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| v3 - LEED 2009

Indoor air quality best management practices - outdoor air delivery monitoring

EQc1.2 | Possible 1 point

Glossary

Intent

To provide capacity for ventilation system monitoring to help sustain occupant comfort and well-being.

Requirements

Install permanent, continuous monitoring systems that provide feedback on ventilation system performance to ensure that ventilation systems maintain minimum outdoor airflow rates under all operating conditions.

AND

Case 1. Mechanical ventilation systems

Provide an outdoor airflow measurement device capable of measuring (and, if necessary, controlling) the minimum outdoor airflow rate at all expected system operating conditions within 15% of the design minimum outdoor air rate. Monitoring must be performed for at least 80% of the building's total outdoor air intake flow serving occupied spaces.

The outdoor airflow measurement device(s) must take measurements at the system level (i.e., the air-handling unit). The device must be monitored by a control system that is configured to trend outdoor airflow in intervals no longer than 15 minutes for a period of no less than 6 months. The control system must be configured to generate an alarm visible to the system operator if the minimum outdoor air rate falls more than 15% below the design minimum rate.

All measurement devices must be calibrated within the manufacturer's recommended interval.

Case 2. Mechanical ventilation systems that predominantly serve densely occupied spaces[1]

Have a CO_2 sensor or sampling location for each densely occupied space and compare it with outdoor ambient CO_2 concentrations. Each sampling location must be between 3 and 6 feet above the floor.

Test and calibrate CO_2 sensors to have an accuracy of no less than 75 parts per million (ppm) or 5% of the reading, whichever is greater. Sensors must be tested and calibrated at least once every 5 years or per the manufacturer's recommendation, whichever is shorter.

Monitor CO_2 sensors with a system configured to trend CO_2 concentrations in intervals no longer than 30 minutes. The system must generate an alarm visible to the system operator and, if desired, to building occupants if the CO_2 concentration in any zone rises more than 15% above that corresponding to the minimum outdoor air rate required by IEQ Prerequisite 1.

CO_2 sensors may be used for demand-controlled ventilation provided the control strategy complies with ASHRAE Standard 62.1-2007 ventilation rate procedure (see IEQ Prerequisite 1: Minimum Indoor Air Quality Performance, including maintaining the area-based component of the design ventilation rate).

Case 3. Natural ventilation systems

Locate CO_2 sensors in the breathing zone of every densely populated room and every natural ventilation zone.

CO_2 sensors must provide an audible or visual alarm to the occupants in the space and to the system operator if CO_2 conditions are greater than 530 ppm above outdoor CO_2 levels or 1,000 ppm absolute. The alarm signal must indicate that ventilation adjustments (e.g. opening windows) are required in the affected space.

All monitoring devices must be calibrated within the manufacturer's recommended interval.

Permanently open areas must meet the requirements of ASHRAE 62.1-2007, Section 5.1 (with errata but without addenda[2]).

Exemptions: If the total square footage of all space served by natural ventilation systems is less than 5% of total occupied square footage, the project is exempt from the requirements of this section. Rooms smaller than 150 square feet are also exempt.

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