



LEADING THE WAY IN INNOVATION

Infrared Heating - 2017



SES

Scottish Energy Saving

CONTENTS

| | |
|---|----|
| What is Infrared and how does it work | 3 |
| Healthy heat - In harmony with the human body | 4 |
| Comparisons between heating technologies | 5 |
| 6 Reasons why infrared heating | 6 |
| Product Range - Satin aluminium | 7 |
| Product Range - Mirror | 8 |
| Product Range - Designer glass | 9 |
| Product Range - Underfloor | 10 |
| Product Range - Portable & kitchen plinth | 11 |
| Smart control system | 12 |
| Sample calculations | 13 |
| Peace of mind | 14 |
| Testimonials | 15 |

WHAT IS INFRARED

How Does it Work

The sun is the original source of the infrared spectrum. 53% of the energy from the sun is infrared heat, 44% is visible light and 3% is ultraviolet light. Whilst we have enjoyed the sun's benefits since the dawn of time, it is only within the last 150 or so years that we have developed our understanding of infrared wavelengths.

The sun does not heat the air itself; rather it heats objects and the earth's surface.

Regardless of how warm it is at the foot of a building, it will be somewhat cooler at the top, even though it is nearer the sun. This is because the sun's energy heats the mass of the earth, building and ground, not the air directly; everything emits radiant heat.

It is recognised that a few people in a small room can emit sufficient heat to increase the temperature significantly, as warmer 'objects' transfer heat to the

cooler ones. Infrared is a natural source of energy known for its direct heating capability, as well as providing several potential health benefits.

Infrared heat is different from traditional convection heat in that it does not cause constant air circulation, and therefore provides a much more even distribution of heat and temperature.



INFRARED HEATING

Our infrared panels emit radiant heat, and the infrared energy will be stored in the walls, ceilings and floors of your home. Each room is therefore heated by the energy emitted from these objects.

This results in a much more evenly heated space, with no heat circulation and a more comfortable living space.



CONVECTION HEATING

Convection heat is constantly at odds with the air in a room and the best way to address this is by keeping the doors closed and having triple-glazing windows and insulated walls in your home.

This method of heating relies on the circulation of warm air around a room, varying the temperature by as much as 5°C as the warmer air rises as a characteristic.

HEALTHY HEAT

Working in Harmony with the Human Body

The human body emits infrared heat at a wavelength of around 10 microns. This is very close to the panels that operate at between 9 and 14 microns. This means that the human body is able to easily absorb the heat energy.

Whilst making no specific claims on the health benefits of radiant heat, many renowned studies have identified a range of benefits to health and well-being.

Globally, over 10,000 academic papers have identified the beneficial effects of infrared on several medical conditions.

Some of the Health Benefits*

- | | |
|------------------------|-------------------------|
| ✓ Rheumatoid arthritis | ✓ Pain relief |
| ✓ Asthma | ✓ Detoxification |
| ✓ Joint complaints | ✓ Compression fractures |
| ✓ Circulation | ✓ Skin conditions |

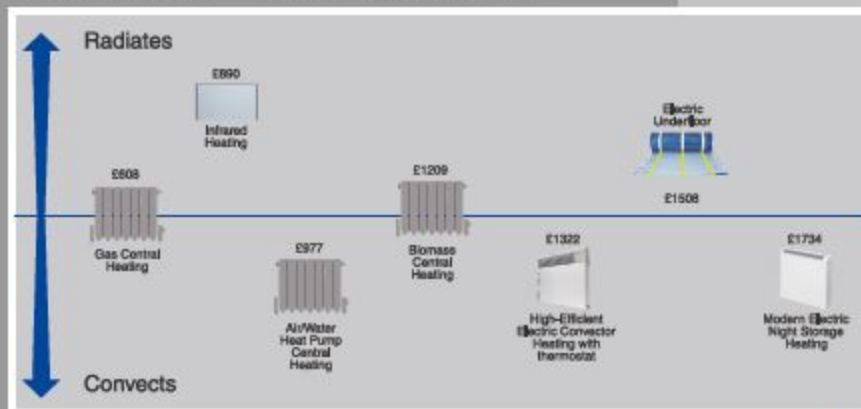


*The McGraw-Hill Encyclopedia of Science and Technology reports medical practitioners make use of far infrared radiant heat to treat sprains, strains, bursitis, peripheral vascular diseases, arthritis, and muscle pain.

COMPARISON

Comparing Infrared Heating with Convection Heating

3 Bedroom House - Total annual cost comparison



Total cost of ownership includes

- Purchase cost
- Installation cost
- Annual running cost
- Maintenance cost
- Replacement cost

All figures are taken from the Energy Saving Trust website calculations for a 3 bedroom house and from manufacturers websites. Government grants and subsidies are not included.

60%

Can deliver up to 60% savings on energy usage over traditional electric heating

Infrared heating compared with new technologies such as air / water heat pumps or biomass can offer significantly quicker payback times due to lower costs of purchase, installation, maintenance and running costs.

5 Ways infrared heating can save you money

- You can set your thermostat 2 degrees lower with infrared heaters because they warm objects that radiate the heat.
- Infrared heaters use less power to heat a room than traditional heating because heat is not lost with through circulation of the air.
- Infrared heating can run off electricity from renewable sources like solar PV
- Our heaters require no maintenance so you can save hundreds of pounds on yearly servicing.
- Our heaters are compatible with thermostats and motion sensors ensuring you are only paying for the heating that you need.

REASONS WHY

Why Choose Infrared, Why Choose

NO MAINTENANCE OR SERVICING NEEDED

Unlike heating systems which rely on moving parts or internal combustion our infrared heating require no servicing or maintenance and have a lifespan of over 20 years.

100% NATURAL ENERGY CONVERSION

Infrared is 100% natural. Infrared is the form of heat that we emit when we are warm and absorb when we are cold. Our bodies absorb infrared heat more easily than any other form of heat.

NO CO2 EMISSIONS

Our heaters do not produce carbon emissions and when used with electricity generated from renewable energy like solar PV they are then a true green energy source.

REDUCED ENERGY USE

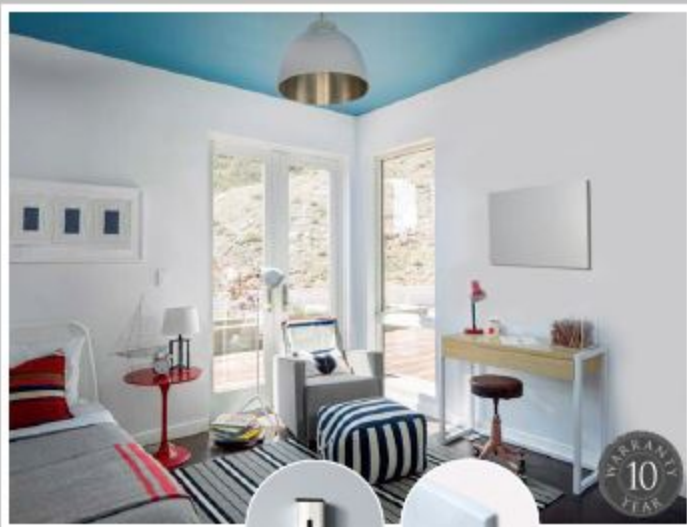
Unlike conventional central heating systems infrared heating does not waste energy by heating the air. All energy use is converted to heat saving up to 60% on off your heating costs.

SMART CONTROLLED

Our heating is 100% smart controlled to ensure that you only heat the rooms needed at the times needed. This ensures that you only pay for what you need through out the year.

HEATS OBJECTS AND NOT THE AIR

This is a much more effective way to produce comfortable warmth than conventional heating systems. Infrared heats like the sun heating you rather than the air in the room.



sample picture


ALUMINIUM

Satin Infrared Panel Range

SES satin aluminium panels are the most cost effective and efficient solution on the market ideally suited for both domestic and commercial properties.

They are simplistic and discreet in design and can easily be installed on the wall as well as the ceiling to save valuable room space as well as giving an additional 15% on the heat coverage.

The frame-less range from are available from 350W to 1200W sizes with an improved carbon crystal heating element for 2017 which promotes an efficiency rating of A+ which is more efficient than any other infrared panel available.

| Code | Wattage (w) | Size (mm) | Weight (kg) | Heat Coverage (m ²) | Colours Available | |
|--------|-------------|-----------------|-------------|---------------------------------|---|-------------|
| IH35-W | 350 | 595 x 595 x 22 | 4.5 | 5 - 7 |  | Satin white |
| IH50-W | 500 | 595 x 795 x 22 | 8,5 | 7 - 10 | | |
| IH80-W | 800 | 595 x 1195 x 22 | 9.8 | 10 - 16 | | |
| IH12-W | 1200 | 795 x 1195 x 22 | 12.9 | 16 - 21 | | |
| | | | | | Service Life | Warranty |
| | | | | | 20 years | 10 years |

MIRROR

Space Saving with Optional LED Backlit

The SES mirror range offers quality stylish mirrors are also ideal space-saving infrared room heaters, perfect for bathrooms, halls and bedrooms.

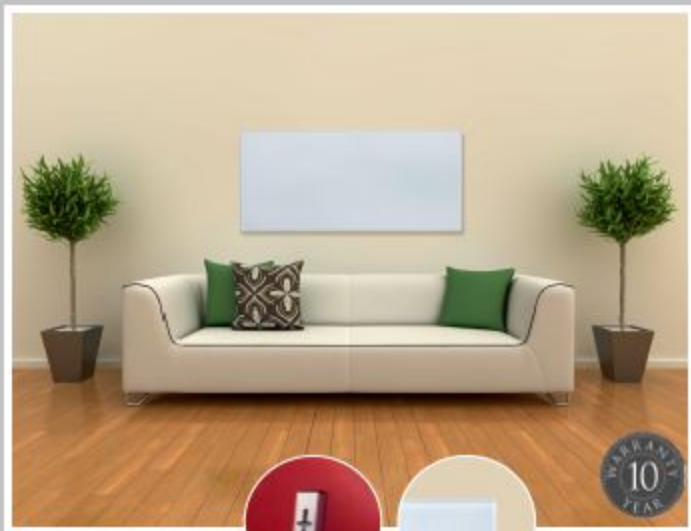
A choice of three standard mirror heaters is complemented by the introduction of a new round mirror.

To enhance the modern design, all heated mirrors are available with the back-lit effect, in warm white.



sample picture

| Code | Wattage (w) | Size (mm) | Weight (kg) | Heat Coverage (m ²) | Colours Available | |
|---------|-------------|-----------------|-------------|---------------------------------|-------------------|----------|
| IH35-M | 350 | 600 x 700 x 22 | 8.7 | 5 - 7 | N/A | |
| IH50-M | 500 | 600 x 1000 x 22 | 12.1 | 7 - 10 | | |
| IH50-MR | 500 | 980 Dia. x 22 | 17.9 | 7 - 10 | Service Life | Warranty |
| IH60-M | 600 | 300 x 1500 x 22 | 11.4 | 8 - 13 | 20 years | 10 years |



sample picture

GLASS

Designer Inspired Infrared Panel Range

The SES range of designer glass infrared heaters are stylish and elegant, offering a heat output unsurpassed by any other infrared supplier.

The frame-less glass panels are available in panel sizes, 450W, 600W and 900W ensuring that there is a size to suit the need of every room. Colours come in are piano black and gloss white.

Glass is an excellent medium for infrared heaters to operate at a fraction of the energy need from traditional heating and being A+ energy efficiency rated you can be sure that the costs are reduced too.

| Code | Wattage (w) | Size (mm) | Weight (kg) | Heat Coverage (m ²) | Colours Available | |
|--------|-------------|-----------------|-------------|---------------------------------|---|-------------|
| IH45-G | 450 | 550 x 600 x 22 | 12.1 | 5 - 8 |  | Gloss white |
| IH90-G | 900 | 550 x 1100 x 22 | 14.2 | 12 - 16 |  | Piano black |
| IH60-G | 600 | 300 x 1800 x 22 | 10.2 | 8 - 13 | | |
| | | | | | Service Life | Warranty |
| | | | | | 20 years | 10 years |

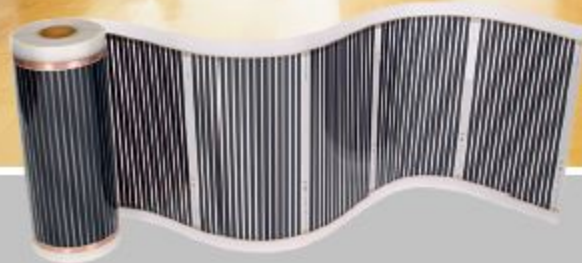
UNDERFLOOR

Space Saving and Simple to Install

SES Infrared carbon fibre underfloor heating film technology combines the best to offer of modern nano-technology. This remarkably effective underfloor heating system can be installed quickly under all floor types including carpet, wood, tile and lino.

Only needing to cover 70% of the floor area it keeps costs to a minimum. The infrared element begins to warm the room as soon as the system is switched on. Having no moving parts, it requires just a standard electric plug.

| Code | Size (m) | Area (m ²) | Coverage (m ²) |
|-------|----------|------------------------|----------------------------|
| KTH33 | 3 x 3 | 9 | 13 |
| KTH34 | 3 x 4 | 12 | 17 |
| KTH35 | 3 x 5 | 15 | 21.5 |
| KTH44 | 4 x 4 | 16 | 23 |
| KTH45 | 4 x 5 | 20 | 28.5 |
| KTH46 | 4 x 6 | 24 | 34 |
| KTH55 | 5 x 5 | 25 | 36 |
| KTH56 | 5 x 6 | 30 | 43 |
| KTH57 | 5 x 7 | 35 | 50 |



Features of SES Underfloor

- Ultra thin, heating film only 0.38mm
- Quick and easy to install
- 200 watts per square metre at 800mm widths
- Suitable to install under all floor types
- Fireproof with 15-year manufacturers warranty
- Only 70% coverage of the floor surface needed

PORTABLE

For those hard to heat areas

If you want to direct heat within a conservatory, caravan or mobile home these will heat an area of up to 5 sqm with very little energy use. They have 3 power settings 150w, 275W and 400W and they simply plug into the mains to operate.



| Code | Wattage (w) | Size (mm) |
|---------|-------------|-----------------|
| IH40-CV | 400 | 500 x 500 x 175 |

PLINTH

Simple but Effective Kitchen Heating

Designed to fit under any standard kitchen base unit these 70w infrared plinth heaters are a great addition to infrared panels or underfloor heating. They can be daisy chained together for any size room and they come in matt black as standard.



sample picture

| Code | Wattage (w) | Size (mm) |
|-----------|-------------|----------------|
| S70PL-BLK | 70 | 145 x 500 x 15 |

SMART CONTROLS

Convenience in One Touch



Wifi Thermostat



Smart App



Thermostat



Receiver



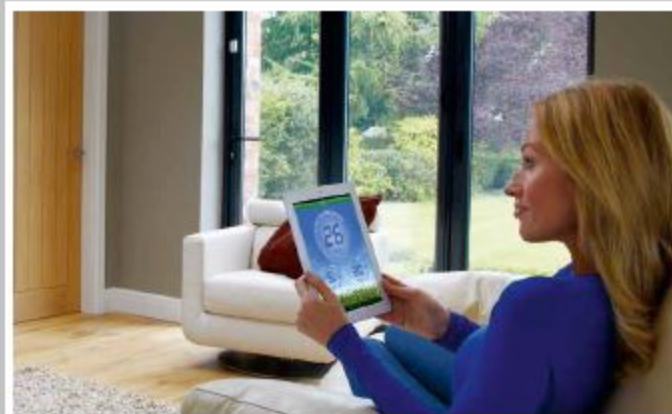
Plug in Receiver

Smart App - Controlling your Heating

To get the most out of your SES infrared heating system you can control it, each panel at a time from anywhere in the world. This can be done by a free app from a tablet, smart phone or computer.

Receivers and Thermostats - Reduce Energy Costs

Your costs can be greatly reduced by ensuring that each room and infrared panel is controlled independently. If a room is not being used then the temperature can be turned down to save energy and money.



SAMPLE CALCULATIONS

Reduction in Energy Usage and Energy Cost

When calculating the number of watts required for a property this is determined by the how old the property is, if the property has adequate insulation and if the windows are single or double glazed.

The average for a well insulated modern property with double glazing is 25wm^3 . This is the length of the room multiplied by the width if the room multiplied by the height of the room. (L x W x H). This figure is then multiplied by 25 watts which will give you the wattage required for the room.

Infrared heats the thermal mass of the room and once the room gets to temperature then this just needs to be topped up. We estimate an average of 6 hours per day is required with a heating season of 180 days*

Convection heating requires on average $40\text{--}50\text{wm}^3$

| Insulation Level | House Type | Watts per m/cubed |
|------------------|-------------------|-------------------|
| Passive building | Airtight property | 8wm^3 |
| New building | Post 1983 | 20wm^3 |
| Modern building | Post 1940 | 25wm^3 |
| Old building | Pre 1940 | 30wm^3 |

Example 3 bedroom modern 213m^3 property

| Number of Panels | Watts per panel | KW usage per year | KW usage per year at 6hrs per day | Cost per yr at £0.13p per kWh |
|------------------|-----------------|-------------------|-----------------------------------|-------------------------------|
| 6 | 800w | 9120 kWh** | 2280 kW | £296.40 |
| 2 | 350w | 1270 kWh*** | 317 kW | £41.21 |
| 8 | | 10,390 kWh | 2597 kWh | £337.61**** |



E/P A+ efficiency rate for 800w panel at 1504 KW usage per year, *E/P A+ efficiency rate for 350w panel at 635 KW usage per year. Temperature controlled by smart control system at constant 20oc, ****This is an example cost for a 3 bedroom modern house at 213m^3 , and the manufacturer cannot be held responsible if your energy costs are not the same as the example given.

*As calculated by the energy saving trust

PEACE OF MIND

Quality, Safety and Efficiency

QUALITY

The independently assessed TUV mark shows that our products have been accredited and certified with a proof of quality and usability.

This will include not just the heating panel but the wiring, plugs and fixings.

SAFETY

The CE mark on our products proves that they conform to EU health & safety standards. Independent assessments have been completed to ensure that guidelines have been adhered to such as low voltage and electromagnetic compatibility directives.

EFFICIENCY

Our infrared heating panels are independently tested and accredited with an A+ efficiency rating which means that they are more than 98% efficient. This figure is determined by the annual energy consumption of the heaters in kWh.



TESTIMONIALS

We Let our Products do the Talking

"We would like to thank everyone for the service you have given us from start to finish, we definitely feel that we have made the right choice.

As you know we have only had our glass heaters in for a short space of time but we can already feel the benefits. The best part being that the whole house is now at a constant 20°C and we no longer have to think if the heating has come on or not, its great.

Would like to give a special thanks to John the electrician who was really helpful when he installed the heaters, once John had set the system up for each room we have not needed to touch it since.

We have just received our electric bill and it has already gone down by £126 from the previous quarter."

Mrs Robertson (Derby) : White glass infrared panels

John contacted us with an aim to save money and to do his bit for the environment by reducing the households carbon footprint. John had heard about infrared heating from a friend who said that he had reduced his energy bills by 50% when he was using electric storage heaters.

"After losing money from my pension I had to think of ways of saving money every week and a friend told me about this new heating system. I have been heating my home with storage heaters for years and they are getting rather expensive so I decided to find out more about infrared.

I try to recycle as much as I can to do my bit for the environment so when I heard that infrared heating could reduce my carbon footprint as well it seemed like a logical choice."

After a feasibility survey and discussion with John he decided that the satin white aluminium panels were the right choice for him.

John Spencer (Scotland) : Aluminium infrared panels



Contact SES now on:

Tel: **0800 799 9753**

E-mail: **info@scottishenergysaving.co.uk**

Visit us at:

www.scottishenergysaving.co.uk

**16 Cromarty Campus,
Rosyth Europarc, Rosyth
KY11 2WX**

This catalogue was supplied to you by:

