MASTERING WAREHOUSE COMPLEXITY

How Robotics, Software, and a Hybrid Approach Drive Efficiency and ROI



Honeywell

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INTRODUCTION

The Evolving Warehouse Landscape

The demands on modern warehouse operations have never been greater. E-commerce continues to surge, customer expectations for speed and accuracy are at an all-time high, and supply chain disruptions are the new norm. To not just survive but thrive in this environment, businesses must look towards innovative solutions that optimize space, enhance productivity, and manage escalating costs. This playbook explores the critical challenges facing today's warehouses and unveils how a hybrid approach – strategically blending robotic automation, intelligent software, and skilled human capital – offers a powerful path to efficiency and return on investment (ROI). Honeywell Intelligrated is at the forefront of this transformation, ready to help you navigate the complexities and build your future-ready warehouse.



THE MOUNTING PRESSURES ON TODAY'S WAREHOUSES

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Warehouse operators are currently navigating a confluence of demanding challenges that impact everything from daily output to long-term strategic planning. Understanding these pressures is the first step towards identifying effective, transformative solutions.



Skyrocketing Operating Costs:

- The average asking rent price for industrial space has reached an unprecedented $9.59 per square foot, putting immense pressure on physical footprint optimization.[1]
- Many companies are looking to optimize throughput and efficiency within existing "brownfield" environments, where capital constraints may prevent new construction, making space utilization even more critical.
- Compounding this, warehouse worker wages have seen a significant 38% increase over a five-year period, directly impacting operational budgets.[2]

The Labor Conundrum:

- A staggering 80% of warehouses are still operating manually, with workers performing the full range of tasks from picking to packing.[3]
- This heavy reliance on manual labor is increasingly problematic due to a persistent labor shortage. Many workers have exited the workforce, and finding people for these physically demanding roles is a growing challenge.
- The consequences are far-reaching:
    - Worker turnover in warehousing is high, at 53% above the industry average.[4]
    - The average cost to replace a single employee is approximately $8,500.[5]
    - Warehouse work carries a higher rate of injury, with 4.5 out of 100 full-time equivalents (FTEs) experiencing workplace injuries.[6]
- This labor shortage doesn't just inflate costs; it directly hinders the ability to ship products, potentially leading to lost sales – an impact often more substantial than rising labor costs alone.

The Inefficiency of Manual Operations in Brownfield Sites:

- With the price per square footage at an all-time high, especially in urban centers close to customers, the lack of automation in many existing warehouses becomes a critical bottleneck.
- The push towards automation is driven by the urgent need to enhance efficiency and throughput within these established sites.
- Furthermore, there's a growing recognition of the need to improve the work experience for employees, as manual, labor-intensive tasks are often undesirable and contribute to high turnover.

These converging pressures – rising costs, labor instability, and the limitations of manual processes – create a compelling case for a paradigm shift in warehouse operations.

$9.59

Highest **EVER** average asking rent price for industrial space (sq. foot)[1]

80%

of warehouses are operating manually[2]

38%

Increase in warehouse worker wages in a five-year period[1]

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4. Supply & Demand Chain Executive, Maximizing Warehouse Efficiency in the Face of Labor Challenges, Jamie Veinot, Sep 10, 2024 [Accessed Mar 19, 2025]
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THE AUTOMATION IMPERATIVE

2

Disruptive Robotics and Intelligent Software

> **The challenges are significant, but so are the opportunities presented by advancements in automation. Robotics and intelligent software are no longer futuristic concepts but accessible, impactful solutions that can redefine warehouse efficiency.**

THE RISE OF ROBOTICS: A FLEXIBLE PATH TO MODERNIZATION

Robotic solutions are transforming physical operations within warehouses, offering rapid and adaptable means of boosting productivity and addressing labor challenges.

Key Benefits of Modern Robotics:

- **Speed to Implement & ROI:** Robotic solutions can now be deployed much faster, with implementation times reduced from one year or 18 months to as little as five to eight months. This allows businesses to see payback on their investments much sooner .
- **Scalability & Flexibility:** These systems are designed to scale according to the needed volume and can be more easily reconfigured to meet changes in demand, avoiding long-term commitment to a single, rigid solution.
- **Reduced Footprint:** Many robotic solutions offer a smaller physical footprint, a crucial advantage when dealing with high real estate costs.
- **Enhanced Work Environment:** By automating strenuous, repetitive, and often undesirable manual tasks, robotics can significantly improve the work experience for employees, allowing them to focus on higher-value activities.

THE INTELLIGENCE ENGINE: MOVING BEYOND BASIC INTEGRATION TO ADVANCED SOFTWARE

While robotics provide clear physical advantages, their true potential is unlocked when orchestrated by intelligent software. Simply adding automation to an existing system in a piecemeal fashion can lead to new problems.

Limitations of Basic or Direct Integration:

- The simplest approach for many automation solutions is direct integration with a Warehouse Management System (WMS). While some products facilitate this with minimal effort, the value derived is often limited.
- Achieving full value from WMS integration can be challenging, and these integrations can become complex.
- For instance, automating the picking process with robots can drive efficiency in that specific area, but without proper coordination with upstream and downstream systems, new bottlenecks may arise, limiting the overall benefits. Adding piecemeal solutions often results in sub-optimal outcomes.
- As businesses grow and automation solutions multiply, the challenge of managing multiple, disparate data flows becomes more pronounced.

Navigating Industry Risks:

- The rapid pace of innovation and frequent acquisitions in the robotics space mean that long-term issues such as cybersecurity and vendor stability pose genuine risks that need careful consideration.

To truly harness the power of automation and mitigate these risks, a more sophisticated software layer is required – one that can intelligently manage and synchronize all aspects of the warehouse.



Honeywell Smart Flexible Depalletizer

ORCHESTRATING SUCCESS

3

The Indispensable Role of Warehouse Execution Systems (WES)

To move from isolated pockets of automation toward a seamlessly integrated, high-performing warehouse, a comprehensive software solution is essential. This is where Warehouse Execution Systems (WES) come into play, acting as the central nervous system for your operations.

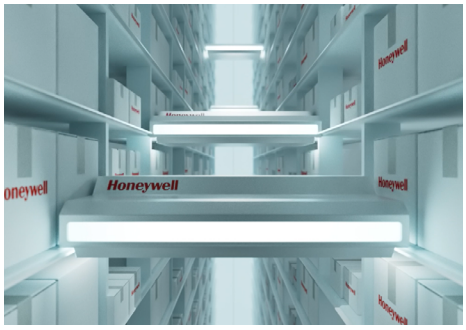
MOVING BEYOND BASIC CONTROL: WCS VS. WES

Understanding the software landscape is key. While Warehouse Control Systems (WCS) have their place, a WES offers a far more powerful and holistic approach.

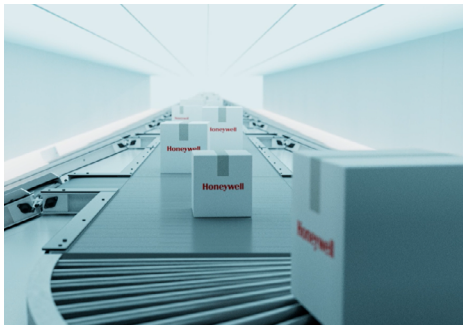
- **Warehouse Control Systems (WCS):** WCS solutions offer a degree of coordination by tying multiple automated areas together, typically on-premises. They manage handoffs between equipment like conveyors, autonomous systems, and Automated Storage and Retrieval Systems (ASRS), primarily handling lower-level flow control.
- **Warehouse Execution Systems (WES):** The Conductor of Your Operations: A WES provides a more powerful orchestration layer, acting as a conductor to manage the flow of all individual pieces of equipment and assets within the warehouse.
    - It enables **real-time decision-making**, enhancing throughput and value by intelligently managing the flow of work through various types of automated equipment and manual processes.
    - WES **simplifies crucial decisions** between mobile robots, conveyors, sortation solutions, and manual labor – tasks that traditionally required multiple independent software packages.
    - By acting as this **central orchestration layer**, WES improves dynamic order prioritization, manages traffic flow, and refines task assignment across the entire operation. This integrated management drives significantly better overall throughput.



WES optimizes real-time decision-making.



WES acts as the orchestration layer.



Cloud-based systems could reduce onboarding time and cost.

CLOUD-BASED WES: A NEW ERA OF EFFICIENCY AND ACCESSIBILITY

Historically, implementing a WES could be a significant undertaking. On-premises Warehouse Execution Systems often required substantial computational power, frequently necessitating a dozen or more physical servers located at the customer site. This model incurred considerable costs for server deployment, the IT personnel needed for configuration and ongoing maintenance, and the significant electrical expenses of running these servers.

However, modern cloud-based WES solutions, such as Honeywell Intelligrated's Momentum WES, have revolutionized this landscape, offering numerous advantages:

- **Reduced Onboarding Time and Cost:** Cloud deployment can significantly shorten the time and lower the expense associated with getting a WES up and running.
- **Elimination of On-Site Server Burden:** The need for physical servers at your facility is eliminated. The responsibility for server management shifts to the WES vendor, requiring only a stable connection to your endpoints.
- **Enhanced Reliability and Security:** Cloud platforms provide robust reliability and are equipped with the latest security features and technologies, managed by experts.
- **Real-Time Scalability & Future-Proofing:** Cloud-based systems offer real-time scalability to match your business needs, eliminating the need for costly and disruptive server upgrades and mitigating the risk of hardware failures. This provides enhanced security and operational stability.

A modern, cloud-enabled WES is the key to unlocking the full potential of your automated and manual resources, allowing them to work in concert to drive toward peak performance.

THE HONEYWELL INTELLIGRATED ADVANTAGE

4

Your Partner in Hybrid Automation

Embarking on an automation journey, especially one involving a hybrid approach with multiple technologies, requires more than just purchasing equipment or software; it demands a strategic partnership. While many robotic solutions are available for direct purchase, the complexities of integration, optimization, and lifecycle management highlight the critical value of working with an experienced integrator.

WHY A "DO-IT-YOURSELF" APPROACH CAN FALL SHORT

Attempting to piece together disparate automation solutions without deep integration expertise can lead to:

- Sub-optimal overall system performance.
- Unexpected bottlenecks and operational conflicts.
- Complex integration challenges, especially when multiple vendors are involved.
- Difficulties in managing ongoing support, maintenance, and future upgrades across various systems.
- Potential risks related to cybersecurity and the long-term stability of individual solution providers in a rapidly evolving market.

THE POWER OF PARTNERSHIP: WORKING WITH AN EXPERIENCED INTEGRATOR

Partnering with a trusted integrator like Honeywell Intelligrated provides a clear path to success by offering comprehensive expertise and support throughout your automation journey.

End-to-End Expertise:

- We provide holistic expertise spanning hardware, software, and implementation, ensuring solutions are tailored to your specific operational needs.
- Our focus is on integrating robotic systems to operate smoothly with all other parts of your application, preventing conflicts and execution barriers for a truly cohesive operation.

Vendor-Agnostic & Best-in-Class Solutions:

- Honeywell Intelligrated has the capability to combine best-in-class fixed and mobile automation from a range of providers, always prioritizing what's best for your unique requirements.
- We independently evaluate available solutions to ensure they are built on reliable and proven methodologies, avoiding novel or untested approaches that could introduce risk.

Faster Deployment & ROI:

- Our proven methodologies and deep experience reduce project complexity and inherent risks, leading to faster, more predictable deployments.
- This accelerated timeline, combined with improved system design, helps you achieve a quicker return on your investment.

Ongoing Support & Lifecycle Services:

- Our commitment extends far beyond initial installation. We are responsible for servicing the products' post-installation, ensuring your systems continue to run smoothly and efficiently.
- We focus on maximizing system uptime and adaptability, helping to optimize costs upfront and ensuring your automation investment continues to deliver value, or even improves, over time.



Honeywell Intelligrated's comprehensive understanding of the "big picture" – from individual components to the overall operational flow – is crucial for a successful initial deployment, a faster ROI, and the avoidance of costly integration issues down the line. We help you navigate the complexities of automation, ensuring that your solutions work together harmoniously to achieve your strategic business objectives.

BUILDING YOUR FUTURE WAREHOUSE, TODAY

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The path to a more efficient, resilient, and productive warehouse lies in embracing a strategic, hybrid approach to automation. By intelligently combining the strengths of robotic systems, the orchestrating power of advanced Warehouse Execution Software, and the invaluable skills of your workforce, you can transform your operational challenges into competitive advantages.

This isn't just about implementing new technology; it's about creating a synergistic environment where every component, automated or manual, works in concert to achieve peak performance. It's about building an operation that is scalable, adaptable, and ready for the demands of tomorrow.

ARE YOU READY TO SCALE YOUR OPERATIONS WITH HYBRID AUTOMATION?

Take the next step in your automation journey with Honeywell Intelligrated. Let us help you create a customized automation roadmap and business case that meets your unique needs.

- Engage with our team of experts for a comprehensive Warehouse Assessment & Automation Roadmap: Let our experts analyze your current operations and co-create a tailored strategy for phased automation.
- Witness Innovation in Action with Live Demos: Experience our mobile and fixed automation solutions firsthand and see how they can address your specific challenges.
- Receive a Detailed ROI Analysis for Your Business Case: Understand the tangible financial benefits and payback period for your proposed automation investments.

Let's build your future warehouse together.

CONTACT US TODAY

For more information
https://automation.honeywell.com/us/en/products/warehouse-automation/solutions-by-technology/robotics

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