

**INTERPRETATION IC 62-1989-27 OF
ASHRAE STANDARD 62-1989
VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY**

January 26, 1997

Request from: Mike Schell, Englehard Sensor Technology, 6489 Calle Real, Goleta, CA 93117.

References. This request refers to ANSI/ASHRAE 62-1989 subclauses 6.1.3 Ventilation Requirements, 6.1.3.4 Intermittent or Variable Occupancies, and Figure 4 Maximum Permissible Ventilation Lag Time.

Mr. Schell's letter provides the following background in two parts:

Englehard Background No.1. In Interpretation IC 62-1989-23 of ANSI/ASHRAE Standard 62-1989, the comment in support of Answer 5h states that the use of demand control with the Ventilation Rate Procedure where the variable provision of 6.1.3.4 is applied is improper. "Comment. If the total outdoor air supply based on the occupied space is reduced during periods of less occupancy by demand control, it is improper to also apply the variable provision of 6.1.3.4."

Answer 5h supports the use of demand control with the Ventilation Rate Procedure as long as demand control is properly applied, the variable provision of 6.1.3.4 is not applied, and other requirements are met. This request seeks to clarify the requirements for proper use and implementation of demand control with the Ventilation Rate Procedure.

Englehard Interpretation No. 1. It is consistent with the Ventilation Rate Procedure that demand control be permitted for use to reduce the total outdoor air supply during periods of less occupancy, providing the following conditions are met:

- a) The variable provision of 6.1.3.4 is not applied to lower the estimated maximum occupancy for the purpose of reducing the design ventilation rate.
- b) CO₂ is not being removed by methods other than dilution ventilation, such as gas phase sorption filtration (interpretation IC 62-1989-7).
- c) The designer has not routinely presumed that lag ventilation will result in acceptable indoor air quality, but has considered the potential for "appreciable buildup of contaminants during the unoccupied hours," for instance "from materials of machines in building, microbially contaminated areas, or activities of maintenance personnel" (Interpretation IC 62-1989-7).
- d) Where required, the multiple spaces requirements of 6.1.3.1 are used to determine the system outdoor air quantity using the corrected fraction of outdoor air.
- e) Sensor location and setpoints are selected on the basis of achieving the rates in Table 2.
- f) Method of demand control of outdoor air intake is properly implemented (See Englehard Interpretations No. 2 and 3 below).

Question 1. Is Englehard Interpretation No. 1 correct?

Answer. Yes.

Comment. However, good practice and the rationale on which the ventilation rates in Table 2 are based, indicates the need for a non-zero base ventilation rate to handle non-occupant sources whenever the space is occupied.

Englehard Background No. 2. The considerations presented in the first sentences of Section 6.1.3.4, Intermittent or Variable Occupancy, must always be taken into account when considering the use of demand control based on CO₂ levels. Designs must take into account the need to ensure increased outdoor air intake

within the maximum permissible ventilation lag time as shown in Figure 4 of ANSI/ASHRAE Standard 62-1989.

Englehard Interpretation No. 2. It is consistent with the Ventilation Rate Procedure that demand control be permitted for use to reduce the total outdoor air supply during periods of less occupancy if it is properly implemented using a make or break CO₂ controller to call for the design ventilation rate in accordance with the requirements of the Ventilation Rate Procedure and Table 2.

Question 2. Is Englehard Interpretation No. 2 correct?

Answer. Yes.

Englehard Interpretation No. 3. It is consistent with the Ventilation Rate Procedure that demand control be permitted for use to reduce the total outdoor air supply during periods of less occupancy, if it is properly implemented using a Proportional, Proportional-Integral, or Proportional-Integral-Derivative controller to control outdoor air intake, using the difference between indoor and outdoor CO₂ levels to meet the requirements of the Ventilation Rate Procedure and Table 2.

Question 3. Is Englehard Interpretation No. 3 correct?

Answer. Yes.