LOCUS

Improving Warehouse Operations with Automation

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How to Improve Warehouse Operations

> Warehouse managers across all industries know they need to improve their productivity and efficiency. It's tough to make that the focus when firestorms of labor challenges and getting orders out the door cause warehouse optimization to take a back seat. It's time to look at your warehouse operations and be tactical and proactive instead of only reactive to changing daily priorities.

7-Tips:

Take a look at these seven tips that you can implement for warehouse optimization.

1. **Create an Ergonomic Warehouse**
2. **Plan for the Full Year**
3. **Establish a Clear Process Flow**
4. **Cross-Train Associates**
5. **Think of the Four Walls**
6. **Minimize Work in Process**
7. **Automate with Robotics**

Create an Ergonomic Warehouse

Provide sufficient lighting in your warehouse to reduce time searching for items and eyestrain on your associates. If workers will be standing in one spot for most of the day, invest in anti-fatigue mats to cut down on feet, legs, and backaches. Place signs around your warehouse reminding workers to stretch at various intervals. You should also incorporate regular breaks into work schedules to keep people sharp.

Plan for the Full Year

As companies rush to automate, they often focus just on what's going on at that point in time instead of thinking long-term. When companies move to warehouse automation during the peak season, they could build too big for the rest of the year and be stuck with conveyors or other fixed structures that don't provide a return on investment. If you bring on automation during a non-peak time, you'll find yourself struggling to keep up with orders at peak. The best warehouse automation solution is one that will adjust and scale for peak season.

How to Improve Warehouse Operations (continued)

Establish a Clear Process Flow

Help your warehouse associates understand how the entire warehouse works, advises JP Lichtenberg. Organization charts are helpful for managers and associates to see the workflow as a whole for warehouse optimization. As you're looking at the flow, you might see that one department is being shortchanged. For example, if your packing associates receive from picking and don't take action right away, any productivity gains from an improved picking time there are lost in the overall warehouse productivity.

Cross-Train Associates

Warehouse associates are typically trained only for the specific tasks for their job. Steve Branch advises against that, stating that "your warehouse is going to have call-outs. While you don't need every warehouse associate to be able to do everything, you should train them on the tasks that happen before and after their area so they can move around and help out as needed."

Think of the Four Walls

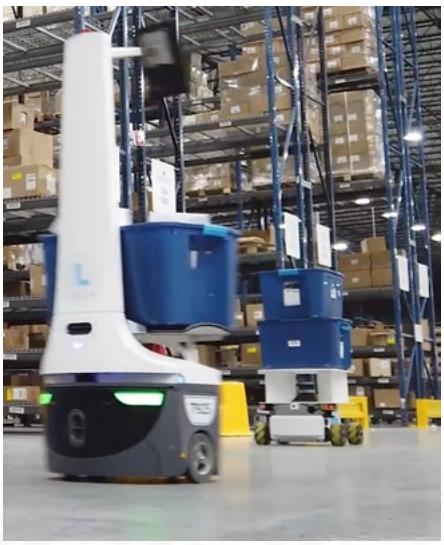
Warehouse managers who are trying to solve fulfillment issues are looking for ways to efficiently get ecommerce orders out on time, but sometimes only focus on putaway and picking. Mike Johnson advises warehouse managers to "Think about how you can improve productivity throughout your entire warehouse, not just in one area. If you pick faster, you also want to pack faster to get the orders onto the trucks and out the door. Otherwise, the operational efficiency is lost."

Minimize Work in Process

Most warehouses work in the model of picking multiple orders at the same time, putting them into one main batch, and then sorting at the packing and sortation section into various outbound cartons. There are a number of ways to implement warehouse optimization. One suggestion is to pick directly into the box that is shipped out, which eliminates the need for separate packing and reduces the number of touches. The other is to do batch picking for a single-unit pool.

Automate with Robotics

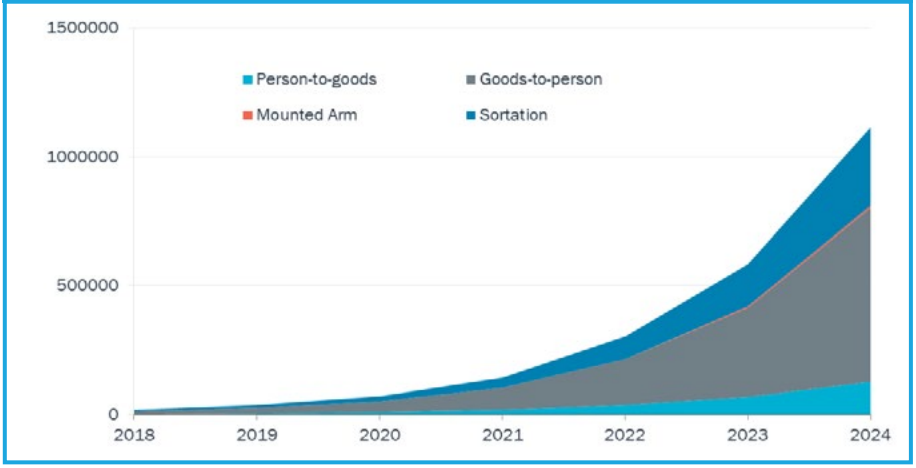
Autonomous mobile robots (AMRs) help to improve warehouse operations in all areas of the warehouse, from receiving to shipping; and putaway to packing. When you add robots into the mix, your human warehouse associates can seamlessly alternate between picking and re-stocking/putaway, helping improve the overall efficiency of your warehouse operation and focus on true task interleaving for the tasks that require a human brain.



How to Select the Right Automation Solution

Warehouses and manufacturing facilities alike see the need for automation to improve warehouse operations, including making the move to autonomous mobile robots (AMRs). In fact, market research firm Interact Analysis research predicts that the number of AMR shipments will increase to over 530,000 in 2024, bringing the total number in operation to more than 1.1 million, a significant increase over the 36,000 AMRs in use at the end of 2019.

INSTALL BASE OF AMRs DEPLOYED FOR ORDER FULFILLMENT



With the number of automation solutions available, it can be difficult to figure out which is the right one for your company and then evaluate, select, and implement that solution. We've listed some questions and tips below that companies should ask themselves and the vendors they're evaluating when they're choosing an AMR for their facility.

Find the Right Solution

Your facility's goal should be to find the solution to the problem they're having, even if it's not an AMR. Your evaluation will most likely lead to choosing an AMR as an automation solution, but keep other options in mind. How do you figure that out? Look at the problem you're trying to solve in your facility. It could include:

- **Hiring and retaining skilled workers**
- **Trying to reduce costs**
- **Having to fulfill more orders in the space you currently have**
- **Needing to reduce cycle time**

Once you've determined the problem, define your criteria for success, which could include the savings and ROI you'll receive with your chosen solution.

Money Talks

The automation technology you're evaluating will be the latest and greatest, but it's the potential savings and ROI that are going to sway your C-level in one solution over another. As Steve Branch notes in an anecdote he heard from a sales rep, "Yes, robots are cool, but there's not a CFO in the world who buys 'cool'." Instead, their focus is on the ROI, labor retention, long-term maintenance needs, training, and more.

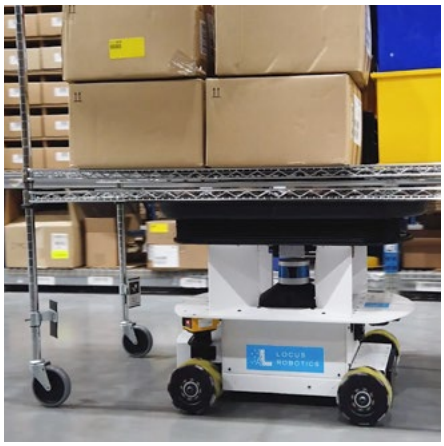
Additionally, while your CFO wants to hear about the savings and ROI, their ears will perk up if the AMR you choose comes with an OpEx model rather than CapEx. Why? The industry is developing at a rapid pace. If you invest in a solution with a CapEx model, that means that you've committed to that solution for the lifetime of the solution, which could be seven to 10 years.

With an OpEx model, like Robots-as-a-Service (RaaS), you can be flexible with the number of bots you have at a time based on demand. When peak season comes around, simply add additional robots just for that timeframe to work in your facility to cover orders with your human associates.

How to Select the Right Automation Solution (continued)

Is it the Right Fit?

Whatever you choose for an AMR or automation solution, it needs to work along with your human associates. Robots should always work to make a human's life better. And it also needs to work within your facility. To determine if the AMR can do what you need it to do, we've created a helpful checklist that lists some key questions, which can be seen in full in the next section. Those questions include:



- **What is the payload of the robot? Do the dimensions of the robot match what you'll be placing on it?**
- **What are the training requirements for the AMR you're considering? Can your associates ramp up easily to the technology?**
- **Is the human interface visual and simple to be easily understood?**

ONE LAST NOTE:

For any AMR or automation solution you're considering, you should always see the solution in operation at a live site.

Top Questions to Ask When Choosing an AMR

When selecting an autonomous mobile robot (AMR) solution, there are many factors to consider in choosing the right one. Here are some key questions you should ask yourself and the vendors you're evaluating to find the right AMR for your warehouse.

Compatibility

- **What are you putting on the AMR? Think about what will be carried by the robot and if that matches the envelope (dimensions) of the robot and the weight capacity.**
- **Can the robot run on your warehouse surface? For example, if you have plywood decking, the AMR needs to be able to drive over that surface.**
- **What are the charger power requirements? Consider where the chargers will be located, and if charging management is automatic, which it should be.**
- **What temperature is your warehouse? Can the robot handle that temperature? This is important if you have a refrigerator environment.**
- **Can the AMR work with and adapt to other use cases that your warehouse might have in the future? For example, Brownfield and Greenfield; Single-Level Discrete Pick; Single-Level Batch Pick; Multi-Level Batch Pick to Downstream Sortation; Multi-Level Discrete Pick-and-Pass; and Omnichannel.**

Maneuverability

- **Can the AMRs navigate your building effectively? Consider if there are blockades that don't allow for AMRs to travel around your building.**
- **Are your aisle widths large enough to allow two AMRs to pass by each other, or turn around in the aisle? Check the width of your aisles and compare that to the size of the AMRs.**
- **Can your warehouse support your entire AMR fleet? Consider areas that might lead to congestion due to workflow.**

User Interface

- **Is it visual and simple to use? The AMR should provide the information that's needed by the user to perform their job in an easy and effective manner.**
- **What are the training requirements? Consider the amount of time it will take to train the user; if there are multilingual users; and any authentication/login process.**

The Right Robot for Your Warehouse

Our full fleet of AMRs is powered by LocusOne - the industry's only fully integrated system that seamlessly orchestrates and manages all of your product movement needs.

Locus Origin

Locus Origin is the intelligent AMR that's designed specifically for collaborative, high volume order fulfillment. With our exclusive, multi-bot approach, Locus Origin improves fulfillment productivity over 2X by eliminating unproductive walking time and ensures order accuracy. Since Locus Origin does the traveling, workers can be more productive enabling faster cycle times, improved ergonomics, worker safety, and overall workplace quality.

Locus Origin can be easily configured to use multi-level shelving and a wide range of containers, from tote-arrays, bulk bins, and even shipping boxes, easily adapting to your workflow and product types. It seamlessly supports dynamic task-interleaving, letting you complete both pick and putaway/ replenishment tasks at the same time, with the same labor force.

The Right Robot for Your Warehouse (continued)

Locus Vector

Locus Vector is the innovative, flexible AMR specially designed for high-productivity material handling and logistics applications. Built with an industrial strength chassis, omnidirectional mobility, and compact design, Locus Vector can be deployed in a wide range of environments, tackling a variety of material handling tasks.

Featuring a high payload capacity of up to 600 lbs. Locus Vector can easily move anything in your operation. The flexible design allows multiple use cases, from shelf/rack moving, discrete order picking, and point-to-point material handling. Using its roller-top configuration, Locus Vector easily connects to conveyors, sortation, and other mechanized automation workflows.

Locus Max

Locus Max is the heavyweight AMR specifically designed for safe, autonomous transportation of large and heavy payloads throughout your facility. Featuring an industrial strength chassis, Locus Max's 3,000 lbs. carrying capacity and omnidirectional mobility enables astonishingly smooth and nimble movement of your heaviest materials.

Locus Max comes equipped with our easy-to-use interface that makes set up and autonomous operation easy - often in under 15 minutes. With dual safety rated LiDAR sensors, a 3-stage safety system, and superior autonomous navigation, Locus Max works safely and efficiently alongside workers in even the most dynamic and demanding environments.

Locus Max is ideal for nearly all types of use cases, including case picking and pallet movement, easily interacting with workers, safely and efficiently with the power to carry even the heaviest loads.

About Locus Robotics

Locus Robotics is the market leader in Autonomous Mobile Robots (AMR) for fulfillment warehouses. Locus is the leading warehouse robotics choice for retailers and third-party logistics (3PL) operators, industrial/automotive, and healthcare companies worldwide looking to meet — and solve — the increasing demands of the booming and dynamic e-commerce and fulfillment market. For more information visit **www.locusrobotics.com**