

White Paper  Hotwire
warm your soul

GUIDE TO ELECTRIC FLOOR HEATING



White paper Floor heating

Guide to electric floor heating

Electric Floor Heating is a simple solution to heating both small and large spaces.

A luxury that previously came with a luxury price tag is now very much affordable for almost any home. This paper outlines the benefits and technology that is now available including WiFi Thermostats that can even integrate with the Google Home System.

Table of contents:

Benefits of Floor Heating	2
Different Types of Electric Floor Heating Available	3
Repairing Floor Heating	5
Running Cost of Floor Heating	6
Electric Heating Compared to Hydronic Heating.	7
Components of Floor Heating	8
Size of system required (Wattage)	9
Contact:	10

Benefits of floor heating

Comfort:

Floor Heating is simply the nicest way of feeling warm. As the whole floor is warm the entire room has a lovely even heat distributed perfectly. As Hot Air rises the most logical place to heat that air is at floor level. The warmth then rises through the room heating everything in the room as it rises.

Energy Efficient:

Floor Heating is very energy efficient. Heating Zones can even be applied to open plan living areas, reducing running costs and giving greater control over the heating. In wet areas there is simply no more cost-effective heating. A typical bathroom can be heated for as little as 700 watts. A typically Heat Lamp unit is 1.5kw.

Health Benefits:

As no air is being blown around the room, floor heating is great for allergy sufferers. As floor heating also dries the floor, mould build-up in wet areas is greatly reduced.

Zero Maintenance.

Floor Heating does not require any maintenance. There are no filters to clear or service calls required.

Thermostatically Controlled

A variety of floor heating controllers exist. Most companies offer a 24 hour 7 programmable thermostat. The most advanced companies also offer thermostat that can be controlled via an App or even connected to Google Home and other smart systems.

Invisible Heat

Floor Heating offers complete design freedom for any home. The only visible part of the heating system is a small controller on the wall. The controller can even be hidden in a vanity or other cupboard if required.



Different Types of Electric Floor Heating Available

In Slab Heating.

In Slab heating consists of a thin heating element fixed to the re-enforcement of the concrete slab.

This, obviously, has to be installed during the installation of the slab. This style of heating is excellent in very cold climates but is generally not the most suited to the milder climate in Australia. In Slab heating is generally connected to off-peak power.

A much higher wattage per lineal metre of heating element is required than other forms of heating. Around 30w is standard.

In Screed Heating

In Screed Heating is often used in bathroom areas where the floor “fall” is built up with a sand and cement screed. The screed is typically between 30 and 100 mm.

It can also be used in living areas where a sand and cement screed is used due to the tile or floor surface required.

In Screed Heating is also perfect if the slab is poured in two stages to facilitate a polished concrete finish.

There are a variety of methods available for fixing the element to the subfloor. It is critical to ensure the element is fixed well to the subfloor.

Under Tile Heating or “On Slab” Heating

Under Tile Heating is the most common method of floor heating in Australia. It can be used with a variety of floor surfaces but is typically referred to as “Under Tile Heating”. The element is generally as thin as 4 mm and spread across the floor. The flooring is simply installed over the top.

On slab heating can be a loose wire or fixed to a fibreglass mesh. The product fixed to a mesh is more expensive but can be easier to install.

On Slab heating needs to be encased in a self-levelling compound or encased in the tile glue.

This type of heating does give the quickest heat-up time and will generally heat a room in 30 - 60 minutes.



Repairing floor heating

A major and completely justifiable concern is how to repair Floor Heating should there be an issue.

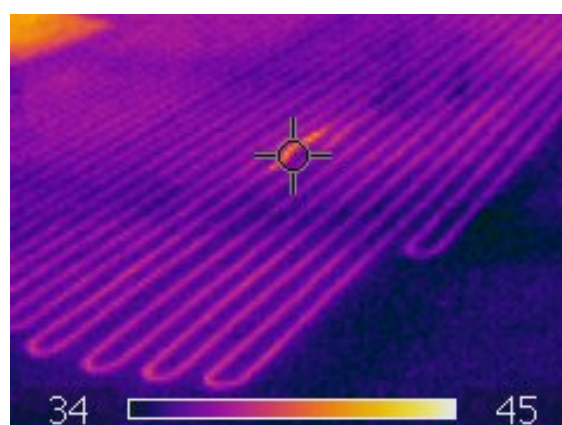
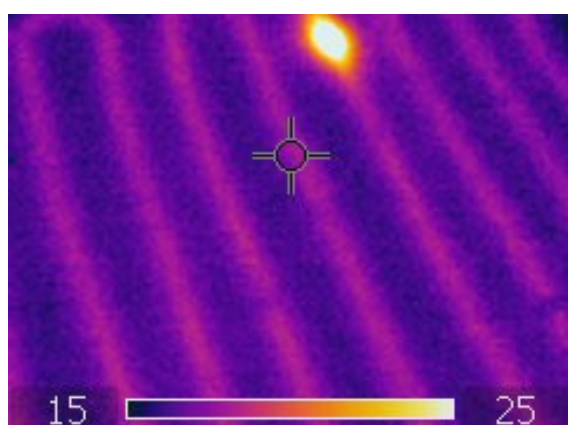
Most reputable floor heating companies provide an alarm that monitors the heating element while the flooring is laid. So most damage is identified before the flooring is completed and therefore easily fixed.

Thanks to advances in technology fixing faults after the flooring is completed is now quite simple. There are a variety of tools that are used. The most common being a "Variable Speed Transformer" and a "Thermal Imaging Camera".

A break or damage to the cable will typically trip the circuit breaker. In order to find the fault, the earth is removed from the circuit and power sent down the element. The Variable Speed Transformer increases the power from 240v up to 3kv if required.

The application of such a high voltage typically creates a hot spot where the damage has occurred.

The floor surface can simply be removed in that small area, the element fixed and the flooring relaid. The method of repairing the flooring varies depending on the specific type of flooring used.



Running Cost Of Floor Heating

Depending on the specific type of Under Floor Heating being used the running costs will vary.

In Slab Heating can be run on off-peak tariff but is not the most suited heating to the Australian climate. In Slab Heating can also be quite expensive as it must be run for up to 9 hours to heat the entire slab.

In Screed Heating and Under Tile Heating are generally the best suited to the Australian climate.

Assuming correct installation of the product runnings costs are generally quoted at 2 cents per m² per hour.

The average bathroom that contains 5m² of heatable floor area would, therefore, cost only 10c an hour to run.

The average living room of 40m² would cost only 80c an hour to run.

Generally, floor heating is much cheaper to run than most people think.



Electric Heating Compared to Hydronic Heating



Up Front Cost

The major drawback of Hydronic systems is the significant upfront cost involved. This makes it simply impractical if you are looking at smaller areas or projects where the budget is tighter. Electric Floor Heating can be installed in areas as small as 1m² with very minimal setup costs.



Flexibility

Electric Floor Heating can be installed on top of the slab or subfloor and therefore have very minimal impact on the floor height. The element is as thin as 4 mm so it can even be completely absorbed into the tile glue.



Heat Up Time

Hydronic Floor Heating typically takes several hours to heat and if it is a full in-slab system could take closer to 9 hours. This means that the homeowner has very little flexibility. If heating is only required in the morning, as the day will be warm, they have little choice but to heat their home for the entire day.

Electric Floor Heating is normally installed on top of the slab, therefore, heating the floor in as little as one hour.

This is most suitable for the typical Australian climate. A quick heat-up time enables the home owner to turn the heating on only when required.

Components of Floor Heating

The components of most floor heating systems are as follows,

1. Heating Element

The Heating Element Can be in either a mat or spooled element form. Elements can vary from a very small roll for a Loose Wire 1-2 m2 system to a very large roll for large rooms heated via an In Slab element.

2. Alarm

The Continuity alarm monitors the heating element during installation. Should any damage occur the element will sound immediately.

3. Thermostat / Controller

A variety of devices to control floor heating exist. Basic timers right up to fully integrated voice-activated (via Google) thermostats.

4. Temperature Sensor

The sensor is buried in the floor. The thermostat uses this to determine the temperature of the room and adjust accordingly. Most advanced Thermostats can also operate on “Air Sensing” or “Room Temperature”.

5. Fixing Methods

In “On Slab and some “In Screed” applications, the element must be fixed to the slab. This can be done with tape, hot glue etc.

6. Instruction Manual

A detailed manual outlining how the product is installed.



Size of system required (Wattage)

Typically floor heating is installed at 150w per m2. The following table shows the wattage required for the m2 range.

M2 Range	System Wattage
1 - 1.3	200
1.4 - 2	300
2.1 - 2.6	400
2.7 - 3.3	500
3.4 - 4	600
4.1 - 4.6	700
4.7 - 5.3	800
5.4 - 6	900
6.1 - 7.1	1000
7.2 - 8.9	1250
9 - 10.7	1500
10.8 - 12.5	1750
12.6 - 14.2	2000
14.3 - 17.8	2500
17.9 - 21.4	3000
21.5 - 25	3500
25.1 - 28.5	4000
28.6 - 35.7	5000
35.8 - 43	6000

Contact

Hotwire is one of Australia's leading floor heating suppliers.

Hotwire has a Victorian Head Office and a National Network of Installers.

You can see a wide variety of the projects that Hotwire has been involved in on their website.

Contact details,

www.hotwireheating.com.au

sales@hotwireheating.com.au

1300 HOTWIRE(1300 797 060)

