

An OMNIE guide to
air source heat pumps
(ASHPs)



Experience on tap



Tried systems that are innovative.
Tested products designed for the future.
Trusted by the UK construction industry.

Performance Guaranteed

All our systems are tested for heat output and fast warm-up times. To make it easy for products to be compared, either against each other or against competitors – we have set out three simple tests:

1. The water temperature for a heat output at 50 W/m².
2. The heat output at 50°C flow water temperature.
3. Heat maps showing heat diffusion and heat output at 20-, 40-, 60- and 80-minute intervals vs. the nearest competitor product.

Technical Experts

Our team of technical experts are always on hand to help. Whether you need advice on the most suitable system for your project or require installation advice. Every project we undertake comes complete with a comprehensive handover pack including project plans, guides, manuals and commissioning details.

Over 30 years' experience

We have decades of experience delivering the best underfloor heating, ventilation and heat pumps systems money can buy – our Whole House System philosophy underpins our commitment to continually improving the indoor living environment.

Award-Winning Products



Our TorFloor® underfloor heating system scored top marks amongst builders in *Professional Builder Magazine*. Known for its ease of installation, high heat output and fast warm-up times, the floor-in-one system now benefits from AL HEX® technology – further improving heat output and lowering the flow water temperature.

Free Design Service

We provide a comprehensive design service for every project we undertake. This means you can be absolutely assured that the system we specify will work as designed.

Dedicated Project Manager

Every project benefits from a dedicated project manager. Your project manager will guide you through the design process and take care of your project requirements from order to delivery on site.

An OMNIE guide to air source heat pumps

In this guide, we'll explain the basics of how air source heat pumps (ASHPs) work and debunk a few myths along the way.

We'll also touch on the Government's £450m Boiler Upgrade Scheme (announced in May 2022) and how to apply for funding through the Scheme to offset the cost of a heat pump installation.

An introduction to air source heat pumps

ASHPs are a highly efficient, green way of heating your home.

They work simply by extracting warmth from the outside air, using technology very similar to your fridge. Fridges extract the heat out of food and keep it cool; ASHPs use the same techniques, but in reverse.

How do heat pumps work?

ASHPs are powered by electricity. A fan draws outside air into the heat pump. Inside, the air passes over a liquid refrigerant which boils and turns into gas at very low temperatures (just 4°C).

This gas is then passed into a compressor and put under pressure, which raises its temperature.

The pressurised gas then passes to the condenser, where its heat is transferred to the property's heating and hot water system. The now cooled refrigerant flows back to the evaporator through an expansion valve.

And the cycle begins again.

Will an ASHP heat both my home & provide hot water?

Yes. An ASHP is designed to both warm your home and heat the water that comes out of your taps, shower etc.

The hot water an ASHP produces is stored in an insulated hot water cylinder, so you get hot water whenever you need it. A 3-bedroom house would probably need to store around 150 litres of hot water/day, requiring a cylinder of around 1m high x 0.5m diameter.

How efficient are ASHPs? Are they expensive to run?

ASHPs are around three times more efficient than gas boilers, producing 3kWh of heat for every 1kWh of electricity they consume.

They also moderate their output as a property heats up to help save you electricity. This means that running costs for heat pumps should be on a par with (if not better than) your existing heating systems, provided they are correctly installed and serviced for optimum performance. Plus, the more insulated your property is, the cheaper it will be to heat.

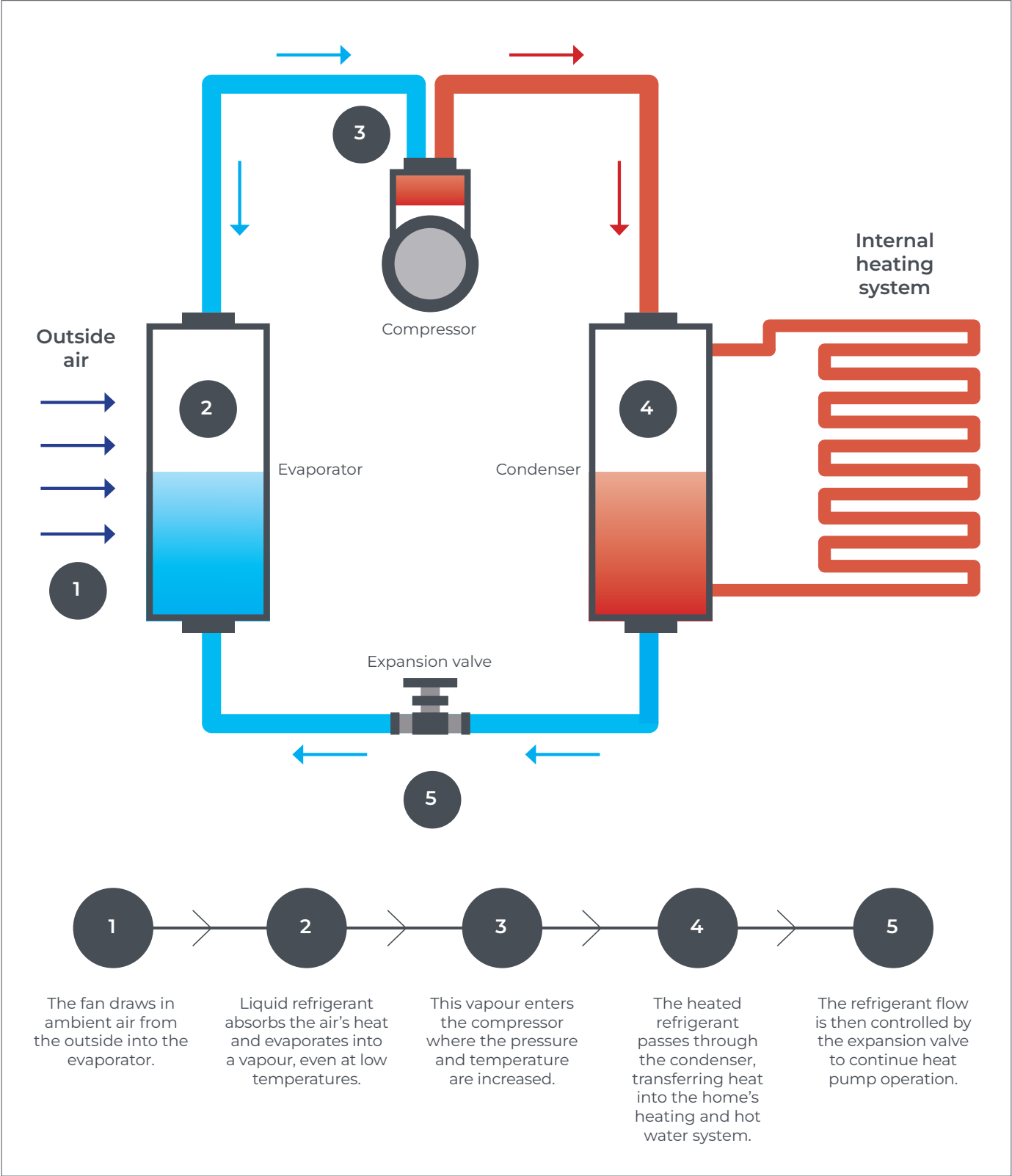
Before you commit to your purchase, your installer will conduct a survey of your property and will be able to give you an estimation of your home's energy efficiency rating (its EPC), the system's expected performance, and an estimate of its operating costs.

Installing a thermal heat meter will allow you to keep an eye on how efficient your heat pump is, and if it's meeting your expectations.

We recommend you service your system annually, in line with the manufacturers' guidelines, to maintain its performance.

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Figure 1: How our ASHPs work



How warm will my home be?

It's worth remembering from the outset that ASHPs are very popular among homeowners in countries that are far colder than the UK (notably in Scandinavia)! Obviously, correctly insulating your home will make it warmer.

However, the amount of insulation that a property needs to be warmed effectively by an ASHP is probably less than you'd expect. For most houses, loft and cavity wall insulation should be more than adequate.

You should be able to continue using your existing two- or three-panel radiators, although swapping these for underfloor heating will allow better dissipation of the heat throughout a room rather than concentrating the warmth in one or two places. We can advise if this option would be better for you.

In winter, your ASHP should continue to work very effectively, even when temperatures drop below freezing. It may have to work a bit harder but it ought to remain at least twice as efficient as a gas boiler, provided it's properly serviced and there's no uninsulated external pipework.

TIP: If you want to test how warm your house would be with an ASHP, try turning the flow temperature down on your gas boiler from 60 degrees to 50 degrees.

How environmentally friendly are ASHPs?

An ASHP is an extremely environmentally friendly way to heat your home. As we've mentioned, ASHPs are far more energy efficient than gas boilers, using three times less electricity to generate the same amount of heat.

An ASHP also contains around three times less embodied carbon than a gas boiler. The amount of refrigerant gas it uses is very low; an 8-10kWh heat pump will run on the equivalent of a camping gas container.

Plus, more heat pump manufacturers are now relocating to the UK, which will lower their transport emissions.

Are ASHPs noisy?

The current generation of ASHPs emit a noise that can be described as a low whirring, provided they're correctly installed, serviced, and maintained.

That said, a heat pump will be quietest when it's working optimally, so it's important that it's specified by a professional installer and considerations such as insulation and the EPC rating of the building are addressed from the outset.



“You should be able to continue using your existing two- or three-panel radiators, although swapping these for underfloor heating will allow better dissipation of the heat throughout a room”

Are ASHPs reliable?

Yes, they are typically very reliable provided they have been correctly installed and maintained/serviced. They can last up to 20 years.

Your installer should be your first point of call if you do encounter any problems.

Where should we put our ASHP?

Your survey will confirm the best location for your ASHP, but as a rule of thumb, you'll need a space about the size of a bike against the side of an external wall.

Nothing must obstruct the free circulation of air around the heat pump (intake and outlet). You should avoid terraces, and do not place it opposite a wall with a window (or close to where you sleep). You'll also need to observe any local bylaws and you should (of course!) be considerate of your neighbours.

The Boiler Upgrade Scheme (England and Wales)

What is the Boiler Upgrade Scheme (BUS)?

The BUS is a government initiative which offers households a government voucher of £5,000 towards the cost of a new heat pump installation.

Do I qualify for BUS funding?

To be eligible, you need to be living in England or Wales and currently using a boiler powered by fossil fuels (gas, kerosene etc).

You also need to occupy your home on a permanent basis and undertake any upgrade work as recommended in the survey/EPC, such as insulation improvement or windows replacement.

You will need to pay for the work in full upfront, as the voucher is only claimable once the work is done.

(Landlords may be eligible but will need to have approval from their tenant. Social Housing is not eligible for the BUS scheme.)

How long will the BUS run?

The £450 million BUS is planned to run over three years and is designed to support c.90,000 heat pump installations, which, it is hoped, will help boost the market in the UK.

There is an annual budget of £150m per financial year so no new vouchers will be issued after this has all been spent until more funds become available.

Any new applications will be placed in a queuing system, awaiting the release of more money. However, once a voucher is issued for an installation, you can be confident that there will be budget available to make that payment, provided the voucher redemption application is successful.

How do I apply for BUS funding?

Simply call our BUS Advice Line on tel. 01392 36 36 05.

We can design and supply your heat pump system, as well as commission it under the MCS requirements. We will also apply for your voucher and redeem it.

If you need an installer, we can suggest someone local to you. If you choose your own installer, they don't need to be MCS registered as we cover this part of the process.

For more information go to: omnie.co.uk/bus

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