TUSKROBOTS

APR Creator

About TUSKROBOTS

Tuskrobots devote ourselves to empowering factory and logistics to become intelligent, making handling easier and more efficient. We take the lead in launching this handling and picking intelligent robot product with global unique innovation which can highly fit in the international standard pallets. TUSKROBOTS is headquartered in Foshan, Guangdong, with production facilities based there as well. We have local customer service/support teams in Beijing, Shanghai, Hangzhou, Suzhou, Wuhan, Changsha, Chengdu, and Chongqing. Our versatile robotic solutions find extensive applications in industries such as automotive, pharmaceutical, tobacco, new energy, electronics, and commercial trade, enabling businesses to achieve higher efficiency and safety through continuous automation in material handling.

130+
Global Plant Patents

100+
R&D Personnel

20+
Industrial Applications

30+
Global Channel Coverage

APR Series
No Auxiliary Equipment Required

Robot Scheduling System
Integrated Platform System, Visual Bin Detection

Diverse Accessory Products
Supporting Various Business Scenarios

Honors

CE Marking

ISO9001

2023 RBR50 Robotics Innovation Awards

Red Dot Design Award

IF Design Award

LT Award

GG-Led Golden Globe Award

Golden Ant Awards

World Innovation Award

Equal Ocean Rising Global Enterprises Top50

Outstanding Industrial Robotics Companies

56 PinPai

China Headquarter
Foshan

China Branches
Beijing/Shanghai/hangzhou

After-sales service network extends globally including Europe, North America, and Southeast Asia.

Germany

Japan

China

U.S.

Singapore

📍 Headquarter   📍 Branch

Implementation of Preparation
Equipment Inventory
On-Site Review of the Solution
Check of Implementation Conditions
Software Pre-Integration and Debugging

Implementation in Project Site
DM Code Construction、SLAM Mapping
System Map Drawing System
Environment and Parameter Configuration
Software and Hardware Debugging

Launch and Support
User Training / Launching Trial Run
Handbook Information Handover /
Maintenance Training
Sign for Acceptance
After-sale Technical Support Service

7x24 remote technical support

On-Site Maintenance Service

Preventive Maintenance Service

Peak On-Site Support Service

Accessories and Tooling Equipment Package

Technical Training Service

System Upgrade and Maintenance Service

Annual Framework Service

Company History

2019

1.Introducing our second-generation Omni-directional Pallet Robot, which underwent on-site testing and application with our esteemed angel customer.
2.We participated in the Shanghai Logistics Expo, making our first public appearance.

2021

1.Continuously secured multiple rounds of funding totaling billions of RMB.
2.Established a production base in Foshan.
3.Launched the fourth-generation robot, along with the SLAM navigation edition.
4.Introduced a large-scale robot cluster scheduling system, wireless control module, and terminal app, which extensively support the integration of automatic doors, elevators, robotic arms, and other equipment, enabling a comprehensive pallet robot system solution.
5.Projects in the renewable energy and automotive electronics industries have been effectively implemented.

2023

1.Initiated global expansion by establishing branches in North America, Europe, Japan, and Southeast Asia
2.Actively engaged in international exhibitions such as PROMAT in the U.S., HANNOVER MESSE in Germany, and KANSAI LOGISTICS EXPO in Japan, strategically expanding our presence in the global market.
3.Introduced the sixth-generation high-performance E-Series pallet robot.
4.Awarded the prestigious international Red Dot Design Award and the German iF Design Award.
5.Honored to receive the "Logistics Oscars," the LT China Logistics Technology Award for Innovation in Product.
6.Awarded the 2023 RBR50 Global Robotics Innovation Award, making us the only Chinese company to receive this prestigious honor

2022

1.Established multiple regional marketing and after-sales operation centers to provide global coverage
2.Obtained the ISO 9001 quality management system certification.
3.Introduced the fifth-generation heavy-duty 1.2t APR
4.Introduced the F-Series forklift-style robot and C-Series lift-style robot.
5.Leveraging deep learning technology, we proudly launched the fourth-generation robot management system with support for visual bin detection.
6.We participated in the Chinese logistics exhibition for the first time and received the Golden Ant Award.
7.We have successfully implemented over 100 cases across 20+ industries, earning recognition and repeat orders from multiple Fortune Global 500 companies. The APR product started to widely promoted within China.
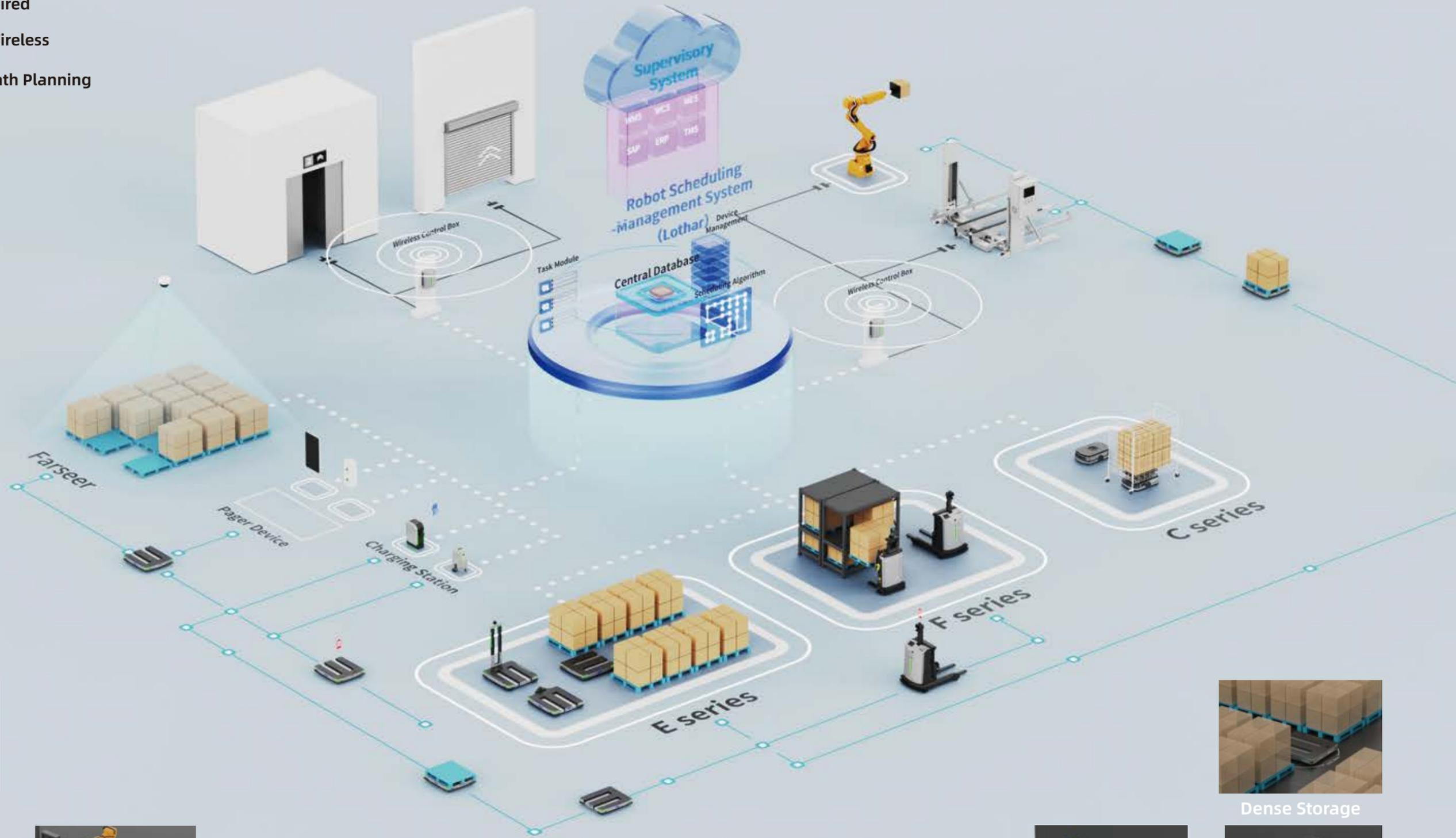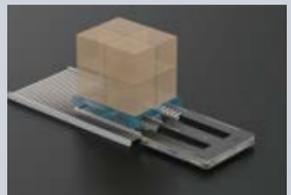
2020

1.Launched the third-generation industrial-grade version and introduced the multi-robot scheduling management system to the market.
2.Successful implementations in pharmaceutical and 3C industries.
3.Introducing the E-Series: Our First Differential Pallet Robot

2018

1.Innovatively introduced the concept of the APR (Automated Pallet Robot).
2.The founding team initiated the R&D process, conducting prototype validation.

APR Scene Architecture

Wired

Wireless

Path Planning

Supervisory System

WMS WCS MES

SAP ERP TMS

Robot Scheduling Management System (Lothar)

Device Management

Task Module

Central Database

Scheduling Algorithm

Wireless Control Box

Wireless Control Box

Farseer

Pager Device

Charging Station

C series

F series

E series

Lift Conveyor Line

Ground Roller

Robotic Arm
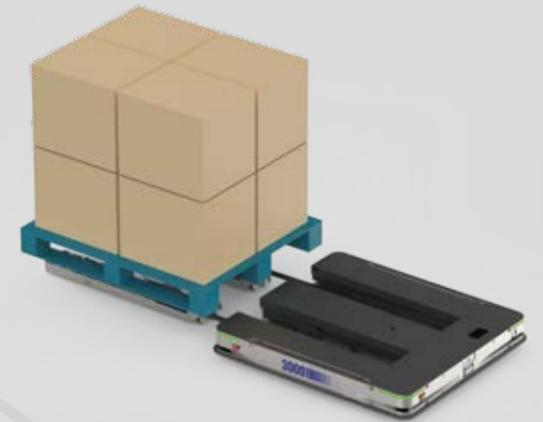

Dense Storage

Elevator

Automatic Door

E-series Function Introduction

Lifting Mechanism

Invisible Fork Arm Direct Pallet Pickup
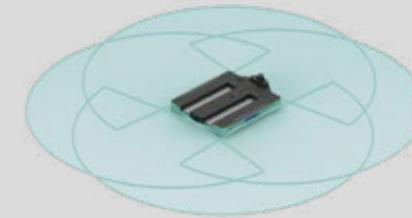
Body-Backed Operation
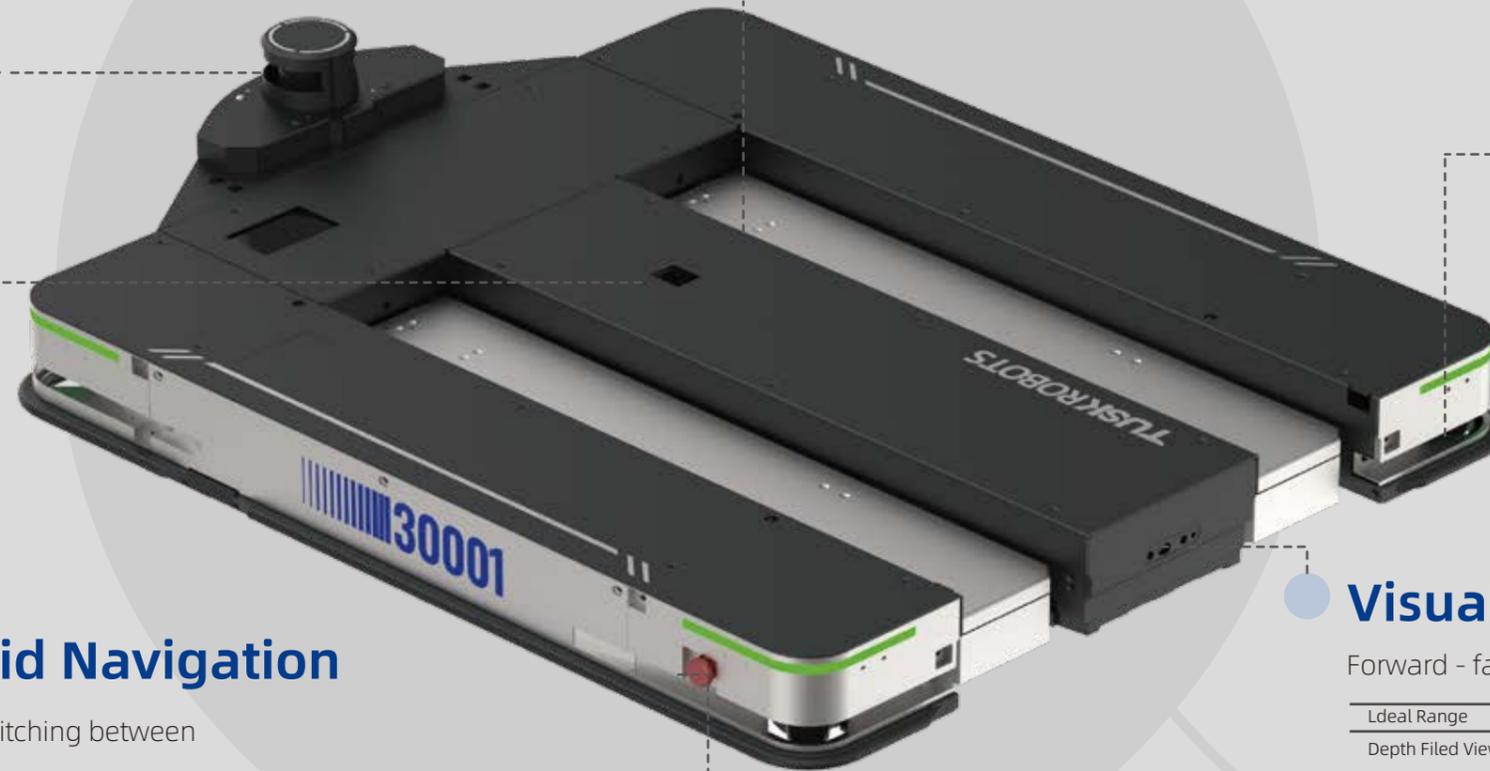
1000KG
Rated load

1.5m/s
Move Speed

8H
Battery Endurance

360° Obstacle Avoidance

4 laser configuration, 360° laser protection

Detection distance	6m
Scanning angle	270 °
Frame rate	30 fps
Resolution	0.5°/1mm
Absolute accuracy	±20mm
Protection	IP65

Visual Obstacle Avoidance

Forward - facing stereo camera, stereoscopic space protection

Ldeal Range	3m
Depth Filed View(FOV)	87°×56°
Depth Frame rate	90 fps
Resolution	1280×720

Hybrid Navigation

Hybrid Switching between

DM Code and SLAM Navigation

SLAM Laser	
Detection distance	25m
Scanning angle	360°
Frame rate	10-30 fps
Resolution	0.05°/1mm
Resistant to light interference	80000 Lux
Protection	IP65

Multi-dimensional Protection

Safety Bumper, Emergency Stop Button, Status Indicator Lights, Voice Alarm, providing real-time monitoring of APR operation status and safety protection from all directions
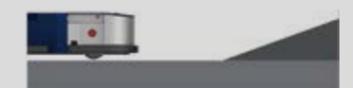
Ground Adaptability

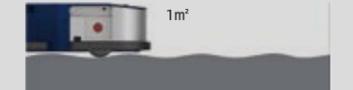**Step** H≤15mm within a range of 100mm length

Slope α≤4°

Gap L≤40mm

Surface Roughness Variation w≤5mm within 1m²

TuskE

- ### CE Certification
 Full directive CE Certification

- ### High-level Safety
  CE PLd level

- ### Multiple Vehicles
  Support National Standard and European Standard Pallets

Project	Specifications	TuskE	TuskES-H
Basic Parameters	Size(mm)	1312×1060×170 (Include the protection strip)	1479×1060×295 (SLAM component can be elevated)
	Maximum Lifting Weight (kg)	800	
	Self-Weight (kg)	310	340
	Fork Height (mm)	90(7mm downward floating height with loading)	
	Fork Stretch Out Max Limit (mm)	1400	
	Maximum Lifting Height (mm)	≤330	
	Pallet Opening Height (mm)	95-130	
	Display Screen	5 inches	
	Telecommunication Modes	Support dual-band 2.4G/5G	
Safety Protection	Obstacle Avoidance Protection	Front double laser sensors + Rear double laser sensors	
	Detection Distance of Front Laser(m)	0-3	
	Mechanical Protection	Emergency stop button，Reset button，A protection strip around the whole vehicle body	
	Caution Function	With voice and photoelectric alarm functions	
	Fork tip protection	Photoelectric sensor detection distance≤100mm, collision switch	
	Security level	PLd	
Movement Capability	Navigation Mode	DM code	SLAM + DM code Dual Navigation
	Maximum Speed (Full Load/Empty Load)(m/s)	1.2 / 1.5	
	Rated Acceleration(m/s²)	1	
	Stop Accuracy	±5mm /±1°	±20mm /±2°
	Movement Mode	Two-wheel differential	
	Ground Adaptation Gap Slope Step	40mm(Gap)/4°(7%)(Slope)/15mm(Step)	
	Maximum Slope when the Fork Extension reach to the Maximum	2°	
Lithium Battery Performance	Rated Voltage/Capacity	51.2V/30AH	
	Battery Life	The times of fully charging: 1500 times (The battery capacity is guaranted to be more than 70% of the new battery)	
	Battery Endurance/Charging Time	≥8H/≤2H	
	Battery Type	LFP	
Environment	Operating temperature(℃)	0~45	
Pallet Requirement	The Width of W1 and W2 (mm)	W1≤160，600≤W2≤900	
	Pallet Length (mm)	≤1400	≤1300

Vertical Entry Clearance

W2

W1

Pallet Length
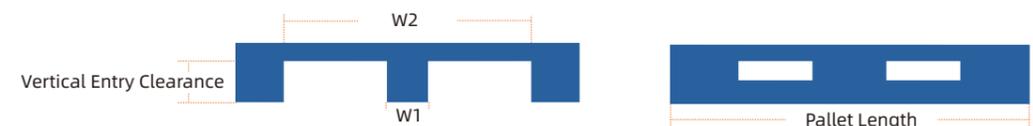
C-series Latent Mobile Robot

■ Collaborative Operations

Multi-Series Robot Collaborations
Supports Third-Party Integration

■ Safety Protection

Multiple Safety Protection Measures,
Reliable and Secure

■ Adaptable to Multiple Scenarios

Suitable for various scenarios, including warehousing, workshops, and 3PLs

Project	Specifications	C06-D	C06C-D	C10-D	C10C-D
Basic Parameters	Rated Load(kg)	600		1000	
	Overall SizeL*W*H(mm)	950×650×250		1150×820×260	
	Rotation Diameter(mm)	965		1201	
	Lifting Height(mm)	60		60	
	Ground Clearance(mm)	25		25	
	Lifting Plate Size(mm)	850×600		1030×770	
	Lifting method	Electric lifting			
	Self-weight(kg)	130		180	
	Communication method	Default WIFI dual-band, 5G optional			
	Navigation Mode	DM Code	DM Code + Laser SLAM	DM Code	DM Code + Laser SLAM
	LCD Display	Equipped			
Safety Protection	Front Protection	250° Laser			
	Rear Protection	Laser Optional			
	Collision Strip Detection	360° Inspection			
	Emergency Stop Button	One at the front and one at the rear			
	Lighting alerts	Equipped			
	Voice prompts	Equipped			
	3D Obstacle Avoidance	Optional			
Movement Capability	Maximum Speed (Full Load/Empty Load)	2.0/1.5		1.8/1.5	
	Rated Acceleration	1 m/s²		1 m/s²	
	Stop Angle Accuracy(°)	±1		±1	
	Stop Position Accuracy(mm)	±5	±10	±5	±10
	Rated Voltage(v)	30mm(Gap)/3°(5%)(Slope)/10mm(Step)		30mm(Gap)/3°(5%)(Slope)/10mm(Step)	
Lithium Battery Performance	Capacity（Ah）	51.2V / 24AH		51.2V / 40AH	
	Battery Life	Times of fully charging over 2000（Battery Capacity Ensured to be Above 70% of New Battery Level）			
	Battery Endurance/Charging Time	≥8H/≤1.5H			
	Battery Type	LFP			
Environment	Operating temperature(℃)	0~45			

Accessories

Calling Device

One-Click Call
Call tasks directly with a single button press.

Fault Location
Achieve fault location through an intelligent system.

Live Monitoring
Real-time display of task status, location information, and equipment status.

User-Friendly Operation
Visualized operational logic for easy and intuitive operation and equipment status.

Charging Station

System Control
Wireless Communication and Centralized System Control

Intelligent Control
Real-time monitoring of temperature and current
Overcurrent, Overvoltage, and Overheat Protection, Intelligent Cooling

Intelligent Identification
Charging Identity Recognition and Access Inspection

Protection
Electric Shock Protection, Protection against Motor Exposures and Foreign Object Detection

Dual-Charging Mode
Supports Manual and Automatic Mode Switching

Communication Module
Supports Dual-band WiFi and Mobile 5G Communication

Wireless Control Box

IO Interface
Provides Multiple Digital Input and Output Interface and equipment status.S

Communication Interface
Provides RS232 and RS485 Communication Interfaces

Network Connectivity
Support dual-frequency WIFI and 5G communication

Customization
Supports Customizable and Multiple Protocols.

Various Devices
Supports integration with automatic doors, elevators, signal lights, and other devices

Third Party
Supports Third-party Device Integration into the System

Instanders for forklifts

Fingerprint login
Log in through fingerprints, identify, control driving permissions;

Safety belt detection
Whether to wear a seat belt detection to ensure the driver's safety

Intelligent speed measurement
In real-time detection of forklift operation speed, providing reference and overspeed alarm for the driver
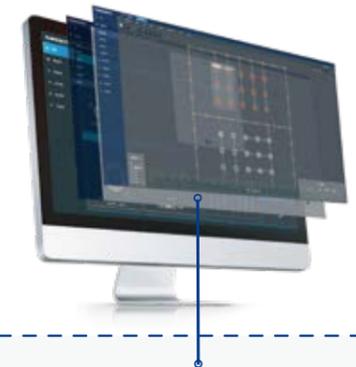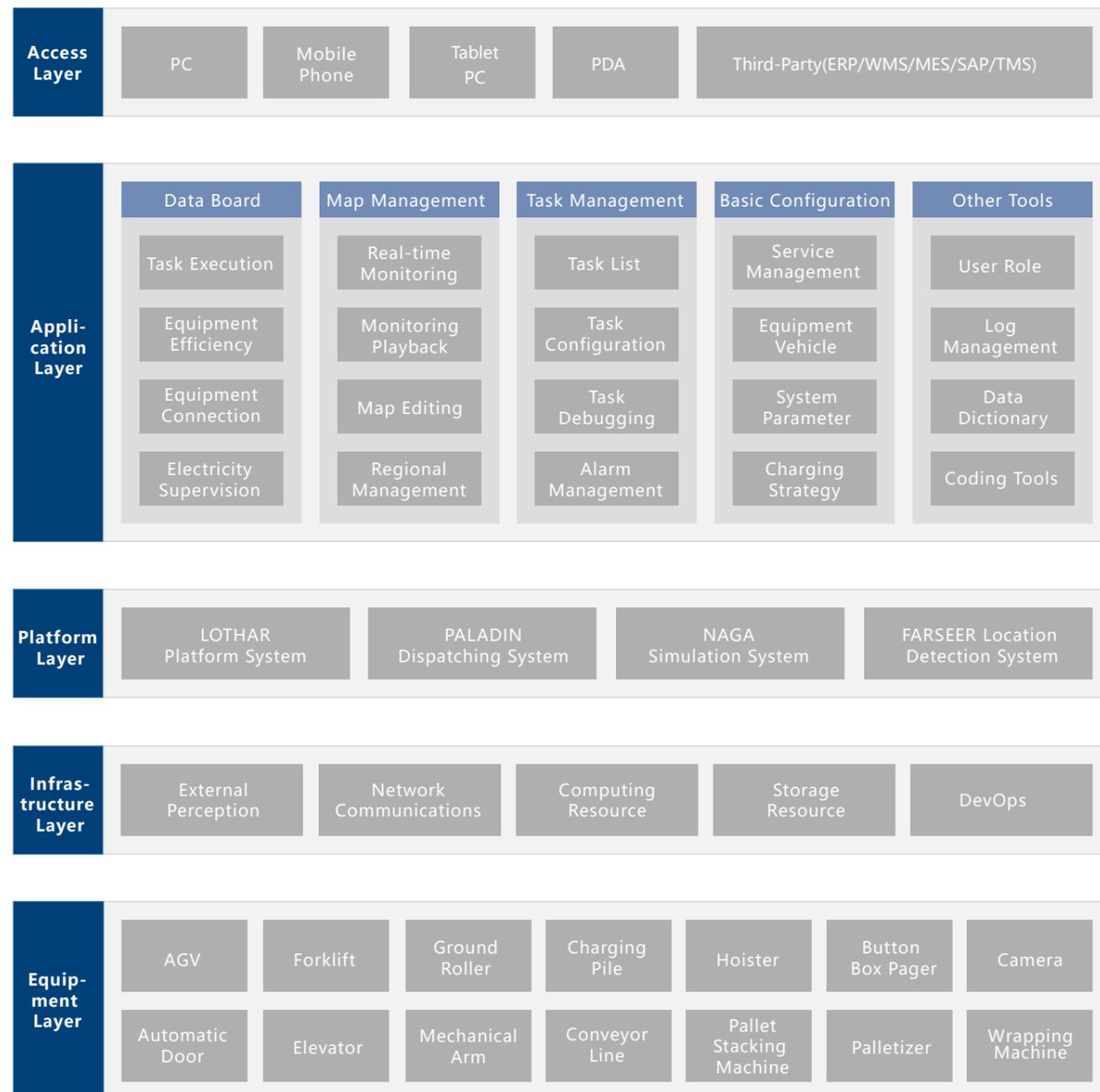
Sound and light alarm
Equipped with sound and light alarms, providing multiple sensory prompts

Software System Introduction

Tusk Intelligent Management Platform

Access Layer	PC	Mobile Phone	Tablet PC	PDA	Third-Party(ERP/WMS/MES/SAP/TMS)

Appli-cation Layer	Data Board	Map Management	Task Management	Basic Configuration	Other Tools
	Task Execution	Real-time Monitoring	Task List	Service Management	User Role
	Equipment Efficiency	Monitoring Playback	Task Configuration	Equipment Vehicle	Log Management
	Equipment Connection	Map Editing	Task Debugging	System Parameter	Data Dictionary
	Electricity Supervision	Regional Management	Alarm Management	Charging Strategy	Coding Tools

Platform Layer	LOTHAR Platform System	PALADIN Dispatching System	NAGA Simulation System	FARSEER Location Detection System

Infras-tructure Layer	External Perception	Network Communications	Computing Resource	Storage Resource	DevOps

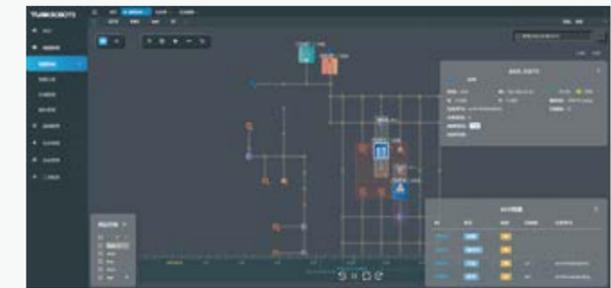| Equip-ment Layer	AGV	Forklift	Ground Roller	Charging Pile	Hoister	Button Box Pager	Camera
	Automatic Door	Elevator	Mechanical Arm	Conveyor Line	Pallet Stacking Machine	Palletizer	Wrapping Machine

Real-Time Display

Homepage Data Dashboard

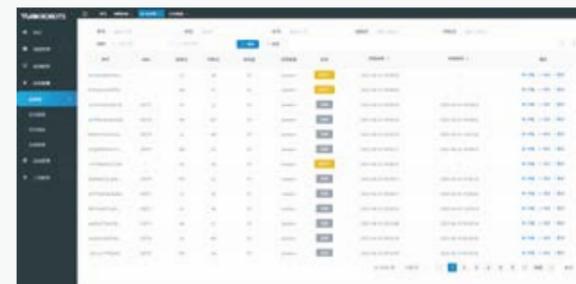Offering real-time and historical visualized data toempower data analysis and aid in business decision-making.

Real-time Map Tracking

Quick and easy visualization of map construction enables real-time monitoring of on-site conditions at project location
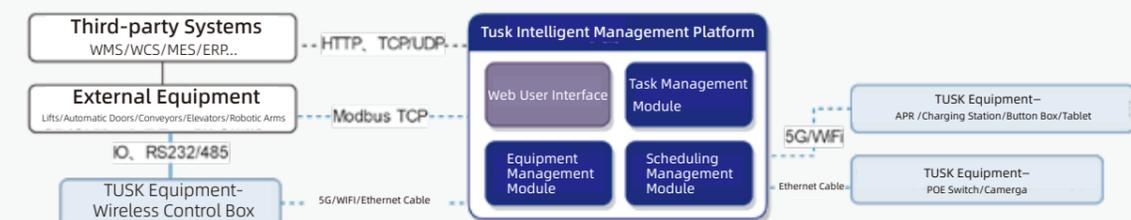
Task Management

•Transportation Mode: Combination of Point and Area Handling,

•Picking Mode: Call from Operation Station,

•Fixed Mode: Initialization, Clearing, and Organizing,

•Collaborative Mode: Multi-vehicle Collaborative Box Picking,

•Manual Mode: Manual Task Assignment, Cancellation, and Designated Charging

External Interface

Mobile Application

TUSKROBOTS' self-developed mobile app for Android devices offers real-time manaement of storage locations, zones, and device status. It facilitates quick task initiation, simple inventory management, and device anomaly alerts. With an intuitive UI design, it ensures low learning curve and easy usage for operators.

- Supports All Android Devices
- Real-time Query of Devices
- Swift Initiation of Tasks
- Exception Diagnosis
- Easy Inventory Management
- DM Code Scanning Input

TUSKROBOTS
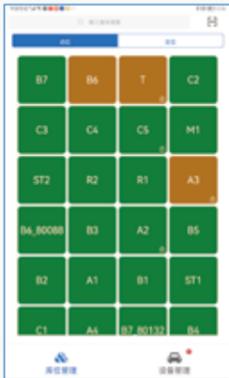
Location Management
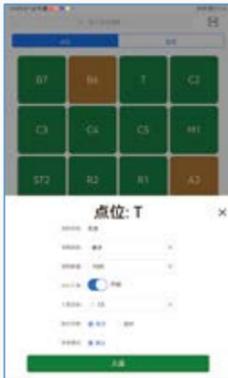
Point/Area Operation

Performing inbound and outbound operations in designated location
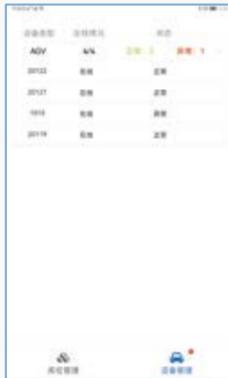
Device Management

Storage Location Visual Inspection System

The Storage Location Visual Inspection System uses deep learning image recognition to monitor storage locations in real-time. It updates information to the Tusk Intelligent Management Platform and optimizes robot deployment for factory operations accordingly.
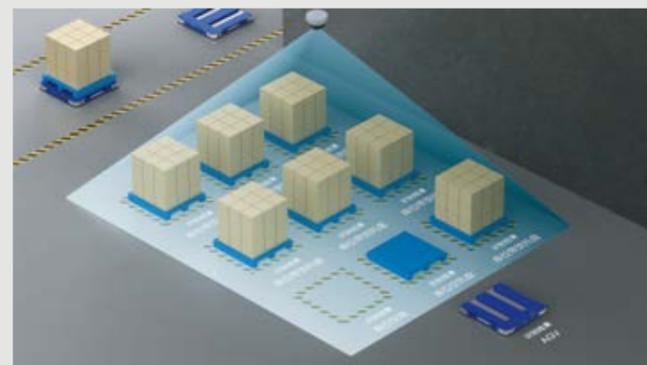
Recognizable Storage Location States

Unoccupied Ground without Pallets

Empty Pallets

Loaded Pallets
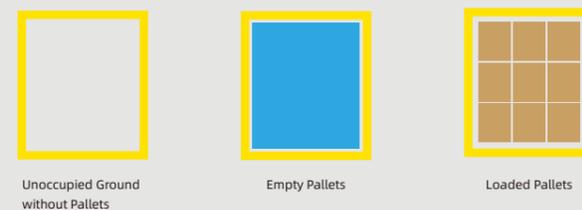
The Storage Location Visual Inspection System paired with the LEGO Task Configuration Module, offers flexible application for various business scenarios and task workflows. It enables automated triggering of pre-configured transport tasks like semi-finished product offloading, finished product offloading, raw material replenishment, empty pallet recycling, and empty pallet replenishment based on storage location status changes.

Case

Automotive Electronics Industry

Phase 2 of the APR Handling Project for Finished Products and Raw Materials at a Shenzhen Automotive Parts Manufacturer;

APR Handling Project for XAP (Electronic Group) Raw Materials and Finished Products

Pharmaceutical Industry

Intelligent APR Handling Project for Logistics in the Clean Area of a Pharmaceutical Limited Company;

APR Project for Intelligent Expandable Forklifts in a New Solid Dosage Workshop

Tobacco Industry

Automation Project for Discrete Material Handling in the Semi-Finished Tobacco Production at a Cigarette Factory;

APR Handling Project at a Central Tobacco Logistics Transfer Center

Electrical Vehicle

APR Project for Line-side Delivery of Aluminum Shells and Top Covers in a New Energy Company;

APR Project for Material Transfer at a Limited Company's Foil Materials Division

Food Industry

Cross-Floor Material Transfer Project for Raw Materials and Finished Products at a Food Company in Guizhou;

APR Handling Project for Semi-Finished Product Warehousing at a Limited Company in Fujian

Home Appliance Industry

NB Packaging Line and Warehouse Material Distribution Project in Hefei;

APR Material Handling Project in a Environmental Systems Sub-factory in Foshan

Cosmetics Industry

Logistics Industry

Furniture Industry

Printing Industry

Electronics Components Industry
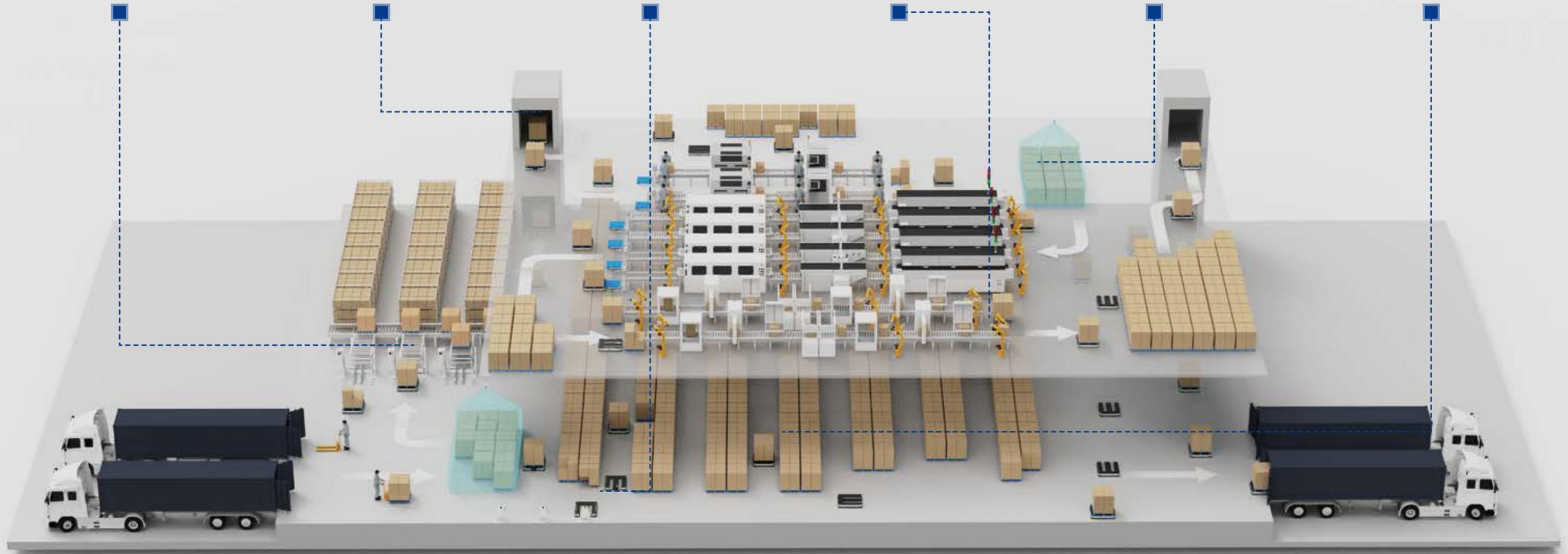
Automotive Parts Industry

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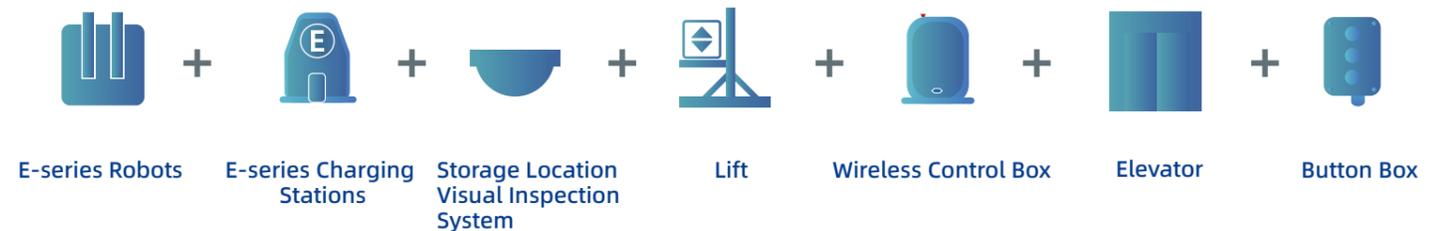Lift Docking Elevator Docking Automatic Charging Line-side Transportationv Farseer Bin Location Detection High-Density Storage

TUSK Creates Smart Factory Solutions

Based on TUSKROBOTS Autonomous Pallet-handling Robot and TUSK robot scheduling management system, in conjunction with factory automation production lines, MES, and WMS systems, the material flow paths of inbound and outbound docks, staging areas, production line areas, and semi-finished and finished goods storage areas are interconnected. This enables end-to-end traceability, control, and visualization, providing a comprehensive and integrated solution for intelligent factory logistics, covering production and inventory management.

E-series Robots + E-series Charging Stations + Storage Location Visual Inspection System + Lift + Wireless Control Box + Elevator + Button Box

Automotive Electronics Industry

APR Handling Project for XAP (Electronic Group) Raw Materials and Finished Products.

Industry Case Studies

Pharmaceutical Industry

Intelligent APR Handling Project for Logistics in the Clean Area of a Pharmaceutical Limited Company
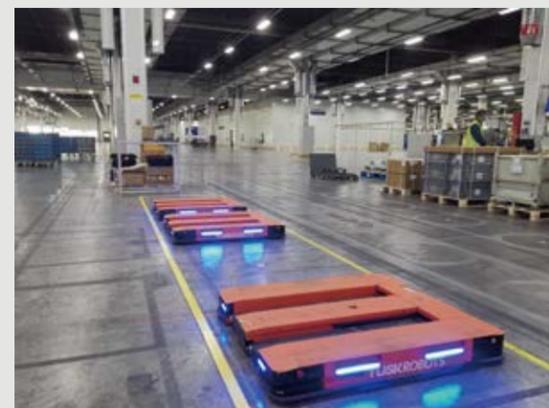
Industry Case Studies

Client Profile

- **Leading global** automotive electronics company, a **Fortune Global 500** German corporation；
- Three-shift operation with strong workforce, but delayed manual material replenishment；
- Diverse carrier categories lacking process monitoring, resulting in high management costs.

Solution

- **Button call system** for seamless raw material replenishment and finished product transfer；
- **360° laser safety protection** with intelligent human-machine interaction for collision avoidance；
- Real-time integration with WMS/JIS digital systems for online monitoring through data fusion；
- Standardization of 16 pallet types down to **4**, reducing management costs；

Project Value

Average daily operation 18 hours

More than 25% Efficiency Increase

ROI 1.5 years

Cost reduction and efficiency enhancement

Stable Operation with 2 Repurchases in 2 years

Client Profile

- A nationally recognized innovative enterprise engaged in the research, production, and global distribution of novel pharmaceuticals；
- Challenges include low manual labor efficiency in multi-floor, multi-zone warehouse transfers；
- Varied sterilization requirements across zones make manual aseptic handling **difficult to control**；

Solution

- Automatic distribution and transfer of packaging materials, raw materials, and finished products in **multiple zones**；
- Full automation with **elevator integration** for efficient multi-floor operations；
- SLAM + DM code **hybrid navigation** for adapting to various environmental requirements in different areas；
- Zone-based door control switching and **automatic disinfection and sterilization**；

Project Value

20 Units of APRs Utilization

Cost Reduction and Efficiency Enhancement

Inter-Floor Transportation

Hybrid Navigation Operations

Home Appliance Industry

NB Packaging Line and Warehouse Material Distribution Project in Hefei

Industry Case Studies

Electrical Vehicle

APR Project for Line-side Delivery of Aluminum Shells and Top Covers in a New Energy Company

Industry Case Studies

Client Profile

- A famous enterprise in the home appliance manufacturing industry looking to establish an intelligent, lean **benchmark factory**;
- Operates 24/7 with high labor intensity, leading to fatigue issues;
- Facing high labor cost and recruitment challenges;
- Current inventory management lacks **material information integration**;

Solution

- Achieved automated material transfer within the workshop and at the production line side by integrating APR.
- APR automatically docks with **the hoister**, enabling cross-floor material transfer for production;
- **Customized business processes** integrated deeply with the customer's MES, enabling end-to-end automation and flexibility in production;

Project Value

More than 30% Efficiency Increase	Reduction of 15 Personnel	Cost reduction and increased efficiency	Flexible, efficient, and safe production

Client Profile

- A well-known domestic high-tech enterprise established in 1995, leading in multiple fields such as batteries, electronics, and automobiles;
- Working across multiple floors, long-distance transportation, resulting in high-intensity labor and **high safety risks**;
- **Low efficiency** in temporary storage management and material handling interactions;

Solution

- Pallet handling of foil and electrode materials for warehouse inventory, including cross-floor transportation, with **high-precision alignment** to elevators within **±5mm**;
- Customized carriers equipped with automatic recognition capabilities, compatible with various equipment;
- Real-time integration with WMS for end-to-end visibility and control throughout the process;

Project Value

Over 80 Units of APRs Utilization	More than 35% Efficiency Increase	Multiple Project Launches Across Locations	Customized Carriers	Visualized Tracking

Food Industry

Cross-Floor Material Transfer Project for Raw Materials and Finished Products at a Food Company in Guizhou

Industry Case Studies

Tobacco Industry

Automation Project for Discrete Material Handling in the Semi-Finished Tobacco Production at a Cigarette Factory

Industry Case Studies

Client Profile

- Positioned as a high-quality chain bakery brand, occupying a modern industrial park of over 60,000㎡;
- Chain-operated business with high production capacity and **stringent delivery schedule accuracy requirements**;
- Involves long-distance, cross-floor material handling, with a heavy reliance on manual labor that faces staffing instability;
- Complex passageways and transfer areas, with a high risk to personnel safety;

Solution

- PDA task instructions are issued promptly, ensuring seamless task execution;
- Efficient transportation with seamless transitions **across floors and diagonal warehouse** map locations;
- Utilizes 5G device communication for low latency and high stability;
- Employs SLAM+DM code **hybrid navigation** for highly adaptable environmental navigation;

Project Value
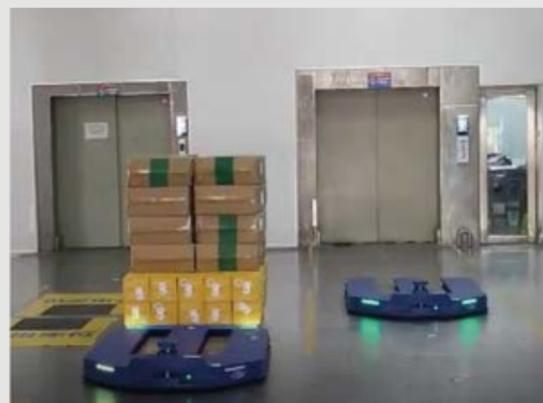
8 Units of APRs Utilization	Reduction of 6 Personnel	Increase in Inventory by Over 30%	Hybrid Navigation Operations	5G Communication

Client Profile

- Well-known tobacco industry corporation with 6 major cigarette production plants;
- Multiple on-site handling scenarios with long transportation distances, imposing significant manual labor;
- High-stacked goods pose substantial safety risks during handling;

Solution

- Automated Integration of **Robotic Arm** for Unpacking and Palletizing;
- **Double-Stacking** of Tobacco Bales in the Casing Box for **Enhanced Stability and Safety** during Transportation;
- **360° Laser** Safety Protection for Effective Hazard Elimination;
- Real-time Integration with WMS Digital System for Data Fusion and Online Monitoring;

Project Value

Over 20 Units of APRs Utilization	Reduction of 6 Personnel	Stable Operation for Over 1 Year	360° Laser Safety Protection	Precision Integration

Automotive Parts Industry

Advancing Automated Multi-Vehicle Collaboration in the Logistics of an Automotive Parts Enterprise

APR Creator

Expert in Pallet Handling Scenarios

Product and Solution Consulting

info@tuskrobots.com

Marketing Department

marketing@tuskrobots.com

Information Share
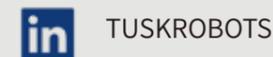
Offcial Website

www.tuskrobots.com

Contact us

440-8808-310

Official Wechat

in TUSKROBOTS

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Client Profile

- Established in 1972, a world-leading automotive technology manufacturer with a global sales presence;
- Significant safety hazards exist due to **the coexistence of numerous manual material handling equipment** in the workshop;
- Dependence on manual operations for goods in/out and transfers, leading to delayed response to demands;
- Complex working conditions, **diverse carriers**, and high difficulty in task allocation and vehicle scheduling;

Solution

- APR seamlessly **integrates with third-party equipment** for efficient transfers and automated outbound processes;
- Combining with the **C-series Submersible Lifting Robot** can ensure precise material distribution and automatic retrieval of empty carts;
- TUSK Visual Inspection System autonomously updates inventory statuses, enabling **human-machine collaboration** and one-click deliveries;

Project Value

| 30% Efficiency Improvement | RReduction of 30 Personnel | Precise and Efficient Human-Machine Interaction | Collaborative Operation of Different Types of Equipment |

APR Creator

GUANGDONG TUSKROBOTS CO., LTD

Foshan Office
2/F, Building A1, XingZhongChuang Xiabei Hi tech Industrial Center, Nanhai District, Foshan City, Guangdong Province
Shanghai Office
No.21C, Caohejing Science Park, Pujiang, No. 2388, Chenhang Road, Minhang District, Shanghai
Beijing Office
6/F, Independent Innovation Building, No. 6, Chuangye Road, Haidian District, Beijing