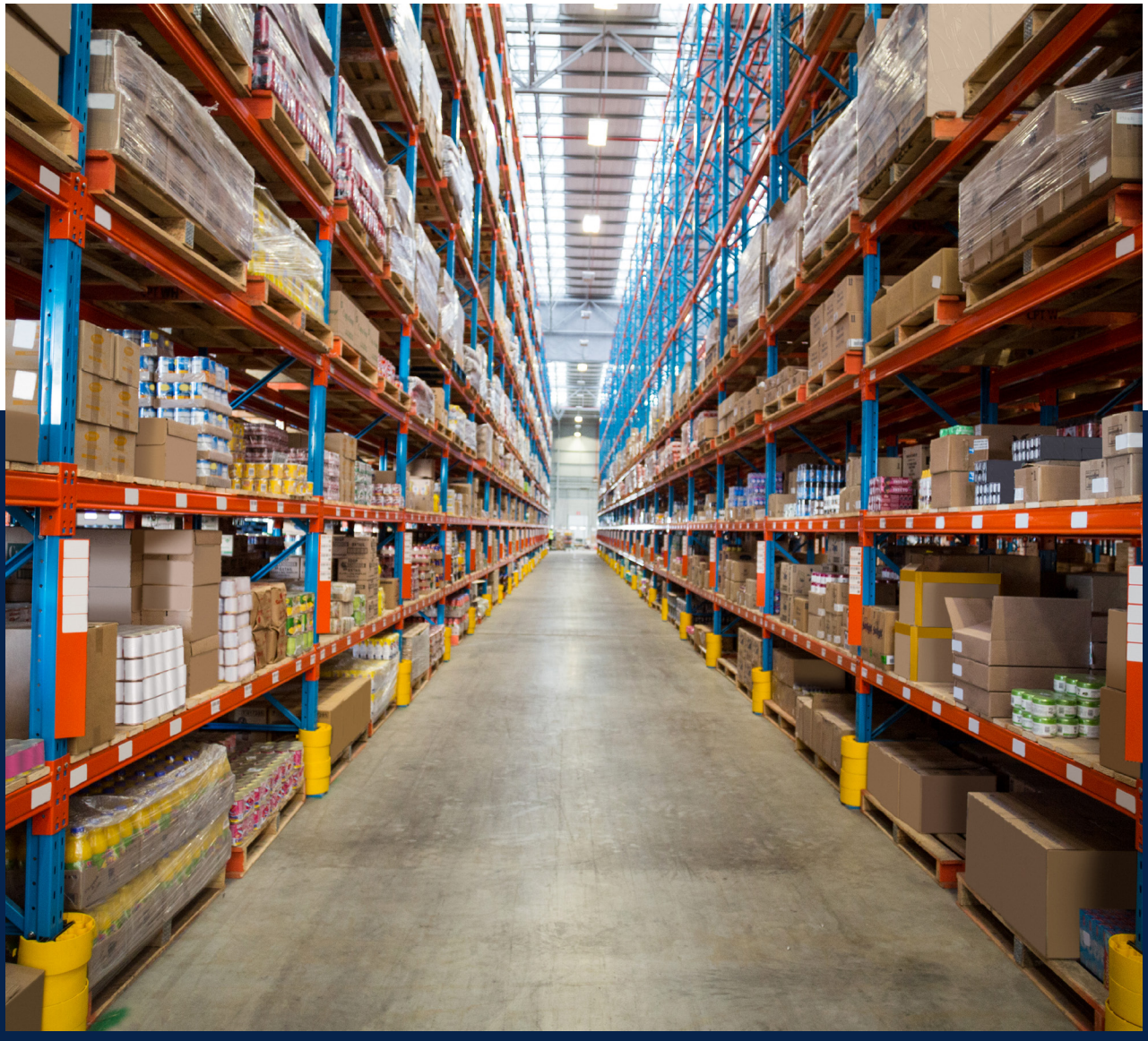
Top 10 Things to Consider Before Implementing Warehouse Automation

A deployment-ready guide to automation success



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About the Author

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During her nine years at OPEX, Jennifer has directly overseen nearly 100 warehouse automation equipment installations around the world. Prior to joining OPEX, Jennifer worked as a Senior Manufacturing Engineer at Alcatel Data Networks. Jennifer holds a Bachelor's degree in Industrial Engineering from The College of New Jersey.

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Introduction

It's no secret that warehouse automation offers significant operational benefits—from reductions in costs and labor to increased accuracy and efficiency. The tricky part is just knowing how and where to begin.

We've put together this high-level guide to highlight the top 10 things you should consider before signing off on an automation project. We'll share implementation best practices, tips to help you avoid project delays, and guidance on how to best understand, define, and plan:

Project goals: Every company has different reasons for implementing warehouse automation. It's important to identify your organization's key goals for the implementation and plan how you will measure them.

Physical space: Understanding your warehouse's physical space is key in the successful execution of any warehouse automation solution.

Potential oversights or delays: A successful implementation involves being aware of potential issues in advance, planning ahead to minimize delays, and preparing for the common challenges that often slow companies down.

Employee impact: It can be easy to overlook the impact that automation can have on warehouse associates. Change management is an essential part of deploying warehouse automation.

Vision for the future: Scaling up, scaling down, shifting production gears—you want to make sure that whatever automation you choose, it's flexible and can easily change with your business.

Chapter 1

Know Your Goals

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#1 Know Your Goals

Why are you investing in warehouse automation? Every organization has different reasons and goals that they are hoping automation delivers. Some of the most common drivers are:

Reducing dependence on physical labor

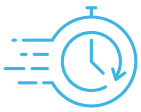
With the surge in e-commerce and need for physical labor in many essential businesses like grocery and drug stores, finding labor has been a challenge. Companies are hiring at peak season speeds while focusing on having the proper safety protocols in place.

Enabling cost savings

By implementing robotics hardware and warehouse control software, warehouses and distribution centers can effectively manage inventory volumes and the flow of goods. By making your operation more efficient, you can easily eliminate redundant processes for greater cost savings.

Attracting investment dollars

Investment in warehouse robotics technology startups clocked in at $381 million in the first quarter of 2020, up 57% from the same period in 2019.[1]



Boosting efficiency

Adding automated solutions to your warehouse can reduce risk while improving productivity. For example, a goods-to-person system eliminates the need for employees to travel throughout the warehouse, resulting in faster, more accurate order fulfillment. The time it takes to manually sort multi-line orders can be reduced significantly by adding high-speed automated sorting systems.

[1] "Report: Warehouse Robotics Investment Surges 57% in 2020," Freightwaves, September 14, 2022. https://www.freightwaves.com/news/report-warehouse-robotics-investment-surges-57-in-2020

Before you embark on your automation journey, it's important to identify your operational objectives, your company's competitive strategy, and the long-term goals of your business. Here are a few key steps to follow:

STEP 1:
Identify high-level automation goals.

STEP 2:
Match goals to corporate objectives and strategies.

STEP 3:
Leave room for granular adjustments to service levels and how you'll gauge performance based on learnings throughout the implementation and go-live.

STEP 4:
Develop Key Performance Indicators (KPIs) based on initial goals and drivers, as well as what you've learned along the way.

#2 Analyze Your Inventory Flow

Whether automation is a stand-alone project or part of a multi-phase warehouse initiative, it's important to understand your inventory and products and how everything flows today. There are three key aspects to this step:

1 DATA ANALYSIS

You need a baseline of what products are ordered and picked, as well as frequency. This review is the number one success factor for accelerating speed.

2 OPTIMIZE INVENTORY PROCESSES

Warehouse automation starts at the dock and ends at the dock. The fastest and shortest distance between these two events will drive efficient workflow and drive your warehouse.

3 EXPLORE THE IMPACT OF ADDING AUTOMATION

Identify where and how it will change your existing inventory flow. Some automation solutions, like goods-to-person picking technologies allow you a better way to store and track the inventory in your warehouse. Automation can also improve the picking efficiency and reduce out-of-stock situations. Having flexible automation solutions allows you to be able to react quickly to the demands of today's customers.

Chapter 2

Assess the Physical Space

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#3 Assess the Physical Space

Where you install your automation solution is another key component in choosing a warehouse solution. There are four factors you'll want to assess to ensure your automation choices will be the right fit.

1 Building floor space

Avoid wasting time and money, as well as potentially jeopardizing the project outcome, and assess building readiness requirements early on:

- Am I using a brownfield (purchasing or leasing an existing facility) or greenfield (brand new facilities built from the ground up)?
- What are my floor slab specs?
- Are there any special electrical and environmental requirements?
- What are my ceiling clearances?

It's essential to cover your layout process and timeline with all suppliers in great detail. For example, one company scheduled installation in a new building that did not yet have doors and windows. That detail, combined with unfortunate weather conditions, caused an actual cloud to form inside their building, which resulted in condensation on everything.

2 Equipment

Automation comes in all shapes and sizes, and some systems can be challenging to move from the dock door to the installation location. Plus, many automation systems require storage space for building materials, such as racking, pallets, and other tools.

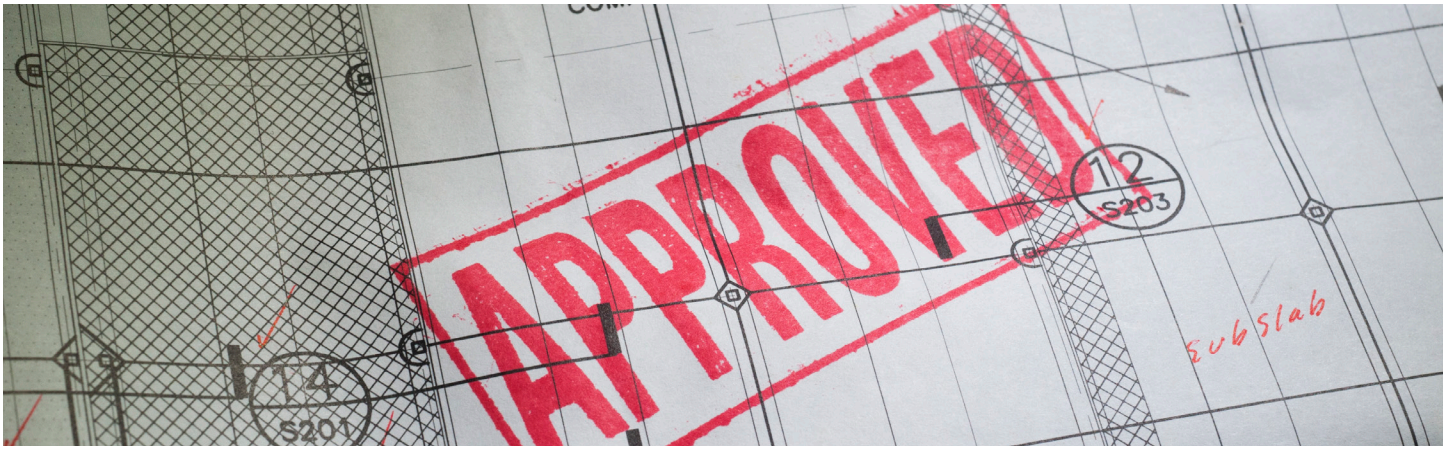
Your supplier should educate you on exactly how much space is needed during the installation process. Remember that the actual installation of materials, equipment, and tooling takes up more room than the footprint of the machinery.

3 Seismic zones

If your warehouse is located in an area impacted by seismic zones, be sure to consider whether the machinery you want to purchase meets seismic requirements or if it will require any design changes.

4 Temperature requirements

You will want to select a solution that will be able to operate in the temperature of your warehouse, including any flucuations between seasons. Do your goods have any temperature requirements?



#4 Understand Building Permits and Insurance Guidelines

If you've ever worked on a home improvement project, you probably already know that obtaining permits can be a lengthy and challenging process. That's why it's so important to reach out to local authorities sooner, rather than later, to find out whether a permit is required to install machinery. Your supplier will be able to provide the details you need to fully prepare for that conversation.

Although local authorities all have similar permit processes, the manner in which they interpret building codes can vary greatly. In fact, if an office has more than one plan reviewer, it may be beneficial to speak to each reviewer separately, as you might get different answers.

The local authority will also instruct you on how to apply for permits, so feel free to ask questions like:

- Should each installer apply separately or should applications be submitted as one package?
- What is the process for plan reviews?
- What sort of timeline can we expect?

In addition to contacting your local authorities, you'll also want to reach out to your insurance carrier to determine building code compliance. If possible, review a copy of your insurance policy to find out whether changing the physical layout will impact coverage.

#5 Ensure Interconnectivity

Robotic or autonomous solutions need to be integrated into your warehouse and are often interconnected through WiFi. Most warehouse automation solutions also include a service component that requires remote access to ensure the highest availability of the robots. It is extremely important to have a good understanding of the frequencies used in your warehouse, the available bandwidth of each, and other technologies that may be competing for the same frequencies. In our experience, approximately 30% of installations require some degree of WiFi enhancement.

Your warehouse automation supplier should conduct a site survey and WiFi scan before installation, as well as offer recommendations on how to best approach and/or adjust bandwidth.

> “Approximately **30%** of the installations we’ve been a part of required some degree of WiFi enhancement.”
>
> JENNIFER THIEL, OPEX®

Chapter 3

Potential Oversights or Delays

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#6 Know Where Your Equipment is Manufactured

Some of the factors that you may consider to be supporting details are actually important parts of the pre-installation process that can hinder your schedule without careful planning. When you think about lead times, keep in mind that there are several areas over which you have little control, including permits, customs, travel, and manufacturing times.

However, you *can* control the supplier you choose. Working with a company that manufactures their automation systems in the same country where installation will occur could reduce potential delivery delays. In today's uncertain environment, it is strongly recommended that you add a bit of padding to your timeline, just to be safe.

Before you commit to an automation supplier, be sure to ask:

- What are your typical manufacturing times?
- What time of year will you place the order? *(Different holiday schedules can impact timelines.)*
- Do you have experience importing products into the U.S.? *(if they manufacture in a different country)*
- What is the lead time from order placement to delivery to implementation?
- Who supplies your software solution? *(This often takes longer to plan than physical materials.)*

Having a project lead can help ensure regular communications, internally and externally. They will also keep track of various vendors to minimize delays.

#7 Customization vs. Standard

Another area that can sometimes cause schedules to get off track is solution customization. Whenever possible, it's best to use a standard solution to save time and costs. A warehouse automation project can actually be a good catalyst to reduce unnecessary custom processes. If customizations are required, remember that they will add to the timeline. Choose customizations only if they are necessary to achieve your automation goals.

Some solutions are specifically designed to be customizable, but in other instances, you may uncover the need for design changes while you're in the middle of installation. That's why it is so important to schedule regular planning meetings involving all contractors to reveal and address any potential issues or delays due to customization.

> *We used automation as a catalyst to standardize processes within our warehouse that had been running for 20-30 years. There were still situations that required us to use customized solutions, and knowing the drawbacks up front helped to keep us aligned with the expectations of the project.*
>
> TOM SHIELD, MANAGER
> U.S. TRANSPORTATION & LOGISTICS FOR KOHLER CO.

Chapter 4

Employee Impact

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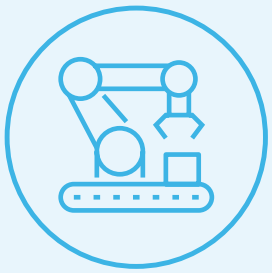
#8 Communicate With Your People

Automation doesn't necessarily mean that robots are directly replacing people. However, without the right change management communications, employees may believe that is the case, causing unnecessary confusion and stress.

To ensure the smoothest possible rollout to employees:

- Create a detailed communication plan, with strategies, timelines and tasks for each audience (leadership, warehouse, union, etc.).
- Start by getting buy-in from the warehouse team before any construction begins. Share specifics about how the automation will ultimately make their jobs easier.
- For the leadership team, clearly set expectations, share timelines, and answer key questions like, "How will this impact labor requirements?"



The impact of the pandemic has caused a surge in interest for adding automation. Many of the solutions offer businesses ways to be effective without adding new labor, especially during peak season.

Additionally, technologies like goods-to-person and automated sorting solutions allow operators to easily practice social distancing, which benefits both the employee and the employer.

#9 Have the Right Resources Available

Approximately 75% of our customers chose to work with an integrator for their warehouse automation installation, but that isn't the best choice for everyone. If you have the right internal resources and expertise to get your system up and running, and choose not to use an integrator, it is very helpful to have two Project Managers – one within your company and one at your supplier. You should also involve an internal engineering resource and the facilities team, since they know the building specs.

Approximately **75%** of our customers chose to work with an integrator for their warehouse automation installation

Chapter 5

Vision for the Future

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#10 Scalability

If 2020 has taught us one business lesson, it's to expect the unexpected. Whatever automation you choose, make sure that it's flexible enough to change with your needs. Only consider automation options that can scale with your business, whether it's planned growth or unexpected peaks.

Think about your own business and how it might grow and change. Are the SKUs you're selling this year very different from last year? During this pandemic, some of our customers experienced 30% spikes in growth – overnight! Make sure your warehouse automation solution would be able to handle unforeseen peaks by discussing the following questions with your team:

During this pandemic, some of our customers experienced **30%** spikes in growth – overnight!

- How might our business change and grow over the next few years?
- Are we selecting automation that will meet our potential needs and goals for future growth?
- If we had to expand unexpectedly, would this solution be able to scale quickly?

Conclusion

The COVID-19 crisis is prompting a growing number of companies to invest in automation and robotics to better manage operations, boost supply chain resiliency, and improve responsiveness.

Since the cost of implementing automation in your warehouse can range anywhere from $500K to $20M, it's important to do your homework before you sign on the bottom line. At the same time, warehouse automation is relatively new as it relates to robotics, so it can be difficult to base a decision solely on the experience of other companies.

Top 10 Things to Consider

1. Know your goals
2. Analyze your inventory flow
3. Assess the physical space
4. Understand building permits and insurance guidelines
5. Ensure interconnectivity
6. Know where your equipment is manufactured
7. Decide on customized vs. Standard
8. Communicate with your people
9. Have the right resources available
10. Ensure scalability

About OPEX

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