

**INTERPRETATION IC 90.1-2007-26 OF  
ANSI/ASHRAE/IESNA STANDARD 90.1-2007  
Energy Standard for Buildings Except Low-Rise Residential Buildings**

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**Reference:** This request for interpretation refers to the requirements presented in ANSI/ASHRAE/IESNA Standard 90.1-2007, Section G3.1.2.4, regarding fan system operation.

**Background:** When modeling under the Performance Rating Method in Appendix G the standard requires that the supply and return fans shall operate continuously whenever the spaces are occupied. If the supply fan is modeled as cycling and fan energy is included in the energy-efficiency rating of the equipment fan energy shall not be modeled explicitly. The standard does not define when the supply fan can be modeled as cycling.

This section also states that supply, return, and/or exhaust fans will remain on during occupied and unoccupied hours in spaces that have health and safety mandated minimum ventilation requirements during unoccupied hours.

**Interpretation No.1:** The supply and return fans shall run continuously during occupied hours in order to provide the minimum ventilation requirement per ASHRAE Standards 62.1-2007 Section 5.1. The fans are required to draw in and distribute the ventilation air. The HVAC system associated with the fans will condition the outside air so that the discharge air temperature of the HVAC system is within acceptable limits.

**Question No.1:** Is this interpretation correct?

**Answer No.1:** No.

**Comments:**

Section 10 of Table G3.1 states that the proposed building model shall be consistent with the design documents, so the proposed building model shall only include an exhaust or return fan if the fan is specified on the design documents.

Per Section 4 of Table G3.1, HVAC fans that provide outdoor air for ventilation shall run continuously whenever spaces are occupied, so if the building is occupied the fans associated with providing ventilation shall run continuously.

Section G3.1.2.6 specifies that the outdoor air intake flow shall be identical in the baseline and proposed designs, but does not specify the means for determining the minimum ventilation rate, so designing to the requirements of ASHRAE Standards 62.1-2007 Section 5.1 is not specified in Appendix G. The discharge air temperature would be determined by the simulation program based on the input system type, controls, schedules, etc.

**Interpretation No.2:** If the minimum ventilation requirement is met by either natural ventilation per Standards 62.1-2007 Section 5.1 or supplied by a dedicated outdoor air system (DOAS) with ductwork that is separate from the space HVAC system ductwork, then the supply and return fans for the HVAC system may cycle to maintain space temperature set-point and set-back set-points.

An example of the first condition in Interpretation No. 2 is a PTAC Heat Pump in a high rise residential building with operable windows meeting the requirements of Standard 62.1-2007 Section 5.1.1.

An example of the second condition in Interpretation No. 2 is an office building served by a VRV heat pump system. Ventilation air is supplied by a DOAS that conditions the outside air and supplies it to the spaces with ductwork that is separate from the VRV system.

**Question No.2:** Is this interpretation correct?

**Answer No.2:** No.

**Comments:**

Section G3.1.2.6 specifies that the outdoor air intake flow shall be identical in the baseline and proposed designs, but does not specify the means for determining the minimum ventilation rate or how the proposed design's ventilation should be supplied.

If the supply fan(s) for the proposed building model's HVAC system do not supply ventilation, then the requirements of Section 4 of Table G3.1 would not apply to the non-ventilation related HVAC supply fan(s). The operation of the non-ventilation related HVAC supply fan(s) would be determined by the simulation program based on the input system type, controls, schedules, etc.

Per the exception to Section 4 of Table G3.1, schedules may be allowed to differ between proposed design and baseline building design when necessary to model nonstandard efficiency measures, provided that the revised schedules have the approval of the rating authority.

It should be noted that ASHRAE 90.1-2010 specifically precludes schedule changes based on manual controls.