

# The best underfloor heating solution for upper floors

**Underfloor heating (UFH) is the most efficient and effective way to warm a home. Not only that, it also creates a very comfortable warmth - comparable to that generated by the sun. And, of course, it's unobtrusive, because all the pipework is entirely hidden beneath the floor.**

It's also the ideal emitter to pair with a heat pump; a key focus for property owners as Britain transitions away from a dependency on fossil fuels for power and heating, to a low carbon economy and renewable energy sources.

Heat pumps work best when they heat the water to around 38–55°C, and UFH systems work extremely well at these lower water temperatures – far better than traditional radiators that are designed to work with gas boilers delivering water temperatures of around 70°C.

So, if UFH is so efficient, and apparently an ideal pairing for heat pumps, why is it so common to find that UFH is only installed on the ground floor of a property, while upper floors are still warmed by radiators?

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The answer lies in the ability of UFH systems to transfer heat efficiently from the pipework to the overlying floor surface. To successfully deliver heat to the room above, the water pipes need to be in direct, physical contact with the



floor deck. Even small gaps between the pipework and the floor above make any UFH system less efficient because air is a poor transmitter of heat.

On ground floors, this is typically a non-issue; UFH systems are often embedded in the wet screed giving the pipes very close contact with the floor surface. However, first floors (and above) will be

suspended on joists, and unless there is a way to contain and directly connect the pipes with the floor, most of the heat inside them will be lost.

Fixing the pipework in a way that allows the system to warm upstairs rooms typically adds considerably to the cost and time on-site, which is why so many projects simply use radiators.

## How effective are aluminum spreader plates combined with UFH?

Until now, the best option for installing UFH pipes upstairs has been with aluminum spreader plates that secure the pipes in direct contact with the overlying floorboards. However, spreader plates are limited in their effectiveness, and not easy to install:

- Spreader plates don't transfer heat into the floor particularly well. While the aluminium plate sits over the joist, it will sag on either side with the weight of the pipe, meaning the pipe can't make good contact with the structural floor deck.
- The water pipe is still a distance from the floor finish, compounding the problem of heat transmission.
- The plates are difficult and unsafe to install unless done from underneath; they are installed with the water pipe before the floor deck goes onto the joist.
- The joists may require notching to achieve the loop return.

## Is there an UFH system that effectively heats upper floors?

There are a number of UFH products which are suited to upper floors. Originally, these were limited to 'overlay' systems using dry panels with routed channels. Some projects still use them. However, each of these still require a structural floor deck to be constructed underneath them on which they rest. Plus, even the lowest of systems, adds a build-up height to allow the pipes to run under the finished floor.

Then, around 14 years ago, came a breakthrough. OMNIE's engineers developed a new, revolutionary solution, the (now market leading) TorFloor® system. It was designed to reduce the risk of faulty installs while also offering a host of other end-user benefits.

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TorFloor® was the first system to integrate UFH into a structural flooring deck, meaning there were no air gaps because the floor itself became the UFH heating emitter.

With TorFloor®, the UFH system and the floor deck have been combined into a single product so it works extremely well with both joisted and battened floors.

## Does TorFloor 2® incorporate aluminium heat diffusers?

The latest product to join the TorFloor® family, TorFloor 2®, adds a new dimension to the TorFloor® panel. It includes a 6mm chipboard upper panel covered with a pre-foiled aluminium heat diffuser. As with TorFloor®, all the panels are routed with matching channels that align around the pipework. The system is therefore capable of providing both a consistent heat output and delivering fast warm-up times because it keeps the water pipes close to the surface. These adjustments in the design mean that the heat output of the TorFloor 2® system is 15 per cent higher than a standard TorFloor® system, and an astonishing 40 per cent above that of an unfoiled routed chipboard system.

Unlike radiators, TorFloor 2® has been designed with heat pumps in mind, so it is 'Low Temperature Ready'. Its high levels of efficiency are evidenced by the fact that, when combined with a heat pump, TorFloor 2® is around 20 per cent cheaper to run than a UFH system that uses aluminium spreader plates.

Plus, because TorFloor 2® is a complete and direct replacement for the structural floor, project teams do not need to purchase the floor and the UFH as separate items. This is cheaper and it simplifies/minimises the installation process.

## Summary

All in all, OMNIE's TorFloor 2® system both revolutionises UFH and resolves the flaws inherent in older systems. It improves the efficiency of buildings by extending cost-effective UFH beyond ground floor level and it removes the need for workarounds and patch-ups of radiators and spreader plates. TorFloor 2® can be installed at the build phase or retrofitted without compromising existing structures.

All TorFloor® systems have been independently tested by BSRI to guarantee heat outputs, and it is the only UFH product tested to BS EN 1195.

If you want to know more about TorFloor 2 you can visit our website [omnie.co.uk](http://omnie.co.uk) or call us on 01392 36 36 05.