

Embracing New Loading Dock Technology to Improve Safety

Signaling systems and other advancements are changing the way workers interact with equipment.

Chad Dillavou | Sep 26, 2019

Despite major technological advances reshaping the inside of industrial settings and warehouse facilities throughout the U.S., the loading dock has remained seemingly unchanged. However, gradual improvements in ergonomics and technology have elevated the loading dock from a relatively low-tech area to a safer, easier workplace for employees.

When accidents occur at the loading dock – and they do, all too frequently – it leads to damaged products and equipment along with costly workplace injuries. These can lead to losses of \$135 million in direct costs and another \$650 million in indirect costs.

An estimated two-thirds of loading dock accidents can be prevented with equipment and technology which already exists. However, there is no single piece of equipment that can resolve every safety challenge at the loading dock. A good start is finding a comprehensive safety system which offers upgradeable features to reduce risk in the present and increase safety in the future when the timing and budget allows.

One clear trend is toward technological upgrades of loading docks, specifically making them more automated.

Light communication

The red/green signaling system found around many loading docks has become a familiar fixture at plants and warehouses in the last several decades. Inside the loading dock, a green light indicates the trailer has been secured to the building and it is safe for a forklift operator to begin the loading and unloading process. Conversely, a red light on the outside of the dock communicated to the truck driver that it is not safe to pull away from the dock. The lights switch colors when the restraint is unlocked, indicating it's safe for the truck driver to pull out without risk to the dock workers and material handlers inside.

The last 10 years have seen upgrades to this basic communication tool. For example, highly visible LED lights in the upper corners of dock doors have been developed to increase safety for forklift operators who might not be able to see the red/green light at the control box due to stacked pallets or other equipment. For forklift operators inside the trailer, LED lights alongside the leveler provides visual confirmation that the trailer is still secured to the loading dock.

The most recent developments in dock safety involve motion sensor-based systems in the dock area. One such system projects a blue light (similar to forklift safety lights) onto the leveler when activity is detected inside a trailer, alerting workers that a pedestrian or material handling equipment could back out at any moment. Considering the dangers of workers being struck or crushed inside the loading dock, this is critical in mitigating the risk for pedestrian and forklift collision – especially considering forklifts weigh that of three standard automobiles. This type of system can be integrated with advanced control boxes to keep the vehicle restraint locked until the activity stops, ensuring an unaware worker does not erroneously unlock the vehicle restraint, signaling to the semi driver it is okay to pull away while a forklift operator is still inside the trailer bed.

Reducing back-over risks

Distractions and risks are all around the outside of the loading dock, as well. In fact, OSHA is currently considering a new rule that addresses backing vehicles and equipment, which are common causes of struck-by injuries. This type of injury and caught-between injuries are two of the four leading causes of workplace fatalities.

Backing trailers pose this exact type of threat. Due to the 70-foot-plus distance between the dock position and the truck's engine, as well as other distractions in the loading dock yard, this back-over hazard can go undetected by workers until it's too late for them to avoid being struck. According to OSHA, there have been 40 fatal accidents involving backing tractor trailers in just a 6-year span.

To address this challenge, a number of new safety solutions have been developed. Some vehicle restraints now incorporate an external motion sensor, which triggers an audible and visual alarm to alert workers outside the dock when a trailer begins backing in. These types of multisensory warnings help to gain the attention of workers who might be in harm's way and signify they should evacuate the dangerous drive approach.

Ergonomic equipment

At one time, each piece of loading dock equipment – vehicle restraints, levelers and overhead doors – were manually operated. However, the daily tasks of a dock worker can now become easier and safer as technological advancements have allowed these operations to become fully automated.

The leading loading dock control systems automate the loading and unloading process with just the touch of a button – starting with the vehicle restraint. Restraints that require minimal human interaction to automatically secure a trailer to the dock increase efficiency and safety by eliminating the need for dock employees to go outside and physically chock truck tires. They also help eliminate the opportunity for mistakes by the driver by clearly communicating with red and green lights when a trailer is restrained, ensuring the trailer can't mistakenly pull away when a forklift is still inside.

There still exists a danger that inexperienced or distracted workers can operate these pieces of equipment incorrectly or in the wrong order. If a leveler or door is lowered too early, a backing trailer can damage the expensive equipment. If a restraint is unlocked before the leveler is stored and a forklift enters or exits the trailer, the chance for serious risk and injury increases exponentially.

Leading dock controls can now be programmed to operate only in a safe sequence of operation, with individual elements of the system interlocked. The most advanced dock control systems can be programmed with a green light interlock, which disables the use of the push button dock leveler or overhead door until the vehicle restraint is safely engaged; an overhead door interlock, which requires overhead doors to be opened prior to leveler operation or a stored leveler interlock. This ensures that the leveler is stored safely before the restraint can release the trailer. If a worker presses the control box button for an individual system element in the wrong sequence, it won't work.

Additionally, some automatic restraints can be integrated into building management or security systems, providing another level of security and protection against external tampering.

Facility managers should look beyond one piece of equipment to address the many safety challenges at the loading dock. Equipment that incorporates elements such as a safe sequence of operation, motion-sensors and LED lights and audible alarms makes any facility safer.

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