

TAC - Brief

Technology Applications Center News Update

Significant energy savings can be realized with the proper application of electric comfort heaters . . .

Radiant heaters have been providing employee comfort in the colder parts of the USA since the 1930's. Over the past several decades, the Southern States has seen a steady growth in their application as well, even as far south as the Gulf Coast.

Both gas and electric radiant heaters are designed to provide "spot heating" as well as "total area heat" within a building envelope. However, electric radiant can have a distinct advantage over gas in "spot heating" applications. Particularly when the building envelope has a high ceiling, large open areas, or requiring a high volume of air turns.

Radiant heat utilizes electromagnetic energy from the heater to transfer its energy and is not heat until it is absorbed by an object or person.

Convection energy utilizes heated air as the transfer medium between the heat source and the object to be heated. You end up with a lot of hot air that can be exhausted due to required air change outs or simply rises to the top of the building and stays there.

How well a radiant heater performs is generally based on the radiant efficiency of the heater. And, radiant efficiency is based on the operating temperature of the heater. The higher the emitter temperature of the heater, the higher percentage the radiant component is. Understanding this radiant component is the key to achieving an energy efficient application.

Radiant output should not be confused with Btu output. The Btu rating of a heater tells you the energy size of the heater. In conjunction with the Btu size, the radiant efficiency is used together to correctly size the spot heat application.



A radiant heating system will feel warm even though the surrounding air temperature is significantly lower.

Electric radiant heaters are available in radiant percent efficiency up to 95%. Gas radiant heaters are only available in efficiencies up to 50%.

Saving energy:

Every radiant heater manufacture offers an application guide for proper sizing based on the heater's performance characteristics.

If, for example, a 60,000 Btu heater with an emitter temperature of 1,500°F, (approx. 50% radiant; 50% convection) is recommended, one could look at using a higher radiant efficiency heater having less Btu output for the same application. A 30,000 Btu electric radiant heater having an emitter temperature of 4,000°F will have a radiant efficiency of 95% with the remainder of the energy given off as convection.

The end result is nearly the same amount of radiant heat available to the workstation using a lower Btu rated heater. Correct applications = energy savings to your bottom line.