

**Interpretation IC 170-2017-3 of
ANSI/ASHRAE/ASHE Standard 170-2017
Ventilation of Health Care Facilities**

Date Approved: 6/25/2019

Request from: Junaid Bin Naseer, International Tower, Abu Dhabi.

Reference: This request for interpretation refers to the requirements in ANSI/ASHRAE/ASHE Standard 170-2017, Sections 7, 8 and 9 and Tables 7.1, 8.1 and 9.1 regarding Outdoor ACH during Heating Mode.

Background: We have a hospital project which is following above mentioned standard for ventilation. The hospital requires heating and cooling at separate times as it is located in climate zone 3B. The project contains 32 floors, of which first 10 floors are D&T, and the rest of the floors are patient ward.

The system proposed for patient ward is a VAV system which includes dedicated outdoor air handling unit and air handling unit. The dedicated outdoor air handling unit provides treated air to air handling unit (recirculating type) which mixes fresh air and return air from space and supplies mixed air to patient space.

The supply air is provided to patient room using overhead supply air diffusers type A1 and return is collected using return air diffusers located in ceiling as well. The supply air temperature during heating mode is 32°C which is 8°C above room set point and 13°C during cooling mode which is 8°C room set point.

The system falls under item 6 of Section 7.1 General Requirements. The section requires calculating minimum outdoor air using Standard 170 and the Ventilation Rate Procedure set by Standard 62.1.

Interpretation No.1: The outdoor air rate calculated through Standard 170 is interpreted as equal to zone outdoor airflow (V_{OZ}). Considering the above, the zone air distribution effectiveness of diffusers will be considered as 1 during heating mode because the Standard 170 addresses efficiency of air distribution as long as outdoor air change rate is satisfied.

Question No.1: Is this interpretation correct?

Answer No.1: Yes

Comments: As this Standard provides specific guidance on the type of supply air outlets that shall be utilized in the varied healthcare environments, as indicated in Table 6-2, the committee has determined that the minimum outdoor air change rates indicated in Table 7-1 represent the Zone Outdoor Airflow, (thus defining the Zone Air Distribution Effectiveness for these spaces at 1.0 and factored into the determination of these total and outdoor air change rates) as may be needed for use in calculations, including the Ventilation Rate Procedure of ASHRAE Standard 62.1.

Interpretation No.2: Multiple zone recirculating calculations should be calculated from Section 6.2.5.1 onwards of Standard 62.1 as outdoor air calculated using Standard 170 is considered as zone outdoor air flow (V_{OZ}) and not breathing zone outdoor air flow (V_{bz}).

Question No.2: Is this interpretation correct?

Answer No.2: Yes

Comments: Per ASHRAE/ASHE Standard 170 Section 7.1.a.6, this Standard provides two alternative methods for determining system outdoor air quantity for air-handling units serving multiple spaces. If the user elects to use the method identified in Section 7.1.a.6.ii, the user shall utilize the minimum outdoor air change rates indicated in Table 7.1 as the ASHRAE Standard 62.1 value for Zone Outdoor Airflow (V_{OZ}), as well as follow the calculation procedures outlined in ASHRAE Standard 62.1 to calculate system outdoor air quantity for air-handling units serving multiple spaces.

Interpretation No.3: VRP calculations are not required for air handling unit serving multiple zones if each space in that zone satisfies air change requirement of the standard.

Question No.3: Is this interpretation correct?

Answer No.3: No, insufficient detail is provided in your interpretation request to furnish a response (ie. air changes are not defined as outside air changes or total air changes).

Comments: Per ASHRAE/ASHE Standard 170 Section 7.1.a.6, this Standard provides two alternative methods for determining system outdoor air quantity for air-handling units serving multiple spaces:

1. If the user elects to use the method identified in Section 7.1.a.6.i, the user shall utilize the individual space minimum outdoor air change rates indicated in Table 7.1, the sum of which values equate to the system minimum outdoor air quantity.
2. If the user elects to use the method identified in Section 7.1.a.6.ii, the user shall utilize the individual space minimum outdoor air change rates indicated in Table 7.1 as equal to the ASHRAE Standard 62.1 value for Zone Outdoor Airflow (V_{OZ}), as well as follow the Ventilation Rate Procedure outlined in ASHRAE Standard 62.1 – Section 6.2.5 Multiple-Zone Recirculating Systems to calculate system outdoor air quantity for air-handling units serving multiple spaces.

If you intend to apply and adhere to method 1 above, the VRP procedure detailed in method 2 would not be required.