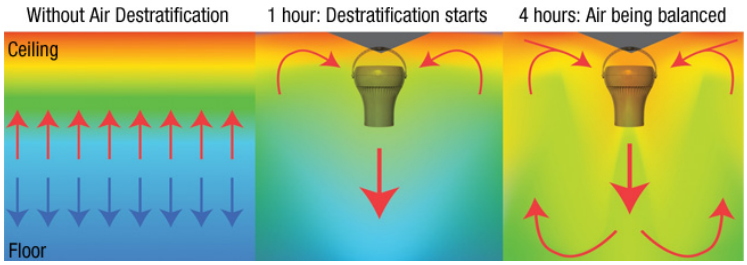
Thermal Destratification Defined - Causes - Solutions

What is Thermal Destratification?

Thermal Destratification is the process of mixing the interior air in a building to eliminate stratified layers and achieve temperature and humidity balance throughout the building. It is the reverse of the natural process of thermal stratification, which is the layering of differing (normally rising) air temperatures from floor to ceiling. In a stratified building, temperature differentials of up to 20°F can be found over a height of 25' on average. In extreme cases, temperature differentials of 20°F have been found at a height of 10'. In a destratified building, temperature differentials can be reduced to 5°F or less from floor to ceiling.

Contrary to popular belief, stratification can also form when dry, cooler air is trapped above warm, moist air – a condition that frequently occurs in buildings with ceiling-based sources of air-conditioning. Destratified air not only helps keep the work environment more comfortable but it reduced the energy consumption of the building's HVAC systems and reduces humidity and condensation build up.



The Thermal Destratification Solution

The only way for complete destratification to occur through the entire building is to use ceiling fans or turbines located up near the roof deck that are designed to draw in the air near the deck then drive the air completely to the floor surface. This assures complete circulation of both thermal layers and assists in reducing the potential condensation build up on the warehouse floor. Although the overall temperatures and thermal conditions in the space will become more balanced the fans are typically not designed for creating a wind or draft in the space like some larger fans, but rather a subtle and consistent circulation of air overall.

Examples of Destratification Fans

Ceiling Mount Fan

Suspended Box Fan

Suspended Turbine Fan

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