5 AMR applications that optimize your internal transportation from warehouse to assembly line

Material transport workflows for production and assembly lines is a time-consuming, non-value adding task for most manufacturers

Autonomous mobile robots (AMRs) are a simple, efficient, and cost-effective way to automate material handling and in-house transportation tasks in nearly any situation where employees would previously have been required to push carts around the facility.

Sub-assemblies, assemblies, and other consumables are often transported manually over long distances from the warehouse to the assembly line.

To optimize efficiency and save time on internal transportation, many companies have intermediate storage in the production. This takes up valuable space and decreases the flexibility of the production layout.

AMR software can be integrated with MES, ERP, or WMS systems to automatically deliver materials lineside to meet just-in-time and agile processes, eliminating the need for storage inside the production.

5 applications for warehouse-to-assembly line automation

Workflows are different in all types of industries, but the flexible and adaptable robots from MiR can be customized to fit almost any business needs; these mobile robots have an open interface, meaning that they can be mounted with customized top modules whatever the customer application demands. Here are five typical applications that can help companies optimize the warehouse-to-assembly line transportation.

Static shelf

Shelf units are a popular and simple way to automate the transportation from warehouse to assembly line. The shelf structure simply needs to be mounted on the robot with four bolts and then the application is good to go. The static shelves are mostly used in semi-automated solutions where an employee summons the mobile robot via the robot's interface on a tablet, fills up the robot with the assemblies and send it on its way with just one click on a button to be manually offloaded once it reaches the destination.

Cart system

This is a basic application where the robot is mounted with a top module to pick up, transport and deliver carts. The robot transports the cart from the warehouse to the production where it can drop off the entire cart with sub-assemblies and then continue on its path, to pick up an empty cart and drive it back to the warehouse, or take a new cart with other sub-assemblies to another assembly line.

Karakuri system

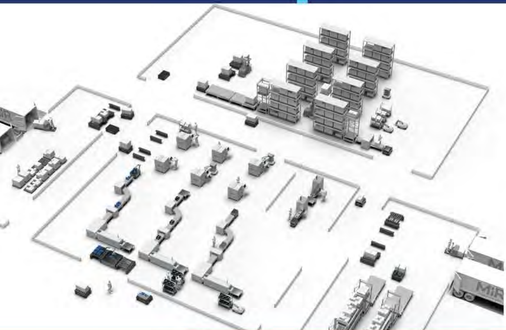
For fully automated solutions, companies are integrating a Karakuri system on top of an AMR. This is a gravity-based system with mechanical linkages. Gravity allows the rack to offload and onload onto the robot. A Karakuri system can fully automate the process of loading and unloading onto an assembly line for maximum efficiency. If the mobile robot is integrated into e.g. the ERP system, this solution can eliminate human interference as the robot is automatically summoned, connects to the fixed Karakuri system, and loads and offloads.

Conveyor belts

When the AMRs are deployed with a conveyor top module, they can work as the adaptable link between fixed conveyors. This is often part of a fully automated solution where the AMR moves sub-assemblies from warehouse to production or between assembly lines. This solution adds a lot of flexibility to the logistics processes compared to having a fixed conveyor, and it adds agility to a site, as it is very easy to change the AMRs' routes and positions, while it is time consuming to move conveyors around.

Pallet lifts

When moving large items from a warehouse to the production, heavy duty AMRs can take over the pallet movement. With customized pallet lifts and racks, AMRs can pick up, transport, and deliver pallets autonomously from the warehouse, offering an efficient transportation. Most manufacturers want forklifts away from the factory floor as they constitute a safety hazard, and with the autonomous navigation, AMRs are a safe alternative that avoid people on their paths and other obstacles.



Material transport workflows to assembly lines are ideal to automate with autonomous mobile robots. Whether manufacturers need to move heavy items or smaller sub-assemblies, and whether they need a fully automated and integrated solution or a more basic, semi-automated solution, the flexible and adaptable mobile robots from MiR can solve the task.

About Mobile Industrial Robots:
Mobile Industrial Robots (MiR) develops and markets the industry's most advanced line of autonomous, collaborative and secure mobile robots (AMR) that manage internal logistics quickly, easily and profitably, freeing up employees for higher value activities. Hundreds of manufacturers and logistics centers from medium to large multinationals, together with several hospitals around the world, have installed the innovative MiR robots. As a global market leader, MiR has a global distribution network in more than 60 countries, with regional offices in New York, San Diego, Singapore, Frankfurt, Barcelona, Tokyo and Shanghai. MiR has grown rapidly since its founding in 2013, with a sales increase of 1,246% between 2015 and 2020. Founded by experienced professionals from the Danish robotics industry, MiR is based in Odense, Denmark, and was acquired in 2018 by Teradyne, the leading provider of automated test equipment.

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