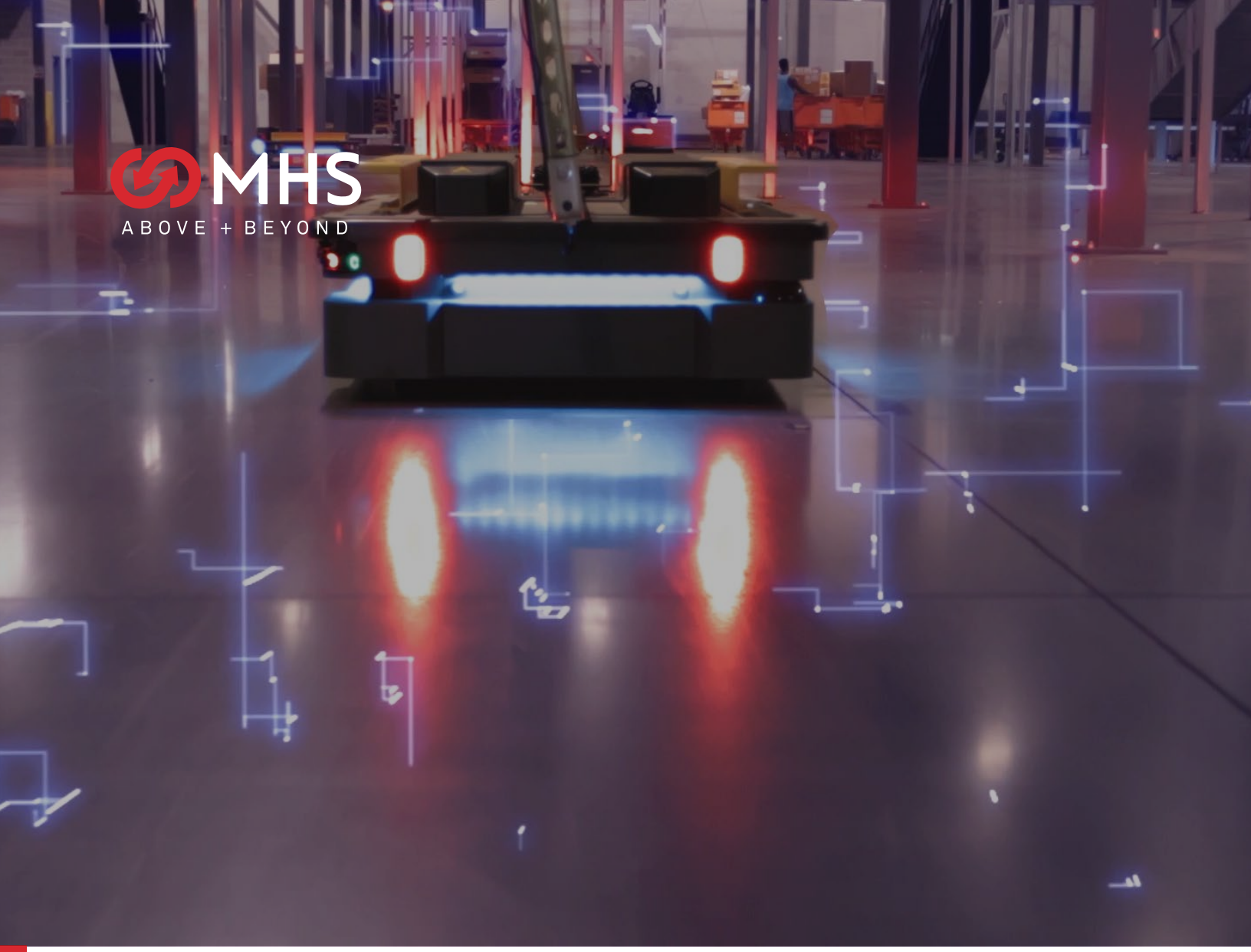


HOW TO NAVIGATE A MATURING WAREHOUSE ROBOTICS MARKET

ABSTRACT

Today's robotics solutions are more advanced than ever, capable of taking on more and more of the warehouse workload. Self-driving vehicles can move loads from point A to B, robotic arms can pick and place individual items and still other robotic solutions can load and unload freight on the dock.

LogisticsIQ estimates the warehouse automation market will grow to $30 billion by 2026, up from $15 billion in 2019 – a compound annual growth rate of 14%. This growth is powered by the intersection of key technology advances and major labor challenges.

The labor challenge boils down to this – businesses lack the staff necessary to handle the physical and repetitive tasks of the distribution center.

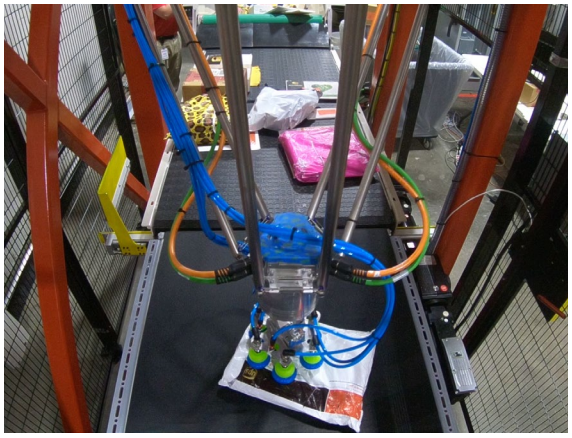
And the labor that is available is expensive and prone to high turnover.

But how high? According to the Bureau of Labor Statistics, the turnover rate for warehouse labor stood at 46% as of the latest data available and has hardly cracked below the 40% mark in the last five years.

A SECOND WAVE LABOR SHORTAGE

As more solutions emerge to automate individual tasks, entire processes can eventually be handled with zero manual touches. Without the need for workers to navigate facilities, operations can literally turn the lights out and create a 'dark' warehouse.

For example, to fully automate order fulfillment, robotic gripping technology can pick and place individual items, while an autonomous mobile robot can move inventory into position for picking and to take away completed orders. A complete order fulfillment cycle with no manual intervention.



Solutions that fully automate or even partially automate a process can greatly increase a warehouse's labor efficiency and significantly reduce headcount, thereby overcoming the labor shortage. Rather than a staff of hundreds engaging in repetitive, low value-added tasks, a smaller staff with a high level of technical skill would be required to keep operations moving.

But this also creates a new, "second wave" labor shortage.

Once businesses rely on automated systems, they must develop the technical skills to manage and maintain automated systems to keep them up and running. These jobs require significant training and institutional knowledge transfer but reassigning employees to these higher-level positions offers greater responsibility and a more pleasant work environment.

Robotics and automation can serve as a productivity multiplier for each staff member while giving operators the super-human capability that industrial robots deliver. The problem that emerges is that traditional robotics platforms do not work well for collaborative efforts nor lend themselves to ease of programming and operation. These critical pains in the industry are leading to novel products that do allow for high levels of collaboration between robots and staff while reducing the effort required in programming.

As the market shifts to fill these gaps, it is anticipated that collaborative robots merge with safe and redundant vision systems which allow for the robot not just to sense by touch, but to see and anticipate the movements of surrounding objects and people. This will lead to orders of magnitude improvement in flexibility of operations as robot safety is driven to record levels.

On the programming front it is anticipated that the market will provide solutions that are natively programmed in software languages similar to Python as these read effectively as English from line to line and training on the robot operating language becomes easier and faster. This in conjunction with a drop in proprietary control languages and syntax will enable adoption rates that can keep pace with market demand.

With the enabling technology changes well underway, how far away is a completely automated facility?

At least five years and perhaps closer to 10 years in the future. During that same time span, though, the labor shortage is expected to become even more dramatic, with 2.4 million jobs estimated to go unfilled in manufacturing alone. As such, end users are engaging trusted suppliers to leverage the power of the latest robotics technologies to develop new solutions for manual processes that have been longstanding targets for automation.

HANDLE CAPACITY PEAKS WITH POP-UP FACILITIES

The pop-up facility offers a a heavily automated, flexible model, commonly used by parcel carriers to bolster distribution capacity during peak periods without the full investment of a permanent, fully staffed facility. A pop-up facility can get online in about a month, provides extra cross-docking capacity for a couple months during peak season, then can be decommissioned in around the same time it took to get online. The key to the extra cross-docking capacity in this setup? A fleet of mobile robots.

As demographics shift geographies and online order volumes continue to grow, the pop-up facility model provides a leaner, more efficient solution for distribution networks to respond. And robotics offer a flexible, on-demand workforce ideal for redeployment and round-the-clock productivity during peak season.

TRUST THAT TECHNOLOGY IS BUILT FOR THE LONG HAUL

Robotic technology continues to evolve and advance, and as new solutions hit the market, obsolescence can enter the discussion as operations scope out what's best for them. While current autonomous mobile robots commonly rely on 2D lidar technology, 3D navigation is actively in development. Should end users worry about robots they currently have deployed or on order? The short answer is ... no.

Robot performance is not a zero-sum game. The increased performance of new advances does not come at the price of diminishing performance by existing units. Businesses can keep existing systems operating according to original specification, and reap the expanded capabilities made possible by investments in more advanced sensors and processing power.

START DOWN THE ROBOTICS PATH

According to the 2020 MHI Annual report, 39% of supply chain professionals report actively using robotics and automation. But in the context of the expected growth of the warehouse automation market described earlier – expected to double by 2026 – many operations are set to make their first foray into robotics in the coming years. As such, the market is beyond the awareness stage, now with an appetite for education on how to translate potential to practical value.

Getting started requires understanding how to harness the key benefits of modern robotic solutions. For autonomous mobile robots, their superior flexibility is key, as they do not require guidance infrastructure to be laid out in order to function. This enables faster startup and easier reconfiguration, ideal for businesses that must regularly adapt to meet changing requirements.

But to deliver on the promise of flexibility, businesses must consider the human element. The user interface is critical to a smooth implementation, operation and cultural acceptance of robotic systems. In today's connected world, people are accustomed to making a query for certain information through a web browser, then processing information through that interface. When managing robotic systems, users can request information from robots via a similar web browser-based interface that they already understand. By capitalizing on existing familiarity with browsers, smartphone apps and work instruction, a strong user interface can allow operations to retrain scarce labor resources to monitor and run robotic systems.

Finally, businesses must set realistic expectations for the value a robotics investment can bring. Understand that a mobile robot cannot do everything alone – it must function as part of a broader system to drive real results. Understand what key performance indicators are important to measuring success, such as a reduction in manual touches, and what tasks are the best candidates for automation, both immediately and years into the future.

By making a plan and taking a step-by-step approach to introducing automation, operations can create facilities with exceptional labor efficiency, order accuracy and more – whether technically a fully automated warehouse or not.

To learn more about capitalizing on robotics at your facility, **reach out to a solutions expert at MHS** and access more educational content in our **MHS Insider series**.