Autonomous
Material Transportation
The world’s most popular mobile robot solution

1933
Omron established

210
Locations Worldwide

1000s
of robots deployed globally

20+
years of robotics experience

Omron is the original pioneer of industrial mobile robots, working closely with customers to develop best-in-class solutions.
**AMRs vs AGVs**

The difference is flexibility

Conveyors have been used by factories and warehouses for over 100 years, but they are expensive and can be very difficult to modify when products or processes change.

About a decade ago, automated guided vehicles (AGVs) became an alternative to conveyors for material handling. So what is the difference between an autonomous mobile robot (AMR) and an AGV?

AGVs require a predefined path to follow, either a network of magnetic lines on the floor or beacons on the walls. So although AGVs allow modifications to production lines, facilities will need to install new equipment every time the AGV path is changed, leading to downtime and extra costs.

AMRs can safely navigate without the use of floor magnets or wall-mounted beacons. An AMR will first create a baseline map of a facility using built-in sensors, then will constantly detect its surroundings. When processes change, AMRs can easily change as well, creating networks of new routes or being reassigned to new tasks.

Unlike AGVs, which will stop at obstacles indefinitely, AMRs avoid stationary or moving obstacles and automatically reroute themselves when necessary. AMR paths automatically change without human intervention, making operations more flexible and decreasing total cost of ownership.

### AMRs vs AGVs Table

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<th>Omron AMR</th>
<th>AGV</th>
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<td><strong>Set Up</strong></td>
<td>Ready to go after simple mapping</td>
<td>Requires navigation guides</td>
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<td><strong>Navigation</strong></td>
<td>Navigates autonomously and safely without physical guides</td>
<td>Needs guides, such as floor magnets or beacons</td>
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<td>Safely avoids obstacles without stopping</td>
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Unlike autonomous mobile robots (AMRs), automated guided vehicles (AGVs) require guides, which restrict their options for routing.
Flexible Functionality

Omron’s mobile robot solutions are extremely versatile and can be adapted to perform a wide variety of tasks and applications. We’re also scalable, so we can grow with your business.

Grow Your Business
- Modify layouts to optimize production

Adapt to Changing Environments
- Assembly stations
- Clean rooms
- Order fulfillment
- Loading docks
- Stock rooms
- Plus many others
Meet the strongest member of Omron’s family of mobile robots.

Omron is proud to announce the release of the LD250, our latest automated mobile robot with a payload capacity of 250kg.

The LD250 is based on the same tested-and-proven technology used in the industry-leading LD90, with a higher payload capacity and tougher metal skins. Customers can now move heavier loads, or make fewer trips with larger batches, ultimately doing more with less equipment.

Integrating seamlessly into an Omron mobile fleet, the LD250 supports all of the same fleet management functions as it’s smaller siblings enabling customers to optimize their traffic management, battery management, and routing of vehicles now with an even more diverse fleet.

Increased Capacity
Omron mobile robots are easy to get up and running, requiring no construction such as the installation of magnets, and minimal programming. In addition, our software integrates with your other systems so you can get the solution up and running in minimal time.

Key Installation Features

- No construction required
- Easy integration with MES, ERP, and WMS
- Enhanced security to comply with IT systems
- Autonomous navigation doesn’t require preset routes, magnets, or beacons
- Automatic software updates across fleet while maintaining continuous work flow

1. UNBOX
The complete mobile solution comes with everything you need for quick setup.

2. MAP
After a short tour through your facility, the robot will make a custom map of your floor plan.

3. SET GOALS
Use simple commands to set up goals for pick-ups and drop-offs.

4. SEND JOBS
Simple integration between the Omron Fleet Manager and your MES and WMS allows you to get your robots working immediately.
Omron mobile robots are fundamentally built to serve human workers. Designed to meet the industry’s latest requirements, our mobile robots interact with people to promote a collaborative, safe working environment. Safety lasers and rear sensors allow our robots to detect obstacles in their path and prevent collisions.

**Feature packed by design**

LD60/90
- Onboard laser sensing and navigation
- Rearward obstacle detection
- Automatic dock charging
- Power and control of custom topper units

LD Cart Transporter
Same capabilities as the LD-60/90 plus:
- Higher payload capacity (cart req.)
- Automatic cart latching system
- Expanded laser sensing
- Optional factory installed Acuity system
- Color touch screen user interface

LD250
- Onboard laser sensing and navigation
- Heavy duty, all metal construction
- Rearward obstacle detection
- Automatic dock charging
- Power and control of custom topper units
- Supports full line of LD series options and accessories

**Safety Features**
- Avoids static and moving obstacles
- Additional E-stops easily added
- Complies with ISO EN1525, JIS D6802 and ANSI B56.5 safety standards
Product Features

LD Cart Transporter

Rear Laser
Detects high level rear obstacles.

Rear Sonar
Detects rear low level obstacles using sonar.

Acuity System
Tracks ceiling features to increase navigation performance (optional).

Touch Screen
Provides system control and status monitoring.

Performance Battery
Up to 12 hours of runtime between charges up to 7 years.

Charge Dock
Integrated contacts for automated charging.
Product Features

LD Cart Transporter

Dual side lasers
Detects high level side obstacles when moving forward.

Latch System
Automatically engages and disengages with cart units.

Light Discs
Status indicator is located on both sides.

Safety Scanning Laser
Safety-rated laser used for SLAM (Simultaneous Localization and Mapping) and safety functionality.

Front Bumper
Stops when in contact with obstacle.

Low Front Laser
Obstacle sensor detects low-profile objects when moving forward.
Product Features

LD 60/90

Rear Sonar
Detects rear obstacles using sonar.

Performance Battery
Up to 15 hours of runtime between charges for up to 7 years.

Charge Dock
Integrated contacts for automated charging.

AUX Power & I/O
Internal connections to power and control custom topper models.

Operation Panel
Access to system power, E-Stop, and the operation status display.

Safety Scanning Laser
Safety-rated laser used for SLAM (Simultaneous Localization and Mapping) and safety functionality.

Light Discs
Status indicator is located on both sides.

Front Bumper
Stops when in contact with an obstacle.

Low Front Laser
Obstacle sensor detects low-profile objects when moving forward.
Product
Features

LD 250

Light Discs
Status indicator is located on both sides.

E-Stop Buttons
E-stop located on both sides and top.

Aux Power & I/O
Internal connections to power and control custom topper modules.

Performance Battery
Up to 13 hours of runtime between charges for up to 7 years.

Rear ToF Sensors
Detects rear obstacles using infrared light.

Hardened Construction
Metal chassis and skins for increased duty and durability.

Safety Scanning Laser
Safety-rated laser used for SLAM (Simultaneous Localization and Mapping) and safety functionality.

Low Front Laser
Obstacle sensor detects low-profile objects when moving forward.

Operation Panel
Access to system power, E-Stop, and the operation status display.

Charge Dock
Integrated contacts for automated charging.

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E-stop located on both sides and top.

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Access to system power, E-Stop, and the operation status display.

Charge Dock
Integrated contacts for automated charging.
Precise Performance

Our safe and intelligent navigation leads the industry in speed and accuracy. Using multiple systems, our robots learn to become even more efficient after they’re installed. Every robot in our fleet acts as a sensor to map out the most challenging environments and optimize its performance, from navigating tight aisles to planning the most efficient routes.

Key Performance Capabilities

- Dynamic obstacle avoidance
- Faster navigation times
- Smoother driving
- Fast goal approach speeds
- Superior alignment at goals

Acuity
Omron’s patented Acuity sensing system generates navigation markers from ceiling lights and objects, since these are more likely to remain fixed. Using these ceiling features along with the standard floor level map, the system can identify the robot’s position no matter how frequently the environment on the floor changes.

Cell Alignment Positioning System (CAPS)
CAPS evaluates real-world features to effectively align robots for high accuracy drop-offs and pick-ups.

High Accuracy Positioning System (HAPS)
HAPS allows our mobile robots to move along fixed paths in applications that require tight tolerances.
The Omron Fleet Manager, running with FLOW Core software, can manage fleets of up to 100 robots in any configuration.

**Powerful Fleet Management**

**Omron Fleet Operations Workspace (FLOW) Core**

The Omron Fleet Operations Workspace (FLOW) solution provides an intelligent fleet management system that monitors mobile robot locations, traffic flow, and job requests, ensuring your factory operates at peak efficiency.

The FLOW Core solution also reduces programming in your manufacturing execution system (MES) or enterprise resource planning (ERP) system by automating robot tasks.

**Key Functions**

- Displays robot location and status
- Displays job queue
- Prioritizes important jobs
- Selects fastest routes based on human and robot traffic
- Identifies blocked paths and creates alternative routes
- Optimizes job assignments
- Optimizes battery charging
Omron

Fleet Manager

**Optimize Efficiency**

1. Intelligent Job Assignment
   Reduces wasted time and movement by continuously looking ahead to anticipate which robots will be best positioned for upcoming tasks.

2. Managed Motion
   Ensures smooth operations in busy environments by coordinating traffic flows and efficiently sequencing pick-up and drop-off at target locations.

3. Traffic Control
   Notifies converging robots of their predicted paths, allowing them to re-calculate and avoid collision in the most efficient way.

**Maximize Uptime**

4. Automatic Updates
   Performs updates automatically across the entire fleet.

5. Charge Management
   Tracks battery power of the entire fleet, directing robots to their nearest available, or preferred, docking station on a schedule that ensures continuous fleet operation.

**Increase Flexibility**

6. Easy Integration with IT Systems
   Fleet Manager can connect to your MES, ERP and WMS so that jobs can be propagated automatically to the fleet in real time.

7. Skill Administration
   Understands the capabilities of each vehicle in the fleet, and always makes sure that the right job is assigned to the right robot.
With payloads of 60, 90, and 250 kg, the LD series is the industry standard for Autonomous Mobile Robots (AMRs).

Omron Fleet Manager coordinates mobile robots and provides traceability, job allocation, and traffic control across the entire fleet. A second Fleet Manager can also provide backup functionality.

Omron Fleet Simulator easily simulates fleets of robots so you can fine-tune your fleet before deployment.

Omron Fleet Manager coordinates mobile robots and provides traceability, job allocation, and traffic control across the entire fleet. A second Fleet Manager can also provide backup functionality.

Omron supplies more than robots. We deliver a full ecosystem of automation technology to provide the best solution from one source.

Fleet Operations Workspace is the software platform that puts you in complete control of your mobile robot workforce, improving productivity, throughput, and traceability.

Our Cell Alignment Positioning System (CAPS) uses markers to more effectively align robots at goals for better drop-offs and pick-ups.

Our patented Acuity Drive generates navigation markers from ceiling lights and objects to help identify positions of the robots, no matter how frequently the environment on the floor changes.

Our customers can add manipulation to their mobile fleet by integrating our LDs with our Omron TM Collaborative Robots.

Our PC and tablet-based software interface helps you manage your fleet.

Enhanced security allows safe and easy integration into IT systems, including MES and WRP systems.

Omron Mobile Solution

Robots are built for performance. Omron’s mobile robots handle the performance of simple transport, delivery, and routing chores so your employees can perform higher-value jobs.
Industrial Automation Solution

As the leader in industrial automation, Omron offers products that help manufacturers fulfill the needs of mass customization, and address issues related to rising labor costs and labor shortages.

Along with mobile robots, Omron provides a variety of automation equipment and devices that range from control components and vision sensors to controllers and servomotors, as well as an array of safety devices and fixed robots.

You need more than a piece of advanced hardware equipment; you need an autonomous material transport system flexible enough to evolve with changing needs. The Omron full family of automation technology fills in your entire production line.
Your trusted partner in automation

When you work with Omron, you don’t just get a robot — you get a fully integrated solution to meet the needs of your automated production.

Integrated
Integrates with custom payloads such as conveyors
Compatible with other Omron robots

Intelligent
Optimizes routing
Adapts to changing conditions on the fly

Interactive
One fleet manager controls up to 100 robots
Intuitive setup on PCs and tablets
Works safely with people
Made for Industry

With the largest install base in the world, Omron mobile robots are deployed in thousands of applications across multiple industries.

Automotive
- Tire assembly
- Automotive electronics
- Automotive accessories
- Assembly and inspection

Digital
- Semiconductor wafer fabrication
- Semiconductor packaging and test
- Mobile device manufacturing
- Data center environmental surveillance

Consumer products
- Stockroom transport
- Transport goods to assembly and sorting stations

Medical
- Sterilization room transport
- Laboratory sample transport
## Case Studies

### Škoda Auto

**Location**: Vrchlabí, Czech Republic  
**Industry**: Automotive  
**Products**: Transmissions  
**Date**: 2018  

**Customer challenge**: Demand increase led to higher capacity for the plants and more traffic in the production areas, leading to safety risks and fatigue for workers that had to continuously transport material from one part of the factory to another.  

**Application**: The LD robot completes 120 trips per day and travels a total distance of 35 km between the mechanical measuring center and the processing machines.  

**Omron equipment**: Omron LD-130CT mobile robots  

**Why Omron was chosen**: Customer wanted to move away from magnetic tape to an autonomous system, and in particular liked MobilePlanner.  

**Impact**: Škoda expanded production and improved worker safety without increasing labor cost at the plant.

### GlobalFoundries

**Location**: Singapore  
**Industry**: Semiconductor  
**Products**: Semiconductor wafers  
**Date**: 2013  

**Customer challenge**: Improve productivity by providing more predictable delivery times and reducing human errors. Optimize the workforce and redeploy workers to higher-value tasks.  

**Application**: 60+ LD robots integrated with handlers used for intra-bay loading and inter-bay transfer. Robots carry pods from one machine tool to another and move works-in-progress to various process areas within the fab. They have been running 24/7 since 2013.  

**Omron equipment**: Omron LD-90 mobile robots  

**Why Omron was chosen**: Customer explored AGVs but preferred Omron AMRs because of flexible navigation and ease of installation, as well as LD’s cleanroom rating.  

**Impact**: GlobalFoundries improved labor productivity by more than 5%, a big jump in Singapore’s productive semiconductor industry.
Global service and support network

Omron offers service and support for its mobile solutions almost anywhere in the world, ensuring our solutions will run with minimal unwanted downtime.