

**INTERPRETATION IC 90.1-2007-30 OF
ANSI/ASHRAE/IESNA STANDARD 90.1-2007
Energy Standard for Buildings Except Low-Rise Residential Buildings**

Date Approved: March 11, 2016

Request from: Junaid Bin Naseer, KEO Office, Mezzanine Floor, Jazeera Tower, P.O. Box 27594, Abu Dhabi.

Reference: This request for interpretation refers to the requirements presented in ANSI/ASHRAE/IESNA Standard 90.1-2007, Section G3.1.3.12, regarding supply air temperature reset (Systems 5 through 8).

Background: This interpretation is requested for a school project and because the AHJ have a different interpretation than us. The details of the school project are presented below:

1. Climate Zone 1b
2. Area 18,490 m²
3. No Space Heating
4. Proposed Design VAV-Reheat-DOAS system
5. Proposed Design has a Reheat in case temperature falls below design condition.

The baseline system selected is System 8-VAV with PFP Boxes from Table G3.1.1A. Section G3.1.3.12 states the following: “The air temperature for cooling shall be reset higher by 2.3°C under the minimum cooling load conditions.”

The room air temperature designed is 23°C, therefore an off-coil temperature of 12°C is taken at the cooling coil for baseline system as per Section G3.1.2.8 Design Airflow Rates. In our case the baseline system has a higher airflow rate than the ventilation requirement. When the room temperature falls below 21°C and the VAV airflow rate is at the minimum, the off-coil temperature increases to 14.3°C as per Section G3.1.3.12.

During winter months (mainly December, January & February), the reheat energy increases as the chiller is NOT de-energized and the temperature off the coil is always 14.3°C and the reheat which is an electric heater consumes a significant amount of energy.

The AHJ believes that temperature off-coil at cooling coil can be reset to any higher temperature to reduce reheat energy.

Interpretation No.1: The baseline system in our case shall have a maximum reset temperature of 2.3°C which will result in 14.3°C off-coil temperature and not any higher to reduce reheat energy if it satisfies the conditions of the exceptions in Section 6.5.2.1.

Question No.1: Is this interpretation correct?

Answer No.1: YES

Interpretation No.2: The electric heater working in months of winter shall be considered as a space heater and not as re-heater. The heating energy consumed in months of winter due to cooling the air at 14.3°C and then heating the air to a higher temperature is acceptable for baseline system.

Question No.2: Is this interpretation correct?

Answer No.2: NO

Comments No.2: Concerning your first sentence, reheating is defined in the standard as “raising the temperature of air that has been previously cooled either by mechanical refrigeration or an economizer system” and not the season of the year. We agree with your second sentence.