

Case Study - Warehouse Radiant Barrier Installation

(July 2010)

The Need

Most warehouse areas are left unconditioned. Due to their sizes and the would-be cost of equipment and energy, it is typically impractical to aircondition these areas. This generally leaves hot and harsh working conditions for warehouse employees. Even with conventional attempts to provide relief, such as opening bay doors and running fans, the temperatures inside warehouses will often be higher than outdoor ambient temperatures.

Introduction

This case study focuses on a 3500 sq. ft. unconditioned warehouse located near Dallas, TX. Fans have been used in the past to provide some relief, however, they were mostly just circulating the hot air. Prior to installation, warehouse temperatures typically exceeded outdoor ambient temperatures by several degrees and as much as 20 degrees 15 feet above the floor level.

Installation and Measurements

Data loggers were installed in the center of the warehouse at heights of 4ft, 8ft, and 12ft. Temperature readings were collected for 4 days prior to insulating. Double bubble radiant barrier from Energy Efficient Solutions was installed at the bottom of the roof trusses approximately 2 feet below the ceiling. Bailing wire was attached to the bottom surface of the trusses to provide a support structure, and the radiant barrier was laid on top of the wire. The data loggers continued to record data for another week after the installation was complete. The installation took place in Dallas, TX during the month of July when outdoor temperatures commonly exceed 100 F.



Results

Data from the following two days was taken for comparison:

Before RB Installation: 7/18/2010, Outdoor High-Low: 100°F - 77°F

After RB Installation: 7/31/2010, Outdoor High-Low: 102°F - 81°F

Warehouse Temperature Results			
Height Above Floor	Daily High Before RB (F)	Daily High After RB (F)	Reduction (F)
4 ft	104.2	91.7	12.5
8 ft	109.3	94.0	15.3
12 ft	114.6	97.0	17.6

(See temperature graphs on page 2 for more details.)

Conclusions

Installing radiant barrier is an extremely effective method to reduce summer warehouse temperatures and increase the comfort of a warehouse space. In this particular warehouse, the temperatures were reduced by an average of 15 degrees and even brought the internal temperature down below the outdoor ambient temperature. The radiant barrier has created a more pleasant working environment for warehouse employees.

