Körber Supply Chain

Warehouse control systems: the fast track to optimized warehouse automation

How WCS will maximize ROI
of material handling equipment

Introduction

The global trend towards e-commerce existed long before Covid-19 was known. Pandemic-related disruptions have simply accelerated the growth of e-commerce for many retailers, rather than created it.

The resulting growth in order volumes, and the need for greater fulfilment speed and accuracy, has led to an increased uptake in the use of warehouse automation technology. Experts agree that, with or without a global pandemic, they expect this trend to continue across verticals. Over the next three years, global sales of automation technology are projected to grow from US$ 29 billion in 2019 to US$ 48 billion in 2023.[1]

This augmented demand for flexible, scalable automation is driven by an increasingly unpredictable operating environment[1], caused by:

- **A rapid shift to e-commerce**
- **An uptake in the use of direct-to-consumer channels**
- **Associated changes in fulfillment needs.**

Increasing throughput will always be a major goal of warehouse automation. However, businesses are now willing to sacrifice some of it so they can adapt to changing requirements in the form of:

- **SKU mix**
- **Order size**
- **Seasonal and promotional variability**
- **Unpredictable variations in order volumes**[2]

Implementing material handling technology: the challenges

With increased adoption of warehouse automation technology, most large warehouses and distribution centers will implement a portfolio of material handling equipment (MHE) and automation technology, such as:

- **Shuttle systems**
- **Sorters**
- **Automatic storage and retrieval systems (ASRS)**
- **High bay warehouses (HBW)**
- **Autonomous mobile robots (AMR)**

These systems are typically supplied by different vendors, resulting in a mixed MHE portfolio, which can cause more problems than it solves.

It can be challenging to deploy and optimize the performance of even one of these solutions. Doing so for multiple systems compounds the issues. And, after optimizing each system individually, warehouse operators often find a bigger challenge still lies ahead.

A multi-vendor, multi-technology MHE infrastructure makes it virtually impossible to run the costly equipment as a unified system. It will also lack end-to-end visibility of the automation chain.

Implementing material handling technology: the solution

Most businesses justify the substantial investment in additional automation equipment to help them:

- Increase throughput and maximize capacity of warehouse operations
- Trace and remediate malfunctions as quickly as possible
- Immediately adjust material routes in cases of malfunctions or receipt changes
- Ensure visibility of materials along the entire automation chain

A comprehensive warehouse control system (WCS) will address each of these requirements. However, to do so effectively, it must provide:

Support for MHE from all vendors of all types

Warehouse control solutions have been marketed by MHE vendors for years. They typically provide a solution to control and optimize one vendor's devices. While this is a step in the right direction, only solutions that truly support customers' entire MHE portfolio can provide the unified control they require to optimize their end-to-end MHE performance.

This means the WCS must be vendor agnostic and support all automation technologies as referenced above.

Comprehensive workflow support

A comprehensive WCS must support all common workflows 'out of the box,' including:

- Basic automation
- Hybrid automation-workforce configurations
- Complex fully-automated operations

It must also be adaptable, accommodating customer-specific requirements and automation scenarios, and be able to evolve as requirements change.

Continuous optimization of the material flow

A central WCS establishes a point of unified control and management for all MHE. This in turn allows quick adjustments of material routing in case individual devices fail and ensures continued material flow. It also enables optimization strategies such as dynamically selecting the optimal transport route, interleaving or sequencing of transport orders.

Full transparency

A centralized WCS is a prerequisite for end-to-end visibility of the automation chain, which allows tracking of the material flow, individual items and barcodes through the system.

It also allows for further operational optimization over time. Intuitive graphical dashboards will increase usability, and shorten the operatives' learning curves.

Seamless vertical integration

Modern WCS, designed as a single point of data exchange and communication between MHE and the warehouse management system can also provide seamless vertical integration of material handling processes, from the WMS all the way to the logic controller in the MHE. This allows for optimum control and, by extension, performance of the MHE.

Conclusion

Experts and businesses alike agree that the trend towards e-commerce, and the reshoring of manufacturing to the US and Europe to mitigate future supply chain disruption, is likely to continue to accelerate. This will drive further adoption of automation and robotics.

Körber's innovative WCS will let warehouse operators conquer the challenges of running mixed, multi-vendor MHE portfolios. With it, we can unify the MHE's management, optimize its performance and make entire warehouse operations more efficient, adaptable and agile.

For more information
Find out how our WCS solutions can help you take control of your MHE, and maximize its ROI.

Learn more about our WCS solutions:
Read more →

Learn more about our MHE solutions:
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Learn more about our Automation solutions:
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References
1. The Future of Warehouse Automation 2020, Interact Analysis
2. Warehouse Automation and Control Market Analysis, September 2020, ARC Advisory Group

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