

Are Mobile Robotics a Good Fit for Your Material Transport Plans?

By ROEQ Stories

From the time materials arrive at your receiving dock until they're shipped out, they can spend hours being transported from one process to another throughout your manufacturing or warehouse facility.

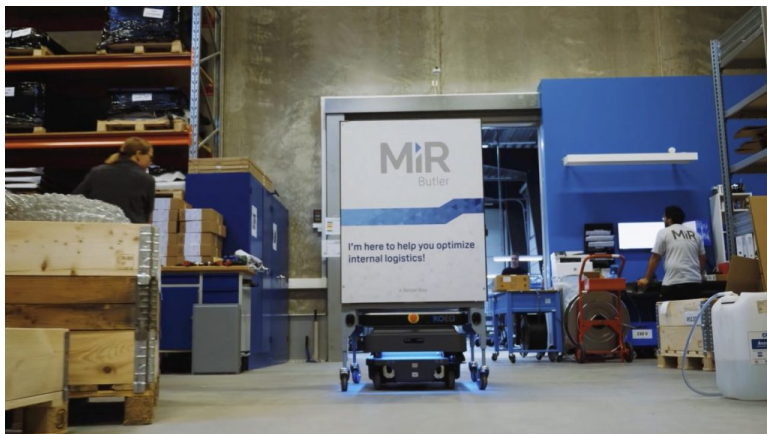
Those hours may be spent by dedicated material handlers pushing or driving carts or fork trucks all day long—repetitive work that can lead to distraction and accidents. Or perhaps your trained production employees must leave their workstations several times a day to pick up raw materials or subassemblies, transport assemblies to the next process or finished goods warehouse, or even take waste material to the trash. How many assemblies could that worker have built during the time it takes for him to push a cart to the warehouse?

When goods are moved in routine patterns over long distances multiple times per day, automating with autonomous mobile robots (AMRs) is the next logical step to improve efficiency, productivity, safety and competitiveness. Ideal environments include manufacturing floors, where robots can work around machinery and move material from one department to another, as well as intralogistics within warehouses and distribution centers.

Autonomous robots and mobile robotics equipment (MRE) take on intralogistics

Autonomous robots use integrated cameras, sensors, and intelligent software to navigate safely and autonomously throughout buildings and around people, equipment, and obstacles. Unlike automated guided vehicles (AGVs) or conveyor systems, mobile robots don't require complex, expensive, and inflexible infrastructure, and they can be easily reprogrammed to support changing production lines or warehouse layouts. They can be quickly integrated into an existing plant floor and they come in a wide range of sizes and payload capabilities.

With all these options, it's not surprising that logistics is one of the fastest-growing robotics segments, with growth projected at 40% per year, according to the International Federation of Robotics (IFR).



A significant advantage of mobile robots is their modular design that allows for a range of readily available, standard mobile robotics equipment (MRE) to complete the application. Similar to traditional 6-axis robots, which aren't complete without end-of-arm-tooling such as grippers or sensors, mobile robots are designed as configurable platforms. They aren't complete without MRE such as carts and pallet lifters, or roller modules that interface with conveyor systems. While some applications may

require custom top modules—similar to the customization that is required for AGVs—mobile robot integration with standard MRE is almost always faster and more reliable, with less debugging and lower support costs than fully custom approaches.

Improve safety and efficiency in inbound logistics



Inbound logistics workflows at the receiving dock are often highly dynamic, with different sizes, weights, and shapes of material being received, and with volumes that can be unpredictable. Manual carts and fork trucks in this workflow depend on available labor. If volumes are low, full-time material transport workers can sit idle, and during peak times, additional workers may have to be pulled from other jobs or be paid overtime to manage incoming goods.

In addition, fork trucks are known for higher risk of injury to workers and damage to goods and equipment. Many companies are limiting

the use of fork trucks to unloading shipping containers to pallet racks or conveyors. From there, mobile robots equipped with pallet lifters or top rollers with conveyor-integration systems can automatically pick up and deliver inbound material. These robots provide safe, efficient, long-distance transport from the receiving dock into populated areas.

Mobile robots and standard MRE in raw material warehouse support agile delivery

Moving components from the warehouse to the manufacturing floor can require workers to travel thousands of yards many times per day. And workers who are waiting at the warehouse for materials aren't building products.

Robot software can be integrated with manufacturing execution systems (MES), warehouse management systems (WMS), or enterprise resource planning (ERP) systems to automatically deliver materials lineside for just-in-time and agile processes. Robots can also be programmed to follow standard routes or come on-demand to deliver and pick up materials or sub-assemblies and transport them to the next process. Standard MRE software is developed, tested, and proven in lockstep with the robot's software, for seamless updates without the downtime for development and testing that customized systems often require.

Flexible mobile robots excel in dynamic production and assembly line workflows

Mobile robots excel in dynamic, populated manufacturing floor workflows where fork trucks can be hazardous and manual carts can be misplaced or left in the way of other equipment or processes. Autonomous robots automatically find the most efficient routes, and safely slow down or stop to avoid collisions and maneuver around people or other obstacles. And robots can be easily rerouted for new production layouts and their missions can change to match delivery requirements for faster or slower processes.

Unlike inflexible conveyor lines or AGVs, robots can adapt to changes in production lines or processes and can bypass lines that aren't being used. When robots are configured with standard MRE top modules such as integrated conveyor rollers, the robots can pick up and deliver goods without worker interaction for even more efficiency.

Robots at the finish line, for outbound logistics



With a full range of sizes, payloads, and top modules, mobile robots support workflows from final assembly to the finished goods warehouse and shipping dock. And robots configured with pallet or cart lifters can lift and transport large or heavy finished products that aren't suitable for conveyors and could cause lifting injuries for workers. Robots with cart or pallet lifters can also remove empty pallets, material packaging, and other waste from the manufacturing floor.

As in the receiving dock, mobile robots offer a safer alternative to navigate populated areas so that fork trucks can be limited to loading trucks and shipping containers.

What workflows make sense for mobile robots in your operation?

When you're ready to explore options to keep your materials flowing in the most cost-effective and efficient way possible, contact one of our material transport automation experts for guidance!

The full article can be read at - <https://roeq.dk/are-mobile-robotics-a-good-fit-for-your-material-transport-plans/>