The Use of **AMRs** in Warehousing

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The Use of **AMR's** in Warehousing

By AHS Staff

As modern warehouses, distribution facilities and E-commerce facilities grow in demand, many industry challenges, both old and new, are becoming more apparent. Labor issues continue to be a growing concern, volume demand is continuing to rise, and consumers are looking for their products sooner rather than later.

Labor Issues

Labor issues include low unemployment, local competition over the labor market between firms in logistics and distribution, and retaining employees in roles that involve repetitive, non-value-added tasks. Such tasks are often associated with workplace injuries. Simultaneously, there is a demand for increased productivity that is directly impacted by these labor challenges.

Volume Demand

Volume demand is ever increasing, driven by high-speed internet, smart phones, ease of ordering, deals on shipping, and the personal benefit of having a product delivered to your door, instead of taking the time to drive somewhere to make the purchase.

Autonomous Mobile Robots (AMR)

As technology progresses, and becomes more cost-effective, Autonomous Mobile Robots (AMRs) are becoming increasingly available. There are a wide variety of AMR platforms currently deployed in the industry, and AMR systems are growing in number and diversity of applications. A similar technology used in manufacturing called Automated Guided Vehicles (AGV) has been around for many years. AGVs typically fulfill their navigation duties based on wires embedded in the floor, guide rails or magnetic tape. AMRs need none of these navigation aids. AMRs use sensors, cameras, bar codes and/or lasers to find their way through a warehouse environment. If their path is blocked, AMRs can re-route themselves with no assistance.

The devices an AMR uses to navigate also ensures that many AMR platforms can operate safely in a dynamic environment alongside humans and material handling equipment. This is a major advantage of using AMRs as brownfield implementations are possible with little to no change in an operation while maintaining a safe working environment.

ROI for AMRs

The time it takes to see a return on investment (ROI) for the implementation of AMRs is growing shorter as mobile robots become commodity items-- the range of applications become broader, and implementation is eased by a maturing mobile robotics industry. Several cost models have presented themselves in recent years making it possible for companies to purchase robots outright, on a per use fee, or lease them on a monthly basis.

Something else to consider: an AMR is not a permanent structure in the warehouse. It is not bolted down, welded in place, or constrained by a guide wire. AMRs also do not use rails or magnetic tape. It can be moved and re-deployed with minimal cost as your business grows and changes over time. Many AMR systems have a high degree of scalability and a low barrier to deployment, allowing for rapid change in robotic infrastructure to follow changing operational needs.

AMRs can be seen performing various duties within a warehouse. These duties can include:

- Pallet transport
- Case/each transport
- Trash management
- Corrugate management
- Piece picking
- Case picking
- Pallet picking
- Tote management

AMRs can typically work 24/7, with the ability to charge their batteries periodically.

Non-value-added tasks such as the movement of excess garbage, boxes or dunnage is a huge slowdown in a warehouse environment. How often are boxes seen collecting in an aisle way or plastic discarded in the middle of the floor? With a mobile robot, top modules can be used to transport trash to the trash line/compactor area when it is full. Transportation across large footprints is a huge opportunity for AMRs. Where an employee may be hauling a pallet jack thousands of feet or pushing a heavy cart, an AMR can seamlessly handle the same task with the right solution built to it.

Picking can be made more efficient with the use of AMRs as well. There are many methodologies being performed with picking. Some of these methods include zone picking, a follow the bot approach, and a goods to man solution-- assisting the picker for an easier task. Integrating a WMS, or a middleware, the bot can become a huge asset to operations when Pick-to-light or pallet shelving is added.

With the use of AMRs in your warehouse, you will typically see productivity improvements and increased quality and accuracy. AMRs can work through breaks, lunches, shift changes and even work multiple shifts. They are highly reliable and require little maintenance. AMRs are able to help with employee retention by taking on the boring, repetitive tasks in your facility. In most cases, a reduction in injuries can be noted as the AMR will be able to do the 'heavy lifting'- removing the risk of an employee getting hurt. It is important to note that AMRs are collaborative and can work safely and intelligently around humans.

Summary

There are many types of AMRs on the market. Because no one AMR can perform all tasks, it is best to review all AMR options on the market or work with an integrator to find an AMR that can effectively fulfill your needs. In many situations, you will see a combination of robotic technologies working together in the same warehouse environment.

Want to learn more and possibly see an AMR in person? Contact our experts at AHS, LLC for help! Call us at **800-891-5504** or email us today at **emergingtechnologies@ahs1.com.**