



Why Should You Deploy Autonomous Mobile Robots on the Factory Floor?

As a manufacturer, it is not easy for you to implement any new technology in your facility. Especially when you consider the varying number of options available in the market and the complexities of manufacturing processes. From mobile robots to industrial internet of things — the options are limitless. And we understand that the key challenge lies in deciding when and how to harness the power of these solutions.

For managing material handling needs specifically, many manufacturers are deploying Autonomous Mobile Robots or AMRs that improve efficiency and picking productivity around the facility. But how can you decide whether AMRs are the right fit for your needs? Also, why should you choose AMRs over other types of automation solutions, such as automated guided vehicles (AGVs) or conveyors?

Why AMRs are a better choice for your manufacturing facility?

Automation solutions, like conveyors or goods-to-person (G2P) systems, are expensive to implement and are more suited to static facilities. AGVs, which have been quite popular in manufacturing facilities, are flexible and cheaper to implement. However, if you intend to expand your operations, you will need to make significant investments as well as update your facility.

On the other hand, AMRs are significantly more sophisticated. They're packed with onboard technology that enables them to understand their operating environment. Rather than being restricted to fixed routes, an AMR can move around dynamically, allowing it to plan its own paths and travel quickly.

If you have been considering AMRs for your facility, you should carefully assess their capabilities and features before making a decision.



In this eBook, we will take a deep dive into the capabilities, limitations, requirements, and ongoing management of AMRs.



Let's look at what benefits AMRs can offer for your material handling needs



You don't need to make any infrastructural changes.

Automated transport solutions, like AGVs and conveyors, require rails, tracking and other infrastructural changes before they can be deployed. This can mean a significant upfront cost as well as a delay in deployment until the upgrade is complete. In today's fast-paced world, you can't delay your production schedules for updates because your customers expect you to complete orders quickly.



You aren't required to involve your IT team.

You can deploy entire AMR fleets with [cloud-based robotics software](#), so there's no requirement for complex programming. You can even add or remove robots easily as your needs change with time. AMRs can also leverage your existing wireless networks, so you don't have to invest in a separate network.



You can manage current labor challenges.

With unemployment at historical lows, manufacturers are facing difficulties in finding workers across the board. [As per a study](#) by the Workforce Institute at UMG, around 38% of manufacturers found it difficult to find the right talent before this pandemic, however that number has risen to 54% now. Introducing AMRs to your facility for repetitive material handling tasks can ease some of this burden for you. Moreover, deploying AMRs will make it safer and easier for your employees to work.



You won't need to interrupt operations for deployment.

AMRs can be deployed within hours, unlike other automation solutions. Since conveyors or AGVs require infrastructural and IT updates before deployment, a portion of your manufacturing facility may have to be shut down pre-deployment. With AMRs, you don't have to make any changes to your facility as AMRs move autonomously and learn from their environment to avoid obstacles.



When should you consider other automation solutions?

While there are many advantages to AMRs, they are not right for all manufacturing environments. AMRs are not designed for:



Movement of extremely heavy or large items.

While AMRs can handle increasingly heavy loads – up to 3,300 pounds – which is more than sufficient for most environments and industries, some manufacturing facilities are moving products or components much heavier than that. AMRs could still be used to transport smaller parts for sub-assembly or work-in-progress.



Movement of extremely wide or long items.

Since AMRs need to navigate, and possibly renavigate, around a facility autonomously, AMRs need to have payloads with dimensions that don't overhang the zone where the AMR can sense an obstruction. As above, AMRs could still be used to transport smaller parts for sub-assembly or work-in-progress.



Manufacturing environments with large temperature gradients.

Such environments result in condensation, which could impede the operation of an AMR's non-specialized electronics.



Outside environments.

Since AMRs work by building a map of your environment using lidar (see [here](#) for more detail on this process), the lack of consistent structure in an outdoor environment makes it difficult to navigate autonomously. In addition, there could also be other hazards which would make a rail-guided system a better option.



Integration of AMRs into your manufacturing facility

If you have decided to deploy AMRs in your facility, you must consider how to integrate these robots into your existing systems. Will it work with your Warehouse Management System (WMS)? If yes, how much time will it take for the integration?

You must ensure that the robotics software can be integrated seamlessly, and that it allows you to manage your AMR fleet from a centralized location. If you have the right technology, it will offer additional efficiencies such as:



Collaborative workflow planning: You can easily share best practices for workflows, training and other tips across the organization, with any updates seen immediately by other users. A cloud-based software allows easy integration with your WMS and enables you to collaborate with different business units.



Faster deployment: Since AMRs require no fixed tracking guidance or other infrastructure, they are faster to deploy than conveyors, AGVs, or other automated material transport systems. Many manufacturers have multiple production facilities, and a cloud-based software allows you to deploy across all facilities from one location. Similarly, any upgrades can be deployed across facilities simultaneously.



Scalability: A cloud-based system empowers you to start with a few robots as a proof of concept, then easily add more over time as soon as you realize the benefits. You can also scale up to meet seasonal needs, all without adding any infrastructure on-premise. In addition, you can deploy and redeploy robots in facilities globally.



Instant hazard avoidance: You can instantly move AMRs away from an emergency incident such as an unexpected sprinkler activation, roof leakage, or a heavy machinery accident from anywhere.



Automatic notifications: Though rare, if an AMR leaves its expected path and requires attention, a manager can remotely re-route the unit, minimizing downtime and eliminating manual intervention or costly onsite support.



While there are instances where other types of automated transportation are a better choice, most manufacturing facilities can take advantage of cloud-based deployment and management of AMRs today, following the lead of other industries that have improved productivity by centrally managing operations across multiple facilities.

If you're thinking about automating material transport,
you can learn about Autonomous Mobile Robots at
fetchrobotics.com/manufacturing/



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