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The Ultimate Guide to Warehouse Automation Success:

3-Step Evaluation Plan

E-BOOK

Introduction

As more supply chains are increasingly driven by technology, many organizations are investigating the benefits of an automated warehouse. Warehouse automation can make your operations far more accurate, productive and responsive, however, it is not a one-size-fits-all proposition. In fact, it's a far cry from a system that you can simply buy, plug in and watch the magic happen. But as the old saying goes, "Nothing worth having comes easy."

If automation is something you are considering for your warehouse, you will need to do some careful research and planning to make sure you're making the right decision. All this hard work will help make the transition to automation as smooth as possible for your business. To get you started on your journey, Tecsys is reviewing the three stages of warehouse automation success: preparation, evaluation and implementation.

In this e-book, we will examine the three steps you need to take in the evaluation stage of warehouse automation.

In this stage, you will be establishing the right criteria for automation in your warehouse, weighing the options and selecting the best fit for your business.

Ready to Start Looking?

At this point, you have looked at your warehouse problems and decided automation is the right path forward. You have cleaned up all of the warehouse data, figured out your warehouse needs and have a good milestone around your current position versus where you want to go with automation.

It's now time to evaluate potential automation projects and potential solutions.

1.

Get Your Reasons for Doing Automation Right

The right decision matches the problem with the right options against the right criteria. Look at your range of products and transactions to find the best candidates for warehouse automation. You want to look for things that cause repeatable activity volume, accuracy issues, labor intensity or delays. Rank the candidates and consider individual automation projects, while looking for overlaps and coordination between projects.

Popular Reasons for Warehouse Automation

Accuracy improvements
(apply a price for errors)

Productivity improvements
(labor, physical equipment resources and office personnel)

Timeliness improvements
(delivery speed and meeting time windows)

Development of new capabilities
(responsiveness related to both shipments and information, plus new services)

Here is a list of some common industry metrics. Your responses to these questions will help you identify your criteria for automation:

Metric	Questions
Perfect Order Percentage	• What percentage of orders are delivered on time, in the right quantities and in the right condition? (includes being undamaged, but also the right labeling, packaging, etc.)
Cycle Time	• How long does it take from receipt of products to being put away and ready to pick? • How long does it take to fill an order? (either shipped or arrival to customer) • What percentage of orders can be shipped within a desired cycle time?
Capacity and Productivity	• How many items or orders can be picked per time period? • How many people or equipment resources are needed? • How much space is required for how much product? • How productive is each person? • Can the system scale up and down easily with demand growth and cycles?
SKU Breadth	• How many SKUs do you have? • How many are productive? • Does the automation system better enable omnichannel or e-commerce capabilities? • Can the automation system work for liquids, semi-solid, bulky, oddly shaped, hazardous, or products requiring temperature-controlled environments?
Financial	• What does it cost to fulfill orders and order lines? (roll up to overall cost of distribution as percentage of sales) • How much does the automation system cost? (total cost of ownership of hardware, software, installation, and ongoing operation) • How much inventory is held and at what cost? How quickly is inventory turning over?

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2.

Find the Automation That Fits Your Problem

Find automation options by asking people you trust in the industry and research trade magazines, blogs and analyst reports. Don't focus on the hardware and software right away, but instead focus on searching for options that are satisfying the criteria that you have identified as being essential.

You might be surprised by the many different warehouse automation options available. To make it even more confusing, there are different levels of cost, complexity and benefits. Carefully evaluate your own level of warehouse automation maturity. Manually operated warehouses extensively using paper-based systems will view some seemingly basic levels of automation, like handheld barcode readers and wireless communication systems tied into a warehouse management system as a huge step. More mature warehouses, having already taken those steps, will be evaluating automated storage and retrieval systems, autonomous vehicles and high-volume sortation systems.

Some factors to consider when selecting your automation selection criteria are:

Greater Identification and Inventory Accuracy

Automation fails without fast, reliable data with timely communication, processing and storage. Tools such as warehouse management systems will make accessing this data easier for you and enable better decision-making about reallocating resources.

At the lower end are handheld barcode scanners with wireless communication capabilities, dependably capturing every identification of products, people, places, orders, tasks, etc. Barcodes still rule the warehouse automation world for the balance of speed, accuracy, cost, and use by your supply chain suppliers and customers. RFID has many valuable applications and should be investigated, but not as a replacement for barcodes. Automated, high-speed vision scanning systems can quickly scan fast-moving cases, trays and individual items from almost any angle and side as they move down conveyors, making them a must for high-volume operations.

For higher-speed picking situations of individual items and small cases, establish a picking solution. Pick or put light systems typically display lights at a pick or put location along with a number, waiting for an operator button press, confirming the pick or put. Mistakes are greatly reduced and transaction information is instantly available.

Fast, reliable data

Timely communication

Processing

Storage

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Better Use of Space

If you only stack pallets on the warehouse floor, storage racks and high-reach forklift capabilities seem like a technological advancement. For the company that already has storage racks to the ceiling, there are ways of squeezing aisles together, using narrow-aisle person-operated lift systems barely more than a pallet wide. There are more automated systems such as ASRS cranes that can put/pick within the entire aisle, plus there are pallet shuttles that can be deployed at each level and can even move from aisle to aisle to match demand levels.

Large amounts of shelves with workers walking around and pulling items off the shelves should be replaced by more compact automated storage and retrieval systems that utilize vertical space to store and retrieve a large amount of SKUs, resulting in gains in space savings and picking time. Closely tracked and controlled items tend to be more secure.

Today, highly scalable systems have small armies of automated devices moving within three-dimensional storage areas, putting away and retrieving items, then possibly even moving to another aisle when order activity is heavier in those areas. These systems replace human pickers riding on picking devices. Look at high-density shuttle systems and systems like AutoStore (taking storage density to a very high level for typically smaller-sized products).

Better Use of Humans

Labor is harder to find and getting more expensive. Pick more and walk less. Many systems bring items to people to perform the intricate handling, packing and other tasks machines can't do reliably or affordably. Also, scan data rather than having people perform slow and error-prone data entry.

Automated pallet stretch-wrapping devices are a form of automation reducing human work and makes the process more consistent. Automatic box erectors and sealers, plus print and apply systems for barcode labels on boxes and products are far more accurate, faster and consistent.

Rise of Mobile Bots

Automated vehicles move products around facilities in a flexible, scalable fashion, further reducing labor demand. They automatically pick items up at docks, taking them to putaway stations, providing replenishment moves, and moving items to shipping docks. They don't get tired or lose focus, but always follow the rules and can work three shifts. Note that conveyors still have a great carrying cost ratio.

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3.

Make Your Automation System Selection

Now that you have the right reasons and the range of automation options to solve your problems, it is time to prioritize and make a selection. First, consider a few of these guiding thoughts.

Don't Be Bleeding Edge

You may wish to be on the leading edge when it comes to warehouse automation, but you also don't want to be on the bleeding edge. Instead, put greater weight on proven options and clearly define risk tolerance for your business.

Decide to Build or Partner

If your company is self-integrating, you will be evaluating individual and collections of hardware and software solutions. Or your company may decide to utilize outside counsel for automation system selection, in which case your team will primarily be evaluating overall satisfaction with the solution and your confidence in their ability to deliver. Either way, the decision-making process is quite similar. When evaluating consultants and integrators, put greater value on those who work with a wider variety of solution providers and tend to package the best solution rather than being dedicated to particular equipment suppliers.

Return to the ABCs

Before making your selection, make sure to turn to your ABC analysis completed in the preparation stage. Your products should be classified as A-type "fast movers," C-type "slow movers" and B-type products are between those two. This is important to reference because each of these types will typically use very different types of handling and storage automation along with different physical locations in the warehouse.

A-type products need to be quickly put away in easy-access pick locations to enable fast response along the main flow lines of the warehouse. They need fast picking, but even faster moving, higher-volume transportation, such as automated sortation conveyors.

B-type items also need relatively fast response, but are put in denser automated storage systems away from the main-line flow of the warehouse. B-types have lower volume transportation needs, requiring just enough to enter the main-line flow to packing and shipping.

C-type items spend much more time in storage and are accessed fewer times overall, but make up a large amount of physical inventory. These products should be stored and accessed in denser automated storage/retrieval type systems. Like the B-types, the C-types need just enough transportation to join the main pack and ship area to complete customer orders. Lower volume and speed conveyors or automated bots can get them where they need to go.

Regardless of ABC classification, some product types are bulky, odd-shaped, highly controlled, hazardous, or have other handling characteristics that don't blend well with handling other products within main flow areas. This means that you may choose more dedicated automated handling bots or keep manually handling them if the volume of movement doesn't support automation.

A — put away in easy-access pick locations to enable fast response

B — put away from the main-line flow of the warehouse

C — make up a large amount of physical inventory

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Utilize a Scoring System

Consider using a five- or ten-point scale — the kind utilized in customer satisfaction surveys with a "greatly dissatisfied" to "greatly satisfied" option — because it makes the team evaluation process easier and more reliable. Make the scoring process initially anonymous, then have an open discussion of the top candidates to reach a final decision rather than just selecting top scores.

Eat Only as Much as You Can Hold

There is a temptation to go big with warehouse automation, but putting too much on your team's plate runs the risk of significant heartburn. Concentrate first on information gathering, flow and analysis along with a few areas of hardware automation that have the best balance of investment, return and risk. Start automation with only a portion of the products in order to demonstrate that you can absorb the changes. Then your appetite grows with the successes and your team can take larger bites.

Conclusion

At this point in your automation journey, you should be armed with a strong understanding of your unique business requirements and feel confident in selecting a system that is the best fit for your organization. Conduct your due diligence before confirming your final decision. Talk with references and make sure you are getting a consistent view of their experiences – it speaks volumes about what you can expect.

If you're ready to learn more, read our final e-book on the **implementation stage** of your automation project.

Speak to a supply chain expert →

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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