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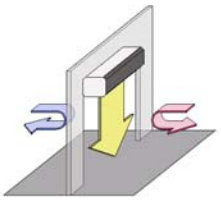
Powered AirE-News For Engineers

Steve Liescheidt,
P.E., CSI - CCS, CCPR

Tech Talk– Uses of Air Doors

Air Doors are used to solve a variety of engineering challenges in buildings including but not limited to:

- Infiltration Control
- Insect Control
- Thermal Zone Separations
- Dust Control
- Odor Control



"In its simplest application, an air curtain is a continuous broad stream of air circulated across a doorway of a conditioned space. It reduces penetration of insects and unconditioned air into a conditioned space by forcing an airstream over the entire entrance."
Reference: ASHRAE HANDBOOK - 2004 Systems and Equipment

Air Doors Can Be Used to:

- Save energy by minimizing cold air or hot humid air infiltration through open doors/windows.
- Prevent insect and other bugs from entering into food preparation or eating areas.
- Help ensure that customers and employees are comfortable and not bothered by drafts from the outside.
- Reduce dust migration from a dusty environment into a cleaner environment.
- Reduce odor migration from trash areas into occupied customer areas.
- Allow downsizing of the central HVAC Air Conditioning System by reducing infiltration loads.
- Allow the opportunity to eliminate vestibules and utilize that valuable square footage for other purposes.
- Provide more effective heating at service docks, entries and other openings.
- Solve other unique problems more effectively than other types of HVAC products or system control schemes.

Facility types that have potential uses for air doors include but are not limited to:

- Commercial Office Buildings
- Restaurants
- Retail Stores
- Hospitals
- Hotels
- Convenient Stores
- Grocery Stores
- Fast Food Chains
- Automotive Service Centers

Application Consideration

Although air doors/curtains are generally mounted in an exposed location above entry doors this is not required. There are times when the architectural objective may require that the air door be recessed similar to a concealed cabinet heater but with greater effectiveness.

The photo at right shows such an installation which utilizes a nozzle extension and a trim boarder (not a diffuser) at the discharge. The return grille functions as the maintenance access panel and provides a clean appearance. This air door installation outperforms other alternate system types that don't adequately prevent outside air infiltration or provide adequate recover heating capability.

Air Door Application Consideration