Protecting products from every angle at the loading dock

Properly outfitted loading docks maximize the ability of operations to secure product against theft, while protecting product integrity and quality

By Walt Swietlik

Director of customer relations and sales support for Rite-Hite.

Most safety-minded organizations are taking proactive measures to comply with current OSHA standards and anticipated future regulations. These measures – many of them focused on distribution – are helping secure America's supply chain from a growing concern: cargo theft. They are also helping companies protect themselves from the damaging and lasting impact of a major product recall.

There are a wide variety of links in the supply chain. Yet, at almost every level – from processing and manufacturing to distribution – loading docks play a significant role in delivering products safely to consumers in a timely manner. There are a host of potential threats related to dock operations that businesses need to address, including cargo theft, cold chain integrity, and contamination issues.

Identifying the Threats

Cargo theft

According to *Inbound Logistics*[1], there is an estimated $30 billion in cargo stolen each year in the U.S. with the most highly sought-after shipments being pharmaceuticals, consumer electronics, apparel, and food. Despite serious efforts by the industry to combat cargo theft, those numbers are still on the rise. In an annual report, FreightWatch[2] stated that there were 794 reported incidents of cargo theft in the U.S. in 2014. Although total thefts were down, the average value of stolen cargo increased 36 percent to more than $232,000 per incident, compared to 2013. The FreightWatch report suggests this is due to "increased organization and innovation on the part of cargo thieves." Unsecured trailers at busy loading docks are a prime target for these thieves, as well as dropped trailers and those left unattended by drivers.

Cold chain integrity

When fresh or frozen products (like food) are being transported, the procedures and equipment needed to maintain the integrity of the cold chain are critical. Any breakdown can adversely affect quality and freshness. In some cases, it can lead to serious contamination. According to the CDC, loading docks are a frequent area of concern, particularly when refrigerated goods are left on a loading dock for extended periods of time in warm weather.

When it comes to the loading dock, a common breakdown in the cold chain occurs when the security seal on trailer doors is broken outside the building and the doors are opened in the

drive approach, exposing the product to outside elements. If the security seal is broken by the driver, or some other party, companies have no way of knowing if the contents have been tampered with – creating a number of potential security issues. In addition, products may be exposed to warm temperatures outside the building, which can foster bacteria growth, thawing, and other problems for refrigerated or frozen cargo. Temperature and humidity control also become important once a product is unloaded in a facility, as gaps in the perimeter of the dock opening make it challenging to control environmental conditions. A company's inability to control temperature and humidity can lead to spoiled or damaged goods.

Contamination

Loading dock doors create gaping holes in a building that can allow unwelcomed elements like wind, rain, dust, and bugs in, while energy escapes out. For that reason, many facilities use dock seals or shelters to create an environmental barrier between the semi-trailer and the building. However, the wide variety of truck types and sizes on the road makes getting a tight, complete seal challenging, so unwanted gaps remain.

For obvious reasons, this is a major concern when it comes to supply chain integrity. Organizations like the American Institute of Baking International (AIB) have strict standards for dock seal integrity at food manufacturing facilities and distribution centers. According to its *Consolidated Standards for Inspection*[3] guide, all external doors, windows or other openings must be close-fitting or otherwise pest-proofed to less than 0.25 inches or 6 millimeters. Likewise, the World Health Organization (WHO) has its *Guide to Good Storage Practices for Pharmaceuticals*[4], which notes that receiving and dispatch bays should be able to protect materials and products from outdoor weather.

5 Solutions to Address these Threats

1. Automatic vehicle restraints: The first step in supply chain security

Restraints that automatically secure a trailer or vehicle when it backs up to the dock are the first step in establishing supply chain security. Automated restraints not only enhance employee safety by ensuring that a trailer cannot mistakenly pull away when a forklift is still inside, but also help prevent theft and reduce contamination. An automatic restraint wraps around a trailer's rear-impact guard (RIG), securing the trailer to the loading dock. In addition to preventing trailer separation accidents, a tight connection reduces white space where dirt, debris, insects, and other environmental contaminants can enter a building. Additionally, some automatic restraints, like Rite-Hite's Dok-Lok® system, can be integrated into building management or security systems, providing another level of security and protection against external tampering.

As the most advanced automatic vehicle restraint on the market, the Dok-Lok SHR-5000 offers a RIG/restraint vertical engagement range of 9 to 30 inches, making it compatible with the widest possible range of trailers. It can even help secure intermodal overseas container chassis, which typically are different heights than standard trailers and often have an obstructed RIG.

2. Dock Levelers: Bridging the gap from dock to trailer

Once a trailer is secured at the loading dock, the next step is taking care of the gap between the dock floor and the trailer bed. A vertical-storing dock leveler is considered the gold standard for maintaining cold chain integrity, environmental control, and security. Unlike a pit-style leveler, a vertical leveler (when in the stored position) allows the loading dock door to close directly on the pit floor – rather than the leveler itself – reducing energy loss by minimizing outside air infiltration. This also helps to protect the dock door from damage and helps reduce dust, debris, rodents, and other contaminants from entering a building. Additionally, vertical dock levelers improve security by minimizing points of entry at the loading dock. And finally, the vertical design makes it easy to clean or wash down the pit floor when the leveler is in the upright and stored position.

Although a number of companies offer vertical dock levelers, facility managers should consider a variety of specific features before committing to an installation. First, look for a “drive-through” application that allows trailer doors to be opened inside the facility. Opening and closing trailer doors inside the loading dock, rather than on the drive approach, helps to ensure cold chain integrity by minimizing outside air exchange into a cold environment. Equally as important, drive through applications allow loading dock staff to open the trailer doors from inside the building. This reduces the chance of theft or tampering.

Certco Inc. of Madison, Wis. is one wholesale food distributor that recently made the switch to vertical levelers in a drive-through application, and is happy it did. Based on its experience with other storage facilities, Certco switched away from its previous dock/leveler design when building a new 133,000 square foot freezer warehouse. By installing vertical levelers in a continuous pit, drive-through application, it successfully created an uninterrupted cold chain for products moving in and out, with dock personnel having control over the trailer doors, which now open inside the building after the trailer is positioned at the loading dock.

“We are very pleased that we used vertical levelers in this configuration for the freezer building’s docks,” says the facility’s former maintenance manager, Tom Ellis. “They were a huge improvement in terms of food safety, sanitation, and energy efficiency.”

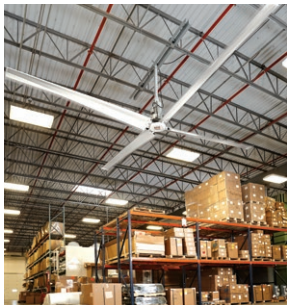
The newest dock shelters complement the vertical storing dock leveler and are specifically designed for drive-through applications. Their unique design allows for trailer doors to be opened and closed inside the building, while still ensuring a tight, consistent seal around the trailer.

3. Seals and Shelters: Properly sealing the dock perimeter

A dock seal or shelter provides an environmental barrier between the back end of the semi-trailer and the inside of the loading dock. This connection helps companies control their environment by keeping wind, rain, dust, bugs, and other contaminants outside the building, while preventing the escape of valuable energy from inside the building. An effective dock sealing system also helps prevent weather-related product damage and contamination, protecting and securing the integrity of products as they move in and out of a facility during manufacturing, processing, and shipping. Seals and shelters can also provide deterrence against theft at the loading dock by closing gaps that could otherwise be passageways for thieves to move product.

For maximum protection, it is important to equip all dock door openings with a four-sided sealing system like the Eclipse® dock shelter and PitMaster™ under-leveler seal by Rite-Hite. In a single piece of equipment, the Eclipse dock shelter provides a tight, complete seal all the way up the trailer sides, across the top, and at the corners. Below and around the dock leveler, the PitMaster sealing system provides a barrier against environmental infiltration.

4. Fans: Keeping temperatures consistent at the loading dock



Most loading docks are not air-conditioned. Moreover, most dock staging areas are expansive spaces with tall ceilings, which make them hard to cool even if they are air-conditioned. The frequent opening and closing of loading dock doors is another added challenge to temperature moderation. In addition, sweating slab syndrome can occur in buildings when warm, humid air enters the structure through open dock doors and creates condensation on any surface that is at or below the dew point temperature. This can potentially damage product and creates a potential slip hazard.

One solution that addresses temperature differentiation and condensation are high volume, low speed (HVLS) fans. These fans can be up to 24' in diameter and can move large volumes of air over an area up to 22,000 square feet. In addition to helping provide consistent temperature and prevent product damage, these large fans also help keep people cool and productive.

5. High-speed doors: Maintaining the cold chain inside the facility

There are also ways to maintain cold chain integrity once inside the facility so frozen or refrigerated products – like food and pharmaceuticals – aren't compromised. One of the traditional approaches to this was to install heavy, insulated, rigid doors with a high R-value on all cooler and freezer openings. While these side-acting doors do a good job of keeping the cold in (fighting conduction), they have a downside – they are typically slow moving, resulting in longer door cycle times and thus, higher rates of air infiltration, hampering inside temperature control. Additionally, their slower speed means workers must either wait for the door to open or leave it open for extended periods of time.

Recent improvements in door technology combine fast cycling with high-efficiency insulation and sealing. These innovations contribute to low long-term energy costs, improved efficiency, and increased safety. In short, high R-value is no longer the main driver in door selection.

Significant improvements in the roll-up design category include reduced cycle times and the use of insulated door panels. These insulated curtain panels provide a high enough R-value to avoid needing expensive panel defrost systems. The fastest roll-up doors available, like Rite-Hite's FasTrax® line, can operate at 100 inches per second – a rate that minimizes air infiltration and ensures optimal productivity. Newer upward-acting doors also incorporate a perimeter thermal air seal for added energy savings through a tighter closure.

A Systematic Approach = A Protected Supply Chain

In most instances, a systematic approach that incorporates automatic vehicle restraints, vertical dock levelers, seals/shelters, the use of HVLS fans, and high-speed doors is the best way to secure a loading dock and protect your products. These solutions – working together as a system – enhance security, reduce contamination, and improve environmental conditions within a building and throughout a given supply chain.

Rite-Hite Material Handling Product Solutions Include:

» Vehicle Restraints

» Loading Dock Levelers

» Industrial Doors

» Industrial Fans

» Barrier Safety Systems

» Industrial Curtain Walls

» Machine Guarding

» Loading Dock Management

» Telescopic Conveyors

Visit www.RiteHite.com for more information or to contact a Representative in your area.

Works Cited:

[1] Palmer, Jared S. (January 2010). "The Cargo Theft Threat." Inbound Logistics, pp. 239-245. <http://resources.inboundlogistics.com/digital/issues/il_digital_january2010.pdf>

[2] Kilcarr, Sean. (10 March 2015). "FreightWatch: Cargo theft risk will increase in 2015." Fleet Owner, online. <http://fleetowner.com/fleet-management/freightwatch-cargo-theft-risk-will-rise-2015>

[3] The AIB International. Consolidated Standards for Inspection. (31 December 2012). Pest Prevention § 2.9.1.3. <https://aibonline.org/aibOnline_/www.aibonline.org/Standards/Distribution_Center_Eng_Man_Web.pdf>

[4] World Health Organization. Annex 9: Guide to Good Storage Practices for Pharmaceuticals. (2003). Premises and Facilities § 4.5. <http://apps.who.int/medicinedocs/documents/s18675en/s18675en.pdf>

RITE-HITE®
ALWAYS LOOKING AHEAD

8900 North Arbon Drive
Milwaukee, WI 53223, USA

P 414-355-2600 (800-456-0600)
F 414-355-9248

www.RiteHite.com