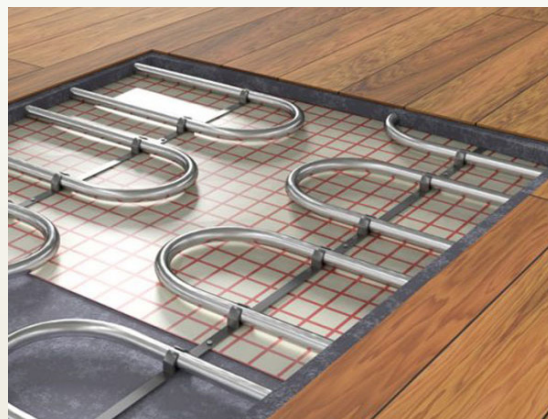


Radiant heating



Radiant heaters focus emitted energy into a directional beam, similar to how a torch focuses light, which can be used as an effective way of heating people or objects. Unlike convection heaters which heat the air and transfer the heat throughout that space to warm up people and physical objects, radiant heaters heat surface temperatures rather than the air. Radiant heaters can be fuelled by electric, gas or oil, delivering heat through a range of direct heaters and radiating plaques or panels.



Suitable for:

- Spaces with large air volumes and large amounts of unavoidable infiltration of outside air/ air changes; such as workshops with large roller doors, or frequently opened personnel doors.
- Factories/ packing and processing where employees may be based at a workstation for a long time, so other areas of the factory do not need to be heated
- Village halls, public buildings, churches – where heating is only put on as-and-when people come into the building to use it.
- Buildings with high ceilings and low level of insulation – where heated air will be lost quickly through heat loss/air changes

To consider:

- Potential insurance issues. Need to consider maximum surface temperatures (e.g. cardboard boxes in a warehouse) and other issues of flammability such as sawdust.
- Can become expensive (particularly electric) if used for long periods.
- Consider the capacity of electrical supply, or the availability of gas supply and gas plumbing issues.
- The range of the heaters available and where they might be positioned
- Thermal discomfort (it can feel as though you are getting grilled!).

Advantages

- Can save energy in the right applications (manufacturers claim 40% of energy costs compared to convection heating)
- Quick warm up times and responsive controls. Gets up to heat quickly but takes longer to warm surfaces.
- Efficient in large spaces. With radiant heating you only heat particular zones as required, rather than heating the whole space.
- Delivery of heat is directional. Heat is delivered to where it is needed.



Types of radiant heating

Electric

- Wide range of options - wall or ceiling mounted, mobile units, infrared tubes and panels, plaques.
- Generally, the most straightforward to use and/or install.
- Need to consider electrical capacity (capacity for existing circuits to handle an array of heaters, including whether 3-phase is available)
- Generally supplied with a lead that enables the heater to be connected to a fused wall plate or even to be hard-wired.
- Some 3-phase radiant heaters can produce effective heat even when mounted at heights up to 20m - opens up the scope of application to largest sports halls and warehouses.
- BUT, remember, electric heating is always expensive and carbon hungry, electric radiant heating is only suitable in the right application, need to consider hours of use, wattage of heaters, use of the area etc.

Electric quartz heating

Quartz heating is designed to emit heat in the infrared spectrum with very little heat absorbed by the air due to the infrared range being almost completely outside the absorption spectrum of air.

By utilising infrared waves to heat the surface of objects directly, quartz heating is a very efficient heat source which is not affected by air movement and thus is suitable for outdoor heating as well as indoor heating. It is recommended that a suitable qualified installer is used to advice on appropriate heater sizes and their placement.

Further information is available on...

Radiant heaters are part of the UK Government ECA (Enhanced Capital Allowances) scheme and are on the approved ETL (Energy Technology List)

Gas radiant heaters

The smallest gas radiant heaters are mobile cabinet heaters running from a bottle of gas, but more powerful systems usually run on mains gas. Gas plaque heaters work in the same way as the small cabinet heaters in that the gas is burned on a perforated ceramic tile backed by a reflector which direct radiant heat to where needed. Plaque heaters are usually either rectangular or conical. Radiant gas tube heaters use a gas flame contained in a steel tube, which in turn radiates heat.

Water

Heated water carried via pipework is used to feed radiant panels. Similar to conventional radiators, but where a radiator is a long flat tank of water designed to heat by convection of passing air, a radiant panel is a pattern of thin pipework sandwiched between a heat transfer surface and an insulation layer. Much lighter than radiators and designed to emit radiant heat from one surface only.

Oil

A small number of mobile radiant heaters that are supplied mainly for site work run on diesel. The principle is that a convex perforated steel screen is heated by a burner, and the orange or black heated steel in the screen provides a radiant heat

Radiant cooling

Radiant cooling systems use the opposite effect of radiant heating systems. Heat will flow from objects, occupants, equipment and lights in a space to a cooled surface as long as their temperatures are warmer than that of the cooled surface and they are within the line of sight of the cooled surface. Radiant cooling systems are usually hydronic; cooling using circulating water running in pipes in thermal contact with the surface.

Dual purpose panels are available – radiant heating and cooling (manufacturer Zehnder) ceiling mounted panels.

