



Industrial Doorway Accident Prompts Metal Fabricator's

AIR CURTAIN Installation for SAFETY

Safety comes first, but air curtain also saves energy, increases productivity and employees' indoor air comfort during Ohio winters.

Berner International Corp.

Air Curtain as a Doorway Safety Solution

Youngstown, Ohio--After several near-misses culminating with an injurious forklift truck collision involving strip curtains, a Northeast Ohio metal fabricator and manufacturer searched for creative solutions to improve safety, energy efficiency and productivity at a high traffic ground level material handling doorway.

The busy 20 (w) x 16 (h)-foot doorway's 16-inch-wide, clear overlapping PVC strips steadily lost visibility from scratches, oil film from metal fabricating processes and residual grease from forklift mast rail chains. The accident was due to one forklift driver not being able to see another through the strip curtains, which resulted in a worker's compensation claim.

Originally the doorway's insulated overhead door was prematurely becoming maintenance-intensive due to excessive forklift traffic from outdoor metal stock areas to indoor production areas. Adding the \$3,000 strip curtains was an inexpensive energy solution to a previously inefficient doorway during Ohio's four-month winter season. But while the strip curtains helped reduce energy losses from the door's 20 cycles per hour or left open status during high traffic periods, the metal product manufacturer felt it could no longer risk more potential accident liabilities at its 100,000-square-foot industrial complex.

Instead, J.W. Murdoch and Sons, Youngstown, Ohio, a three-generation, family-owned industrial door installation and service dealer, offered an air curtain as a doorway safety solution.

A high-speed door was nixed because it costs three times more than an air curtain, needs significantly more maintenance, can also be a forklift liability, and have no defense against escaping energy while open, according to David Murdoch, president, J.W. Murdoch and Sons.

Murdoch suggested two CFA model, 12-foot-long air curtains manufactured by Berner International, New Castle, Pa., to cover the 20-foot-wide doorway with two feet extra on each side. Forklift drivers now have full visibility through the doorway, with minimal energy losses, and Murdoch's client has reported no further accidents or close-calls.

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While the air curtain cost five times more than new strip curtains, the expected 20-year or more lifecycle of an air curtain is far superior to the short 1-1/2-year lifecycle of the metal fabricator's last set of strip curtains. "I think the air curtain also has a better 'seal' against strip curtains, which don't retain their contiguous overlapping very long," said Murdoch.

Typically, Murdoch uses Berner's proprietary energy audit software to estimate the energy savings, however the client ran its own audit that revealed a 1.6-year payback. Although the air curtain was chosen mainly for safety, the metal fabricator still calculated the heat losses, the number of door openings, the average wind speed by the doorway and a dozen other parameters required in a comprehensive energy audit. The client used Berner's free online energy audit software to calculate the energy savings and determine the annual cost of power per kilowatt hour needed to run each air curtain's 7.5-hp motor. The result was minimal when compared to the annual energy savings and had little impact on the expected payback.

When activated, the air curtains produce 26,126-cfm of air to generate a uniform seal that protects the doorway from outdoor temperatures, dust, flying insects and wind speeds up to 5 mph. An effective seal, sizing and accurate performance specifications are important considerations when choosing an air curtain, because some manufacturers' specifications aren't precise, which could cause underperformance, according to Murdoch. To guarantee specifications, he chose models certified by the Air Movement & Control Association-International (AMCA), Arlington Heights, Ill., which is a not-for-profit organization that tests and certifies manufacturer's stated performance of fans, blowers, air curtains and other air movement devices.

An angle iron framework encases both air curtains into a one-piece unit that is supported by C-channel steel support brackets bolted to the precast concrete wall above the door opening. "The customer opted to make the framework and the C-channel steel support brackets in-house because of their metal fabrication specialty, so it was an easy six-hour installation from our perspective," said Murdoch, who tested and adjusted the airflow to strategically meet the floor just a few inches outside the threshold, which is called the "break."

The client is happy with the air curtain solution, according to Murdoch. "They like the fact production people are warmer, they're losing less energy, forklift drivers have more visibility, it's a safer work environment and it was the least expensive option," Murdoch said.