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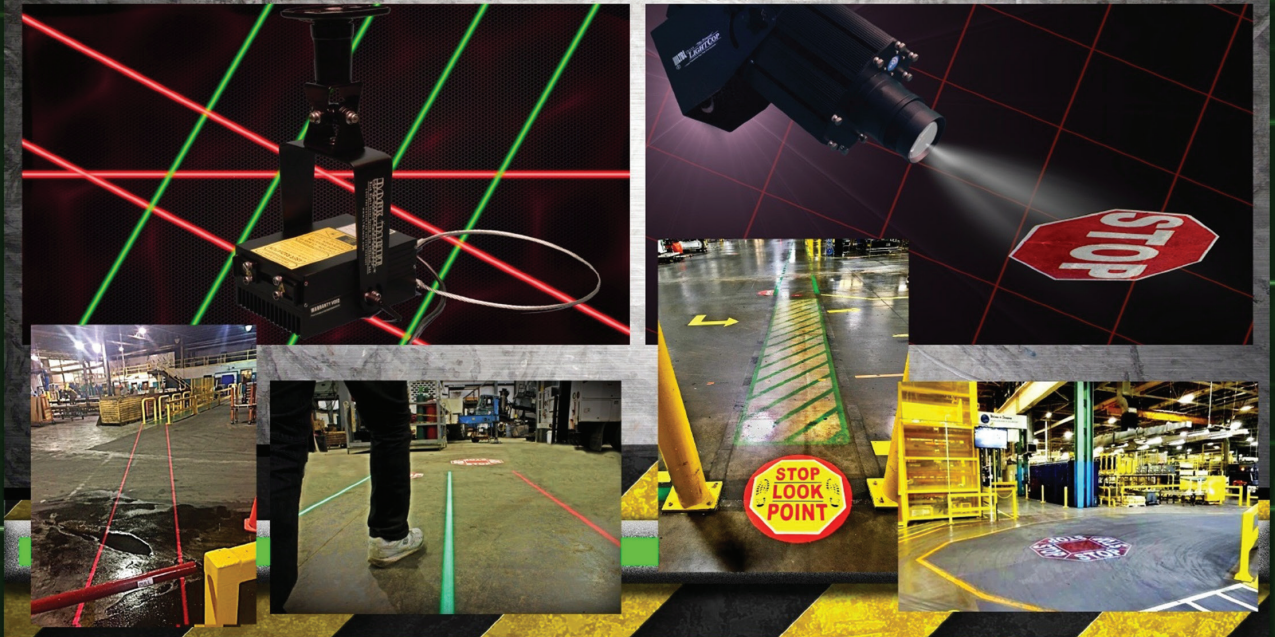
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Material Handling/Logistics

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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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Around New Year's, I heard so many people say, "2021 has got to be better than 2020," that it became a mantra, something that would surely be true if only it was repeated often enough. With a long, pandemically challenged winter behind us and April – and spring – officially here, it's time for 2021 to start making good on its promise. Better weather will increase our ability to socialize and work safely out of doors. The continuation and expansion of the COVID-19 vaccination effort is also bound to improve our quality of life and the way we do business. Mask wearing and social distancing will remain realities for some time to come, but dining out, going to sporting events and travel are gradually being reintroduced to a public eager to re-embrace them.

Employers and facility managers still have to factor the coronavirus into their policies and procedures, but a focus on preventing COVID-19 transmission shouldn't cause them to neglect evergreen workplace hazards.

In this issue, we bring you a special section on plant safety that discusses some of those hazards and gives you ways to mitigate them. Thanks to our contributing writers, you'll learn all about the types of mirrors needed for specific hazard zones in a facility (like intersections between shelving stacked high with goods) and how floor tape can enhance facility safety. In addition to different colors, it comes in different varieties – some of which can greatly reduce the chances of slip-and-fall injuries, especially in areas where moisture tends to be present, like building entrances.

Then, too, there are safety signs, which have many applications. Our coverage lists the types and presents the example of a safety manager who upgraded the signage in his facility to improve wayfinding, create electrical safety boundaries and highlight emergency exits, among other things. And finally, you'll find an intriguing take on how an organized workplace (using the 5S method) is a safe workplace. (You may want to apply the 5S method to your home and garage, as well.)

We also bring you a look at ProMatDX 2021, the virtual version of the event that brings manufacturing and supply chain professionals, vendors and experts together for a highly concentrated exchange of information. ProMatDX may be online, but the lineup of keynote speakers and list of companies exhibiting products (in virtual showcases and demonstrations) is as impressive as ever.

There's lots more, including a timely piece on how emergency showers and eyewashes require extra maintenance in the COVID-19 era, and an article that explains why hearing protection must also accommodate situational awareness. We cover multi-pallet handlers for forklifts, a racking system that increases onsite storage capabilities and what features to look for in rugged devices that have to operate in extreme environments.

Thanks, as always, for being a *Workplace Material Handling & Safety* subscriber. We hope you find the information in this issue helpful.

'til next time,

Maureen Paraventi
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Ruggedized Printers Smooth Operations for Warehouse Personnel

By: **Mina Lee** and **Jessica Bernardo**, Contributors

Warehouses and distribution centers (DCs) represent the hub of today's ecommerce. They are full of staff seeking to deliver their company's products to customers throughout the U.S. and beyond. Personnel within these thriving and bustling depots depend on products, tools and systems that will perform day-in-day-out – 'round the clock in many instances – without fail.

It's all about delivering their company's goods to customers as quickly, accurately and efficiently as humanly possible. Anything less is subpar, considering the desire for customer satisfaction is at an all-time high.

Ruggedized label printers play a critical role in the successful operation of warehouses, DCs and manufacturing facilities. Built to withstand such rough and tumble infrastructures, these printers clearly and concisely print purchase order information, as well as barcode labels to assure accurate tracking of individual parcels, as well as bulk shipments. This ensures packages will arrive when and where they should.

BUYING THE RIGHT PRINTER

What should businesses look for before buying ruggedized label printers? The descriptor says it all. Ruggedized. That should include:

- Sturdy components and highly durable printer enclosures
- Dust and moisture protection with at least an IP54 rating
- Drop-resistance that has been proven by testing
- Durable printers should have fewer openings in the casing in order to better protect against water ingress

All these design elements are vital for mobile printers to withstand the common bumps and bruises of warehouse, DCs and manufacturing settings. Mobile printers can withstand the rigors of moving around a warehouse and mounting on a forklift; they are able to go to where

the work exists. Expansive print head life is another integral product element for ensuring continuous operations without the annoyance of having to constantly replace this key part.

Logistics purchasing and warehouse managers alike should also keep an eye out for ruggedized printers that are ridiculously easy to set up and use. This includes having:

- Printers featuring emulations and POS (point of sale) system languages enabling seamless connectivity and network operability in retail and warehouse operations.
- Systems with easily replaceable print heads and media (labeling or consumables in other words).
 - Single-hand drop-in media roll loading is especially ideal.
- Label makers with color LCD readily provide printer and battery status.

Ruggedized label printers may cost slightly more than standard versions, but they'll pay off in time. Be mindful that regular label printers are prone to more enclosure breakage



Mobile printers can withstand the rigors of moving around a warehouse and mounting on a forklift.

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RUGGED PRINTERS

issues and often require replacements after only two to three years. Companies can safely expect at least five years of continuous use from more rugged versions.

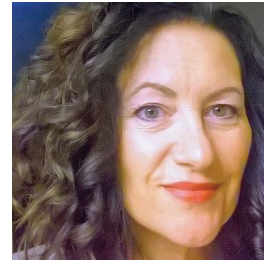
Ruggedized thermal label printers are especially helpful in ecommerce operations, where quick transportation requirements exist, in these key areas:

- **Scope:** Given the printers' inherent capability to hold abundant amounts of media versus laser and inkjet systems, they are ideal for producing exponentially more shipping and postage labels before a refill is required.
- **Speed:** Typically faster – producing more inches of labels per second (IPS) – and designed with the customer in mind to best enhance productivity for today's logistics professionals, thermal label printers save businesses much time and effort.
 - This is particularly germane for high-volume shipping operations.
- **Savings:** Additional cost savings as there's no need for ink or cartridges.
- **Size:** Compact in design, ruggedized mobile printers allow professionals the flexibility to create labels wherever needed.

As ecommerce increasingly becomes a de facto shopping preference, business logistics functions must operate

accordingly. Complete accuracy in parcel labeling should be expected. Consumers will expect nothing less. If their golf clubs or espresso maker don't arrive on time, they'll take notice.

The inclusion of label printers that print clearly and sharply while absorbing the rough and tumble nature of warehouses and DCs is becoming less of a should have and more of a must have as breakages may equal shipping delays. **WMHS**



Mina Lee is the Senior Product Line Manager, Label and Receipt Printer Solutions for Toshiba America Business Solutions and Jessica Bernardo is the Senior Product Marketing Manager, Label and Receipt Printer Solutions. Toshiba America Business Solutions' rugged, lightweight and portable printers can operate in extreme conditions and are used in supply chain, logistics, material handling and retail applications (<http://business.toshiba.com>).

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Food Industry Pallet Flow Racking System Triples Onsite Storage and Streamlines Production

By: **Arlin Keck**, Contributor

Food processors and warehouse professionals often require creative pallet racking solutions in order to be most effective and profitable due to seasonal cycles such as the harvest, consumer demand and other logistical concerns.

Without such support, crowded production and storage facilities may need to purchase or lease off-site storage space for at least a portion of the year. Besides the extra overhead this involves, it can also entail double-handling of product or inputs, along with more complex coordination than simply storing everything in-house.

Fortunately for food industry professionals, many proven yet inventive alternatives exist beyond floor storage and selective racking that can be customized to specific needs and processes. In one such case involving pallet flow racking, a global food producer was able to triple its onsite storage while streamlining production at an existing facility.

OPTIMIZING STORAGE

GLK Foods, family-owned for four generations, has grown into what it says is the largest kraut producer in the world

and is an innovator of top-selling grab'n go snacks. Such growth has required implementing some industry best practices in terms of optimizing storage and production.

So, when the company's Bear Creek, WI facility reached its onsite storage capacity and required offsite storage during the busy fall harvest season, Brad Froberg, Plant Manager, sought a solution.

"We were looking to triple our available pallet storage and streamline production at our existing facility," said Froberg. "We run product year-round, but in the fall, as cabbage crops come in, we have to ramp up our production lines for a specialty kraut product."

According to Froberg, previously pallet floor storage was utilized in the facility for the specialty kraut product. He notes that the product was not stackable, so the pallets were stored in single file across the floor.

"The challenge was that inventory processing and inventory storage all went through the same room and became a production bottleneck. This led to leasing offsite storage and the inefficient double handling of product," said Froberg.

Froberg consulted with a full-service material handling distributor, who recommended an approach to streamline the facility's available storage and lift truck fleet management.

The approach utilized a pallet flow system that can store up to 100% more product than selective racks and reduce aisle space by 75%.

However, to optimize pallet flow, more planning and precision can sometimes be required than with traditional storage. With pallet flow, dynamic flow rails are inclined in a static rack structure, allowing loads placed on one end to move by gravity on



Utilizing pallet flow racking, GLK Foods was able to triple its onsite storage while streamlining production at an existing facility. Image courtesy of Steel King Industries.

rollers to the unloading end, with speed controllers acting as gentle brakes.

When pallet flow is properly designed and installed, as each pallet load is removed, the pallets behind it move forward automatically. Once loaded, first-in first-out (FIFO) product rotation is automatic. Forklifts are only required for the initial loading and final unloading because the rack eliminates the labor and forklift operation required to arrange loads in traditional racking.

The dynamic flow system's accommodating height, width and depth, as well as strength, were a good fit for GLK Foods' space efficient, high-volume needs at the Bear Creek, WI facility.

With 850 pallet positions in racking five levels high, the pallet flow system exceeds 27ft and was built with closed back tubular rack for strength and durability. Compared to open back roll formed columns, the closed tubular uprights are 44 times more torsion/twist resistant, with 250 % greater frontal impact resistance and 68 % greater side impact resistance. All beams are constructed of high-strength (55,000 p.s.i. minimum) steel, and holes are placed on the column's face, not the corners, minimizing strength loss.

"We selected a racking system that is able to resist forklift damage," said Froberg. "By design, the closed back rack is safer, stronger and more durable than open back rack."

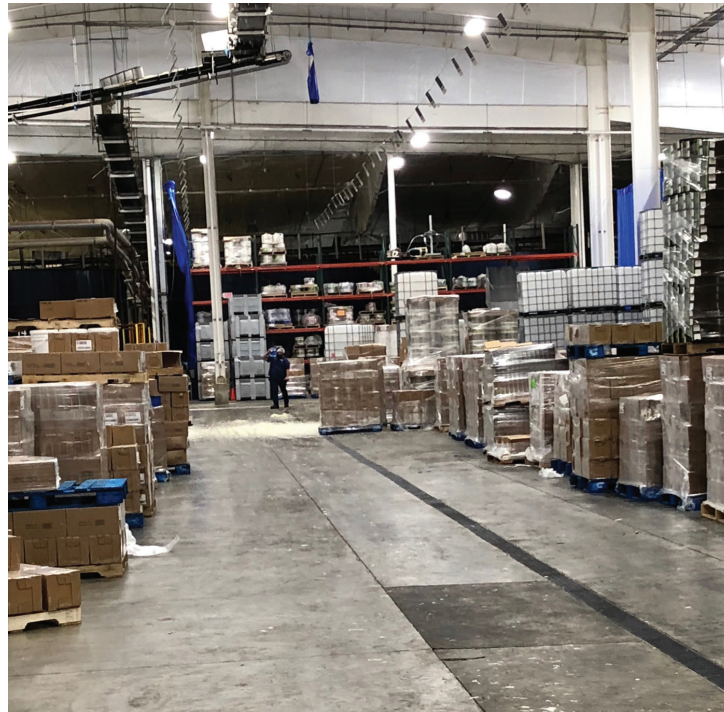
To take full advantage of the facility's vertical space, the pallet flow system was installed to a height of 27½ft. Access to the top racks is enabled by the use of a high-reach fork truck, as recommended by Wisconsin Lift Truck.

"The pallet flow system has tripled storage space at our facility, while streamlining processing and production," said Froberg. "We were able to increase our in-house storage capacity by about 25 trailer loads of product. So, we are not shipping it to offsite storage, and then bringing it back again."

According to Froberg, this approach not only eliminates the cost of leasing offsite storage space, but also eradicates the double-handling of product.

"Over the fall harvest period, we are probably saving about 150 hours of forklift double-handling alone," he said.

The greater pallet storage density has opened up floor space in the facility. This enables putting more separation between product lines, as well as enhances safety, productivity and cleanliness, according to Froberg.



GLK Foods' facility before installation of pallet flow racking. Image courtesy of Steel King Industries.

"The pallet flow system has eliminated our storage and production bottleneck and is improving our effectiveness," he said. "The storage consolidation will also help us accommodate future growth within our facility."

In addition, Froberg says that having the specialty kraut product stored in-house is easier to control and rotate with FIFO capability than having to monitor and oversee product in offsite storage.

"The logistics is easier with in-house pallet flow storage with automatic FIFO, which helps to ensure proper product rotation," concluded Froberg. "That is not the case when coordinating shipping to offsite locations for storage is necessary."

While accommodating seasonal inflows to warehousing can be a serious challenge, creative problem solving to increase storage density and minimize material handling is also available in other forms than pallet flow rack.

So, consulting with a pallet rack specialist can be the first step in resolving ongoing inefficiencies. Ultimately, such collaboration can often open unexpected opportunities to enhance productivity and profitability. **WMHS**

Arlin Keck is an Engineer at Steel King Industries, a designer and manufacturer of warehouse storage racks, pallet racks and material handling/safety products since 1970 (www.steelking.com).

Painted or Stainless Safety Gates? *How to Decide*

Contributed by: **Mezzanine Safeti-Gate**

Fall protection systems are required by OSHA for any work platforms in a facility that are elevated over four feet. Dual-gate safety solutions are often the best method of creating a permanent safe environment. To select the right mezzanine safety gate solution for your area, you need to review the available space in your area, the size of the pallets being moved and the procedure for loading and accessing the material. But there is another decision that must be made before selecting the proper safety device - what the safety gate will be made of and how it will be finished or painted.



A powder-coated steel Roly safety gate from Mezzanine Safeti-Gates, Inc. is painted in gray and yellow. Safety gate models can be painted in any color.

To select the right construction material for the safety gate, review the environment in which the gate will be installed to determine if the area has any specific requirements.

In a basic warehousing or material handling environment where palletized material is lifted to an upper level, and picked or moved with a pallet jack, painted mild steel is often the right choice. This is an economical and durable solution. Most manufacturers use a powder-coating process over wet paint for a more durable finish that will not flack or crack.

CHOOSING COLOR

A two-color scheme in opposing colors help the moving components stand out from the stationary parts. This helps increase safety awareness for the employees working around the ledge. For example, the Roly Model from safety gate designer and manufacturer Mezzanine Safeti-Gate is powder-coated with frames silver and safety yellow for the gates. The company's Pivot Model has frames in blue with yellow gates.

Sometimes it is preferable for the safety device to blend into the facility environment, so it's possible to select a custom color to match existing guardrails or rack structures. In other instances, it's advantageous to select a custom color that clashes with the surrounding area, again for safety. For example, one of our customers paints everything blue and yellow in their facilities, but requests the pallet drop gates be painted red in order for the areas to stand out as potential hazards.

The key to selecting color for your safety systems is to look at your surroundings to determine what should blend in and what should stand out. Then, talk to your safety gate supplier to work on color schemes that fit your needs. Most companies have several colors to choose from or can match colors with RAL numbers.

Some facilities may have sanitation requirements that do not allow any type of paint, whether powder coat or wet. Some of these areas may be able to use mild steel equipment with specialty finishes such as Steel-It Paint, which includes FDA-approved stainless-steel pigments. For food or processing plants, it is imperative to review the specific sanitation requirements for each area and to communicate those requirements to the safety gate supplier.



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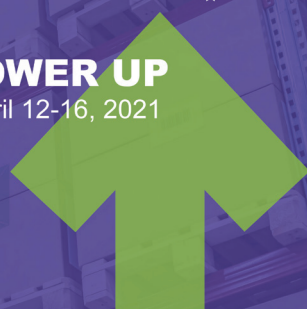


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A stainless steel Tri-Side safety gate from Mezzanine Safeti-Gates, Inc. allows for extreme temperatures or frequent rinsing. All safety gate models can be constructed from stainless steel.

Many processing plants feature applications in which ingredients are moving through the pallet drop area. In these instances, stainless steel is often the best choice as it allows material to be washed down and cleaned without

concern of flaking or chipping paint contaminating the ingredients.

When it comes to stainless solutions, some designs work better than others. It's ideal to have as few moving parts as possible, and necessary to be able to clean all components without allowing water to enter the structure where it cannot fully drain.

Questions to ask when choosing a safety gate:

- Are units constructed in stainless steel fabricated out of 305 stainless steel with all stainless hardware?
- Are open ends capped to prevent water and debris from entering the system?
- Are there continuous welds (which can eliminate any bolts holes in the tubing)?
- Before the unit is shipped, will it be electro-polished to remove any burn marks from the welding process to ensure installing the cleanest system available?

If your application uses caustic material, galvanized steel or aluminum, gates may be required. Find out if the company you're doing business with can construct the safety gates from these materials to match the other equipment in the facility.

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The key to making sure your safety system is constructed out of the right material is to review the specific requirements with operations, maintenance and safety teams to determine the specific requirements are in the facility, so those features are designed into the gate system. Don't hesitate to make special requests when it comes to paint colors and construction. **WMHS**

Mezzanine Safeti-Gate designs and manufactures fall protection systems for mezzanine levels and pallet drop areas on elevated work platforms in warehouses, distribution centers and manufacturing facilities. Its product line now includes many standard pallet drop safety gate models, including rack supported designs and safety gates for the loading dock and lifts. A version of this article first appeared on <https://mezzgate.com>.

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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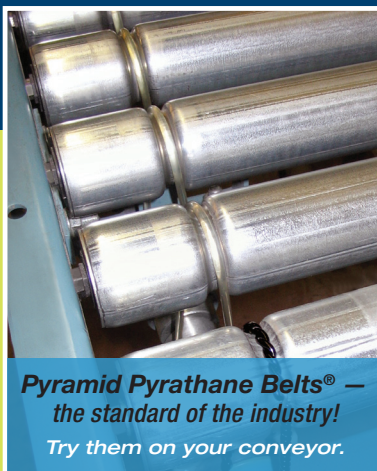
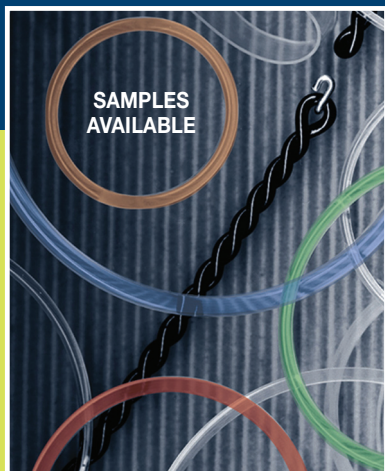
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Evolving Order Picking and Fulfillment with Progressive Automatization Solutions

By: **Andrea Bodenhagen**, Contributor

What does shapewear have in common with mobile phone accessories, beauty products and LED bulbs? Or, washing machines, fridges, car parts and home building material? The answer is ecommerce. All the above items belong on the trending list of popular products ordered online. To keep up with this ever-growing market, logistics and distribution centers need to turn to flexible, universally deployable automation solutions.

Following rapid expansion in recent years, global ecommerce retail sales are estimated to be worth some USD \$3.53 trillion. In 2019, ecommerce sales accounted for 14.1 % of retail purchases worldwide. In 2023, the market research firm Statista expects the ecommerce share of total global retail sales to have increased to 22 %.

In these challenging times when the market is rapidly changing its behavior and online sales (or ecommerce) is accelerating, fulfillment and distribution centers need to keep up with an even higher pace and demand. Hence,

this rapid growth increases the demand for efficient automation in warehouses and logistics chains and is not only fostered by further increasing process speed, but also by the pandemic's inherent necessity for social distancing.

Today, order picking is still largely manual and can take up at least 50 % of labor cost in warehouses. Therefore, automation also provides a great potential for cost savings. Depending on whether the items to be collected are small, light and manyfold in a parcel, or a single heavy item, different automation solutions come into play.

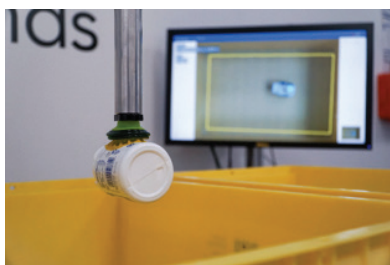
CHOOSING THE RIGHT GRIPPER

For the former, a set-up of mobile device equipped with a collaborative robot is a common solution moving through automated rack storage systems collecting the relevant individual parts and assembling them for the respective shipments. Here the crucial point is the gripper, as it needs to be able to pick up all kinds of different items in different packaging material, without leaving any mark on the



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Suction cups with vacuum technology can be a useful end-of-arm tool for handling objects of different sizes and shapes. Images courtesy of Piab

product to ensure that it arrives to the end user in a flawless state. Because of the variety of items being handled, a high degree of flexibility is required. A corset wrapped in a flimsy plastic bag needs to be picked up and transferred along a logistics chain as easily as a rigid gift box of shampoo and conditioner.

Application-specific grippers used in production for handling the same item over and over will not work in such a setting that would require numerous tool changes for packing just one single parcel of different objects. A more universal concept is offered by vacuum technology with suction cups as the final means of handling on an end-of-arm tool. Recognizing its vital role in a picking solution it easily becomes apparent that quality, characteristics and material are essential to allow picking of as many different objects as possible in a safe and rapid way.

And although suction cups look inconspicuous at first glance, it requires innovative strength and expertise behind their development. A one-pick-all-suction cup needs to have excellent sealing properties to reduce the leakage rate of difficult-to-seal surfaces (porous material such as cartons or difficult-to-cover surfaces like folding foil), and then still be able to operate at low vacuum flows / levels, which is one of the important characteristics working with a cobot

application. And on the other hand, they need to be stiff enough to handle fast movement and to compensate for height differences of different products too. They should also be made of a high longevity material with great tear resistance to not wear out too quickly, reducing maintenance to the lowest possible level.

EMPLOYEE CONSIDERATIONS

When handling single heavy items often two people are necessary. Sometimes the product is stored in cramped places where one person simply cannot manage the picking on their own. Then again, there is the problem of social distancing, labor costs and ergonomics (with associated costs for sick leave and the burden of having to reorganize personnel to cope with the daily tasks).

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PICKING/ORDER FULFILLMENT

Here, vacuum technology based semi-automatic tools, such as lifting aids that enable lifting inside pallet racks or crowded areas, reduce the physical effort needed to move items. This allows the handling challenges with just one operator, while saving him or her from lifting in uncomfortable positions. This will effectively prevent musculoskeletal disorders (MSDs) and create a safe and ergonomic work environment where everyone can lift without the need to be “big and strong.” And when one person can do the lifting on their own, operators can always easily maintain a safe social distance.

In case of mobile vacuum lift units that are compatible with standard LLOPs, an order picker can even be moved around quickly from pallet rack to pallet rack, allowing an operator to work independently to fulfill various shipment orders by him- or herself. This is important as like in all other parts of the logistics—flow speed is of the essence in the order picking process.

Speed also requires that any solution to help workers needs to be up and running without delay and easily integrated into the existing material handling flow. Nevertheless, optimizing utilization of space, storing goods in the best possible way for the fastest order picking possible remains an important prerequisite for successfully coping with the increasing demand of ecommerce shipments.

The trend toward higher volumes of smaller cartons and plastic bags of different shapes, sizes and weights, as well as the increasing number of white goods and other heavy or bulky objects ordered online poses challenges for the ecommerce, logistics and warehousing sector. Apart from being labor intensive and ergonomically challenging, manual pick operations struggle to keep up with demand. Equally and increasingly, even automated systems that used to work are becoming inefficient, with speed and accuracy suffering under the strain of greater order volumes and a wider range of different objects. Therefore, continuous improvement through progressive gripping, lifting and moving solutions allows logistics and distribution centers to constantly evolve their order picking and fulfillment solutions. **WMHS**

Andrea Bodenhagen is the Global Ownership Content Manager at Piab. In 2020 the company acquired TAWI, a leading manufacturer of smart lifting solutions with global reach. The former Piab Ergonomic Handling division is now merged under the brand TAWI securing an even broader range in ergonomic handling solutions. Piab is evolving automation through progressive gripping, lifting and moving solutions and has done so since 1951 (www.piab.com).



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Lithium-Ion Batteries: Improving Warehouse Efficiencies in Light Of Surging Ecommerce Demand

By: **Roberto Denti & Nikolaos Tsiouvaras**, Contributors

An increase in demand for ecommerce sales as a result of COVID-19 is undoubtedly applying pressure to enhance efficiency for many warehouses and fulfillment centers. Spikes and fluctuations in demand have emphasized the need to maximize working capacity and combat increased unpredictability as adjusted retail ecommerce sales in the second quarter of 2020 hit \$211.5 billion, according to the Census Bureau of the U.S. Department of Commerce. This number shows an increase of 31.8 % from the first quarter of 2020, and a staggering 44.5 % increase from the second quarter of 2019.

The surge in demand in ecommerce sales is being reflected across the world and shows no signs of stopping as globally we prepare for further restrictions in light of a Wave 2 of COVID-19. As a result, warehouse and fulfillment centers need to improve operational predictability.

When assessing the efficiency of a warehouse, it is important to understand the performance limits of your equipment. Aging forklifts that are no longer running at the efficiency required may need to be serviced or replaced to keep up with high demand. However, it is also important to understand how components of the product may be

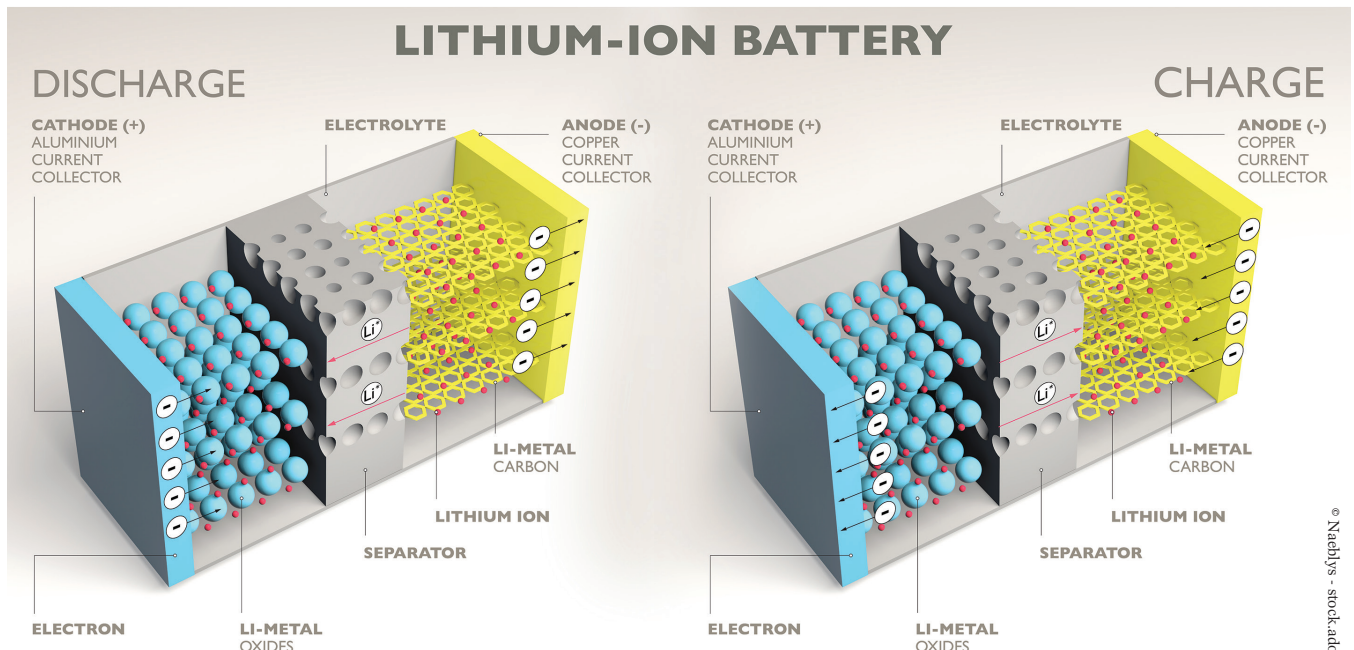
hindering its performance. In particular, its power source: the battery.

THE IMPORTANCE OF THE RIGHT BATTERY

The right battery can have a significant impact not just on performance, but on the footprint of the warehouse and running costs. Lithium-ion batteries form a significant part of that solution. Their application in electrical industrial vehicles, including forklifts, helps to reduce downtime, enhance output and improve reliability.

With the impetus on maintaining increased demand across warehouses, operators need to extend the use of their machinery. Lithium-ion helps achieve this reduction in idle time through substantial improvements in speed of charging, and the primary advantage of the opportunity charging option, when required, with no effect on battery service life.

Using lithium-ion-phosphate offers approximately 4,500 charging cycles, depending on user profile. The added longevity translates to a marked difference on return on investment despite the higher initial purchase cost.



Lithium-ion batteries used in electrical industrial vehicles, including forklifts, help to reduce downtime, enhance output and improve reliability.

Innovative Battery Monitoring Systems (BMS) and Active Balancing modes, which can be employed both in the charging and discharging cycle for lithium-ion batteries, also allow the equal flow and receipt of energy between the cells, keeping them constantly at the same voltage levels, thus optimizing the performance and lifecycle of the battery as a system.

Improved energy efficiency results in significantly lower electricity consumption on charge-discharge cycles compared to classic lead acid solutions, combined with zero emissions during operation, attest to enhanced air quality in warehouses – where no dedicated charging room is required.



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KEEPING SAFETY IN MIND

However, when it comes to the efficiency of lithium-ion batteries it is vitally important to specify batteries from a trusted manufacturer and follow care and maintenance instructions. The composition of lithium-ion batteries is quite complex. From a manufacturing perspective this needs to be considered at the very beginning, from the use of high-quality raw materials to state-of-the-art manufacturing processes in accordance with health and safety standards such as IEC 61508 health and safety regulations.

Compared to other battery options, lithium-ion batteries, due to their composition, require less maintenance, offer greater longevity and can improve the environmental footprint of a business, accounting for an important reduction in resulting annual TCO (total cost of ownership) compared to other technologies. However, the primary safety concern with lithium-ion batteries is the risk of fires.

Fires can happen when a higher-than-specified temperature increases by overcharging, deep discharging or mechanical faults. To mitigate these risks, batteries are manufactured with in-built safety measures. To provide warning against possible hazardous situations, it is important to look for manufacturers that provide BMS cloud connectivity functions as standard, which can send alerts via email and includes a predictive maintenance. Battery management systems with cloud connectivity opens up new possibilities for fleet management.

As ecommerce shows no signs of slowing down and fulfillment centers continue to improve efficiencies to tackle a surge in demand, simple changes such as the adoption and proper care of lithium-ion batteries can greatly improve productivity. By selecting a battery that features built-in safety measures, BMS and cloud connectivity as standard

from a trusted manufacturer, warehouses can continue to provide a fast and reliable service to their customers, even in these challenging times. **WMHS**



Roberto Denti (left) is the Operations Director, while Nikolaos Tsiouvaras (right) is the R&D Director at Systems Sunlight, a leading technology company in the production of batteries for energy storage industry (www.systems-sunlight.com).



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Should You Be Using Multi-Pallet Handlers?

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

It's been 98 years since someone had the bright idea to put forks and a vertical mast that could be raised on a truck, thus creating what came to be known as the forklift. The fact that the mast could be elevated above the height of the truck – with a lifting mechanism controlled by a rack and pinion system – made material management much more efficient.

Forklift trucks have evolved since then, especially in terms of the many attachments available to outfit the lift trucks for particular loads or tasks. Among these attachments are pallet handlers. The introduction of multi-pallet handlers within the last decade was a welcome development for many industries. Unlike standard two-forked pallet handlers, which can lift only one or two pallets side by side, multi-pallet handlers feature additional forks that can be separated by a hydraulic spreader, so that the operator can lift, and the truck can carry multiple pallets at a time. These hardworking attachments allow forklift operators to make fewer trips when transporting goods, thus increasing efficiency and reducing costs by using less fuel. However, multi-pallet handlers are not optimal for all industries and all facilities – or even for all forklift trucks.

If you're thinking about adding them to your forklift fleet, here are a few things to keep in mind.

First, there are a number of options:

- Single/double pallet handlers have four forks instead of two
- Double pallet handlers can hold one or two pallets, side by side

- Double/triple pallet handlers can hold up to three pallets
- Six pallet handlers are for four to six pallets
- Four pallet/eight pallet handlers can carry two or four pallets side by side or four or eight pallets

Multi-pallet handlers are especially useful for the beverage, construction and landscaping supply industries. They are ideal for handling pallets that are the same size and loaded with the same products, such as beer, soft drinks, bottled water, brick, stone and tile.

THE PROS OF MULTI-PALLET HANDLERS

Among the advantages of multi-pallet handlers, they are durable and require minimal maintenance, giving companies a good return on their investment. They not only save time on loading and unloading operations, but they also save on fuel costs, since a forklift operator needs to make fewer trips to achieve the same results. The movement in which forks are divided is synchronized and smooth. Visibility has been optimized by manufacturers, so that the operator can see over the attachments and keep the load in view. Side or rear loading is an option in some models, as are high operation speeds.

THE CONS OF MULTI-PALLET HANDLERS

A forklift may be fitted with a handler that allows it to pick up and transport multiple pallets simultaneously, but can its engine handle the weight of that load? If the combined pallets weigh in at a number that exceeds the forklift's rated capacity, its engine could be damaged. Repairs and downtime can be costly and affect productivity.

Then, too, multi-pallet handlers may increase the instability for which forklifts are known (although many manufacturers say their multi-pallet handlers are designed to enhance stability). Most forklifts used in warehouses have load capacities between one and five tons, with the load limit decreasing as the fork is raised. The limit is affected by the positioning of the load as well. Do the kinds of heavier loads enabled by multi-pallet handlers increase the chances of a tip-over incident? A forward tip, in particular, can occur if the load shifts because the manufacturer's maximum load has been exceeded. (The high operation speeds mentioned previously may also pose a safety challenge.) Before you install any attachment, it's important to ask the manufacturer or dealer of your forklift brand for a re-rating of your forklift's safe lifting capacity that is based on the specific attachment.

Wider loads need wider aisles and a larger turning radius. Multi-pallet handlers may not be a good fit for facilities who've adapted narrow aisles and drive-in or drive-through racking systems in order to maximize the use of space. One solution to this is the use of telescopic forks that are ultra-narrow and use a single cylinder for each tine, resulting in a width that allows the forklift to navigate narrow aisles.

ACCELERATING THE MATERIAL MANAGEMENT PROCESS

Multi-pallet handlers have been embraced by a number of industries and are likely to be adapted by even more in the future. Their ability to accelerate the material management process can make them a valuable addition to a forklift fleet, as long as factors like lifting capacity and aisle widths are taken into account. **WMHS**

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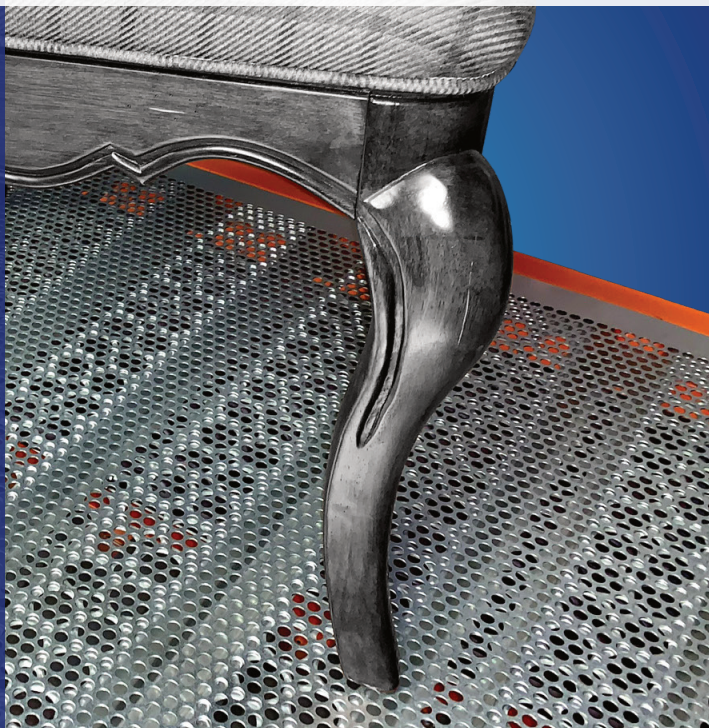


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ProMatDX: Coming to a (Mobile) Screen Near You

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

It sounds a lot like a ProMat show. Experts are holding seminars about emerging technologies like IoT, AI, robotics and automation. Vendors are displaying their wares in showcases and conducting product demonstrations. However, in what has become the new normal, presenters and product exhibitions at this year's ProMatDX show are digital. And instead of traversing a spacious convention center, hurrying from seminar to seminar or browsing through the expo, attendees are taking it all in online. (The "DX" that's been added to the venerable ProMat name stands for Digital Experience.)

ProMatDX, going on April 12th through the 16th, is an opportunity for manufacturing and supply chain professionals to learn about the latest trends and technologies they need in order to improve the resiliency and agility of their operations. There are pros and cons to this pandemically prompted style of professional gathering (which has become the norm since the global COVID-19 outbreak). People can't network in person, but they can have personalized video meetings (AI "matchmaking") with solutions providers. There won't be any socializing at the end of a long, information-laden convention day but neither will there be costly plane rides and hotel rooms. Business cards with contact information on them are being exchanged, but virtually. You can listen to a 30-minute seminar in the comfort of your own home, grab a cup of coffee during the two-minute "grace period" that follows and then enjoy another seminar – still from the comfort of your own home.

Even in digital form, ProMatDX is impressive in its scope, with a strong lineup of speakers and presenters and more than 500 vendors.

KEYNOTE SPEAKERS INCLUDE:

- MHI CEO John Paxton, who'll discuss: Transformation in Action: Introducing The 2021 MHI Innovation Award Winners on Monday, April 12 from 11 a.m. – noon.
- American Logistics Aid Network's Kathy Fulton and a panel of supply chain and disaster response thought leaders who will explore the topic: Beyond COVID-19: Building Supply Chain Resilience Is the Key to Recovery and Preparing for Future Disruption on Tuesday, April 13 from 11 a.m. – noon.
- Thomas Boykin of Deloitte and MHI CEO John Paxton who will present 2021 MHI Annual Industry Report Preview - Innovation Driven Resilience: How technology helps supply chains respond, recover and thrive even amid disruption on Wednesday, April 14 from 11 a.m. – noon.
- Panelists Maike Sievers, Vice President Logistics/Supply Chain at Hibbett Sports; Megan Smith, CEO, Symbia Logistics; and Erin Donnelly, Director Supply Chain Development at The Home Depot, who will discuss Women in Supply Chain: Delivering Proven Success Strategies on Thursday, April 15 from 11 a.m. – noon.

SPONSOR SHOWCASES AND PRODUCT DEMONSTRATIONS

Exhibitors of ProMatDX represent industry, commerce and government representing 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.

Here's a sampling of the companies at ProMatDX:

WHO: 6 River Systems, Inc.

WHAT: Collaborative robots, artificial intelligence and operational expertise

FOR: Improving efficiency, optimizing labor and scaling quickly and easily

WHO: AutoGuide Mobile Robots

WHAT: High payload autonomous mobile robots (AMRs)

FOR: Improving operational workflows in organizations of all sizes and across a broad spectrum of industries.

WHO: Avery Dennison Printer Solutions

WHAT: Routing and RFID solutions for Last Mile efficiency

FOR: Helping companies overcome omni-channel challenges like product capacity capabilities, speed of routing product, inventory accuracy and integrity and labor shortages.

WHO: FANUC America Corporation

WHAT: Robotics, CNCs, and ROBOMACHINE

FOR: Helping companies to improve productivity, increase quality, maximize profits and maintain a competitive edge.

WHO: Gorbelt Inc.

WHAT: Cranes, engineered and mobile fall protection solutions, electric chain hoists and intelligent lifting devices.

FOR: The safe and efficient use of overhead material handling equipment.

WHO: Honeywell
Intelligrated

WHAT: Conveyors, sortation devices, robotics, palletizers and automated storage and retrieval systems

FOR: Helping companies digitize to maximize efficiencies and inform decision making via real-time visibility to assets, automated systems and workers across the enterprise.

WHO: Material Handling Systems Inc. (MHS)

WHAT: Sorters, conveyors, extendable loading and unloading systems
FOR: Solving the challenges of distribution and fulfillment operations with a broad range of controls and automated equipment.

WHO: Nilfisk, Inc.

WHAT: Sweepers, scrubbers, pressure washers, and floor cleaning products
FOR: Making our customers' business smarter through intelligent cleaning solutions.

WHO: ORBIS Corporation

WHAT: Reusable totes, pallets, containers, dunnage and racks
FOR: Moving products faster, safer and more cost effectively.

WHO: Seegrid

WHAT: A material handling solution that combines infrastructure-free vision guided vehicles, fleet management software and actionable analytics
FOR: Moving materials reliably, flexibly and safely.

WHO: Siemens Industry, Inc.

WHAT: Sorter systems, conveyor systems, auxiliary mh products, baggage handling systems

WHO: Steel King Industries, Inc.

WHAT: Durable, high-quality pallet racks, drive in rack, flow rack, pushback rack, pick modules, mezzanines/work platforms, cantilever racks, portable racks, industrial containers, custom shipping racks, and industrial safety guard railing.

FOR: Improving the efficiency of material handling systems.

WHO: Topper Industrial

WHAT: Industrial carts including quad steer, tracking, specialized delivery, tracking carts, static, rotation, tilt carts and transfer carts with roller deck.
FOR: Material handling that is ergonomic and efficient.

WHO: Westfalia Technologies, Inc.

WHAT: Flexible, automated storage and retrieval systems.
FOR: Organizing inventory, optimizing space and increasing efficiency in warehousing operations.

WHO: Wieland Electric Inc.

WHAT: Electric control boards
FOR: Conveyors
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Solutions to Heat Stress for Workplace Safety

By: **Jane Marsh**, *Contributor*

As average temperatures rise throughout the globe due to climate change, workplace safety is taking precedence. Employees who work in buildings without adequate ventilation or air conditioning, work outside in higher temperatures, or work in hot conditions are at a higher risk for heat-related illness.

Employers are required to ensure their employees are safe. Although heat stress is preventable, thousands of employees still become sick because of working under extreme heat. The Occupational Safety and Health Administration (OSHA) estimates that up to 70 % of the outdoor fatalities due to heat-related illness occur within the first few days of someone working outside for the first time.

There are many solutions to heat stress for workplace safety, but employers may not be aware of how to prevent it. Safety, of course, is of the utmost importance in any workplace. By knowing what heat-related illnesses are, their signs and how to avoid them, you can provide a safe and effective environment for your employees.

WHAT IS HEAT STRESS?

To offer solutions for your company to avoid heat stress, you need to know what heat stress and other heat-related illnesses are. Heat stress can manifest itself in many ways, including:

- **Heat stroke:** Of all heat-related illnesses, the Centers for Disease Control states this is the most severe. The body can no longer control its internal temperature, meaning the person cannot sweat or cool down in any way. It can be fatal or cause disability.
- **Heat rash:** Just like other rashes, heat rash is a skin irritation. It's caused by excessive sweating, especially in hot weather.

- **Heat cramps:** If someone is working strenuously in warm temperatures, their body may be deprived of salt from sweating. Low salt levels in the body can cause painful cramping.
- **Heat exhaustion:** As the body attempts to cool down, it can respond with excessive sweating due to a loss of salt and water content.
- **Heat syncope:** Heat syncope is when someone faints or gets extremely dizzy from a long period of standing or working in the heat. This could also be a result of dehydration.
- **Rhabdomyolysis:** This condition results from heat stress and physical activity, which breaks down and kills muscle. The muscle then releases proteins which can cause heart issues and seizures.

These heat stress conditions can lead to more severe health concerns if not cared for as soon as the symptoms are recognized. Although the various forms of heat stress have differing symptoms, they can range from thirst, sweating or confusion to seizures, extreme muscle pain or even fatality if treatment isn't available immediately.

If you ever think an employee or coworker is experiencing heat stress, call 911 as soon as possible. In the meantime, get the person to a place with shade, air conditioning or a low-humidity location, remove their outer clothing and provide them with water or an ice pack.

SOLUTIONS TO HEAT STRESS

You can avoid heat stress by taking precautions for your workplace and your workers.

1. Allow for Acclimatization

New employees may not be used to working in varying climates, especially the heat. On average, it takes a

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person a few weeks to acclimate to the weather. During this time, do not give them a heavy or full workload.

2. Provide Fruit and Cold Beverages

Make water and other cold beverages with electrolytes available at all times during the workday to prevent dehydration. In addition, providing fruits such as apples or bananas can help replenish electrolytes as well.

3. Establish a Shaded or Air-Conditioned Location

If a worker notices they are experiencing signs of heat stress, remind them to go to an established shaded area or indoors where there is air conditioning. This will help their body cool down.

4. Update Energy Efficiency in the Workplace

Not all heat stress occurs while working outside. Inefficient buildings can get hot and humid, and without proper ventilation, your workplace can reach temperatures similar to those outside.

Window replacements and a more energy-efficient design can provide a cooler space to work even if you don't have full-building air conditioning.

5. Remind Employees to Wear Cool Clothing

Too many layers of clothing while working in hot weather can cause heat stress as well. Either provide them with safe, breathable clothing or remind them to wear it. Looser clothing allows the body to cool down quickly and efficiently.

6. Let Your Workers Rest

It's better to allow your workers to take a break than risk them having heat stress. Heat stress can cause permanent impairment, so a short break is much better than the loss of an employee.

KEEP YOUR EMPLOYEES COOL AND SAFE IN THE HEAT

Heat stress is a serious concern that can cause you to lose workers if it's not treated. It can occur in any season of the year, too. Know the types, signs, symptoms, treatments and prevention to ensure every one of your employees is safe. **WMHS**

Jane Marsh covers topics in green technology and manufacturing. She also works as the Editor-in-Chief of Environment.co.

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Situational Awareness in the Workplace

By: **Garry G. Gordon**, *Contributor*

With over 36 years' experience working with industrial, recreational, law enforcement, music and military accounts, it has been interesting to witness how hearing protection is often selected and assigned. We all know the ramifications of excessive noise exposure, whether it has occurred in the workplace or in leisure activities, like motor sports, concerts or hunting. In many cases the choices of hearing protection offered is not always given the attention it deserves. After reviewing numerous audiograms in addition to hearing surveys and fit check reports it became apparent that we had numerous indications from end users that they were not installing their protection properly or were intentionally wearing them incorrectly.

Why? Some said full insertions were uncomfortable while others implied they already had a mild or moderate hearing loss and needed a product that would assist with situational awareness. In other words, they needed to be acoustically aware of their surroundings before circumstances resulted in negative consequences. When a person cannot hear critical sounds, on or off the job, this can pose a serious threat to the health and safety of both the individual and those around them. This is very true when we think of the needs for pilots, police officers and military personnel, where situational awareness is essential for survival. Similar, yet different needs are also essential with industrial accounts who have employees with or without hearing loss but also have a serious need to hear critical sounds such as radio

Lack of attention to such matters has proven to be expensive. For example, it has been estimated that in the U.S. we pay well over \$1.6 billion dollars annually for hearing loss claims from the military. As a side note it should also be understood that employees with unidentified or untreated hearing loss also contribute to expensive mistakes that are costly for their industry. For example, did you say seven or 11? Or did the employee not hear a sound from a machine that indicated an expensive repair or replacement if not turned off in time.

A song called "Acoustical Confusion" brings awareness to the problem in a humorous and relatable way. You can find it at: <https://earinc.com/acoustical-confusion/>. (You might want to play it for your employees, as well.)

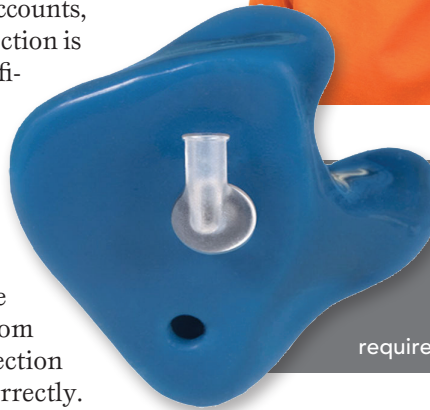
A LOOK AT YOUR OPTIONS

So, the bottom-line question is "What are the options that can be considered for an employee to hear better while working in a hazardous noise environment?"

1. Filtered Ear Protection is a common choice made available to those who need to tame down the intensity while minimizing this risk of over exposure. One of the most recent items has been a dual-filtered product that provides variable attenuation and works for impact sound such as gunfire. As the noise level goes up so does the attenuation. Most, but not all filtered protection is available in generic form with different size options or custom fit. These can be worn under a muff when



Photo courtesy stock.adobe.com



Depending upon the employee's environment, tasks and potential for being exposed to noise, hearing protection that has multiple functions may be required. (Photo courtesy of E.A.R. Inc.)



Hearing protection that provides "variable attenuation," such as E.A.R. Inc.'s HearDefenders®-DF, increases noise reduction as the noise level rises. (Photo courtesy of E.A.R. Inc.)

dual protection is required. Another version is about to appear which the end user can control how much sound comes through by moving a small lever.

2. Generic and custom-molded products that connect with communication devices such as radios, Bluetooth and smart phones. This technology has been helpful during the pandemic since it enables better options for social distancing.
3. Electronic Ear Plugs and Muffs are also available and they too can integrate communications into their circuitry. These options are considerably more expensive but extremely valuable where there is a need to hear accurately while engaged in a noisy environment.

In conclusion, situational awareness can coexist with hearing protection. Proper selection of such devices will minimize the risk of noise-induced hearing loss and at the same time allow an employee to perform better and not feel so isolated. Technology is constantly changing, and it is critical to understand the options that are available and how they work. **WMHS**



Garry G. Gordon is CEO and Audiologist for E.A.R., Inc., a company that offers high quality, comfortable and certified hearing protection. Visit www.earinc.com for information about E.A.R. Inc. products. For details about classes on properly fitting and modifying customized hearing systems and on how to get certified

by the Council for Accreditation in Occupational Hearing Conservation (CAOHC), visit <https://tinyurl.com/138guuza>.



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Safety Equipment Maintenance Falling Short with COVID-19?

Here's How to Ensure Weekly ANSI/ISEA Z358.1 Compliance

By: **Eric Clark**, Contributor

The American National Standards Institute (ANSI) created industry standard ANSI/ISEA Z358.1 in 1981 as a means of establishing minimum performance and use requirements for emergency eyewash and shower equipment. It's a comprehensive guideline outlining specific parameters for the appropriate design, installation, performance, certification, use and maintenance of emergency eyewash and shower equipment across various industries. So, what happens during a global pandemic?

Staying compliant with ANSI/ISEA Z358.1 requires stringent and regular testing to ensure that proper functioning equipment is available at all times — and that requirement has not changed during the COVID-19 pandemic. While ANSI/ISEA Z358.1 has been revised in previous years, most recently in 2014, these updates were a reflection of changing environments and safety interpretations. The most current revisions include minor specifications for the design, manufacture and installation of emergency locations, as well as the location and accessibility of safety equipment and adjusted measurements. At this time, no exceptions of any kind have been made during the COVID-19 health emergency that waive a facility's responsibility for compliance.

Pandemic or otherwise, sections 4.6.2 and 4.6.5 of ANSI/ISEA Z358.1 require emergency shower and eyewash equipment to be activated weekly, with a more rigorous evaluation conducted annually. This standard is the most effective way to ensure that workers are protected from eye, face and body injuries resulting from corrosive materials

in workplace incidents such as spills, splashes and blown particulates. Simply put, properly functioning equipment must be readily available at all times, no matter what is happening in the world at large.

In August 2016, OSHA fines for non-compliance increased a full 80 %, putting violations for inappropriate or inadequate eyewash and shower equipment at risk of penalties exceeding \$100,000. But the potential for fines should not be the only motivation for compliance. It's critical to understand that compliance isn't an annual or monthly responsibility, nor is it a responsibility that can be waived during health emergencies. Rather, compliance is a requirement that must be continuously observed.

WEEKLY MINIMUM PERFORMANCE REQUIREMENTS

ANSI/ISEA Z358.1 specifies three minimum requirements for the weekly inspection of emergency equipment:

- Every piece of emergency equipment must be activated weekly.
- Activation must ensure proper water flow to all device heads, including eyewash, eye/face wash and shower.
- Duration of activation must be long enough to sufficiently flush any and all stagnant water from both the unit and all sections of piping outside of a constant circulation system, also known as

“dead leg” portions. This timeframe is determined by the length of piping in which stagnant water might collect before it can reach the head(s) of the unit.

A best practice is recommended beyond these ANSI/ISEA minimum requirements. Additional weekly checks should also be conducted to ensure equipment is fully operational and ready to provide appropriate first aid in the event of a workplace emergency.



ANSI/ISEA Z358.1 states that emergency shower and eyewash equipment be activated weekly, with a more rigorous evaluation conducted annually.

A common question for many companies is whether they are required to hire a certified tester to perform these weekly and annual inspections. The answer is no. There are no prerequisites or certification requirements for personnel to conduct safety equipment testing. However, a full understanding of the installation and performance requirements is essential. Equipment manufacturers offer various training tools, including online competent person training — particularly helpful during a pandemic — to ensure company personnel can become subject matter experts, capable of properly conducting tests. Today, many companies also have third-party inspections performed annually, which offer a level of credibility and assurance to the review process.

Facilities with hundreds of shower and eyewash units should seek to create as many subject matter experts as possible. Once trained, these experts will be capable of completing weekly checks quickly. Creating facility maps, making full testing kits readily

available and conducting periodic training classes can also help streamline the process. Keep in mind that worker protection should be a priority in every safety plan. It's not enough to simply provide emergency shower and eyewashes. Inspecting, testing and monitoring equipment readiness and performance is the key to optimal response and a safer workplace.

Safety is an ongoing job, and it's the responsibility of the workplace to ensure that workplace environments always meet current standards — pandemics notwithstanding. **WMHS**

Eric Clark is the Director of Services / North America for Haws, a global manufacturer of standardized and customized emergency eye/face washes and showers, tempered water response units and drinking fountains. Haws does startup commissioning, preventative maintenance, annual ANSI/ISEA Z358.1 site surveys and inspections, repairs, and educational training programs and certifications (www.hawesco.com).



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Electrical Safety
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Safety Signs That Wow OSHA and Get Results

By: **Christine Torres**, Contributor

Walk through the facilities of some of the nation's top companies like Amazon, Toyota, Northrop Grumman and Coca-Cola, and it's easy to see why they are stellar. The facilities are orderly and embrace top-down safety programs. This is a tried-and-true combination that tackles efficiency hurdles. Part of what it takes to maintain this level are the tools these companies use for communication and frequent upkeep. Any business can take facility management up a level by making safety inspections routine and putting the right safety signs, labels and floor marking to work.

REQUIRED AND NECESSARY COMMUNICATION

The Occupational Safety and Health Administration (OSHA) has safety sign standards, which are part of OSHA 1910, and use ANSI Z535 for sign component standards. Many businesses know they need to label their facility adequately for OSHA compliance and to provide workers with effective communication to do their jobs. Yet, many facility managers don't know where to start, what they need to label and what supplies they will need to carry out the task.

To find out where to start with signs, think about their purpose. Signs help draw attention, document protocol, remind people to follow instructions and underscore locations for wayfinding and emergency equipment, exits and more. They also prohibit or mandate actions.

Typically, there are five types of safety signs for workplaces. These are part of the ANSI Z535 standard for hazard communication and informational requirements, which have headers of danger, warning, caution, notice and safety. Facility managers can get an idea of what signs a facility needs by conducting a thorough safety inspection. This helps identify hazards and communication concerns to

know where to place labels and signs that increase safety and boost efficiency. A tip is to create a communication plan. Categorize primary labeling applications and tackle the list. For ease, businesses can use a facility identification evaluation workbook.

Adding and improving signs seemed to be a large task for Larry Brown, Safety Manager at a small fabrication facility near Seattle, Washington. "We wanted to polish up our building as our business began growing," Brown said. "We are looking into becoming ISO certified and are working with quality companies as they get through the pandemic. If you want to be taken seriously, you need to make your business look serious and professional."

One focus in sprucing up the 50-year-old facility was streamlining its signs, labels and floor marking. Brown said staff updated its wayfinding, emergency exit signs, chemical labels and reporting, and added floor marking to create electrical safety boundaries.

COMMUNICATION TOOLS

Once a facility has a system set up, it can become evident what communication tools are necessary. For example, once a pipe system's information has been inspected, documented and detailed, a label can be placed on each type of piping to alert to directional flow, the pipe's contents, pressure and any potential dangers. Another example, electrical wires and cables might need markings to let workers quickly identify each wire's purpose. Labels can even help keep items organized, such as personal protective equipment.



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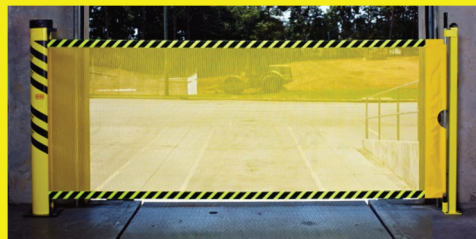
Organization is an essential part of efficiency and maintaining lean programs, such as the 5S method. Break up the work routine and complacency by changing signs often as needed. This re-grabs attention and can help sustain safety and efficiency efforts.

Whether using signs, labels or floor marking, the communication needs to be clear. Be sure to use the correct language, colors, headers and pictograms. Prior to labeling, it is worth taking the time to understand the types of surfaces where the signs and labels will go. For example, pipes can be made from plastic or metal. Labels with a strong adhesive backing and that are an appropriate size for the pipe diameters are important for long-lasting effectiveness. Order premade labels and signs for common projects or use an industrial label printer for custom options that are unique to the facility's needs. **WMHS**

*This article first appeared on
<https://www.graphicproducts.com/blog>.*

Christine Torres is a writer, social media influencer and public relations manager for Graphic Products, makers of the DuraLabel line of industrial label and sign printers (www.GraphicProducts.com).

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Enhance Facility Safety by Applying the 5S Method in the Warehouse

By: **David Bowers**, Contributor

In 2019, Netflix introduced Western audiences to Japanese organizing consultant Marie Kondo and her KonMari Method™ for tidying the home. Kondo became an instant sensation for this method that focuses on eliminating any items that don't "spark joy" to create less clutter and more ideal living spaces to improve your quality of life.

But KonMari isn't the first organization method to hail from Japan. The Toyota Production System (TPS)—originally developed by the Toyota Motor Company following World War II—has been adopted by countless companies the world over as a proven model for eliminating waste from the manufacturing process to increase productivity. Now commonly known as "lean manufacturing," the TPS rests on several foundational pillars, including the workplace organization method of 5S.

In this article, we will look at the application of 5S—not on the plant floor, but in the warehouse—and how it drives improvements in workplace safety as well as warehouse efficiency. 5S naturally leads to improved safety, by eliminating clutter or mess on the floor that can obstruct walkways and present tripping hazards. It also reduces the risk of misplaced or improperly stored items falling from a height onto employees. However, warehouses should also prioritize creating completely separate safety programs so that worker health and safety get the attention they deserve.

WHAT DOES 5S MEAN AND HOW DOES IT WORK?

Like KonMari, the goal of 5S is a clean and organized workplace, free of clutter that can negatively impact operational effectiveness. For instance, if you have a messy and disorganized setup or layout, you can end up wasting time looking for items that you need, taking extraneous steps or inadvertently create unsafe conditions. Within the warehouse, these types of issues can hinder material flow and lead to difficulties with making on-time deliveries.

5S instead supports efficient and effective workflows—and derives its name—from five tactical steps anchored toward cleanliness and organization.

1. Sort (seiri)

The first step concentrates on sorting and grouping items based on how often they're used in the warehouse. These can be products, machines, tools or workstation equipment. There should be one group for high-use items that need to be accessible at all times, such as handheld scanners and fast-moving products. Another group should be items that are not used frequently, if at all, which can be disposed of

or sold off to reduce clutter, such as broken equipment or old inventory. Some items may be hard to classify and can be placed in a holding area. If they haven't been touched in a month's time, that means they can also be disposed of or sold.

2. Set in order (seiton)

Once you've identified what items are essential to your operations, you can then figure out where and how to optimally store or place them within the warehouse for quick access. In this step, the goal is to reduce the time or number of steps required for processes. For example, fast-moving products or ones in high demand based on forecasts should be arranged and stored in a place where they can be quickly retrieved for fulfillment and outbound shipping.

Likewise, frequently used equipment or tools should be kept in and returned to convenient locations within the facility or workstation. You want to have a place for everything and everything in its place. A best practice is to label the home for each item and even outline it using paint or tape. After all, a tool taken from a well-identified location is more likely to be returned to the right place.

Items should be stored at an ergonomically appropriate height so that workers can avoid constant bending and lifting or putting markers in place for forklift areas, among other considerations.

3. Shine (seiso)

Many companies make the mistake of thinking that since customers rarely (if ever) enter the warehouse, there's no need to maintain appearances. But a clean warehouse is an operationally effective warehouse. As part of 5S, it's important to conduct regular cleaning—preferably daily—paying careful attention to dirt, dust, debris or garbage on the floor, on surfaces, around workstations, in aisles and on machines. "Shine" can be considered a preventative step, as you can keep garbage from getting in people's way or liquid on the floor from causing someone to fall. You can even take this time to see if machines or equipment require maintenance before an issue arises mid-process.

4. Standardize (seiketsu)

After completing the first three steps, your warehouse should look quite pristine and well-organized—everything the 5S method promises. But anyone who has cleaned a desk or home knows that it's easy to get busy, let messes accumulate again and revert back to the way things were before. This is why standardization is one of the most

critical 5S steps. By creating regular tasks, schedules and prescribed steps for warehouse staff, sorting, setting in order and shining become standard operating procedures—rather than one-time exercises. A picture displaying how an area should look can be posted nearby to offer both guidance for anyone unfamiliar with the area and for auditing performance. Over time, 5S becomes ingrained into your culture and the daily routine of everyone in the warehouse.

5. Sustain (shitsuke)

The final step—sustain—is all about creating that culture, where everyone is well-versed and fully invested in the 5S method to maintain cleanliness and order. This is typically the most difficult step, but there are several ways to inspire such a culture, such as assigning individuals or teams the responsibility for maintaining certain areas to improve accountability. Regular audits can also help to reinforce best practices. But it's also important to remain nimble and open minded as well. Your staff may have ideas for better ways of organizing things. Encouraging them to voice these ideas can help keep them engaged, make them feel like their voices matter and lead to further workflow improvements. Even creating competitions between teams or areas for the highest audit score can boost performance and morale. Everyone will want to display the 5S trophy in their area for all to see!

5S SPARKS MORE THAN JOY

Ultimately, when you follow the 5S method, you streamline your warehouse to the essentials, put everything in its right place, and make it quick and easy to get the job done. When standardized and sustained, 5S sparks more than joy. It drives a culture focused on safety, continuous improvement, efficiency and the successful execution of warehouse operations. **WMHS**

David Bowers is Vice President of Warehouse Operations for TA Services, a premier full-service logistics provider whose mission is to Make. Ship. Happen. while ensuring that safety is a way of life (www.taservices.com).

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Surely Warehouses Need Safety Too

By: **Rolly Clendening**, *Contributor*

When was the last time you were witness to a “near-miss forklift accident” at a busy intersection in your warehouse or distribution center? Chances are the memory is not that distant if you are one of those forklift drivers. The sad truth is that there are safety directors that have had to experience these events under their watch and what’s worse is that they’re sometimes limited by budget restraints to properly resolve these problems.

Outfitting a safe facility doesn’t need to be a major investment, but the delay in planning can be costly when an injury accident occurs. The most important thing you can do is work with a qualified manufacturer representative or safety professional to construct a plan to fit your facility’s driving culture and intersection traffic.

Recently I was called to provide a full-site mirror survey at a major retailer’s distribution center where a serious injury related accident had occurred. When I arrived, there wasn’t a single safety mirror in the building. Previously there hadn’t been any major accidents, but this single event would prove expensive for this corporation due to the extent of the employee’s injuries. Mirrors at the intersections had been considerations in the past but were never followed up on, a costly delay. To this company’s credit, it already had us in for mirror surveys in several of their distribution centers and have equipped their forklifts with blue-light warning devices, plus had added safety signage.

SAFETY SOLUTIONS

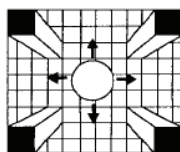
Honking horns and stopping at all intersections are the beginning of good driving habits. Warnings of approaching traffic make a facility safer and more effective in preventing expenses of damaged product due to intersection congestion. Hi-Vis vests, gloves and harnesses also come into play when focusing on employee safety in the material handling facilities.

There are Blue Light Alert Systems available that attach to the forklifts where the light pattern extends beyond the vehicle to warn others of their location. Projection units are also used to display stop signs and safety messages on the floor at intersections.

Motion detectors can be mounted above or near intersections to warn forklift operators and pedestrians of traffic coming from multiple directions. Some of these units are attached to mirrored domes to supply a view from floor level, along with the warning sensor that indicates the direction of an approaching vehicle or pedestrian near the intersection.

Mirrors are an immediate visual indicator of intersections and blind spots to both drivers and pedestrians. There are different styles of mirrors designed for various types of intersections and problem areas.

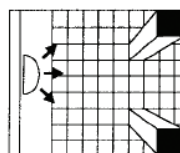
Full Dome Mirrors suspended at the center of a 4-way intersection, provide a 180-degree viewing angle from all four directions. Having a view of a forklift or pedestrian around a corner will give a forklift operator the opportunity to come to a smooth stop, keeping the vehicle and the transported load under control.



Full Dome Mirrors suspended at the center of a 4-way intersection, provide a 180-degree viewing angle from all four directions.

The domes should be mounted as low as possible, but still about 1-2ft above the highest moving forklift mast or product stack. A rule of thumb for your mirror size choice, is one inch of mirror diameter will provide at least one foot of viewing distance in each direction. (36in would provide 36 + ft of viewing). For intersections that do not allow a dome to be hung due to overhead storage or utility congestion, convex and DomeVex Mirrors can be vertically mounted on a nearby wall, rack or post to show blind spot viewing angles.

Three Way or “T” Intersections can cause concern for choosing the right mirror, given the individual obstacles within the location. Generally, a Half Dome Mirror can be mounted on the wall or rack from the closed direction. A newer solution is the option of using a larger DomeVex Mirror that displays a 180-degree view, mounted at eye-level for optimum exposure in all three directions.




Three Way or “T” Intersections can cause concern for choosing the right mirror, given the individual obstacles within the location.

LOOKING AT COST

Cost is a driving force when considering your plan. Management would rather not spend a lot of their budgets on non-productive expenses, but there are various ways to evaluate the development of a safety program. Employees need and appreciate the confidence of working in a safe working environment that their company has provided. Plus, physical injuries are very expensive, both in medical bills and lost-time workers compensation costs. Products damaged in an accident are another cost, along with the time lost in clean up and replacing the damaged items.

A beneficial point to consider is the reduced insurance premiums after audits show that your company is being proactive against costly accidents. The combination of mirrors, warning systems and a defined safety program will pay dividends in the long run. **WMHS**


Roland (Rolly) Clendening is an Accounts Manager and Product Engineer at Se-Kure Domes and Mirrors, a made-in-America manufacturer of the mirrored safety products used at intersections and blind spots (www.domesandmirrors.com).



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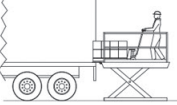


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OSHA & ANSI Color Standards for Safety Tape and Signs in the Workplace

By: **Chris Meacher**, Contributor

OSHA & ANSI color standards exist to help businesses in the U.S. make good decisions when it comes to marking their facilities for maximum efficiency and, more importantly, safety. There are resources available to help guide such businesses in making logical choices when applying floor marking and anti-slip tape in facilities.

OSHA & ANSI color standards guides hope to make it easier for these businesses to mark out warehouses, factories, distribution centers or any other facility that requires floor demarcation.

Depending on your safety tape requirements in your workplace, you can apply OSHA & ANSI color standards to all floor markings or choose select areas to suit your optimization and safety needs within the workplace.

THE OSHA & ANSI USES FOR COLOR STANDARDS ARE DETAILED BELOW:

Red: Signals danger and relates to risk of fire. In relation to fire, red denotes areas where firefighting equipment

is stored to highlight a fire exit (often red/white hazard markings) or marks an area, such as a hatch, that must remain clear at all times.

For traffic signage, red will warn people or vehicles to stop, possibly due to a busy thoroughway.

Other examples include emergency stop switches, buttons and bars on machines. Also, containers containing flammable liquids and confined space hazards.

Yellow: Denotes areas where caution must be taken. Use yellow for aisles, walkways and docking bays where there are exposed edges such as ledges and curbs. Often these routes will also be through or part of a working process, ensuring that people are kept aware of any potential hazards, such as forklifts.

Yellow is also used to mark physical, and sometimes static objects so they cannot be missed. These could include

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trip and striking hazards, and objects you could be caught in between.

Mark areas with yellow restrictions, such as construction areas or locations where only authorized personnel are allowed.

Blue: Blue is used to mark out important information in factories and warehouses. These notices can remind employees of best work practices, strict rules, overhead clearance in given areas and designated smoking and non-smoking areas.

Blue is also used to zone equipment that is out of order or work that is part of a process.

Green: The color green is used in the workplace for safety related information or medical equipment, such as first aid kits and eye wash stations. For safety information, examples are general sanitation reminders and guidelines and notify employees about potential hazards, best practices or safety measures.

Orange: Orange is used as a color to mark out warnings, often in areas where static or moving vehicles or machinery are in operation. Orange can be used in place of red to warn about a hazard that can result in death or serious



Red anti-slip tape warns workers of a potential danger.

injury, but the overall risk isn't severe enough for red signs signaling danger.

Examples are exposed and moving machine parts, construction zones, low clearance levels and electrical hazards.

Black/Yellow: Areas that are potential health hazards or must be traversed with caution are often marked with black/yellow hazard markings. Often areas under maintenance or storing dangerous chemicals would feature these color markings clearly.

Red/White: As previously mentioned, you will find this color combination marking areas that need to be kept clear.

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This sign warns workers of a forklift area.

Emergency access or electrical points with these markings are easily seen, helping people use them effectively and safely.

ADHERING IS KEY

Variation is always possible depending on working practices, but it is advisable to stick to these guides as best as possible. As these colors have seemingly gained an almost universal understanding when used in the correct areas, to stray too far could have detrimental effects.

Simply color-coding objects or applying various forms of safety tapes in relevant colors can be enough to warn employees or guests. If this is not enough, then signs with messages (symbols, text or a combination of the two) applied in prominent positions will be very effective.

Combining color standards with anti-slip tape is also a cost-effective process. Combining slip prevention with markings to highlight hazards or restrictions can solve more than one problem with one process.

OSHA & ANSI standards employed correctly in the workplace can not only improve workplace efficiency but, most importantly, will reduce the likelihood of workplace accidents. Something that not only can cause death or injury to individuals but can have serious financial implications for a business.

By taking a little time to understand and prepare workplace safety color guidelines, you can save a lot of time in the long run. **WMHS**

Chris Meacher is the Marketing Manager with over ten years of experience for Heskins LLC, a safety tape manufacturer based in Butler, PA (<https://heskins.com>).



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Why Is Safety Training for Forklift Operators So Important?

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

Forklifts, also known as powered industrial trucks, are an essential part of most material handling operations. They can be found on loading docks and in warehouses, factories, distribution centers and many other work settings. They are both incredibly useful and potentially hazardous – both to the people operating them and to other workers in the vicinity. Making sure forklift operators are trained and certified and complying with safety standards can go a long way toward mitigating the hazards presented by forklifts.

From 2011 to 2017, forklift-related incidents caused the deaths of 614 employees, according to the U.S. Bureau of Labor Statistics' (BLS) Census of Fatal Occupational Injuries (CFOI).¹ In each of those years, there were more than 7,000 nonfatal injuries that resulted in days away from work (9,050 in 2017 alone). The median of 13 days away from work for forklift-related cases was higher than the median of eight days for all types of cases.

Most fatalities occur when a worker is crushed by a forklift that has overturned or fallen from a loading dock. Being struck by or falling from a forklift are other frequent causes.

RIDING ON FORKS, SPEEDING RESULT IN FATALITIES

Here are several cases reported to the National Institute for Occupational Safety and Health (NIOSH) Fatality Assessment and Control Evaluation (FACE) Program that demonstrate the hazards involved with forklift use:²

- A 36-year-old electric-line technician who was riding on the forks of a forklift died after falling to the ground and being run over by the vehicle.
- A 41-year-old worker in Indiana was killed when the forklift he was operating fell off a loading dock and pinned him under the overhead guard. The incident investigation determined that either the forklift was too close to the outer edge of the loading dock (which crumbled) or the right front tire was caught in a large crack in the loading dock, causing the forklift to overturn. The loading dock had large cracks in the surface and was in need of extensive repair.
- A 39-year-old punch press operator at a computer components manufacturer was crushed at her workstation by a metal scrap bin that had been propelled toward her after being struck by a forklift traveling in reverse at high speed.

WHAT OSHA REQUIRES IN THE WAY OF SAFETY TRAINING

OSHA spells out the requirements for operator training and licensing in its 29 CFR 1910.178(l), Final Rule for Powered Industrial Truck Operator Training. Among its provisions: operator performance must be periodically evaluated and refresher training is required if the operator is observed operating the truck in an unsafe manner, is involved in an accident or near miss, or is assigned a different type of truck.

Forklift operators should be trained to:

- Not raise or lower forks while the forklift is moving
- Operate the vehicle at a safe speed (one that will allow a quick stop)
- Slow down and sound the horn at cross aisles and other locations where vision is obstructed
- Look forward and keep a clear view of the travel path



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1 www.bls.gov/iif/oshwc/cfoi/forklifts-2017.htm

2 www.cdc.gov/niosh/docs/2001-109/



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- Not permit unauthorized personnel to ride on a forklift (if someone is authorized to ride on a lift truck, it must be done in a safe place on the vehicle)
- On grades, tilt the load back and raise it only as far as needed to clear the road surface
- Not drive a forklift up to anyone standing in front of a bench or other fixed object

Forklift maintenance is also covered in the standard. Forklifts are supposed to be examined at least daily (or after each shift, if they're used around the clock) for any condition or damage that could affect safety. When defects are found, they must be reported and corrected right away.

Additionally, the standard addresses specific training requirements for truck operation, loading, seat belts, overhead protective structures and alarms.



NIOSH has forklift safety recommendations for workers:

- Do not operate a forklift unless you have been trained and licensed
- Use seatbelts if they are available
- Report to your supervisor any damage or problems that occur to a forklift during your shift

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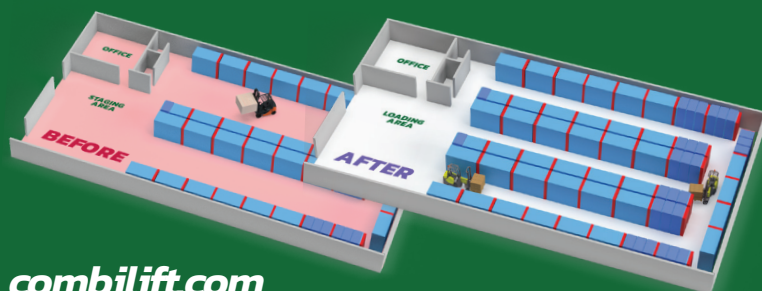
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- Do not jump from an overturning, sit-down type forklift. Stay with the truck, holding on firmly and leaning in the opposite direction of the overturn
- Exit from a stand-up type forklift with rear-entry access by stepping backward if a lateral tip over occurs
- Use extreme caution on grades or ramps
- Do not handle loads that are heavier than the weight capacity of the forklift
- When dismounting from a forklift, set the parking brake, lower the forks or lifting carriage, and neutralize the controls
- Elevate a worker on a platform only when the vehicle is directly below the work area
- Whenever a truck is used to elevate personnel, secure the elevating platform to the lifting carriage or forks of the forklift
- Use a restraining means such as rails, chains or a body belt with a lanyard or deceleration device for the worker(s) on the platform
- Do not drive to another location with the work platform elevated

training and making sure that workers follow best practices for operating forklifts, managers can greatly reduce the chances of incidents at their facilities. **WMHS**



Safety training is vital to preventing forklift-related injuries and fatalities. By complying with regulatory requirements for

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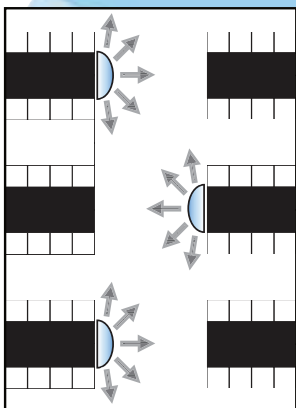
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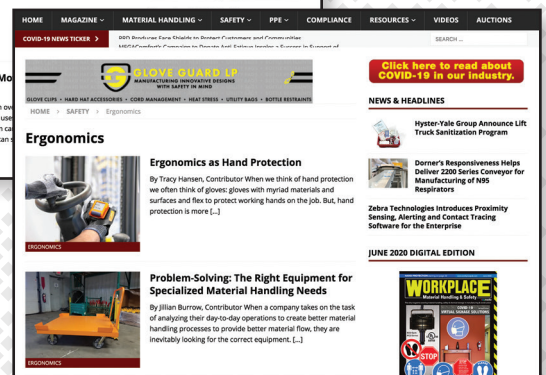
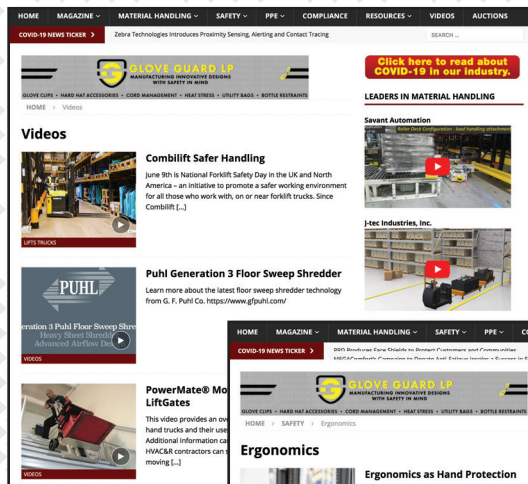
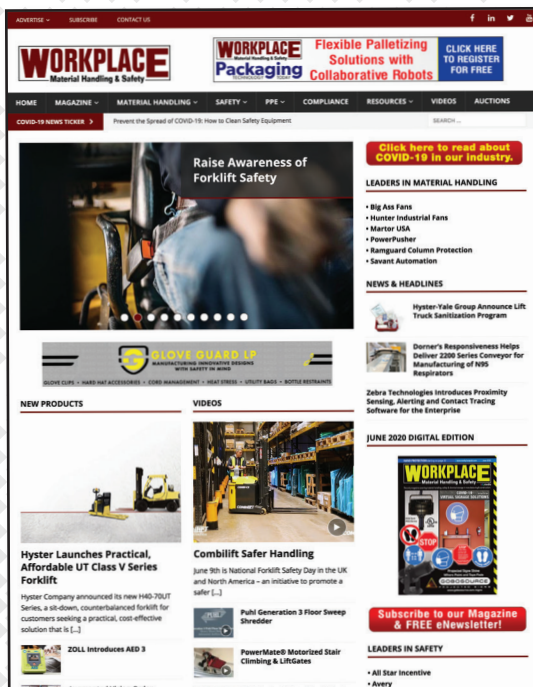
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