



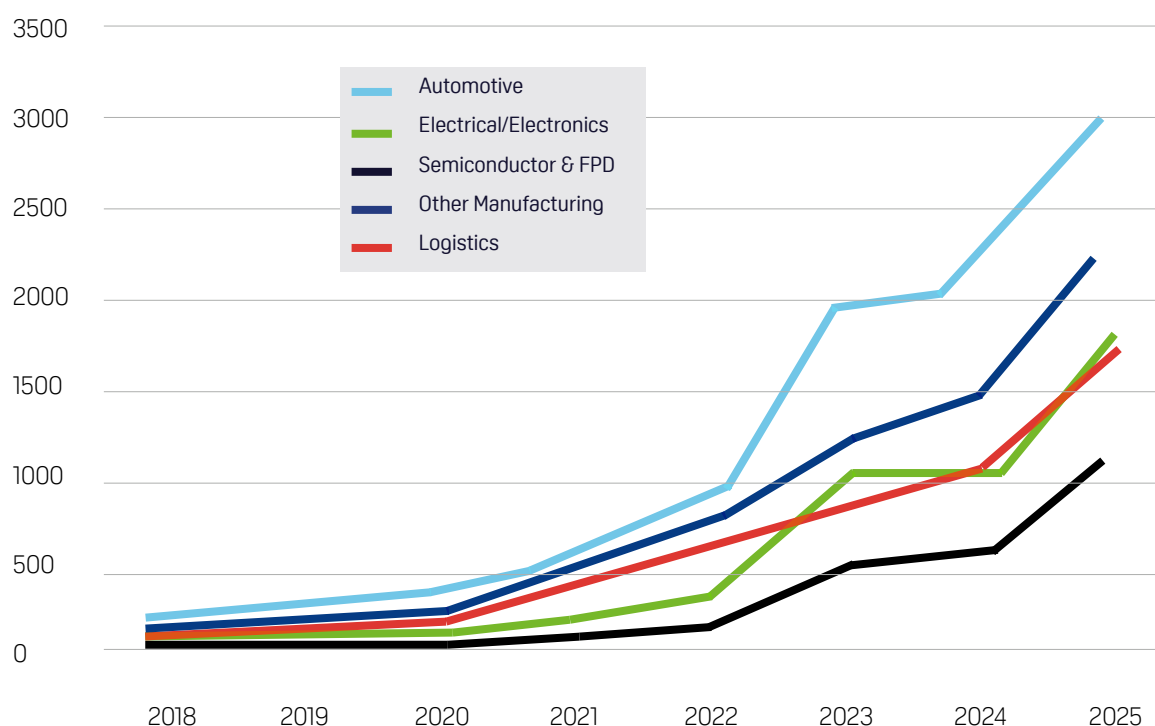
Intralogistics Automation in the Automotive Industry



Automating automotive processes with robots

Competitive pressures and dynamic market demands have made the automotive industry the most automated in the world. Production of cars and trucks is often associated with large, hulking robots fenced from human employees.

The industry, though, is advancing on the automation front. Today, it's about more than repetitive, fast, and high-volume production. Automotive consumers want customized products and to meet the needs, autonomous mobile robots (AMRs) offer automotive OEMs and suppliers the combination of repeatability and flexibility they need, even in logistics processes that haven't been possible to automate until now.



Source: Interact Analysis. "The Mobile Robot Market - 2021. An analysis of AGVs & AMRs in material handling applications"

How AMRs help automotive manufacturers stay competitive

Despite the fact that automation is already very well established in the automotive industry, OEMs, tier one, two and three suppliers alike can still profit from continuing advances in this field. Autonomous mobile robots provide attractive opportunities for automation of internal logistics and material handling in the automotive industry for a wide range of applications and production facilities. Here's some of the reasons why automotive manufacturers should consider investing in AMRs:

Solve labor shortage challenges: AMRs take over non-value adding

internal transportation tasks and optimize productivity, and allows companies to redeploy workers for higher value jobs.

Increased safety: AMRs navigate safely in dynamic environments, and if they meet a person they reroute or make a safety stop. They constitute a safe alternative to forklifts that are accident prone.

Maximized flexibility: Agile AMRs can adapt to dynamic factory layouts and changing production setups fast and without any new requirements for the intralogistics setup.



STERA Technologies uses traditional fenced robots in their production and has deployed MiR robots to ensure automated, efficient, and safe transportation of components to the robotics cells.

3 typical workflows to automate with AMRs

1

Automated Inbound Logistics

AMRs can replace forklifts in long hauls between your inbound logistics and storage area to optimize the transportation of incoming goods. The AMRs can autonomously navigate to different area of the factory based on load, and deliver e.g. for storage or directly for production. Moreover, the flexible MiR robots can effectively transport odd-size goods and non-conveyable goods.



2

Component and Raw Material Transfer

AMRs can move materials, WIP-parts or components between production lines, cells, or departments, and depending on your needs, they can drive a specific route continuously or pick up and deliver goods on demand.



3

Waste Disposal

AMRs can help automotive manufactures stay lean by making sure to pick up the waste material in the production, either scheduled or by being summoned when needed. The heavy-duty AMRs from MiR can also be used for removing empty pallets from a pallet magazine dispenser or vice versa.



MiR offers a wide range of AMRs that can move everything from smaller parts to heavy loads and pallets. Learn more about MiR's different solutions.

Automotive Case Stories from around the World



Ford / Spain



The incorporation of the 3 MiR robots has allowed us to turn a routine distribution of spare items into a highly qualified job.”



Alvarez,
Manager of the
Body & Stamping plant

Challenge:

FORD in Valencia manufactures 2,000 vehicles a day in the plant that covers an area of 300,000 m². To keep FORD's production running in this huge facility, it is essential to deliver fresh industrial and welding materials to the different robot stations of the Body & Stamping plant. However, this task was handled manually, and it was a repetitive and time-consuming task for the FORD employees that added no value.

Solution:

To optimize its internal logistics, FORD deployed MiR100 robots to transport welding materials from the intermediate storages and directly to the robotic cells. The robots are equipped with an automated shelving system with 17 slots to accommodate materials of different weights and sizes. To avoid errors, the opening and closing of these slots is automated, meaning that operators in each area only have access to the materials assigned to them.

Benefits:

- 3 MiR100 robots free up 40 man hours per day at FORD, allowing workers to dedicate themselves to more complex tasks.
- The robots navigate efficiently between human workers, forklifts and other intralogistics systems and ensure timely deliveries of welding materials.
- The AMRs are easily reconfigured for new tasks and new maps as they don't require new infrastructure, which allows FORD to stay efficient, even if they change their layout.



Learn more: www.mobile-industrial-robots.com/case-studies/mir100-ford-spain

Faurecia, Germany



The solution can be transferred without any problems to other transport tasks at Faurecia. The implementation of the automated transport with AMRs is a milestone on our way to shaping the future through digital transformation.”



Hartmut Beisner,
Implementation Leader at
Faurecia Stadthagen

Challenge:

Automotive Tier 1 supplier, Faurecia, is highly automated. However, at the company's Stadthagen plant, employees spent 8-10 hours a day transporting products from the welding shop via the paint shop to assembly. They needed a flexible solution that could be adapted to existing processes while increasing the productivity.

Solution:

Faurecia deployed a mixed fleet of MiR500 and MiR200 Hooks to transport frame parts between different stations. The highly flexible MiR500 robots are equipped with a customized structure that realizes the loading and unloading of frame parts, and Faurecia has integrated the MiR robots into their ERP system, so the AMRs automatically receive orders. All of this means that Faurecia has been able to fully automate their internal transportation of frame parts.

Benefits:

- Fully automated intralogistics workflows increase efficiency
- Compared to traditional AGVs, AMRs do not require magnetic tape or other guidance which allows Faurecia to easily use the AMRs for different routes and tasks
- The MiR robots are flexible platforms and Faurecia has customized them to fit into their existing automation equipment with special top modules



Learn more: www.mobile-industrial-robots.com/case-studies/mir500-faurecia-germany/

Visteon, Slovakia



MiR robots provide labor related advantages in two main areas: simple and monotonous tasks can be done by robots, which implies cost-savings for us. Also, in terms of ergonomics, it's very useful that workers are supplied with material in a precise time and comfort without having to carry out heavy physical activities themselves."



Richard Čiernik,
Industrial Engineer Manager in
Visteon Electronics Slovakia

Challenge:

Visteon Electronics Slovakia produces 2 million cockpit desks a year for several OEM automotive manufacturers. Supplying materials at a given quality, volume, and at a given time is complex and requires high precision and flexibility. The company used AGVs navigated by magnetic strips for automated internal transport. But AGVs require much time and costs in case of a need to change the production layout and infrastructure. It was clear that Visteon needed an alternative.

Solution:

Visteon wanted a logistics system that is suited for Industry 4.0 and complies with agile and flexible work environments where new production cells need to be implemented at a certain pace. The solution was AMRs from MiR. The MiR robots transport PCBs supply to SMT lines, they collect waste material, and transport finished plastic components. The mobile robots are currently used in 24 hours operation five days a week.

Benefits:

- Visteon has had an ROI on less than a year with the MiR robots
- The flexible AMRs enable Visteon to use the same type of robot in different applications in multiple shop floors with minimal modifications to the layout
- The user-friendliness of the MiR robots has allowed Visteon to easily implement them and it's fast to redeploy them for new tasks



Learn more: www.mobile-industrial-robots.com/case-studies/mir200-visteon-slovakia/

Our AMRs at a glance

The autonomous mobile robots from MiR are designed to optimize productivity in logistics and manufacturing operations. The MiR AMRs make your employees more efficient by allowing them to focus on higher-value activities, while shortening lead time, reducing the risk of bottlenecks, and optimizing safety.

AMRs to transport small and medium-sized materials



MiR250

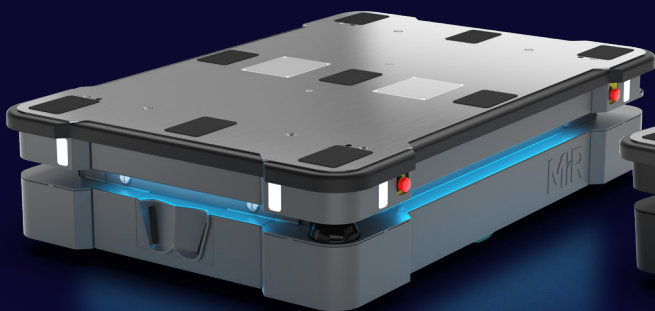
Payload: 250 kg / 551 lbs
Size: Length: 800 mm / 31.5 in
 Width: 580 mm / 22.8 in
 Height: 300 mm / 11.8 in
Speed: 2.0 m/s (7.2 km/h)
 6.6 ft/s (4.5 mph)



MiR100

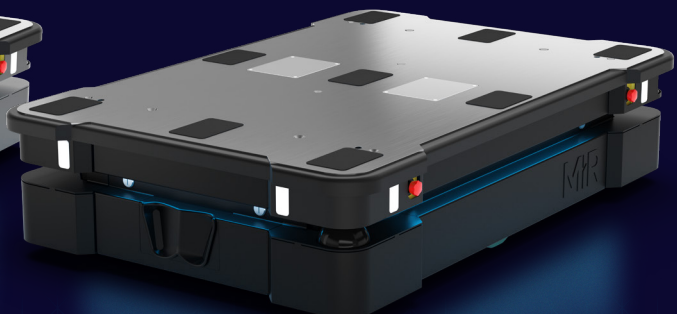
Payload: 100 kg / 220 lbs
Size: Length: 890 mm / 35 in
 Width: 580 mm / 22.8 in
 Height: 352 mm / 13.9 in
Speed: Forwards: 1.5 m/s (5.4 km/h) / 3.6 ft/s (2.5 mph)
 Backwards: 0.3 m/s (1 km/h) / 1.0 ft/s (0.7 mph)

AMRs to transport heavy loads and pallets



MiR600

Payload: 600 kg / 1320 lbs
Size: Length: 1350 mm / 53.1 in
 Width: 910 mm / 35.8 in
 Height: 322 mm / 12.7 in
Speed: 2.0 m/s (7.2 km/h)



MiR1350

Payload: 1350 kg / 2976 lbs
Size: Length: 1350 mm / 53.1 in
 Width: 910 mm / 35.8 in
 Height: 322 mm / 12.7 in
Speed: 1.2 m/s (4.3 km/h)

Scalable out-of-box solutions from MiR

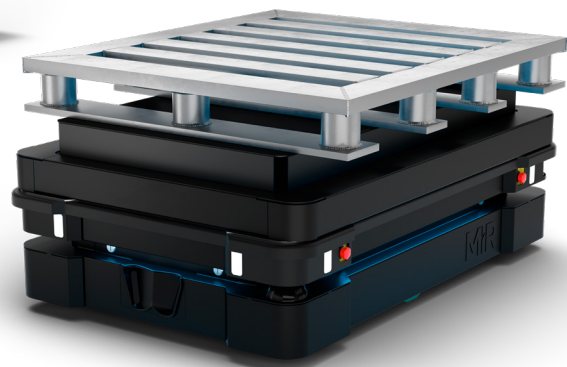
Out-of-the-box solutions from MiR include the **MiR250 Hook** and **MiR250 Shelf Carrier** and, the **MiR600** and **MiR1350** pallet lifts and shelf lifts. These tested and proven products enable easy integration and scalability, from pilot programs to replicated systems that can be scaled across multiple sites.



MiR250 Hook
Available for **MiR250**



MiR250 Cart Carrier
Available for **MiR250**



MiR Pallet Lift
Available for **MiR600** and **MiR1350**



MiR Shelf Lift
Available for **MiR600** and **MiR1350**

MiR EU Pallet Lift
Available for **MiR600** and **MiR1350**



Customize your AMR to your workflow

One of the biggest advantages of MiR AMRs is their configurability to work seamlessly within your current workflows and processes, because MiR is an open platform for both software and hardware. Our ecosystem for AMR applications, MiRGo, is the largest in the industry offering more than 140 applications to easily customize your automated logistics solution for your needs.

Popular customized solutions in the automotive industry

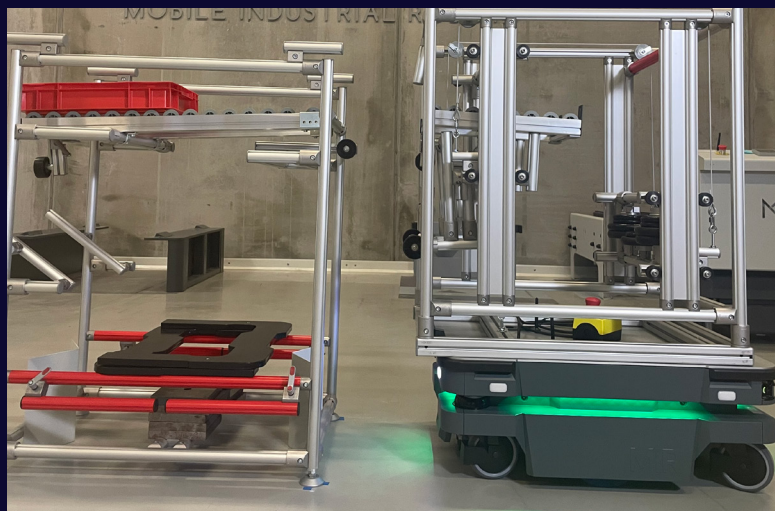
Collaborative Mobile Robots

The combination of MiR robots and Universal Robots' collaborative robot arms can e.g. be used for:

- On-demand Kanban service for C-parts
- Automated CNC machine tending
- Automatically transport and re-stock consumables and materials

Mobile Gravity Systems

MiR robots are often deployed with karakuri systems that can directly connect to existing stationary systems for maximum productivity of the intralogistics processes.





Want to learn more?

MiR has a team of automotive industry experts

Get in touch today



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