INTERPRETATION IC 62.1-2010-4 OF
ANSI/ASHRAE STANDARD 62.1-2010
VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY

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Reference: This request for interpretation refers to the requirements presented in ANSI/ASHRAE Standard 62.1-2010, Sections 6.2.6.1 and 8.3, regarding ventilation system operation.

Background: Recent amendments (2010) to the Oregon Energy Efficiency Specialty Code require demand controlled ventilation in certain spaces and allow an exception for spaces less than 750 ft^2 (69.7 m^2) where an occupancy sensor turns the fan off, closes the ventilation damper, or closes the zone damper when the space is unoccupied.

There has been some question whether this Oregon code provision complies with ASHRAE 62.1 based on the idea that the area ventilation rate should be maintained even when the space is not occupied, during periods of expected occupancy. Some designers have expressed the opinion that single zone systems may be turned off under occupancy sensor control, but that a single zone within a multiple-zone recirculating system is required to receive the area ventilation when the system serving that zone is operating, even if the zone is unoccupied.

There has also been some debate in the design community, and conflicting opinions about providing the area portion (Ra • Az) of the Vbz determined with Equation 6-1 in the ventilation rate procedure at all times a zone is "expected to be occupied" rather than when actually occupied.

Fan and ventilation energy is a significant portion of unitary HVAC energy and reducing unnecessary fan operation and unneeded heating and cooling of ventilation air can save significant energy. This is especially true of a VAV reheat system serving a high occupancy zone like a conference room that will likely require reheat to maintain a neutral temperature when the space is vacant due to the high volume of primary (cold) air needed to meet ventilation requirements.

Related information:

- Section 8.3 states: "Systems shall be operated such that spaces are ventilated in accordance with Section 6 when they are **expected to be occupied**." [emphasis added] The reference to Section 6 indicates that the Section 8.3 requirement for operation is subject to Section 6 requirements for ventilation.
- Section 6.2.6.1 requires ventilation "whenever the zones served by the system **are occupied**," [emphasis added]

- Example A-A on page 164 of the 62.1-2010 User's Manual states that occupancy sensors may be used to turn off ventilation when a space is unoccupied, with the specific example of allowing VAV box "minimum airflow setpoints to be set to zero whenever the occupancy sensor indicates the zone is unoccupied."
- Page 164 of the 62.1-2010 User's Manual states "Occupancy sensors: These sensors, commonly used for lighting control, can also be used to assure design ventilation is supplied when people are present and shut off ventilation or reduce minimum airflow setpoints (on VAV systems) when spaces are unoccupied." Some designers have interpreted this language to indicate that the minimum airflow setpoint is reduced to some level above zero (usually the area ventilation rate), despite example A-A.
- On page 30 of the 62.1-2010 User's Manual an occupancy sensor is one suggested on/off control that can be used to operate the fan system whenever the spaces served **are occupied**. [emphasis added]. Under Addendum e, control requirements are tied to requirements for ventilation in section 6.
- Interpretation 62.1-2007-18 requires exhaust fan operation in certain spaces when **buildings are expected to be occupied**. [emphasis added]; so in cases where exhaust is required and there is not available transfer or other makeup air, exhaust makeup requirements may need to be met by zone ventilation air.

Standard 90.1-2010, Section 6.4.3.3.4 requires zone isolation including "isolation devices capable of automatically shutting off the supply of conditioned air and **outdoor air** to and exhaust air from the area." [emphasis added] This would require zones or groups of zones to have minimum air reduced to zero.

Interpretation No.1: A method of operation that uses a schedule to enable (allow full system operation at occupied setpoints subject to local controls) a single zone ventilation system when the served zones are expected to be occupied and then uses local occupancy sensor(s) to activate (turn on the fan and open ventilation dampers) the enabled system when the served zone is actually occupied is compliant with standard 62.1.

Question No.1: Is this interpretation correct?

Answer No.1: No. This system as described does not comply with Section 6.2.7.1 which states that Vbz shall be no less than the building component in the DCV zone.

Interpretation No.2: A method of operation that uses a schedule to activate (turn on the fan and ventilation components) a multiple-zone recirculating system when the served zones are expected to be occupied and then uses local occupancy sensor(s) to activate the local zone ventilation minimum setpoint (as determined with the multiple space method) when the zone is actually occupied is compliant with Standard 62.1.

Question No.2: Is this interpretation correct?

Answer No.2: No. This system as described does not comply with Section 6.2.7.1 which states that Vbz shall be no less than the building component in the DCV zone.

Interpretation No.3: When local occupancy sensor(s) indicate a zone served by a multiple-zone recirculating system is unoccupied, that zone box may have the minimum airflow setpoint set to

zero and any zone fan required for ventilation turned off. There is no requirement under the ventilation rate procedure or the multi-space method to provide the area portion ($R_a \cdot A_z$) of the V_{bz} determined with Equation 6-1 to the zone when the zone is unoccupied.

Question No.3: Is this interpretation correct?

Answer No.3: No. Section 6.2.7.1.2 requires that Vbz shall be no less than the building component in the DCV zone.

Interpretation No.4: If interpretation 1 is correct, this interpretation holds true for ANSI/ASHRAE Standard 62.1-2010 and ANSI/ASHRAE Standard 62.1-2007.

Question No.4: Is this interpretation correct?

Answer No.4: The answer to Interpretation #1 is true for ANSI/ASHRAE Standard 62.1-2007.

Interpretation No.5: If interpretation 2 is correct, this interpretation holds true for ANSI/ASHRAE Standard 62.1-2010 and ANSI/ASHRAE Standard 62.1-2007.

Question No.5: Is this interpretation correct?

Answer No.5: The answer to Interpretation #2 is true for ANSI/ASHRAE Standard 62.1-2007.

Interpretation No.6: If interpretation 3 is correct, this interpretation holds true for ANSI/ASHRAE Standard 62.1-2010 and ANSI/ASHRAE Standard 62.1-2007.

Question No.6: Is this interpretation correct?

Answer No.6: The answer to Interpretation #3 is true for ANSI/ASHRAE Standard 62.1-2007.