Ask Gail

by William D. Frye, Ph.D., CHE

Cooling standards for PTAC units are explained

Dear Gail:

In Georgia, the summers are exceptionally warm. Our guestrooms are each equipped with a heating and air-conditioning unit that sits under the window. I often have guests complaining that the air-conditioning unit in their guestroom does not cool satisfactorily. Since I am not sure what appropriate standards are for cooling guestrooms, I need help in order to respond to guest complaints.

Vincent C.
LaGrange, GA

Dear Vincent,

As soon as I received your phone call, I contacted TRC's energy expert Phil Sprague. He shared the following information with me. Most limited-service and select-service properties such as yours use packaged terminal air conditioners (PTACs) for their heating and cooling needs in guestrooms. A PTAC is essentially a single-unit combination air-conditioner and heat pump that is designed to provide the heating, ventilating and air conditioning needs for individual guestrooms. The advantages of PTACs are that they are easy to maintain, cost effective, allow individual guests to control their own level of heating and cooling comfort, and that the operation or malfunction of one unit does not affect the operation of other units, as in a central HVAC system. Energy can be conserved because only guestrooms which are occupied will turn on their units. Also, PTACs do not require ventilation ducts to be dispersed through the ceiling from a main furnace or central air-conditioning unit throughout the entire hotel to each individual guestroom. Finally, PTACs can easily be removed from walls and windows and replaced when they malfunction. A single 9000-BTU PTAC unit, designed for a standard-sized guestroom, typically costs between $400-$1000, depending on its features and the number of units purchased.

When set at the maximum cooling setting, an individual 9000-BTU PTAC unit in a standard-sized guestroom should cool the room to approximately 62°F. The temperature being emitted from a newer unit usually ranges from 58°F-60°F while older units that have more years of service will likely cool at 60°F-63°F. Factors such as the age of the PTAC unit, the cleanliness of the grill and the coil fins as well as how properly the unit is seated and sealed into the wall or window will affect its cooling ability.

The easiest method for determining the cooling performance of an individual PTAC unit is to place a thermometer gauge on the wall directly across and farthest from the unit. Normally, a 9000-BTU unit is designed to cool a standard-sized guestroom to a room temperature of 72°F in 15 minutes. Obviously, depending on the initial guestroom temperature and weather conditions, it will take longer to reach the target range of 58-63°F for optimum guest comfort. Don't forget to make sure the guestroom door and any windows are closed when performing this test. Assuming the unit is seated and sealed properly, it will likely be necessary to service or replace those PTAC units that cannot meet this threshold of cooling. The first "hot" day of the season is an ideal time to test each PTAC unit in your hotel for its ability to cool according to standard. If you don't do this, undoubtedly you will receive many subsequent complaints from guests throughout the summer season. ✧

Pictured below: Most modern PTAC units for guestrooms, such as the ones show below, are 42" in length and 16" in height and displace 9000 BTUs of heat. These units typically account for 70-80% of the total energy consumed in the hotels that use them.

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