ISSUE 23
DECEMBER/JANUARY 2025

HEAT PUMPS TODAY

ESSENTIAL INFORMATION FOR INSTALLERS

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Welcome to the December/January issue of Heat Pumps Today

With the recently announced budget, all eyes within the Heat Pump/Renewables sector were focusing on what support the Government are giving to manufacturers, installers, and end-users/homeowners on the journey to Net Zero.

The Boiler Upgrade Scheme is still in play. In fact, due to the growth in demand, the grant pot has been boosted to £295m.

I'm pleased to say I've now taken advantage of this opportunity and my heat pump, underfloor heating, battery, solar panels, and EV charger are being fitted as I write this.

The Warm Homes Local Grant will begin delivery in 2025 and will provide energy performance upgrades and low carbon heating via local authorities, to qualifying households in England.

Cost caps – a simple dual cost cap structure has been set of £15k per home cap for energy performance upgrades, and £15k per home for low carbon heating.

For full details visit: **www.gov.uk/government/publications/warm-homes-local-grant**

Events

Next month sees us recognising upwards of 30 ACR & Heat Pump Trainees at the not-for-profit ACR & Heat Pump Trainee of the Year Awards luncheon, held in Leeds.

Following on from this, the National ACR & Heat Pump Awards is open for entries. You've got until the 6th of December to enter. Most tables are already booked so if you don't want to miss out, contact: **hayleyc@warnersgroup.co.uk**

For full details on how to enter, visit: **www.acrjournal.uk/national-acr-heat-pump-awards**

Finally, I'd like to provide a huge thank you to David Crowson, Digital Editor who has helped enormously with bringing together this month's issue of Heat Pumps Today.

Juliet Loiselle MinstR
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Lochinvar powers up heat pump team

Lochinvar has expanded its specialist heat pump team to meet the growing demand for its products and technical expertise.

With the UK on track for a record year of heat pump installations, the company has recruited two highly experienced HVAC professionals to provide vital extra technical sales support.

Anthony Curry joins as Lochinvar's new northern heat pump specialist with **John Court** appointed to the same role in the south.

Curry brings a wealth of experience to this new role having joined the industry over 20 years ago. He has spent most of that time helping clients reduce their carbon footprint and most recently worked exclusively with mechanical consultants on low carbon specifications.

Court has spent the last ten years as a mechanical building services engineer supporting architects, consultants, and contractors designing renewable systems.

"John and Anthony's expertise in designing renewable system solutions will be invaluable as we continue to expand and enhance our heat pump services and products," said Lochinvar's renewables manager **James Cooper**.

"The two new additions to the company's team will work closely with Lochinvar's area sales managers to ensure heat pump specifications meet client needs. They will also continue to expand the company's industry connections and build relationships with contractors and clients who require specialist technical assistance with their low carbon projects."

www.lochinvar.ltd.uk

Safer and easier heat pump installations: Meet the heat pump mover

Lite Work Designs is proud to introduce the Heat Pump Mover into Europe, a tool 'designed by installers for installers' to move heat pumps. The tool has quickly become an essential asset for over 800 professional installers across the UK, who are benefiting from improved work efficiency and reduced risk of personal injury or pump damage.

CEO, **Mike Wyeth** said: "Europe is way ahead of the UK in terms of Heat Pump installations which is why we are launching the Mover into Europe at ISH (6.1 D03) in March 2025. We will demonstrate the Mover in action and encouraging visitors to 'have a go', just to see the relief on their faces that a tool like this is now available. We'll also be introducing the new Mini Mover, designed for Solar Batteries and Panels, and the Maxi Mover for loaded pallets."

A solution born from experience

The Mover was invented by Mike (CEO), a veteran installation engineer with over two decades of experience in water, gas, and renewable heat pump systems. After suffering a back injury during a heat pump installation in 2021, Mike said: "I needed a solution to help me move pumps across building sites more effectively with less effort and risk".

His vision led to the creation of the Mover, an innovative tool designed to move pumps up to 200kg with ease. Since then, it has proven its worth by drastically reducing physical strain, and improving safety and team motivation.

Engineered to move heat pumps up to 600mm wide across the toughest of building environments, it features pneumatic wheels with adjustable straps to secure and pull the pump. Safety is at the heart of Lite Work Designs' mission. The Mover is built to comply with stringent UK and EU Health & Safety, and Manual Handling Regulations. It was tested by a certified UK testing agency to ensure it can handle loads safely across any worksite environment.

www.heatpumpmover.co.uk

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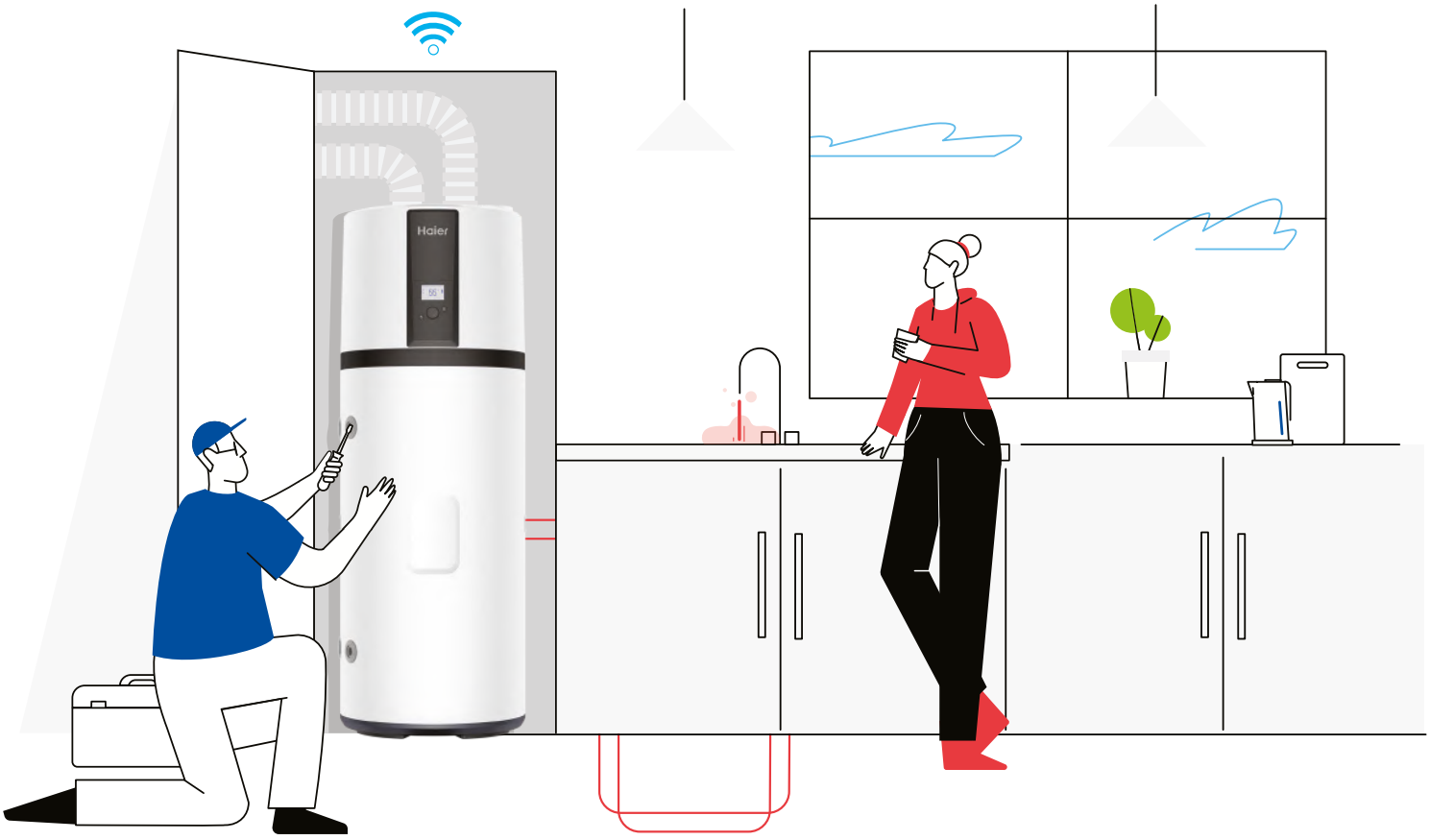

Introducing Haier's New R290 air source Heat Pump Water Heater (HPWH), which adopts advanced full-inverter heat pump technology to provide a solution that delivers high efficiency, stability, and quietness. Compared to traditional electric storage water heaters it can save up to 75% of energy for domestic hot water in households, making it equally suitable for renovation and new constructions.

The HPWH range comes in **80L-250L** wall mount & floor standing options, delivering high energy efficiencies as well as **65°C** high leaving water temperatures. Encompassed by an environmentally friendly refrigerant and full connectivity via the **hOn** application. A range that dedicates itself to providing the right solution for a variety of needs – setting the standard for **the future of sustainable water heating.**

For more information and where to buy, Scan here
haierhvac.eu

HPA bring Heat Pumps to Westminster's Doorstep

HPA Hear, See and Feel a Heat Pump Event - October 2024

15 October, the Heat Pump Association (HPA) along with three of its manufacturing members Kensa, Panasonic Heating & Cooling Solutions, and Ideal Heating, supported by the MCS Foundation, took working heat pumps to Parliament's doorstep to bust myths and raise awareness of the vital technology and its role in decarbonising the UK's heating.

The HPA's 'Hear, See and Feel a Heat Pump' event provided over 40 MPs, peers, councillors, policy officials, and wider stakeholders with the ability to see various heat pump types in action, hear from industry experts who were on hand to answer those important questions and feel how heat pumps provide reliable, efficient low carbon heat.

Commenting on the event, **Charlotte Lee**, Chief Executive of the HPA said: "With only 100 days of the new Government being in place and many new MPs gracing Westminster, we felt it was important to raise awareness of heat pumps as a technology and provide an opportunity for MPs to see them in operation. With the proliferation of negative and questionable media stories about heat pumps over recent months, it was fantastic to be able to meet so many MPs and stakeholders and bust some myths through the provision of a hands-on experience."

Tomas Roberto, Public Affairs Executive at Kensa commented: "The Heat Pump Association's first 'Hear, See and Feel a Heat Pump' event was a unique opportunity for MPs to see Kensa's British-made ground source heat pumps up close and in operation firsthand. We've been delivering networked heat pumps, a proven, scalable solution to heat decarbonisation, for over a decade, and it was brilliant to share this technology with MPs and Lords and bust some heat pump myths!"

To read the story in full and further comments on the event from **John Kellett**, UK and Ireland Country Manager for Panasonic Heating & Cooling Solutions, **Elizabeth Wilkinson**, Product Director at Ideal Heating, and **David Cowdrey**, Acting Chief Executive of the MCS Foundation visit: **www.acrjournal.uk/heat-pumps/hpa-bring-heat-pumps-to-westminsters-doorstep**
www.heatpumps.org.uk

The tragic loss of Paul Swales and Julia Harris

The Ground Source Heat Pump Association (GSHPA) is deeply saddened by the tragic loss of Paul Swales and Julia Harris following the incident on Saturday, 19th October. We extend our heartfelt condolences to their families, friends, and colleagues, and offer our full support during this incredibly difficult time. The GSHPA stands ready to assist the Cleat Hill community and relevant authorities in any way we can.

The GSHPA is committed to the highest standards of safety and environmental protection, and we constantly work with our members to maintain standards for our industry, and we believe it is essential to thoroughly understand the circumstances that led to this incident. We will work closely with all relevant parties to examine how this occurred and learn from this tragic situation. We have received questions about the presence of gas in boreholes. To the best of our knowledge, this is an extremely rare occurrence.

The GSHPA's Vertical Borehole Standard (VBS), which all our members commit to following, by signing up to the GSHPA Code of Conduct, is an industry benchmark designed to ensure safety and technical excellence. This standard, cited in The Environmental Permitting (England and Wales) (Amendment) (England) Regulations 2023, is part of our broader commitment to safe and responsible drilling practices. Furthermore, our partnership with the Microgeneration Certification Scheme (MCS) includes a certified audit procedure that verifies compliance with our VBS standard. We also work closely with the British Drilling Association (BDA), which oversees drilling activities in other sectors, reinforcing our commitment to a unified and comprehensive approach to safety.

We reaffirm our dedication to continuous improvement and collaboration with industry partners to ensure that the safety and well-being of workers and communities remain at the heart of our mission.

https://gshp.org.uk

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10. COMMERCIAL HEAT PUMP PRODUCT
11. GROUND SOURCE PROJECT
12. DOMESTIC AIR SOURCE PROJECT
13. NON-DOMESTIC AIR SOURCE PROJECT
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If you have any queries regarding entering please contact hayleyc@warnersgroup.co.uk

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Mitigating the risks of corrosion in Ground Source Heat Pumps with effective fluid choice

Jerry Lewis, Chief Technical Officer at Kilfrost, looks at how choosing the correct heat transfer fluid for your closed loop ground heating system can help overcome corrosion challenges and increase system lifespan.

Electrochemical Setup

While the benefits of efficient and environmentally friendly heating and cooling offered by ground source heat pumps (GSHPs) are clear, these systems are not immune to the damaging effects of corrosion, which remains a silent but significant challenge.

Corrosion damages internal components, such as pipes, valves, and even heat exchangers, leading to reduced efficiency, shorter system lifespan, and costly repairs. Choosing the correct heat transfer fluid (HTF), along with proper system cleaning and ongoing maintenance, is crucial to overcoming corrosion risks and maximising system efficiency.

Corrosion: The silent threat

Corrosion is a gradual process, primarily driven by contaminants like oxygen, metal ions, and bacteria present in the system. The result is a decrease in efficiency, heat transfer, and system lifespan. One of the biggest challenges in GSHPs is that corrosion often develops silently, becoming visible only once the damage is already done.

Jerry Lewis, Chief Technical Officer at Kilfrost

While often an afterthought in the final stages of system installation, choosing the right fluid from the outset with a knowledgeable and proactive supplier is key to ensuring corrosion issues are managed throughout the design and setup process.

Although water is the most common medium due to its low viscosity and excellent heat transfer properties, it also presents challenges:

- It acts as a catalyst for corrosion, reacting with metal surfaces within the system.
- It provides an ideal environment for microorganisms, which can lead to biofouling.
- If water freezes, it can cause damage to system components, especially in cooler climates.

If left untreated, these issues can significantly weaken the system's performance. Therefore, selecting the right HTF is crucial to mitigate these risks.

Selecting the right heat transfer fluid

An appropriate HTF should balance efficiency, corrosion protection, and operational needs. Most GSHPs use a blend of water and glycols, with additional additives to protect the system. The choice of glycol is essential as it influences both the system's efficiency and its ability to withstand varying temperatures.

Glycols as additives

Two primary glycols are commonly used in HTFs:

- Monoethylene Glycol (MEG): Known for its low viscosity, MEG offers strong freeze protection and efficient heat transfer. However, it is toxic, limiting its use in certain applications, especially where safety is paramount.
- Monopropylene Glycol (MPG): Safer and regarded as non-toxic, MPG is preferred for systems requiring higher safety standards. However, it has a higher viscosity, which can reduce overall heat transfer efficiency.

The right balance between MEG and MPG usage depends on the specific requirements of the GSHP system, such as its location, operating temperature range, and any safety or environmental considerations.

However, neither of these ticks all of the boxes which is why some fluid providers are developing alternative options that outperform MEG, MPG, and other

traditional chemicals used as the anti-freeze bases, to overcome the individual drawbacks of these.

ASTM D1384 Test Rig

The role of corrosion inhibitors and biocides

Beyond glycols, the fluid should include corrosion inhibitors and biocides to protect the long-term effectiveness of the system.

Corrosion inhibitors form a protective layer on metal surfaces, preventing the chemical reactions that lead to corrosion. In HTFs, corrosion inhibitors should be effective across a range of metals commonly found in GSHP systems, such as copper, brass, solder, steel, cast iron, and aluminium.

Microorganisms can cause biofouling, leading to blockages and corrosion. Biocides within the HTF help control bacterial growth and maintain system cleanliness.

By choosing a well-formulated HTF that meets internationally recognised standards (ASTM D1384 and ASTM D3306), GSHP operators can ensure that the fluid provides comprehensive protection against corrosion while maintaining system efficiency.

The necessity of system cleaning

Before introducing any HTF into a GSHP, thorough cleaning and pre-treatment are essential. Both new and existing systems require a cleaning process to remove contaminants, which, if left unchecked, can undermine the fluid's protective properties.

New installations often contain residues from lubricants, debris from welding, or chemical treatments. These contaminants can accelerate corrosion once the fluid is added and the system is in operation.

Older systems are likely to have scale, sludge, bio-growth, and degraded glycols, which compromise both the HTF and the system's performance. If an older system is being upgraded or its HTF replaced, a deep clean is crucial.

The cleaning process should include:

1. Draining the system to remove all old fluids and accumulated contaminants.
2. Applying a cleaning solution specifically tailored to the type and extent of fouling. Concentration and contact time should be managed to ensure the thorough removal of residues.
3. After cleaning, flush out the solution and rinse the system to eliminate any remaining contaminants.
4. A sanitising agent should be added to remove any microorganisms, followed by draining and a final rinse.

Once cleaned, the system can then be refilled. The most common issues we see during our initial fluid check at month three result from inadequate cleaning and preparation of the system, which can lead to the rapid degradation of both the fluid and system components.

Quality of dilution water

The quality of water used to dilute HTF is another important consideration. Poor-quality water can compromise system protection by:

- Lowering pH levels: a low pH can affect the effectiveness of corrosion inhibitors.
- Introducing ions: ions in water can lead to scale formation, which reduces efficiency.
- Carrying microbial contaminants: microbiological growth can cause biofouling and contribute to corrosion.

To mitigate these risks, deionised or demineralised water should be used for dilution, ensuring optimal system protection and fluid longevity.

Regular monitoring and maintenance of HTF

Even the best HTFs require monitoring to maintain system performance. Fluid checks help identify early signs of degradation, contamination, or corrosion, allowing for timely remedial action. It's recommended to perform:

- Visual inspections to check for clarity, solids, and any discoloration in the fluid.
- Refractive index tests that measure HTF concentration and its freeze point.
- pH balance tests to ensure the fluid maintains the proper chemical balance to prevent corrosion.
- Biofouling assessments to identify signs of microbial contamination.

In-field testing provides a quick snapshot of fluid health, while laboratory testing can offer detailed insights into potential issues like poor dilution water quality or emerging corrosion products. Your fluid provider might give you sample pots to send back for testing. They will then provide a report on the health of the system detailing any necessary remedies or actions to take, if any.

Best practices for corrosion prevention

To prevent corrosion and ensure long-term GSHP performance, operators should follow these best practices:

1. Clean and flush systems thoroughly: remove all potential contaminants before filling the system with HTF.
2. Choose a well-formulated HTF: select a fluid that provides efficient heat transfer, antifreeze properties, and effective corrosion inhibitors and biocides.
3. Use high-quality dilution water: deionised or demineralised water helps prevent scale and microbiological contamination.
4. Monitor fluid quality regularly: routine checks for clarity, pH balance, and biofouling will help detect early issues and allow for prompt intervention. We recommend an initial three-month check followed by annual testing.

By adhering to these steps, GSHP operators can reduce corrosion risks, maintain high efficiency, and extend the operational life of their systems.

Taking a proactive approach to HTF selection and maintenance not only protects the system but also maximises efficiency and lifespan, providing a better long-term return on investment. If you look after your fluid, your fluid will look after your system.

www.kilfrost.com

Meeting carbon targets with the right heat pump solution

Decarbonisation is now a priority for many organisations and heat pump technology has significant potential to meet the heating, cooling, and hot water needs of occupants while achieving carbon reduction targets. Here, **Cliff Jones**, Head of Applied at Daikin outlines the key considerations to ensure the correct system specification based on the requirements of the building.

The UK has committed to achieving net zero by 2050, with a 68% reduction in emissions by 2030. However, a recent assessment from the Climate Change Committee (CCC)[1] suggests that the country is not currently on track to meet the 2030 target. The CCC noted that the low-carbon technologies needed to make the transition already exist but have not yet been adopted widely enough.

Non-domestic buildings currently account for 23% of built environment carbon emissions, and 66% of this can be attributed to heating[2]. This means that a switch from fossil fuels to renewable, low-carbon climate control solutions, such as heat pumps, is essential for commercial buildings.

Finding the right solution for each application

The first factor to consider is the heat sources available. For the majority of projects in the UK, an air source heat pump (ASHP) will be the best solution due to a lack of access to suitable ground or water heat sources nearby. However, for those projects with the required body of water or appropriate geology close to the building, it may be possible to take advantage of the greater stability of water and ground temperatures to achieve more consistent year-round performance from the system.

Cliff Jones, Head of Applied at Daikin

Next, it is important to look at what the heat pump needs to achieve. Meeting space heating requirements is relatively simple for the majority of commercial heat pump systems. This is especially true for buildings with a heating system designed for lower temperatures. In addition, heat pumps can be used to deliver comfort cooling requirements, as the refrigerant cycle can be reversed for cooling. This is one of the main advantages of heat pumps over conventional heating systems.

One area where that is increasingly a focus for building occupants when considering carbon reductions is the generation of domestic hot water (DHW). With a legacy need to achieve temperatures of 70°C on boiler replacements, this has traditionally been more of a challenge for heat pump systems that were principally designed for space heating. One approach, which is often very efficient, is to combine different types of heat pumps. For example, an ASHP for heating in cascade with a water source heat pump (WSHP) is used as a booster to cover the domestic hot water requirements. This allows the comfort control elements to operate at lower, more efficient temperatures while the higher temperatures are only required for the lower DHW demand.

Commercial Landscapes

Additionally, there are now ASHP solutions, such as Daikin's new CZ-HT high temperature heat pump, that can directly achieve 70°C for DHW across the UK ambient air temperature range. This is possible due to innovations in heat pump technology and the switch to the latest generation of refrigerants, which also have a lower global warming potential (GWP) and lower embodied carbon.

For projects where the heating and cooling requirements are more complex, there are multipurpose heat pump units that can efficiently achieve heating, cooling or a mixture of both, taking advantage of heat recovery. These 'four pipe' multipurpose heat pumps can provide an alternative to the gas burners used in the central air handling units to treat the fresh air load – further reducing the building's use of fossil fuels.

To boost the efficiency of the building still further, it is also possible to utilise other sources of heat within the building to meet various requirements. For example, server arrays will generate large amounts of heat all year round that must be addressed. With the right system design, the waste heat from data centres or large server rooms within other commercial buildings can be used to meet the heating needs of other parts of the building.

Design and specification considerations

One factor that must be considered early in any project is the location and layout of the heat pump units. It is generally appreciated that a commercial heat pump plant, by its nature, will occupy a significant amount of space, particularly as multiple units may be required to deliver the heating, cooling, and DHW capacity. However, one factor that is sometimes overlooked when planning the most efficient use of a limited area is the spacing required between units. The cold air that is discharged from ASHPs will sink due to its lack of buoyancy. Without sufficient spacing between the units, there is a significant risk that the cold air will be recirculated through the heat pump, causing a loss of performance and capacity. Manufacturers will be able to provide guidance on ensuring there is adequate make-up air and space between the units to mitigate this issue. Spacing is made more complex if acoustic measures need to be employed to comply with planning requirements. Acoustic enclosures will generally increase the physical size of the unit and must therefore be considered during the initial design and specification.

Another important point for ASHPs is the impact that defrost cycles have on the capacity of units and how this can be managed. The ice that forms on the coils due to the low operating temperatures needs to be removed to maintain efficiency. It is important to remember that reversing the heat pump's refrigerant cycle to deliver heat to the coil reduces the heating capacity by around 15% and as a result will impact the water temperatures within the system. Therefore, the system should be specified based on the 'integrated capacity', which is the capacity considering defrost, rather than the instantaneous or peak capacity. Also, if the system has multiple units, the defrost cycles should be sequenced so that only one circuit or unit is in defrost mode at a time.

For water and ground source heat pumps (GSHP) there are other specific factors that need to be considered. As the units will typically be installed in a plant room, refrigerant safety is a particular issue that must be addressed. The risk of exposure to the refrigerant means that leak detection and emergency mechanical ventilation measures are required to mitigate any risks. The manufacturer of the heat pump system should be able to advise on the specification of these elements. There is also a need for fire risk assessments to be carried out as part of the design due to the classification of low GWP and natural refrigerants as mildly flammable (A2L) or flammable (A3).

Finally, with any WSHP or GSHP installation, the potential impact of the heating or cooling effect of the heat pump's operation on the local environment needs to be accounted for. This is particularly true for open loop systems where water is abstracted, passed through the heat exchanger, and re-injected back into the ground or surface water. It will be necessary to obtain the relevant approvals from the Environment Agency as part of the design and specification process.

A vital role to play

Heat pumps have a vital role to play in the decarbonisation of buildings, which is essential if we are to meet climate targets. To ensure the best possible specification and design of a system that will meet the needs of occupants, while reducing the carbon impact of heating, cooling, and hot water, it is important to partner with the right supplier. A manufacturer who can offer a wide range of solutions will be able to deliver the best possible solution for any project and provide technical support and guidance throughout.

www.daikin.co.uk

Source
1. www.theccc.org.uk/2024/07/18/uk-off-track-for-net-zero-say-countrys-climate-advisors
2. https://ukgbc.org/wp-content/uploads/2021/11/UKGBC-Whole-Life-Carbon-Roadmap-A-Pathway-to-Net-Zero.pdf

Electrifying heating at the end of the gas era

Tom Lowe, Founding Director of Thermal Storage UK, discusses the need to electrify homes as part of the first clean industrial revolution. He emphasises the importance of installing smart products that support the grid while delivering warm and energy-efficient homes.

We are electrifying heating as the era of gas central heating comes to a close. Since the discovery of North Sea reserves in the 1960s, the UK has become a world leader in oil and gas extraction and built a world class gas network. We have now largely depleted our geological inheritance.

Since 2004, the UK has been a net importer of gas, and North Sea resources are steadily declining. That means purchasing an increasing proportion of our gas from partners in Norway, Qatar, and the United States. This strategy has two major flaws. The first is that UK gas prices are set by an international market. This was painfully apparent during the worst of the 2021 to 2023 gas crisis which required the Government to intervene with a colossal support package of £40 billion. The second is that burning gas is a significant contributor to global warming.

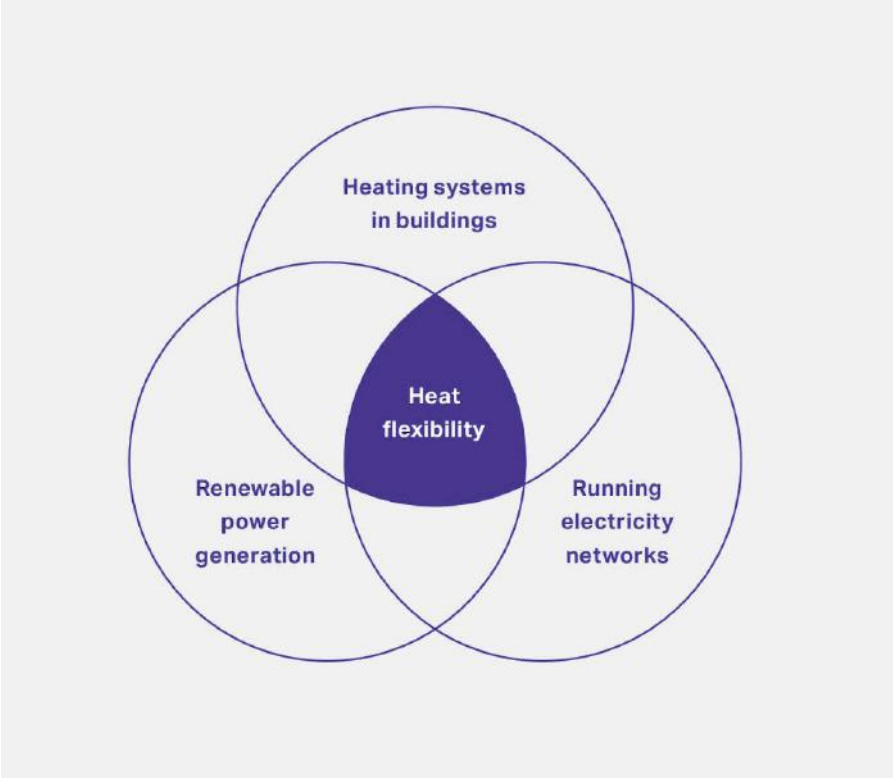
The relative cheapness of gas before the crisis led to a boom in gas central heating systems. 85% of homes are heated with gas and new builds continue to connect to the gas network even in 2025. Optimising the efficiency of those gas central heating systems was not a priority. Cheap gas meant there were limited cost savings from a system operating at 90% efficiency versus one operating at 80% efficiency. It took Government regulation to require gas boiler installations to switch first to condensing systems (2005) and then lower temperature systems (2023 for new installations). The payback on improving energy efficiency to reduce heat loss, particularly deep retrofit measures such as solid wall insulation, was even harder to justify. This meant we collectively failed to invest enough during the gas boom years.

Electrifying heating is the only game in town for most homes. Even if the various technical issues were resolved, hydrogen for home heating is unlikely to be cost-competitive in most parts of the UK and is unlikely to be available for 15 to 20 years. We can electrify heating now and make homes both more comfortable and cleaner.

Tom Lowe, Founding Director of Thermal Storage UK

Electrifying heating requires thinking about the electricity grid. Electrified heating could increase peak demand by as much as four times during the seasonal peaks on the coldest day of the year, particularly around the 5pm to 8pm evening peak. This increase means we need to upgrade our electricity networks, particularly at the distribution level. We also need to consider how these electric heating systems can provide flexibility to the electricity system.

There are three main ways that electrified heating can provide flexibility. Depending on the home, one or more of these approaches can be used to provide heat flexibility.



Heat flexibility is integral to integrating electric heating and renewables

Pre-heating the home

This means turning on the heating a few hours before the heat is needed, shifting the home's highest demand away from the system peaks. Pre-heating is more beneficial in homes with slower heat loss, not least because the electricity system can have more confidence that flexibility will be available when required. Pre-heating during the day ahead of the evening peak is more likely to be comfortable for users. In comparison, night-time preheating of the building ahead of the morning peak could disrupt people's sleep.

Using dedicated thermal storage for hot water

Every heat pump will have a thermal store, whether a traditional cylinder or newer technologies such as heat batteries for hot water. This flexibility is particularly valuable because it is available to the electricity grid throughout the year as domestic hot water demand is fairly constant and consistent.

Using dedicated storage for the central heating system.

Space heating is a larger component of overall household electricity demand, which is concentrated during the colder winter months between October and March. This flexibility could involve coupling a battery or heat battery with a heat pump or making use of heat batteries for central heating.

All of these solutions require smart electricity tariffs from energy suppliers to incentivise people to alter when they consume electricity. Companies such as EDF, Ovo, and Good Energy have followed the lead of Octopus and are increasingly offering these smart tariffs. Some of these electricity tariffs are specific to heating systems. The switch to market-wide half-hourly settlement during 2025 will further incentivise energy suppliers to offer these smart tariffs.

As heat electrification accelerates, installers and homeowners now need to upgrade their heating systems, their radiators, and their building fabric. Depending on the house, this means reducing heat loss, finding a suitable space for the new heating system, finding space for a thermal store, and ensuring that radiators can deliver sufficient heat at the relevant flow temperature.

We need a range of technologies

A range of technologies will allow people to electrify home heating and provide flexibility. Heat pumps (and heat networks) have a major role to play. Research from the Centre for Net Zero shows that homes with heat pumps can provide a little bit of flexibility even on the coldest day of the year.

Some homes will have external space for a heat pump but struggle to find space for thermal storage, particularly large traditional hot water cylinders. Companies such as Sunamp offer a compact heat battery solution that works with heat pumps from global brands such as Bosch, Vaillant, Samsung, Phnix, Panasonic, Stiebel Eltron, Trianco, Daikin and Kensa. This solution, using phase change materials rather than hot water as the storage medium, can fit in spaces under kitchen worktops or under the stairs, allowing more homes to have air-source and ground-source heat pumps installed.

Sunamp heat batteries can help with DHW where internal space is limited

The UK Government estimates that at least 20% of homes are more difficult or expensive for heat pumps and heat networks to decarbonise. There are a range of barriers in these homes, including grid capacity, heat loss, limited external space for a heat pump, and planning or noise restrictions. We need to help these people to switch to electrified heat. Products such as tepeo's heat batteries for central heating can provide a great solution, requiring no external space and no internal fabric or radiator upgrades.

Electrifying heat provides an opportunity to fix some of the issues left unresolved from the gas era. We can ensure all of our heating engineers install best-in-class heating systems that maximise both efficiency and flexibility. We upgrade fabric in homes so that we're not wasting valuable electricity. We can make better use of the UK's enduring and non-finite resources, including using homes to maximise the use of renewables.

Conclusion

To electrify homes, we need to see rapid and coordinated deployment on a scale not seen since the switchover from town gas to natural gas in the 1960s and 1970s. This means energy suppliers, heating manufacturers, and heating installers working together area-by-area to roll out new electrified solutions. And giving people some choice about how they electrify.

The heating sector has the opportunity to be part of the first clean industrial revolution, installing smart products that support the grid and deliver warm homes.

www.thermalstorage.org.uk

Heat pumps and heat batteries provide modern comfort

Can heat pumps work with radiators?

Rob Nezard, Managing Director of UKRadiators.com explores the real question: How can we prove that heat pumps can work with radiators and lower the carbon footprint and running costs?

A topic of hot debate right now. While this question at first glance is simple and can be answered with a simple "yes", how does that address all the concerns we have and see in the media: bills skyrocketing after heat pump installations; lukewarm radiators; how can heat pumps work in the cold; and many more. The real question is - How can we prove that heat pumps can work with radiators? Not only proof that heat pumps can be installed with radiators but also that they can lower both your carbon footprint and running costs.

In this article, we are going to tackle this problem with evidence and provide an understanding of heat energy, which will in turn provide the knowledge needed to succeed with a heat pump installation. We are going to focus on the technical bits you need to understand and cut away any technical nonsense that, while it may be interesting to some, won't actually help you. Every home is different, even a property in Brighton which is identical to a property in Scotland is still not identical in every way when it comes to home heating. Because of this, we need to change the question "Can heat pumps work with radiators" to "Can heat pumps work with radiators in my home". But just because your current ones wouldn't work, doesn't mean radiators cannot work.

How do heat pumps work?

There is so much heavy-handed science that normal people are expected to understand when it comes to heat pump explanations. We'll do our best to keep the science and jargon to a minimum while giving you the information you need. Setting aside energy saving and cost of heating bills concerns, heat pumps work as follows: They do what your fridge/freezer does, just with a different goal

- Fridges take heat energy from inside the fridge and put it in the room.
- Heat pumps take heat energy from the outside world and put it in your room.
- A heat pump uses energy from the grid (electricity) to get extra energy from the outside world.
- How well it does this is called the COP (Coefficient of Performance), we call this efficiency.
- For every 1KWh taken from the Grid, it supplies 3KWh of energy to the room, this is a COP of 3, or efficiency of 300%.

There are two relevant types of heat pump in the UK for residential premises:

- Air to Water
  - Takes energy from air outside, uses that to heat water in radiators.
  - Max internal temperature for radiators is around 55 degrees.
  - Higher internal temperatures and lower external temperatures mean a lower COP, so the colder it gets outside, the higher the water temp for radiators and the lower the COP.
  - Big box installed on side of the property.

- Ground to Water
  - Similar to Air to Water but can have a higher water temp in radiators.
  - Ground temperature is usually quite a bit higher than air temperature, so better for colder areas like the Scottish Highlands.
  - Installation costs are higher, plus you need to dig up your garden to lay ducting.

You can read more about this in "How do heat pumps work[1]" along with a bit more behind why the science is sound by checking out our heat pump myths blog[2].

Can radiators work with heat pumps?

Yes, they can, there is no question here as to the compatibility of the technology. The question is "Will heat pumps work for you", which is highly dependent on your geographic location and property type. Without any hesitation, we can say that for single brick uninsulated properties, anywhere in the UK, an air to water heat pump system won't work, let alone save

any form of money. A ground to air heat pump could possibly work but don't expect savings or lower bills. I personally would also be hesitant with double brick uninsulated properties. So, in these instances, you need an extra £9,000 - £15,000 on average to improve your home and make heat pumps realistic. Cavity wall uninsulated properties, on the other hand, would only need about £1,000 to make them realistic for heat pumps. Well-insulated properties and anything built after 1985 are going to have a good shot at working well. If you have a Grade listed building, just don't. Not for many years until technology improves and special grants can be made available. Before looking into the financials of getting your property ready for a heat pump, you should be asking "How much will it cost to run" Even if you can scrape together £10,000 to improve your home, is it even worth it long term?

How reliable are the COP and SCOP on a heat pump?

COP, how efficient it is. SCOP = Seasonal Coefficient of performance. COP is a way of representing efficiency, so if you take 1KW from the national grid (that you pay for), and get 2.3 KW free from the environment, with a total of 3.3KW of heat energy in your home, your COP is 3.3KW. In our opinion, this is an area that is pretty poor right now within standards and deployments. We explain our view fully in this article, Is the COP on a heat pump accurate?

How important is it to work with a competent heat pump professional?

It is vital that you work with an industry professional who understands how to relate the COP and SCOP on heat pumps to your geographical area. Further to this, when it comes to money saving, this has to relate to the heating system you have in place and your current costs. This concept changes drastically across the landscape of the UK and differing properties that are present along with comparable heating systems already in place. It is quite a job to get right, but it has to be done regardless of the effort required.

So, will I need bigger radiators to work on a heat pump?

Yes, that is a safe assumption. How much bigger is situational and dependent on the heat pump type and amount of COP you want to achieve. There are a very small number of properties that are an exception to the rule, some properties built after 2005 may be suitable with current radiators, but those will be the rare exceptions.

Are there particular radiators for air source heat pumps?

The radiators available to you are no different from how you define what is available for your current heating system. You calculate the heat loss of the room for your geographic location. You have a desired water flow temperature, this is represented by the "Delta" listed on the radiator for Delta 30 (55°C flow temperature). Alternatively, if you want a lower Delta value, you will need to use the KM and N values (your heat pump professional should know how to do this), you can use a factor table, but it's not the best or most accurate method. So, the answer to this question is, don't pick radiators on your own, do it with your competent heat pump installer/engineer. Your choice will impact the water flow temperature to meet the home energy requirement for the room, therefore, picking badly means higher water flow temperatures needed and a lower COP. They also need to relate the COP to the geographic winter design temperature.

Are there particular radiators for ground source heat pumps?

Ground source heat pumps can have a higher water flow temperature whilst having less impact on the COP. This just means you'll likely have a bigger selection of radiators to choose from.

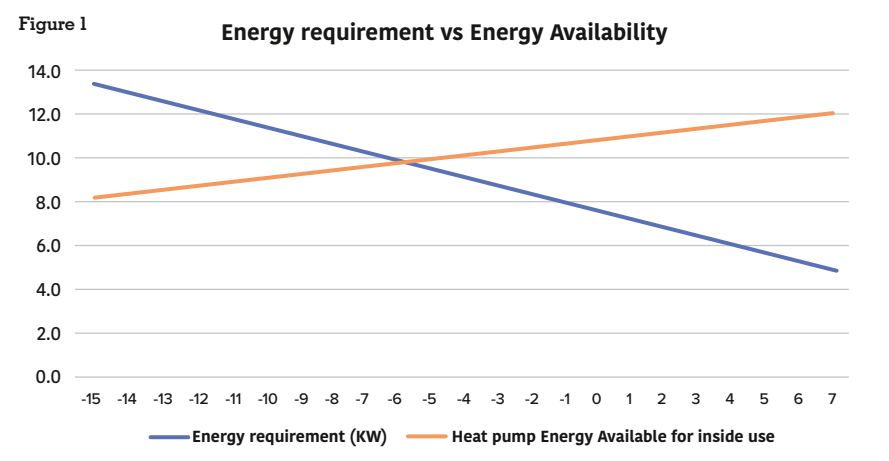
Are there any concerns with heat pumps and the technology?

Yes, absolutely. The key one is buffers in home design and the correlation with the availability of energy and home energy requirements for changing external temperatures. An issue we have with this tech (and we can consider naturally occurring disaster scenarios) is when we do get extreme cold if the heat pumps aren't installed properly and with consideration of extreme temperatures, it could be disastrous. We cover this in more detail in our "Major concern with heat pump technology[2]". Figure 1 below is a 12KW heat pump vs an 8KW home based on 20°C internal temp and a standard winter design of -1°C.

So, in this scenario, we don't have the energy required to heat our homes, so for the Highlands of Scotland where these lower temperatures are generally an annual event, a lot more consideration is needed when choosing a heat pump. The other side of this coin is that the lower the temperature outside, the higher the water temperature in the radiator needs to be. This area needs a lot more focus and attention to avoid disaster scenarios. We hope that this article has given you a better idea of how heat pumps work, if they can work with radiators, how reliable (or unreliable) heat pump documentation can be, and more questions you may have on your transition or research of low-temperature systems. There are several other blogs mentioned in this one, if you are seriously considering a heat pump, we recommend that you give those a read so that you are better equipped to get the most out of your new heat pump system.

www.ukradiators.com

Figure 1



Source
1. www.ukradiators.com/blogs/buying-guides/how-do-heat-pumps-work
2. www.ukradiators.com/blogs/buying-guides/myth-busting-heat-pumps

Skirting board heating - the perfect solution for heat pumps system

We know that changing the way we heat our homes could make a significant difference. With the shift from traditional gas boilers to more eco-friendly heat pumps, homeowners and installers are looking to upgrade their existing systems to match. Underfloor heating (UFH) and oversized radiators could offer solutions, but both come with their own set of drawbacks. **Ethan Wadsworth**, Sales and Marketing Director at DiscreteHeat, explains how ThermaSkirt, an innovative radiant skirting board heating system, offers an alternative.

Radiant skirting board heating is a perfect match for heat pumps, whether retrofitting an existing home or installing in a new build. It overcomes the limitations of UFH and oversized radiators, is easy to install, and is also versatile enough to be used in a wide range of commercial applications, including hospitals and care homes.

The challenge: lower temperature heating

The shift to heat pumps is being driven by their impressive ability to reduce carbon emissions. Unlike traditional gas boilers, which typically generate water temperatures of around 70°C, heat pumps produce lower temperatures, usually between 40°C and 50°C. While this is ideal for energy savings, it requires careful consideration when selecting heat emitters, especially for older homes where heat loss can be higher. The challenge is to find a heating system that can efficiently distribute this lower temperature heat while maintaining comfort and efficiency.

Many assume that underfloor heating is the best match for heat pumps. However, in older properties, retrofitting UFH can be impractical, and its output of 55-80 watts per square metre may not be sufficient for homes with greater heat loss. The alternative is to install oversized radiators, but this, too, is far from ideal. Larger radiators take up more space, are heavy, and can compromise the aesthetic and practical use of a room. Worse still, many radiators don't provide radiant heat as effectively as people believe. Instead, they rely on convection currents to move air around the room. At lower temperatures, this can lead to poor heat distribution, creating 'microclimates' where one side of the room remains cold.

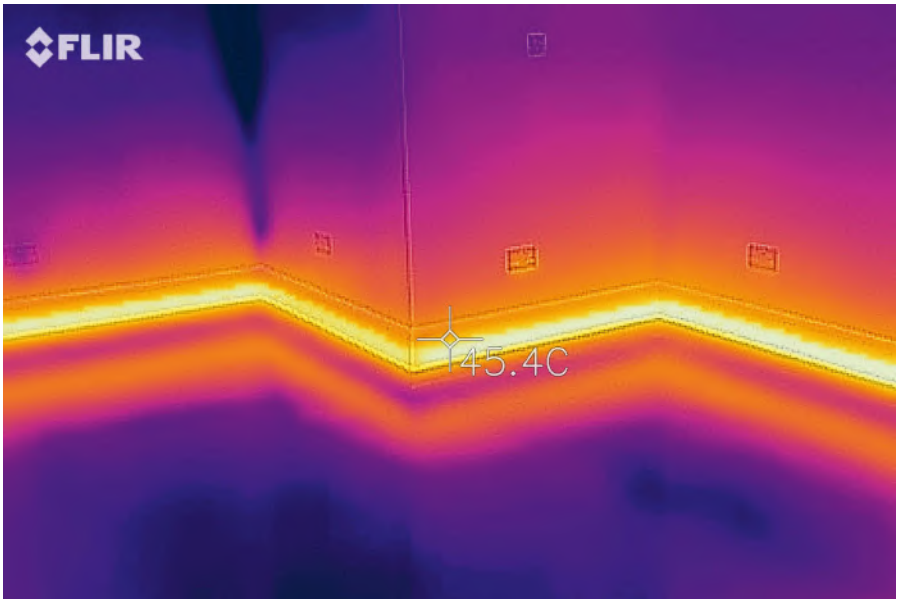
Ethan Wadsworth, Sales and Marketing Director at DiscreteHeat

Skirting board heating – a game-changer!

Skirting board heating, offers a solution that overcomes these challenges. In essence, it is a radiant heating system disguised as a skirting board. Hot water circulates through aluminium profiles, which then emit heat directly into the room through infrared radiation, exactly how heat should be distributed. Unlike traditional radiators, ThermaSkirt doesn't need to rely on air movement for heat transfer. The result is an even, comfortable heat that fills the room without the air circulation issues of radiators.

Benefits of skirting board heating:

- Space-saving design: it doesn't take up any wall, more room for furniture and a cleaner, more modern look.
- Efficiency: with lower water volumes than radiators and fast heat-up times compared to UFH, it's highly responsive, perfect for the lower water temperatures produced by heat pumps.
- Easy to retrofit: unlike underfloor heating, which requires significant disruption to floor structures, it can be quickly and easily installed in existing buildings.



Skirting board heating isn't just for residential use. Its flexibility, combined with easy installation and maintenance, makes it ideal for commercial properties such as hospitals, care homes, and public buildings, where hygiene, safety, and ease of cleaning are critical.

In environments such as hospitals, the problem of dust and dirt accumulating behind radiators can create breeding grounds for harmful bacteria. With skirting board heating, this isn't an issue. The sleek design eliminates grilles, slots, and other areas where detritus can gather, making it easy to wipe down and maintain sterile conditions.

Moreover, the system's anti-tamper design makes it safe for use in settings where vulnerable people could be at risk of harm from exposed pipes or radiators. It also reduces trip hazards and impact risks, making it a safer alternative for care home residents who may be at risk of falls.

Simple installation

One of the main benefits of skirting board heating, is its ease of installation, especially when compared to the extensive work required for underfloor heating or the additional structural concerns associated with oversized radiators. Professional heating engineers and even competent DIYers can install it efficiently by following a clear step-by-step process.

The installation starts with fixing foil and brackets to the wall, followed by setting up the feed pipework. Each section of the skirting board is measured and cut precisely before being assembled and clipped into place. The final steps involve commissioning the system, balancing it for optimal heat output, and adding finishing touches like gaskets and covers. This straightforward process means that the system can be up and running in a fraction of the time it takes to install alternative systems.

Perfect for new build and retrofit projects

Skirting board heating is an excellent solution not only for retrofitting older properties but also for new builds. While UFH is often installed on the ground floor of new build homes, skirting board heating offers an appealing option for upper floors. It provides efficient heating and eliminates the need for unsightly radiators.

When retrofitting, if a heat loss calculation indicates that the existing radiators are undersized for use with a heat pump, it can be added into the room to boost the heat output without replacing all the radiators. This offers flexibility, giving homeowners options for how to manage their heating systems without needing to completely replace all the radiators.

ThermaSkirt is the perfect partner for heat pumps, offering an innovative and efficient solution that overcomes the limitations of underfloor heating and oversized radiators. It saves space, is easy to install, and provides effective radiant heating that works seamlessly with the lower temperatures generated by heat pumps. It offers a practical and aesthetically pleasing solution that ticks all the boxes.

For more information on how to install ThermaSkirt or to become a registered installer, visit: **www.discreteheat.co.uk**

WOMEN IN THE HEAT PUMP INDUSTRY

In an exclusive interview with **Zoe Sims**, Technical Training Manager at Ideal Heating's Expert Academy, she shares her journey so far in the heat pump industry, including her transition from using tools to training, becoming Ideal Heating's first female trainer.

What was your journey into the heat pump industry?

I joined Ideal Heating 15 years ago as part of the technical team, advising installers and customers on our products. Being from Hull, where Ideal has become one of the biggest employers, I was already familiar with the company before I decided to apply for a role.

After a couple of years in the technical role, I realised I had a passion for becoming a gas engineer. To make my passion a reality I am proud to have pursued my training and obtained my qualifications independently, taking evening and weekend courses.

I decided to transition to a role in Ideal Heating's Quality and Reliability team when I became pregnant with my first child. I felt it wasn't wise to continue clambering around in people's lofts while carrying a baby. My day-to-day responsibilities shifted from servicing boilers to using data to monitor trends, analysing component failures, conducting root cause analysis, and understanding how models perform. This role allowed me to continue working on boilers, so I didn't lose the skills I had gathered throughout my gas engineering career. If anything, I learned things I didn't already know.

While on maternity leave after the birth of my second child, I saw an opening for the Technical Training Manager position. Training has always been of interest to me, and it felt like the perfect opportunity to use my years of experience as a gas engineer to train both the current and next generation of installers in renewable energy solutions, especially at a time when training is more critical than ever.

In September, I was delighted to be appointed as the Technical Training Manager at our Expert Academy.

Zoe Sims, Technical Training Manager at Ideal Heating's Expert Academy

When I started at Ideal Heating 15 years ago, I never could have imagined that I'd be here helping to train people all these years later. My appointment strengthened an already experienced training team, which has over 300 combined years of expertise in the heating industry and is dedicated to shaping the future of our sector.

What does your current role involve?

My current role focuses on teaching installers about heat pumps, including servicing and diagnostics so they have the knowledge required to work with both current and future heating solutions. I also design training courses and conduct sessions to help installers deepen their understanding of heat pumps.

We know that the UK Government's target of 600,000 heat pump installations annually by 2028, and upcoming regulations banning gas boilers in new homes from 2025 with a full ban by 2035, are ambitious so the team and I will ensure that installers are well-equipped to meet these targets and drive the low carbon heating transition.

What would you say to other women who are considering working in the heat pump industry?

A fact that has stuck with me is that, according to British Gas, just 0.2 percent of gas engineers working in the UK in 2023 were women. This needs to change.

I've had the opportunity to attend several Women in Manufacturing events with Ideal to encourage young women to explore the opportunities our industry can offer. I understand that joining a male-dominated field can seem intimidating, but I want to reassure them that it's a welcoming environment. Throughout my 15 years at Ideal, I am delighted to say that my colleagues have been incredibly supportive, and we really need more women to bring their skills and perspectives into the industry.

Do you have any mentors or anyone in particular who inspires you?

I would say, my dad. He was in the heating industry, and when I was training to be a gas engineer, his knowledge and connections helped me immensely. He introduced me to a friend who provided practical experience. My dad's support really built my confidence, especially in those early days, and I'm so grateful for that encouragement.

What do you like to do outside of work?

Outside of work, I'm a full-time mum to my two young boys, who keep me very busy! Being a parent is my second full-time job, but it's also my greatest joy, and they're truly my biggest blessing.

Are renewable heating systems notifiable?

Perhaps surprisingly, this is a question OFTEC is asked quite frequently. So, what are the facts? OFTEC Registration Director, **Adrian Lightwood** explains.

With more and more renewable heating systems being installed, and new companies entering the sector every week, it's important that everyone working in the sector understands their responsibilities and get things right from the onset.

The Building Regulations 2010 sets out in Regulation 20[1] that certain works in England and Wales described in Schedule 3[2] can go under self-certification by installers, providing they are registered with an accredited competent person scheme.

One such area of work that is listed in Schedule 3, and is therefore exempt from obtaining a building notice, is the installation of microgeneration or renewable sources in the building to produce heating, cooling, or electricity. Heat pumps and solar are among the technologies included in this category.

Therefore, the same rules that apply to oil, gas, and solid fuel combustion appliances also apply to renewable installations. That means you need to self-certify renewable installations through your competent person scheme - but only if you hold that scope of registration with your scheme. If you don't hold the relevant scope of registration, we can help with your registration and training needs.

In addition to notifying your renewable installations, please don't forget to include any unvented hot water cylinder work, heating system, external controls and electrical work. The full list of renewable works to be notified. The Building Regulations are:

Renewables

- Install an air source heat pump
- Install a ground source heat pump
- Install a water source heat pump
- Install a solar thermal system
- Install a biomass wet boiler, heater, stove, or cooker
- Install a biomass dry room heater, stove, or cooker

Heating and hot water

- Install a heating system
- Install an extension to an existing heating system
- Install a vented hot water storage vessel
- Install hot water with vented hot water storage
- Install hot water with unvented hot water storage
- Install a hot water system without storage
- Install an unvented hot water storage vessel
- Install controls separate from the heating appliance

Source
1. www.legislation.gov.uk/uksi/2010/2214/regulation/20/made
2. www.legislation.gov.uk/uksi/2010/2214/schedule/3/made

UK households are switching to heat pumps

Russell Dean, Deputy Divisional Manager at Mitsubishi Electric, explores why UK households are making the switch to renewable heating systems, the financial incentives that are helping to drive adoption, and how rebalancing electricity and gas prices would make heat pumps a much cheaper way to heat a home in the future.

Year-on-year, sales of heat pumps are growing. Increasingly, households across the UK are choosing to install air source heat pumps and are moving away from traditional gas boilers. Where gas was once the go-to heating and hot water system for a home, UK families are now opting for a renewable heating system that is more efficient than a fossil fuel boiler, and more sustainable for the environment. Why are they doing this?

Concern about climate change, the rising cost of energy, volatile gas prices, plus Government incentives and attractive energy deals from energy suppliers, are all making heat pumps a more attractive choice for homeowners.

The case for heat pumps: efficiency and sustainability

Heat pumps operate by transferring heat from the outside air into the home. They use electricity to do this, but for every unit of electricity consumed, they can deliver three or four units of heat, making them much more efficient than gas boilers. In contrast, gas boilers typically waste a portion of energy as they burn fossil fuels, emitting carbon dioxide into the atmosphere.

Russell Dean, Deputy Divisional Manager at Mitsubishi Electric

This efficiency means heat pumps can significantly reduce a household's carbon footprint. The National Audit Office published that "Heating the UK's 28 million homes accounted for 18% of all UK greenhouse gas emissions in 2021." By switching to a heat pump, a typical household could cut its carbon emissions by up to 70%, making it a vital tool in the UK's push to reach net zero emissions by 2050.

Government incentives and support

Incentives from both the UK and Scottish Governments help make installing a heat pump very attractive. The UK Government's Boiler Upgrade Scheme (BUS) offers households in England and Wales a grant of up to £7,500 to support the installation of heat pumps. The Scottish Government has a similar scheme, the Home Energy Scotland grant and loan, which is more generous for rural and island homes. Households are also attracted to the fact that there is no VAT on heat pumps.

Recognising the rising demand for heat pumps, the Chancellor of the Exchequer announced in the autumn budget statement, that there would be increases in funding for BUS. While greater detail on this is required, the commitment to BUS and funding to help families switch to heat pumps is welcomed.

Rebalancing electricity and gas prices

One of the major barriers to heat pump adoption has been the high cost of electricity compared to gas.

The energy price cap set by Ofgem from 1 October is 24.50p per kWh, with a daily standing charge of 60.99p for electricity. Gas, on the other hand, has a sizeably more favourable rate of 6.24p per kWh and a daily standing charge of 31.66p. This is clearly not a level playing field. A rebalancing of pricing needs to occur. And this is where Government can act.

Lowering the price of electricity in comparison to gas would make heat pumps more attractive for households. This would help family budgets, and it would be a significant step in helping to decarbonise home heating and, subsequently, help Government reach its goal of net zero by 2050.

OVO Energy's partnership with Mitsubishi Electric illustrates how the lowering of electricity pricing makes running a heat pump an attractive option for households. The Heat Pump Plus add-on offers OVO customers with a Mitsubishi Electric Ecodan heat pump the opportunity to heat their homes for 15p per kWh, compared to the average standard variable rate tariff. This means that OVO customers could shave over a third off their home heating bills compared to the market average.

OVO's offer could be the beginning of a trend that would see more energy suppliers offering heat pump-specific tariffs, making it financially advantageous for more households to run heat pumps.

Overcoming information barriers

Another challenge is public awareness. Many UK households remain unaware of the potential cost savings and environmental benefits of heat pumps. To address this, Government and industry campaigns can play a key role in educating homeowners and dispelling misconceptions about the technology.


Ecodan heat pump

At a Parliamentary roundtable in Westminster, organised by Mitsubishi Electric in October, business leaders, think tanks, and academics, pointed to the lack of information available to consumers on how best to heat their homes. There is confusion and misinformation. Looking to Scotland, the Energy Savings Trust, with Home Energy Scotland, and funded by the Scottish Government, offers advice about warm and energy efficient homes, and reducing energy bills. This is an example of what could be offered in the rest of Britain so that households can have impartial advice.

The path towards a greener, more affordable future

With growing financial incentives, supportive Government policies, and the rebalancing of electricity and gas prices, heat pumps are a viable and affordable option for UK households. Deals, such as that from OVO Energy, mark a major step towards making heat pumps an economically attractive choice for heating, and as more companies follow suit, we should see an accelerating shift away from gas boilers.

For UK households, making the switch to a heat pump represents not only an opportunity to reduce heating costs but also a step toward a sustainable future. As the electricity grid continues to decarbonise and heat pump technology advances, this low-carbon heating solution can soon become the preferred option for millions of homes across the UK.

https://les.mitsubishielectric.co.uk
https://www.ovoenergy.com

Heat pumps emit 95% fewer emissions than gas boilers a year, new study shows

Mark McManus, UK Managing Director at STIEBEL ELTRON discusses their new study which has found that heat pumps in a home setting emit almost a staggering 95% fewer carbon emissions than a traditional gas boiler annually.

The study, which took place over 12 months, in a four-bedroom home found that their WPL-A 07 Premium air-source heat pump produced 250kgCO_2e, whereas a conventional gas boiler in the same dwelling would emit over 3,500kgCO_2e.

As well as showing significant carbon savings, the heat pump maintained a comfortable indoor temperature above 20°C all year round, with a Coefficient of Performance (COP) consistently exceeding 4.2, highlighting its high energy efficiency.

Meanwhile, the heat pump costs £750.00 a year to run, some £250.00 less than a traditional boiler in the same setting, with the unit's reduced energy consumption contributing to long-term savings on utility bills.

The performance of the heat pump was monitored using real-time reporting and data analytics via the company's monitoring software, providing valuable insights into its efficiency, cost-effectiveness, and environmental impact.

Mark said: "There is a growing onus being placed on technologies that will significantly reduce carbon emissions that come from homes and buildings. These results show that a heat pump does exactly that.

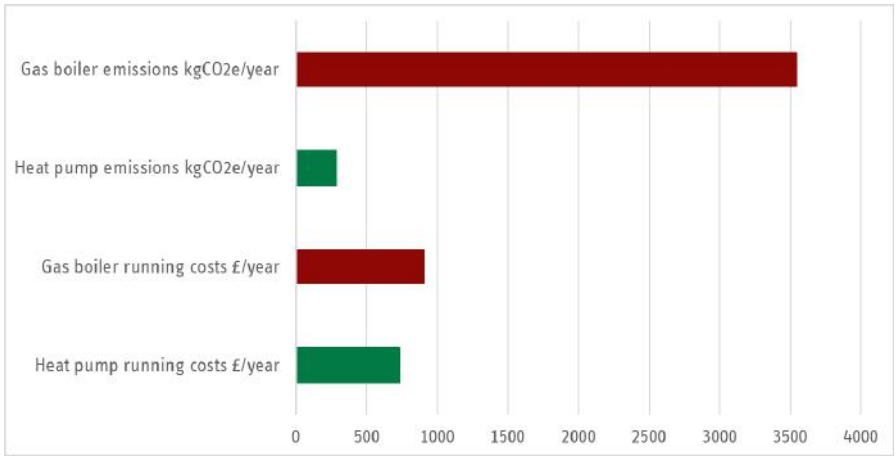
"Consumers who are exploring the possibility of a heat pump can have confidence that it will deliver huge carbon reductions, maintain a constant and comfortable indoor temperature, and perform efficiently while bringing cost savings at the same time.

"As the environmental benefits become more prominent and the need for more carbon-efficient homes becomes greater, demand for heat pumps is only going to increase in the years to come."

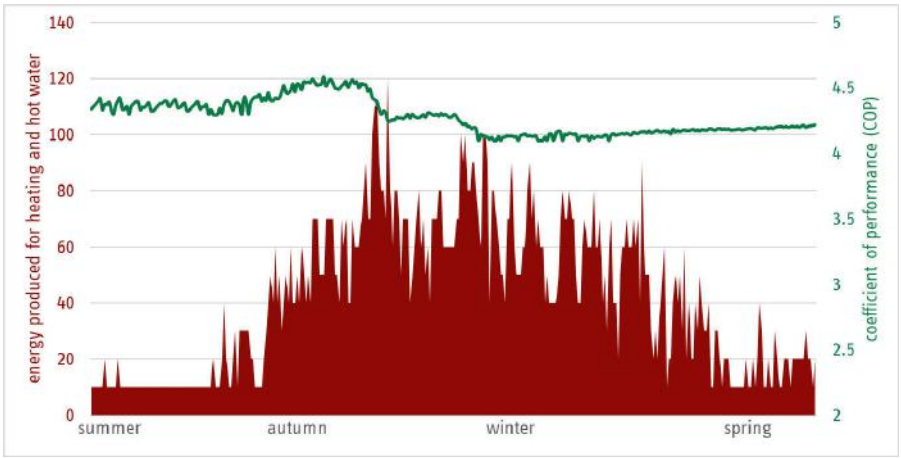
Mark concluded by saying: "At STIEBEL ELTRON we're looking forward to meeting this demand, equipping both consumers and installers with the technology, and knowledge, to transition towards greener energy solutions."

www.stiebel-eltron.co.uk

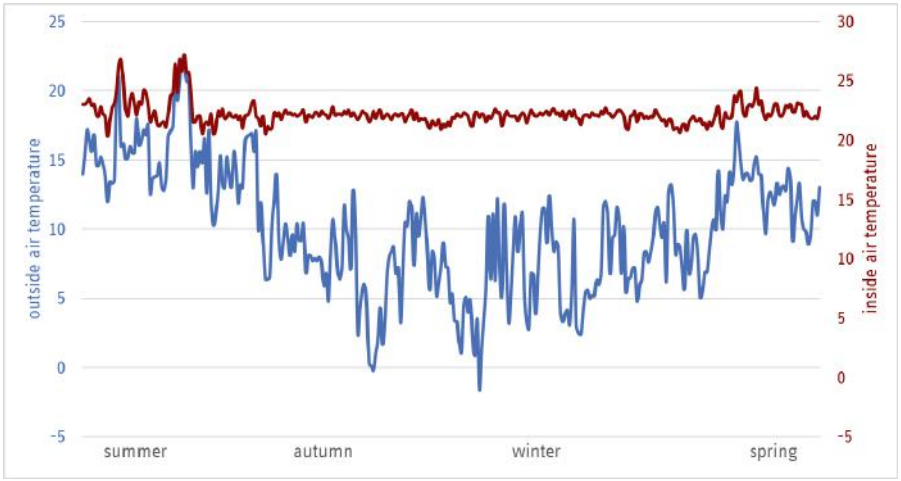
Heat pump v gas boiler carbon emissions



Tracked COP by season



Temperature inside vs outside by season



UK heating engineers slow to support transition to clean heat technologies

Baxi's 2024 Installer Skills Survey shows heating engineers play a key role in promoting the switch away from gas boilers, but are held back by a lack of practical training, complex Government incentives, and sluggish consumer demand.

Baxi has published its 2024 Installer Skills Survey, conducted in partnership with green supply chain consultancy Gemserv, the survey examines the appetite and confidence of heating engineers to support households in their transition to clean heat technologies. It also reflects the future pace of change in the installer community. In the UK, around 18% of all carbon emissions come from home heating, with around 85% of homes using natural gas boilers.

As consumers often rely on a heating engineer's expertise when deciding on heating options for their home, installers play an influential role in the decision to move away from natural gas boilers towards low-carbon alternatives, such as heat pumps. As such, the survey is an important indicator of the readiness of heating engineers to adopt and promote heat pumps in the context of evolving Government policies and consumer demands. Over 300 installers took part in the survey, conducted in August 2024.

Although this year's survey reveals more positive sentiment towards heat pumps compared to the first edition in 2022, it's clear that many installers still lack the training, knowledge, and incentive to help homeowners begin their transition away from gas boilers.

Just 9% of installers say they are fitting heat pumps. This is up from 3% in 2022 and 7% in 2023. Sentiment towards heat pump installation in the future looks weak, with half of the installers saying they are "somewhat" or "extremely unlikely" to start fitting heat pumps in the next three years. This compares to 46% in 2022 and even less confidence - 53% - in 2023. There is more enthusiasm for hybrid systems – where a heat pump is combined with a gas boiler – with 30% of installers showing interest.

Government schemes, such as the Boiler Upgrade Scheme (BUS), are met with frustration in the survey, due to perceived complexity, excessive paperwork, and lack of consumer awareness. Only 9% of installers rate Government schemes as "good" or "excellent" and 42% say customers never mention the BUS.

A lack of confidence to promote and install low-carbon heating technologies has been a feature of the Installer Skills Survey since it began in 2022. This year, there is a slight improvement, with 11% of installers saying they are 'extremely confident' in discussing low-carbon technologies (up from 7% in 2023) and 35% 'moderately confident'. This indicates that while training opportunities and industry communication are having a positive effect, many installers still lack the expertise to fully promote and install low-carbon heating technologies.

Practical training is key to building confidence, with 34% of respondents indicating a preference for hands-on learning. The perceived high cost of training, along with the complexities of MCS accreditation, are an ongoing obstacle to learning.

The lack of consumer demand for heat pumps further contributes to installers' low engagement. Without strong consumer interest, installers continue to feel hesitant about making the transition to low-carbon heating, including investing in training. In the 2024 survey, only 3% of installers say customers always ask about low-carbon heating.

A recurring theme in all three surveys has been a generational divide among installers, with those nearing retirement less inclined to invest in training. As more new installers enter the industry, it's expected that more will be willing to embrace new technologies. However, the transition will require further intervention from both Government and industry to create a more supportive environment.

Baxi shared the findings of the survey at an event held at the Baxi Solutions Academy in Warwick on 24 September. Invited industry stakeholders shared their perspectives on the role of skills in the energy transition, and the critical dependencies that consumers, the supply chain, and the Government have on installers to make the clean heat transition happen.

Ian Trott, Baxi's Head of UK Training says, "While the 2024 survey shows some positive developments, particularly regarding hybrid systems, many of the challenges highlighted by previous surveys, such as insufficient training, poor Government support, low consumer demand, haven't moved on. The transition to low-carbon heating will require more targeted interventions to support installers in overcoming these barriers."

James Higgins, Partner, Low Carbon at Gemserv, says: "The 2024 installer survey shows incremental progress in attitudes towards low-carbon heating technologies among installers, but as the industry moves forward, increased financial support, streamlined training opportunities, and efforts to raise consumer awareness will be crucial to achieving heat decarbonisation."

Info
www.baxi.co.uk

£2.7 million awarded in Round 6 to optimise heat networks in England and Wales

HEAT NETWORK EFFICIENCY SCHEME

In the sixth round of funding awarded under the Government's Heat Network Efficiency Scheme (HNES), another £2.7 million has been awarded to 33 heat networks across England and Wales.

So far, HNES has helped to improve the heating and hot water supply for over 41,000 residents connected to 192 heat networks, and funding in Round 6 adds to that progress, as another 1,945 residents are set to benefit from improved and optimised heating and cooling provision. The 33 successful heat networks will receive either direct capital funding for improvement works, or funding to support optimisation studies which will help heat network owners identify the causes of low-efficiency levels and areas for improvement.

Some notable projects benefitting from support in this round include capital support to the Reservoir and Watersreach heat network to implement improvements identified as a result of their HNES revenue grant funding in Round 1. Universities in Nottingham and Worcester will also receive support to undertake studies to identify issues with their unreliable heat networks, which are currently operating at low-efficiency levels and causing occasional service interruptions.

Minister for Energy Consumers, **Miatta Fahnbulleh MP**, commented: "Heat Network customers should be able to expect a good quality service – delivering regular, reliable heating and hot water.

"The £2.7 million funding boost will transform 33 old and inefficient heat networks across the country, adding to our support of more than 41,000 residents, ensuring they get what most of us take for granted.

"This is part of our wider efforts through the Heat Network Efficiency Scheme – with more projects set to benefit in the near future."

Louise Singleton, Principal Consultant at Gemserv, said: "It is great to see HNES continuing to provide vital funding to old, inefficient heat networks across England and Wales.

"It is particularly encouraging to see applicants being proactive once receiving the output of their HNES funded optimisation studies. Projects are now being awarded capital funding to implement recommendations from these studies that will go on to improve outcomes for residents and occupants. We look forward to working with heat networks throughout England and Wales who plan to apply for HNES in future rounds after being inspired by demonstrated successes from our funded projects."

Capital Grant Funding

Capital grant funding will go directly towards covering the cost of operational works to improve the efficiency of existing heat networks. In this round, £2.2 million will directly improve the efficiencies of heat networks serving 334 residents.

Local Authorities

Council of the City of York: Has been awarded £125,075 for a heat network serving the Glen Lodge Extra Care facility. Flats 1-32 will receive the funding to remedy poor infrastructure causing high heat losses, regular system interruptions and major outages.

Housing Associations and Social Housing Providers

Notting Hill Genesis: Will receive over £1.8 million for two heat networks in Westminster and Hackney serving 179 residents. The Ernest Harriss House and Reservoir and Watersreach networks will receive funding to remedy high heat losses, poor insulation, and low-efficiency levels. A2Dominion Housing Group: Has been awarded almost £154,000 to improve a heat network serving Baker House in Ealing. The heat network, serving a building in the Capital, will utilise funding to fix the lack of data being received from the Building Management System, upgrade insulation in the energy centre, and to create hydraulic separation in each dwelling by installing hydraulic interface units.

Private Sector

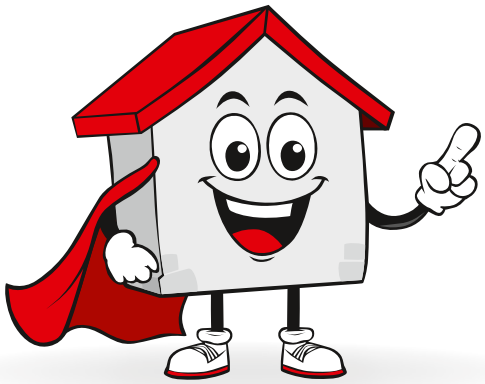
Listello Buildings Management Company Limited: Has been awarded over £71,000 for the Greenaway Apartments/Newberry Mews/Bloore House heat network. The two buildings, housing 75 apartments, will utilise HNES funding to improve pipework, insulation, and metering systems that are resulting in poor efficiency levels and high energy bills.

Revenue Grant Funding

In addition to capital grant funding, projects in Round 6 have also been awarded almost £564,000 of revenue grant funding to undertake optimisation studies to review the performance of their heat networks and identify areas for improvement. Optimisation studies in this round will identify improvements to networks affecting 1,611 residents.

To read about the award to Housing Associations, Social Housing Providers, Local Authorities and Health and Education Sector including Bolton at Home Limited, ClwydAlyn Housing Ltd, Home Group, Norwich City Council, Lambeth London Borough Council, University of Nottingham, The University of Worcester, The Centre for Alternative Technology Charity Limited and Stockwood Community Benefit Society Ltd visit: **www.acrjournal.uk/heat-pumps/2-7-million-awarded-to-optimise-heat-networks-in-england-and-wales**

www.gemserv.com



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HEAT PUMPS TODAY

Clear legislation and a robust supply chain will boost heat pump demand

Iain Davies, Supplier Engagement Manager at Changeworks, discusses the importance of investing in the supply chain to support the journey to net zero.

Changeworks works in partnership to deliver large-scale retrofit programmes, and also recently launched EcoCosi, a home retrofit service. We want to help meet net-zero targets by making Scotland's homes more energy efficient and lowering carbon emissions from home heating systems. We know that heat pumps will play a vital role in the transition to a low-carbon Scotland. However, with uptake still relatively low, it's clear that in order to build confidence amongst householders and the commercial sector, the Scottish Government must prioritise a clear legal framework for domestic heating and energy efficiency. In tandem with legislation, we also need to strengthen the retrofit supply chain in Scotland to support the rollout of home energy efficiency upgrades. At Changeworks, we are building a network of quality contractors and trades to prepare for the transition to zero direct emissions heating (ZDEH) systems.

Scaling up heat pump installations is key

Improving the energy efficiency of existing homes and replacing fossil fuel systems with ZDEH such as heat pumps is key to helping Scotland to decarbonise and make heating homes more affordable, protecting householders against energy price shocks.

With around 35% of Scottish households in fuel poverty, it's obvious that our current energy system isn't working. Volatile gas prices have their part to play, but even before the latest energy crisis, annual rates of fuel poverty routinely exceeded 25%. For over a decade, the most consistent driver of unaffordable energy costs has been the poor energy efficiency of our housing. More than 50% of Scottish homes have an EPC rating of D or below, making them some of the least energy-efficient dwellings in Europe.

Iain Davies, Supplier Engagement Manager at Changeworks

The latest figures from the Microgeneration Certificate Scheme (MCS) show that Scotland is set to achieve a record number of heat pump installations this year. As of October, the number of installs in 2024 stands at 5,000, putting the industry on track to beat 2023's total of 6,388 by year's end. However, whilst this is certainly a move in the right direction, the rate of change remains far behind what is necessary. Before scrapping its 2030 interim climate targets, the Scottish Government stated that heat pump installations would need to hit 100,000 a year by the end of this decade. Though the targets may have been scrapped, the urgency of a transition to ZDEH remains.

Clear regulation and supply chain investment

Multiple factors affect heat pump uptake, but chief among them is the lack of clear regulation to guide both householders and the supply chain. Without knowing what needs to be done and the timeline in which to do it, both the public and the commercial sector are finding it hard to make decisions about retrofit. For example, if a householder's gas boiler breaks down this year, does it still make sense to replace it with the cheapest like-for-like option? Or how much should a heating company invest in retraining its engineers to install ZDEH over the next five years, given the uncertainty of demand?

Questions such as these will be easier to answer once the Scottish Government passes its delayed Heat in Buildings Bill. In its current form, the Bill proposes that the use of polluting heating systems (such as gas boilers) will be prohibited after 2045, to be replaced with a zero-emissions system. It will also require privately owned homes to meet a 'reasonable minimum energy efficiency standard' by 2033, and privately rented homes to meet the same standard by 2028.

While it's encouraging to see the Bill included in the Programme for Government for the year ahead, there is a need for a firm timeline and quality standards to drive the pace of delivery.

This would allow installers, manufacturers, and the wider supply chain adequate time to prepare, invest, and upskill their workforce. Such preparation is crucial if the sector hopes to meet the demand for electric heating and fabric measures.

Join our trusted network

At Changeworks, we want to strengthen the retrofit supply chain across Scotland. We are building and maintaining a network of installers who can support our activities to decarbonise homes. This includes working with key stakeholders to ensure that decarbonisation is scaled up, from skills providers to manufacturers.

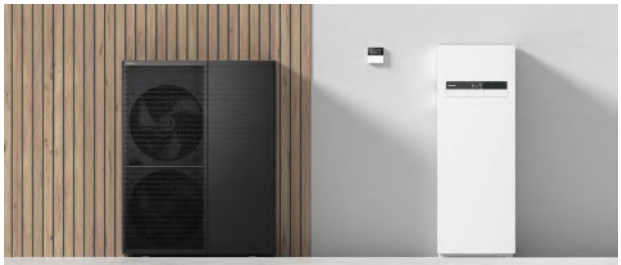
By building this trusted retrofit network now, the industry will be in a strong position to meet the challenges and opportunities posed by the Heat in Buildings Bill.

www.changeworks.org.uk

The Innovation Zone

The guide to what's new for Heat Pumps Today readers, offering vital industry news.
To advertise your product in 'The Innovation Zone' section please contact **victoria.brown@warnersgroup.co.uk**

Panasonic's innovative T-CAP Aquarea M Series Heat Pumps with R290 are available now



Panasonic Aquarea M Series Now Avaliable

Panasonic Heating & Cooling Solution's has launched the Aquarea M Series air-to-water heat pumps, setting new standards in efficiency and sustainability. The M Series 9,12 & 16kW Single or 3 phase has been designed with a modular concept that caters to diverse applications and property types. The M Series offers four configurations: Standalone Remote Controller, Control Module, Hydro Box, and All-in-One (AiO), providing tailored solutions for every user. Utilising the natural refrigerant R290, with a low Global Warming Potential (GWP) of 3, the system is a more environmentally friendly choice. The hydraulic connection between outdoor and indoor units (Hydro Box & All In One) simplifies installation, removing the need for F-gas certification.

www.aircon.panasonic.eu

Toshiba USX Edge Modular Heat Pump launched

The groundbreaking Toshiba Universal Smart X (USX) Series Edge high-capacity modular air source heat pump is now available. Engineered for exceptional efficiency, flexibility, and sustainability, the USX is poised to deliver innovations to the commercial and industrial HVAC landscape.

Toshiba Universal Smart X (USX) Series EDGE

The system features an enhanced compressor design based on the world's largest capacity DC twin rotary compressor, enabling the use of high-pressure, lower-GWP R32 refrigerant.
A sophisticated module control system optimises internal water flow and pressure, significantly reducing wastewater while maintaining stable environmental conditions.
Additionally, an industry-first pulse width modulation (PWM) converter enhances power factor, eliminates harmonic current issues, and reduces losses, contributing to a more compact and efficient design.

www.toshiba-aircon.co.uk/product/r32-high-capacity-heat-pump-universal-smart-x-edge

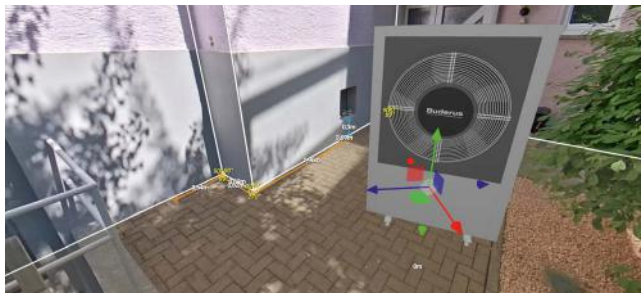
3D-Workroom: A Solution for digital twins of constructions and buildings

Immersight from Germany has developed the 3D-Workroom. This offers the possibility for construction site documentation and communication. This means that employees of a craft/construction company take panoramic photos of rooms with 360° cameras and upload them to the cloud-based application. After several minutes the 360°-photo is available and all colleagues can do a virtual inspection. This is done very easily by just using a web-browser because the entire solution is web-based software. Also, in the web-based 3D-Workroom everybody can take measurements in 3D in the 360°-photo. Immersight calls these virtual twins, because the result is a digital twin of the real existing room, but easily understandable by virtual technology. The focus is particularly on refurbishment/ renovation of existing rooms.

360°- camera taking a picture of a room. Afterwards, the Software allows 3D measurements in the office.

An example of a real use case (Headpump-Installation):
tinyurl.com/38hcnf7m

The solution is mainly used for bathroom renovation and installation of heating and air conditioning installations. Now immersight has released a new version of their 3D-Workroom which also allows you to insert 3D models of products in real size.



360°- Photo in the garden. Measurements are taken in the office and a Headpump is placed outside (3D model).

Almost every manufacturer has an app with AR technology to place 3D models of its products in real-time by using a smartphone or a tablet. But these apps work online on-site you always have to be right now there.

The 3D-Workroom of immersight allows independent installers to capture the room or garden, and then place 3D objects in the real size of their own choice. This can be done afterward in the office and easily shared with customers and colleagues.

https://immersight.com/en/

About Blygold

Blygold is an innovative and forward-thinking company offering unique and sustainable high-quality protection against corrosion. With over 40 years of experience, we have the know-how and state-of-the-art products and techniques to solve any corrosion problem.

What Are Heat Pumps?

Heat pumps are systems that move heat from one place to another by using a compressor and circulating a structure of liquid or gas refrigerant. Through this, the heat is extracted from outside sources and then pumped indoors. Pumping the heat tends to use a lot less electrical energy than typical methods of turning electricity into heat. Plus, during the summer months, the cycle can be reversed and the unit will act as an air conditioner instead, making it multi-functional.

The use of this particular energy source has been a lot slower in the UK than the rest of Europe. This is due to the fact that the government only recently introduced new schemes to make switching to green energy both easier and a lot more affordable. These moves have helped to increase the popularity of all renewable energy technology among the British public, and so it is starting to take off.

Heat pumps are actually the most efficient alternative to fuel, oil, and electrical systems when it comes to the process of heating and cooling. They supply a larger capacity of heating and cooling than the amount of electrical energy that is used to run it. In fact, the efficiency rate is able to go up to as high as 300%.

Advantages of Heat Pumps

- Heat pumps are much safer than systems that are based on combustion.
- They are cheaper to run than oil and gas boilers.
- The system reduces your carbon emissions & it has an efficient conversation rate of energy to heat.

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