SHADOW
Industrial Infrared

Infrared Heating

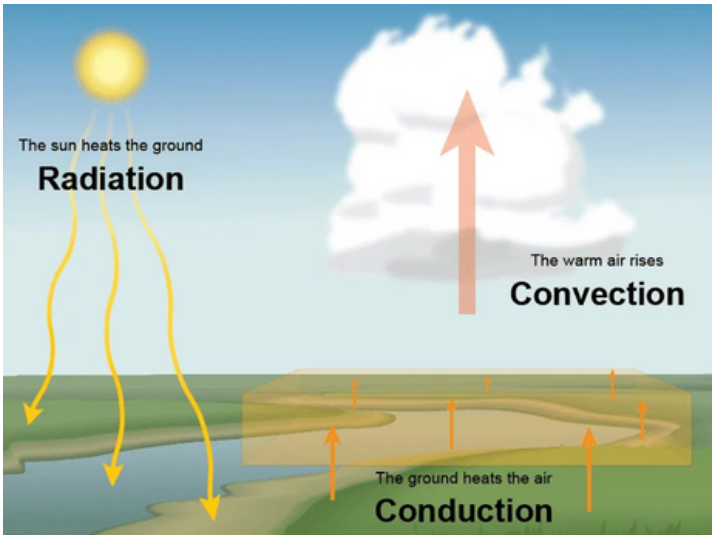
Infrared heat is a type of heating that works similarly to sunlight. Instead of warming the air first, it directly heats people, surfaces and objects in a room. Infrared heaters produce invisible rays called infrared radiation, a form of energy similar to light but with longer wavelengths that we cannot see.

Convection – through air movement. ie. Heated by a radiator.

Radiation – through invisible waves, like the warmth of the sun

Conduction – through direct contact (like a hot pan warming your hand)

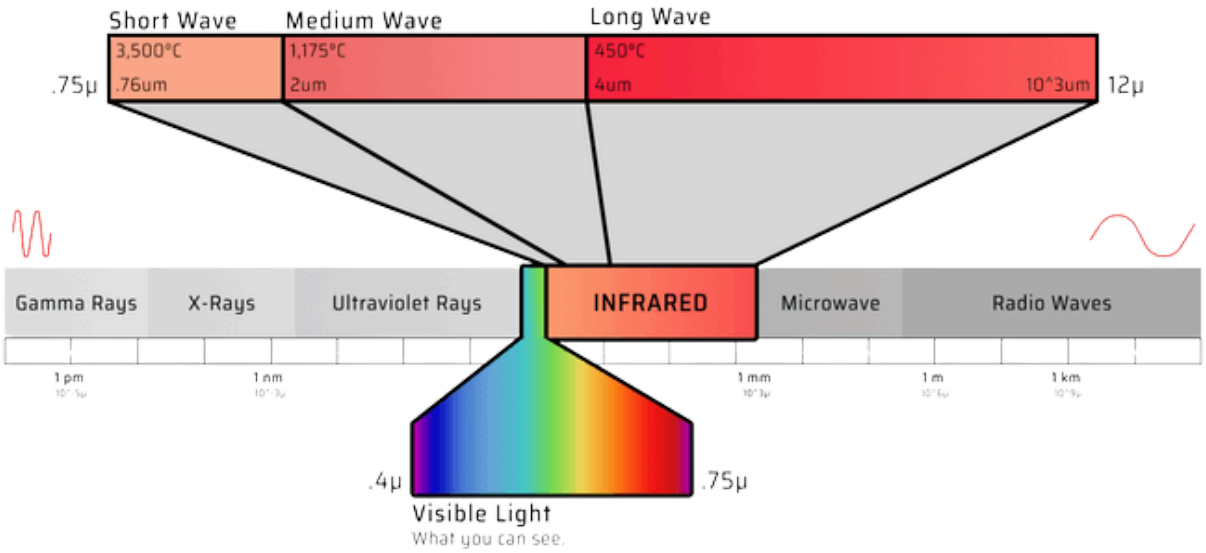
When these rays hit objects, they warm them up and the heated objects then release heat into the surrounding space. This process creates a comfortable and evenly distributed warmth.



Electromagnetic Spectrum

The electromagnetic (EM) spectrum includes all types of electromagnetic waves, from low-energy radio waves to high-energy gamma rays.

Infrared lies beyond red visible light, approximately 0.7–1000 μm. For heating applications, the practically relevant range is ~0.7–15 μm.



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Types of Infrared

There are four main types of infrared, each suited to different applications and a variety of environments:

- Short wave
- Medium wave
- Long wave
- Far infrared

Each type has specific benefits depending on the size of the space, the level of heat needed and whether you want rapid heating or gentle, gradual warmth.

Type	Wavelength	Surface temp	Key Traits	Typical Use
Short-wave (Near IR)	High energy	1200 - 3,500°C	• Instant heat • Visible red glow • Most powerful type of IR. Instantaneous heat focused using refined parabolic reflector • About 90% of energy is converted directly into heat, making it very efficient. • Almost unaffected by wind, as heats people and objects directly and faster than the air can cool them.	Industrial or outdoor spaces
Medium-wave (Mid IR)	Moderate energy	550 - 1200°C	• Fast heat up with ultra-low glare and less intense heat. • Around 70% of MWIR energy warms people directly. • Air movement will reduce their effectiveness outdoors, so less effective in windy areas.	Halls, workshops, therapies
Long-wave	Gentle temperature	200-550°C	• 3 - 15* minute warm-up time • Natural radiant comfort • Discreet and efficient heating with almost no visible light output • Heats people and surfaces directly • Efficiency affected by air movement, so, not very useful outdoors. *Depending on external factors	Churches, heritage and listed buildings
Far IR	Gentle	0-200°C	• Zero glow • Up to 5 minute warm-up time • A direct replacement for indoor radiators with normal surface temperatures of 70 - 80 degrees • 70% convection, so predominantly heats the air. • Pefect for low ceilinged rooms or offices.	Radiant heater panels.

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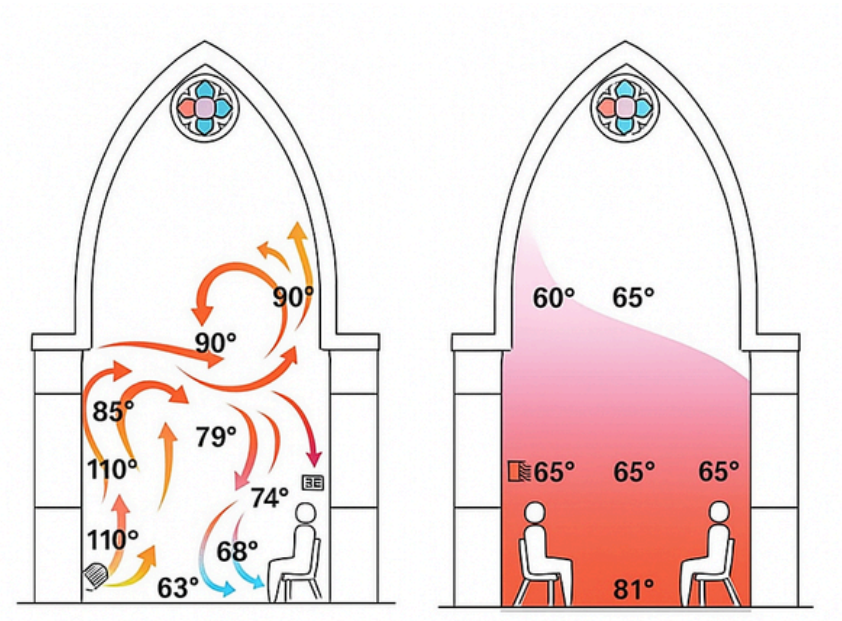
Heating a Church

Churches are among the most difficult buildings to heat. Vast internal volumes, cold stone walls, high thermal mass, draughts, minimal insulation and often short, irregular use make traditional systems inefficient.

Conventional solutions such as radiators or underfloor heating rely on convection to warm the air. However, in a church, warm air rises rapidly to the roof, leaving the congregation cold. In most cases, convection means we are effectively paying to heat the ceiling, not the people. Energy is consumed, yet comfort is not delivered.



Because churches are often occupied for only a few hours each week, whole-building heating works against us: we heat large empty spaces for very small gatherings.

This is where infrared heating can help, not as a replacement for other systems, but as a complementary tool designed for a different job.

Infrared heating applies radiant physics to large, intermittently occupied, high-loss spaces. When correctly specified, it can:

- Improve comfort
- Reduce pre-heating energy demand
- Minimise fabric stress
- Support net-zero targets when powered by renewable electricity

Churches typically have:	Infrared solves these issues by:
• Large air volumes but small occupied zones • Significant draughts and infiltration • High thermal mass (cold stone, plaster, timber) • Intermittent occupancy	• Delivering heat to people, not the void • Enabling zoning (nave, choir, side chapels) • Shortening warm-up time • Reducing convective cycling and moisture movement