

MAKE A SMART MOVE TO MOBILE ROBOTICS

Brochure

Honeywell Intelligrated

SMART MOBILE ROBOTS DRIVE SMARTER OPERATIONS

ON-DEMAND AUTOMATION THAT GROWS AT YOUR PACE

Autonomous mobile robots (AMRs) are among the fastest-growing automation strategies available to the logistics and manufacturing industries today. Supplied in strategic collaboration with OTTO Motors, AMRs are smart enough to interact safely with human co-workers and other vehicles, find a different route if their original path is blocked, and respond to rapid changes in orders or logistics needs — all without human intervention.

AMRs are also highly cost-effective, requiring minimal information technology (IT) or infrastructural changes. No tape, markers or wires are needed for navigation, and the robots require only a short set-up period to learn their surroundings. AMRs can be deployed to ease labor burdens, improve productivity, reduce or eliminate manual errors, lower costs, and help your operation to stay nimble in constantly changing market conditions.

EASE LABOR BURDENS AND RESPOND QUICKLY TO CHANGE

Mobile robots deliver many benefits by taking on some of the most labor-intensive warehouse jobs, from moving pallets, carts or totes to assisting human co-workers with picking and other operations. While AMRs handle repetitive and often time-consuming tasks, increasingly scarce labor resources can be shifted to higher-value jobs. This alone delivers multiple benefits, such as boosting worker satisfaction, while reducing injuries and turnover rates.

AMRs can also adapt quickly to changing workflows to meet your current operational needs, such as sudden shifts in consumer buying habits, peak shopping seasons, facility expansions and more.

DESIGNED FOR SAFETY

The state-of-the-art AMRs used in Honeywell Robotics solutions are designed with an uncompromising commitment to safety. Advanced sensor and camera technologies allow the robots to navigate safely in dynamic environments, giving the right of way to workers and vehicles, and independently re-routing around obstacles if necessary.

AMRs leverage multiple technologies common in self-driving vehicles, including:

- 360-degree vision with no blind spots
- 3D obstacle-detection cameras
- Light detection and ranging (LiDAR) sensors
- Inertial measurement units (IMUs)
- Time-of-flight (ToF) sensors
- Industry-leading, obstacle-detection and avoidance technology with more than 3 million hours of accident-free driving

In addition, workers and equipment are protected by hardware-based safeguards, ensuring safe navigation around operators and vehicles.



BENEFITS OF MOBILE ROBOTICS

- Able to deploy in hours for nearly any workflow in any facility
- Unmatched flexibility and scalability that adapt quickly to changing market conditions or peak buying seasons
- Minimizes human walk and wait times
- Frees up scarce workers for higher-value jobs
- Reduces forklift and ergonomic injuries
- Eliminates manual errors
- Minimal changes to IT or infrastructure
- Integration with elevators and lifts, enabling loads to be moved between levels
- Runs for more than a full shift on a 90% battery charge, or longer with opportunity charging
- Durable, all-metal construction
- Capable of operating in extreme temperatures from 32–140 °F (0–40 °C) and up to 95% humidity
- Seamless integration with your warehouse management system (WMS) or manufacturing execution system (MES)
- Integrates with tablets, wireless push-buttons and other human-machine interfaces (HMIs)
- Customizable for unique workflows

High-speed charging stations allow some AMR models to recharge themselves without human intervention. In addition, automated opportunity charging enables continuous operation of your AMR fleet 24/7, with any given robot available approximately 85% of the time.

PICKING AND CART TRANSPORT SAVE ON LABOR COSTS AND INCREASE PRODUCTIVITY

Mobile robots can provide significant productivity benefits by automating the movement of carts used to transport picked orders, returns or kits. AMRs can travel over any floor surface smooth enough to handle a traditional cart pushed by a worker. Instead of spending as much as half the day walking, workers can simply park carts in designated pick-up locations and call robots to retrieve them.

In distribution and fulfillment (D&F) operations, AMRs can help workers to stay focused on skilled picking tasks while the AMRs handle the low-skilled jobs of transporting items to pack-out and shipping areas. By transferring responsibility for transporting completed bundles to AMRs, pick times can be reduced by nearly 50%.

This solution is ideal for zone picks and rush orders. A variety of interfaces can be used to call the nearest available robot to pick up the cart and deliver it to its destination.

In manufacturing environments, an MES can instruct robots to pick up and transport items. Fabricated, assembled or kitted items are placed onto a cart beside the workstation. A signal is sent to the fleet management system indicating the next destination for the items. The robot then arrives, connects to the cart, and delivers it to the designated location.



PALLET CONVEYANCE IMPROVES SAFETY AND EFFICIENCY

Pallet conveyance AMRs offer an efficient and flexible alternative to traditional forklifts and conveyor systems. They're capable of transporting heavy loads independently or interacting autonomously with other systems, including conveyors, stretch wrappers, palletizers and depalletizers.

AMRs can increase your operational savings by reducing the number of forklifts and drivers needed for transport, enabling them to be repurposed for other value-added tasks. Traditional forklift and industrial truck accidents, which cause an average of 34,900 injuries per year[1], can also be reduced.

1. Source: OSHA

OTTO Flatbed AMRs	OTTO Lifter
• Durable for demanding applications • Designed to move loads up to 1,900 kg (4,188 lbs.) • Heavy-duty to move your toughest loads	• Smart and predictable pallet transport of loads up to 1,200 kg (2,646 lbs.) • Intelligently handles pallet transport workflows

OTTO Flatbed AMRs

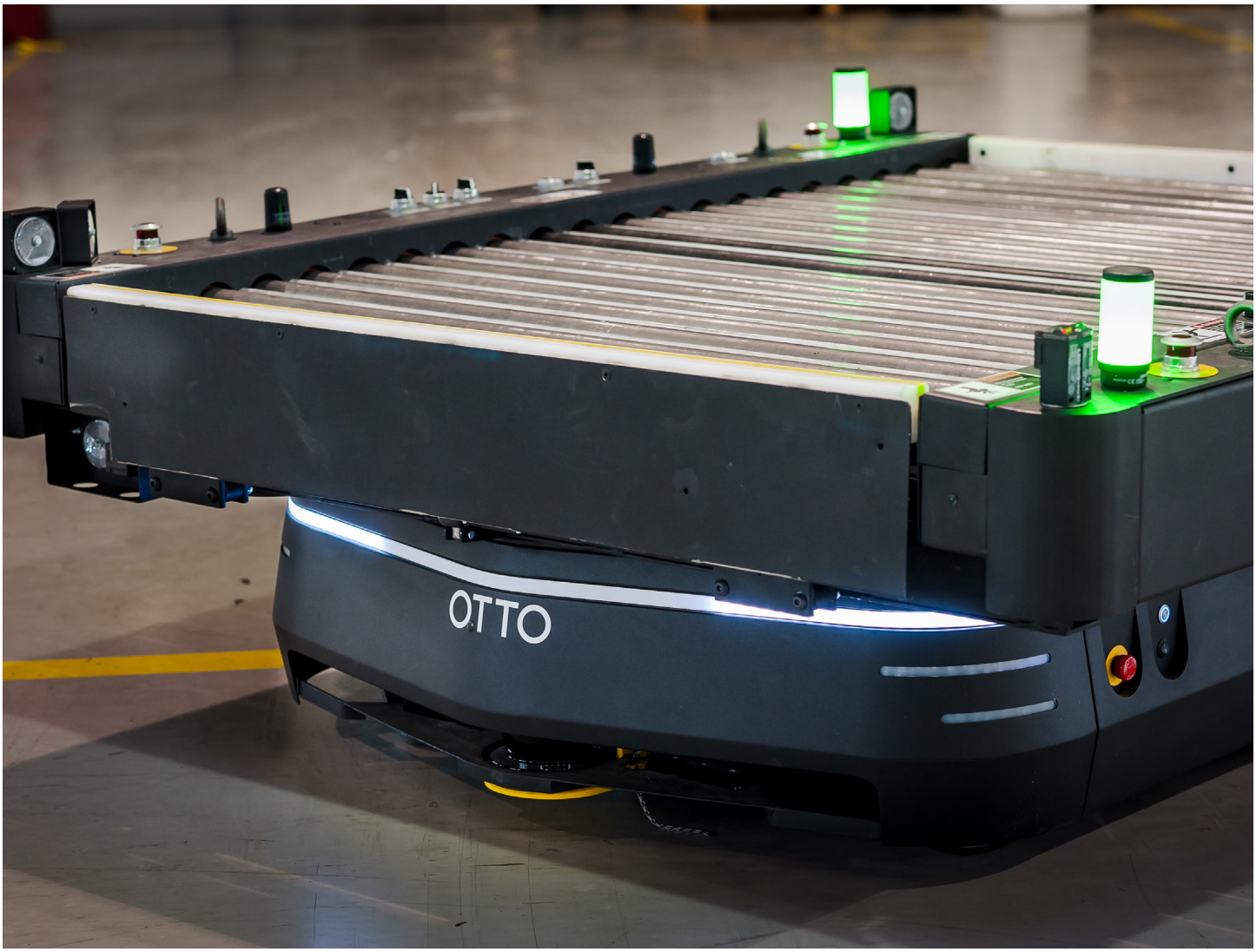


OTTO Lifter



MACHINE TENDING ENABLES ADVANCED AUTOMATION

AMRs with the in-line conveyor option or the OTTO Lifter can bridge gaps in manufacturing or warehouse environments to keep production moving by easily managing variations in workflows that traditionally required manual heavy load transport. By enabling the robot to connect to any conveyor, this option allows pallets to be transported autonomously from a palletizer to a wrapper and on to shipping, with little or no human supervision.



OTHER APPLICATIONS FOR OPERATIONAL FLEXIBILITY

- **Replenishment** — Mobile robots can be used in distribution centers (DCs) to perform tasks such as replenishment and delivery to and from automated storage and retrieval systems (AS/RS).
- **Conveyor bridging** — In-line conveyor AMRs can serve as a versatile robotic "bridge" between different conveyors in virtually any facility.
- **Empty tote and pallet returns** — When not performing other tasks, mobile robots can collect empty totes and pallets and return them to refill stations.

In all of these applications, AMRs handle the movement of goods between locations, enabling full and continuous equipment utilization.

CERTIFIED FOR SEAMLESS INTEGRATION

Honeywell Intelligrated is recognized by the Association for Advancing Automation (A3) as a Certified Robot Integrator, with extensive experience implementing robotic solutions that work seamlessly with existing automation equipment. Robotic systems come with integrated software and controls, enabling easy training, simple daily use and straightforward maintenance.

A3 ROBOTICS | CERTIFIED Robot Integrator

ROBOTIC SOLUTION DESIGN SERVICES

Honeywell Robotics offers a full suite of Robotic Solution Design Services to help you develop a mobile robotics solution that delivers optimal efficiency. Leveraging industry-leading simulation, emulation, software and feature analyses, prototype designs, system modeling and more, we can help you to design robotic solutions that meet your unique needs — today and in the future. From calculating the ideal number of robots to evaluating where other solutions might be most effective, these powerful developmental tools ensure that you'll get the right solution — without having to rely on trial and error.



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