

WORKPLACE

Material Handling & Safety

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PUBLICATION

The only magazine covering material handling, safety & chemical storage in manufacturing & construction.



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- Fall Protection
- Product News



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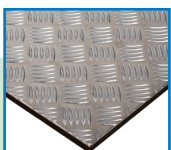
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Safety switches are interlocking devices used to monitor (and sometimes lock) machine guards, doors, gates, windows, jaws or other machinery to protect both people and machines. A variety of safety switch styles are available to detect unsafe conditions and isolate power from the hazard.

Also Available

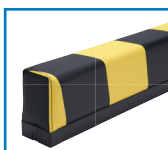
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Material Handling/Logistics

AUTOMATED STORAGE/ RETRIEVAL SYSTEMS

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FALL PROTECTION

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- 32 What Slips, Trips and Falls Signage Can Teach Us About Workplace Communication**
Visual communication doesn't just belong on signs and hazcom labels; it's an approach that should be used in all safety training.





5 Repeatable Patterns for Safety Success

When it comes to safety, companies need to be confident they're on the right path. And who can blame them? It can be hard to know what initiatives to implement, especially with a limited budget for safety.

SafeStart has worked with tens of thousands of safety professionals in various industries over the last three decades and we've found they typically all have the same problems. This guide shares the patterns we've seen that have helped organizations achieve better safety results—and a few quotes from our client success stories to provide real-life examples.



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It didn't take long for newly elected President Joe Biden to take up the issue of worker health and safety. An executive order Biden signed in January, aptly entitled, "Protecting Worker Health and Safety," directs OSHA to toughen up its enforcement generally, but also contains specific clauses related to the ongoing pandemic. It singles out – for special protection – "healthcare workers and other essential workers" who "have put their lives on the line during the coronavirus disease 2019 (COVID-19) pandemic."

The executive order requires OSHA to:

- Update COVID-19 safety recommendations for businesses in the U.S. (which will have been done by the time this goes to print, if OSHA meets Biden's deadline) and
- Focus enforcement efforts related to COVID-19 on violations that put the largest number of workers at serious risk or are contrary to anti-retaliation principles.

The agency is also tasked with determining whether or not an emergency temporary standard is necessary. If it is, that standard would be issued with a speed unusual for safety standards, which usually go through a long process that includes input from stakeholders and a public comment period. An emergency standard could be issued sometime this month.

In other OSHA news, the agency – which went without a permanent leader during the Trump administration because the Senate failed to confirm Trump nominee Scott Mugno – may be getting a new chief. Biden has nominated James S. Frederick for the position of Assistant Secretary of Labor for Occupational Safety and Health. Frederick has strong union ties and worked for the United Steelworkers' health, safety and environment department for 20+ years before joining a Washington, D.C. consulting firm. Will the Senate fail to confirm Frederick? We'll see.

Another executive order that will affect businesses is the "Buy America" one signed by Biden. It directs federal agencies to maximize the use of goods, products, and materials produced in, and services offered in, the U.S. It also requires the federal government to – whenever possible – "procure goods, products, materials, and services from sources that will help American businesses compete in strategic industries and help America's workers thrive."

Reaction to the "Buy America" initiative has been mixed. Forbes says it will make it more difficult for federal agencies to purchase foreign-made products. It will also assist small and midsize companies in their efforts to do business with the federal government. The Wall Street Journal notes that companies in other countries are concerned about being shut out of the U.S. government procurement market – and that the executive order might conflict with Biden's vow to re-establish good relationships with U.S. allies (Canada, for one, is seeking an exemption).

What effect these and other Biden actions will have on the business sector remains to be seen. The pandemic remains the wild card that continues to affect the economy in both expected and unpredictable ways.

As always, *Workplace Material Handling & Safety* is committed to bringing you the information you need to compete and be profitable, while also keeping your workers safe. We hope you find the articles in this issue helpful. Your comments, questions or suggestions are welcome. You can email me at maureenp@rdgmedia.com.

Maureen Paraventi



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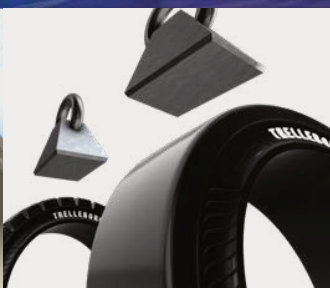
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Four Supply Chain Benefits of Collaborative Mobile Robotics

By: **Fergal Glynn**, Contributor

The COVID-19 pandemic changed the supply chain overnight. Buying behaviors that were predicted to become the norm by 2026 are suddenly a reality. Based on the U.S. Census Bureau, there was more ecommerce growth in the first six months of the COVID-19 pandemic than the previous five years combined.

Even prior to COVID-19, ecommerce and B2B fulfillment operators were increasingly turning to Collaborative Mobile Robots (CMRs) to gain operational flexibility and maintain growth. As CMRs require no new infrastructure, they can be deployed within as little as 2-4 weeks and require mere minutes of training for associates to ramp up to productivity. As a result, CMRs will continue to play a critical role in efforts to meet the unexpected demand, handle the increase in each picking, offset unpredictable labor availability and launch or expand fulfillment-from-store and omnichannel initiatives.

Now, more than ever, supply chain leaders know that fulfillment is the key to differentiation, and in some cases, survival. Because of this new reality, CMR providers expect a continued surge in demand as operators implement new strategies to provide cost-effective fulfillment services in an uncertain labor market.

Here are four key benefits that 3PLs, retailers and B2B distributors can realize with the implementation of fulfillment automation that includes collaborative robots:

1. IMPLEMENT QUICKLY WITHOUT DISRUPTING YOUR OPERATIONS

Most companies can't afford to completely abandon their current system or infrastructure; it's too disruptive and too expensive. And traditional warehouse automation systems can take 12 to 24 months to go live and as much as five years to achieve ROI. Collaborative mobile robots provide a faster alternative for implementing automation and are safer, customizable and designed to work with your existing warehouse processes and staff. Some robotics systems, such as 6 River Systems' solution, can be implemented in as little as four weeks and support faster, more accurate fulfillment execution across putaway, picking, sorting and packing.

The result is a facility or enterprise-wide network that can support growth, without disrupting your existing fulfillment operations.

As CMRs require no new infrastructure, they can be deployed within as little as 2-4 weeks and require mere minutes of training for associates to ramp up to productivity.



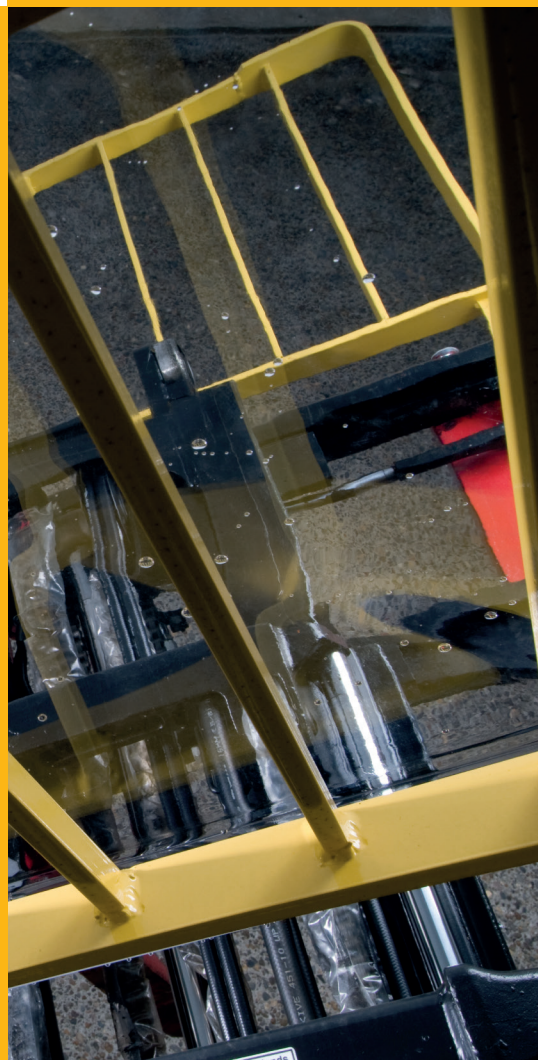


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AUTOMATED STORAGE/RETRIEVAL SYSTEMS

2. TRAIN MORE ASSOCIATES MORE EASILY, FOR LESS

Even before COVID-19, warehouse labor was a challenge. Today, it may be THE challenge as the labor shortage that marked the industry from 2015 on has turned into a full-on crisis. In addition, the massive increase in online purchases has created a significant crunch on capacity, both in terms of fulfillment and transportation. Small to midsize 3PLs have been placed under tremendous pressure to maintain SLAs in the face of insufficient labor resources and/or inflexible legacy systems that aren't equipped to scale. All of this is a strong recipe toward automation.

With training built into the design (some collaborative robots guide your associates through the picking process), onboarding is simpler with collaborative mobile robots. Plus, fewer mechanical touchpoints and integrations make them more intuitive to use. These innovations make onboarding and equipment training a much simpler task, even for the greenest of hires.

3. CREATE THE FLEXIBILITY AND SCALABILITY YOU NEED TO MEET UNPREDICTABLE DEMAND

The need to adjust your warehouse's capabilities to accommodate fluctuating demand is a common challenge in today's fulfillment landscape—and inflexible systems

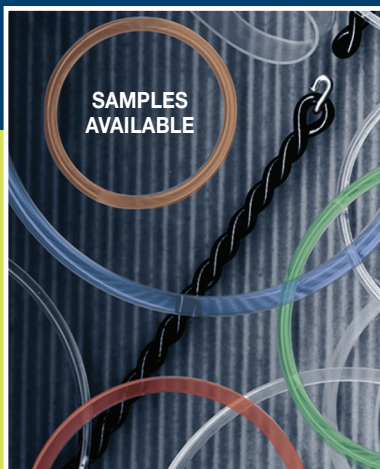
or legacy automation don't meet the growing need to adapt. Similarly, the use of traditional tactics like changing warehouse layouts and the use of alternate shifts may provide flexibility in certain situations, but they can be difficult and costly to coordinate. Automated robots, however, can be retrofitted into any existing warehouse layout or design without the need for major changes to racking, bolts or shuttles.

It is also easy to add additional CMRs and temporary labor to adjust for this demand, far more quickly than otherwise possible. CMRs can also be rented, transferred among facilities and/or brought online quickly to adapt to changing needs, providing necessary scalability in the modern warehousing world. Temporary and portable capacity is something that no traditional automation can offer.

4. EMPOWER WAREHOUSE ASSOCIATES TO BE MORE PRODUCTIVE

Staffing warehouses has become increasingly challenging as the demand for qualified workers continues to rise. In warehouses that have implemented collaborative robotic systems, there have been a number of reported benefits, such as 2 to 3x increases in productivity, fewer errors and greater employee satisfaction. These improvements have

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enabled warehouses with autonomous robots to achieve productivity rates that rival goods-to-person technologies.

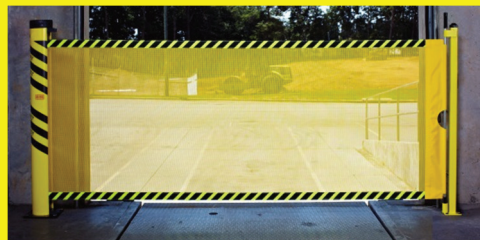
Collaborative mobile robots are also designed to leverage AI and machine learning, allowing the systems to make data-driven decisions in real time. By guiding associates from task to task and optimizing picking routes, automated robots allow associates to handle several tasks during one walking trip on the floor, thereby accomplishing more in less time. It also reduces steps between tasks and makes streamlines pick paths, reducing unnecessary walking. **WMHS**

Fergal Glynn is VP of Marketing at 6 River Systems, Inc. (6RS) where he is responsible for demand generation and branding. Founded in Waltham, Mass. in 2015, 6 River Systems is a leading collaborative mobile robotics fulfillment solution provider and part of global commerce company Shopify Inc. (www.6river.com).

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Want to contribute to **Workplace Material Handling & Safety**? Let us know if you have an interest in writing an article for an upcoming issue.

Contact: Maureen Paraventi, Chief Editor,
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Product Damage: Carrier Issue or Packaging Issue?

By: **Dustin Smith**, Contributor

We recently had a customer request our expert opinion on why a product they shipped became damaged. Was the damage because of carrier handling or that the packaging was not designed to survive the carrier's supply chain?

It was an interesting question that we have seen previously with other customers. In this article, we are going to dive into some of the details as to how to answer this question!

KNOW YOUR SUPPLY CHAIN

The first step in developing a packaging solution is understanding the supply chain in which your product is shipped through. This directly impacts the packaging design and testing protocols required to verify a concept. A product shipping on full truck load (FTL) on a company's existing fleet in comparison to less than truckload (LTL) requires completely different packaging solutions. Too often we see customers using the same concept that works shipping FTL but is damaged in an LTL environment and the blame is put on the carrier.

A few questions that are helpful when evaluating a supply chain are outlined below:

- How is the product stored and handled internally prior to shipment?
- What machinery is used to transport the packaged product?
 - Fork truck? Hand truck? Clamp truck?
- If palletized, does the pallet allow for the available machinery to be utilized without special attachments or modifications?
 - Example: Fork truck tine extensions
- How many hubs will the packaged products go through if shipping LTL?
- What hazards are to be expected during shipping and handling?
 - Vehicle vibration, forklift handling, horizontal and vertical impacts, drivers clipping curb, etc.



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UNDERSTAND YOUR PACKAGING BUDGET

All companies seek to have 0% damage during shipping but there is a balance between product damage and packaging related costs. It is important to build an expected budget around packaging material, freight and labor costs. Investigating a \$100 packaging solution when the product margin only allows for \$10 is an incorrect path to explore. Having this information up front narrows down the choices allowable for your specific product.

DESIGNING TO THE APE SYSTEM

Creating a packaging design meant to survive an FTL or LTL supply chain can be broken down into what BoldtSmith Packaging references as the APE System. Below is a breakdown.

Allow: This references allowing the expected hazards to occur and design the packaging to survive these hazards. For example, we know that shipping a 48"x40" pallet with a flat top surface has a high likelihood to have products stacked on top of it through an LTL supply chain. Knowing this is an expected hazard and allowing it to happen requires packaging needs to be designed to survive this. Pushing back on the carrier when another pallet is stacked on top of your product is not understanding the expected hazards in an LTL environment.

Prevent: This references preventing damage that has a high likelihood of happening to create product damage. For example, it is to be expected that a pallet that has the product overhanging 2" will likely be impacted by another product/pallet or forklift. For this reason, underhang is utilized to prevent this being an issue with creating product damage.

Eliminate: This references eliminating the expected hazards to occur. For example, a 96"x48" pallet is used to ship a product that is extremely heavy on one end and

light on the other. This poses two issues with handling. The pallet cannot be a 4-way entry stringer pallet due to the risk of the pallet tipping over when lifting from the openings on the 96" dimension. Also, the pallet should only be lifted from the heavy end; for this reason the pallet would only have an opening on that side. This essentially turns the pallet into a one-way entry and eliminates the forklift operator from unintentionally causing damage.

TESTING

After the designs are created, testing needs to occur to verify the design and materials can survive the intended supply chain. This thorough investigation can be broken down into two categories:

- **Lab Testing:** Utilizing a lab gives a great baseline using an established testing protocol such as ISTA 3B for an LTL supply chain. It is recommended after passing one of these protocols to complete a more thorough verification by completing ship tests.
- **Ship Testing:** Completing ship testing provides the data to have a high confidence level in a specific packaging design. Some of the hazards that occur during shipping are difficult to replicate in a lab environment and for this reason, ship testing provides additional data. It is recommended to be onsite prior to the product shipping and also onsite when the customer receives the product.



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The first step in developing a packaging solution is understanding the supply chain in which your product is shipped through.

It is recommended to create reports and documentation for both lab and ship testing. This information can be sent to the carriers if damage does occur. This provides evidence to the carriers that the design was created and verified to survive the intended supply chain.

It is easy to point the finger at a carrier if your product is damaged during shipping and certainly unexpected hazards do occur. However, it is important to follow the outlined system in how to create and test a packaging solution that allows your carriers to be successful.

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Dustin Smith is the Co-Founder and CEO of BoldtSmith Packaging. BoldtSmith Packaging is a recognized leader in packaging design, testing and optimization (<https://boldtsmithpackagingconsultants.com>).

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ProMatDX 2021: POWER UP

What: ProMatDX 2021

When: April 12-16, 2021

Where: Online



The “DX” in ProMatDX refers to the fact that the 2021 version of this event will be a digital experience, one that is designed to “power up” manufacturing and supply chain professionals with critical access to the latest solutions they need to improve the resiliency and agility of their operations. There is no cost to attend the event.

Organizer MHI notes that “in these unprecedented times, supply chain solutions are more critical to business success than they have ever been.”

ProMatDX will use digital event technology to deliver the information and experiences that in-person attendees have come to expect:

- Product showcases of the latest technologies and innovations from more than 500 companies. These will include live chat opportunities and digital product demos.
- Exposure to the current thinking on resiliency and efficiency in thought-provoking keynote speeches and through more than 100 digital seminars that will cover emerging technologies in IoT, AI, robotics, automation and more.
- An AI-matchmaking service that will connect companies with solutions tailored their specific needs (and enable them to take a deeper dive with solution providers of their choice through personalized video meetings).
- The chance to network with suppliers from around the world

ProMatDX attendees will hail from more than 140 countries and will include: C-level and VP-level manufacturing, distribution, logistics and supply chain executives; manufacturing and production managers; industrial, plant and manufacturing engineers; IT, logistics and supply chain directors; third-party logistics professionals; distribution center and warehousing managers and procurement professionals.

PROMATDX 2021 KEYNOTE SPEAKERS

MONDAY, APRIL 12

Speaker: John Paxton, MHI CEO

2021 MHI Innovation Award Winners

Join John Paxton as he introduces the winners of the 2021 MHI Innovation Awards for best new innovation,

best IT innovation and best innovation of an existing product. During this keynote, you will learn about these innovative solutions and how they can power up and innovate your supply chain.

WEDNESDAY, APRIL 13

Speakers: Thomas Boykin of Deloitte and John Paxton, MHI CEO

Panelists:

- Randy V. Bradley, Assistant Professor of Information Systems and Supply Chain Management
- Haslam College of Business, The University of Tennessee
- Annette Danek-Akey, Executive Vice President, Supply Chain, Penguin Random House

2021 MHI Annual Industry Report Preview

Thomas Boykin and CEO John Paxton present the findings of a new report on the trends and technologies that are transforming supply chains. They will be joined by a panel of manufacturing and supply chain thought leaders to discuss the real-world significance of the report findings.

THURSDAY, APRIL 14

Women in Supply Chain: Delivering Proven Success Strategies

During this keynote, you’ll learn how strong supply chains are built upon resiliency. A panel of women supply chain leaders will share their career experiences and how they successfully implemented, measured and showcased operational success and sometimes challenged the status quo. Get inspired, come away with techniques and ideas to take into action in your operations to develop the supply chain resiliency necessary in today’s world.

SPONSOR SHOWCASES AND PRODUCT DEMONSTRATIONS

Exhibitors from industry, commerce and government will display their supply chain solutions and innovations during ProMatDX via sponsor showcases product demonstrations. Areas that will be represented include: material handling equipment and systems; packaging; containers; and shipping equipment: inventory management and controlling technologies: dock and warehouse equipment and supplies: automatic identification equipment

and systems: supply chain management: sustainability solutions and robotics & automated solutions.

Exhibitors will include: American Baling Company, AutoGuide Mobile Robots, Avery Dennison Printer Solutions, Big Ass Fans, FANUC America Corporation, Gorbel Inc., Mac Rak Inc., Maren Balers & Shredders, Mezzanine Safeti-Gates, Inc., Nilfisk, Inc., ORBIS Corporation, Rite-Hite Corporation, Siemens Logistics LLC, Steel King Industries, Topper Industrial and Westfalia Technologies.

EDUCATION AND NETWORKING

ProMatDX will include more 100 sessions and bring together leading experts from the industry to give you the latest information on manufacturing and supply chain trends, technologies and innovations.

Sessions include:

Power Up Your Robotics Investment with WES

Emerging warehouse robotic technology offers promising new capabilities, but how do you harness the power of these state-of-the-art solutions while delivering ROI? Employing a powerful Warehouse Execution System (WES) is essential to putting robotics to work effectively in your warehouse.

Employee Engagement in the Modern Warehouse

The key to maximizing the utilization of the workforce is to push beyond just measuring productivity. A truly engaged workforce is motivated, productive and satisfied. Cultivating these attributes requires more than simply reviewing raw performance data and finding the low performers.

To Automate or Not to Automate

With supply chains in flux and ecommerce orders surging, automation is increasingly being leveraged to reduce labor dependencies while also improving distribution efficiencies, fulfillment timeframes, customer service, cost savings and resilience.

Warehouse Technology v. The People: How to Overcome Labor Shortages and Retain Talent

For a modern warehouse to run effectively and efficiently, your workforce needs the right technology, and your technology needs a productive workforce. Striking a balance between these two resources means operational excellence, happier employees, less costly turnover and better retention rates.

Conquering Supply Chain Complexity in Your Operations



Are you ahead of today's supply chain challenges? Today, fewer than 10% are prepared to handle complexities

from MORE products, MORE suppliers, MORE distribution channels and RISING consumer expectations. Let's talk strategy and how top organizations are adapting to today's demands!

REGISTRATION



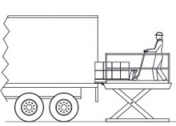
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What's Next for the Supply Chain?



By: **Mitch Hayes**, Contributor

The COVID-19 pandemic continues to be a major disrupter the likes of which we have not seen in over a generation. In the last year, it has had a significant impact on the supply chain, driving disruptions and shortages that have pushed supply lines to their limit.

During this time, we have also seen an increase in warehouse automation as companies look to the technology to help them overcome some of the supply chain challenges they continue to face.

Firstly, the accelerated rise of ecommerce and changing consumer expectations is putting renewed focus on the last mile. Automation solutions, such as automated micro-fulfillment centers, help companies bring fulfillment closer to the customer.

Secondly, the complexity and volume of products being moved have increased as a result of consumers' accelerated acceptance of ecommerce. This shift is forcing organizations to handle more individual units and the associated complexity and coordination is more cost effectively handled through automation.

Finally, the impacts of COVID-19 on worker availability is obvious. Less obvious is that with baby boomer workers retiring, there are fewer workers willing to work in warehouses and associated labor rates are increasing. This is making the return on investment for automation more compelling.

So, as we look ahead and (hopefully) begin to move beyond COVID-19, what can we expect for the supply

chain? Two of the biggest drivers of change we are seeing when it comes to the supply chain's embrace of automation are ongoing digital transformation and the growing need to bring fulfillment closer to the consumer.

DIGITIZATION CREATES NEW OPPORTUNITIES FOR OPTIMIZATION

Digital transformation marks one of the most significant changes in business in recent years as organizations seek to harness digital technology and data to improve the customer experience and business performance. Through digital transformation, organizations are harnessing both historical and real-time (or near real-time) data to help evolve the supply chain.

It's no longer enough to have access to data; it's becoming imperative to be able to use that data to drive action. Collecting, analyzing and using data across the business, as well as from partners and markets, fuels the insight that enables the shift from responding reactively to changes in demand and markets to proactively anticipating those changes and using automation to respond.

Data is a powerful tool in supply chain management, but one that is only beginning to be utilized. The key to harnessing the power of warehouse data lies in warehouse management and execution software. As warehouse software has evolved, silos have been created, with warehouse management, warehouse execution and automation control systems all operating in a way that leaves data isolated, limiting its potential to improve operations. Not only is data siloed between production and the supply chain that supports it, but within the supply chain

itself. The new generation of warehouse management software integrates these various warehouse functions into a single platform to unleash the power of the data.

This data is fuel for the artificial intelligence systems that will enable logistics systems to learn and evolve on their own. Through the power of data and artificial intelligence, supply chain systems can learn to recognize patterns, regularities and interdependencies from structured and unstructured data to anticipate demand and adapt, dynamically and independently, to new situations. Working with similarly intelligent productions systems, these self-learning supply chain systems will enable organizations to meet global customer requirements with greater speed, customization and efficiency.

MICRO-FULFILLMENT CENTERS BRING FULFILLMENT CLOSER TO CONSUMERS

Over the last few years, as ecommerce sales have increased and customer expectations have shifted, there has been a steady race to move fulfillment closer to the consumer. Something once as innovative as two-day delivery has led to next-day delivery, which is quickly becoming obsolete as consumers demand same-day

delivery. This trend has accelerated during the COVID-19 pandemic, especially as more consumers become comfortable with online ordering of perishable items and groceries.

Moving storage and fulfillment closer to consumers while maintaining the agility to quickly relocate those functions as market demand shifts or supply chain needs change



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will be an essential characteristic of the supply chain of the future.

Typically, one of the dominant components in a company's supply chain was the large warehouse or distribution center that acted as a central hub from where products are shipped to retail outlets. These are now being joined by a network of fulfillment centers that focus on localized, direct-to-customer service. They are designed to primarily get online orders to customers quickly. These facilities have become a powerful tool in conquering the last mile and helping maintain a pleasant, seamless customer experience.

One relatively new type of fulfillment center that is gaining a lot of attention is the micro-fulfillment center. Micro-fulfillment centers are a simple and compact last-mile delivery solution that can be quickly deployed anywhere, especially where real estate space is limited or cost-prohibitive. While they are generally smaller in size than regional or metro-fulfillment centers, they can be virtually any size, providing the needed flexibility to meet customer needs and fit nicely into a wide range of supply chain strategies.

Micro-fulfillment centers can be built as a standalone facility, built inside or bolted onto an existing location to expand fulfillment capacity, especially within limited

footprint. They are also well suited for automation technology, bringing it to the lowest supply chain level. Micro-fulfillment centers are quickly becoming an essential part of the supply chain. They hold much promise for helping reduce delivery costs and shorten the last-mile and the time to consumer.

The evolution that will create dramatic change in the supply chain has already begun, but more change is on the way. The challenge for supply chain managers is making decisions today that will maximize their ability to leverage future developments, including automation technology. Organizations that can adapt efficiently and cost-effectively to this evolution will be able to reduce costs and improve service through a more intelligent, integrated and connected supply chain. **WMHS**



Mitch Hayes has served in a variety of roles with increasing responsibility for Swisslog and currently leads the Americas E-Commerce/Retail business unit in Mason, OH. Prior to that he served as Global Key Account Manager for one of Swisslog's largest and most important clients, and Vice President, Sales for E-Commerce/Retail (www.swisslog.com).

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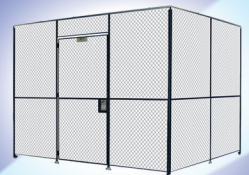
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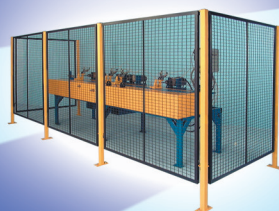
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Narrow Aisles and High-Density Storage: The Warehouse Gold Standard

By: **Jim Hess**, Contributor



Warehouses can boost storage density by using reach trucks to serve elevated storage locations and work in reduced aisle widths.

From the name alone, it's obvious that high-density warehousing requires the efficient use of space. Industry research backs up this assumption, as average warehouse capacity used was identified as the single most popular benchmarking metric in the 2020 Warehousing Education and Research Council DC Measures Report. Best-in-class operations use an average of 90 % of available warehouse capacity and 100 % during peaks.

But maximizing space is not about capacity alone – operations must be able to move inventory quickly. Insufficient storage can cause goods to pile up in aisles, producing congestion that hampers throughput, requires additional product touches and creates greater risk of product, facility and equipment damage. And with consumer expectations for ever-faster delivery, that type of congestion becomes increasingly incompatible with aggressive throughput targets.

DEMAND IS ON THE RISE

Warehouses are squeezed at both sides – as they race to enable the swift flow of goods and rapid throughput, ecommerce growth and demand for variety press them to stock larger inventories, pushing storage capacity to the limit.

The simple answer to both challenges is more space. But as warehouse leaders can attest, securing additional space is challenging and expensive. Average rent growth for warehouse and logistics facilities has exceeded 5 % for five straight years. In 2019, rents kept rising and vacancy rates stayed near historic lows, despite record growth in new warehousing space. And while the unprecedented construction might hint at relief, space is not a temporary concern – Zebra reported that nearly 60 % of warehouse leaders named capacity utilization as one of their top expected challenges over the next several years.

HIGH-DENSITY STORAGE CONFIGURATIONS

Aisles that are narrower than standard can enable warehouses to get the capacity boost they need. When measuring the choice of a costly new facility or expansion against finding more capacity in existing space, re-racking a facility or portions of a facility with narrower aisles can provide the necessary boost in capacity without the expense of construction.

While a standard aisle is 12ft wide, operations can implement a narrower spec to fit additional storage aisles in the same footprint – provided the right type of lift truck is there to service it. Reach trucks are capable of handling 8-10ft aisle widths, depending on height and weight, and very narrow aisle (VNA) turret trucks can work in aisle widths as narrow as 6ft. Multiply the impact across several aisles and the capacity gains really start to stack up. For example, based on space saved on aisle widths alone, an operation with 4ft loads could save 40ft over ten aisles by reducing standard aisles to aisles 8ft wide and using reach trucks. In that saved space, they could set up two additional aisles, or four runs of rack, and still have additional freed space available for use.

Warehouses pinched for capacity can also bolster their storage with higher racks. This allows operations to take advantage of unused cubic volume by building up, rather than out – a natural extension of the push to store more in the same space with narrower aisles. Paired with the right slotting strategy and equipment, leveraging higher-level storage offers an efficient solution to compound capacity gains.

But as previously noted, increasing capacity is only part of the story – moving inventory efficiently is critical to success for high-intensity warehouses. While reach trucks can reach heights as high as 37ft, allowing them to service much higher-level storage locations compared to counterbalance trucks, it's important to evaluate your equipment options for fast cycle times. When your operators are



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lifting and lowering to and from greater heights, even seconds shaved off each cycle add up – even one additional pallet move per hour equates to 7 % greater productivity. Higher lift and lower speeds along with better acceleration and braking capabilities help drive that increase.

Another way to pack even more capacity into narrow aisles is with double-deep storage, in which the pallet at the front of the location has one stored directly behind it. Reach trucks with the necessary reach capabilities can extend into the racking to reach pallets in the deeper position, allowing warehouses to achieve up to 50 % more capacity than single selective racking. The right solution may be a mix of double-deep racking for some products for maximum storage density and single selective racking where case picking is required for improved productivity when access to the SKU is paramount.

DO NOT OVERLOOK THE OPERATOR

In any narrow aisle environment, prioritizing the operator is fundamental to success. Equipment with characteristics to support operator comfort, speed and precision can help prevent productivity from suffering due to challenges of working in higher, narrow aisle configurations, like maneuvering in tight spaces, placing and retrieving loads at greater heights and double depths, discomfort, fatigue or greater time waiting for loads to be lifted and lowered.

For narrow aisles to be an efficient solution for capacity and productivity targets alike, operators need sufficient maneuverability to work in smaller spaces, performance to move quickly and visibility to precisely position forks at height. Equipment features such as cameras, built-in LED lights and fork laser levels that show fork positioning when placing or retrieving loads at height can help boost operator accuracy and confidence. But ergonomics play an important role, too, helping fend off fatigue so that operators stay fresh and productive all shift long. The total package of narrow aisle storage is equipment and operators coming together to deliver the higher efficiency and capacity today's high-intensity warehouses need to excel. **WMHS**

Jim Hess is the Director of Warehouse Business Development, Yale Materials Handling Corporation. He brings over 35 years of warehouse and lift truck experience with special expertise in 3PL, grocery, retail, food and beverage to his role overseeing warehouse business development and related products at Yale (www.yale.com).



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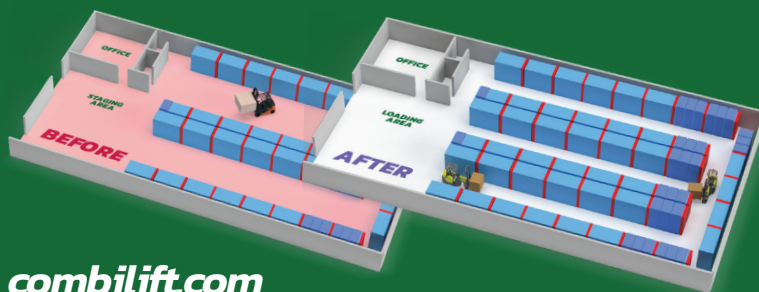
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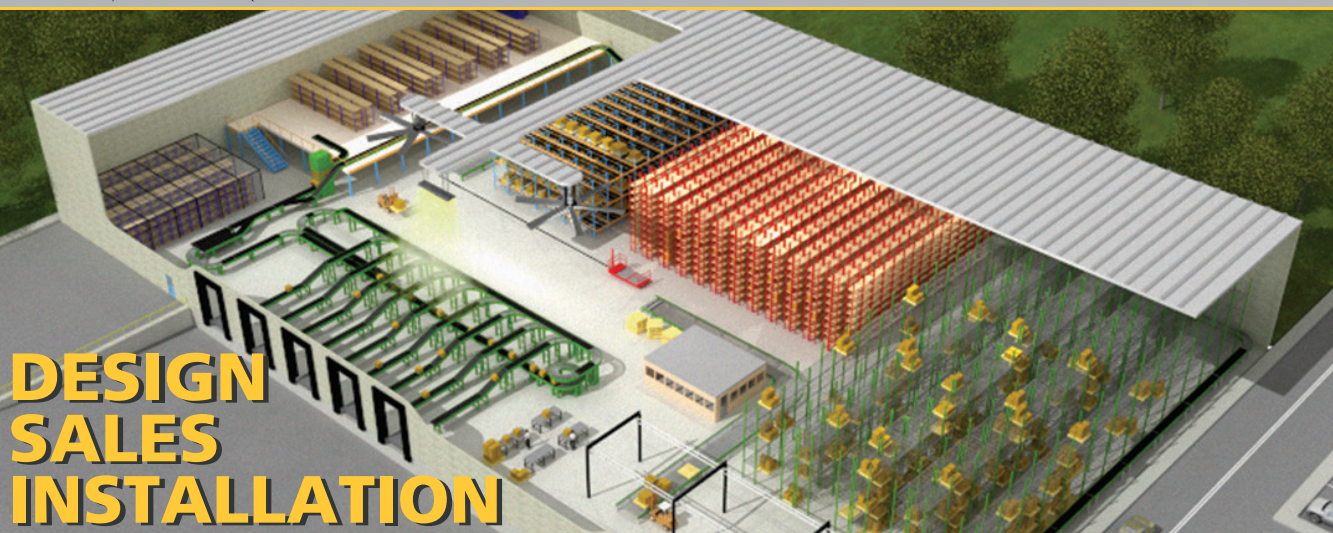


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Prevent LOTO Mistakes with Visual Communication

By: **Brian McFadden**, Contributor

Effective Lockout/Tagout (LOTO) systems protect workers from unexpected movement or energy release during equipment service. OSHA estimates that these procedures save 120 lives, and prevent 50,000 injuries, every year.

Naturally, any workplace that takes worker safety seriously will work hard to maintain an effective LOTO program. But we're all only human; mistakes still happen. With care, though, we can take steps to prevent those mistakes. In many cases, visual signals are the key.

IDENTIFY POSSIBLE FAILURE POINTS

Before you can solve a problem, you need to understand what that problem really is. What might go wrong in your LOTO process?

You may already know where LOTO systems have failed in the past in your workplace; injuries and even fatalities may have occurred. You may have had near-misses, where workers managed to avoid harm even though the LOTO process didn't work correctly. These past events offer insight into what might happen in the future.

If your workplace has been fortunate so far, you may not have these data points available to learn from. Instead, you'll need to rely on a close understanding of the equipment in your facility, the maintenance and service procedures that are called for and the LOTO program that is already in place. Few individuals will have all that expertise; instead of relying on one person to know everything, take advantage of the collected knowledge of your team.

Ask for ideas and suggestions as part of reviewing your LOTO program. Every time a work process changes, consider if the LOTO procedures need to be changed as well. Revising a plan to account for new information does not mean the plan was a failure—especially if reviewing and revising the plan was part of the plan in the first place, as required for OSHA-compliant LOTO programs!

POST EQUIPMENT-SPECIFIC PROCEDURES

Once a procedure has been created for a given piece of equipment, that plan needs to be put into action. Authorized employees, who are the workers assigned to



One of the often-overlooked requirements in OSHA's LOTO regulation is that the locks, tags or other equipment used for LOTO must be clearly identifiable and traceable to the specific individual who applied them.

perform LOTO in each situation, should have clear training on the steps to be taken in their work.

With appropriate training, any of these authorized employees should be able to explain the core concepts of LOTO and make reasonable guesses about the steps for a given task. But it's unlikely that any one worker will memorize the exact steps for every machine, and even more unlikely that they will be able to recall each step correctly every time, without ever making a mistake. All it takes is one mistake, happening one time, to cause serious injury or death; that's why LOTO exists in the first place.

Why rely on guesses or fuzzy memory, when your LOTO program already includes written step-by-step instructions? It's easy to create a label or sign that lists the steps for a specific machine. Posting that sign right on the equipment will provide your workers with the information they need, in the time and place they need it. These procedure labels serve double duty: they remind workers that LOTO is necessary for specific service needs, and they provide a "checklist" to ensure that steps aren't forgotten.

MARK KEY LOTO LOCATIONS

One of the common uses of facility signage is to help people find their way around, with directional signs and floor marking. (This kind of visual signal is usually called "wayfinding.") Effective wayfinding saves time by helping people quickly understand and navigate their surroundings. Applying the concept of wayfinding to the

needs of a LOTO program can help improve safety and efficiency there, as well.

Typically, a specific switch, valve or breaker will be the designated shutoff point for a given LOTO procedure. How quickly can the authorized workers locate the right switch? Marking it with a label will help speed the process along.

Should there be a lock at a given location before maintenance work begins? If there's a sign saying so, anyone walking past that sign will be able to check for the lock, and essentially become part of a double-checking system to make sure the life-saving procedures are being followed.

IDENTIFY LOTO EQUIPMENT

Some of the often-overlooked requirements in OSHA's LOTO regulation are that the locks, tags or other equipment used for LOTO must be clearly identifiable, must be used only for LOTO processes and must be traceable to the specific individual who applied them.

The most reliable way to meet these goals is to ensure that every authorized worker has a lock marked with "LOTO" and their name. If that lock is in place, keeping

a piece of equipment disconnected from a power source, only that person should remove it. Separate tags are often used instead, with a large and eye-catching warning about why the lock is there, and additional details (such as names, dates or contact information) added by hand or with on-demand printing.

When a workplace uses only a limited number of locks and doesn't assign them permanently to individual employees, it becomes even more important to use visual signals effectively. In those cases, the tags become the only connection linking a given lock and the worker whose life it protects. Handwritten details that become smudged or illegible simply won't provide effective protection.

It's important to maintain good communication about all the parts of a LOTO program, whether on the LOTO devices themselves, on the equipment to be locked out or in the facility in general. Visual signals like signs and labels can provide reliable avenues for that communication. **WMHS**

Brian McFadden is a Compliance Specialist and writes for Graphic Products, makers of the DuraLabel line of industrial label and sign printers (www.GraphicProducts.com).

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The How and Why of OSHA's eTool for Eye and Face Protection

By: **Maureen Paraventi**, *Editor*

As workplace eye protection has improved and evolved, the task of selecting the right safety glasses or goggles has become much more complicated. Trying to choose the eye protection that is right for both the application and the user means taking into account hazards, materials and regulations that are relevant to this form of personal protective equipment (PPE). It can be a daunting task, especially since making the wrong choice or failing to adhere to regulatory requirements can result in a worker being injured and a company being fined. Thousands of people are blinded each year from work-related eye injuries that could have been prevented with the proper selection and use of eye and face protection.¹

- What should be included in a hazard assessment
- Regulatory requirements on fitting and maintenance of eye protection, along with training workers on how to use it
- How to deal with contacts or prescription lenses

Standards for general requirements, general industry and the maritime and construction industries are all referenced.

THE HAZARD ASSESSMENT MODULE

Before assigning PPE to workers, the employer must first assess the workplace and determine if hazards that necessitate the use of eye and face protection are present or are likely to be present.

Hazards that can cause eye injuries range from flying particles, molten metal, liquid chemicals and acids or caustic liquids to chemical gases or vapors, as well as injurious light radiation.

The Hazard Assessment Module identifies tasks that are commonly related to specific hazards. For example, flying objects such as large chips, fragments, particles, sand and dirt can occur when a worker is performing chipping, grinding, machining, masonry work, wood working, sawing, drilling, chiseling, powered fastening, riveting or sanding. While handling acids, chemicals or blood, or doing degreasing or plating, a worker's eyes and face can be exposed to splashes, fumes, vapors and irritating mists. Furnace operations, pouring, casting, hot dipping and welding pose heat hazards, and woodworking and buffing can send harmful dust into the eyes. Radiant energy that

can damage the cornea, glare and intense light are produced by welding, torch-cutting, brazing, soldering and laser work.

It's important to keep in mind that hazard exposures may not be isolated. Potential combinations of hazards must be taken account. Employers must also make efforts to protect workers' eyes against the highest level of each hazard.



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Among the many eTools in OSHA's online toolbox is one which applies to operations involving potential eye and face hazards. This resource can simplify the selection process for safety managers.

HERE IS WHAT THE ETOOL OFFERS

The Eye and Face Protection eTool¹ is designed to provide compliance assistance information to employers and employees. It includes:

¹ www.osha.gov/SLTC/etools/eyeandface

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TRAINING WORKERS ON THE USE OF EYE PROTECTION

Using safety eyewear sounds intuitive, doesn't it? The worker should just...put it on. However, as OSHA spells out in 29 CFR 1910.132(f), there's more to it than that. For instance, employees need to be trained on when eye protection is necessary as well as what eye protection is necessary. Do they need to don it only for specific tasks or when they're in certain areas of the facility? (Both of those questions can be answered by using the results of the hazard assessment.) Training must also include how to properly don, doff, adjust and wear PPE, as well as how to take care of it (and how to tell when its useful life is over).

Retraining is required if there are changes in the workplace, changes in the type of eye protection being used or, if the employee doesn't appear to understand the training he or she has already received.

IF EYE PROTECTION DOESN'T FIT, IT WON'T PROTECT

Fit gets considerable attention in 29 CFR 1926.102(a)(6)(iii) because it is key to both comfort – so that workers won't be tempted to remove safety eyewear – and

efficacy. A proper fit keeps the device in the correct position and, when appropriate, forms a protective seal to keep out dust and chemical splashes. Welding helmets and face shields that don't fit properly may fall off during work operations. The Eye and Face Protection eTool covers who should do the fitting and how prescription safety spectacles and devices with adjustable features should be fitted.

There's lots more information available online, like what to do if an eye injury does occur, which standards eye and face protection must comply with and what minimum requirements it must meet. Maintenance, cleaning and storage are also covered in detail. These three are not throwaway items. Damaged eyewear can reduce visibility, for example, and safety glasses that were previously used by one employee must be disinfected before assigned to another – especially with the prevention of COVID-19 transmission being of paramount importance. Careful storage of goggles and spectacles will help keep items clean and free of damage – both of which can affect their ability to provide protection to wearers. **WMHS**



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The Safety Pitfalls You Don't Expect

By: **Erica Cole**, Contributor

Typically, workers who use fall protection are focused on safety because it allows them to perform their duties without harm. Besides adhering to mandatory Occupational Safety & Health Administration (OSHA) protocols, workers often opt to use fall protection equipment with more stringent safety standards like American National Standards Institute (ANSI). However, it is the hidden dangers that provide the most peril. It's often easiest for both inexperienced workers, as well as those with the most experience, to overlook safety hazards, leading to increased accidents and incidents. Newer workers are still learning while older workers have become desensitized to everyday dangers. Many workers begin their daily routine with a safety huddle. For those unfamiliar with the concept, a safety huddle is a routine meeting to increase safety awareness, identify safety issues and develop action plans for their resolution. Despite more methods of communication than ever via the internet, podcasts, social media and magazines, fatalities are up 2%, according to the Bureau of Labor Statistics. One fifth of OSHA fatalities occur in the construction segment. That's over 1,400 deaths annually.

You have the right equipment, but what other safety pitfalls are you missing? Learn how to start your day by inspecting the jobsite for unknown dangers. Here are some not-so-common pitfalls and actions you can take to mitigate your risk.

- Ensure each component of your Personal Fall Arrest System (PFAS) is compatible. Commonplace industry knowledge defines the PFAS components as A-B-C. As awareness increases consider expanding this acronym further into the alphabet A-B-C-D-E.

- (A) – Anchorage: secure attachment point capable of safely supporting the system in a fall

Harness fit is one of the most overlooked safety steps. If your harness is not properly donned and adjusted, it could cause injury or even death.



- (B) – Body Support: equipment worn on the body to provide support and connection points
 - (C) – Connecting Device: equipment used to connect the body support to the anchorage
 - (D) – Dropped Object Prevention: equipment used to connect tools to anchor points
 - (E) – Educate yourself! Have a rescue plan. How will you get to the ground safely if your PFAS system is already deployed?
- Site Safety Walk Through – allow fall protection experts to look at your jobsite and setup to suggest the safest method of work. Many fall protection manufacturers offer this service gratis.
 - Ensure your connecting device is rated for the type of application required. It is especially dangerous when workers use non-leading-edge equipment on leading edges. A leading edge is defined as an edge with a radius of 0.005" or less (sharp edge).
 - Minimize the number of components in a system if possible.
 - When you have 100% tie-off, for example a dual leg self-retracting lifeline or dual leg lanyard, it is imperative that your second leg is connected securely prior to you releasing the first connection.
 - Inspect your fall protection equipment prior to each use and annually, or at the manufacturer recommended intervals.
 - Ensure workers weight, including equipment and tools, is within the manufacturer specified limits. Often this weight range is 130 – 310lbs. but could vary. Sometimes with increased weight ranges, manufacturers certify the equipment to OSHA only not ANSI standards.
 - Make certain the structure connected to the anchorage is capable of meeting the strength requirements in all loading directions. Frequently this is 5,000 or 10,000lbs.
 - Fall Clearance – when calculating fall clearance, don't neglect the manufacturer specified safety factor.

Inspect your fall protection equipment prior to each use and annually or at the manufacturer recommended intervals.



- Read the manufacturer instructions. If you have misplaced these, you can locate new copies online or request this directly from the manufacturer.
- Cleaning solutions affecting safety equipment. Be certain chemicals from cleaning do not adversely damage equipment. Check the manufacturer's guidelines for recommended products that are safe to use.
- Installing a horizontal lifeline on an edge could put workers at unnecessary risk if the install height does not allow sufficient fall clearance. There could be a potential for the lifeline to contact the edge in the event of a fall. This scenario becomes even more dangerous if the edge is a sharp edge that could abrade the lifeline.
- Harness fit is one of the most overlooked safety steps. If your harness is not properly donned and adjusted, it could cause injury or even death.
- Anchorage may be used in a number of substrates, including wood, concrete, steel, tile and others. Ensure the substrate thickness meets the minimum specified in the manufacturer instructions.
- Inspect the integrity of walking working surface for unforeseen hazards that could cause slip, trips and falls or unexpectedly cause fall protection equipment to fail. Examples include cracks, holes and weakened surfaces, amongst others.

All these tips could prevent an accident or fatality. Stay alert and aware of your surroundings and equipment. Stay safe! **WMHS**

Erica Cole is Product Manager, Mechanical Goods at Pure Safety Group (PSG). Cole has worked as a mechanical design engineer in the oil and gas industry before following her passion to save lives by joining Pure Safety Group in 2018 (www.puresafetygroup.com).



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What Slips, Trips and Falls Signage Can Teach Us About Workplace Communication

By: **Carolyn Voelkening**, Contributor

It doesn't matter what your job is or where you work, you know the slips, trips and falls warning sign: a black figure on a yellow background, arms out, one leg about to lose contact with a surface, the other leg bent knee in mid-air. Stuck in perpetual, impending disaster, this instantly recognizable stick figure can teach us a lot about effective safety communication in the workplace.

LESSON #1: MAKE IT VISUAL

The slips, trips and falls image is the perfect example of the old adage, "A picture is worth a thousand words." It conveys a clear message without any text, and it's easily understood by all audiences, regardless of education level or native language.

While the reliance on visual imagery in safety is nothing new, it's taken on increasing importance in the last few years with OSHA's current Hazard Communication Standard (HCS, 29 CFR 1910.1200). As part of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), the nine standard pictograms required by HCS cement the importance of visual imagery as a way to communicate across languages and cultural barriers.

But visual communication doesn't just belong on signs and hazcom labels. It's an approach that can and should be used in safety training, according to a recent study published in the peer-reviewed journal *Safety Science*¹. The study looked at the effectiveness of using visual communication in safety training and found that using images and symbols increased workers' comprehension and job satisfaction. The study also concluded that while images themselves are useful, a more effective method is to use cartoon or icon-like symbols on photographs to highlight hazards and best practices.

LESSON #2: KNOW YOUR TAKEAWAY

An easy way to test the effectiveness of any safety communication is to ask yourself, "What is the one thing I want employees to remember when they walk away?" The slips, trips and falls image is so impactful because it communicates a single, actionable message: "Be cautious! A slip, trip or fall hazard is present."

Imagine if, instead of the falling figure, you saw an explanation of the existing hazard, a reference to the relevant standard and all the possible behavioral responses. Clearly, it would be a much less effective approach, yet it's the approach many companies fall back on when communicating about safety. They lump multiple topics into one message or training session, rather than focusing on a single, actionable takeaway. Before delivering any safety message, force yourself to articulate the single takeaway you want your audience to remember and then tailor your information to focus on that takeaway.

Using videos
in your safety
communications is a
great and familiar
way to grab and
keep employees'
attention.



LESSON #3: SAY IT AGAIN, AND AGAIN AND AGAIN

The slips, trips and falls figure is ubiquitous, appearing everywhere we go. We see it in schools, in grocery aisles, in hospitals and at work. And each time we see it, the message is equally important, because safety messaging—or any kind of messaging, for that matter—isn't a one and done thing.

It's a simple rule of marketing that people need to be exposed to a message seven times before they take action. Especially in a climate of workforce instability—employee shortages, high-turnover, and seemingly endless onboarding—it's critical to reinforce messages. The Director of Safety for a national supermarket chain summed up the challenge and importance of redundant safety messaging this way, "We train them on Monday, but if we don't reinforce the message, they forget it on Tuesday, and they've developed a bad habit by Wednesday."

¹ Occupational safety and visual communication: User-centered design of safety training material for migrant farmworkers in Italy. Lucia Vigoroso, FedericaCaffaro, EugenioCavallo, www.sciencedirect.com/science/article/pii/S0925753518306106, Safety Science, November 2018

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LESSON #4: KEEP IT MOVING

With the proliferation of video on YouTube, Instagram, Facebook and streaming media channels, consumers have grown accustomed to getting their information through video. If a slips, trips and falls picture is worth a thousand words, a short-form video—with its natural beginning, middle and end—is those thousand words arranged into a compelling story. Using videos in your safety communications is a great and familiar way to grab and keep employees' attention.

LESSON #5: BE IN THE RIGHT PLACE AT THE RIGHT TIME

How effective would a slips, trips and falls caution sign be if it was placed far away from the hazard? One of the challenges with on-the-job communication is ensuring all employees see and/or hear it, especially in a shift-based environment.

Consider, for example, the company that tries to address employee morale by recognizing employees in an email newsletter, without stopping to consider that most shift workers don't actually have company email. Or the manager who announces a company event at a morning huddle, forgetting to convey the same information to the night crew. Even the most well-crafted, well-intentioned

message won't resonate with employees if they don't see it. Communication needs to reach employees where they congregate and work: in break rooms, cafeterias and on factory floors—and it needs to reach them at the right time, whether that's 3AM, 7AM or 4PM.

LESSON #6: MAKE IT PERSONAL

The slips, trips and falls image works, ultimately, because we connect to it on an emotional level. As the figure slips backwards, trips forward, or falls into space, we respond personally to the idea of slipping, tripping or falling, which is what causes us to take precautionary action. We have a vested interest and we're emotionally connected to the outcome.

Every employee is more than their job. They're a whole person with interests, concerns and priorities that may have nothing to do with the workplace. These personal motivations can be the reason an employee makes the right or wrong choice at a pivotal safety moment, which is why emotional engagement is so important for all workplace communications. By recognizing the whole person, and balancing direct safety messages with employee recognition, health and wellness and holiday messages, employers can recognize the whole person and connect with workers on an emotional level.

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PUTTING IT INTO ACTION

While the slips, trips and falls sign warns us to be cautious, every step in the communication journey is a step in the right direction. By thinking visually and communicating with your employees in a clear, focused way, you can build the foundation of an employee-driven safety culture. You just have to take the first step. **WMHS**

Carolyn Voelkening is the Chief Content Officer at Marlin, a global leader in workplace digital signage. She has over 20 years of experience in building audiences and reshaping traditional communication strategies to leverage digital disruption. Voelkening leads a team of OSHA-certified content strategists, designers and writers who create Marlin's award-winning, industry-critical content (www.themarlincompany.com).

This article was originally published in the Leader magazine.

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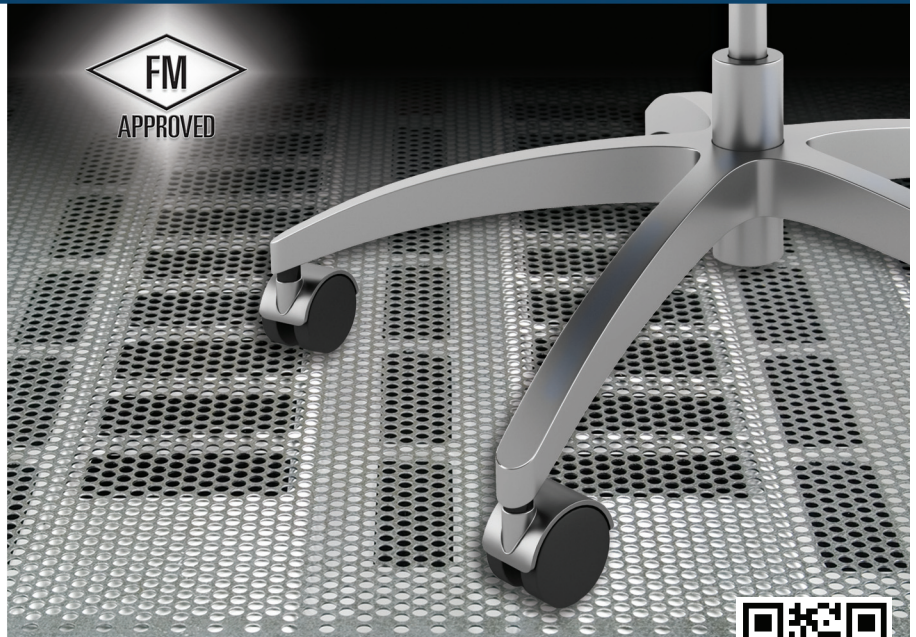
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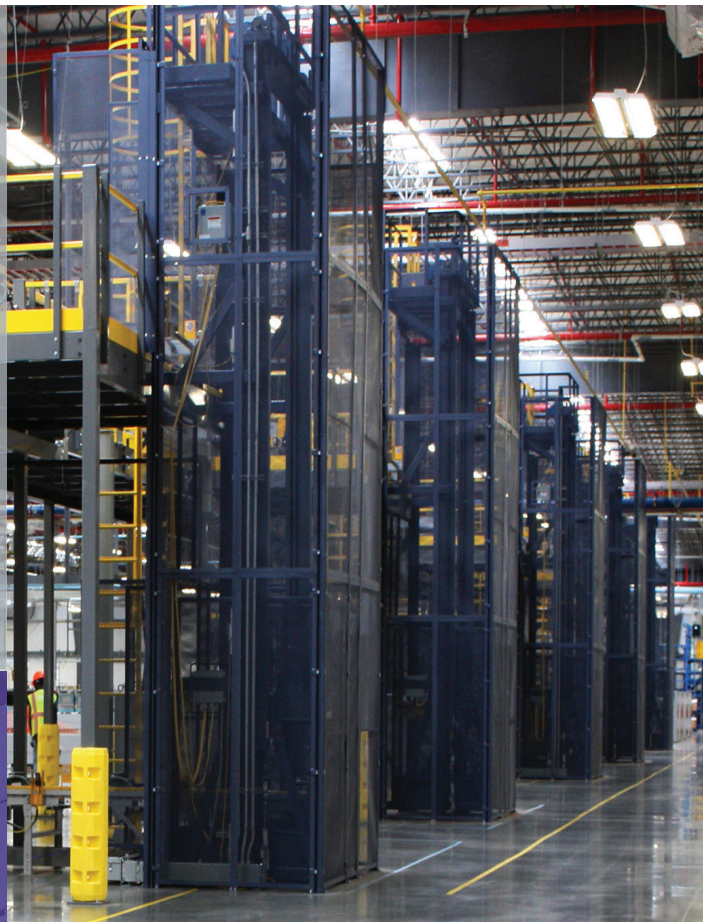
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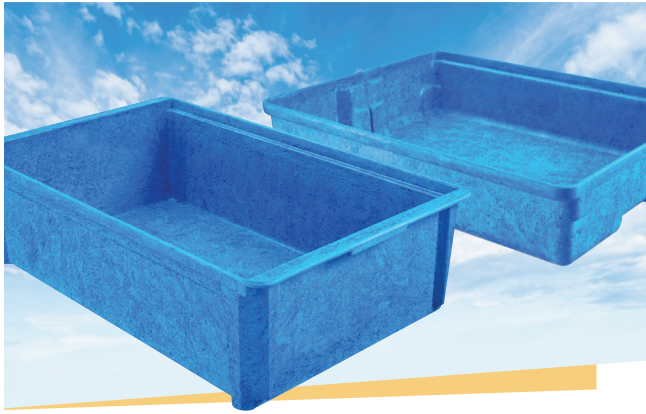
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Our products round-up this time around features both personal protective equipment and industrial and material handling solutions: everything from a headband that cools to a safety gate configured for multiple pallets deep, a forklift truck that can lift really heavy materials to high visibility safety vests with dozens of pockets. Here are the latest products designed to ramp up efficiency and enhance worker safety:

Ergodyne Has Products to Cool Faces, Heads and Crews

Ergodyne announced the launch of six new products to help keep workers cool and protected amid perennially rising summer temps and global pandemics. The 2021 Chill-

Its® products include: 6489 2-Layer Evaporative Cooling Multi-Band for face coverage, 8936 Lightweight Ranger Hat with Mesh Venting and 6634 Evaporative Cooling Headband for head coverage. For crew coverage, there are new SHAX® products: the 6005 Custom Canopy 10' x 10' Heavy-Duty Pop-Up Tent, 6092 Heavy-Duty Pop-Up Tent Sidewall with Mesh Window and 6052 10' x 10' Heavy-Duty Pop-Up Tent Kit + 2 Mesh Window Sidewalls. www.ergodyne.com



New Offering from Mezzanine Safeti-Gates is Configured for Multiple Pallets Deep

Mezzanine Safeti-Gates, Inc. has added a Rack Supported Roly® safety gate to its innovative line of pallet drop safety gates that provide fall protection in material handling and manufacturing facilities, distribution centers and warehouses. The Rack Supported Roly® safety gate is configured for multiple pallets deep. It has a dual-gate system that attaches directly to the rack uprights in rack systems or pick modules, which maximizes space in the area and creates a secure connection without having to anchor the gate into the decking. The gate can be designed to match the depth of the pallet flow lane to capture multiple pallets. This new standard design is released on the heels of the Rack Supported Open Top safety gates, which are configured to provide fall protection in pallet flow cluster picking applications. <https://mezzgate.com>




X-Lock Angle Grinders from Makita Have Innovative Locking Mechanism

Makita U.S.A., Inc. has launched angle grinders with the X-LOCK quick-change system, designed for cutting, grinding and surface prep applications in metalworking. X-LOCK is an accessory locking mechanism integrated into the gear housing for tool-free accessory changes. A click-mount and pull release lever make changing accessories easy and up to five times faster than traditional threaded lock-nut mounting. X-LOCK eliminates the possibility of over- or under-tightening the threaded lock spindles. Three new angle grinders feature X-LOCK: 18V LXT® Brushless 4-1/20-inch / 5-inch X-LOCK Angle



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Grinder (XAG25Z), 18V LXT® Brushless 4-1/2-inch / 5-inch Paddle Switch Angle Grinder (XAG26Z), and 4-1/2-inch X-LOCK Angle Grinder (GA4570). 18V LXT Brushless 4-1/2-inch / 5-inch X-LOCK Angle Grinders. The cordless angle grinders feature an efficient Makita-built brushless motor that delivers faster grinding. A quick guard rotation allows easy toolless adjustment for increased productivity. Spiral bevel gears provide smoother rotations and a more efficient transfer of energy for smoother, consistent grinding. Both grinders reportedly feature a rubberized soft grip and a 3-stage LED gauge to indicate battery charge level and are equipped with wire mesh intake covers to help prevent debris from entering the motor. www.makitatools.com

Milwaukee Tool Rolls out Surveyor's and High Visibility Safety Vests

Milwaukee Tool added to its Personal Protective Equipment lineup two new styles of Safety Vests - Surveyor's and Mesh and an expansion of its High Visibility Safety Vests designed to keep users safe and provide all-day comfort by keeping users cooler on the jobsite. Ideal for rugged



environments, the Surveyor's Safety Vests have tear resistant construction and reinforced pockets and edges, and are built to carry more with 27 pockets. The High Visibility Safety Vests are designed to carry more and feature quick internal size adjustment capabilities to easily be worn in the summer over a t-shirt or in the winter over a jacket. These vests are recommended when working in environments requiring additional visibility, when working around heavy machinery or traffic traveling over 50mph. Both are ANSI compliant, Type R Class 2 Rated and available in yellow or orange variations. www.milwaukeetool.com/ppe

Combilift's Aisle Master-OP Allows Access From Both Sides of the Truck

Combilift's new Aisle Master-OP (AME-OP) is a stand-on electric powered model that combines the advantages of a narrow aisle articulated forklift and an order picker for versatile operation in warehousing applications. The main feature of this unit is the step-through operator compartment. The low floor height of just 11" enables convenient, single-step access from both sides of the truck which speeds up order picking compared to the operator having to get on and off from a seated position. The AME-OP truck has all the key features of the conventional Aisle Master - indoor/outdoor, for loading/offloading and for stock replenishment at

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other times during shifts when order picking is complete. The Aisle Master-OP is available in a number of variants, with lift capacities up to 3,300-6,000lbs and lift heights up to 39ft. It can operate in aisles as narrow as 72" and features a patented chain steering system which allows the truck to articulate more than 205°, with an inline drive motor and front drive axle assembly, all of which enable narrower aisle operation. <https://combilift.com/us/aisle-master-op/>

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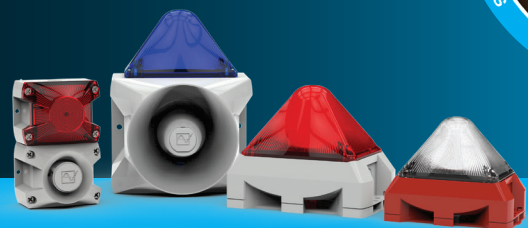


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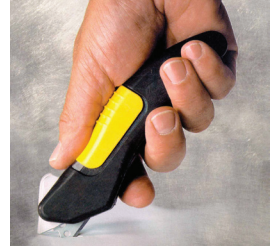
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Aisle Master Order Picker

The NEW Aisle Master-OP (AME-OP) is a pioneering stand-on electric powered model that combines the advantages of a narrow aisle articulated forklift and an order picker for versatile operation in warehousing applications.

The main feature is the step-through operator compartment which has design copyright protection across multiple markets worldwide. The low floor height of just 11" enables convenient, single step access from both sides of the truck which speeds up order picking compared to the operator having to get on and off from a seated position. The AME-OP truck has all the key advantages of the conventional Aisle Master - indoor/outdoor, for loading/offloading and for stock replenishment at other times during shifts when order picking is complete.

Available with lift capacities up to 6,000lbs, lift heights up to 39ft and operating in 72" aisles, the new AM-OP has been designed specifically for the North American market. <https://combilift.com/us/aisle-master-op/>



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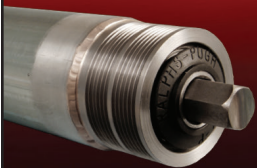
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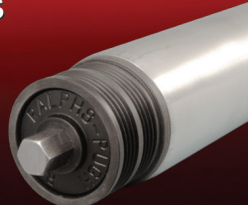
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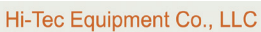


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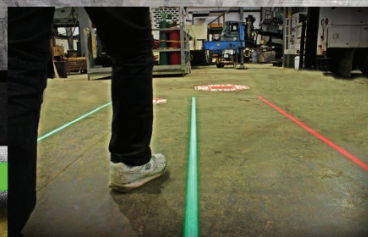
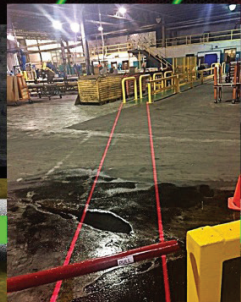
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