Flawless underfloor heating and cooling at your fingertips

warmafloor

we know a touch more

Contents

A warm welcome to Warmafloor

For 30 years, Warmafloor has been at the forefront of the UK's surface heating and cooling industry. Three decades over which we have invested in research and development, introduced valuable innovation, shared our knowledge and partnered hundreds of successful projects.

That we are Britain's leading underfloor heating specialist is no accident. Our quest is, and always has been, to be the best.

So we focus completely on underfloor heating and cooling systems and provide a unique wall-to-wall solution to deliver excellence. We are the only company to design, supply, install, commission and provide ongoing support to every system, because it gives us total control and our customers total assurance.

The things that matter to customers – efficiency, quality, consistency, sustainability, flexibility and personal service – matter equally to us. And that is why Warmafloor systems are installed in landmark buildings in almost every sector across the UK.

As you'll see, when it comes to underfloor, we know a touch more.

Call: 01489 581787
Email: sales@warmafloor.co.uk
Web: warmafloor.co.uk

Greater expertise at every turn

From the earliest days of the UK's radiant floor heating industry, we have spent time learning, researching, investing and partnering the British building industry to see large and complex projects through to completion for commercial, industrial, public and residential buildings.

360° competency

Such is the depth of our experience and capability that we feel confident in claiming to know just a touch more about underfloor.

No other company brings such well qualified expertise to every aspect of surface heating and cooling, from consultation and system design to supply, installation and on through to certification and bespoke aftercare. It's a complete solution that reduces risk and gives our project partners one point of contact.

We believe that when well designed, accurately specified and professionally installed, underfloor heating provides the most efficient and comfortable all-round warmth of any heating system.

So, whatever the scale of your project, we will do all we can to ensure every facet of our solution is flawless, from the highest performance polybutylene pipes (which carry an industry leading 100-year guarantee) right down to easy access information and useful FAQs on our website.

A unique fingerprint

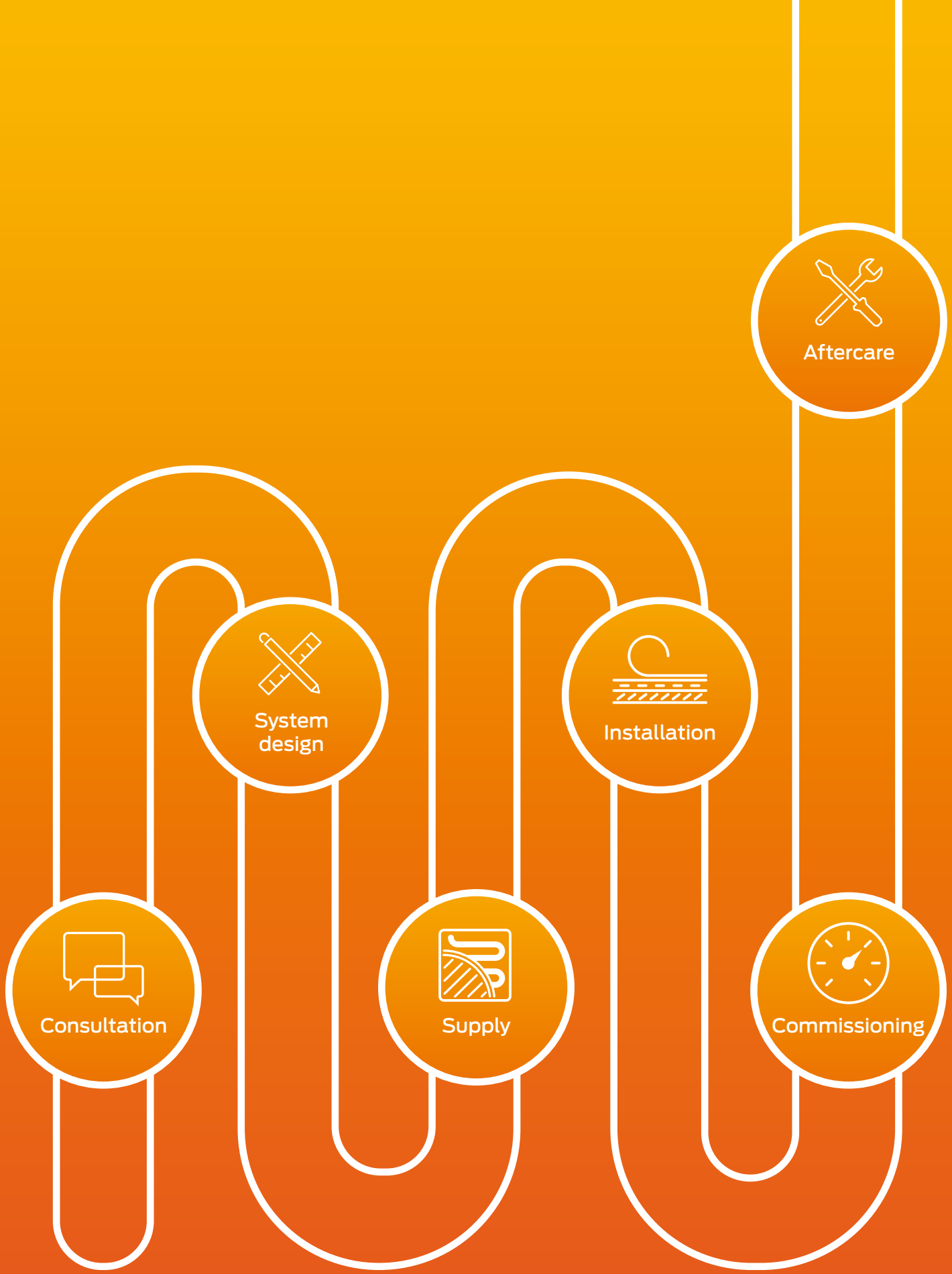
Pipes, plates, panels, meshes, manifolds and more feature in any underfloor installation, but at the heart of every Warmafloor system is the key component of our people. We invest in developing and training our team so that every customer can rely on quality of delivery, right from your first enquiry through to servicing and support.

We extend this to installation too, employing our own installers as well as approved contractors to ensure that projects stay on spec, on schedule, on budget and perform without fault.

In addition, our systems are available on a supply-only basis, or a design and supply basis for customers qualified to carry out the installation work themselves, and we work with our partners to provide accredited CPD courses.

It's a total solution that delivers total assurance.

Read on to learn more about key aspects of the Warmafloor system and the powerful benefits that underfloor heating and cooling can deliver to almost any building.


Aftercare
System design
Installation
Consultation
Supply
Commissioning

A leading choice of energy sources, floor types and system designs

With a degree of confidence, we believe that Warmafloor has more experience and capability in large and complex projects than any other company in the UK. We are able to work effectively across multiple mechanical and electrical contracts, and have a wealth of case studies that illustrate both the scope of our expertise and the scale of the projects we have partnered.

From conception to completion, if you have the floor we have the system. Solid floor screeded systems, structural concrete floors, batten/sprung floors, floating, suspended and raised access floors are all in our standard portfolio.

In fact, our designers are pushing boundaries in underfloor heating technology, adapting basic principles and standard components to provide unique solutions, not only in non-standard floor applications, but also in ceilings and walls.

Keeping cool

Cooling is increasingly a consideration for building owners and designers. With official reports predicting that the average national temperature could rise by as much as 8°C in the next century, the ability to offset high ambient temperatures and solar gains in summer months by circulating cool water is a major benefit of our underfloor systems.

Fit for the future

Echoing the choice of available systems for different floor types, we are also able to advise on an extensive range of potential energy sources. Building Regulations, growing environmental concerns and government initiatives, such as the Carbon Plan to cut greenhouse gas emissions by 80%, are increasing the demand for renewable solutions.

Warmafloor systems can connect to renewable technologies such as solar panels, wind turbines, ground source heat pumps and biomass boilers, often allied to a traditional condensing gas boiler to ‘top-up’ energy as required. The result is a system that is less expensive to operate, with a high coefficient performance factor, a reduced carbon footprint and creating a more comfortable, year-round working or living environment.

Drawing on an investment in innovation

Whether in undertaking research and development, supporting education and training, offering system advances, non-standard solutions, introducing new materials or expanding the choice of energy sources, Warmafloor has a pedigree in innovation and advancing the cause of surface heating.

The following two key developments clearly demonstrate how that investment pays dividends for our customers.

Setting the industry standard

At Warmafloor, we pioneered the use of full-colour Auto CAD for designing and preparing underfloor heating drawings. Every project is accompanied with up to four drawings: from an initial zone design concept for consideration and costings; to a full design for approval; followed by construction drawings for client and our installer; and finally, a set of record drawings at completion, which accurately record the system as installed.

Our experience shows that such attention to detail at each and every stage is vital to smooth running on site, underpinning our ability to bring even the most complex projects in on schedule.

Controllability

Intelligent control lies at the heart of minimising energy consumption, increasing efficiency, delivering optimum comfort, achieving cost reductions in operation and enhancing the lifetime value of every system.

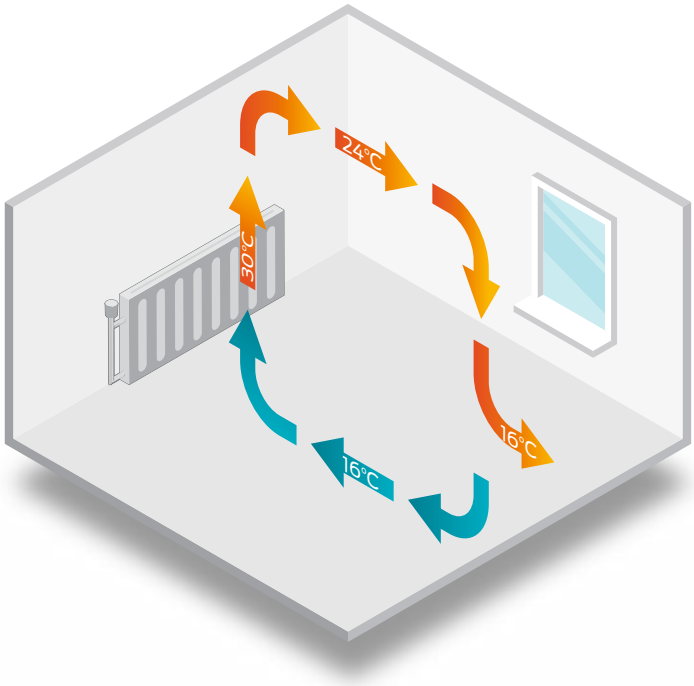
Our advances in pioneering an intelligent control system – one that manages multiple energy sources from a central location – puts the ability to tune every aspect of the installed system at a user's fingertips.

Turn to page 18 for more information on our Inteliq smart control systems.

Cut heating bills by approx 8%

By lowering the temperature of a heating system by just one degree.

Delivering much more than warmth

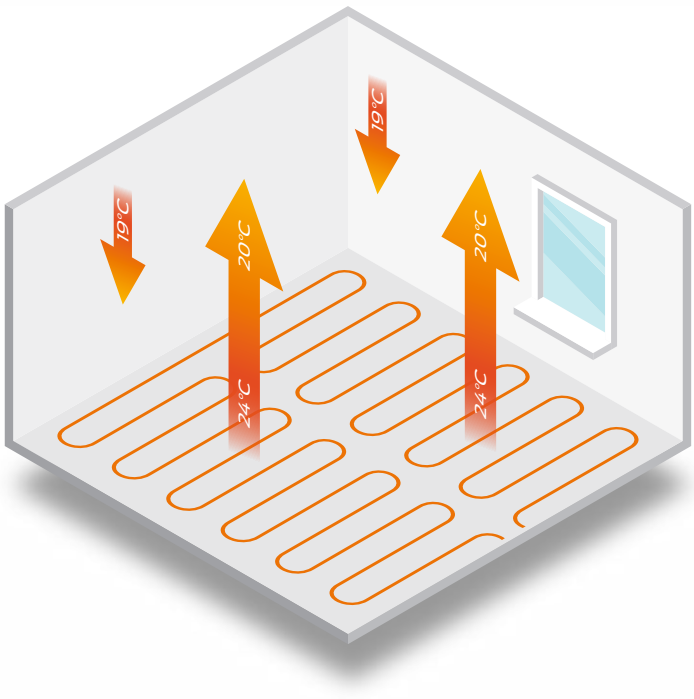


Systems with radiators

Radiators distribute heat by convection currents, which can result in draughts and hot spots. The floor will be the coldest zone of the room, as hot air rises, and the space above your head will be the warmest part of the room.

Radiators transfer heat into a room largely by convection from a hot metal surface. Because the surface of the radiator is small, in comparison to the volume of the room, it needs a high heat input and doesn't spread the heat evenly.

Convection currents also circulate allergens, dust particles, fumes and germs, which are then distributed around the building, contributing to an unhealthy atmosphere.



Underfloor heating

Underfloor heating systems are simple to install, low maintenance and cost-effective to run. The room is heated mostly by radiation – the most natural and comfortable form of heating, creating a uniform environment with no hot or cold draughts.

Rooms with high ceilings such as churches, sports halls or industrial units gain even greater benefits. With radiator systems, some of the heat is immediately wasted as it rises to the ceiling. With an underfloor heating system, the heat is concentrated at floor level where it is most needed. In rooms with large areas, underfloor heating is the only way to heat the centre of the floor area effectively.

Warmafloor offers
a bespoke aftercare service

routine inspection

general maintenance

system refurbishment

Floor coverings

Floor coverings such as carpet, underlay and timber reduce the floor heat output. Please check with us to confirm suitability. Some floor coverings, especially timber and vinyl floors, have a recommended maximum floor surface or sub floor temperature that they can operate at; if a higher temperature is used it can damage the floor covering. Manufacturers' data sheets should be checked to confirm the covering's suitability.

Energy efficiency

- Underfloor heating is the most energy efficient way of transferring heat into a room and can consistently deliver substantial energy savings compared to radiator systems.
- Because underfloor heating systems benefit from the use of lower water temperatures throughout the system (rather than hot water in radiator systems), condensing boilers can generally run at greater efficiency, saving even more energy costs.
- By providing a constant heat, underfloor heating allows occupants to feel more comfortable at a lower temperature.

Interior design

- Out of sight, underfloor heating gives a total flexibility in layout, with no radiators to limit interior designs and furniture arrangement.
- Underfloor heating is compatible with most types of floor covering. The interior designer has freedom to specify most materials whether it be tiles, wood, laminates or carpets.
- Even though it can't be seen, underfloor heating adds perceived value to the property.

Sustainability

- Warmafloor has been part of the project team for many buildings that have won architectural and energy savings awards.
- By providing greater control, energy efficiency, and by using recyclable materials, Warmafloor can contribute to BREEAM credits, a lower carbon footprint, enhanced sustainability and lifetime value.

Health & Safety

- Underfloor heating systems eliminate radiators, which can potentially be a health and safety risk because of their high surface temperatures and sharp edges.
- Moisture levels in floor coverings are reduced, which reduces microbiological growth and the risk of slipping. In carpet, it virtually eliminates dust mites.
- As there is no convection driven airflow, and the circulation of bacteria and pollen is reduced, the indoor air quality is cleaner and healthier.

Underfloor cooling. Year-round environmental control

Underfloor cooling in a high precision engineering facility

Underfloor systems installed to provide heating and optimum comfort during winter months can also be utilised to cool buildings when temperatures rise.

One installation. Two efficient systems

This dual usage not only delivers installation efficiencies and a perfect environment all year round, it also provides economic, aesthetic and environmental benefits that outperform alternatives. By reducing or removing the demand for air-conditioning, an underfloor cooling solution can further cut your energy costs and carbon footprint.

Simply by circulating cool rather than warm water through the system, a floor can be cooled to offset solar gain and high ambient temperatures.

Underfloor cooling operates with chilled water, sourced via air or ground source heat pumps or a chiller, circulating through the pipes within the floor. This is unlike air conditioning systems, where air is forced over a cooling element to provide cold air.

The floor is cooled to a temperature lower than the air above, reducing the air temperature through the transfer of energy by radiant heat exchange. Silent in operation, the process also delivers a better quality of air, with no temperature cold spots, draft or dust circulation.

It is crucial to consider from the outset whether cooling will be a requirement for any given project, so that the optimum design and specification can be detailed and engineered into the installation.

Sustainability runs through every inch of Warmafloor

Building Regulation, government directives, the concerns of contractors, and the conscience of individuals have combined to make energy efficiency and sustainability essential elements of any modern-day building brief.

In response, we at Warmafloor are genuinely committed to making positive contributions to the sustainable future of every build project we are involved with. Through the careful selection of materials, smart design and thoughtful operation on site, we ensure that we minimise our own environmental footprint, while delivering some of the most sustainable heating and cooling systems available.

- Warmafloor is one of only a few companies to use a five-layer, polybutylene barrier pipe to circulate water. The pipe is fully recyclable, uses no toxic chemicals and is designed to last for the life of the building.
- Insulation products, such as our expanded polystyrene, have an ozone depleting potential of zero.
- All boxes used in our packaging are made from recycled cardboard, and we endeavour to use biodegradable packaging throughout.
- Our manifolds are 100% recyclable and are assembled in the UK.
- Our recycling policy enables both expanded polystyrene and polypropylene to be converted back into a solid state.
- The ABS plastic used in our plate clipping system is vacuum formed from recycled material and, at the end of its useful life, can be recycled and reused as mouldable material.
- Products and materials used on installations are selected so they can be recycled and we are committed to keeping waste on every project to a minimum.

Some of Britain's finest buildings carry the Warmafloor fingerprint

Over 30 years, Warmafloor has created an enviable track record of helping large and complex construction and regeneration projects reach their energy efficiency and sustainability goals.

With an installation completed somewhere almost weekly, that invaluable experience extends from prestigious projects like the Olympic Delivery Authority and British Museum, to what was at the time the world's largest underfloor system for the MOD, over 2,000 schools, and almost all other applications and sectors.

Whether the project is large or small, new build or refurbishment, underfloor heating from Warmafloor offers a touch more.

- Education
- Leisure & Retail
- Healthcare
- Residential
- Churches, Cathedrals & Museums
- Government
- Inner city regeneration

Scottish Parliament, Edinburgh, Scotland

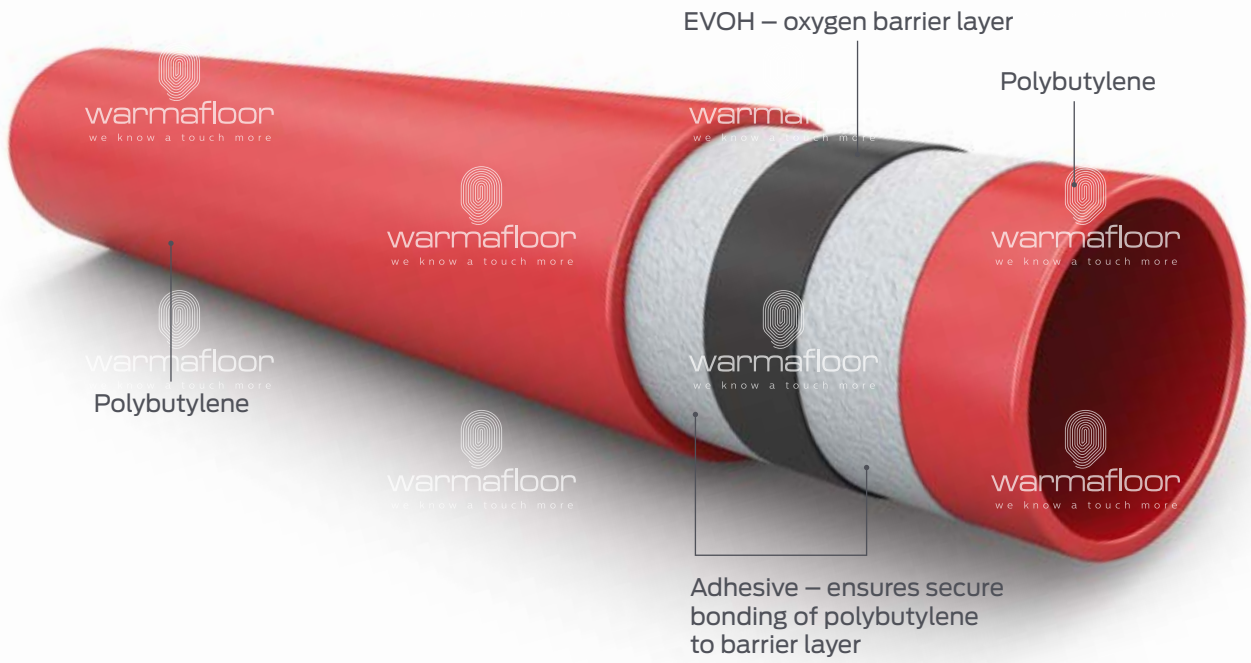
Warmafloor components. Made to perform better

Any underfloor system can only be as good as the components used in its construction. And, to ensure our customers can trust in the best possible solution, we use only the highest quality components.

It is why we insist on polybutylene pipe that carries an industry leading 100-year guarantee, why we hand-build bespoke manifolds and why we have engineered control systems that combine extensive functionality with a simple user interface for energy efficient control.

The following pages provide an overview of these key elements.

Superior Pipe. Superior performance



As part of our quest to provide only the best, we insist on polybutylene pipe in our systems because of its unrivalled balance of properties in installation, in use and in sustainability.

Manufactured to all known European quality and performance standards*, Warmafloor polybutylene is designed to last for the life of the building and carries an industry leading 100-year guarantee.

*(Including BS EN 9001 and BS EN ISO 2100 BSI Kitemarked)

Installing the best

More flexible than other pipe material, it offers excellent creep resistance, is non-corrosive, resists frost damage and is unaffected by hard, soft or aggressive water conditions.

An integral oxygen barrier is fully protected within an advanced, five-layer construction, ensuring that oxygen cannot permeate and removes any potential risk of corrosion.

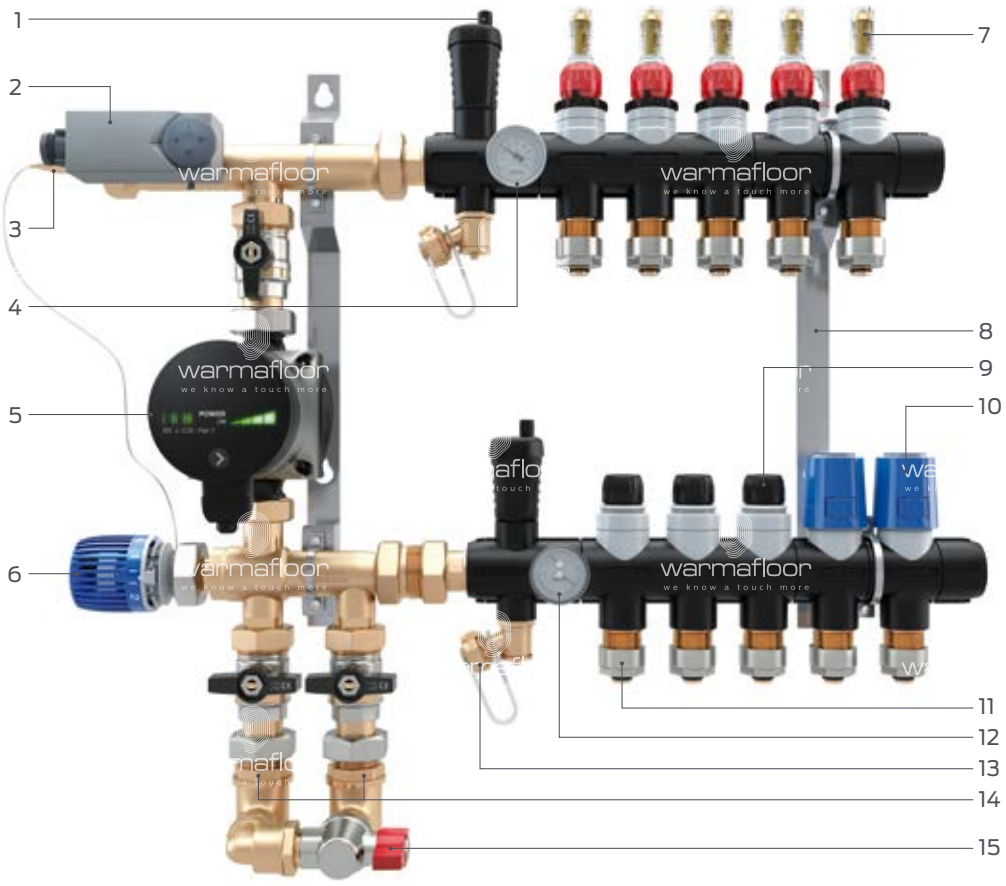
Available in 16mm and 20mm diameters, and in coils of up to 200m in length, polybutylene pipe speeds installation, enables versatility in, and the optimisation of, coil layout and ensures, in line with industry best practice, that there are no underfloor joints. And its performance credentials are matched by its environmental qualities. Polybutylene has markedly less embodied energy than many competing materials and, if required, can be recycled and converted back into granular form for reuse.

Proven in applications worldwide, and in prestigious projects from Canary Wharf to the Welsh Assembly, we believe polybutylene is simply superior.

Warmafloor Manifolds. Connecting to quality

Composite Blending Manifold

1. Automatic Air Vent (AAV)
2. High Limit Thermostat
3. TMV Temperature Sensor
4. Flow Temperature Gauge
5. Circulating Pump
6. Thermostatic Manifold Valve (TMV)
7. Flow Rate Indicator
8. Wall Mounting Bracket
9. Manual Head
10. Thermal Actuator
11. Pipe Connectors 16-20mm
12. Combined Pressure and Temperature Gauge
13. Fill and Drain Valve
14. Isolating Valves
15. 15mm Full Bore Flushing Bypass



Our range of Standard and Blending Composite Manifolds completes an unbroken circuit of quality in every Warmafloor system, utilising the most appropriate materials for the specific functions they are intended to perform.

That means industry standard brassware for compression connections, and a barrel body manufactured from Glass Fibre Reinforced Black Polyamide, which is not adversely affected by any accidental contact with linseed oil sealing compounds and is further unaffected by soft, hard or aggressive water or inhibitors.

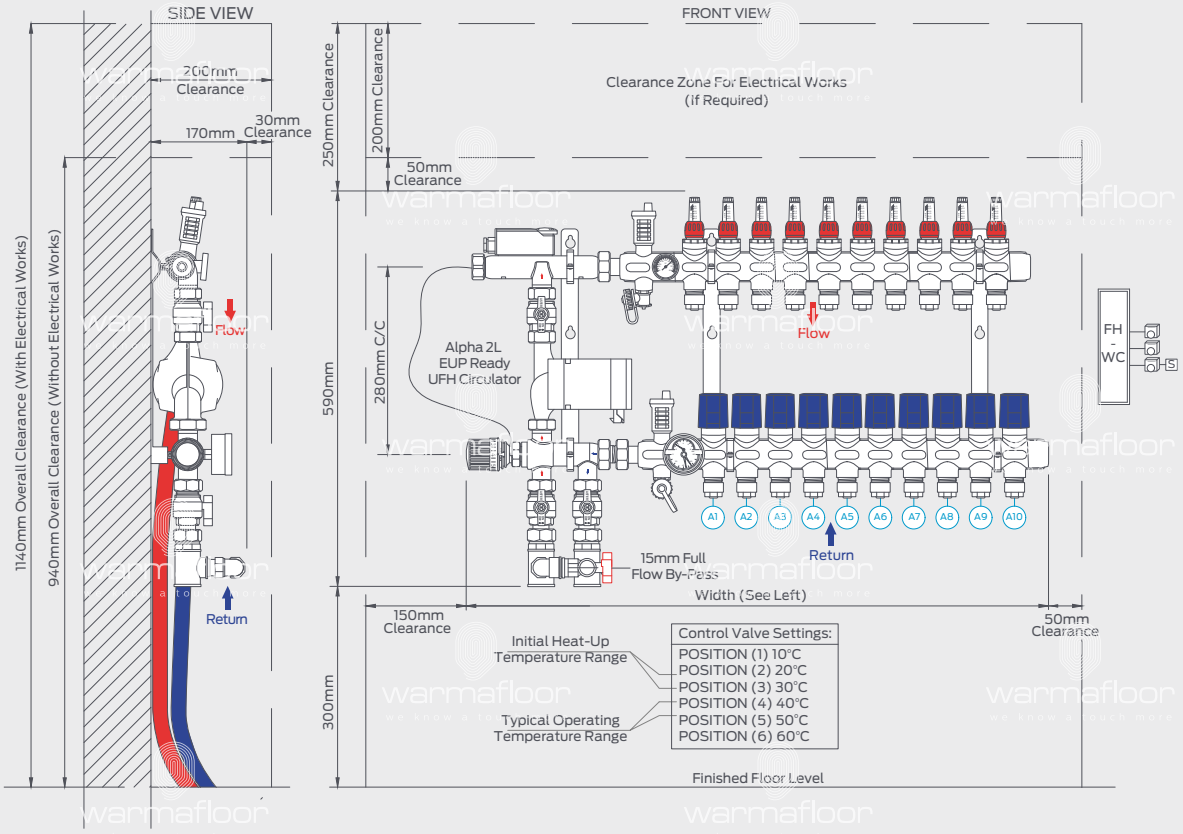
High grade stainless steel ball valves are used to isolate/shut-off the manifold, with industry standard gauges for reliable and accurate readings, and brand leading Grundfos pumps for superior energy/system performance. Even the supporting brackets are precision engineered to secure the manifold and offset the barrels to allow the flow pipework to be routed behind and adjacent to the return connection.

All configurations of the manifold have been rigorously tested by the British Board of Agrément (BBA CERT.10-4738) and are 100% recyclable.

Composite Blending Manifold

Dimensions:

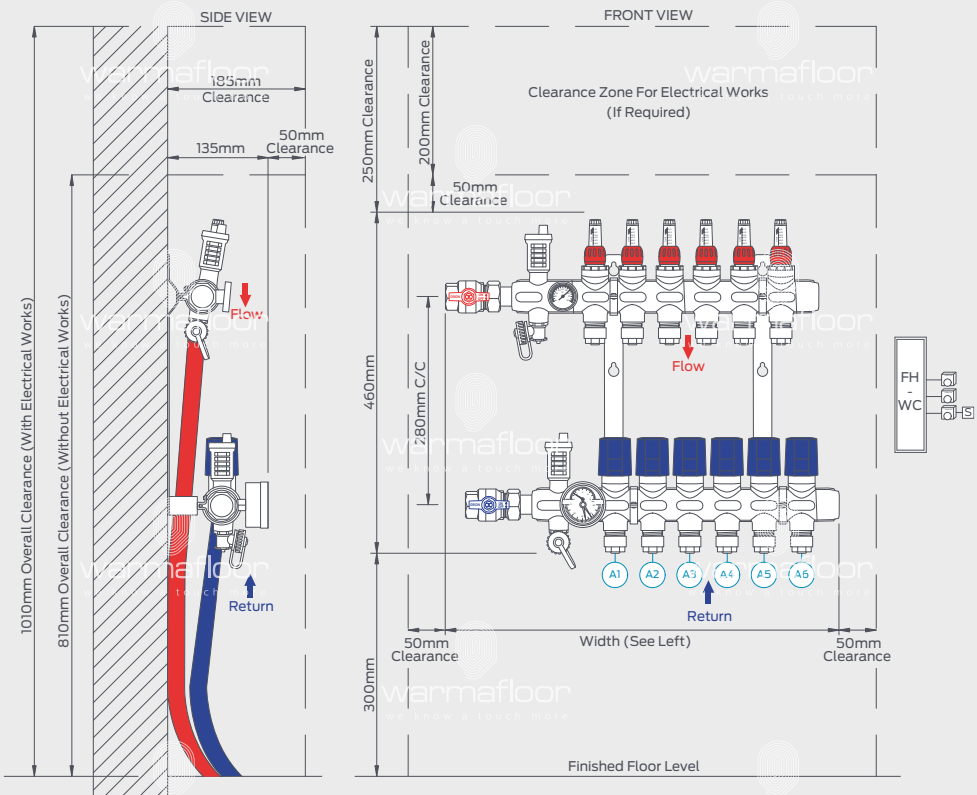
2 Port	470mm
3 Port	520mm
4 Port	570mm
5 Port	620mm
6 Port	670mm
7 Port	720mm
8 Port	770mm
9 Port	820mm
10 Port	870mm
11 Port	920mm
12 Port	970mm



Composite Standard Manifold

Dimensions:

2 Port	330mm
3 Port	380mm
4 Port	430mm
5 Port	480mm
6 Port	530mm
7 Port	580mm
8 Port	630mm
9 Port	680mm
10 Port	730mm
11 Port	780mm
12 Port	830mm



Intelligent control. The key to efficiency

Whether an underfloor installation is in a school, warehouse or residential tower, smart control is key to delivering the optimum in climatic comfort and energy efficiency.

We provide a range of solutions designed to give each building's inhabitants or managers the perfect balance of control and functionality.

INTELIQ

smart control systems

Our Inteliq smart control systems are the culmination of 30 years of experience in underfloor heating and its precise and practical control.

This modular solution puts all our learning and expertise at the user's fingertips. By combining sophisticated functionality and advanced technology into one user-friendly touchscreen control, it is easy to create the perfect environment – whatever the season, scenario or space.

- Control up to 32 zones from one intelligent touchscreen
- Precision climate control with the capability to dual-sense air and floor temperatures, with high and low set points in each zone
- Four time and temperature set options for every day of the week
- In-built Night Set Back and Holiday Mode for optimum efficiency
- Mirror building usage with sensor lock-out of individual zones
- Secure password protected touchscreen
- Sensor accuracy of at least 0.5ºC
- 'Quick-view' display of zone status including current temperature, set points, demand state and recent activity log
- Auto-optimisation constantly monitors and self-learns settings for enhanced 'curve-control', eliminating heating lag and promoting an efficient 'steady state'
- Constant monitoring of all network diagnostics with on-screen 'fault-find' alerts
- Automatic pump and actuator exercise routine reduces maintenance call outs
- Auto frost and building fabric protection with multiple weather compensation settings
- Advanced configuration capability for VRF/VRV and 0-10V Fan Coil Units
- Precise, individual zone/room control for both heating and fan cooling
- Seamless Building Management System integration for single source control of a building's services infrastructure

Standard Control Systems

For more basic control solutions, we have two building regulation compliant Night Set Back systems to choose from.

Programmable NSB System

- 230V digital and programmable thermostat
- 4 time and temperature daily settings with a 5/2 day programmer
- Dual floor and air temperature sensing with minimum and maximum temperatures
- Current temperature display
- In-built frost/fabric protection
- Child safe-lock button feature

Tamperproof NSB System

- 24V thermostat with built-in NSB via external time clock
- Dual sensing capability with minimum or maximum temperatures
- Programmer protected by tamperproof façade
- Choice of 3 operating modes – NSB, comfort or timer

Ad-Vantage Warmafloor At London Landmark

Sitting above Archway tube station is a 17 storey office building being converted into 118 apartments with a roof terrace, winter garden and club room by developer Essential Living.

As the building is located in one of London's red routes and space on site is extremely limited, the challenge to Warmafloor was to deliver the project efficiently, meeting Grid Architects' requirements, and the developer's delivery schedule.

To create a comfortable environment for residents, designers Grid Architects specified an underfloor system to provide efficient heating and acoustic flooring to minimise noise between the apartments.

Warmafloor set about installing eight apartments per week, achieved in cycles of batten laying, insulation, pipe installation and testing. On sign off, each floor will be topped using Smartspan cementitious board.

Warmafloor installed its Inteliq smart control system which can interface with multiple energy sources from boilers, heat pumps and solar panels through to energy exchangers, underfloor heating, radiators and fan coil units to optimise the generation and demand side of the building at minimum running cost.

In order to comply with Building Regulations and to provide home owners with an environment that is tranquil, Warmafloor installed acoustic batten floors. The Vantage Point Archway development is on target to achieve a BREEAM 'Very Good' status.

Key facts

Project
Vantage Point Archway Tower

System
Inteliq smart control system
Acoustic batten floors

Developer
Essential Living

Warmafloor was able to meet the various challenges this project presented, offering a solutions-driven approach to the heating and flooring requirements and also meeting the tight installation deadline.

Toby Conroy, Senior Programme Manager at Essential Living Management

Your guide to underfloor systems and floor types

If you have the floor, we have the system

Underfloor heating and cooling can be installed in any type of floor construction and with most floor coverings.

From offices, schools and residential blocks, to sports academies, churches, museums and factories, we have extensive experience, and have gained invaluable knowledge, in meeting the challenges of even the most demanding projects.

Because we provide an end-to-end solution, we also have the ability to tailor systems and components to meet bespoke needs, which have included installations in walls and ceilings as well as floors. We can also project manage the screed installation.

Over the following pages, we detail the systems we can provide for common floor types, but do get in touch directly if you have a project requirement not covered in this brochure.

Call: 01489 581787
Email: sales@warmafloor.co.uk
Web: warmafloor.co.uk

Solid Floor Screeded Systems

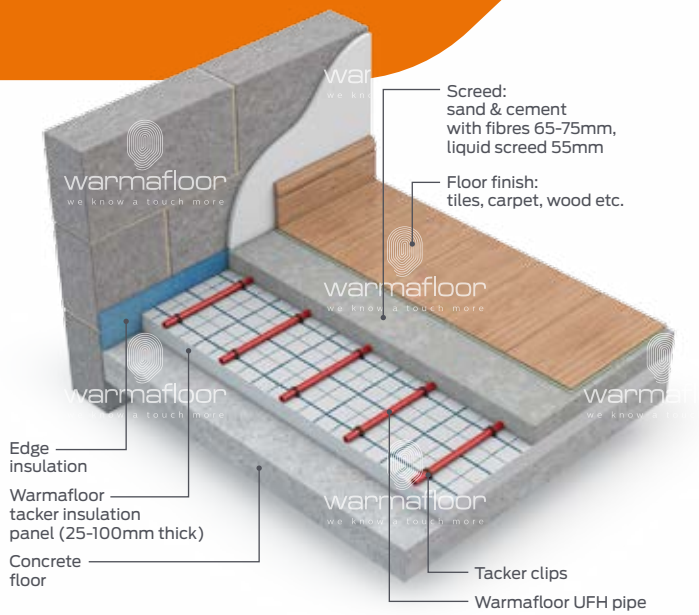
Warmafloor systems can be fitted to any type of concrete floor construction which has a screed topping.

The elements of the system – floor insulation, edge insulation, moisture barrier, fixing system and pipework – are installed utilising one of the Warmafloor systems as detailed, then covered with the appropriate screed and final floor finish.

The system can be selected according to constructional requirements and we will specify what we consider the most appropriate for the project.

We will also advise on the most suitable depth and screed type to be used. Warmafloor screeded systems are available to suit all types of commercial, industrial, public sector and housing applications.

Once installation is complete and the screed installed and dried out to suitable moisture content, almost any kind of floor covering (including marble, tile, carpet, stone and timber) can be fitted to the floor surface.



Tacker System

The Warmafloor Tacker system is the most widely used for screeded floors because of its versatility and ease of installation.

Warmafloor Tacker floor insulation panels are available in any thickness and various insulation materials, providing solutions for any floor requirement.

The floor insulation panels, whilst generally supplied in expanded polystyrene EPS, are also available in polyisocyanurate (PIR) or in extruded polystyrene, providing extra strength or greater “U” values.

Warmafloor Tacker floor insulation panels have a hessian-based polyethylene foil laminated to the surface of the panel. The foil provides a gridded reference for correct pipe spacing and fixing and is also water resistant.

Edge insulation is laid around the area to be heated; this provides a barrier against perimeter heat loss and for screed expansion. The Warmafloor Tacker insulation panels are then laid over the complete floor area. Warmafloor PB pipework is then laid out in circuits and secured into the Tacker panel by specially designed staples, installed with a Tacker gun. These staples are fully retained by the fabric thereby preventing the pipe lifting during screeding. The underfloor pipework is connected to the Warmafloor manifold, filled with water, and pressurised to check for watertightness.

As soon as practical after the installation is completed, the screed should be laid over the system to the required depth.

Wire Grid System

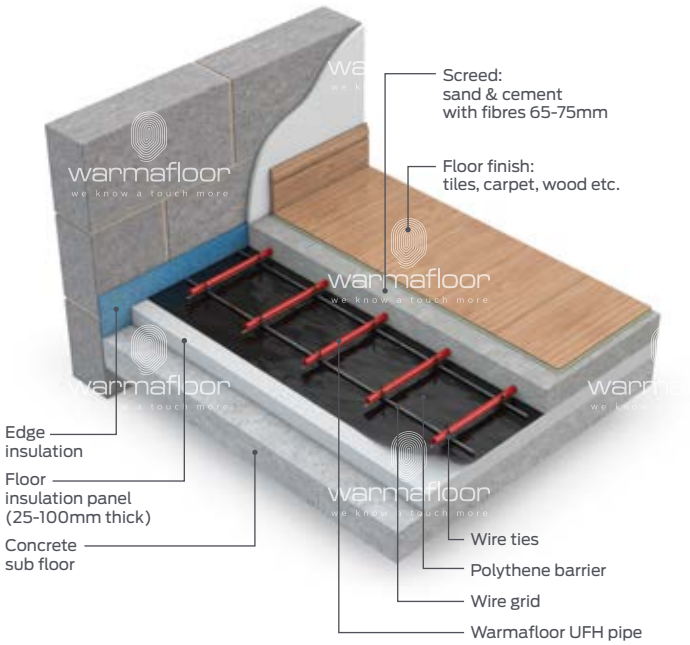
The Warmafloor Wire Grid system is a simple to install approach that provides a robust fixing system where Warmafloor Tacker floor insulation panels are not used.

The floor is fitted with suitable floor insulation, overlaid with a vapour barrier, with edge insulation to all walls in preparation for the installation. An A142 wire grid, which has a 200mm square mesh pattern, is laid butt jointed onto the floor insulation.

Warmafloor PB pipework is then laid out on the grid in the required configuration and secured to the grid with wire or plastic securing ties.

The pipework is circulated back to the manifold and is pressure tested, before screed laying is carried out.

The Warmafloor Wire Grid system is suitable for sand/cement or concrete screed coverings but is not suitable for liquid screed applications.



Clip Rail System

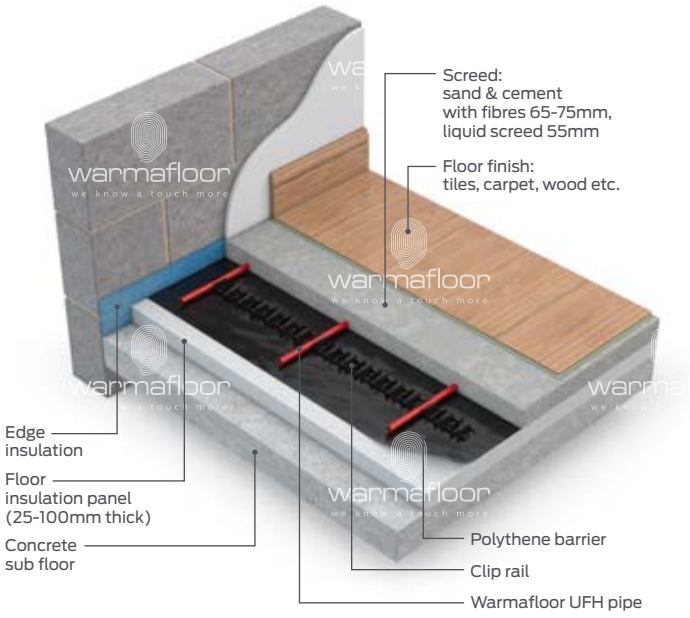
The Warmafloor Clip Rail system comprises plastic pipe-locating rails, fitted to the floor insulation, into which Warmafloor PB pipework is clipped.

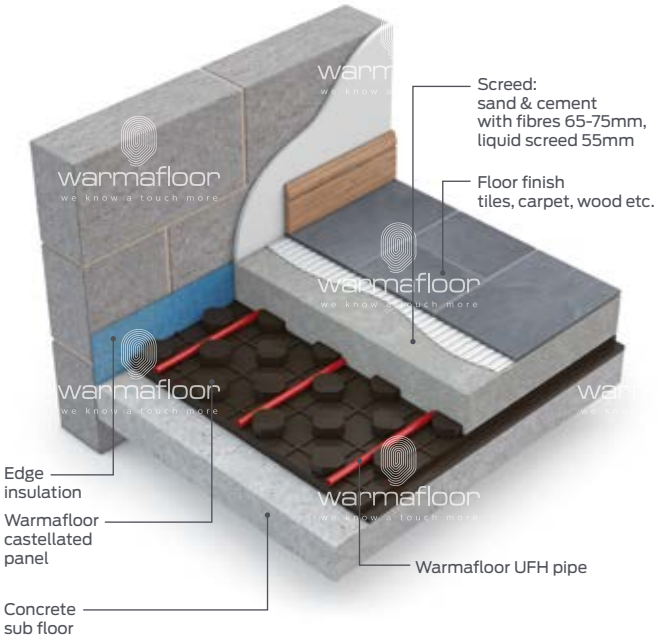
The rails are available for both 16mm and 20mm pipe.

Edge insulation and floor insulation is overlaid with a polythene slip membrane to cover the floor area. The Warmafloor Clip Rails are then located according to the system design and secured into the floor insulation with fixing pins.

Once the Clip Rails are fixed, Warmafloor PB pipework is laid out in the required system configuration for the building and is connected to the manifold.

The underfloor system is then filled with water and pressure tested to confirm the system's integrity prior to the floor screed being laid.





Castellated Plate Panels

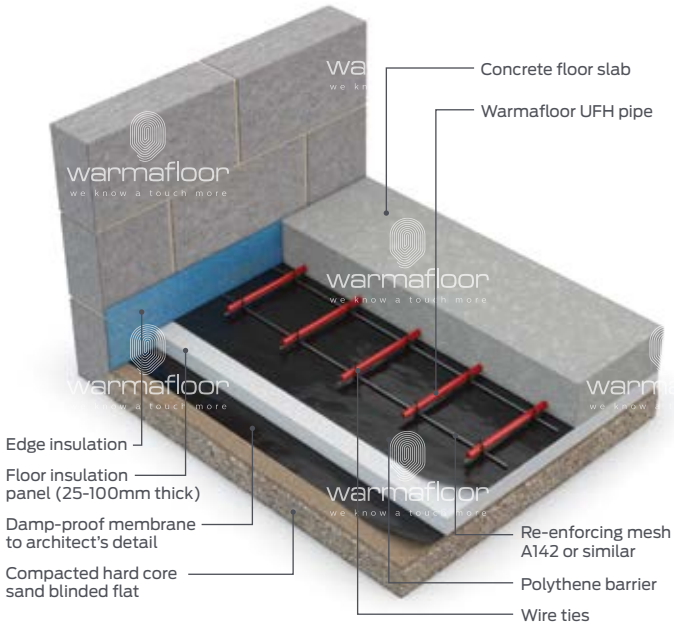
Warmafloor castellated plates are interlocking vacuum formed sheets of recycled plastic which incorporate pipe-locating castles. Sheets are laid over the sub floor, thermally insulated in accordance with Building Regulations, overlapping the edges by 75mm and interlocking them to form a continuous layer. Castellated plates are useful where there is a restricted floor depth.

Warmafloor 16mm PB pipework is clipped into the panels and the installation is complete and ready for the specified screed to be laid.

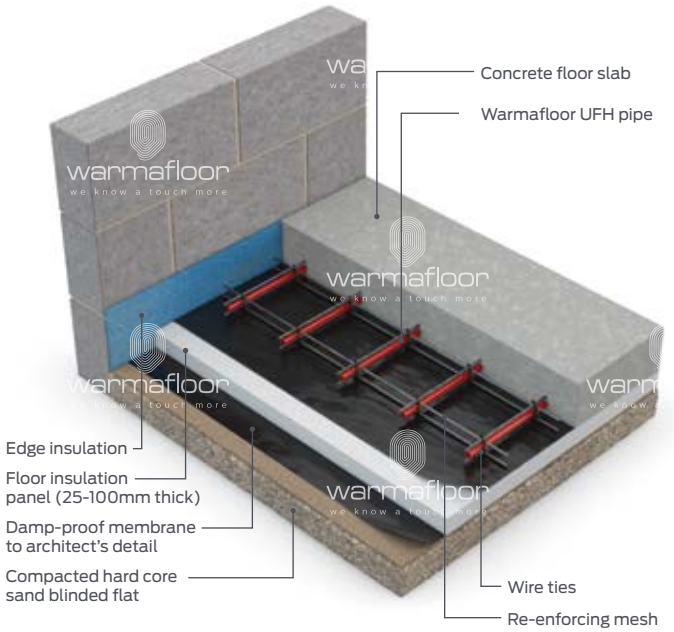
Surface heating has a 40% shorter installation period

1-2 weeks' preliminary savings over other heating options.

Concrete Slab



Structural Concrete Slab



Structural Concrete Floor Systems

Warmafloor systems can be incorporated within load bearing structural floors, in a variety of applications, from factories and warehouses to sports complexes.

There are generally two types of floor construction, those of a simple concrete slab construction and those which incorporate a reinforcing wire mesh grid at mid level in the floor. The floor construction generally comprises a compacted and level hardcore bed, which is sand blinded flat. Onto this, suitable insulation panels of the required density and thickness are laid and covered with vapour barrier, with edge insulation to the perimeter of the building.

Wire mesh is then installed either on the floor insulation – in the case of simple concrete slab floors – or in the case of structural floors, at the required level in the slab.

The Warmafloor PB pipework is secured to the mesh with pipe ties in the required configuration and spacing.

The Warmafloor PB pipework is circuited to the Warmafloor manifolds, filled with water and tested. Concrete is then laid to the required depth and strength, dependent upon the design criteria of the slab.

Floor finishes both with screeded concrete and structural floors can include tile, wood, paving slabs, marble etc.

Heated screed or concrete floors will expand and contract slightly during use; the edge insulation is normally sufficient to take up this movement. However, in certain situations and especially with floor finishes such as tile, marble or stone, screed expansion joints will be required. Whilst the Warmafloor pipe characteristics enable it to be stretched by 50% plus without damage, pipes passing through joints should be sleeved for safety.

All expansion joint layouts should be co-ordinated with screeder/floor finish company and confirmed by the architect.

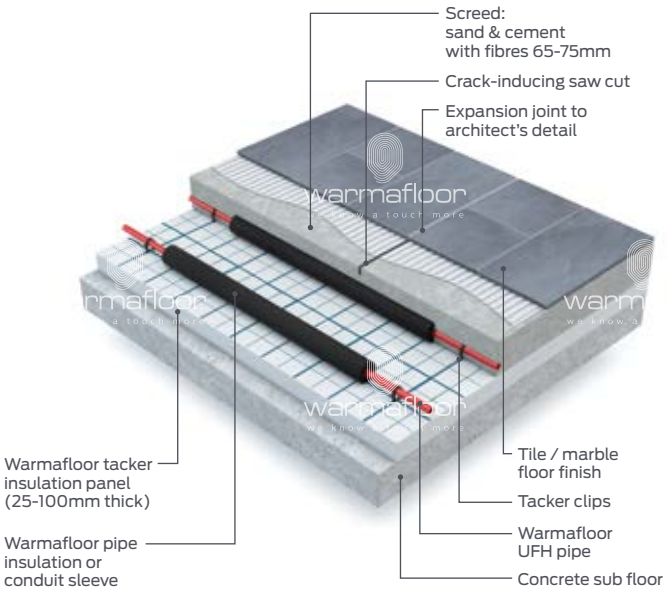
Screeded Floors

Very large rooms or areas may need to be sub-divided by expansion joints or crack inducers, which can then be sealed after screeding with flexible filler. Where these joints occur, the pipework circuits crossing them should be kept to a minimum and where pipes do cross the joints, they should be sleeved as detailed. In addition to this, screed expansion joints will be required in larger floors finished with tile, marble or stone to suit the floor layer's requirements.

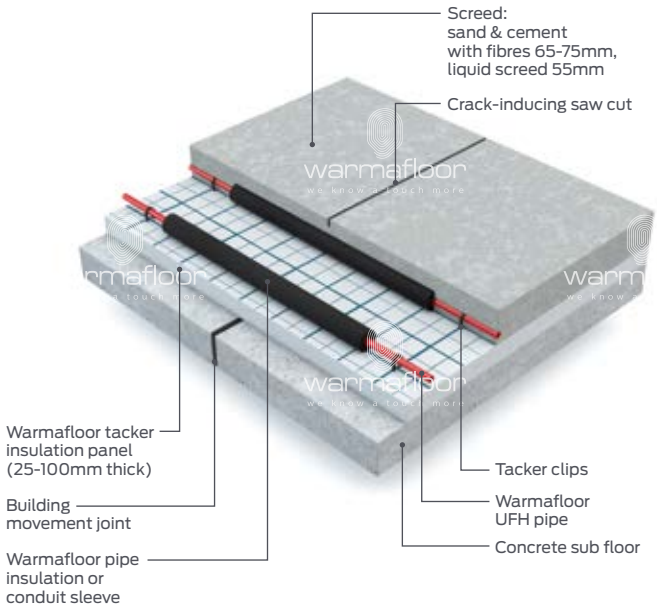
Structural Floors

Occasionally the underfloor heating pipework may have to run across movement joints in a structural floor slab. Where this occurs, provision has to be made for movement in the screed and floor finish above. Whilst crossing movement joints with piping should be avoided if possible, where they do cross over, a pipe sleeve of a minimum of 600mm long must be fitted to allow sufficient movement. For specific advice on movement requirements, always refer to the screeding contractor or architect.

Expansion Joint



Movement Joint



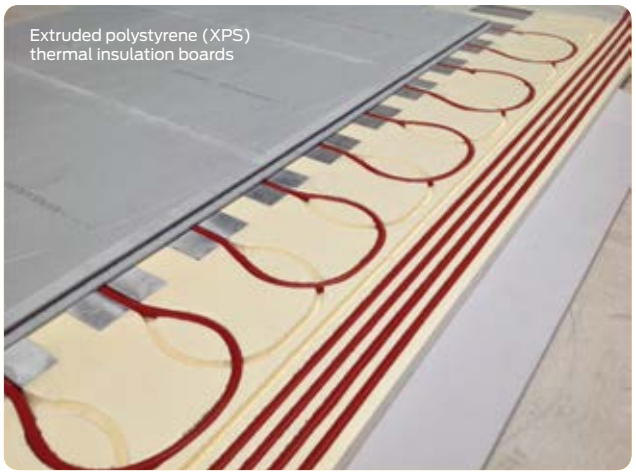
Floating Floor System

Warmafloor's floating floor system utilises dry screed floor boards to deliver greater efficiency, significant cost savings and with extensive logistical, structural and engineering benefits over traditional wet screeds.

With the option of either routed Expanded Polystyrene (EPS), or Extruded Polystyrene (XPS) for greater strength and water resistance, the choice of boards can be tailored to individual project requirements. Available in thicknesses between 25mm and 100mm, the boards can also be supplied to meet specific floor heights.

Heat diffuser plates are pressed into the insulation boards during the design process and 16mm pipework is installed between the routing above the diffuser plates.

Dry screed floor boards are installed on top of the pipework and diffuser plates. The boards' physical properties allow room heating and cooling to be achieved more cost effectively than traditional floor treatments including chipboard. Dry screed floor boards can also accept ceramic tiles directly, making them ideal for wet areas such as kitchens and bathrooms.



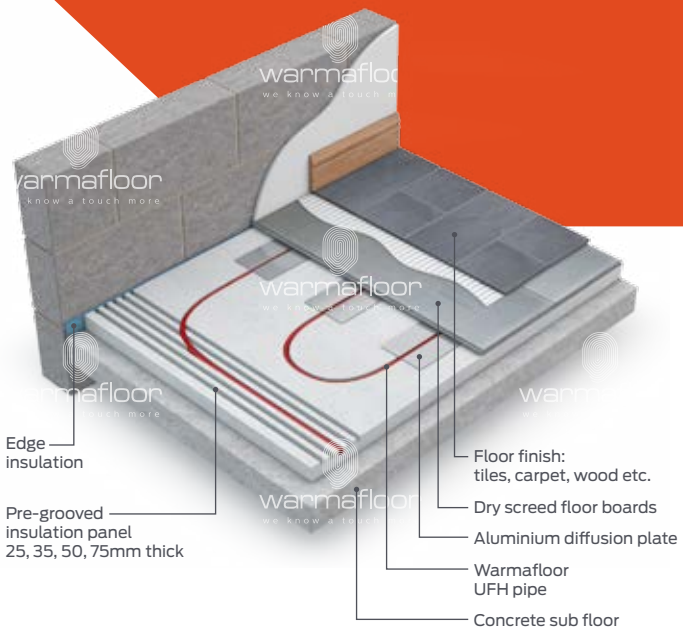
This system relies on the floor being flat and level and involves pre-grooved polystyrene floor insulation panels, fitted with pre-grooved metal diffusion plates into which the underfloor pipework is fitted.

The installation involves laying the Floating Floor panels to cover the complete floor area. Warmafloor PB pipe is then clipped into the diffusion plates, circuited to design requirements and run back to the manifold.

Floating Floor System

The Warmafloor Floating Floor system is for use when underfloor heating is to be installed on concrete floors where a dry finish to the floor is required, not a screed topping.

The Floating Floor system is predominantly for use in new buildings, where the floors are level to at least SR2.



Dry screed floor boards are then laid on the system before the final floor covering is fitted.

This system offers complete access to the installation for any component repair or replacement, by lifting the flooring.

Panels available in:
25, 35, 50 and 75mm thicknesses. Please contact us to discuss other size requirements.

Batten / Sprung Floor Systems

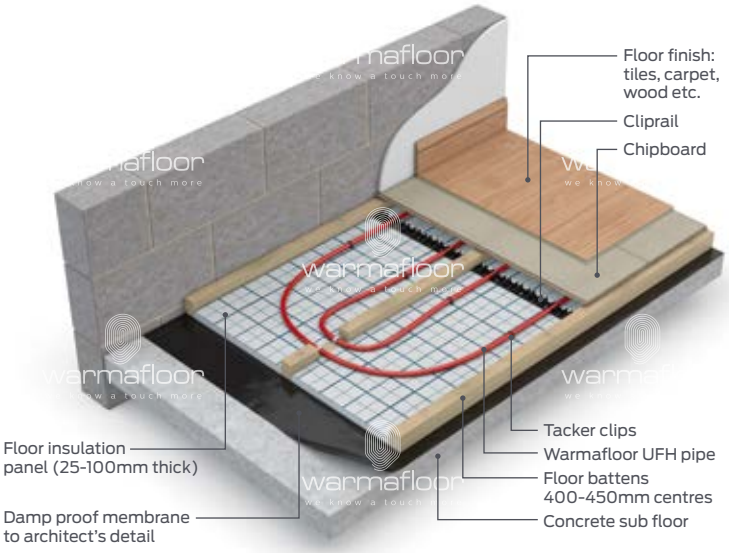
Warmafloor has a number of systems to suit different applications of batten and sprung floors. These can be split into three categories:

- Systems for fitting over concrete or timber floors
- Systems for fitting over engineered timber floors
- Systems for fitting over concrete floors with adjustable height battens

Batten floor systems can be installed quickly and economically, saving time on build programs.

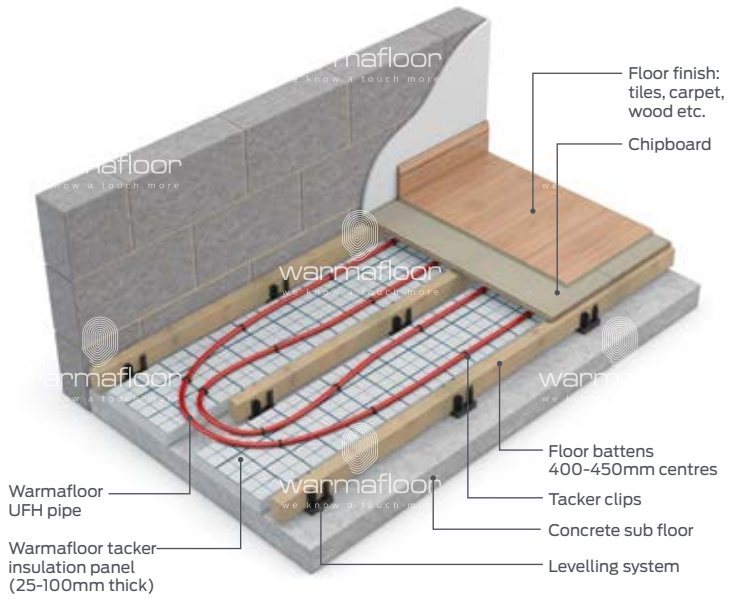
Over concrete or timber deck

In this application suitable floor insulation is laid between the floor battens, and the underfloor pipework is installed using a Clip Rail fixing, or secured into the insulation using Tacker pipe clips.



Acoustic Floors to Part E Regulations

If the flooring is being installed to the 'Sound Transmission in the Building Regulations' Part E, floor battens are fitted with acoustic foam strips or cradles, often with acoustic mineral wool insulation below the floor. When installed in acoustic floors the underfloor system construction will need to be confirmed for each individual application.



Suspended Floor Systems

There are generally two types of suspended timber floors: standard timber joists and engineered timber joists.

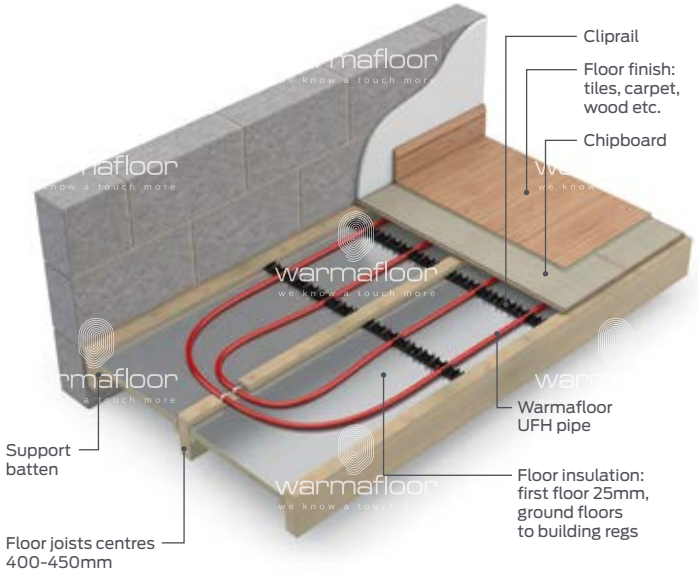
Warmafloor can provide a system for both applications.

Standard Joists

Supporting battens are fitted between joists upon which rigid insulation is installed. Pipework is installed on the insulation and circuited via joist notching, back to the manifold.

Should the joists be interspaced with steel beams or other obstacles, it is recommended to over-batten the joists. This provides a clear space in which the underfloor circuits can run without joist notching or other structural clashes. Rigid floor insulation is installed as normal between the joists and the Warmafloor underfloor system is fitted easily within the batten height. The flooring is then finally fitted.

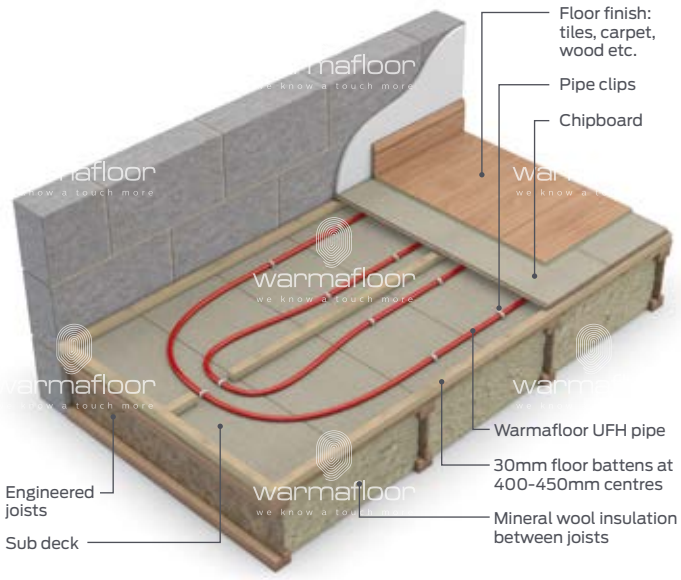
For ground floor applications the insulation between joists must be compliant to Part L of the Building Regulations and the insulation must be tightly fitted, to stop any air ingress from below. On upper floors 25mm PIR or similar insulation should be used.



Engineered Joists

With Engineered Joist systems the joists should be decked out with a sub-deck. Batten positions are marked out on the sub-deck, then Warmafloor pipework is laid out and pinned to the sub-deck.

Floor battens are fitted and then the final chipboard or plywood flooring is laid to provide a complete installation. Insulation should be installed between the joists. This type of floor is generally only used on upper floor levels.



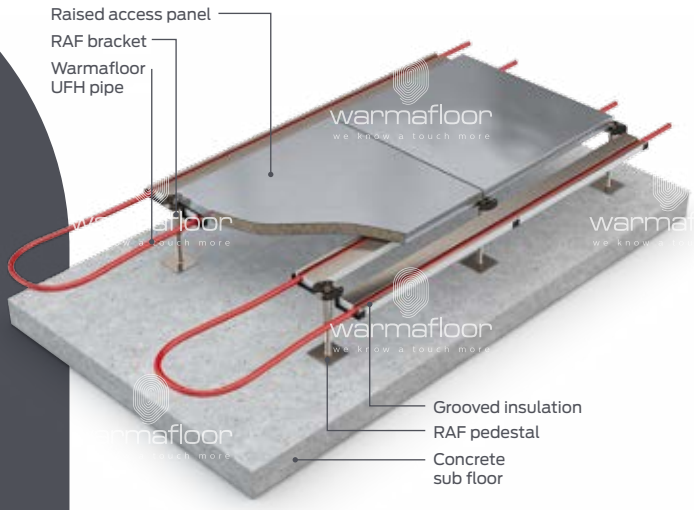
Raised Access Floor System

The Warmafloor Raised Access Floor (RAF) system provides underfloor heating/cooling into standard Raised Access Floor. The system can be used with many RAF systems.

The RAF floor pedestals are installed and the special Warmafloor RAF brackets are attached to the pedestals. Warmafloor 35mm thick, 1.2m long heating modules are then quickly and simply clipped into the brackets.

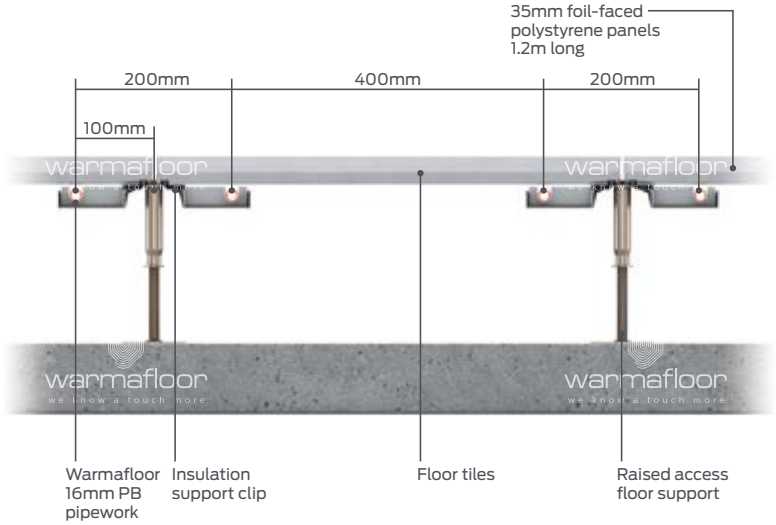
Once these are all fitted, continuous lengths of Warmafloor 16mm underfloor heating pipework is inserted into the Warmafloor Raised Access Floor modules, connecting to underfloor manifolds as necessary. Floor panels are then laid as normal.

Patent No: GB-2375 815 B



The Warmafloor Raised Access Floor System makes it possible to install heating/cooling within raised floors, providing a way for large, open plan offices to be heated evenly and comfortably. Areas can be zoned and independently controlled in multiple offices. Should layouts change, the heating modules can be repositioned as required providing a very flexible system.

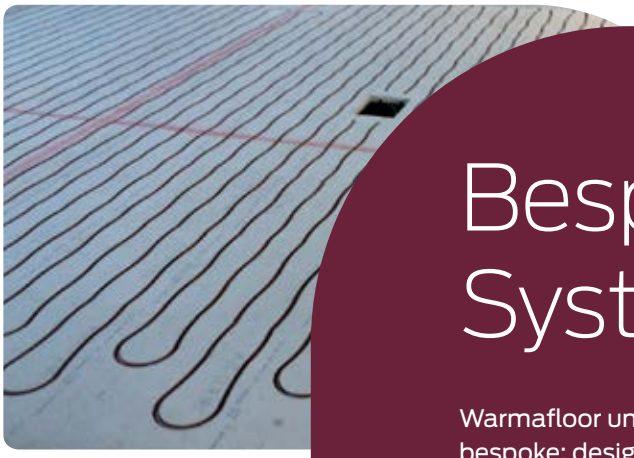
Cross-section through floor



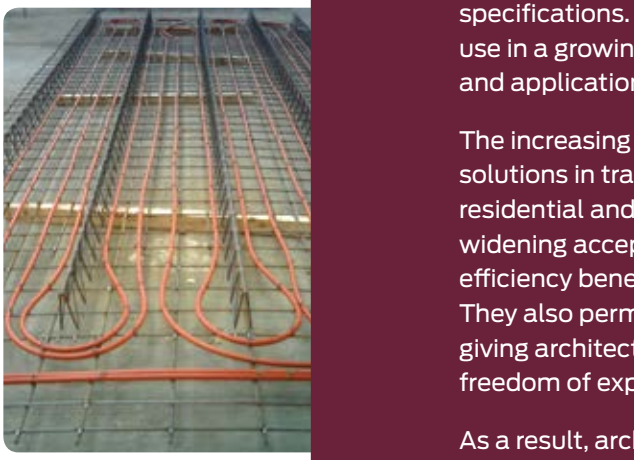
System benefits

- A very cost-effective solution compared with other alternatives.
- Fast efficient installation.
- Heating modules provide good access to floor void.
- Can be retro-fitted to suitable floors.
- The system is future proof, as it can be dismounted and repositioned.

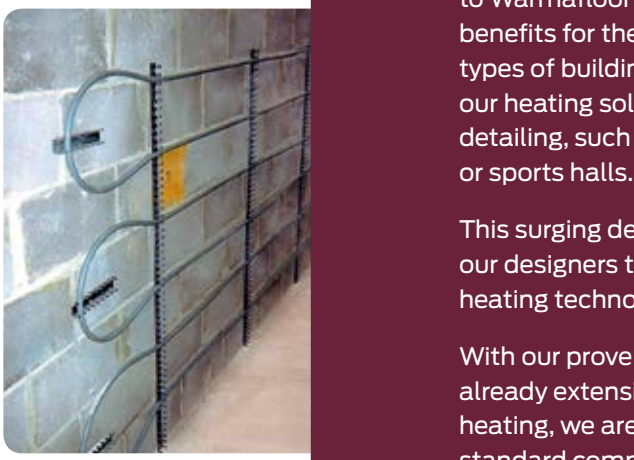
Bespoke routed calcium sulphate panels for 5 Broadgate



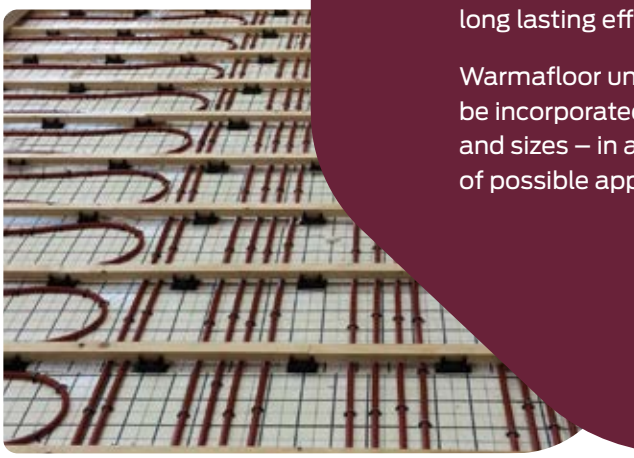
Unique cast slab solution for Manchester Metropolitan University (MMU)



Special heating solution built into the walls at the RSPCA Kennels in Bath



Sports hall floor used at Les Beaucamps High School, Guernsey



Bespoke Systems

Warmafloor underfloor heating solutions are bespoke; designed to meet each project's specifications. They are also ideally suited for use in a growing range of non-standard projects and applications.

The increasing popularity of underfloor heating solutions in traditional applications – such as residential and commercial buildings – reflects widening acceptance of the real comfort and efficiency benefits that these systems offer. They also permit greater flexibility of design, giving architects and interior designers more freedom of expression.

As a result, architects and specifiers are also turning to Warmafloor solutions to provide the same benefits for the developers and occupants of all types of buildings. In addition, they are combining our heating solutions with innovative construction detailing, such as incorporation in access flooring or sports halls.

This surging demand for bespoke systems enables our designers to push the boundaries of underfloor heating technology for the benefit of future users.

With our proven standard design process and our already extensive wealth of expertise in underfloor heating, we are able to adapt basic principles and standard component configurations to provide long lasting effective solutions.

Warmafloor underfloor heating systems can be incorporated into buildings of all types and sizes – in a virtually unlimited range of possible applications.

Screeds over underfloor heating

When screed is installed over underfloor heating, the screed has to be of suitable depth – both for strength and to provide sufficient cover over the underfloor heating pipework.

There are four main types of screed that are used:

Sand and Cement (with added fibres)

Sand and cement screeds are a mixture of sand and cement generally in a 4 to 1 ratio mixed with water. Sand and cement screeds are either mixed on site or can be obtained ready mixed from the plant. We recommend the use of added fibres which reduce micro cracking to the screed surface.

Sand and Cement Enhanced Screeds

Enhanced screeds have added chemicals to improve performance.

The improved properties include faster drying times and/or extra strength. The additives are made by various manufacturers and are sold under their own trade name. The screeds can be obtained for site mixing or ready mix if required.

Anhydrite (Calcium Sulphate) Screeds

Anhydrite screeds are made from a mixture of synthetic anhydrite binder, fine aggregates and additives to form a liquid screed. Unlike sand and cement screeds (which are spread, compacted and levelled), the screed is

poured onto the floor through a delivery hose and levelled with a laser level and dappling bar.

Large areas can be covered much more quickly with this screed type. It is essential, however, that the floor and edge insulation must be fully waterproofed, by taping and sealing all joints in the floor and edge insulation.

These screeds are sold under manufacturers' trade names and delivered to site ready mixed. Whilst a large area of this screed can be installed quickly, it has the disadvantage of a long drying time and it cannot be laid in wet areas, or laid to falls.

Liquid Cementitious Screeds

This type of screed is similar to an anhydrite screed but uses cement instead of calcium sulphate. It is generally much stronger and can be rapid drying. Although available, it is less common in use.

Expansion Joints/ Crack Inducers

All screeds expand and contract to some degree, so allowance has to be made for this. The perimeter insulation fitted with underfloor heating allows for some of this, however large areas will need to have expansion joints or crack inducer cuts in the screed itself to allow movement and avoid screed cracking. Expansion joints will also be required to mirror any expansion joints in the floor slab. These should be as recommended by the screeder or architect.

Floor Tiles, Marble Floors, Stone Floors

Where the screed is to be finished with a rigid tile, marble or stone topping, the expansion provisions are very important as screed movement can crack the floor finish. The flooring should be designed by the floor installer detailing expansion provision in the floor tiles themselves. This can then be mirrored with a separate bedding layer with expansion joints, or in the screed below. Alternatively, a de-bonded bedding layer for the floor finishes can be installed above the screed.

Screed Level and Surface Flatness

All screeds have to be installed to a British Standard of level and flatness.

Flatness – the variation in gap under a straight edge placed anywhere on the surface, to be not more than:

10mm under a 2m straight edge	SR3
5mm under a 2m straight edge	SR2*
3mm under a 2m straight edge	SR1

* In general use. Permitted level tolerance from floor datum +/– 10mm – SR2

Reinforcing Screed

We recommend PP fibres as a minimum reinforcement and D49 mesh/chicken wire over the pipe in the screed where pipe is heavily congested.

Screed Treatment for Finishes

If an adhesive or other finish is to be applied to the screed, it may not be able to be applied directly; a sealer may be required first. Always check with the manufacturer.

Remember

No subfloor will be flat and level on a building site, so it is best to do a level floor survey to ensure enough depth above the floor slab is available for the insulation, underfloor heating and screed. When specifying it is important to ensure the minimum specified depth allows for some tolerance in the floor slab. Always contact the screed manufacturer for specific requirements.

Next steps with Warmafloor

Our promise is to know a little bit more about underfloor and, as a leading authority in surface heating and cooling, we are always available to share our expertise and experience, and provide consultation, advice and designs for commercial new build or refurbishment projects.

We're flexible too, so we can handle everything from conception to completion, or provide a design only service or design and supply.

Simply pick up the phone, email us or, if you'd like to know a little more before getting in touch, explore **warmafloor.co.uk**

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we know a touch more