

Electric slab heating

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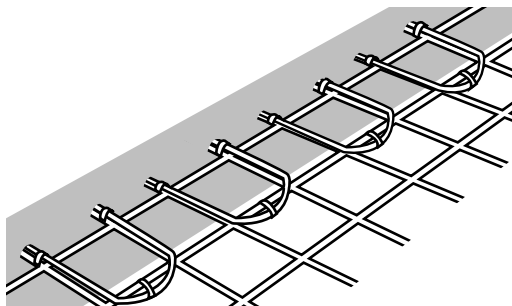
What is electric slab heating?

Electric slab heating uses electric cables embedded in a concrete slab floor to provide home heating. The slab stores the heat, and steadily releases it to provide continuous warmth to your home 24 hours a day.

When using off-peak electricity, slab heating can be an economical method of providing home heating if set at a suitable temperature in a well-insulated home. In new homes, cables are laid when the slab is poured and testing is carried out throughout the pouring stage to ensure the cables are not damaged. Where off-peak tariffs are available, the system is charged overnight and during the afternoon. If the system is sized correctly, it will provide sufficient heat for comfortable temperatures over a 24 hour period. An afternoon boosting period is generally required as overnight charging alone is insufficient to heat most homes.

Cables may also be laid over an existing slab and covered with a minimum of 20 mm of cement/concrete screed. However, this system operates on peak rate electricity, and so could triple running costs. Structural and design aspects should also be considered with the increase in floor height.

Electric slab heating is not the same as under-carpet heating. Under-carpet heating elements are laid on top of the floor and run on the more expensive peak electricity rate.



Electric cables embedded in a concrete slab floor

Dos and don'ts

Do

- > Switch the system on at the start of the heating season (typically May to October) and simply leave to run.
- > Set and maintain the lowest comfortable thermostat setting, and keep the system on this. Every degree the thermostat is turned up adds approximately 15% to your running costs.
- > Install a zoned system and maintain appropriate temperatures in each zone. 18°C is recommended for living areas, and 16°C for bedrooms. Rarely-used rooms, such as laundries, may not require any heating.

A zone is a group of rooms used for a similar purpose. For instance, the kitchen, living, dining and family rooms constitute the 'living' zone. Bedrooms are the 'sleeping' zone, and bathroom, toilet and laundry the 'service' zone.

- > Consider using slab heating to provide background heating, especially in areas such as bedrooms, where lower temperatures are satisfactory. Use in conjunction with an appropriate space heater, such as a high efficiency gas space heater or reverse cycle air conditioner, for boosting temperatures in living areas.

Supplementary heating may be required in bedrooms and similar areas during periods of exceptionally cold weather.

Do not

- > Switch the system on and off to deliver instant heat. It takes at least one day for the slab to heat up to deliver sufficient heat to a room. Slab heating is designed to provide constant warmth, 24 hours a day.
- > Use in homes where occupants are only home for short or irregular periods. Consider instead a system which provides instant heat where and when you need it.

- > Use in non-energy efficient homes. This can lead to substantially higher running costs.
- > Slab heating requires careful temperature control in north-facing rooms with access to the winter sun. These rooms can become overheated if both the slab and incoming sunshine are providing too much warmth.

What are its advantages?

- > Furniture placement is unrestricted
- > No building modifications are required for installation in a new home with a slab floor
- > No moving air or draughts, enabling rooms to be adequately heated at slightly lower temperatures
- > Especially suitable for people suffering from allergies or respiratory complaints caused by moving air or dust particles
- > Quiet, clean and safe
- > Even heat distribution throughout a room, with no hot or cold spots
- > A combination of radiant and convective heat provides excellent comfort, with little vertical temperature variation, making slab heating suitable for homes with high ceilings
- > Low maintenance

Considerations

- > Limited immediate control
- > Can be expensive to run if kept at higher temperatures
- > Unsuitable for uninsulated suspended slab floors where the space underneath is unoccupied, or slab-on-ground floors in areas with a high watertable

Running the system efficiently

Zoning

In-slab systems should always be zoned, with individual zones having separate, wall-mounted thermostats. This allows you to adjust the temperature to suit the uses of various rooms. The lower the temperature selected, the lower the

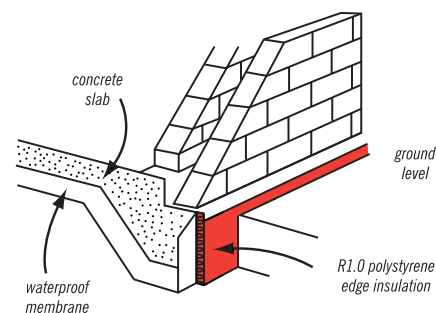
running costs. Thermostats should be placed in draught-free areas, away from windows, external walls and direct sunlight.

Floor coverings

Any floor covering except cork is suitable. Vinyl, ceramic tiles or slate are especially appropriate as they allow heat flow from the slab to the room to occur readily.

Insulation of the slab

Up to 20% of heat is lost through the edges of heated on-ground slabs. High density polystyrene insulation installed around the perimeter can cut these losses in half. The ground provides adequate insulation for the remaining slab area. Heated suspended slabs should have full under-slab insulation if heating cannot be controlled to the area underneath (e.g. a separate flat). Bulk insulation in the form of boards, batts or blankets is suitable for this. There is no need for under-slab insulation if the area below is heated (e.g. a downstairs room). Do not use slab heating if the space underneath is unoccupied (e.g. a garage).



Concrete slab insulation

Ceiling fans

Ceiling fans distribute heat evenly around a room, preventing heat from rising to the ceiling and being lost. Although beneficial in all homes, they should always be installed if the ceiling height is greater than 3 metres.

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