Induspec
engineering profitability

Commercial Freezer

J000144

Background

A food distribution customer required assistance with a large freezer which was recently upgraded to much lower temperatures than the original design.

Initial Condition

The freezer was not able to maintain target temperature because of massive ice build-up all over the evaporator. Staff was required to chip ice off the walls and ceiling for up to 4 hours every day and energy bills were through the roof.

Analysis

Induspec reviewed the operating parameters and performed a basic calculation. Next, thermographic imaging equipment and highly sensitive differential pressure measurement equipment was used to identify the issue. The immediate conclusion was that there had to be a significant influx of warm, moist air into the space and the infiltration was happening through the floor.

Identified Cause

A supply air fan was found to be pushing over 1,000 CFM of outside air into the floor space of the freezer. Since the floor was an enclosed space, separated from the freezer only through floor sheathing, the air easily infiltrated the freezer space.

Recommendations

The problem was easily corrected by immediately turning off the supply fan. In the longer term, the floor space had to be ventilated to avoid the build-up of moisture.

Implementation

Induspec subsequently ventilated the floor space so the fan could be turned on again without pressurizing the floor space and infiltrating the freezer.

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