tecsys™

8 Steps to Implementing **Automation in a Brownfield Environment**

Unlocking a future of efficiency, resilience and growth in your warehouse operations

E-BOOK

Turn your existing warehouse into a competitive asset

Automation is a strategic opportunity for supply chain organizations with existing “brownfield” warehouses that lack sophisticated automation capabilities. With the right approach, automating these warehouses can help them enhance efficiencies, optimize costs and stay competitive without disrupting their existing operations.

But brownfield environments present unique challenges, including:

- **Choosing the right technology:** Operators must prioritize systems with long-term benefits and efficiencies; they also must account for the costs, timelines, and operational disruptions associated with implementation — "trade offs" when automating brownfield environments.
- **Determining ROI:** Warehouse leaders must calculate the return on investment through an in-depth analysis of data, objectives, headcounts, wages, throughput and potential areas for improvement.
- **Supporting complex operations:** Warehouse leaders must align automation systems with their human workforces, optimizing human roles alongside new technologies.
- **Ensuring scalability:** As companies grow in volume and revenue, their automation systems must also scale to keep up with demand without causing disruptions.

Despite these challenges, automation in brownfield environments offers major benefits like higher efficiency and productivity, better accuracy, cost savings and a competitive edge.

This e-book provides an overview and roadmap to successful automation in brownfield warehouses. It addresses the complexities of adding automation alongside existing systems, processes, laborers and equipment. It provides practical advice for supply chain leaders aiming to enhance operations in their brownfield facilities as well.

What is a brownfield environment?

A brownfield environment is an existing warehouse setup where new systems, technologies or infrastructure can be introduced alongside pre-existing structures and operations. Unlike greenfield projects, which are new warehouse setups in undeveloped areas, brownfield environments are characterized by the presence of legacy assets; they may be warehouses that will be repurposed or warehouses that will simply be upgraded with new technologies.

Brownfield vs. greenfield: A quick review

GREENFIELD

In greenfield environments, warehouse designers can design and implement automation solutions with minimal disruptions or constraints. That's because greenfield warehouses are entirely new, with no immediate bearing on existing operations.

BROWNFIELD

In brownfield environments, existing operations and layouts must be taken into account. This means that automated solutions must be carefully integrated and scaled to work alongside existing systems, processes and human workers.

Additionally, brownfield environments often have limited space for expansion or may already be at full capacity. This poses challenges when it comes to implementing new technologies and optimizing workflows without causing disruptions or sacrificing efficiency.

Why the impetus for automating brownfields?

If you have substantial existing brownfield operations, launching greenfield environments may be unrealistic due to cost and time constraints; therefore, you may wish to explore opportunities in your existing warehouses before investing in new ones. Automation in brownfield environments boosts warehouse efficiency and accuracy, helping you meet growing demands with less upfront costs and resources. As supply chains evolve, adopting automation becomes essential to maintain competitiveness without retiring warehouses entirely.

A look at the technology landscape for brownfield warehouse automation

When evaluating technology options, warehouse leaders should consider factors such as scalability, compatibility with existing systems, cost-effectiveness and ease of implementation. They must also consider the unique needs of their operations and determine which technologies will offer the best ROI.

Some popular automation options for brownfield warehouses include:

Autonomous Mobile Robots (AMRs): AMRs are intelligent robotics systems that move materials around a warehouse without human intervention. When correctly implemented in a brownfield environment, they can drastically reduce manual labor, enhance efficiency and adapt to changes in the warehouse layout without significant reprogramming.

Scalable Infrastructure: Scalable automation infrastructure, such as modular conveyor systems or adjustable shelving units, can be tailored to fit the existing layout and grow with the business. This flexibility ensures that brownfield warehouses can increase their automation capabilities without extensive disruptions or the need for significant structural changes.

Automated Storage and Retrieval Systems (AS/RS): AS/RS solutions use computer-controlled systems to automatically store, retrieve and sort inventory. They can be integrated into existing warehouse layouts and offer high-density storage capabilities, making them ideal for brownfield environments with space constraints.

Aligning warehouse software with new automation

Choosing software solutions is a critical element to ensure automated technologies like AMRs work safely and efficiently, cooperating with human workers and remaining agile enough to meet changing business needs. Let's consider how warehouse management systems (WMS), warehouse control systems (WCS), and warehouse execution systems (WES) each serve different functions:

WMS

A WMS is responsible for the overall operation of a warehouse, including inventory management and order fulfillment.

WCS

A WCS manages the automated, material-handling equipment on the floor and interfaces with mission-critical systems like WMS.

WES

A WES makes strategic logistical decisions, such as choosing the most efficient methods to complete tasks. This is crucial in dynamic warehouses where order volumes and processing requirements change quickly.

Implementing software in a strategic way can improve the integration process and drive operational efficiencies in the long term, ensuring you harness the full potential of automation in your warehouse.

The road to automation in a brownfield environment

Planning and executing automation in a brownfield environment require strategic planning, with carefully planned target metrics and a clear understanding of potential ROI. Here we provide insights to help warehouse decision makers navigate this process, with a path to successful automation that can improve efficiency, accuracy, scalability and results.

1. Determine your opportunities through a comprehensive assessment

Begin with a thorough analysis of existing infrastructure, workflows and technology stacks. This step identifies bottlenecks and areas where automation can yield the most significant improvements. An accurate understanding of the current layout and systems ensures that any introduced automation complements rather than disrupts operations.

2. Define your KPIs and metrics for success

After identifying where automation can generate the most significant impact, establish key performance indicators (KPIs) for monitoring progress and establish related metrics for measuring success. These metrics should include tangible benefits like cost savings, efficiency gains, faster deliveries and reductions in errors.

3. Assess your existing tech stack

Before proceeding any further, evaluate your current tech stack to understand its capabilities and limitations. Engage your software vendors to explore if their solutions can adapt to accommodate your automation goals. If gaps emerge, consider going to market for more advanced solutions; for example, a WMS that aligns better with your needs and future-proofs your warehouse operations.

4. Determine your budget and ROI

Create a budget that will help you meet your financial and operational goals. Start with a cost analysis that considers equipment, systems, integration, staff training and necessary modifications for new automation. Finally, consider your KPIs and success metrics as you calculate your anticipated ROI; only then can you confirm that your automation efforts will make business sense.

5. Identify automation technologies that align with your goals

Choose automation solutions such as AMRs, AS/RS, conveyors, carousels, pick modules and others that both align with your KPIs and account for your warehouse's unique operational needs and constraints. Prioritize technologies that offer the best synergy with existing processes and the most straightforward integration path. Decide on a new WMS or other software you prioritized in Step 3 at this time as well.

6. Develop a phased implementation plan

Outline a staged approach to integrating new technologies, starting with areas that promise quick wins to build momentum and support for the project. A phased plan helps in managing risks and allows for adjustments based on early experiences without overwhelming existing operations.

7. Invest in training and change management

Ensure that staff are fully trained not only on how to work with new automation technologies but also on how these changes will enhance their workflows. Addressing the human aspect of automation eases the transition, fosters positive attitudes and enhances productivity.

8. Monitor, evaluate and adjust

After implementation, continuously monitor performance against the predefined metrics and KPIs. Establish formal channels for personnel to provide feedback on their experiences with new technologies. Be prepared to adjust strategies based on comments from personnel, new operational challenges and changing business needs, ensuring the automation initiative remains aligned with overarching business goals.

A necessity and an opportunity

Incorporating automation in brownfield environments is not just strategic but essential. New challenges in modern supply chains, evolving customer expectations and growing competitor capabilities have made this the case. But while automation is a necessity, it's also an opportunity. By carefully managing this transition, leveraging strategic partnerships, and making data-informed decisions, businesses can achieve immediate improvements and long-term operational excellence.

Speak with a warehouse automation expert

About **Tecsys**

Since our founding in 1983, so much has changed in supply chain technology. But one thing has remained consistent across industries, geographies and decades — by transforming their supply chains, good organizations can become great.

Our solutions and services create clarity from operational complexity with end-to-end supply chain visibility. Our customers reduce operating costs, improve customer service and uncover optimization opportunities.

We believe that visionary organizations should have the opportunity to thrive. And they should not have to sacrifice their core values and principles as they grow. Our approach to supply chain transformation enables growing organizations to realize their aspirations.

tecsys™

www.tecsys.com
info@tecsys.com
Phone: 514-866-0001
Toll Free: 1-800-922-8649