

How Ultimate Comfort from VIRTUAL WALL™ Hybrid Heating/Ventilating System Reduces Distribution Center Employee Turnover

Project

69,500 sq. ft. distribution facility in Montana (average winter design temperature of -19 °F)



Heightened Comfort

Increased productivity, less employer turnover.

Content employees work more efficiently and remain in their jobs.



Boosted Indoor Air Quality

Improved employee health, less absenteeism.

Clean, safe air keeps employees working and eliminates production downtime.



Approximately 20% Energy Savings

Greater occupant comfort, reduced energy use.

Ventilation and heating systems operate - when and where needed.



Other Savings

Equipment, labor, and installation savings by replacing unit heaters with infrared heaters.

Overview

With the massive surge in online shopping, retailers and transportation companies are competing daily on delivery time. **Today's consumers expect same day or next day delivery and whoever delivers first, wins - even if it costs more.** To meet these demands, companies have built enormous distribution facilities in major metro areas.

To deliver even faster, companies are now **bringing goods closer to consumers with small scale, localized distribution centers, often called 'last mile' facilities.** The HVAC requirements between these two types of distribution centers is vastly different.

No matter the building size, the VIRTUAL WALL™ hybrid HVAC system can be scaled to fit.

Original Design

All air system which included:

- For occupant heating and pressurization: one (1) constant speed, 25,500 CFM direct-fired, make-up air handler with 2.047 MBTU/h burner.
- For unoccupied areas: eleven (11) gas-fired unit heaters providing 1.375 MBTU/h heat output.

Disadvantages

- **Inefficient and ineffective** - conventional all-air HVAC equipment designs have marginal success in large distribution centers.
- **Heats the outside** - with overhead doors open constantly in busy, small facilities, warm air heating in loading dock areas does not work.
- **Ignores indoor air quality** - does not address air filtering or air cleaning.



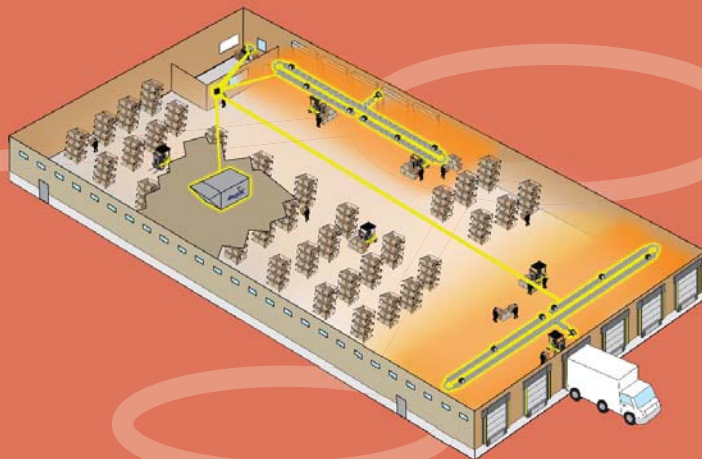
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A 69,500 sq. ft. 'last mile' distribution facility in Montana was faced with increasing employee turnover in the sorting and shipping departments.

Due to extremely high volume in these areas, overhead doors were open most of the day.

Employees were cold, uncomfortable, productivity and employee retention were down.

Other concerns: keeping workers comfortable and productive in offices and the shop without wasting energy heating unoccupied storage areas, all while meeting fresh air requirements.



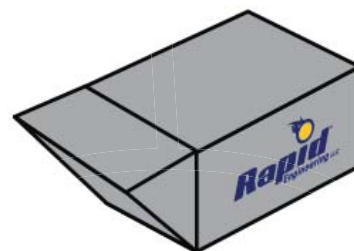
Increased comfort levels by combining best in class HVAC technologies:

ROBERTS GORDON® low-intensity infrared heaters for comfortable temperatures in occupied spaces

- Increased productivity and worker retention
- Quick thermal recovery after door openings

RAPID® direct-fired, make-up air handlers for base level heating in unoccupied areas.

- Incorporates filtration and ultraviolet irradiation of airborne pathogens.
- Provides environmental control through building pressurization.



Results that Speak Volumes

Greater comfort using less energy!

- **70% less equipment** - three (3) gas-fired, low-intensity infrared heaters providing 1.140 MBTU/h heat output replaced higher MBTU/h unit heaters for heating occupied areas.
- **138,000 BTU/h less than original design!** - One (1) 25,500 CFM make up air unit with 1.909 MBTU/h burner operating only when needed for pressurization and heating unoccupied areas; infrared heaters handle occupant heating.
- **More savings** - less roof penetrations, less labor.
- **Boosted indoor air quality** - air filtering and air sterilization incorporated in make-up air handlers.