

# What to Consider When You're Ready to Automate Internal Logistics

The questions to ask to get the best autonomous mobile robot (AMR) for your specific needs



# Ready to automate your material transport?

Global labor issues continue to boost manufacturers' and logistics companies' need to automate low-value, manual tasks such as material transport. These repetitive jobs can be hard to staff cost-effectively, with issues ranging from high labor costs to a shortage of reliable workers. Lack of logistics workers often means high-value employees have to leave their assigned tasks to move material, which can drag down productivity and competitiveness. And if material isn't delivered on time to keep processes flowing, it can have a significant impact on output and profits.

Automating internal logistics with autonomous mobile robots (AMRs) is a strategic, cost-effective solution that can also improve employee safety and workflows.

Asking the right questions will help guide your decision and give you confidence that you're moving in the right direction.

## Know what questions to ask:

- What are your goals for automation?
- What do you need to transport?
- What are your environmental characteristics?
- Do you have industry-specific requirements for your AMR?
- What are your desired results?
- How will your employees accept and interact with robots?
- How integrated should your solution be?
- How adaptable is the robot to your workflows?
- What is your need for global and local support?



# What are your goals for automation?

There are many reasons to automate, and each raises different implications for the type of technology to consider. Your objectives also help determine overall system deployment, including integration, budget, labor expectations, and future business plans.

Look around your facility and analyze your current and future automation initiatives. The reasoning behind those plans is typically as relevant to material transport as to other processes.



## FLEXIBILITY

Do you need to respond more flexibly to deliver new products, services, or processes?



## SAFETY

Are current transportation modes presenting dangerous (and costly) risks to employees?



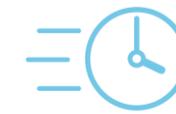
## ADAPTABILITY

Do you need to adapt more readily to changing market conditions, customer demands, or seasonal peaks?



## SAVINGS

Are you looking to reduce costs for dedicated material transportation staff to equipment maintenance?



## STAFFING

Are you struggling to hire and retain reliable workers for low-value tasks?



## CONDITIONS

Will customers and employees respond positively to improved working conditions?

Download our [Comparison Guide to Material Transport & Logistics Options](#) to understand the capabilities and costs of different material transport options.



# What do you need to transport?

Consider which processes and materials tie most closely to your primary objectives. The size, weight, and type of material you need to move will impact many other factors, from size and type of robot and top module to speed, acceleration, and power usage.

- **Payload** – What is the typical and highest weight you need to transport?
- **Size** – How large or bulky is your payload? How is it packaged?
- **Application** – Will you be moving pallets? How are they staged (floor, racks, stands, etc.)? Will the robots transport material directly to or from conveyors or other automated systems? Do the robots need to autonomously recognize, pick up, and deliver carts?



**MiR offers the largest suite of AMRs**, all with the same intuitive user interface, so it's easy to integrate a family of robots for multiple applications and to add or redeploy robots as needed. Payload scales from 100 kg to 1350 kg, including heavy-duty robots that can automatically pick up and deliver pallets.

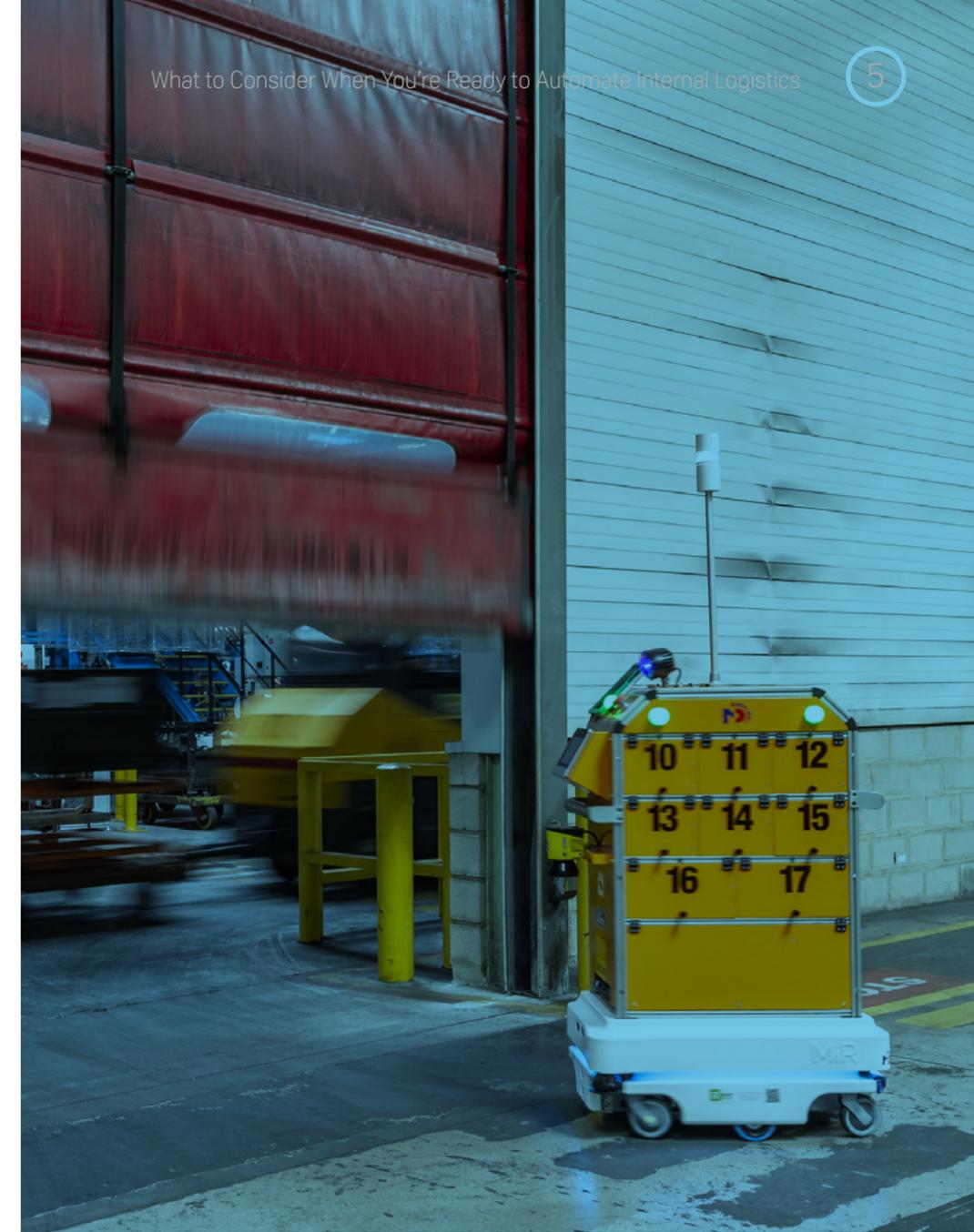
Choose a robot whose footprint is ideal for the size of the materials you need to move and type of top module that best suits your application, which also impacts speed and braking time. For multiple AMRs, MiRFleet software automatically controls missions and traffic and chooses the right robot for specific tasks.

# What are your environmental characteristics?

The conditions in your facility impact your choice of robot platform and application, path and mission options, and battery life and charging—as well as decisions about where and how employees interact with the robot. Your environment also directly influences the height, width, and weight of payload you can move.

Consider these elements to help define the needs for your AMR's sensors, traction, and safety functions:

- **Floor** – Is your floor dusty or dirty? Is it ever wet or slippery? Is it painted or have taped lines or signage? Is it level or are there inclines? Are there bumps, cracks, or rough areas?
- **Light** – What are the lighting conditions where the robot will navigate? Is it consistent? Are there areas of heavy shadow or bands of bright sunlight?
- **Furnishings and equipment** – What fixed or non-fixed elements are in the robot's path? If there are racks or shelves, how high is the lowest shelf from the floor? Are those items often moved?
- **Halls and corners** – Are there narrow hallways or passages that limit the width of the robot, top module, and payload? Is there room for the robot to pass people or other vehicles? Are there tight corners that affect maneuverability and payload balance?
- **Doors and elevators** – Does the robot need to interact with elevator or automatic door opening systems?
- **Low overhangs or passages** – Will the robot and its payload need to navigate under low overhangs, tables, or passageways?
- **Other vehicles** – Does the robot need to interact with other vehicles or robotic systems?
- **Employees and visitors** – How closely will the robot interact with employees? What about visitors, who may not be trained or familiar with the robots? Does the robot need to navigate through densely populated areas, or areas where people are moving regularly?



# AMRs for industrial environments

The **MiR250**, **MiR600**, and **MiR1350** are built with robust industrial components and include features such as bumpers to protect the robots from other vehicles and additional proximity sensors to detect pallets on the floor.

The **MiR600** and **MiR1350** are also the industry's first IP52-rated AMRs. With better ability to withstand dust and fluids, these rugged robots are appropriate for more environments than other AMRs.

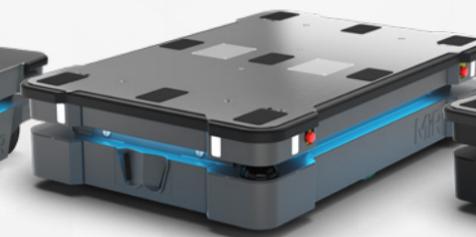
## Seamless integration into existing environments

MiR robots can be seamlessly integrated into existing facilities and processes, including interfacing automatically with elevator systems. For dynamic environments, the MiR250, MiR600, and MiR1350 boast the latest SICK nanoScan technology for optimal precision and docking. MiR also offers artificial intelligence (AI) capabilities using 3D cameras and sophisticated software to detect obstacles or people in advance for safe navigation and to avoid bottlenecks.

MiR250



MiR600



MiR1350



# Do you have industry-specific requirements for your AMR?

Depending on your industry, your specific application, and even the location where robots will be used, your AMR may need to meet a range of requirements and standards. Sterile manufacturing environments may have very different needs than warehouses. Safety standards compliance is often a broad requirement across industries.

Do you need to consider any of these industry- or application-specific requirements that can restrict your AMR options?

- Clean room environment
- Electrostatic discharge (ESD) protection
- Electromagnetic compatibility (EMC) requirements
- IP classification for dust or liquid ingress
- Safety standards compliance
- IT security requirements



MiR robots are designed to comply with the latest industry safety standards and to meet a range of environmental and application requirements.

The MiR250 is ESD-approved and clean-room-certified, and the MiR600 and MiR1350 are IP52-rated, which is often required in the fast-moving consumer goods (FMCG) sector.



## What are your desired results?

Your automation initiative should provide measurable results within the amount of time defined by your company policies and objectives. Considerations for improved output and return on investment (ROI) include:

- **Types of missions** – Do you need a highly specialized mobile robot or one that can be deployed for multiple types of missions and applications?
- **Speed of operations** – How will the robot's output compare to other transport options?
- **Number of shifts** – How many shifts should the AMR cover? Will this allow you to increase the number of shifts you operate?
- **ROI expectations** – Is a typical two-year ROI for automation equipment appropriate for your business?
- **Total cost of ownership (TCO)** – Beyond upfront costs, what are the fees for ongoing service, software updates, and training?

# Configurable AMRs for any workflow

MiR robots are used across a wide range of workflows in warehousing, production, and between departments, and there are no limitations for the number of missions that a MiR robot can run. The MiR robot's standard automation platform allows almost unlimited configuration options for top module equipment to meet specific application requirements.

The **MiR250** is one of the most productive AMRs in the market, with a battery runtime of up to 17 hours and charging ratio of 1:16 (three-hour charge per 24-hour cycle). With its fast battery swap, the **MiR250** can run 24/7 with minimal interaction.

ROI for MiR robots is typically less than two years, and total cost of ownership (TCO) is also low with a simple, transparent service structure and no hidden fees.

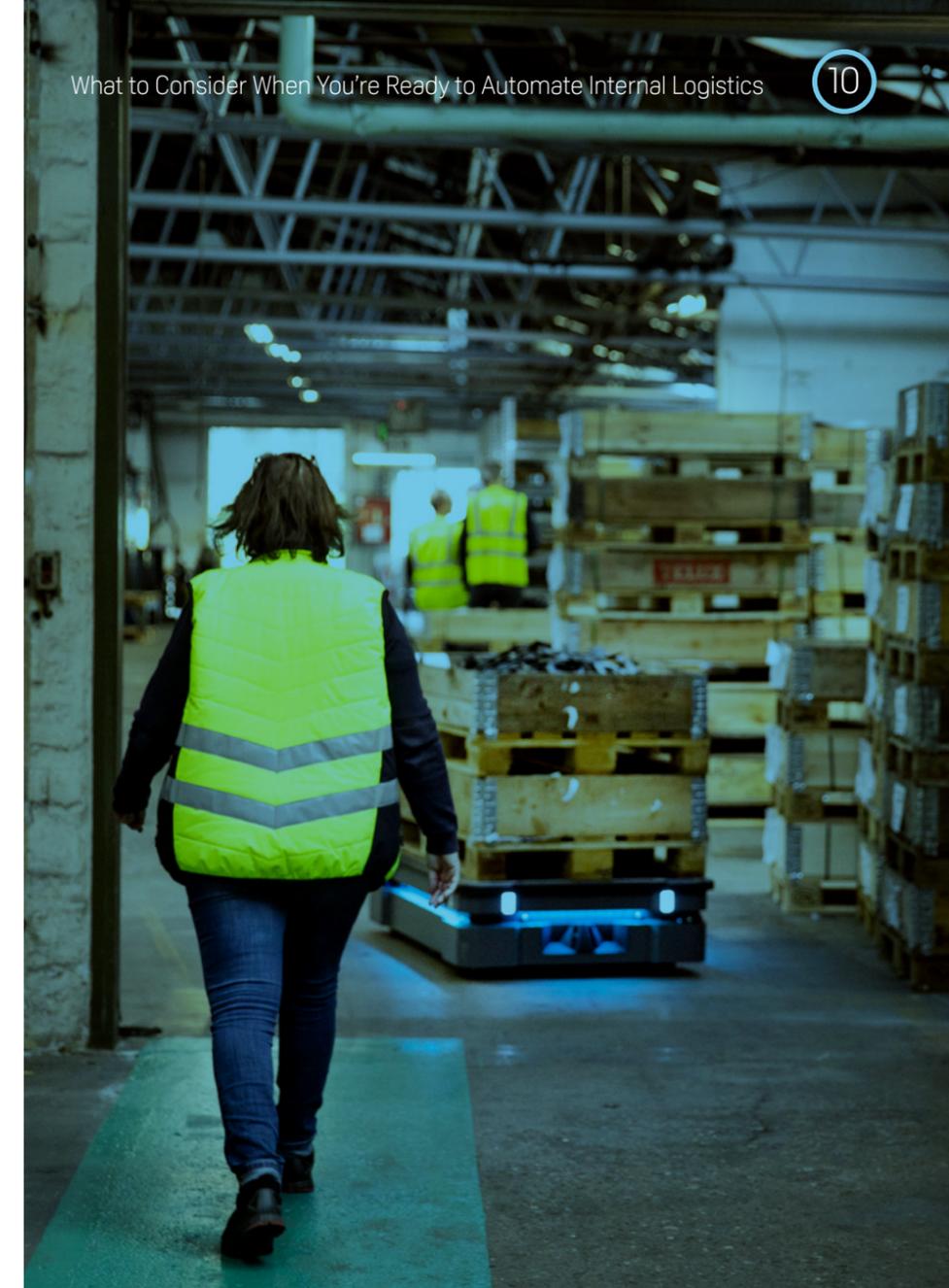


# How will your employees accept and interact with robots?

From implementation to daily interaction, your employees are key to your success. It's important to have internal stakeholders who are responsible for your automation initiative, but their level of knowledge can vary considerably. Some companies have experienced automation teams in-house, while others give an existing employee part-time robotics responsibility.

It's important to plan for these issues that can make or break your automation plans:

- How much experience do employees have with robots?
- Do you anticipate resistance from unions or employees worried about their job security?
- Have you explored opportunities to include employees and give them a sense of ownership, such as a naming contest for their new robot colleague?
- Have you prepared employees and included them in planning processes to address their concerns and help them understand why you're investing in robots?
- Have you identified an employee who will act as the go-to person for any questions or daily interactions with the robot?



Collaborative MiR robots are user-friendly and empowering for employees, even those with little automation experience. Customizable dashboards give appropriate access to different users to protect both the robot and employees.

With AMRs, many employee concerns are quickly alleviated when they experience better work environments, less repetitive labor, and improved working efficiency.

# How integrated should your solution be?

Automated transport can be as simple or complex as your situation requires, from straightforward “bus routes” and manual calls of a few robots, to a fully integrated and automated fleet of robots. What approach best fits your situation?

- AMRs running as separate systems
- Robot fleet management
- AMRs integrated into ERP/WMS/MES



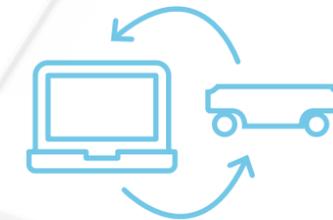
## STRAIGHTFORWARD IMPLEMENTATION

For uncomplicated automated transport, MiR robots can be up and running a simple mission within a day. The robots can be programmed to run regular routes, or can be summoned as needed by employees with just a click on a user-friendly tablet interface using the robots' pull-call function.



## FLEET MANAGEMENT

The sophisticated and intuitive MiRFleet software provides centralized control of a fleet of robots to enable smooth and automated robot traffic. The software receives and distributes missions to whichever robot can complete the task the most quickly and efficiently and ensures proper charging to optimize output.



## SOPHISTICATED INTEGRATION

A full-featured REST API in MiRFleet enables the robots to receive orders from external communication systems such as enterprise resource planning (ERP), warehouse management systems (WMS), and manufacturing execution systems (MES). The robots become part of fully automated workflows, receiving and responding to orders from external systems with minimal interaction from employees.

# How adaptable is the robot to your workflows?

One of the biggest advantages of AMRs is their configurability to work seamlessly within your current workflows and processes. Whether you have an innovative new application or want to be able to redeploy your robots as your needs change, consider how customizable your choice should be.

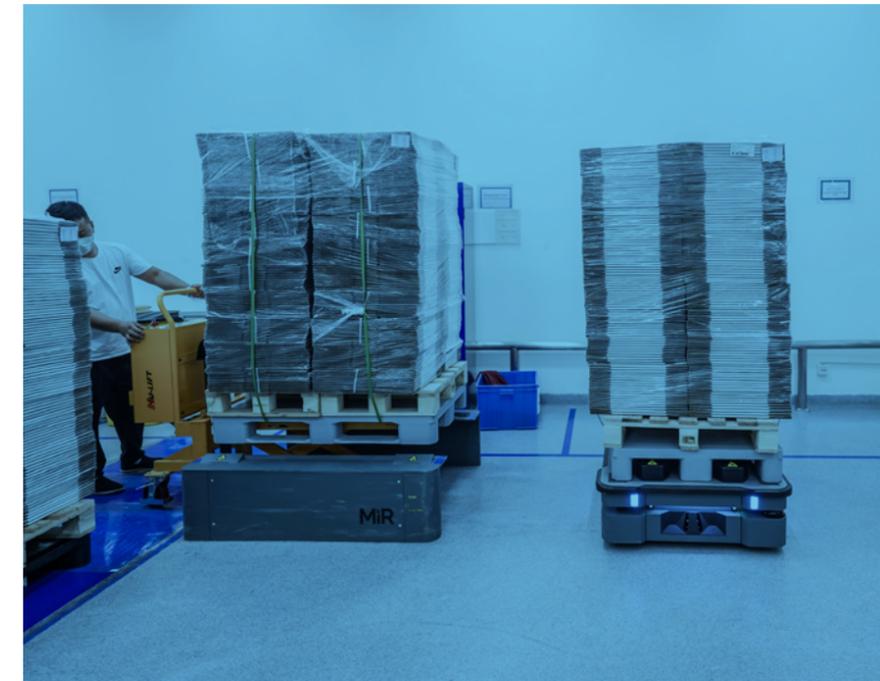
Do you need to add mobility to existing processes such as conveyors or cobot arms? Will the AMR become an integrated link between production cells? Or do you need a plug-and-play solution to ease straightforward logistics processes?

## SCALABLE OUT-OF-THE-BOX SOLUTIONS

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.

## MIR IS AN OPEN PLATFORM FOR BOTH SOFTWARE AND HARDWARE

**MiRGo** is the industry's largest ecosystem for AMR applications, with a wide array of certified third-party software and hardware to easily customize your automated logistics solution for your needs.



Novo Nordisk uses **MiR500** robots equipped with **MiR Lifts** to automate the pallet transportation from docking bay to warehouse.



Honeywell has developed and integrated its own conveyor top module and an RFID scanner, so the MiR robots can scan the content of boxes and deliver them to the right production lines.

# What is your need for global and local support?

As AMRs are integrated into core operations and become a critical part of productive workflows, the ongoing requirements for them also increase. Companies need maximum uptime, which demands robust, high-quality robots. When the robots do need service—from maintenance to repairs to upgrades—it must be easy to access, cost-effective, and standardized across sites and global locations.

As you're researching your options, make sure to take long-term requirements into account:

- What are your in-house service capabilities?
- Do you need service and support across multiple sites or geographic locations?
- Do you need standard service options across different situations or locations?

## EASY SERVICEABILITY, GLOBAL SUPPORT

MiR focuses on easy serviceability, with fast hardware changes that can be done on-site. The **MiR250**, **MiR600**, and **MiR1350** all have pull-out side compartments, making it easy to access all interior components.

MiR was born global, with a network of 200 partners in 60 countries who provide standardized service no matter where you're located.



# Still have questions? We can help!

There are many considerations for automating internal logistics with autonomous mobile robots (AMRs). We can help you define the best, most cost-effective solution for your needs.

**Talk to a MiR automation expert today!**

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