

What technology has Schaefer developed?

Schaefer Ventilation has developed a revolutionary series of high intensity infrared heaters called HotZONE™ heaters that produce and focus infrared heat using an IRLens™. Radiant Optics' HotZONE™ heaters are the only heaters that truly focus infrared heat and can perform spot heating.

What are the components of a HotZone™ heater?

There are two major components. The first is a high efficiency infrared generator that converts most of its input energy into infrared radiation. The second is the IRLens™ which focuses the infrared radiation into a beam or a spot.

Why does a heater with an IRLens™ work better than a heater without a lens?

The IRLens™ concentrates and directs a greater portion of the infrared energy to the spot that needs to be heated. The difference between an infrared heater with and without a lens is similar to the difference between a light bulb and a spot light. A traditional infrared heater is like a lightbulb. The heat generated by the heater goes in all directions. With an IRLens™, the heat is focused in a specific direction resulting in sharp edges between heated and unheated areas and a much greater percentage of the heat being delivered to the intended target. It should be noted that not all applications need spot heat, but all spot heat applications benefit from the application of an IRLens™.

Others claim to have reflectors that direct heat - why is the IRLens™ different?

Conventional reflectors are too small relative to the size of the infrared source to do a good job focusing the infrared energy. The IRLens™ cleverly collapses a large reflector down into a low profile grid that does a much better job focusing the infrared.

How do the heat patterns differ between infrared heaters with and without a lens?

HotZone™ heaters fitted with IRLenses™ increase the amount of infrared energy in the central beam by 3 to 5X that of a conventional heater by "stealing" the energy from the shoulders of the radiation pattern. There is a sharp cutoff between the hot beam and the cold shoulders.

What are the advantages of a sharp cutoff between heated and unheated areas?

The greatest advantage of a sharp cutoff between heated and unheated areas is efficiency. With a focused beam a high percentage of the radiant energy is delivered to the target.

Several applications benefit from a sharp cutoff of delivered energy. Workers along the conveyor of a frozen food plant and spectators in the seating area around an ice skating rink are two examples where it is beneficial for the people to be heated, without heating surrounding areas. In paint and composite curing areas there is great benefit to having the employees much cooler than the heated object.

Are there specific applications where a heater with an IRLens provides the greatest benefit?

HotZone™ heaters are ideally suited for spot heating, as opposed to space heating. When a small area needs extra heat for human comfort or other reasons, it is most effective to heat the person or object in that spot with infrared energy rather than attempting to raise the ambient temperature of the spot or the whole space.

What is Spot Heat?

Spot heat is the notion of heating a small area, or a spot, rather than the whole space. Ideal applications for spot heat include small work areas in large buildings and large areas with only temporary heating needs.

Are HotZone™ heaters efficient?

There are three components of heater efficiency. First is the efficiency of converting input energy to any kind of heat. Electric heaters are 100% efficient and gas heaters, due to stack losses and other issues are around 90% efficient. Next is the efficiency of producing radiant, or infrared energy. The higher the temperature (intensity) of the heater, the higher the efficiency. Schaefer's HotZone™ heaters are amongst the highest intensity heaters on the market today and have a high radiant conversion efficiency. The final component of efficiency is the percentage of the radiant energy that is delivered to the target. HotZone™ heaters with IR-Lenses™ have the highest delivery efficiency. Overall HotZone™ heaters are very efficient.

Are HotZONE™ heaters cost-effective?

HotZone™ heaters are simple and inexpensive to buy and require very little maintenance. Properly deployed, in spot heating applications, HotZone™ heaters can reduce energy use by between 30% and 50%, often providing payback on investment in a year or less.

Are HotZone™ heaters effective in high air exchange environments?

In many buildings, heat loss due to air exchange far exceeds heat loss through walls and ceilings. As HotZone™ heaters heat people, not air, the heat losses due to air exchange are greatly reduced, adding to the payback.

How does one design a heating solution in a "room without walls"?

Radiant heating solution design is fundamentally different from conventional heating solution design, where heat loss calculations come first. In a "room without walls" heat loss is infinite and the only heating effect is from the the radiant energy. Schaefer provides Design Guides that provide the temperature increase pattern for each of our heaters mounted at a range of heights. Use these Design Guides to design your radiant heating solution. As a rough rule of thumb, humans feel 1° warmer for every 2 watts/ft² of radiant energy.

What is the economic justification for HotZone™ heaters?

In new construction, HotZone™ heaters are inexpensive to implement and in many spot heating applications, reduce energy consumption by between 30% and 50% and improve employee morale considerably. The payback on the incremental expense of the HotZone™ heaters is often weeks or months.

In retrofit applications, where the whole cost of the HotZone™ heater implementation is incremental, the energy savings and employee morale benefits often provide a payback of less than a year.

Are HotZone™ heaters safe to use indoors and outdoors?

All HotZone™ heaters have been tested and certified for use by ETL Semko for indoor and outdoor use and carry the ETL Listed mark. When installing and using HotZone™ heaters read and follow the installation instructions carefully and install in accordance with all applicable building codes. Of particular importance are the following instructions. (1) Leave sufficient clearance between the heaters and walls, ceilings and flammable materials. (2) Provide sufficient make-up air for the gas heaters and vent the gas heaters if demanded by local codes. (3) Do not use the heaters for applications or in locations for which they were not intended.