

Air curtain prevents heated air from escaping plant during winter months

ARTHUR, Ill. — When Schrock Cabinet Co. moved shipping operations to its new assembly plant here, company executives quickly learned that it was impossible to control the inside temperature of the building when its 24 dock doors were open for shipping and receiving.

Schrock's plant is located in an area where temperatures reach high into the 90s during summer, and plummet to as low as -20°F in winter. With hot and cold air flowing through the open doors with the change of seasons, workers were alternately baking and freezing.

However, the final straw may have been the day that the shipping department's computers literally froze.

The task of maintaining a busy shipping schedule using all those 8-sq-ft dock doors, while maintaining comfortable working temperatures inside the plant, fell to Tim Shay, manager of manufacturing engineering, and Dean Spear, maintenance leader.

"We considered installing supplementary steam heat units around the plant, but rejected that approach because it would have done nothing to prevent drafts of air coming into the plant," says Shay.

"We also tested inflatable dock seals that encapsulate the open area between the delivery trucks and the open dock door.

"But that wasn't effective, because there was a huge amount of cold air inside the trucks that would migrate inside the plant during loading and unloading," he explains.

The ultimate solution was an air curtain system.

Barrier of moving air

Mars Sales Co. Inc., Gardena, Calif., manufactures the "Mars Air Door" air curtain. The air curtain provides a barrier of moving air across a door opening.

It reduces heat transfer by preventing heated air from escaping in winter, and also minimizes the penetration of hot air during summer. Air curtains also provide environmental separation by preventing the infiltration of pollutants, dust, dirt, and insects.



A MOVING BARRIER of air helped keep workers warm and ensured quality control in this warehouse operation.

"All 24 dock doors have an air curtain, and each has an individual control. This makes the system very flexible and versatile," says Spear.

"The main reason we installed the system was to make our workers more comfortable, but another important reason for controlling inside temperatures was one of quality control.

"We make all-wood kitchen cabinets and bathroom vanity cabinets, and with dramatic temperature changes we were having problems with excess moisture in wood during hot, humid weather. We were also getting some cracks caused by cold, dry air in winter."

Mars helped Schrock realize operational savings by making return on investment calculations available.

Schrock completed the installation in January 1995. Now that the company has made its Arthur plant suitable for assembly and shipping functions, Schrock plans to expand it by another 25,000 sq ft some time during the next two years.

The existing air curtain system will simply be extended to any new dock doors that are added as a result of the expansion, says Spear.

The Schrock installation is somewhat different from the typical Mars

Air Door application because of the number of air curtains required. However, the air curtains have been installed in openings as large as 30 ft wide, and as small as 25 in.

Heating integration

Another difference in the Schrock installation is the company's decision to integrate its heating system with the air curtains.

In cold weather months, the air curtains are heated to 105° to provide a supplementary heat source for the building.

The Schrock installation features double-row steam coils. It takes inlet air, heats it, then a blower distributes heat to the dock door opening and back into the plant.

During summer months, this recirculation of air eliminates hot air stratification.

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