

WHITEPAPER

AMR 101

Everything you need to know about
autonomous mobile robots

Introduction

The exponential growth of eCommerce over the last few years means supply chain logistics need innovative solutions to answer new challenges. To support more drastic peaks, expectations of faster delivery times and increasing SKUs (stock-keeping units), eCommerce fulfillment operations are now prioritizing flexibility and scalability. However, due to increasing labor shortages, resulting in added temporary labor, the traditional approach to scale is no longer enough.

Manual operations are too expensive, low in efficiency and always subject to errors. With the recent pandemic adding the extra need for human distancing, a new approach is needed. AMRs can support supply chains by addressing these challenges, at scale.

What are AMRs?

Autonomous mobile robots, or AMRs, are mobile devices that can autonomously navigate through a warehouse or fulfillment center.

Their sensors, cameras and safety mechanisms allow them to build a digital map of their environment and move around the warehouse free of external guidance. They are a step up from AGVs (autonomous guided vehicles), which require some form of guidance to perform tasks, and which mostly follow a fixed path. Instead, AMRs adapt in real time to the surrounding space, safely detecting and avoiding anything in their way. Without the need to follow a fixed path, they can get to more locations, quicker.

What can AMRs do?

AMRs improve logistics and operations efficiency by supporting floor operations, transportation and processing.



“Look at any scenario where things are moving, that’s an opportunity for AMR. It isn’t about replacing the labor force, as much as it’s about increasing the productivity of the process”.

John Santagate
Vice President, Robotics at Infios

Rather than replace people entirely, AMRs should take on the most repetitive, time-consuming, and dangerous tasks, to save on manual labor. They adapt to you and work for you to answer your challenges. AMRs are tools: they make the employee’s job in the warehouse easier and more productive.

They can, for example, handle the picking and put-away of goods, sorting objects within the warehouse and supporting workers with manual handling.



They can also handle:

- Bulk material movement
- Components shuttling
- Goods-to-person
- Piece picking
- Sortation
- Pallet picking

AMRs make manual jobs easier and alleviate the pressure during busy times with methods such as “swarming,” “follow the bot” and “goods to person.” Swarming robots are especially helpful, for example, during peak times. They minimize the movement throughout the picking stage of operations, navigating workers to picking locations and improving the flow of goods. This way, the picker keeps taking objects from the shelf without pushing a cart or wasting time on additional tasks.



Swarming

The robotic system receives orders from the warehouse management system and automatically assigns them to a dynamic fleet of robots. These meet the workers at the pick location. This way, both the robot and the picker work independently from each other, while their movements are perfectly timed.



Follow the bot

The worker pairs with a robot that directs them throughout the whole pick path. They will then move to another robot once the first picking task is completed.



Goods to person

Robots bring the rack of products to a picker, who stays stationary and continuously picks products off mobile shelves.

What are the benefits of using AMRs?

AMRs are versatile, and can therefore benefit your operations in several ways. They can:

Increase productivity

Placed alongside a smaller, more reliable workforce, they will increase productivity by assisting your team members. By cutting down movements, such as walking between locations, workers can focus on completing more tasks instead of spending time walking and driving.

Reduce errors

Robots have visual interfaces giving workers information about the product they're picking up. They tell them what it looks like, where to find it and where to drop it next. This reduces the possibility of errors, and, in turn, customer dissatisfaction.

Reduce costs

Robotics-as-a-service (RaaS) lets you use AMRs as demand dictates. This means you can lease the exact size of system you need and scale up and down as that need changes.



After the application is installed, adding more robots can be as simple as ordering new bots, unpackaging them, and connecting them to the network.

Integrate easily

They are easy to install into an existing operation, with minimal disruption or modification. They can also learn their surroundings quickly, and adapt their movements accordingly.

Having AMRs in your warehouse will address:

Labor shortages

During seasonal or unpredictable peak times, your team must be free to focus on the most valuable stages of the workflow—when their knowledge and skills are needed the most. AMRs can take over the less valuable tasks, such as shifting product lines or reorganizing storage to optimize packing and shipments. This way, productivity will grow without the need for extra temporary labor. They also cut training time, guiding workers to picking locations without them needing to learn the warehouse's layout.

Seasonal peaks

During peak times, AMRs can reduce operational costs by decreasing staff overtime and taking over some manual tasks. This also means less time spent training new employees.

Need for scalable solutions

AMRs adapt to your warehouse system and environment, offering the best solutions for your needs. They can optimize product placements on shelves, for example, by identifying movement opportunities.



CONCLUSION

What does the future of AMRs look like?

Online sales will only keep growing, which means warehouses need flexible solutions to keep up. Infios can support your needs, by finding the best solution for your unique challenges. We identify the best fit from our wide partnership portfolio, based on capabilities and workflow. We will improve your operations efficiency too, no matter the size of your business.

The AMR industry is growing just as quickly as eCommerce is, which means it's becoming more affordable and easier to integrate. Due to the recent pandemic, AMRs are a safer solution for your team, and their loved ones, as they minimize person-to-person contact in warehouses. And, as their software becomes more advanced, they will be able to pick up new tasks.

Robots are becoming more and more common within the supply chain. To stay competitive, warehouses must find the right fit for their operations, hand over tasks to AMRs and use them to drive efficiency and growth.

Find out more

Learn more about Infios's AMR solution here:

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