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## **WHY UNDERFLOOR HEATING SYSTEMS MAKE GOOD SENSE IN AN ENERGY-AWARE CLIMATE**

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Warm water underfloor heating systems (UFH) have experienced huge growth in the UK over the last decade or so. And with the recent revisions (effective 15 June 2022) to Part L of the Building Regulations (England and Wales) containing requirements relating to the conservation of fuel and power, underfloor heating represents an ideal fuel and power-saving application.

New homes must be built to use less energy and produce lower carbon emissions. As warm water underfloor heating systems operate at lower temperatures than alternative heating methods, ongoing power costs are lower accordingly, and their popularity is therefore likely to increase.

In this rapidly developing area, flexible plastic pipes have proven perfect partners for both new build and refurbishment projects. Using best practice in installation will enhance even further the continued longevity and popularity of these UFH systems.

Plastic pipes provide the main component for this type of heating system and are ideally suited, due to their flexibility for bends and curves, their anti-corrosive qualities, and also their supply in continuous lengths to reduce the number of welds and joints required on site. This makes them faster to install, and it also minimises potential leakage points. They are easy to handle and provide a long service life. Plastic pipes have been in common use for over 50 years, and so are not a 'new' solution; they have an excellent track record in underfloor heating applications generally.

By using warm water underfloor heating the end user can make the most of their living space, as radiators are no longer needed, unless desired in areas like utility rooms and bathrooms for airing items. UFH is widely used in mainland Europe and is gradually spreading across the UK,

building on its previous primary use in commercial buildings and luxury homes. By producing an even temperature across floor areas without high heating levels being required, it avoids potential burns or scalds from radiators and is more efficient to operate, with less 'wasted' heat. As the heat transfer system is predominantly radiant, it does not rely as much on convective air movements, and so reduces the circulation of airborne dust, a benefit to those with allergic respiratory ailments.

The 'warm feet, cold head' profile of UFH systems has been shown to be ideal for comfort levels. Underfloor heating can also be combined with ground source or air source heat pumps to provide a truly energy efficient system.

In order to ensure an even floor surface temperature, most manufacturers design their UFH systems to the requirements of *BS EN 1264 Parts 1-4 Floor Heating Systems and Components*. It defines the design criteria for UFH, and the key design stages needing to be carried out correctly – heat loss, heat requirement, flow temperature, pipe lengths and centres, together with laying patterns suitable for the selected floor type, number of circuits, connection lengths and maximum temperature. System suppliers specify the temperature drop across each heating loop (normally designed to be between 5°C and 10°C), and determine the thermal output, whilst ensuring the generated floor temperature profile is even.

All together this process delivers a successful, efficient and long-lasting warm water UFH system.

Component design is also important, including manifolds, pumps, safety devices and smart room temperature controls, along with allowing for the different laying criteria for solid floors, timber suspended floors and floating floors. BPF Pipes Group manufacturers offer helpful advice on these systems. The end result produces lower running costs and minimal maintenance, along with perfect room by room controls; all big benefits to home-owners looking for efficiency improvements when heating their homes. Furthermore, their suitability to be used with renewable energy systems such as ground source or air source heat pumps, along with their lower operating temperatures compared to traditional heating systems, make them a positive contribution to a sustainable home.

The BPF Pipes Group's guidance is intended to encourage best practice across the industry, and is available at <https://www.bfppipesgroup.com/support-downloads/guidance-notes/>. The guidance offers useful references to installing warm water underfloor heating systems correctly. A list of BPF Pipes Group manufacturers making and supplying these systems is also available at <https://www.bfppipesgroup.com/applications/building-services/>.