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Sometimes manufacturers seeking to reduce energy consumption overlook the elephant in the room—the large, gaping hole that is the loading dock door. Yet some of the biggest energy savings potential offering the fastest payback are on the loading dock.

LOADING DOCK— big gaping hole, big energy savings potential

**Don't overlook these
8 opportunities for quick payoff**



For years plant dock doors have been designed like garage doors. A forklift collision impact can take out a door panel, creating a gap between it and the doorframe.

By Michael Brittingham

When manufacturing management decides to put its plant on an energy diet or to go green, its attention generally has been aimed at high-profile renewable-energy equipment such as solar panels and fuel cells, or “low-hanging fruit” devices such as lighting sensors and waterless toilets. Yet some of the biggest energy savings potential offering the fastest payback are on the loading dock.



In many busy facilities, the dock door is rarely shut because it has been badly damaged by a forklift.

The Material Handling Industry of America recently released the results of a study entitled “Sustainability in Warehousing, Distribution and Manufacturing,” which indicated that sustainability is a significant and growing trend in supply chains. According to the report, 48 percent of the respondents have sustainability initiatives under way; 88 percent said that sustainability will be of even greater importance within the next 18 months.

Many of those surveyed associated equipment such as automatic identification technologies, controls, lift trucks, and even totes as playing a major role in sustainability. Only 7 percent identified dock equipment as having a role in sustainability. Yet few areas in a plant or distribution facility offer as many opportunities for controlling energy loss as the loading dock, especially that huge gaping hole—the dock doorway.

Efficiencies and improvements at the loading dock can be made relatively quickly, offering prime opportunities to combat energy losses.

8 WAYS TO ROCK THE DOCK

Each 8- by 10-ft. dock doorway is an escape hatch for conditioned air and a means for outside weather to invade

the building. In many busy facilities, the dock door is rarely shut.

Often that occurs because forklifts have damaged the door, rendering it ineffective and difficult to close. Think of a 5-ton vehicle weaving through an obstacle course in a confined space under a tight schedule. That is what a forklift does, and that is why damage occurs frequently to loading dock equipment—especially to dock doors.

For years plant dock doors have been designed like garage doors. A forklift collision impact can take out a door panel, or the impact to the panel can misalign the door, creating a gap between it and the doorframe. These gaps can allow hundreds of energy dollars to escape each year.

In fact, the way standard dock doors have been designed makes them incapable of withstanding forklift collisions. The door’s roller guides ride along a sheet metal track that can crumple on impact, making the door tough to open, discouraging dock crews from closing the door between deliveries.

Perhaps the most important part of the door—the side weatherseal—is mounted to the doorframe, making it vulnerable to being torn off by a passing forklift.

Following are eight ways to maximize energy savings in the dock area.

1. Soften the Blow With an Impactable Dock Door. The easiest and least



Figure 1

If the dock door has been damaged in several places, it's best to replace the entire door with a fully impactable dock door that is specifically designed to be easily knocked off track and be reset.



Figure 2

A side weatherseal that is mounted to the door jamb makes it vulnerable to being torn off by a passing forklift. A compression-style seal is mounted to the door panel instead.

expensive solution to forklift damage is to replace the lowest door panel, the part of the door most often damaged, with a breakaway bottom panel. However, if damage occurs at all points of the dock door, the best approach is to replace the entire door with a fully impactable dock door (see **Figure 1**).

On this door style, the rollers and sheet metal tracks are replaced with retractable plungers and a V-groove track. When a door is hit, the panel offers no resistance and is knocked out of its track undamaged. A quick pull on the panel resets it in place and the door is back in operation quickly.

2. Use Compression Seals. Use doors with compression-style seals mounted to the door panel instead of the jamb, keeping the weatherseal out of harm's way (see **Figure 2**). That provides a consistent seal comparable to a refrigerator door—which is how many of these dock doors function in a cold storage facility. Choose impactable dock doors that have this style of seal.

3. Weatherseal Dock Levelers. Help dock floors dodge the draft. Standard, pit-mounted dock levelers provide safe trailer access for forklifts, but their design creates passageways for air infiltration and escape. The concrete pits have small gaps between the edge of the dock leveler and the pit wall, exposing the facility to interior and exterior airflow exchange.

Both new and existing pit-style dock levelers can be outfitted with an advanced weatherseal system comprising a combination of durable open-cell foam and heavy-duty vinyl (see **Figure 3**). This system effectively fills the gaps around the sides and rear of the dock leveler, providing a superior seal around the perimeter. For additional protection against energy loss, the underside of steel dock leveler platforms can be coated with spray foam insulation to minimize the platform's ability to conduct heat.

4. Hug the Truck With Good Seals. Almost every dock has seals or shelters to close the gap between the truck trailer and the dock. They are subjected to damaging force and compression when the semitruck backs up to the wall.

Dock seals and shelters are critically important in containing conditioned air in the dock areas. As with damaged dock doors, a poorly specified or ill-fitting seal or shelter also permits considerable infiltration.

Dock seals are equipped with fabric-covered foam pads that compress when the trailer backs into them, providing a tight seal around the sides of the trailer and closing the gaps between the trailer's door hinges (see **Figure 4**). Dock shelters consist of fabric attached to side and head frames, creating a canopy around the full perimeter of the trailer and allowing full, unimpeded access to the interior of the trailer.

5. Get a Grip With Restraints. Many docks use rubber wheel chocks to hold trailers in place during loading and unloading, but they are not as effective as wall- or ground-

mounted vehicle restraints at withstanding the forces exerted by forklifts as they drive in and out of trailers (see **Figure 5**). A trailer can “walk” away from the dock, forming a doorway gap. A vehicle restraint holds the trailer snugly to the dock, with the back end of the trailer fully enveloped by the dock seal.

6. Fan the Area. High-volume, low-speed (HVLS) fans improve worker comfort, contribute to energy savings, and reduce the size of the building’s carbon footprint in many different ways (see **Figure 6**):

- **Thermostat settings**—Most HVLS fans destratify the air, lowering temperatures in the summer and raising them in the winter near the floor level by about 8 degrees.

- **Reduced HVAC strain**—When fans are used to move the air, the HVAC system does not have to work overtime to maintain the desired temperature, saving energy and HVAC maintenance and ductwork.

- **Low electrical draw**—Fans move a massive amount of air using a small amount of electricity.

- **Solar option**—Fans can be solar-powered.

7. Use Energy-efficient Lighting. It is generally acknowledged that when it comes to energy savings, lighting is a “no-brainer.” Proper lighting is important for safety, both on the dock and inside the truck trailer to prevent injury and product damage. Changing out incandescent lights with LED bulbs can save energy significantly—by an estimated 69 percent (see **Figure 7**). For example, switching out 100 incandescent lights with LEDs can save nearly \$60,000 over the life of the bulbs.

Dock managers can choose to change out just the bulbs or install a light arm and head. Some fixtures are ruggedly designed specifically for the dock area.



Figure 3
Pit-style dock levelers can be outfitted with an advanced weatherseal system that combines durable open-cell foam and heavy-duty vinyl to fill the gaps around the sides and rear of the dock leveler.



Figure 4
Dock seals are attached to the side and head frames and create a canopy around the full perimeter of the trailer.



Figure 5
Wall- or ground-mounted vehicle restraints withstand the forces exerted by forklifts and keep a trailer from “walking away.”



Figure 6
High-volume, low-speed (HVLS) fans improve worker comfort while reducing energy consumption.



Figure 8
Good delivery scheduling software that minimizes idling time reduces wasted fuel and open-door time.



Figure 7
Changing out incandescent lights with LED bulbs in the trailer can save energy by an estimated 69 percent.

8. Schedule Deliveries Well. In a three-shift facility, trucks may be parked in the doorway most of the day for loading and unloading (see **Figure 8**). Even when a forklift operator is working as fast as possible to load or unload a trailer, the door is fully open and the dock is exposed to outside air for hours at a time.

Reduce idling time that wastes fuel with good scheduling software. Making sure a doorway is always available for scheduled truck deliveries minimizes idling time and fuel waste.

As concluded in the MHA survey results, the movement to go green is not a fad or a passing trend in the supply chain. It is growing, and it is here to stay. Changes at the loading dock can be among those that help manufacturing plants and distribution centers move closer to their sustainability goals. 🌱

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