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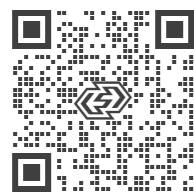
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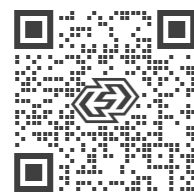
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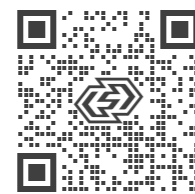
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Jan. 2026

STANDARD ROBOTS PRODUCT CATALOG

Leading the Revolution of Intelligent Manufacturing

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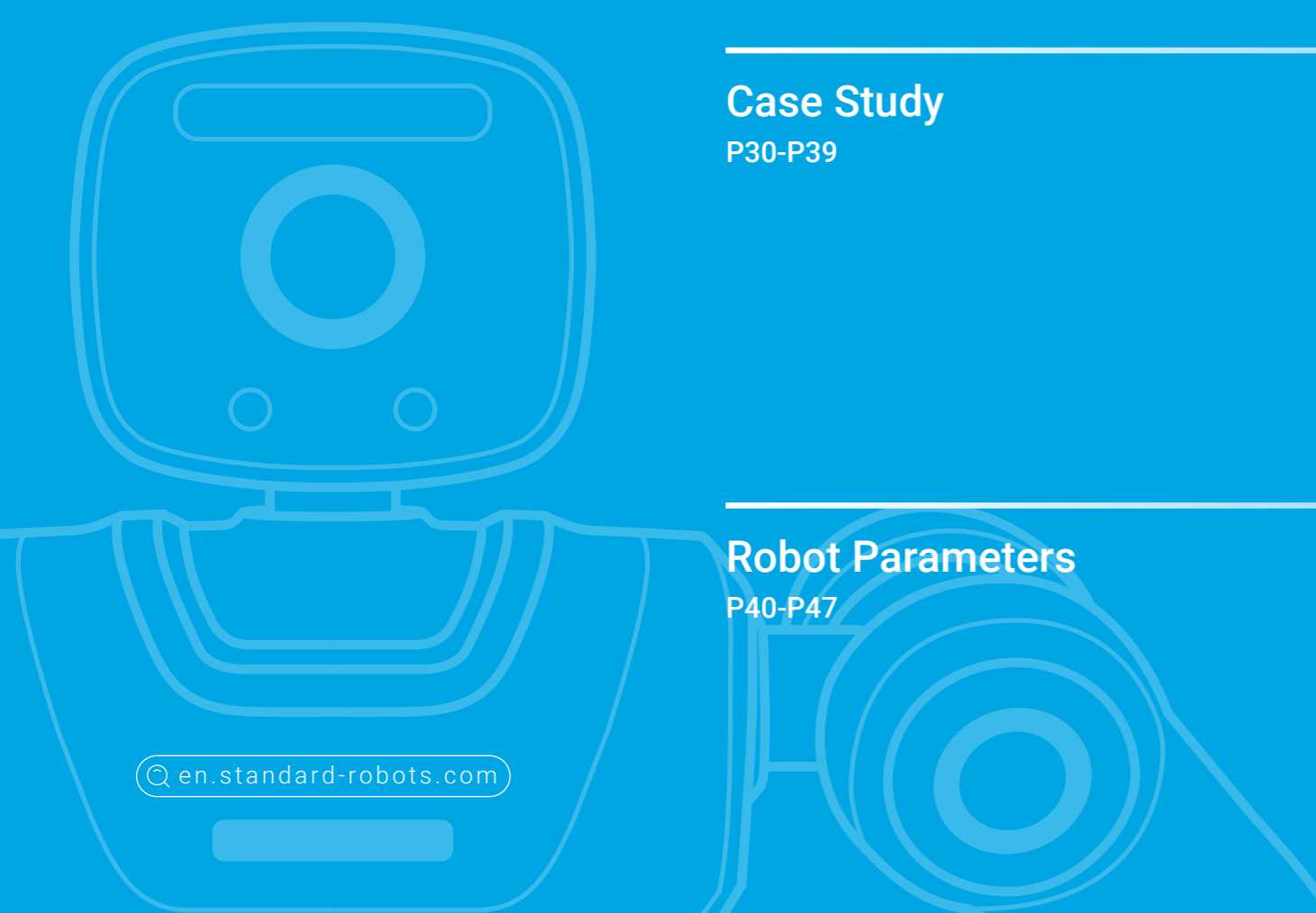
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Robot Parameters

P40-P47



About Us



Standard Robots was founded in 2016, and we are the global leader in industrial intelligent mobile robotics solutions and a pioneer in delivering embodied intelligent robotics solutions.

We hold a globally leading market position and have an outstanding customer base, and we are also one of the few enterprises in the industry that have achieved independent R&D of full-stack technologies. We are committed to promoting the evolution of robots towards greater versatility and intelligence and providing standardized intelligent manufacturing solutions for the global industry.

Headquarters -- Wuxi

R&D and Operation Center -- Shenzhen

Production Center -- Kunshan

Number of served customers

400+

Key customer retention rate

60%+

Patent authorization

140

By the end of 2025-Q4

Representative Customers



We have served customers from a wide range of industries, including electronics, automotive, semiconductor, new energy, photovoltaics, lithium battery, panel, auto parts, biotech and pharmaceutical, fast-moving consumer goods, and general manufacturing.

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Corporate Culture

Mission: To lead a revolution in smart manufacturing through autonomous, digital and intelligent robotic technology.

Vision: To promote evolution of robots towards greater versatility and intelligence and focus on providing standard smart manufacturing solutions for global industries.

Value: Long-termism, Punctuality & Commitment, Co-create Value, Results-driven, Focus on Professionalism, Proactive.



Create customized one-stop solutions for different industrial scenarios

1 + N + S =



Core Technology Platform

Robotic Products

RoboVerse System

Tailored One-stop Solution

Robo-World

Scenario Construction and Simulation Verification Platform



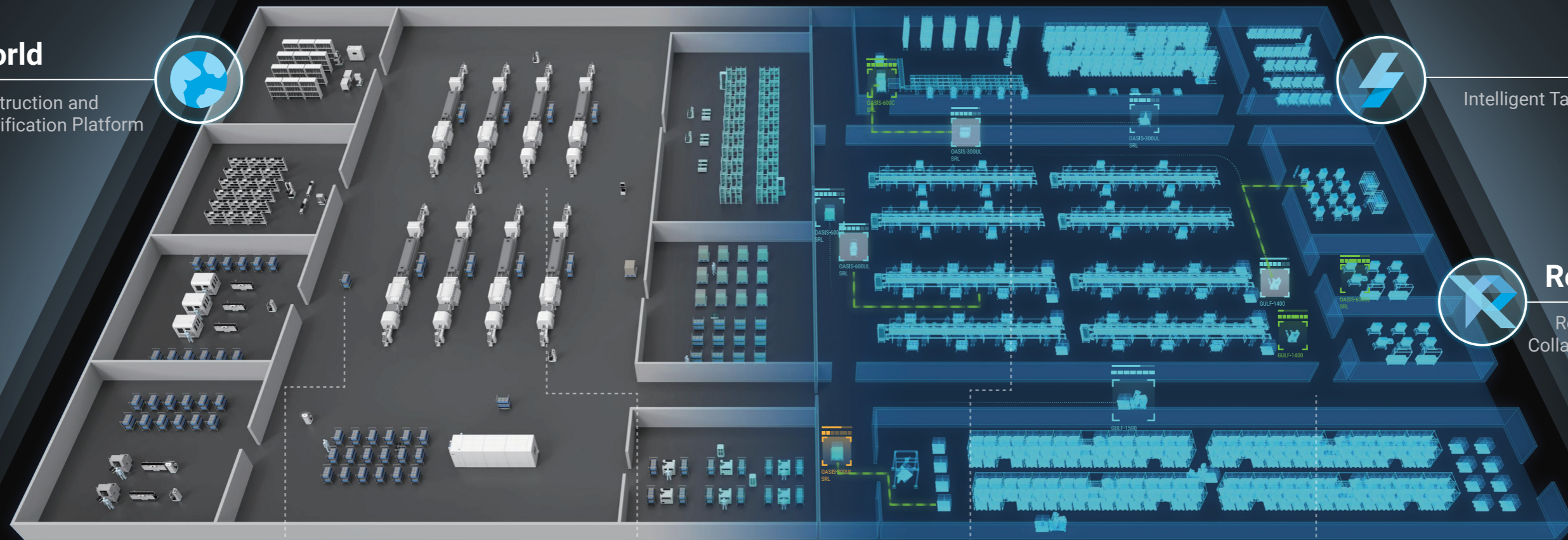
Robo-Set

Intelligent Task-driven Engine



Robo-Team

Robotic Intelligent Collaboration System



Our Robotic Products



Production Equipment



Robots of Different Brands



Manufacturing Software

One-stop Robotics Solutions

Standard Robots is a global leader in industrial intelligent mobile robotics solutions and a pioneer in delivering industrial embodied intelligent robotics solutions. We are committed to empowering smart manufacturing in a wide range of industrial scenarios.



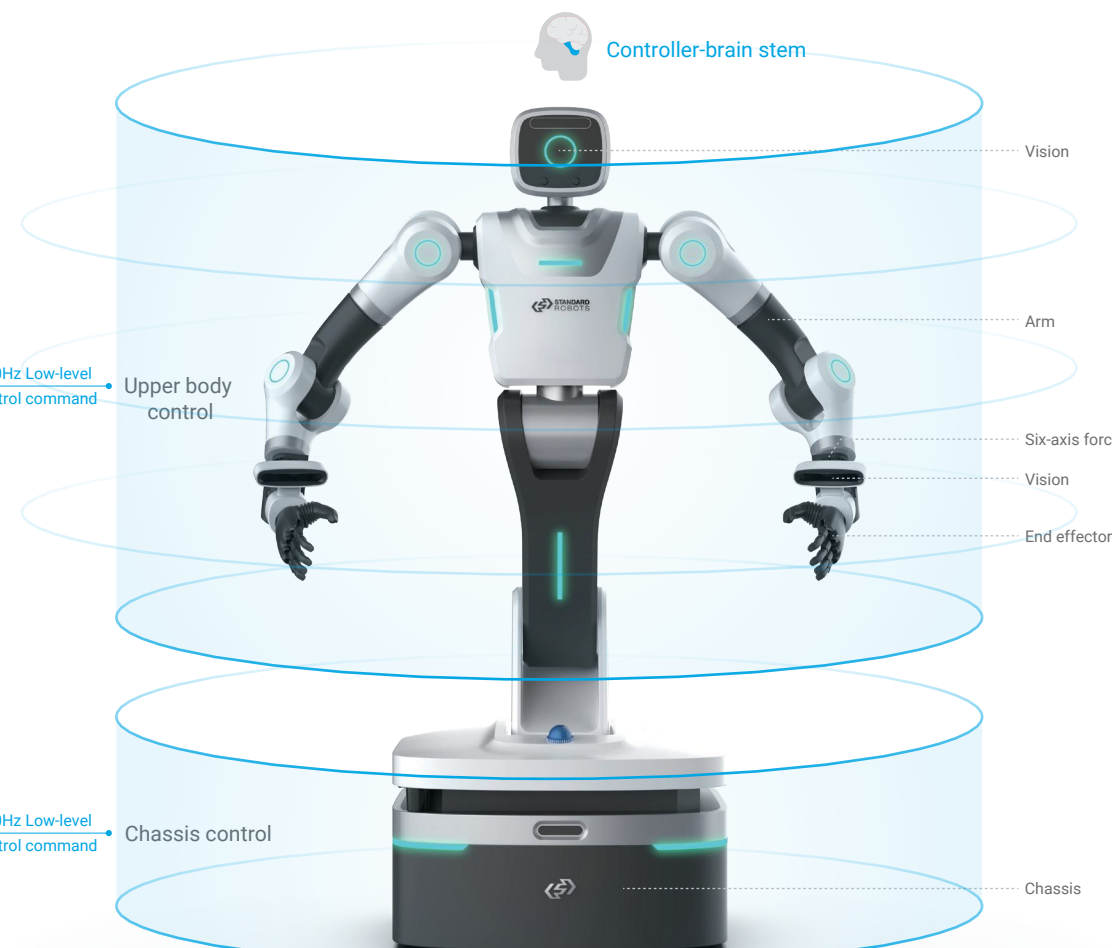
<p>1 Full-scenario product portfolio</p> <p>The product portfolio covers diverse forms and supports versatile functions, fully meeting the requirements of different scenarios.</p>	<p>2 Full-process automated operation</p> <p>Achieve full-process automation across the warehousing, production line, and logistics, thereby minimizing the need of manual intervention.</p>	<p>3 All-data visualization management</p> <p>Track site operational data in real time and achieve data visualization.</p>	<p>Benefits</p> <ul style="list-style-type: none"> Lower costs and higher efficiency Short payback period Light asset input Digitalized logistics
<p>4 Ten years' experience in the industry</p> <p>Rich industry experience, capable of 7*24 response for global projects.</p>	<p>5 Customized one-stop solutions</p> <p>Provide full-cycle customized services focusing on industry-specific characteristics, to reduce adaptation costs.</p>	<p>6 Full ecosystem compatibility & integration</p> <p>Support seamless connection between cross-brand robots and existing production line equipment.</p>	

One Core Robotics Technology Platform

<p>Independently developed core controller</p> <p>Heterogeneous multiprocessor architecture, industrial-grade design, superior performance, high reliability</p> <ul style="list-style-type: none"> CPU + GPU + MCU multiprocessor architecture Industrial-grade design and verification standards Rich and flexible peripheral interfaces 	<p>Leading SLAM algorithm</p> <p>Positioning, navigation, control, perception, and decision-making</p> <ul style="list-style-type: none"> Multi-sensor fusion perception Dual-system VLA architecture
<p>Innovative operating system SROS</p> <p>Efficient communication mechanism, high real-time performance, and heterogeneous processor task scheduling</p> <ul style="list-style-type: none"> Efficient cross-component communication mechanism Microsecond-level low-delay response to critical system tasks Heterogeneous processor task scheduling ensures optimal resource utilization 	<p>Efficient robotics collaboration algorithm</p> <p>Cross-brand, cross-form, efficient collaboration, intelligent planning</p> <ul style="list-style-type: none"> Support over 2000 robots to work together under the same system Industry-leading multi-robot path planning algorithm, ensuring global optimal resource utilization

World-leading Technology Iteration Path

From mobility to full-scenario operation capability

<p>AMR</p> <p>Indoor auto-drive technology</p> <ul style="list-style-type: none"> Multi-sensor fusion positioning Autonomous navigation algorithm Multi-level semantic map Autonomous environment learning Motion control technology 	<p>Embodied Robots</p> <ul style="list-style-type: none"> Multimodal perception (vision + tactile sensation + force control) End-to-end navigation Dual-system VLA architecture 	
<p>Operating system SROS + controller</p>		

Standard Robots | Functional Robots | Embodied Robots

Multiple types of robotic products created by integrating different functional modules into the core robot technology platform



Standard Robots

Strengthen empowerment, focus on applications

Standard robots focus on providing highly reliable and precise mobility capabilities. This series of standardized platforms include both differential and omnidirectional types, with a load capacity range of 300–2000 kg, allowing for flexible selection based on specific needs. They provide mobility for a wide range of complex scenarios driven by proprietary algorithms, and can be seamlessly configured for new scenarios without any modifications to the environment.

Empower Integrators

The standard robots are equipped with a mobile chassis that ensures stable, reliable, high-precision mobility and ± 5 mm interconnection accuracy, allowing integrators to develop automation applications based on this platform.

Fast Secondary Development

The complete supporting documents and development tools, as well as open electrical interfaces and communication protocols allow integrators to perform secondary development without the need of high learning costs, thereby realizing fast delivery.

Low Maintenance Cost

The independently self-developed universal core components reduce the costs of spare parts and maintenance in the later stage, and reduce the capital investment of integrators.

Safe and Reliable

The independently developed SLAM algorithm, paired with dual-lidar sensors and optional vision-enhanced modules, has been validated through thousands of projects, ensuring operational safety and precise positioning.

STANDARD ROBOTS



Empowerment · Reliability · Adaptability

Functional Robots

Efficient Adaptation and Operation Across Scenarios

Functional robots are built based on our core robot technology platform, including lifting robots, transport robots, forklift robots, tugger robots, and other types of robots. Together, they form a product matrix that meets the needs of different scenarios. They support the transportation of the vast majority of carrier types in factories and can operate efficiently under various scenarios. By adding additional modules to the core robot technology platform, they allow flexible expansion to meet customized requirements.

FUNCTIONAL ROBOTS

High Efficiency
High Safety
High Expandability



Lifting Robots

Transport Robots

Forklift Robots

Tugger Robots

Focus on Industry

Cover a wide range of industrial sectors and applications, including automotive, 3C, semiconductor, new energy, pharmaceutical & chemical, and food industries.

High Integration

Own highly integrated products developed based on industry insights, which can be seamlessly deployed to existing production lines without any modifications.

Multi-machine Collaboration

The independently developed standalone robot and scheduling systems enable autonomous decision-making on optimal routes and order priorities in multi-robot collaboration scenarios, ensuring high-speed production takt.

Self-detection

Have real-time access to the hardware and operating state of robots, thereby achieving self-detection and rapid troubleshooting.

Functional Robots—Lifting Robots

Help customers achieve efficient, reliable, and flexible production modes

Integrated with a back-carrying module, a lifting robot can automatically lift and place multi-specification carriers such as trolleys, racks, and pallets that are widely present in factories, achieving automated material turnover and loading/unloading. They can be applied in your scenarios, whether with a high or low automation level, to replace manual material handling and complete automatic docking with equipment, realizing automatic loading and unloading. They are widely used in warehouse and production line scenarios. They help customers achieve integration of factories and warehouses, quickly improve the production efficiency, and reduce costs.

Superior Performance

Cover a load capacity of 300–2000kg, including differential and omnidirectional types, and adapt to multi-specification carriers such as trolleys, racks, and pallets.

Extreme Flexibility

Lifting robots feature a small height and size, allowing for flexible operation, making them the most widely used and versatile type of mobile robot applications.

Low Consumption and High Efficiency

High component reuse rate ensures minimal after-sales issues. Multi-robot collaboration enables 7×24-hour uninterrupted operation, guaranteeing the production capacity.

Intelligent Manufacturing

Can independently identify pose deviations of trolleys and automatically adjust the angle, adapt to various specifications of material carts, and support autonomous navigation and docking, ensuring worry-free production.



*The bottom design of the material cart shall be customized based on the top structure of the robot.

*If pallets need to be lifted, a pallet-compatible robot model is available.

*Refer to P40-41 for relevant robot parameters.

Functional Robots—Transport Robots

Solve the "last meter" breakpoint between devices and achieve dynamic connection

Transport robots are mainly used for the handling of heavy goods and automatic loading and unloading. With high-precision SLAM navigation, they can accurately dock with equipment material inlets, achieving automated handling and transportation of various carriers such as Tray, Magazines, material boxes, pallets, and fixtures between devices. They are widely used in material transfer between processes in industries such as 3C electronics, automotive, and photovoltaics.

*For customization, information such as goods dimensions and the width and height of docking surface shall be provided.

*Refer to P42 for relevant robot parameters.

Flexible Customization

Can be customized according to the size of the goods and the specific scenario, including the transport type (roller, belt), docking width, docking height, etc., to meet customers' diverse requirements, enhance the automation level, and improve the high-precision loading and unloading functions and intelligent management level.

High-precision Docking

Can realize automatic docking with production lines with an accuracy of ± 5 mm and flexible deployment. The motion control algorithm allows for rapid reconstruction and parameter calibration for various configurations, ensuring superior motion stability and execution accuracy.

Scenario Adaptation

The modular design and other features allow for easy adaptation to various scenarios, addressing the issue of low production space efficiency.

Intelligent Management

Real-time synchronization and tracking of full-process robot information allow for easy access to material status and production progress.



Functional Robots—Forklift Robots

Focus on dense storage and retrieval as well as precise delivery to production lines

Forklift robots are specifically designed to meet the automated handling needs of carriers such as pallets, solve the issue of delivery in factories, including high-density stacking and high-position storage. They are widely applied in 3C, automotive, semiconductor, and other sectors.

*Refer to P44-45 for relevant robot parameters.

Superior Performance

Support a maximum load capacity of 2t and storage at high positions up to 7.4m, can automatically identify the positions of pallets, perform adaptive docking, realize automation of pallet transportation, and enhance the accuracy and efficiency.

Intelligent Algorithm

Equipped with AI-based perception and control algorithms, and a perception and manipulation framework used to achieve high-precision recognition and docking. Support high-precision perception of dynamic changes of objects, obstacles, and scenes.

Flexible Adaptation

Compatible with a variety of 4-Way Entry Pallet and 2-Way Entry Pallet. The multiple types of products can meet the requirements of plane handling, stacking and high-position storage, significantly increasing the warehouse space utilization.

Safety Guarantee

Equipped with multi-sensor fusion technology to realize 360° all-around obstacle avoidance and thus ensure operational safety.



Functional Robots—Tugger Robots

Offer higher transportation capacity and efficiency

The robots integrate an automatic coupling-uncoupling device and a visual positioning system, which enables them to automatically identify and precisely dock with trolleys of different specifications, realize batch transfer of multiple trolleys in a single operation, without the need of manual intervention throughout the process. With a maximum towing weight of up to 3 tons and a running speed of 1.5 m/s, they are particularly suitable for long-distance transportation between workshops and warehouses, significantly improving logistics efficiency. They are widely applied in industries such as automotive manufacturing and 3C electronics.

*Refer to P43 for relevant robot parameters.

Superior Performance

With a maximum towing weight of up to 3 tons and a running speed of 1.5 m/s, and can realize batch transfer of 1–5 trolleys in a single operation.

High Carrier Adaptability

Fits trolleys with $\leq 200\text{mm}$ clearance and offers strong adaptability. The tugger robot's visual positioning system auto-identifies and docks precisely with various specifications, enabling automated towing.

Multi-machine Collaboration

Can work collaboratively with other types of robots and production equipment to ensure efficient scheduling of in-factory logistics.

Efficient Production

Suitable for long-distance transportation of 200–500m between workshops and warehouses, effectively improving logistics efficiency.

Scenarios

1. Empty-full material exchange and distribution in the warehouse
2. Empty-full material exchange and distribution in the handover area from warehouse to the line-side
3. Material distribution from the warehouse to different workstations on the production line; support both automatic uncoupling-coupling mode and manual uncoupling-coupling mode as actually needed



Embodied Robots – LINK series

Mobility × Pick-and-Place Capability | A Free Agent of the Production Line

The LINK series robots are typically applied in fields such as semiconductors, 3C electronics and CNC machining. Utilizing high-precision SLAM laser navigation technology in conjunction with a vision recognition system, they can accurately identify materials and complete high-precision pick-and-place tasks. The end-effectors are designed with modularity, allowing for customization to meet the handling requirements of various materials. Equipped with multiple types of sensors, they ensure safe operation in human-robot collaborative environments.

The LINK series robots are generally equipped with a single robotic arm for performing specific tasks (e.g., grabbing, lifting, pushing and pulling). They can pick materials of up to 20 kg, operate machine interfaces and objects, and transfer materials and finished products, thus executing complex tasks in a precise, stable and flexible manner.

The LINK series robots are widely applied to the loading, unloading and transfer of materials such as wafer cassettes and magazines in the semiconductor industry. For the semiconductor industry, the LINK series robots help ensure the precise transmission and handling of fragile and high-value materials (such as semiconductor wafers).

Customizable

The end-effectors are designed with modularity, allowing for customization to meet the handling requirements of various materials. Equipped with multiple types of sensors, they ensure safe operation in human-robot collaborative environments.

Auto

Enable one-stop automation for material handling, equipment docking and certain precision machining scenarios, and can meet the operational requirements of high-precision material loading/unloading at special positions.

Dust-free

Avoid the contamination risks and precision errors caused by manual handling, and ensure the stability of the production process and the product yield.

Precise

Can accurately identify materials and complete high-precision pick-and-place tasks utilizing high-precision SLAM laser navigation technology in conjunction with a vision recognition system.



*The cabinet structure can be customized according to operational requirements, and can also be integrated with a transmission mechanism to achieve multi-functionality in a single unit.

*The end of the collaborative robotic arm also needs to be integrated with mechanisms such as grippers and vision cameras as actually needed.

*Refer to P46 for relevant robot parameters.

Embodied Robots – DARWIN

Beyond The Limitations, Change with the Needs
enables humans and machines to work together seamlessly and safely

Break the operational limitations of a simplex arm, complete more complex tasks through multiple hand-like end effectors, and achieve ultra-high degrees of freedom.

*Refer to P47 for relevant robot parameters.

Expandability

High Degrees of Freedom

Multimodal Perception



Multimode Sensing Network

Equipped with multiple sensor arrays throughout the body

Omnidirectional Mobile Chassis

Omnidirectional steering wheel design with a moving speed of >2 m/s



Ultra-large Operating Range

23+ degrees of freedom for the whole machine, and the load capacity of the two-arm collaborative operation reaches 10 kg

Extreme Fast Charging

With a battery charge-to-discharge ratio of 1:12, it is adapted to continuous working scenarios



Quick-Replaceable Dexterous Hand

Support multiple dexterous hands and the replacement of industrial mechanical grippers

Whole-body VR Remote Control

Whole-body VR remote control system, AI training data collection

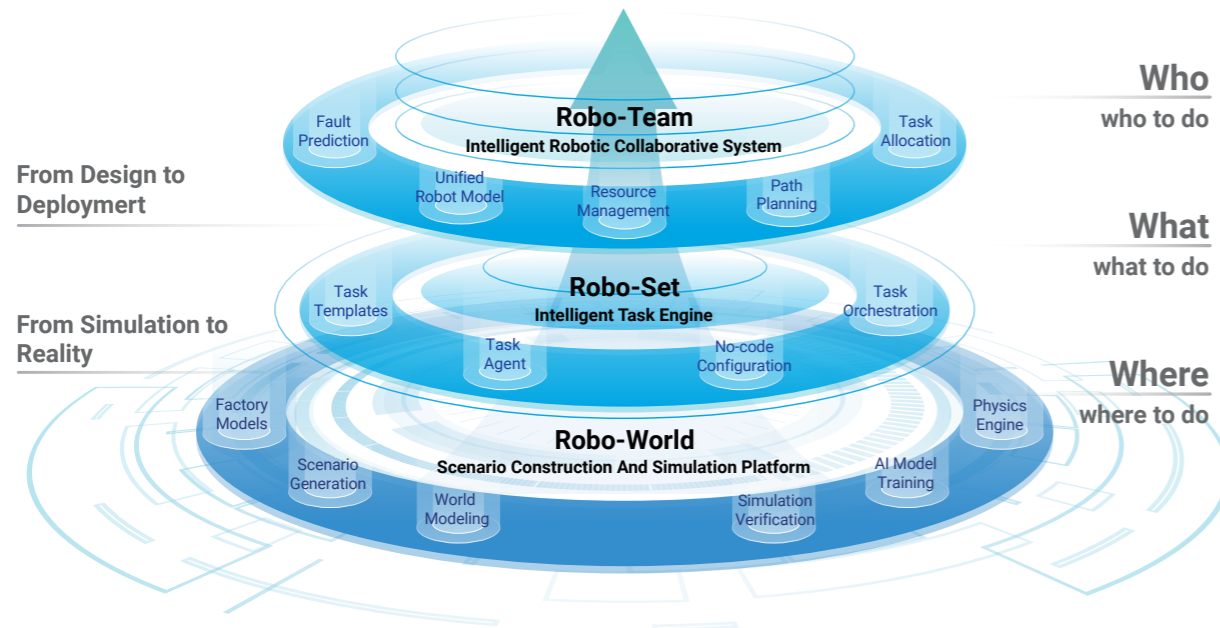


RoboVerse

All-in-One Intelligent Collaboration System for Intelligent Manufacturing

RoboVerse

All-in-one Intelligent Collaborative System for Smart Manufacturing



The RoboVerse system enables robots to understand factories, learn processes, and collaborate in work. It comprises three subsystems, namely Robo-World, Robo-Set, and Robo-Team. It covers the entire life cycle of customer consultation, solution design and validation, project delivery, and operation optimization. It realizes seamless connection from simulation to reality, and helps global factories achieve smarter, more efficient, and more reliable digital and intelligent transformation.

Leading the revolution of automated, digital and intelligent manufacturing

100000+
square meters

2000+
equipment interconnected

Robo-World

- Efficient Scenario Reconstruction**
Digital model covered elements
Real physical engine simulation drive
Ten years of industry experience
- Generative World Model**
World model technology
Digital reconstruction of factory scenario
Reduce development time and configuration risks
- Scenario Generalization**
Efficient and universal
1:1 restoration
Real-time data tracking

Robo-Set

- Task Template**
Multi-industry coverage
High efficiency and intelligence
No-code configuration
- Generative Agent**
Task element tokenization
Tasks automatically generated based on business descriptions
- Task Generalization**
Process drive
Solution assessment
Interactive seamless integration

Robo-Team

- Unified Robot Model**
Interconnection and intercommunication of cross-modal/cross-brand devices
Unified model architecture rapid response
- AI Collaborative Algorithm**
Efficient collaboration
Dynamic resource evaluation and allocation
Intelligent traffic control
- Form Generalization**
Seamless integration into existing production lines
Flexible and open
Interconnected and symbiotic

Top Intelligent Manufacturing Solutions for Diverse Industrial Scenarios

Different industrial scenarios involve specific professional knowledge and face different problems, with profound scenario-specific barriers.

Our solutions are developed based on a thorough understanding of the actual needs of customers across various industries, proprietary knowledge of specific sectors, and accumulated data. By leveraging our technologies to simulate the real-world scenarios of customers' factories, we can develop and deliver customized, one-stop solutions.

We assist customers in achieving robot-based automated, digitalized, and intelligent manufacturing.



ELECTRONICS OPPO 5G Digital Factory

Objectives

The primary objective was to completing the automatic transportation of materials related to the last phone assembly, testing, and packaging section, involving logistics between material warehouses, line-side storage, production lines, and finished products warehouse. It is necessary to deeply cooperate with the customized scheduling system so that the existing system can directly schedule the AMR operation.

Challenges

- Extremely high requirements for the stability of the mobile robots since slightly off scheduling or downtime in logistics will cost interruption to the fast pace production and compacted processes.
- The complex production processes and dynamic environment requires AMR to have robust awareness and flexibility of the surroundings.

Solutions

27 Oasis 600C-SRL mobile robots automated the majority of internal logistic tasks and another 17 robots equipped with SRT modules were deployed in assembly or subassembly lines for material feeding. Also, 2 more Gulf-1400-CDD autonomous forklifts optimize the finished products outbound warehouse.

The Standard Robots Center Control System, RoboVerse, Matrix System, and Customized Material Calling System were installed to maximize efficiency, specifically connecting the robots with goods lifts, gates, etc...



Accuracy Requirements

±5mm



Maximum Speed

1.5m/s



AMRs

46 Units

Benefits

- **Automation of Intralogistics:** Connecting 4 final assembly halls, 3 SMT production halls, 1 packaging station, 1 preprocessing facility, and 3 warehouses across 3 entire floors.
- **Information Transparency:** Real-time production status and data monitoring.
- **Increase Efficiency:** Saving 15mins per hour of non-valuable time from employees who have to push trolleys to transport materials.



SEMICONDUCTOR Wafer Cassette (FOUP) Handling

Objectives


The project was to automate silicon wafer handling in semiconductor manufacturing processes with cassettes or standardized FOUPs. The mobile robots need to distribute wafers to each Load Port and corresponding machines from the line-side storage shelves according to the MES system requests. Alleviate the processing bottleneck and enable dynamic intelligent distribution.


Challenges


- Classifications are required for stringently controlled cleanrooms
- Zero error rate in distribution scheduling and transportation
- Shock absorption and no collision are required for fragile wafers handling

Solutions

Using the Oasis 600C-SRA Compound Robots to pick the customized FOUP onto the compound robots and transfer them to the next location place them into the Load Port machine. However, the RoboVerse is a critical part of this solution since is connected to the MES and WMS to automatically request the robots to transport wafers in between the production station and the storage shelf.


Accuracy Requirements
±5mm


Maximum Speed
1.5m/s


AMRs
10 Units

Benefits

- **Reduce Risks:** Eliminated the risk of damage when handling fragile wafers and the potential source of contamination by humans.
- **Flexible Production:** Connect AMRs to all 3rd-party devices to lower the error rates and create fully automated production with changeable patterns.



AUTOMOTIVE TOYOTA OEM Intralogistics Optimization

Objectives


Upgrade project of the existing manual logistics train, automating the material transportation in the final assembly line to improve process efficiency and reinforces the 5S methodology/system.


Challenges


- The deviation of the trolley position request the Gulf-3000 Tractor to install an identification and adjustment system along with automatic hooks to achieve full autonomy.
- The safe routes and mapping of the Gulf-3000 need to be reconsidered since the mobile robot has to tow 6 trolleys or more at the same time.
- The AMRs need online charging capabilities to cope with the 12 times delivery every 30 mins.

Solutions

A highly flexible logistics solution is tailored to the actual final assembly hall, using 4 Gulf-3000-QDD autonomous tractors to complete the preparation of materials from each line-side warehouse to the assembly hall. Then return the empty trolleys to those warehouses and create a streamlined loop with automated logistics trains.



Accuracy Requirements
±5mm


Maximum Speed
1.5m/s


AMRs
4 Units

Benefits

- **Reduce Work Intensity:** Compared with manual handling, the labor intensity of workers is greatly reduced.
- **Real-time Status:** Employees on the factory floors can easily master how to schedule the mobile tractor robots using RoboVerse and gain visualized status as operating feedback.
- **Boosting Production:** Without congestion, the final assembly lines now orchestrate over 3000 components per every hour and integrated systems allow employees and managers to gain more situational awareness of the floors for better decision making.



AUTOMOTIVE XIAOMI EV Final Assembly Automation

Objectives


The first EV final assembly line with 100% L-SLAM AMR. To ensure logistics efficiency, it is essential to achieve multi-task collaboration between AMRs, production line equipment, and personnel, as well as intelligent dispatching and safety control of robot fleets in complex environments.


Challenges


- High performance AMRs required to achieve quick material feeding into the assembly line via SPS and reaches a peak takt of 50 JPH.
- High-level safety control and perceptive capabilities is a MUST to cope with complex tasks involved in human-robot collaboration.
- The large robot fleet improves difficulty in dynamic dispatching and traffic management.
- Flexible compatibility and modular design is needed to ensure smooth coupling with diversified carriers.

Solutions

97 Oasis Lifting AMRs were introduced in Phase I, ranges from 300kg to 1200kg payload capacity; and 100+ more were planned for further automation. RoboVerse software applied, containing robot fleet management and center control functions for dynamic control, and simulation for solution optimization and faster deployment.



Accuracy Requirements
±5mm


Maximum Speed
1.5m/s


AMRs
200+ Units

Benefits

- **Efficient Deployment:** One-stop solution for automobile industry ensures rapid deployment, which completed within 180 days.
- **Flexible Interaction:** Solution that adapt to high-frequency human interaction and various operation conditions.
- **Efficiency Improvement:** Reacts to busy takt which reaches 50JPH, and ensures production line logistics efficiency.



AUTOMOTIVE Auto Seat Production:Automated Material Handling

Objectives


Six automobile seat production lines, as well as testing and packaging. A lot of materials involved, high frequency of material calling. Before the introduction of AMR, all materials were delivered manually. To ensure production line supply, materials sufficient for half a day to a full day of usage had to be stacked beside the production line, which resulted in high complexity and difficulty in the management of line-side inventory.


Challenges


- A large number of pallets are stored in both the warehouse material preparation area and the end-of-line packaging zone, leading to significant environmental variability.
- To respond agilely to market demands, enterprises have to change their products frequently, which requires AMRs to adapt to frequent line modifications.
- Given the large number of employees on the production line, AMRs must be able to ensure operational safety under the context of high-frequency human-robot interaction and collaboration.
- Automatic rack docking is desired to realize automated material loading and unloading for the production lines.

Solutions

To address the issues of high demand for a large variety of materials in the production line, 100+ OASIS series lifting robots, semi-automatic roller racks and RoboVerse are deployed to improve the efficiency of material delivery from the warehouse to the production line.



Accuracy Requirements
±5mm


Maximum Speed
1.5m/s


AMRs
100 Units

Benefits

- **Management Upgrade:** Effectively improve the factory logistics layout and the level of plant inventory management.
- **Cost Reduction and Efficiency Improvement:** Effectively address the problem of management difficulties, improve material turnover and production efficiency, and reduce production and management costs.
- **Digitalization Upgrade:** Upgrade from pure manual distribution to automatic distribution, and accelerate the digitalization upgrade of the factory.



NEW ENERGY Power Battery Multi-processes Logistics

Objectives


The factory deployed over 200 AMRs and autonomous forklifts for entire manufacturing processes automation: electrode manufacturing, cell assembly, and cell finishing. Each process has plenty of sub-working steps, including foil storage and transport, coating, calendaring, and etc.


Challenges


- Numerous manufacturing processes leads to even more technical details relating to robot and material locating, facility communicating, and equipment coupling.
- A hybrid solution is required, consisting of different robot models, applications, and types, while the payload varies from 600kg to 2000kg, and tailored application is developed for coated foil transport.
- The add-on module varies and shall be of high compatibility for different tasks.
- Short installation time increased the project difficulty in both implementation and management.

Solutions

177 Oasis lifting AMRs, and 26 foil transport AMRs are applied for line-side warehousing, line-feeding logistics, and work-in-progress materials delivery; 41 Gulf Autonomous Forklifts copes with material warehouse in/out stock automation, and coupling with lifter for cross-floor material delivery. RoboVerse software applied, with 2 servers installed on site.


Accuracy Requirements
±5mm


Maximum Speed
1.5m/s


AMRs
244 Units



NEW ENERGY Photovoltaic Solar Cell Manufacturing

Objectives


The mobile robots are highly expected to satisfy actual production requirements, deal with internal logistics gridlock, streamline work processes, and reduce related operational costs while improving capacity and safety.


Challenges


- AMRs handling capacity is strict due to the tight production schedule and the 5 minutes delivery time constraints by specific processes.
- Highly precise docking accuracy is necessary since the solar cell cassette rack is powerless and can only get power when connected to inline process machines.
- The PV industry has strict dust and particle requirements. The mobile robots have to ensure exemplary cleanroom suitability and robust hardware to cope with the wet floor.

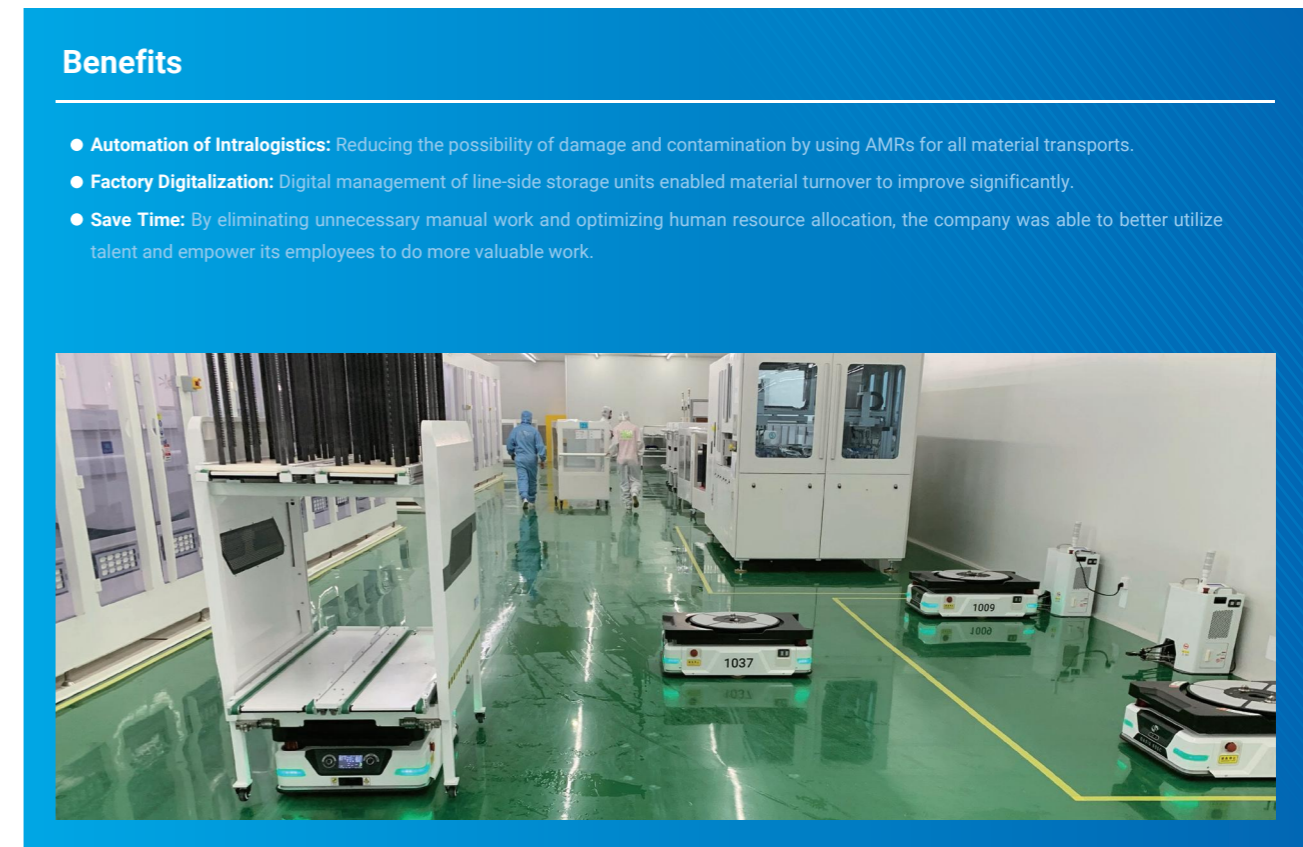
Solutions

73 Oasis 600C-SRL with multiple built-in safety features enables a fully automated handling process in the highly complex solar cell manufacturing floors. The integrated full information-based equipment management solution can monitor the operational status of each AMR in real-time, inventory stocktake, and production line data analysis.


Accuracy Requirements
±5mm


Maximum Speed
1.5m/s


AMRs
73 Units



THE UNITED STATES Foxconn 5G Smart Factory

Objectives

A material handling automation project in Wisconsin for the production of server racks requires Oasis AMRs to consist of feeding materials to all 3 processes: bending, welding, and assembling.

Challenges


- The Oasis 600UL lifting module plans to adapt 3 different types of racks, requiring extra recognition settings based on AI algorithms.
- The materials need to be placed precisely in the designated areas for other automated equipment to process, thus the positioning accuracy must be within ±5mm.

Solutions

For the supply of auxiliary materials, workers will send a request to the warehouse through a pad where 8 Oasis 600UL mobile robots are in staging mode and will be loaded with requested items or materials. Then the AMRs will transport materials to the corresponding location and recycle the empty racks back to the warehouse.



Accuracy Requirements
±5mm



Maximum Speed
1.5m/s



AMRs
8 Units

JAPAN Trusco Automated Distribution Center

Objectives

TRUSCO is committed to the wholesale and development of its own brands of subsidiary materials (MRO) for Japanese factories. There are 15 logistics warehouses in Japan, and around 140,000 products are in the warehouse at any given time. In the face of massive quantities of goods, traditional manual workloads are heavy and inefficient to manage. TRUSCO hopes to realize the flexible automation of the whole process, from the raw material warehouse in the factory to the feeding of the production line by implementing AMRs.

Challenges

- Automating a large warehouse this size and with such a large number of items is difficult enough, let alone the equipment that must be integrated with mobile robots.

Solutions

Two Oasis 600C-SRL robots are part of one fully automated palletizing station that includes a six-axis palletizer robot to pick goods from each of three roller conveyors autonomously and load them directly onto three pallets, which the 600C will transport the full-loaded roller pallet and move to the outbound loading dock. The other 600C will be ready with an empty pallet to keep the palletizing station going. This enables Trusco to eliminate traffic around the palletizing station and loading dock, replacing manual tasks with safe, collaborative mobile robots.



Accuracy Requirements
±5mm



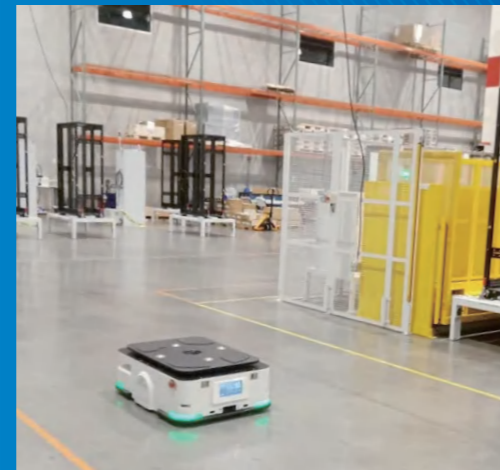
Maximum Speed
1.5m/s



AMRs
11 Units

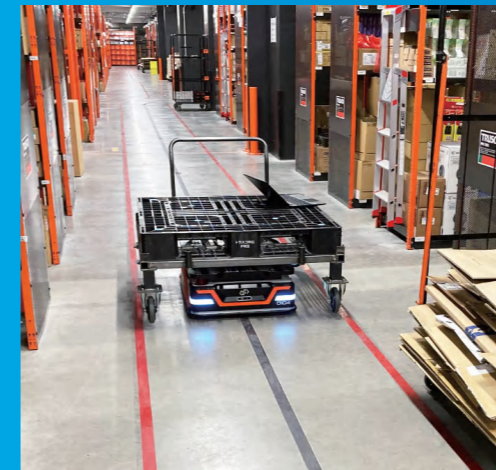
Benefits

- **Rapid Deployment:** Stable, reliable, and easy-to-use products, coupled with an experienced technical team, enable rapid and efficient project deployment. Better ROI with no renovation costs also saves production downtime.
- **Software Scalability:** Seamlessly connected to the existing MES system, production personnel on the floor or in the control room can flexibly schedule AMRs through PDAs and can query material status in real-time through the MES system, helping operations to achieve digital and intelligent production management.



Benefits

- **Automation of Intralogistics:** Not only reduced the repetitive manual labour but also greatly improved the palletizing efficiency.
- **Rapid Deployment:** Trusco starts benefits immediately since Oasis AMR is based on SLAM navigation without aiding infrastructures or abandoning the existing software.



Functional robots – Technical data of lifting robots



Model	Model	OASIS 300E-SRL	OASIS 600E-SRL	OASIS 1200E-SRL	OASIS-2000E-SRL	HORIZON-300EL	OASIS-1000E-4WD-SRL	OASIS-2000E-4WD-SRL
Basic Parameters	Radar layout	Diagonal-arranged dual radar	Diagonal-arranged dual radar	Diagonal-arranged dual radar	Diagonal-arranged dual radar	Front and rear radar	Diagonal-arranged dual radar	Diagonal-arranged dual radar
	Navigation mode	SLAM laser navigation	SLAM laser navigation	SLAM laser navigation	SLAM laser navigation	SLAM laser navigation	SLAM laser navigation	SLAM laser navigation
	Dimension(L * W * H mm)	740*545*285	948*635*245	1150*820*269	1150*820*285	1320*700*371	1900*750*463	2000*1200*450
	Weight(kg)	130	170	325	350	150	≤500	≤500
	Max. Capacity(kg)	300	600	1200	2000	300	1000	2000
	3D Obstacle Detection	Optional	Optional	Optional	Optional	Optional	Optional	Optional
	QR-code Localization	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Communication	Standard: WIFI/Optional: 5G	Standard: WIFI/Optional: 5G	Standard: WIFI/Optional: 5G	Standard: WIFI/Optional: 5G	Standard: WIFI/Optional: 5G	Standard: WIFI/Optional: 5G	Standard: WIFI/Optional: 5G	
Motion Performance	Speed(m/s)	0.05-2.5	0.05-2.5	0.05-1.5	0.05-1.5	0.05-1.5	0.05-1.5	0.05-1.5
	Turing Diameter(mm)	0	0	0	0	0	0	0
	Rotating Diameter(mm)	780	1000	1200	1200	1435	2020	2290
	Max. Slope Gradient	3*/5%	3*/5%	3*/5%	3*/5%	3*/5%	3*/5%	3*/5%
	Max. Obstacle Height(mm)	10	10	10	10	10	10	10
	Traversable Gap(mm)	30	30	30	30	30	30	30
	Min. Aisle Width(mm)	750	835	1000	1000	900	950	1400
	Min. Rotating Aisle Width(mm)	980	1200	1400	1400	1635	2220	2490
	Positioning accuracy (mm)	±10	±10	±10	±10	±10	±10	±10
	Station angle accuracy (°)	±1	±1	±1	±1	±1	±1	±1
Docking accuracy (mm)	±5	±5	±5	±5	±5	±5	±5	
Duration Performance	Endurance (h)	8	8	8	6	8	8	8
	Battery life	DOD≥80% 1500	DOD≥80% 1500	DOD≥80% 1500	DOD≥80% 1500	DOD≥80% 1500	DOD≥80% 1500	DOD≥80% 1500
	Charge mode	Automatic + manual + battery replacement	Automatic + manual + battery replacement	Automatic + manual + battery replacement	Automatic + manual + battery replacement	Automatic + manual + battery replacement	Automatic + manual + battery replacement	Automatic + manual + battery replacement
	Charge time (h)	1	1	1.5	1.5	1.5	1.5	3
Interactive Design	Indicator	Standard	Standard	Standard	Standard	Standard	Standard	Standard
	Speaker	Standard	Standard	Standard	Standard	Standard	Standard	Standard
	Touch screen	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Safety Protection	Camera vision	Optional	Optional	Optional	Optional	Optional	Optional	Optional
	Safety edge	Standard	Standard	Standard	Standard	Standard	Standard	Standard
	Emergency stop button	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Operating Environment	Temperature(°C)	0~50	0~50	0~50	0~50	0~50	0~50	0~50
	Humidity(%)	5~95	5~95	5~95	5~95	5~95	5~95	5~95
	Air condition	No dust and flammable, explosive, corrosive gas	No dust and flammable, explosive, corrosive gas	No dust and flammable, explosive, corrosive gas	No dust and flammable, explosive, corrosive gas	No dust and flammable, explosive, corrosive gas	No dust and flammable, explosive, corrosive gas	No dust and flammable, explosive, corrosive gas
	Indoor/outdoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
Certification		UL	UL	UL	UL	-	-	-
		CE	CE	CE	CE	-	-	-

*For more product parameters, please contact STANDARD Robots to obtain the product specification sheet. Due to product iterative upgrade, some specifications and parameters may differ from the actual ones. For details, please consult the sales personnel.



Model	Model	OASIS-600E-SRT	OASIS-SMT-E1	OASIS-SMT-E2
Basic Parameters	Radar layout	Diagonal-arranged dual radar	Diagonal-arranged dual radar	Diagonal-arranged dual radar
	Navigation mode	SLAM laser navigation	SLAM laser navigation	SLAM laser navigation
	Dimensions (mm)	948*635*870	1050*636*1543	1050*636*1543
	Weight (kg)	Assembled: 60 AGV: 72	280	342
	Rated load (kg)	100	100	100
	QR code localization	Optional	Optional	Optional
	Communication	Standard: WIFI/Optional: 5G	Standard: WIFI/Optional: 5G	Standard: WIFI/Optional: 5G
Motion Performance	Speed (m/s)	0.05-1.5	0.05-1.5	0.05-1.5
	Turning radius (mm)	0	0	0
	Turning diameter (mm)	1000		1190
	Gradeability (°)	3	3	3
	Obstacle clearance height (mm)	10	10	10
	Gap crossing width (mm)	30	30	30
	Passage width (mm)	835	850	850
	Turnover channel width (mm)	1200	1400	1400
	Positioning accuracy (mm)	±10	±10	±10
	Station angle accuracy (°)	±1	±1	±1
	Docking accuracy (mm)	±5	±5	±5
Duration Performance	Endurance (h)	8	8	8
	Battery life	DOD≥80% 1500	DOD≥80% 1500	DOD≥80% 1500
	Charge mode	Automatic + manual + battery replacement	Automatic + manual + battery replacement	Automatic + manual + battery replacement
	Charge time (h)	1	1.5	1.5
Interactive Design	Indicator	Standard	Standard	Standard
	Speaker	Standard	Standard	Standard
	Touch screen	Standard	Standard	Standard
Safety Protection	Safety edge	Standard	Standard	Standard
	Emergency stop button	Standard	Standard	Standard
Operating Environment	Operating temperature (°C)	0~50	0~50	0~50
	Operating humidity (%)	5~95	5~95	5~95
	Air condition	No dust and flammable, explosive, corrosive gas	No dust and flammable, explosive, corrosive gas	No dust and flammable, explosive, corrosive gas
	Indoor/outdoor	Indoor	Indoor	Indoor

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Model	Model	GULF-3000-QDD	OASIS-1WD-SRD-800	ELFIN-600
Basic Parameters	Navigation mode	SLAM laser navigation	SLAM laser navigation	SLAM laser navigation
	Dimensions (mm)	1960*1060*1930	1367*420*284	810*600*510
	Weight (kg)	1030	240	100
	Rated load (kg)	3000	800	600
	Wireless communication	Standard: WIFI/Optional: 5G	Standard: WIFI/Optional: 5G	Standard: WIFI/Optional: 5G
	Motion Performance	Rated running speed (mm/s)	0.05-1.5	0.05-1.5
Turning radius (mm)		1425	1460	0
Turning diameter (mm)		/	/	950
Gradeability (°)		3	3	3
Passage width (mm)		1260	620	800
Positioning accuracy (mm)		±10	±10	±10
Station angle accuracy (°)		1	1	1
Duration Performance		Battery type	Lithium iron phosphate	Lithium iron phosphate
	Endurance (h)	6-8	6-8	6-8
	Battery life	DOD≥80%, 1500	DOD≥80%, 1500	DOD≥80%, 2000
	Charge time (h)	≤2.5	≤1.5	≤1
Interactive Design	Indicator	Standard	Standard	Standard
	Speaker	Standard	Standard	Standard
	Touch screen	Standard	Standard	Standard
Operating Environment	Operating temperature (°C)	0~50	0~50	0~50
	Operating humidity (%)	5-95	5-95	5-95
	Air condition	No dust and flammable, explosive, corrosive gas	No dust and flammable, explosive, corrosive gas	No dust and flammable, explosive, corrosive gas
	Indoor/outdoor	Indoor	Indoor	Indoor
Towing Mechanism	Coupling/decoupling height range (mm)	260-375	294-324	100-245
	Allowable lateral deviation of trolley (mm)	200	30	100
	Allowable angle deviation of trolley (°)	10	5	5
	Towing mode	Manual/Auto	Auto	Manual/Auto

Functional robots— Technical data of forklift robots



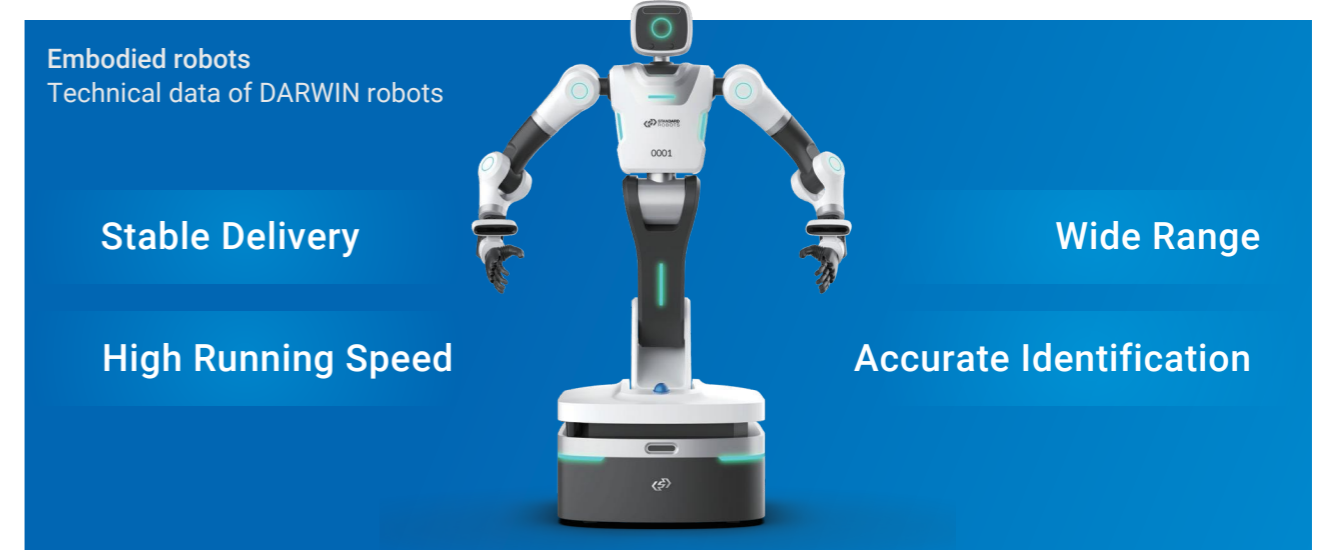
Model	Model	GULF-MP14	GULF-MP15	GULF-MD20	GULF-QZ16	SUNRISE-1200E-SRF
Basic Parameters	Navigation mode	SLAM laser navigation	SLAM laser navigation	SLAM laser navigation	SLAM laser navigation	SLAM laser navigation
	Dimensions (mm)	1810*1010*1930	2630*1250*2085	2250*1060*2090	2800*1600*3400	1382*1026*380
	Weight (kg)	970	3000	1600	3500	450
	Rated load (kg)	1400	1500	2000	1600	1200
	Wireless communication	Standard: WIFI/Optional: 5G	Standard: WIFI/Optional: 5G	Standard: WIFI/Optional: 5G	Standard: WIFI/Optional: 5G	Standard: WIFI/Optional: 5G
Motion Performance	Rated running speed (mm/s)	0.05-1.3	0.05-1.5	0.05-1.5	0.05-1.5	0.05-1.5
	Turning radius (mm)	1200	1330	1780	1770	0
	Turning diameter (mm)	/	/	/	/	1640
	Gradeability (°)	3	3	3	3	3
	Passage width (mm)	1210	1450	1260	1800	1220
	Positioning accuracy (mm)	±10	±10	±10	±10	±10
	Station angle accuracy (°)	1	1	1	1	1
Duration Performance	Battery type	Lithium iron phosphate	Lithium iron phosphate	Lithium iron phosphate	Lithium iron phosphate	Lithium iron phosphate
	Endurance (h)	6-8	6-8	6-8	6-8	6-8
	Battery life	DOD≥80%, 2000	DOD≥80%, 2000	DOD≥80%, 2000	DOD≥80%, 2000	DOD≥80%, 2000
	Charge time (h)	≤1.5	≤2	≤2	≤2	≤1.5
Interactive Design	Indicator	Standard	Standard	Standard	Standard	Standard
	Speaker	Standard	Standard	Standard	Standard	Standard
	Touch screen	Standard	Standard	Standard	Standard	Standard
Forklift Module	Maximum standard lifting height (mm)	2500	4500	4500	7500	375
	Standard outside width of fork (mm)	680	460/560/680	680	360/460/560	620
	Fork length (mm)	1230	1230	1230	1250	1230

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Model	Model	LINK-SRA-D-12	LINK-SRA-A-12	
Basic Parameters	Radar layout	Dual diagonal radars + four side radars	Dual diagonal radars + dual side radars	
	Drive	Double differential module, omnidirectional	Double differential	
	Navigation mode	SLAM navigation + QR code-assisted end positioning	SLAM navigation + QR code-assisted end positioning	
	Overall dimensions (L*W*H mm)	1200*720*1145 (excluding robotic arm)	950*620*964 (excluding robotic arm)	
	Dead weight (kg)	350	400	
	Wireless communication	Standard: 5Ghz/Optional: 5G	Standard: 5Ghz/Optional: 5G	
Motion Performance	Maximum speed (m/s)	Front and rear: 1.5, lateral: 0.8	1.5	
	Turning diameter (mm)	1258	1000	
	Gradeability	3*/5%	3*/5%	
	Obstacle clearance height (mm)	10	10	
	Gap crossing width (mm)	30	30	
	Passage width (mm)	Min 920	Min 920	
	Station positioning accuracy*1 (mm)	±5	±5	
	Gripper picking and placing accuracy (mm)	±0.5	±0.5	
	Storage vibration (G)	≤0.5G	≤1G	
Safety Protection	Front radar	Standard	Standard	
	Rear radar	Standard	Standard	
	Lateral radar	Standard	Standard	
	Camera vision	Standard	Standard	
	Safety edge	Standard	Standard	
	Emergency stop button	Standard	Standard	
	Function of virtual protection zone of robotic arm	Standard	Standard	
	Ultrasonic obstacle avoidance	Standard	Standard	
	Infrared laser pothole detection	Standard	Standard	
Interactive Design	Indicator	Standard	Standard	
	Speaker	Standard	Standard	
	Touch screen	Standard	Standard	
Duration Performance	Endurance (h)	8	8	
	Battery life	DOD≥80% 1500	DOD≥80% 1500	
	Charge time*2 (h)	2	2	
Operating Environment	Operating temperature (°C)	0~50	0~50	
	Operating humidity (%)	5~95	5~95	
	Air condition	No dust and flammable, explosive, corrosive gas	No dust and flammable, explosive, corrosive gas	
	Indoor/outdoor	Indoor	Indoor	
Reference Parameters	Single storage position load capacity (kg)	20	12	
	Robotic arm load capacity (kg)	12	12	
	Robotic arm span (mm)	1300	1100	
	Carrier type	12-inch Cassette (4 positions)		Magazine
		6/8-inch Cassette (6 positions)		Customized end-effectors
8-inch Lotbox (6 positions)				
Tray (8 positions)				
Certification	Safety certification	SEMI S2	-	

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Model	Model	DARWIN-01
Basic Parameters	Radar layout	Diagonal-arranged dual 2D radars
	Navigation mode	Laser SLAM
	Dimensions (mm)	680×640×1736 mm (in raised position)
		680×640×1142 mm (in squat position)
	Weight (kg)	200
	Rated load (kg)	5 (single arm)/10 (dual arms)
Wireless communication	Standard: WIFI/Optional: 5G	
Motion Performance	Rated running speed (m/s)	0.05-1.5
	Gradeability (°)	5
	Obstacle clearance height (mm)	10
	Gap crossing width (mm)	30
	Minimum passing width (mm)	720
	Station positioning accuracy (mm)	±10
	Station angle accuracy (°)	±1
Duration Performance	Endurance (h)	6
	Battery life	DOD≥80% 1300
	Charge mode	Automatic + manual + battery replacement
	Charge time (h)	0.5
Interactive Design	Indicator	Standard
	Microphone	Optional
	Speaker	Optional
	Remote control	Optional
Safety Protection	RGB camera	Optional
	3D camera vision	Optional
	Emergency stop button	Standard (3)
Operating Environment	Operating temperature (°C)	0~50
	Operating humidity (%)	5~95
	Air condition	No dust and flammable, explosive, corrosive gas
	Indoor/outdoor	Indoor