



Industrial Handling Solutions



AGIBOT Innovation (Shanghai) Technology Co., Ltd.

Creating Unlimited Productivity through Intelligent Machines



Challenges in Legacy Tote Transfer



High Labor Costs

- Manufacturing faces challenges in recruiting workers and high labor costs, with personnel expenses increasing year by year
- Fully loaded totes are heavy, and prolonged manual handling poses safety risks



Low Space Utilization

- Fixed equipment requires a dedicated workspace ($\geq 10\text{m}^2$), resulting in rigid factory layout
- Legacy palletizers require 30% redundant space to ensure the safety radius for the robotic arm



Weak Tote Type Adaptability

- Legacy equipment has poor compatibility, low recognition rate for different totes, and inflexible operations
- Visual systems require retraining to recognize different tote types and complex stacking patterns
- Deployment takes a long time



High Production Line Adjustment Costs

- Legacy robots require extensive modifications to production lines
- High-mix, low-volume production lines require frequent annual adjustments/reconfigurations, while legacy robots rely on fixed programming methods
- Lacks environmental adaptability

Tote Depalletizing Solution

Typical Depalletizing Scenario Process

Step 1

Robot waiting point, start task

Step 2

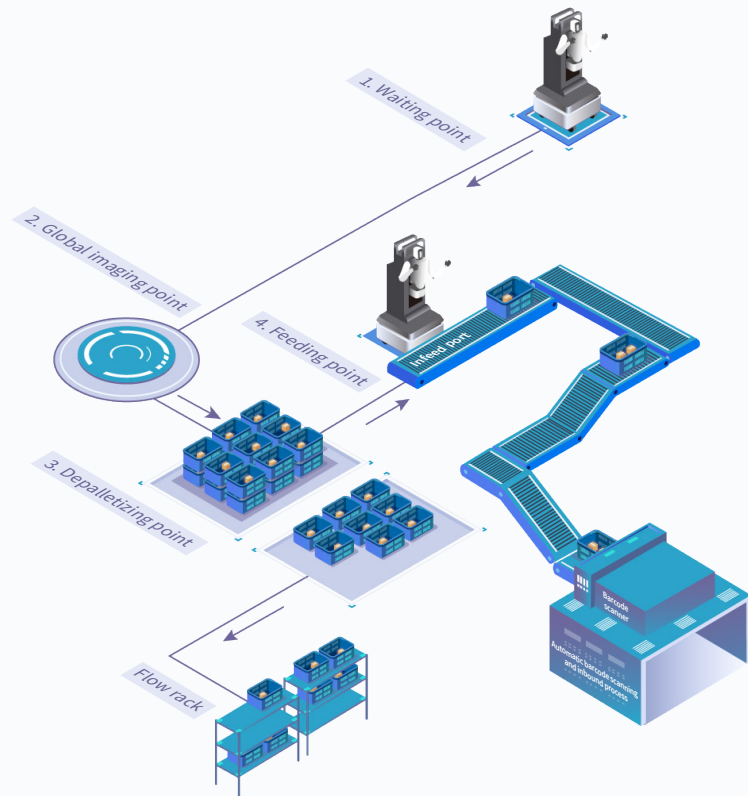
The robot autonomously navigates to the global imaging position, identifies the stack pattern, and calculates depalletizing positions

Step 3

The robot autonomously moves to the depalletizing point, adjusts dual arm posture through real-time perception, and begins depalletizing

Step 4

The robot transfers totes to the feeding point, then returns to the global imaging position to proceed with the next task



Key Performance Indicators



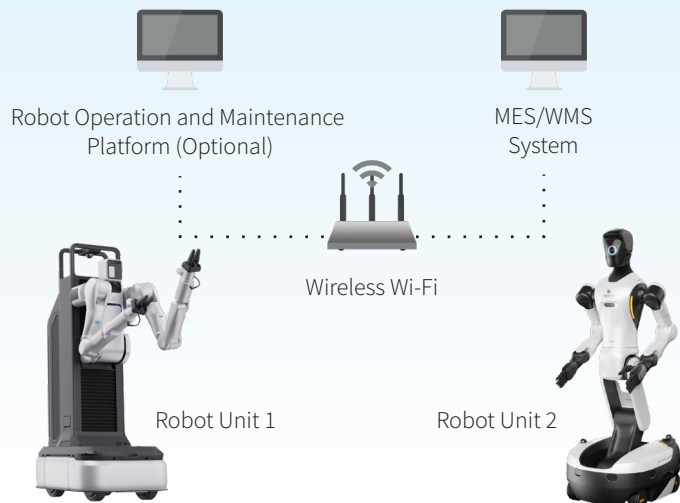
Cycle time: 36s @ 3m



Success rate: 99.9%



Network Architecture



Product Overview

AGIBOT G1 Max



760*615*1600 mm Robot Dimensions	230 kg Total Weight	1 m/s Maximum Speed
22 Total DOF	7 Single-Arm DOF	15 kg Maximum Dual-Arm Payload
Four-wheel drive, omnidirectional movement Chassis Type	0-2 m Operating Height	±63° Head Pitch Angle
2h Charging Time	0-45°C Operating Temperature	1-135° Waist Pitch Angle
5h, supports hot-swappable battery replacement Battery Life	360° LiDAR + Vision-Force Fusion Intelligent Perception	

Product Highlights



Dual-Arm Collaboration, Full Workspace Reach

- Bionic 7-DOF dual arms support both parallel and asynchronous operations, enabling precise handling of totes in various sizes and positions
- Four-wheel drive supports zero-turn radius and crab walk movement; features a lift-and-tilt waist with 22 DOFs for full-range human-like workspace coverage



Efficient Deployment, Adaptive Operation

- Integrated design of chassis, arms, and perception system
- Powered by 275 TOPS of computing capability, enabling millisecond level real time object recognition, pose estimation, and decision making for dynamic adaptation to flexible environments



Convenient Battery Swapping, Uninterrupted Operations

- Hot-swappable battery technology enables 24h uninterrupted operations
- Built-in self-diagnosis and recovery mechanism significantly reduces unplanned downtime



Multi-modal Perception, Safe and Worry-Free

- 360° LiDAR + multi-sensor fusion for real-time obstacle avoidance during operation
- Arm collision detection system integrated with motion prediction algorithms to avoid collisions with people or surroundings



Model Evolution, Continuous Advancement

- Modular atomic capability design supports OTA upgrades, with continuously expanding skill libraries that improve over time
- Standard interfaces available for secondary development

Product Overview

AGIBOT G2

640*760*1795 mm Robot Dimensions	185 kg Total Weight	1.5 m/s Maximum Speed
26 Total DOF	7 Single-Arm DOF	5 kg Maximum Dual-Arm Payload
Four-wheel drive, omnidirectional movement Chassis Type	0-2.3 m Operating Height	2070 TFLOPS (FP4) Computing Power
4h Battery Life	2h Charging Time	1652Wh Total Battery Capacity
0~40°C Operating Temperature	Direct Charging, Battery Swapping, Autonomous Recharging Charging Methods	



Product Highlights



High Operational Precision

- Equipped with high-precision force-controlled dual arms across all joints, achieving sub-millimeter precision operation, and compatible with the AGIBOT OmniHand Series 19-DOF dexterous hands
- Real-robot RL toolchain, enabling deployment and model switching with a small number of demonstrations



Large Operation Range

- Operation height up to 2.3 meters, double-arm span 2.35 meters
- 5-degree-of-freedom waist and legs, 26-degree-of-freedom body, humanoid-level flexible movement
- Omnidirectional movement and crabbing capability, achieving efficient movement and maneuverability



Long Working Battery Life

- Dual-battery hot-swappable design for 7*24h uninterrupted operations
- Automatic recharging for quick recovery



Advanced Interaction Capabilities

- Supports multi-person continuous voice conversation and knowledge base Q&A, accurately identifying conversation targets
- Combined with facial expressions and body movements; synergy with external devices, delivering lifelike, human-like interactions



Powerful Chip Computing Power

- Can be equipped with NVIDIA Jetson Thor T5000, with computing power up to 2070 TFLOPS (FP4)
- Provides strong computational support for multi-modal intelligence, real-time inference and interaction, and autonomous decision-making for complex tasks, enabling robots to transition from "demonstration-level" to "application-level."



Excellent Safety Protection

- 360° fisheye + LiDAR + ultrasonic radar, comprehensive all-around perception capability
- Active obstacle avoidance and collision perception, reducing safety risks

Solution Value



Compact Footprint for Flexible Production Line Reconfiguration

- The robot occupies minimal space and does not require reprogramming when production lines change, allowing flexible deployment across multiple workshops and production lines for depalletizing and material feeding



Autonomous Perception; Adapts to Multi-sized Totes and Diverse Stacking Patterns

- The robot features autonomous generalization capabilities, enabling dual arm coordination and high precision handling of totes with varying sizes and weights, including compatibility with standard European totes
- The robot can autonomously adjust its posture



Integrated Design, Short Deployment Cycle, High Efficiency

- With an integrated chassis, arms, and perception system, deployment can be completed within two weeks, minimizing disruption to production lines
- The robot supports seamless integration with MES/AGV systems



Case Study

Fulin P.M.

Founded in 1997, Fulin P.M. is a leading enterprise in the automotive parts sector. To better cope with rapidly growing business demands, nearly 100 AGIBOT G1 Max robots will be deployed in its factory, marking the first large-scale commercial application of embodied robots in China's industrial sector. This milestone signals the transition of embodied intelligence from technical validation to large scale commercial deployment.

Application Scenarios

Tote Depalletizing and Feeding Scenarios

Products Applied

AGIBOT G1 Max

Scope of Application

The robot's operation range has expanded from the initial two production line stations to 15 feeding points across the two core workshops for powertrains and reducers. It handles raw material delivery for over 500 units daily and also performs automated empty tote recycling, completing nearly 10,000 tote-handling cycles per shift.



Core Highlights

The embodied robot AGIBOT G1 Max works collaboratively with AMR to achieve end-to-end automation for material handling, from retrieving materials from the warehouse and feeding them onto the production line to recycling and transferring empty totes. It fully leverages its generalization capabilities for handling totes and its adaptability in complex scenarios, as well as AMR's efficiency advantages in long-distance, high-load transportation.



Case Study

SAIC Project

SAIC MAXUS has welcomed a new robotic employee, Nengzai No.1, at its Ultium Center Factory in Jinqiao, Shanghai, which is recognized as a State-Level Smart Factory.

Nengzai No.1, built on the foundation of AGIBOT G1 Max, performs high-precision tasks on the battery mass production line for Buick Electra E7. It is the first humanoid robot deployed on mass production lines for automotive manufacturing within the SAIC group and among the first in the automotive sector to be used in such applications. It is also the first humanoid robot to deeply engage in the core manufacturing processes of new energy vehicles. This marks the first time humanoid robots have reached internationally advanced equipment integration standards in the new energy manufacturing sector, signifying the transition from preliminary validation to general deployment.

Application Scenarios

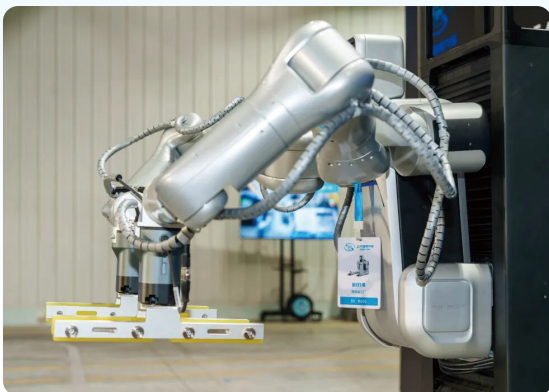
Battery Cell Handling Scenarios

Products Applied

AGIBOT G1 Max

Robot Capabilities

Equipped with human-like capabilities such as visual perception, dual-arm collaboration, and force-controlled grasping, the robot can perform tasks without relying on fixed programming or precise positioning of incoming materials. With ± 0.1 mm high-precision repeatability, it achieves an operating efficiency of approximately 2 seconds/unit. In addition, thanks to its compact design, it occupies less than 15% of the space of a legacy automated station while covering a wider operation range.



Core Highlights

Focusing on core production processes of battery packs, the robot addresses the pain points of legacy processes and achieves comprehensive breakthroughs. It not only eliminates the safety risks associated with manual live-line operations but also overcomes the large footprint and limited flexibility of legacy industrial robots, as well as the payload and efficiency constraints of collaborative robots. This creates a new solution for new energy vehicle battery manufacturing.



“ Create Unlimited Productivity via Intelligent Machines ”

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AGIBOT Factory

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