Goal

Verify that return air CO_2 at the air handler is a valid indicator of occupancy in demand-controlled ventilation (DCV) applications.

Application - Mec Corporation

A new building automation system (BAS) for a large customer training center included the installation of CO_2 sensors in return air ducts at each air handler to control outside air damper positions. The design goal was to ensure that customers enjoyed a comfortable environment while receiving training, and to minimize air conditioning costs when the training rooms were not fully occupied, a concept known as demand-controlled ventilation (DCV).

An AIRXPERT monitoring system was later installed under a short term diagnostic project to verify the performance of the DCV system. In addition to monitoring CO_2 at the air handler, the project included monitoring several training rooms.

Benefit

The AIRXPERT data showed that the relatively low CO_2 concentrations observed at the BAS control screen falsely indicated that the DCV system was working as intended. This is because the return air stream contains CO_2 levels that are the average of all areas served by the air handler.Contrary to BAS indications of high ventilation rates, the project revealed that several training rooms were poorly ventilated, even though the building as a whole was very well ventilated.