



### **Underfloor Heating System**

Underfloor heating has been used for over two thousand years as a way of providing a reliable and comfortable means of heating an area.

Technology and innovative materials have brought this method of heat circulation into the 21<sup>st</sup> century. With insulation now being a huge factor in all buildings designs and modern heating systems increasing in efficiency especially at low temperatures, underfloor heating is now recognised as an effective means of complimenting a buildings quality in a comfortable, cost effective and aesthetically pleasing manner.

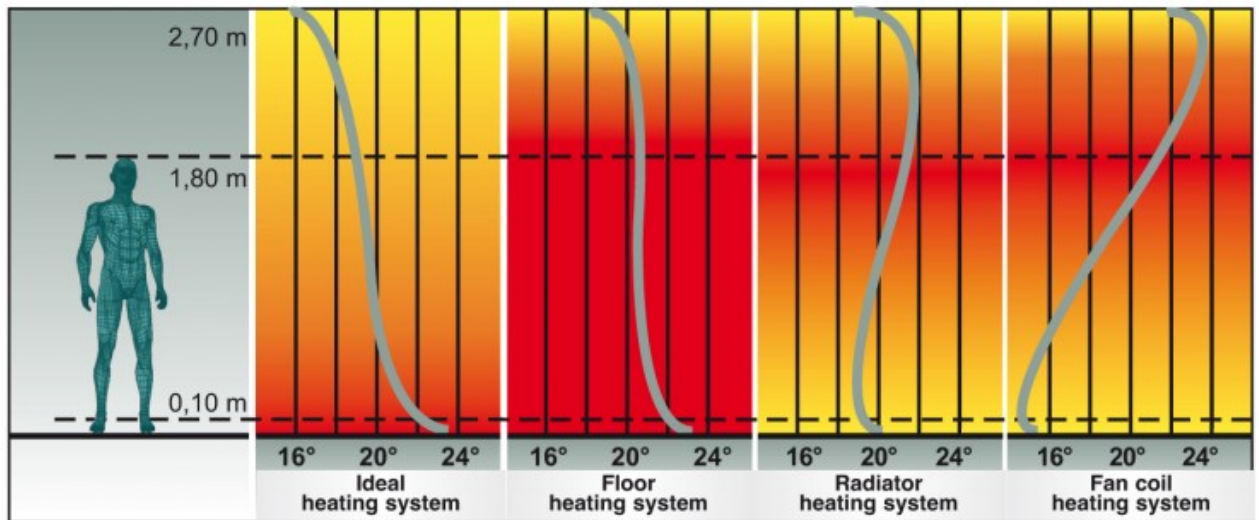
In recent years underfloor heating systems have seen important technological and commercial development. In new homes, in industrial warehouses and in restructured buildings, the choice of radiant panels is often preferred to traditional solutions such as radiator systems and fan heaters.

Some of the basic characteristics of radiant systems provide a logical explanation for this growing trend:

- high thermal comfort;
- aesthetic advantage;
- excellent hygiene in the heated environment;
- very low handling temperature;
- limitation of handling costs about 15% (compared to traditional heating systems);
- integration with energy-efficient systems.

#### **THERMAL COMFORT**

Upon observing the diagram that represents the ideal heat distribution curve it can be seen that most similar result can be achieved by using underfloor heating systems. This is because human body recognizes a wellbeing feeling when room temperature is about 22/23°C at floor level and just a few degrees less at around head height. Further benefits are linked to the presence of a large radiant surface at a low temperature and to the fact that 50% of heat distribution occurs through radiant.



#### AESTHETIC ADVANTAGE

The advantages that stem from the freedom of having a room that has no elements such as radiators or fan heaters are quite obvious: an area which can be used in its entirety, with no constraints as far as furniture, guarantees much better aesthetic solutions.

#### HYGIENE

Another advantage of underfloor heating system is the fact that there is no combustion of atmospheric dust, a typical situation that with traditional systems, can be the cause of irritation to the airways. The circulation of dust is, in this case, determined by convection motion which first heats the air at ceiling level and, subsequently, the air at head height. In addition, with underfloor heating system, there is no production of damp areas with the consequent proliferation of bacteria and mould.

#### ENERGY SAVING

Floor heating systems guarantee, when compared to traditional systems with the same room temperature, energy savings of 15-20%. The reasons for this result are mainly linked to the following factors:

- low temperature of the fluid;
- large radiant surface area;
- less thermal exchange of the panel with the cold walls.

In large buildings, such as warehouses, shopping centres and churches, where rooms have very high ceilings, the fact that there is a radiant surface that distributes heat upwards enables the desired temperature to be reached at eye-level, where it is most needed. Therefore, ambient comfort is combined with advantage of avoiding waste of energy due to the upward stratification of heat.



#### INTEGRATION WITH ENERGY-EFFICIENT SYSTEM

The use of water at low temperature makes the underfloor heating system the best solution for water heating energy-efficient system as solar thermal systems, geothermal heat pumps, but also with the classical condensing boiler.

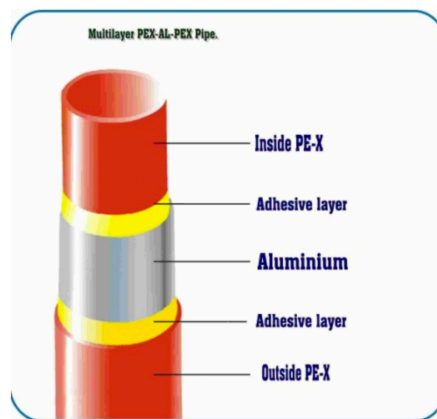
#### UNDERFLOOR DESIGN

Our underfloor system is at the forefront of making a heating system comfortable and efficient. We design all our systems individually to cater for our client's specific needs. This means that based on the layout of each individual floor, room requirements, insulation levels and floor coverings the corresponding underfloor installation will be fitted so as to capitalise on the heating systems efficiency.

#### UNDERFLOOR MATERIALS

##### Pipework

The quality of the piping, manifolds and fixings is paramount to guaranteeing the longevity of our system. The underfloor piping is a multi-layer aluminium barrier pipe sometimes referred to as pex-alu-pex.

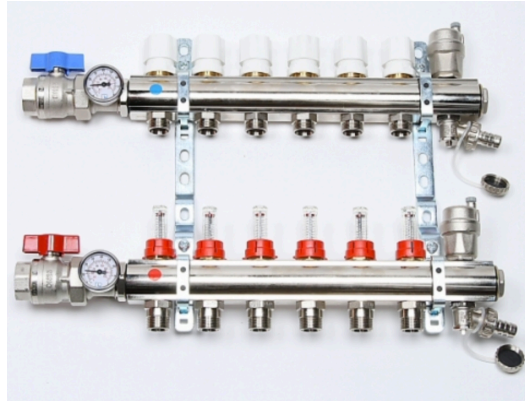


The aluminium core not only reinforces the pipes strength but also guarantees that there will be no oxygen diffusion through the pipework over time. Therefore the instances of pipework "airlocking" have been reduced significantly.

The underfloor pipework will be installed on the ground floor at a maximum of **150mm centres**. This means that we will never have more than 150mm space between our pipes. This caters for a comfortable experience in all rooms and brings an increase in responsiveness in the colder weather.

We test all our pipework when installed to at least 5 bar pressure. This pressure is over two and a half times the normal pressure that will be in the system when operational and testing to this pressure results in the customer being reassured that there is no chance of the pipework failing in the future.

## MANIFOLDS



Our manifolds are nickel-plated brass manifolds. These manifold come complete with:

- Flow meters: to balance the system out when operational which means that rooms will all heat at the same rate
- Regulating valves: these ensure that each port on the manifold can be isolated individually which helps in commissioning the system
- Isolation valves: these help isolate the entire manifold to help in commissioning and also if the manifold e.g. needed to be extended.
- Temperature gauges: these will show the temperatures on both the flow and return pipework
- Air vents: these are used to vent any air from the system at commissioning stage and when the system is being serviced if required.
- Drain Valves: This is used to fill the system and drain the system if required

## CONTROLS

We use the Heatmiser control system which is a leading force in heating system controls for a number of years. The room stats are a digital display stat with a simple dial control that is very user friendly for changing the required temperature. This dial is also lockable to prevent it being adjusted. Advanced controls and network enabled controls are available upon request.