

PUDU MP2000

AI-Native Pallet Handling Robot

Decision in Motion





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Product Overview

Product Positioning · Design · Specifications

PUDU MP2000

MP2000: Born for Pallet Handling



Intelligent Floor-to-Floor Pallet Handling AMR

Focusing on floor-to-floor transport, turning complex project-based unmanned pallet jack capabilities into a standardized product that can be replicated easily and quickly.

Target customers: Express Logistics, E-commerce Warehousing, Manufacturing.

Scenarios: Loading Docks, Warehouses, Line-side Storage, Production Workshops.

Tasks: Point-to-Point, Point-to-Area, and Area-to-Area Transport.

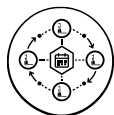
Value: Faster Deployment, Higher Throughput, Less Manual Intervention.

Six Capabilities for an Autonomous Logistics Loop



Plug-and-Play

3D SLAM · Onboard Intelligence · Mapping in Minutes



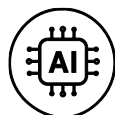
Fleet Orchestration

Autonomous Decisions · Offline Multi-Robot Coordination



Omni-Sense Safety

Multi-Sensor Suite · Stop-and-Avoid / Detours · Proactive Alerts



AI-Native Autonomy

AI Self-Learning · Dynamic Storage Locations · Load Profile Measurement



20s Fork Insertion

20s Fork Entry · 1.6 m/s



IoT Integration

IoT Expansion · Flexible Auto/Manual Switching



Key Components: Safety Operation



Top-view Camera

Warning Light

Safety Contour
Projector

Front-view
Camera

3D LiDAR

Emergency Stop

Indicator Light

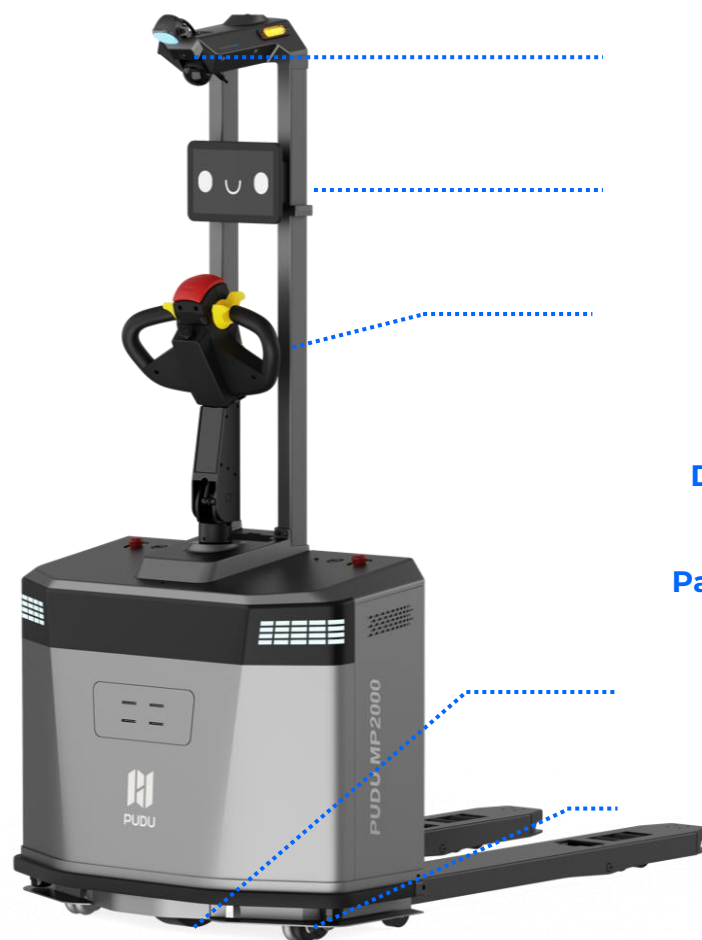
Collision Switch

2D LiDAR





Key Components: Intelligent Operation



Front-view
Camera

LCD Screen

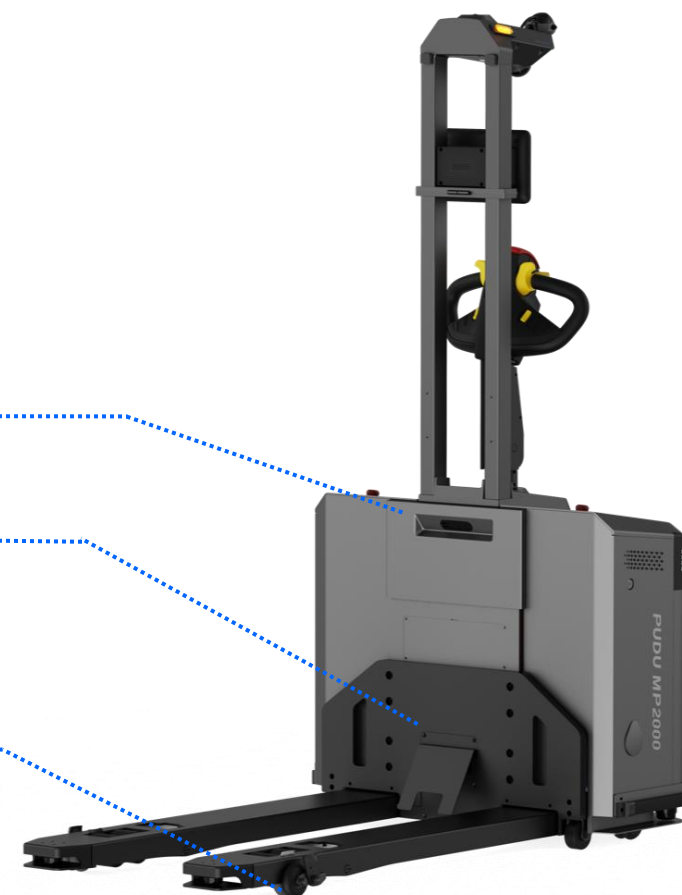
Tiller Handle

Depth Camera

Pallet in-position
Sensor

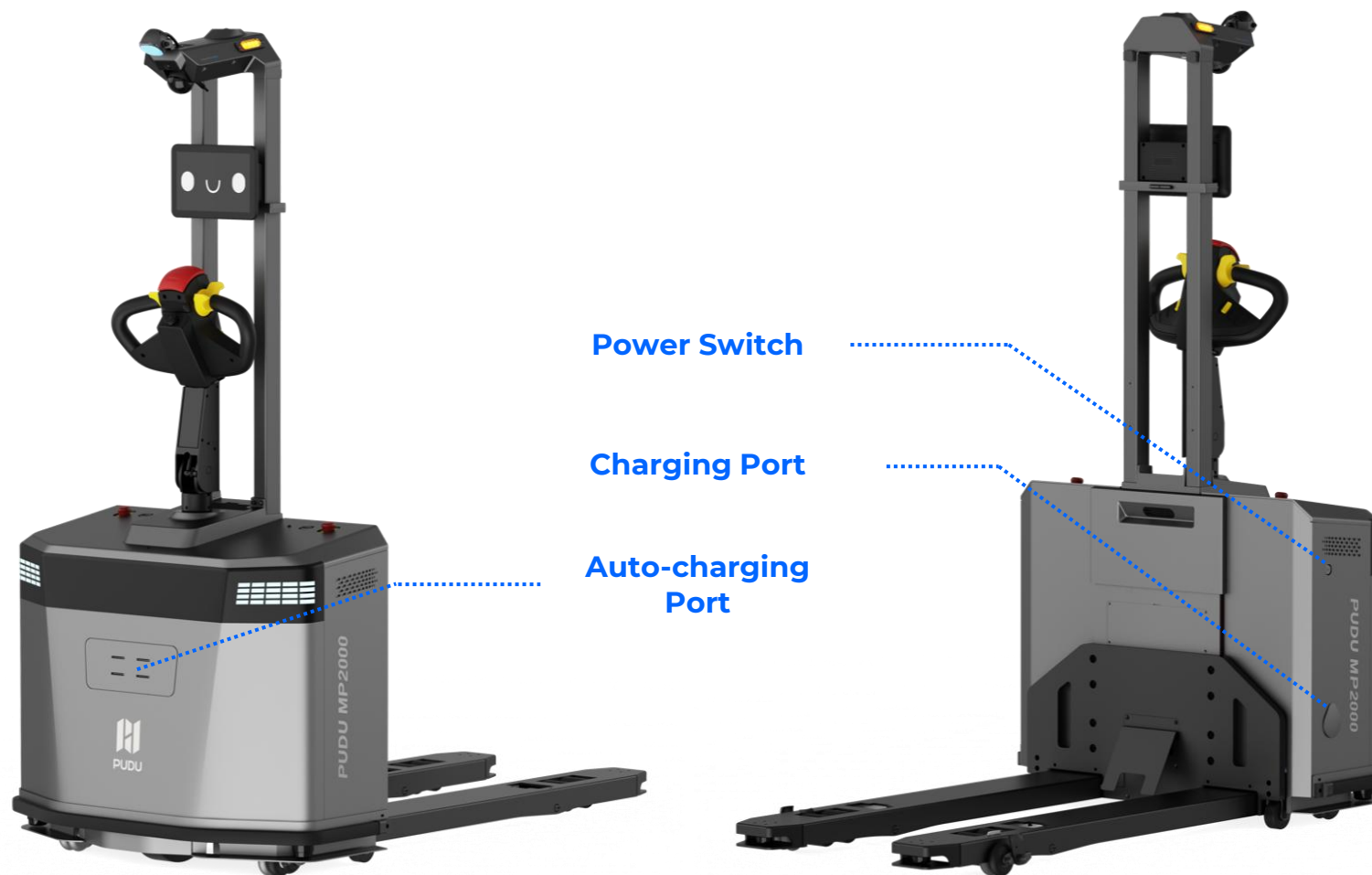
Drive Wheel

Auxiliary
Wheel





Key Components: Flexible Charging



Key Specs: 2 t Pallet Transport

 Payload 2000 kg 	 Fork Entry 20 s 	 Unloaded / Loaded Speed 1.6 / 1.2 m/s	 Operating Endurance Up to 12 h 
 Deployment Speed Minutes 	 Fork Lifting Height Range 80-200 mm	 Fork Outer Width (2 SKUs Available) 550 / 620 mm	 Max. Pallet Offset / Angular Deviation 15 cm/15° 
 Min. Straight Aisle Width (Unloaded) 1.1 m 	 Right-angle Stacking Aisle Width 2.0 m 	 Threshold / Gap Crossing 10/35 mm	 Gradeability Loaded / Unloaded 3°/8°

Specifications subject to the jointly confirmed highlights matrix and parameter sheet.



MP2000 Detailed Specifications

PRODUCT SPECIFICATIONS

Basic Specs	Overall dimensions	1585 x 910 x 1870 mm	Safety Specs	Laser obstacle avoidance	Front dual LiDARs
	Overall weight	420 kg		3D obstacle avoidance	3D LiDAR-based obstacle avoidance
	Max. load	2000 kg		Bumper detection	Available
	Max. lift height	200±5 mm		Pallet position detection	Available
	Lowered fork height	80±5 mm		Emergency stop button	Available
	Turning radius	1350 mm		Warning light	Available
	Right-angle stacking aisle width	≤2000 mm, 1200*1000 mm Pallet (1200 along forks) ≤1960 mm, 1200*800 mm Pallet (1200 along forks)		Outline light	Available
	Fork dimensions (L × W × H)	1130 x 160 x 60 mm		Fork-tine safety protection	Fork-tip laser
	Fork outer width	620 mm (24.41 inches)		Audible and visual alarm	Available
	Navigation method	3D LiDAR-SLAM, VSLAM	Battery Specs	Nominal voltage	DC 51.2 V
	Operating environment	Temperature: 0 °C to 45 °C; humidity: ≤ 85% RH		Rated capacity	54.9 Ah
	Storage environment	Temperature: -20 °C to 60 °C; humidity: ≤ 85% RH		Charging method	Automatic/Manual
Operating Performance	Road surface requirements	Indoor environment with flat, smooth surfaces		Charging time	About 2 h, input voltage 200V~240Vac About 3.2h, input voltage 100V~120Vac
	Pallet misalignment tolerance	≤15°		Battery life	12 h (None load); 6 h (Max. load)
	Max. speed	1.2 / 1.6 m/s (Loaded/Unloaded)			
	Max. surmountable height	10 mm			
	Max. surmountable gap	35 mm			
	Gradeability	3°/ 8° (Full Load/Unloaded)			



MP2000 Detailed Specifications

PRODUCT SPECIFICATIONS

Basic Specs	Overall dimensions	62.40 x 35.83 x 73.62 inches	Safety Specs	Laser obstacle avoidance	Front dual LiDARs
	Overall weight	925.94 lbs		3D obstacle avoidance	3D LiDAR-based obstacle avoidance
	Max. load	4409.25 lbs		Bumper detection	Available
	Max. lift height	7.87±0.20 inches		Pallet position detection	Available
	Lowered fork height	3.15±0.20 inches		Emergency stop button	Available
	Turning radius	53.15inches		Warning light	Available
	Right-angle stacking aisle width	≤78.74 inches, 48*40 inches Pallet (48 along forks) ≤77.17 inches, 48*31.5 inches Pallet (48 along forks)		Outline light	Available
	Fork dimensions (L × W × H)	44.49 x 6.30 x 2.36 inches		Fork-tine safety protection	Fork-tip laser
	Fork outer width	550 mm (21.65 inches)		Audible and visual alarm	Available
	Navigation method	3D LiDAR-SLAM, VSLAM	Battery Specs	Nominal voltage	DC 51.2 V
	Operating environment	Temperature: 0 °C to 45 °C; humidity: ≤ 85% RH		Rated capacity	54.9 Ah
	Storage environment	Temperature: -20 °C to 60 °C; humidity: ≤ 85% RH		Charging method	Automatic/Manual
	Road surface requirements	Indoor environment with flat, smooth surfaces		Charging time	About 2 h, input voltage 200V~240Vac About 3.2h, input voltage 100V~120Vac
	Pallet misalignment tolerance	≤15°		Battery life	12 h (None load); 6 h (Max. load)
	Max. speed	2.7 / 3.6 mph (Loaded/Unloaded)			
	Max. surmountable height	0.39 inches			
	Max. surmountable gap	1.38 inches			
	Gradeability	3°/ 8° (Full Load/Unloaded)			
Operating Performance					



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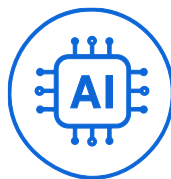
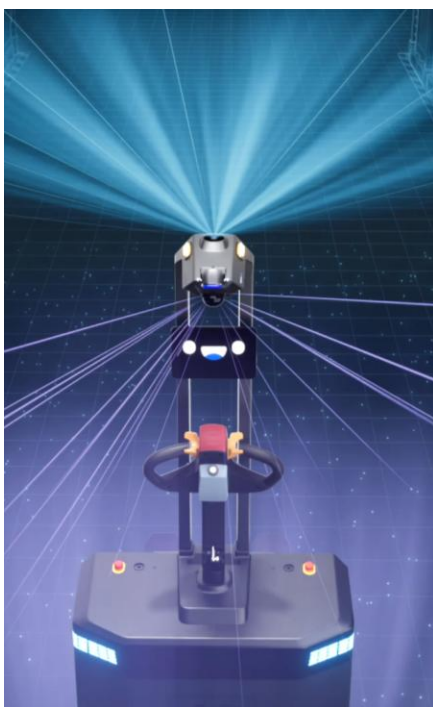
From Rapid Deployment to All-Around Safety



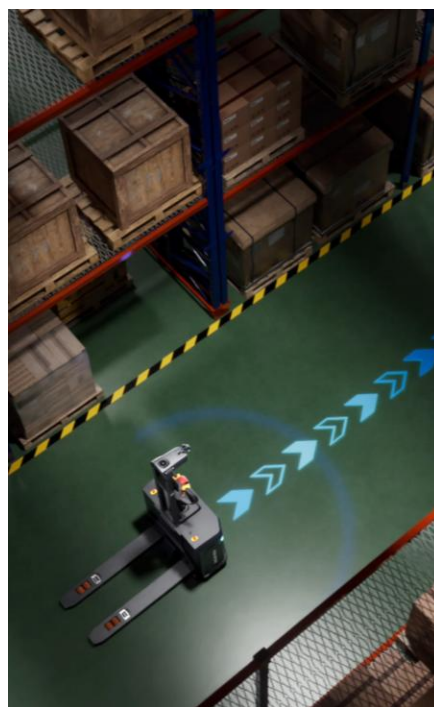
True Automation Does More Than Move



Perceive



Decide



Execute



Collaborate



Plug-and-Play

No Site Retrofit. No Platform Dependency.
Intelligence Goes Straight to Work.



3D SLAM

Vision & 3D LiDAR
Positioning

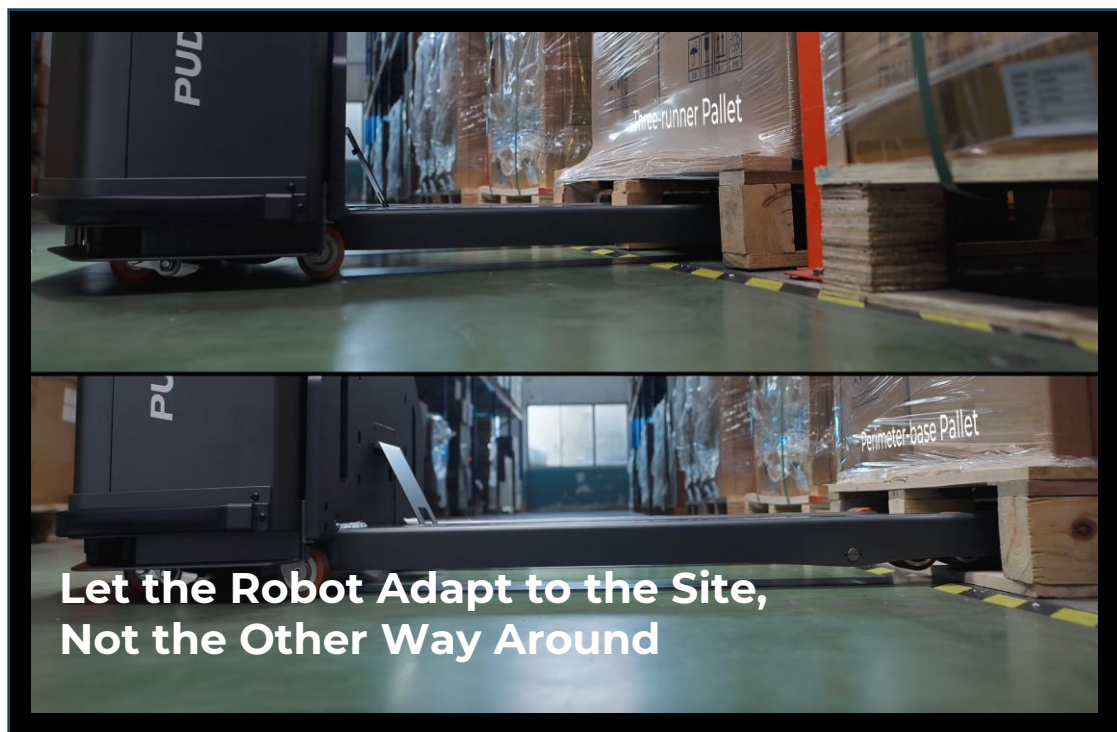
Zero Retrofit

No Reflectors or Floor Markers Needed

Edge-side Closed Loop

Each Robot Completes Core
Tasks Independently

Self-Learning AI for Versatile Load Carrier Compatibility

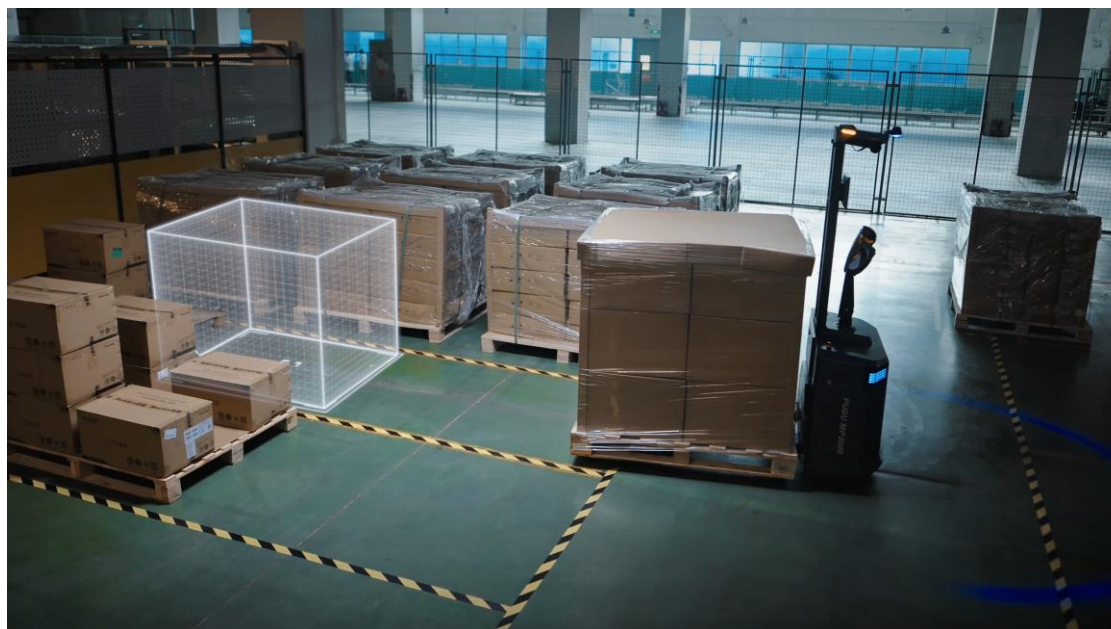
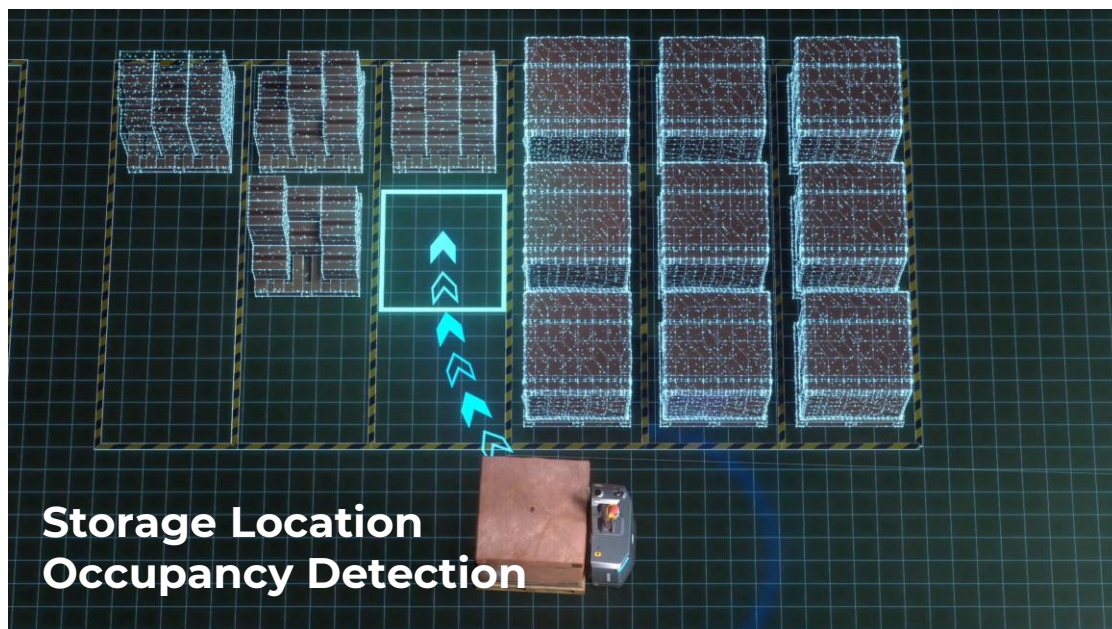


Three-runner & Perimeter-base Pallets



Custom Load Carriers

AI Storage Detection, Seamless Pallet Handling



Automatically detects slot availability and pallet positions, then selects the optimal pickup or drop-off point and plans the route for fully autonomous handling.

Adaptive Alignment, Precise Fork Engagement

No manual realignment required. PUDU MP2000 detects the load carrier's position and angle, then automatically adjusts its fork-entry path.

It handles offsets of **up to 15 cm** and angular deviations of **up to 15°**, ensuring precise, reliable pickup even in complex environments.

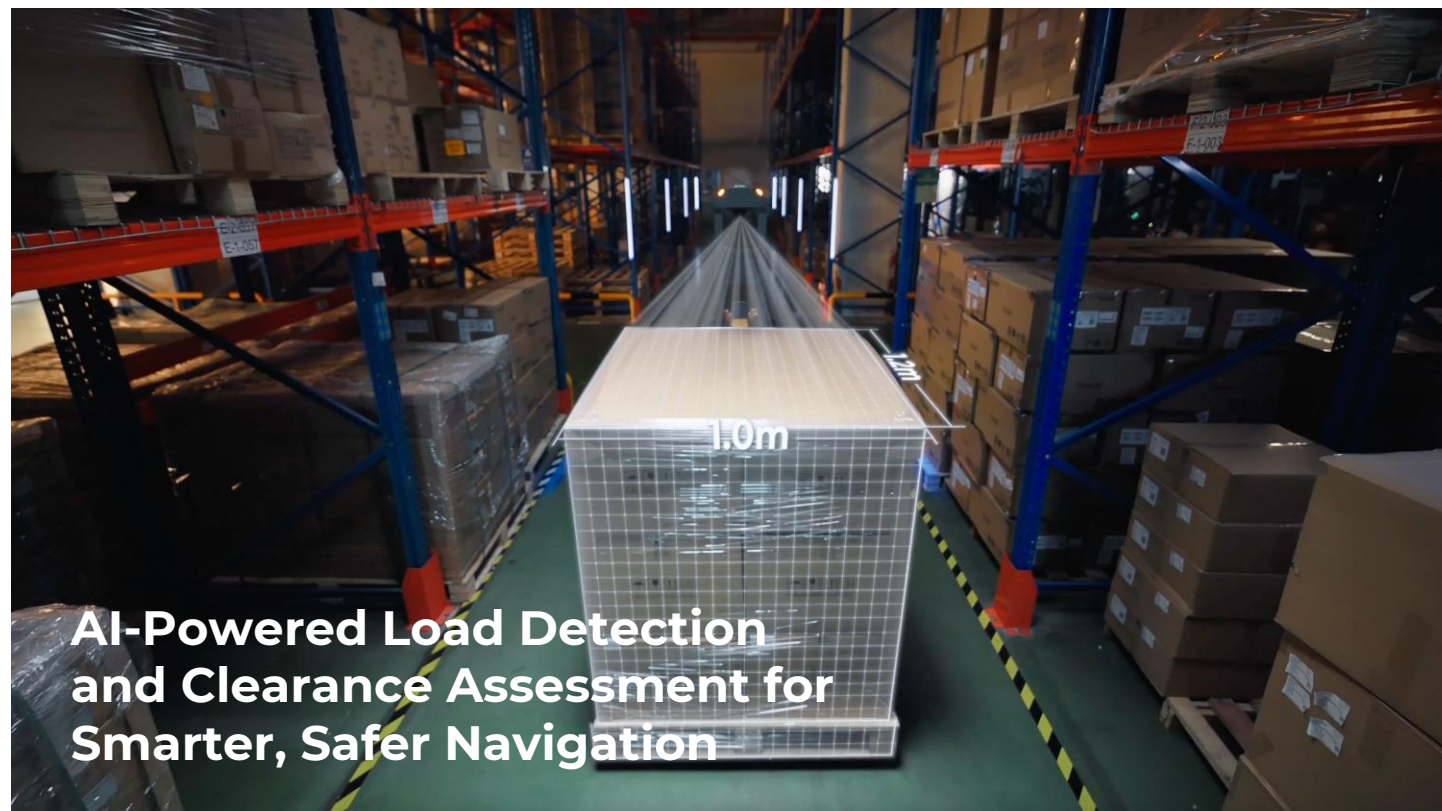


15 cm / 15°

Offset / Deviation Tolerance

Intelligent Clearance Assessment

Detects load dimensions and contours to calculate the space required for safe passage in real time. Handles thresholds **up to 10 mm** and gaps **up to 35 mm** in complex environments.



Fleet Orchestration

**No network or server required,
enabling multiple devices to collaborate
autonomously on site.**

Intelligent Traffic Zone Control

Autonomous Planning and Traffic Scheduling

Distributed Autonomous Collaboration

No Network or Server Prerequisites



20s Fork Insertion

Shorten Every Pickup.
Extend Every Productive Day.

20 s

Complete Fork Entry

1.6 / 1.2 m/s

Unloaded / Loaded Speed

More Storage in Narrow Aisles

Handles 90° pallet pickup in aisles **as narrow as 2 m**, with pallet spacing down **to 15 cm**. Maximizes storage space and supports business growth without facility expansion.



**Right-Angle Pickup in
2 m Aisles, Agile in Tight Spaces**

2.0 m

Right-Angle Stacking Aisle Width

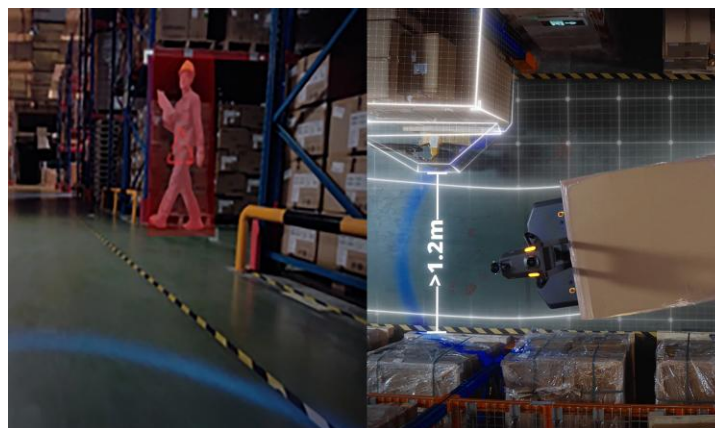
Omni-Sense Safety

Continuously detects personnel, vehicles, loads, and obstacles, enabling risk-based driving decisions.



360°

Multi-Sensor Protection



Reroutes Around Static Obstacles, Stops for Moving Ones

Full 3D Spatial Awareness



Audible and Visual Alerts

Clear, At-a-Glance Status

IoT Integrations



PUDU Link



PUDU Pager



**Elevator
Control Module**



**Automatic
Door Control**



**Auto-charging
Station**

Send tasks via **PUDU Link**, **APIs** or **task Pager** across mobile, system and site endpoints. Integrate elevator control, pagers and other IoT accessories as needed.

Flexible Task Dispatch Methods for Every Need

PUDU Link



Connect the PUDU Link app to dispatch tasks directly

Minutes



Robot Screen Trigger



One-tap task trigger on the robot screen

Minutes



PUDU Pager



IoT Module

Hours



PDA Scan

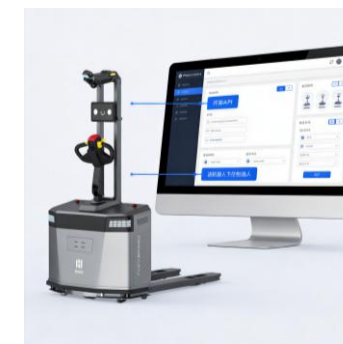


Scan with a PDA using slot information to dispatch tasks

< 1 Day



API Dispatch



Open API Interface

1-2 Months

Flexible Dual-Mode Operation

Seamlessly switches between autonomous and manual modes, handling routine tasks independently while allowing operator assistance when needed for reliable, continuous operations.



Manual Mode



Autonomous Mode

Six Capabilities Deliver Three Outcomes



Faster Deployment



No Site Retrofit



Onboard Intelligence Loop



Rapid Mapping and storehouse building



More Reliable Operations



Autonomous localization and obstacle avoidance



Offline Fleet Collaboration



Human-machine Dual Control



Higher Throughput



20-second Fork Entry



High-speed Heavy-load Transport



24/7 Energy Management



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B01
-06

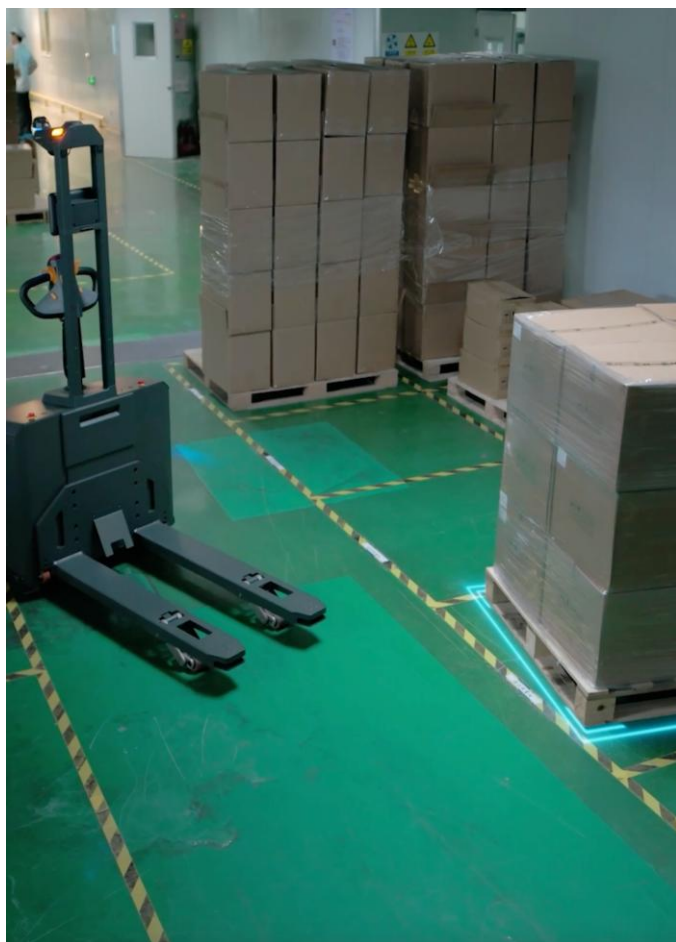
B01

Product Applications

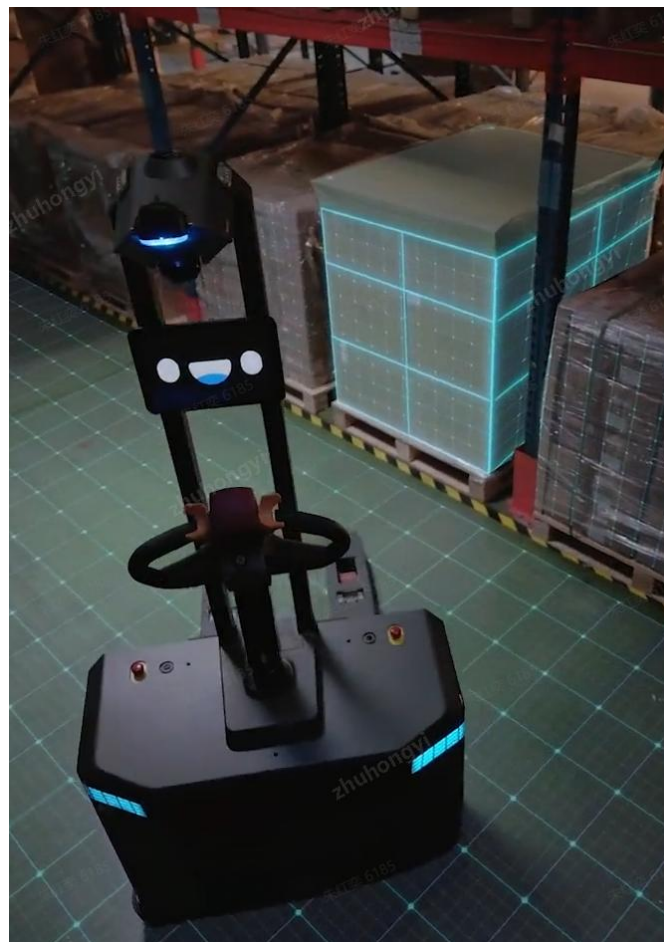
Transport Modes • Typical Scenarios • PISTF



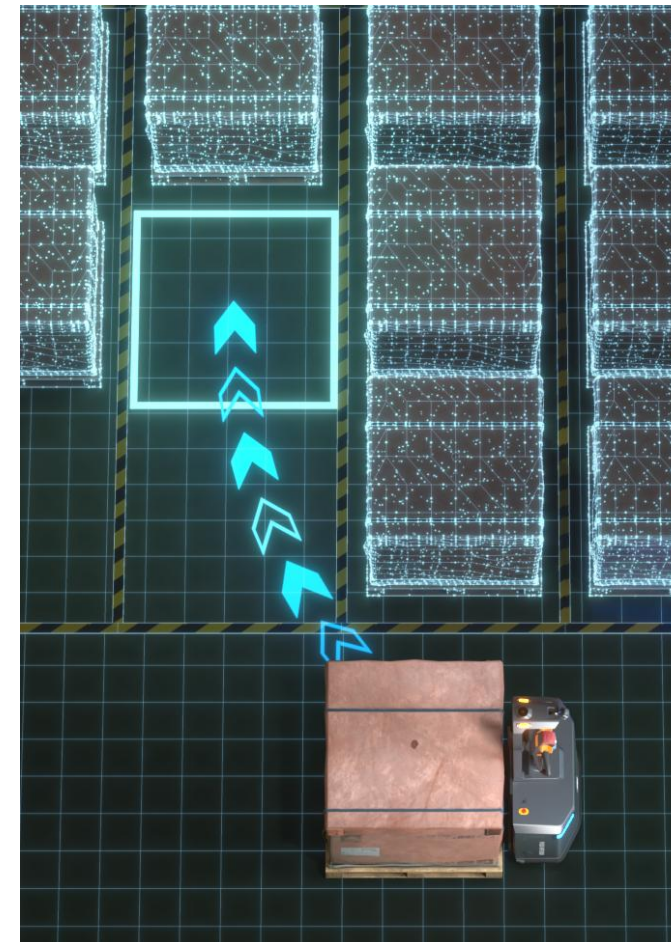
Three Pick-and-place Environments



Single-Point Pick & Place



Bin Location Pick & Place



Grid-Based Pick & Place

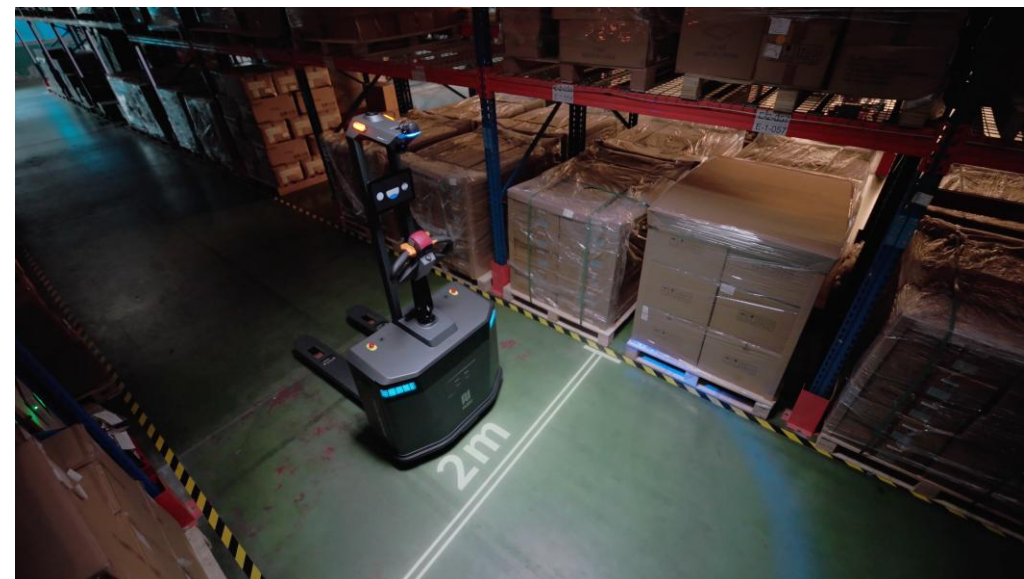
Single-point Pick & Place: Accommodates pallet misalignment, Reliable in Narrow Aisles



Pain points : Inconsistent manual operations lead to significant placement deviations.

Industry Average: Tolerates 5 cm offset and 5° deviation.

PUDU Advantage: Tolerates **15 cm lateral offset** and **15° angular deviation** for reliable fork entry without repeated pallet adjustment.

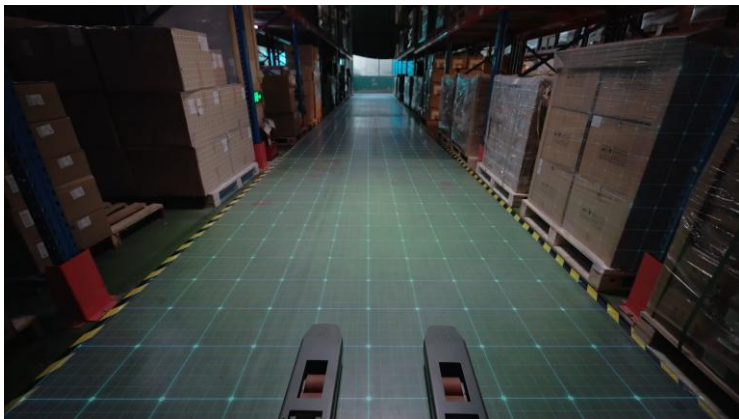


Pain points: Early site planning leaves insufficient aisle clearance.

Industry Average: Detour through wider aisles when faced with narrow passages.

PUDU Advantage: **2.0 m right-angle stacking aisle** and **1.1 m unloaded passability** for stable operation in tight spaces.

Bin Location Pick & Place: Multi-carrier Compatibility and Active Obstacle Avoidance



Pain points: Mixed pallet types and sizes across upstream and downstream operations.

Industry Average: Relies on standardized pallet specifications, with limited compatibility.

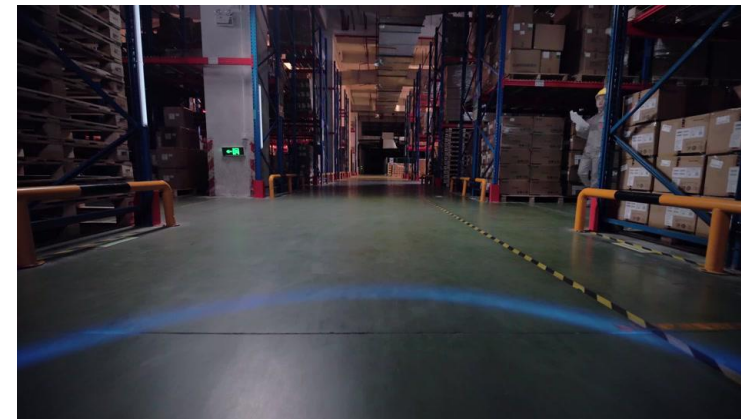
PUDU Advantage: Compatible with **three-Runner Pallet and Perimeter-base pallets**; **AI self-learning** adapts to diverse load carriers and reduces retrofit costs.



Pain points: Unstructured operations leave temporarily stored goods blocking aisles.

Industry Average: Stops in place for static obstacles, causing route blockage and task delays.

PUDU Advantage: 3D and 2D LiDAR identify static obstacles and route around them autonomously.

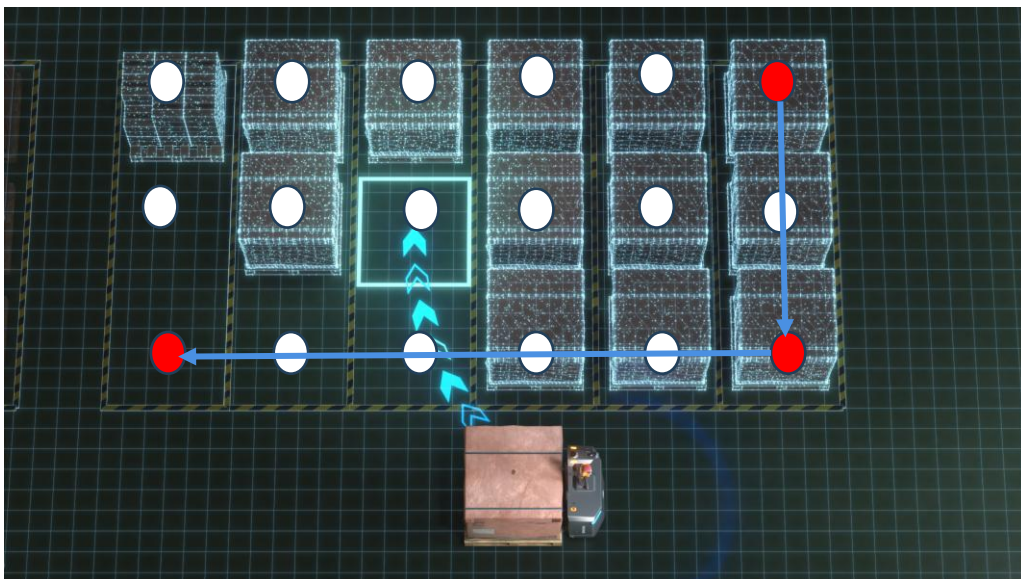


Pain points: Manual inventory checks, cargo inspection, and human-vehicle safety monitoring.

Industry Average: Limited ability to identify unexpected personnel, forklifts, and other dynamic hazards.

PUDU Advantage: Multi-sensor recognition enables proactive avoidance and clear status alerts for safer operations.

Grid-Based Pick & Place: Detect Occupancy and Automatically Selects Target Locations



Pain points: Storage-location setup is time-consuming.

Industry Average: Locations must be manually measured, entered, and labeled.

PUDU Advantage: Scan the start & end of a storage-location group to generate location data automatically, reducing setup time **by 80%**.



Pain points: Limited on-device intelligence requires complex systems to monitor location status.

Industry Average: Ceiling cameras and a central control system assign pick-and-place points.

PUDU Advantage: On-device **AI identifies location occupancy**, locks target locations, plans routes, and reports status autonomously, reducing implementation complexity and investment costs.

Four Core Transport Modes Cover Major Pallet-handling Tasks

Point → Point

Precise Transport Between Fixed Workstations



Precise Positioning



Fixed Route



Safe and Reliable



Point → Area

Workstation to Buffer



From Workstation



Autonomous Navigation



Buffer Transfer



Area → Point

Replenish the production line from a staging area



Pick Up from Staging



Route Planning



Line Delivery



Area → Area

Batch circulation across zones



Cross-zone Scheduling



Batch Transport



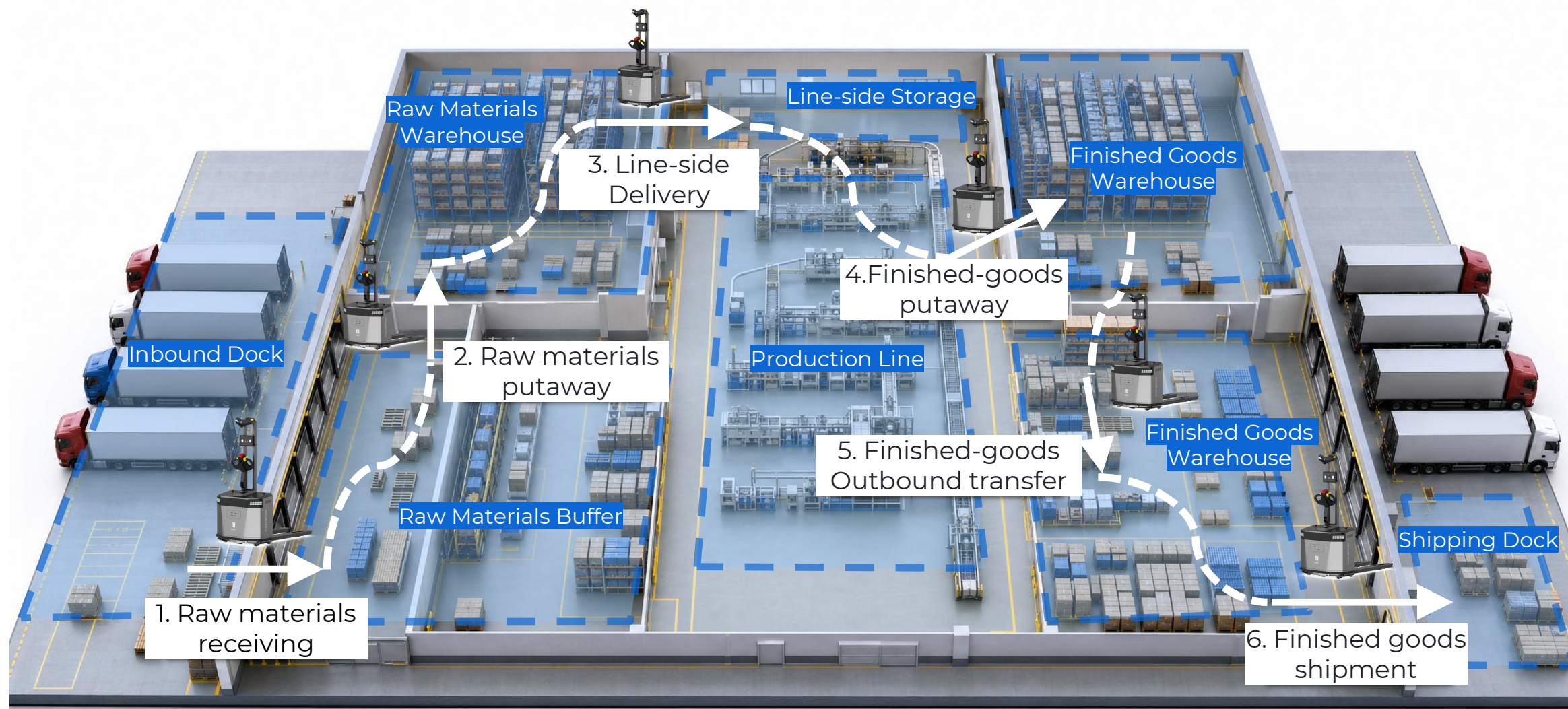
Efficient Turnover



Industrial Scenario: Connect Logistics Before and After the Line

 Zone Layout  MP2000 Logistics Coverage

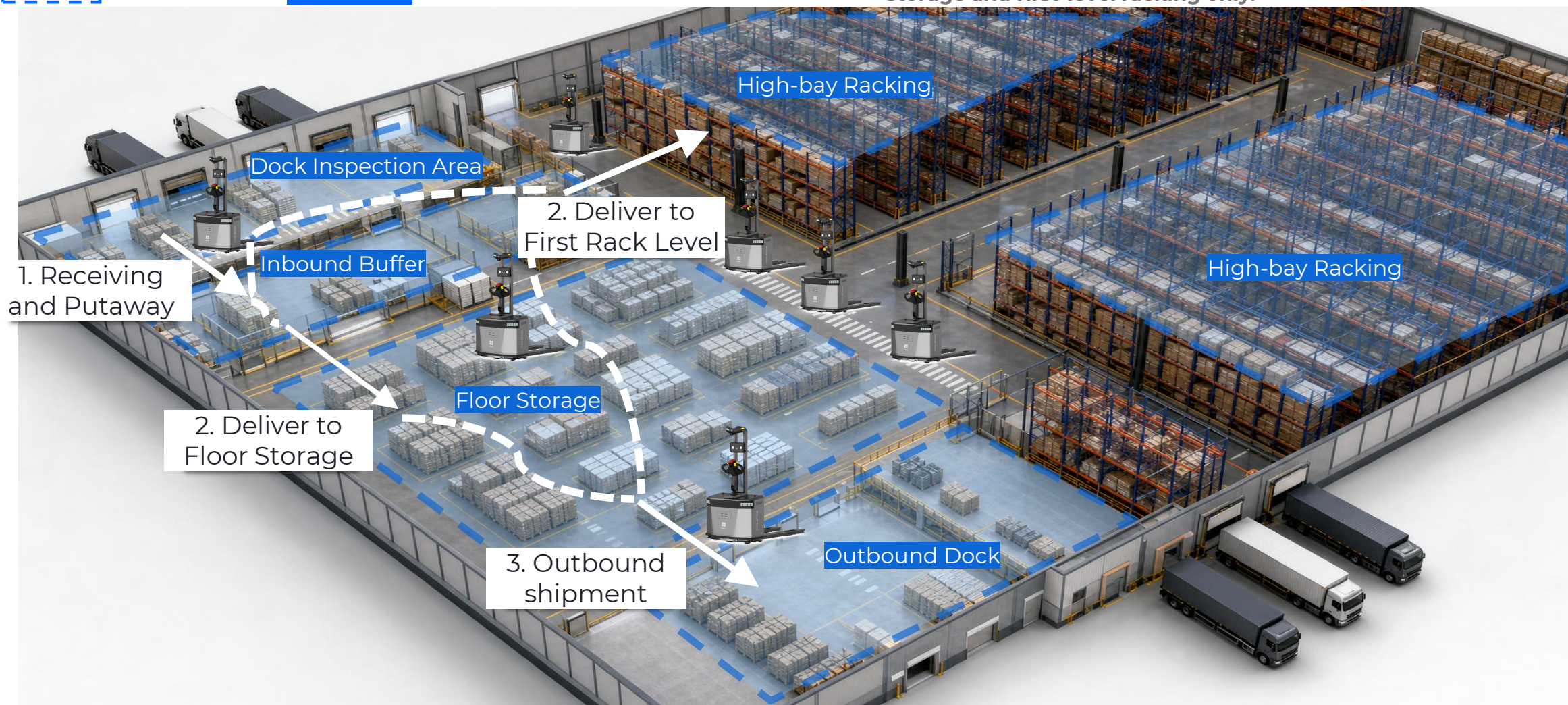
Note: Inbound/outbound coverage includes floor storage and first-level racking only.



Warehousing Scenario: End-to-end Inbound and Outbound Coverage

 Zone Layout  MP2000 Logistics Coverage

Note: Inbound/outbound coverage includes floor storage and first-level racking only.



Express Logistics: Cross-Zone, Long-Distance, Continuous Batch Transport

Subsector: Distribution Center

Unloading -> Buffer -> Sort
-> Consolidate -> Dispatch
-> Loading

Subsector: Transfer Center

Arrival -> Buffer ->
Transfer -> Dispatch
-> Loading



Industry:
Logistics – Express Delivery

Average Daily Pallet Throughput:
3,000-5,000+

Task: Horizontal transport

Painpoints: Peak-volume concentration, tight time windows, continuous shifts, complex routes, frequent short-distance replenishment, cross-zone transfers, labor shortages, and mixed pedestrian-vehicle traffic.



2-ton Transport

Handles full pallets and supports high-volume peak transfers.



Fast Response

20-second fork entry supports frequent replenishment, consolidation, and cross-zone transport.



Continuous Operation

Charger scheduling and up to 12 hours of runtime.

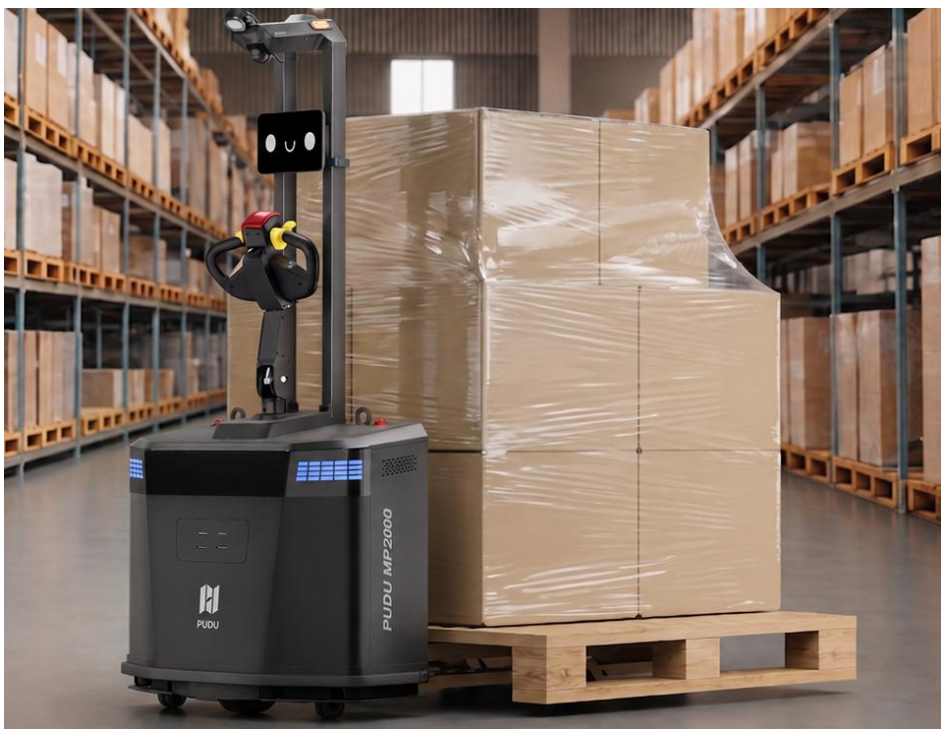


Safer Operations

Automates repetitive horizontal transport, detours around static obstacles, and proactively avoids people and vehicles.

E-Commerce Warehousing: Connecting Inbound, Picking, Checking, and Outbound

Scenario: Receiving and staging area, first-level high-bay rack locations, pre-pick staging area, and outbound consolidation area.



Industry:
E-Commerce Warehousing

Average Daily Pallet Throughput:
350-1,200

Tasks: Full-pallet putaway, internal pallet transfers, picking replenishment, and outbound consolidation.

Painpoint: Order-volume fluctuations, frequent location changes, delayed replenishment, long cross-zone travel, narrow aisles, and mixed pedestrian-vehicle traffic.

Higher storage density

Requires only a 2.0 m right-angle stacking aisle and can travel through 1.1 m aisles unloaded.

Fast Pick & Place

20-second fork entry supports frequent replenishment and storage tasks.

Continuous wave processing

2-ton payload and up to 12 hours of runtime ensure uninterrupted heavy-load transport.

Lower implementation cost

Intelligent warehouse setup and location occupancy detection reduce construction and infrastructure investment.

Manufacturing: Inter-Plant Transport Synced to Production Rhythm

Scenario: Raw material warehouse, line-side warehouse, packaging area, finished goods warehouse, and shipping dock.



Industry:
Manufacturing

Average Daily Pallet Throughput:
200-800

Tasks: Raw-material distribution, line-side replenishment, process transfer, finished-goods putaway, and shipping handoff.

Painpoint: Rigid production schedules, diverse carrier sizes and transfer points, line-side shortages, multi-point delivery, process bottlenecks, cross-zone shuttling, and mixed traffic.



Continuous heavy-load supply

2-ton payload supports bulk delivery of raw materials, packaging materials, semi-finished goods, and finished products.



Fast delivery response

Stable fork entry in approximately 20 seconds supports frequent material replenishment and process transfers.



Compatibility with diverse load carriers

Supports three-Runner Pallet and Perimeter-base pallets, tolerates 15 cm / 15° deviations, and uses AI to adapt to various carriers.



Mixed-traffic Safety

Autonomously detours around static obstacles and proactively stops or avoids moving personnel and vehicles.



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About PUDU

Pudu Robotics, a **global leader in the commercial service robotics sector**, is dedicated to empowering easier work and better lives through AI and robotics, with a vision of building a global intelligent robotics infrastructure that serves 10 billion people worldwide. Pudu Robotics has developed key core technologies and components, including robotic joint modules and motion controllers, and has filed more than 1,900 patent applications worldwide. Built on three core technologies—**Embodied Navigation, Embodied Manipulation, and Embodied Interaction**—Pudu Robotics has pioneered an **"One Brain, Multiple Embodiments"** architecture, establishing a comprehensive product portfolio that includes **specialized, semi-humanoid, and humanoid robots**. Currently, Pudu offers four major product lines: **service delivery, commercial cleaning, industrial delivery and general embodied AI**. Its solutions are widely deployed across industries such as **retail, hospitality, manufacturing, real estate and property services, healthcare, entertainment and sport, education, and public services**. To date, Pudu Robotics has **shipped over 130,000 units** globally, with a presence in **more than 85 countries and regions**.





The Global No.1 in Commercial Service Robotics

Global Market Share by Revenue

No.1 in the global commercial
service robotics market by revenue,

25% market share

TOP1

Global Market Share by Shipments

No.1 in the global commercial service
robotics market by shipments,

23% market share

TOP1

Global Commercial Cleaning Robotics Market Share by Revenue

No.1 in the global commercial
cleaning robotics market by revenue,

29% market share

TOP1

International Market Share by Shipments

No.1 Chinese commercial service
robotics company in international
markets by shipments,

44% market share

TOP1

85+

Countries and Regions

1,000+

Cities

50,000+

End Customers

130,000+

Shipped Globally



Serving Customers Across 85+ Countries and Regions





Honor and Awards

Pudu Robotics has gained recognition from organizations and institutions across various industries.

 reddot award best of the best	 reddot winner 2025	 INTERNATIONAL DESIGN EXCELLENCE AWARDS	 DESIGN AWARD 2025	 GOOD DESIGN AWARD 2022	 FAST COMPANY INNOVATION BY DESIGN 2024
Red Dot Award: "Best of the Best"	Red Dot Award: Product Design 2023 & 2025	International Design Excellence Awards	iF DESIGN AWARD 2023 & 2025	Good Design Award	Fast Company Innovation by Design Awards
 Finalists WIPO Global Awards		 IFEX Innovation Awards 2022	 Horeca Professional Expo HOSPITALITY INNOVATION PLANET	 COMMERCIAL KITCHEN INNOVATION CHALLENGE GOLD WINNER 2022	 THE IFSA'S THE HIGH FOODSERVICE SUPPLIER AWARDS BEST FOODSERVICE TECHNOLOGY PRODUCT - FRONT OF HOUSE 2023
Named among the top 25 for the WIPO Global Awards	CES Innovation Awards	IFEX Innovation Awards	Horeca New Business Models Awards	Winner of Commercial Kitchen Innovation Challenge	IFSA Awards



Global Certifications

The full range of Pudu Robotics robots have the following certifications worldwide.



CE



FCC



KC



RCM



INFOCOMM
MEDIA
DEVELOPMENT
AUTHORITY

IMDA



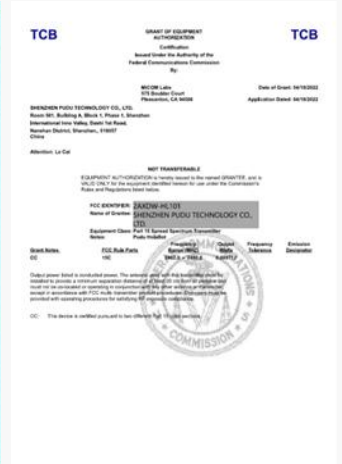
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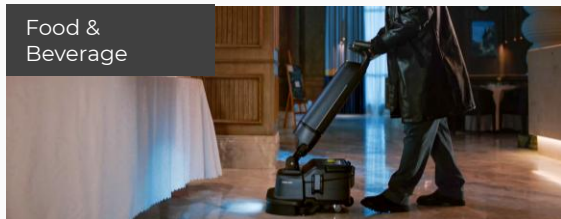


Application Industries

Powering Every Industry with Pudu's Robots

Making Work Easier. Making Life Better.

Food & Beverage



Hospitality



Retail



Industrial Facility



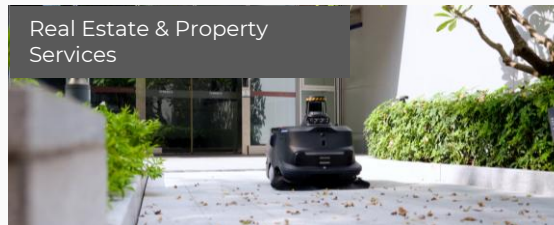
Warehousing & Logistics



Health Care



Real Estate & Property Services



Transportation and Related Service



Education



Entertainment & Sport



Agriculture



Public Service



Power & Utilities



Oil & Gas



Data Centers & AI Infrastructure



Mining & Metals



PUDU MP2000

Empower Autonomous Logistics Operations

- Fast Deployment
- Consistent Efficiency Gains
- Flexible Adaptability

