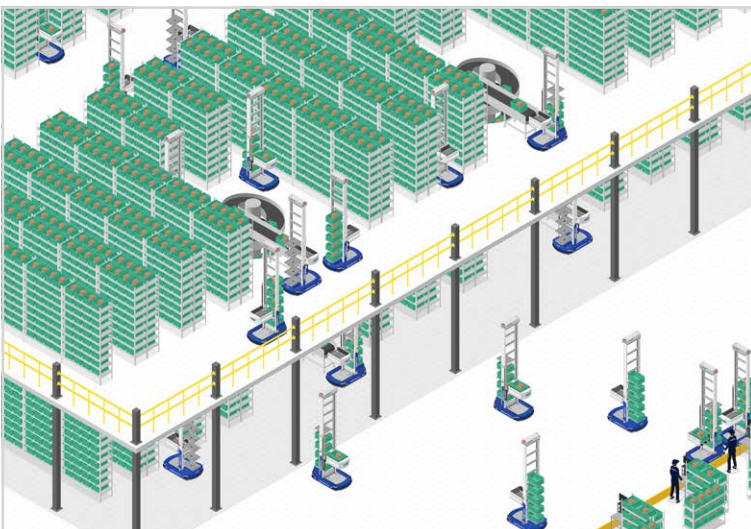
Solutions

Intelligent
Goods-to-Person Solution

Transforms the traditional "Person-to-Goods" to "Goods-to-Person" mode

Smart
In-plant Logistics Solution

Realizes real-time and flexible operation process while breaking the boundary of storehouse and production lines.

Multi-tier
Steel Platform Solution

- Increase the storage density by using warehouses' space to its full capacity
- Easy to deploy, expand and transform.
- Low construction cost and short payback period

Case Studies

SF-DHL Supply Chain CHINA
Shanghai Apparel Warehouse

- Realized information management and increased picking accuracy to 99.9%
- Enhanced security with automation and unmanned operation
- 80% storage capacity increase, 20 times inbound efficiency surge and 3.5 times outbound efficiency improvement
- Swiftly deployed in one week, and went live in a month, successful operated in peak of 618 and double 11 Shopping Festival

ERAL
Zhejiang Apparel Factory

- Increased warehouse efficiency with max. 8 cases carrying capacity of each HAIPICK robot
- Interacted with automatic conveyors to ensure real-time operation process
- Realized high storage density
- Handled materials in a way of kitting to production lines，which increased efficiency and accuracy

BEST Supply Chain
Foshan Apparel Warehouse

- 4 times efficiency increase and 80% storage capacity increase
- x2 peak season efficiency, x4 max. efficiency
- One week to deploy, one month to launch

Philips
Zhuhai Household Appliance Factory

- Equipped with automatic conveyors to improve working efficiency
- Interacted with cache shelving to reduce waiting time for workers

Case Studies

Mujin, Inc.
Tokyo Robotic Arms Joint Project

- Interacted with robotic arms, realizing fully automation in the warehouse
- 80% storage density increase
- One week to deploy, two weeks to launch

SF-DHL Supply Chain CHINA
Hong Kong Spare Parts Warehouse

- Realized the management of multiple SKU and various-size goods
- No more work of moving heavy objects with unmanned operation
- One week to deploy, one month to launch

Suzhou High-tech District
Electronics Factory

- Customized 2.7m HAIPICK robot with max. 5 cases carrying capacity
- Interacted with AGV to connect the storehouse and production lines
- One week to deploy, one month to launch

A Hospital in Shenzhen
Medical Supplies Warehouse

- Connected with SPD to realize the traceability of medical supplies
- Customizable HAIPICK robots with high accuracy
- Fast deploy, two weeks to launch

Transform Warehousing with Robotics + AI Ready Solutions

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