



# Safe and sound through automation

Optimizing warehouses facing labor shortage  
and ergonomic challenges

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# Solution for labor shortage

## Resolving the major challenge for warehouses and distribution centers

Labor shortage continues to be a major challenge for warehouses and distribution centers around the world. According to the 2019 MHI Annual Industry Report, 65 percent of survey respondents cited hiring qualified workers as extremely or very challenging, and a whopping 91 percent rated it as at least somewhat challenging. These shortages put an especially heavy strain on manual warehouses where employees have to pick and prepare orders by hand. Existing

staff need to work harder and faster to fulfill orders on time and accurately, which ultimately poses significant ergonomic hazards and risks for injury.

On top of these ergonomic challenges, insufficient staffing only further compounds the myriad of operational pressures plaguing manual distribution. These facilities are trying to find ways to accommodate growing inventories within a shrinking amount of space – due to SKU proliferation

amid greater consumer demand – and keep product flowing smoothly during the busiest times of the year.

**In the following white paper, we will explore the challenges facing warehouse management during a labor shortage, and how automation can alleviate ergonomic and labor issues so that they can run better, faster and safer operations.**



# The ergonomic challenges and risks of manual handling

In traditional warehouses, manual order picking subjects the human body to strenuous, repetitive tasks, including twisting, bending, reaching and lifting. This puts warehouse staff in constant danger of on-the-job injury, not to mention long-term damages due to years of prolonged physical stress.

## Potential chronic conditions include

- Repetitive stress injuries
- Repetitive motion injuries
- Musculoskeletal disorders
- Cumulative trauma disorders
- Cumulative trauma injuries

# The international labor organization reports

An estimated 340 million occupational accidents happen around the world each year, with an additional 160 million workers experiencing work-related illnesses. Studies show that the number of injury cases in warehousing continues to be significantly higher than other industries.

These risks often make careers in materials handling less appealing to jobseekers and young graduates, hence why there are so many

vacant positions. And with the rise of e-commerce and heightened consumer demand, many companies are increasing output and production, placing greater strain on already limited labor pools.

Given the ergonomic risks associated with manual handling, governments around the world have tried implementing regulations to try and improve work conditions and protect warehouse employees.

## The European Union (EU)

has created Directive 90/269/EEC that lays down minimum health and safety requirements for the manual handling of loads where there is a risk particularly of back injury to workers.

**The United States** has legislation dating back to 1970 with the Occupational Safety and Health Act.

**Canada** put forth a set of health and safety regulations in 2011, and the Canadian Centre for Occupational Health and Safety advises to use mechanical aids.

**Japan**'s 13th Occupational Safety and Health Program, issued by the Ministry of Health, Labor and Welfare, lays out a five-year plan to reduce occupational accidents and promote healthy workplaces.





## Automation can present a drastic improvement in ergonomic conditions and the future outlook of distribution centers.

In spite of these proactive measures, workforce stability in the warehousing and distribution industry remains low. Even when facilities manage to find workers and pickers, uncertainties persist as to whether or not they will stay long enough to receive adequate training.

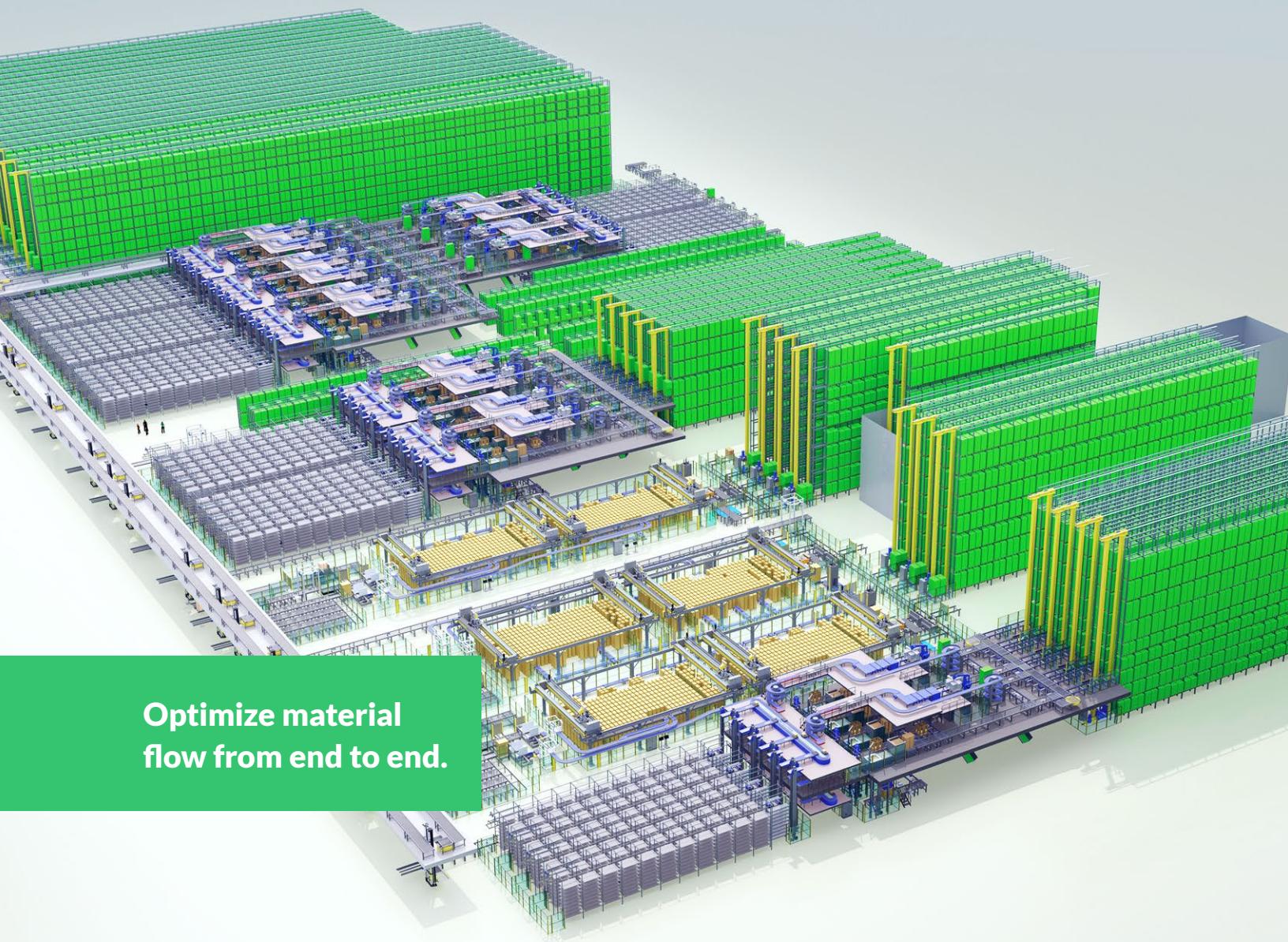
With all of this instability, trained pickers might leave at any moment, putting facilities back to square one with hiring. Regular turnover brings inherent costs with hiring and training employees. The Society for Human Resource Management (SHRM) reports that companies can spend six to nine months of a single employee's salary just on recruiting and training a replacement.

While regulations and education on proper lifting and handling techniques can minimize some risk, technology in the way of automation can present a drastic improvement in ergonomic conditions and the future outlook of distribution centers.

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# Automate for profitable operations and maximum safety

From conveyors and automated guided vehicles (AGVs), to automated storage and retrieval systems (AS/RSs) and order picking solutions, robotics and machinery can now take over the many demanding tasks of order fulfillment. These automated solutions can provide rapid, accurate movement of goods, from receiving, through storage, replenishment and picking, to packing and shipping – optimizing material flow from end to end.



## Optimize material flow from end to end.

This alleviates staff from consistent forceful repetition, strained posture and physical exertion on muscles, tendons, joints and nerves. The question of automating becomes no longer a matter of displacing people from jobs, but of filling in the operational gap left by widespread labor shortages and protecting current employees.

With the right equipment, wasted motions are eliminated, maximizing movement and enhancing efficiency. Facilities can better keep up with increased product demand and order numbers during peak periods, and realize new space savings. There is also a cost reduction element to automating.

**A safer work environment through automation means less on-the-job injuries, so less worker compensation costs, liability costs and potential litigation costs.**

### By automating, the bakery has

- Eliminated the safety risks of manual fulfillment
- Optimized space utilization, using 50 percent less space
- Enabled 100-percent order accuracy
- Reduced its workforce and man hours by 30 percent



## How Martin's Famous Pastry Shoppe, Inc.® got a handle on safety

Martin's Famous Pastry Shoppe, Inc.® in Chambersburg, Pennsylvania previously used a completely manual process for the order picking and fulfillment of its baked goods. Since everything was picked by hand, warehouse staff would have to plan and prep orders hours in advance of anticipated dispatch. This created inefficiencies, especially during summer spikes in business, as well as safety risks for the staff who had to bend, lift

and move products around the warehouse.

Through a combination of high-density storage and retrieval and robotic materials handling, Martin's Famous Pastry Shoppe, Inc.® now has a fully automated process that rapidly moves product from storage to palletizing and loading. It is fully equipped to keep up during seasonal lows and highs. The speed of automation allows Martin's Famous Pastry

Shoppe, Inc.® to schedule and prepare orders within one hour of a truck's arrival.

[Scan here to learn more about Martin's Famous Pastry Shoppe, Inc.® and its automation story.](#)



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# The next generation of warehouse workers

By automating and embracing new technologies, warehouses and distribution centers can cultivate not only a greater culture of safety, but also innovation. Automation marks a transition from the traditional, physically demanding warehouse of yesterday, into a more modern facility closer to what's possible in the burgeoning fourth Industrial Revolution, or "Industry 4.0."

**The tasks for employees are thereby elevated from repetitive, physical labor, into more sophisticated work in operating equipment, supervising automated operations, reviewing performance data, releasing orders, selecting picking sequences, transport planning, or stepping in for products with special handling instructions.**

These value-added roles are much more appealing to young applicants and graduates. These jobseekers gravitate more towards careers where they can apply some technological acumen, in addition to enjoying a safe work environment.

To provide workers the right skills to perform these tasks and competently work with automated systems, look for solutions

providers that offer tailored training packages. They can help to upskill existing workers and teach recruits the necessary skills to excel in the modern warehouse. This way, there is in-house expertise for responsibilities ranging from system operations to maintenance once the systems are up and running. In effect, distribution centers can create a new, tech-driven workforce.

**By automating warehouses and distribution centers can cultivate a greater culture of safety and innovation.**



# What does the Industry 4.0 warehouse look like?

In the Industry 4.0 warehouse, robots, computers and data converge to create new cyberphysical environments, where facilities can use automation to optimize, speed and scale up repeatable tasks. They can also capture data via the Industrial Internet of Things (IIoT) on what the automated tools and robots are doing.

Two webs make up the cyberphysical environment: the physical network of hardware and the cyber network that ties everything together through a seamless flow of data.

**The Industry 4.0 warehouse is able to run faster and smarter, using a combination of data and advanced hardware to readily pivot to changes in orders or consumer demand at large.**

## The physical network

The physical network includes automated systems like AGVs, mobile robots, gantry robots, articulated robots, monorail transfers, AS/RSs and conveyors. The hardware is often outfitted with barcode readers, vision systems, laser scanners or other technologies that collect and send sensory data to software in the cyber network.

## The cyber network

In Industry 4.0, all automated equipment and subsystems are connected to high-level control systems. Distribution centers can use the captured data to understand processes, run analyses and use the results to improve material flow.



# Back to the future

To address the big labor shortage problem taxing their facilities, managers and decisionmakers at struggling distribution centers should examine how safe and ergonomically sound their facilities are. If your risks of injury are high, that is likely why people aren't filling open positions.

By investing in automated solutions, you can not only eliminate ergonomic hazards, but also optimize your facility with modern

equipment and talent. There is no one-size-fits-all solution, but there are numerous options available today. Look to solutions providers that can come in and review your day-to-day flow of operations.

By looking at historical order and performance data, they can perform analyses and run simulations to determine the best strategy for automation, so that your facility can run at its best in a modern and safe way, at all times.

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We are crafting a future where logistics excellency is not just a promise but a guarantee. It's not just our solution; it's your logistics strategy in action. Let's fulfill all your fresh food, beverage, bakery, and dairy supply chain needs!

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