ISSUE 15

HEAT PUMPS TODAY

ESSENTIAL INFORMATION FOR INSTALLERS

WHY WE SHOULDN'T SOLELY RELY ON HEAT PUMPS

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AUGUST/SEPTEMBER 2023

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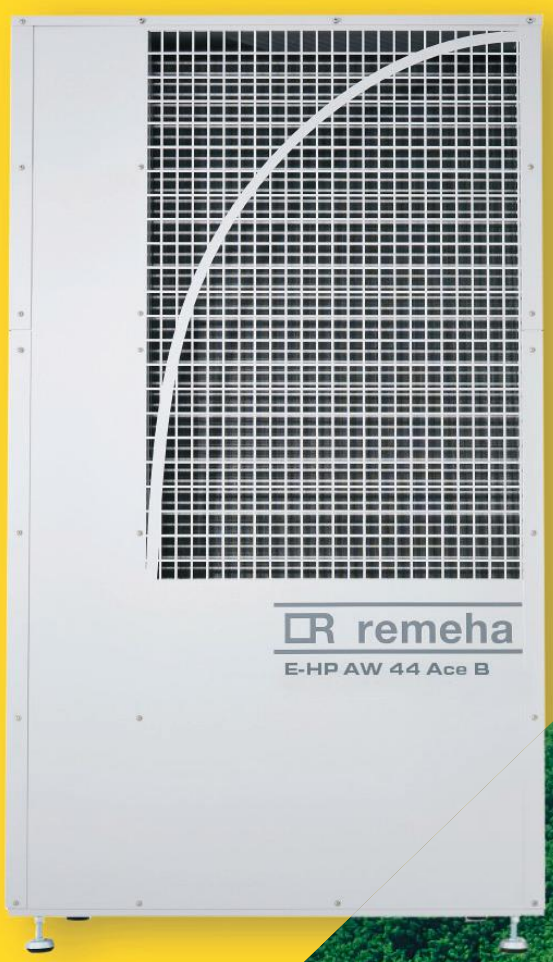

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Welcome to the August/September issue of Heat Pumps Today

As I write this, the sun is finally shining! What a soggy start to the summer we've had. This afternoon sees myself and some of the team heading down to Hampshire to join the HRS (Hampshire Refrigeration Society) for their annual Golf Day and Dinner. Looking forward to catching up with some of our readers and contributors.

This issue of Heat Pumps Today includes a plethora of valuable information. Our contributors have provided a combination of pieces on the importance of maintenance along with articles on 'what is the government doing' to help ensure the market is thriving safely and productively.

Visit page 7 for Phil Hurley's view on how policy intervention can add an extra boost the growing heat pump market. Charlotte Lee, Chief Executive of the Heat Pump Association reflects on 4 months into her role and embracing a bright future.

The Trainee of the Year Awards have been relaunched and are including 3 heat pump apprentice categories. To find out more on how to enter, turn to page 8.

Juliet

The ACR & HEAT PUMP Trainee Of The Year Awards 7th December 2023

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Thermox DTX: At the heart of the UK's leading heat pump projects

Industry proven to maximise heat recovery, reduce maintenance and lower running costs, Hydratech's Thermox DTX heat transfer fluid with antifreeze function, is specified by the UK's most prominent heat pump contractors, installers and designers.

Key considerations when selecting a heat transfer fluid (HTF) for heat recovery include, efficient thermal energy transfer, antifreeze performance, minimal pumping-energy consumption, long-term preservation of pipework/ system components, cost and minimal environmental impact.

Thermox DTX's higher thermal conductivity and lower dynamic viscosity, results in increased heat transfer efficiency and heat recovery, its low viscosity reduces pumping energy consumed.

Commissioned in thousands of commercial and domestic heat pump systems, by industry leaders such as Kensa, Nu-Heat and Ideal, the innovative fluid provides freeze protection down to -50°C, and less volume is required to achieve the same freeze-point protection - when compared with alternative thermal fluids.
To prevent internal corrosion, scaling and biological fouling, Thermox DTX is formulated with long-life inhibitors which exceed ASTM D1384 standards.
Classified as non-toxic and food-safe, the Hydratech product is readily biodegradable (90% over ten days) and will not remain in the environment or bio-accumulate.

Working with industry leaders

Hydratech are committed to helping the UK achieve zero emissions by 2050. A recent collaboration saw Hydratech work as technical partners on a turn-key heat pump project, capable of producing 12% of the UK's tomatoes.

Preparing to charge the heat pump system with Thermox DTX
Picture credit: Oasthouse Ventures

Low Carbon Farming's mega-greenhouse projects in Norfolk and Suffolk, a world-first for renewable heating has 70 acres of greenhouse growing space, five times more glass than the Shard and over 10km of underground pipeline.

Heat is extracted from nearby wastewater treatment plants and transferred in a closed loop system to the heat pumps located at the greenhouses. Electricity for the ground source heat pumps is provided by the grid and Combined Heat and Power units. Such 'CHPs' have the added benefits of providing waste heat which further supplements the greenhouse heating and providing carbon dioxide to enrich the atmosphere inside the greenhouse to encourage plant growth.

The heat plate exchanger system extracts the heat energy using a water and Thermox DTX based system. A closed circuit then takes the heat transfer fluid directly up to the heat pumps. Specifically employed for the system, Hydratech's Thermox DTX is a high efficiency, non-toxic geothermal heat transfer fluid with antifreeze function, for use in geothermal, GSHP & air source heat recovery systems.

The carbon footprint of the food produced at the sites is expected to be 75% lower than equivalent European greenhouses, and 10 times more productive than field farming. The East Anglian sustainability projects demonstrate how renewable heating systems (heat pumps in particular) can be deployed on a commercial scale.

For more information on Thermox DTX, specialist technical advice and factory direct pricing call Hydratech's Sales Engineers:
Call **01792 586800** or email **info@hydratech.co.uk**

Thermox DTX
www.hydratech.co.uk

Meet the new EHS Mono HT Quiet

High temperature, low Noise, optimal performance

Samsung's newest eco heating system is the ideal heating solution for Europe's residential renovation market. Durable and stylishly designed, this heat pump combines advanced features and new technologies to achieve hot water temperatures of up to 70°C[1] for domestic heating purposes. It operates at noise levels as low as 35 d(BA)[2] using a 4-step Quiet mode. It is also capable of reliably providing 100% heating performance* even at temperatures as low as -25°C[3]). Installation and maintenance of the unit is easy and hassle-free, with its internal parts being accessible via a side panel which can be removed by simply undoing 3 screws.

1. Leaving water temperature, when the outdoor temperature is between -15°C - 43°C. Results may vary depending on the actual usage conditions.
2. Based on internal testing of the EHS Mono HT outdoor units. The noise level is measured 3m away from the front of the outdoor unit, in an anechoic room with an outside temperature of 7°C. Results may vary depending on environmental factors and individual use.

*Efficiency ratio of heating output (capacity) versus power input (electricity). Internally tested under lab conditions based on EN 14511, results may vary depending on the actual usage conditions.

3. Based on internal testing on an EHS Mono HT outdoor unit (AE120BXYDGG), compared to a conventional EHS outdoor unit (AE120RXYDGG). Results may vary depending on the actual usage conditions

The Quiet Mark certificate is applicable for UK & EU territories only.

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How can policy intervention add an extra boost to the UK's growing heat pump market?

Written by Phil Hurley, Managing Director of NIBE Energy Systems Ltd

The heating industry is at a crossroads with a period of exciting policy led growth for heat pumps on the horizon. However, with the recent Progress Report from the Climate Change Committee urging imminent action and faster delivery to reach required heat pump targets, policy framework will still need adapting to increase uptake.

The Clean Heat Market Mechanism (CHMM) aims to incentivise 90,000 heat pump installations in year 2 alone, with the possibility of 400,000 by 2028. Whilst these targets are ambitious, the industry has potential for scalability. On the continent, Germany is requiring almost all newly installed heating systems to be 65% renewable energy. This coupled with a rebate scheme for consumers for the cost of buying and installing a heat pump has accelerated uptake. Heat pump sales have ramped up 122% over a year (Q1 2022 to Q1 2023) and over 100,000 new systems were sold in Germany in Q1 alone.

Fast paced change

The UK is also no stranger to fast paced change, with the introduction of the condensing boiler a great example of this. Despite industry reluctance, policy provided a clear, much needed kickstart for the industry to embrace a new, more efficient technology. The industry ramped up installations, adapting with only two years notice1 - a similar time frame for the CHMM announcement, demonstrating that change within this timeframe is possible.

Year one of the BUS had a shaky start with over 56% of available funding unused. For the remainder of the scheme, which has been extended to 2028, the grant can be increased to incentivise greater uptake, particularly for ground source heat pumps, which have considerably lower uptake than under the Domestic Renewable Heat Incentive. The role of other policy schemes, such as the Social Housing Decarbonisation Fund (SHDF) and Homes Upgrade Grant (HUG) can also be reviewed to further drive progress towards the 600,000 target. These schemes do not fully take advantage of the benefits of heat pump systems. For instance, heat pumps make up only 2% of the measures installed under SHDF3 and only 10% of all measures installed under HUG4 based on the latest statistical release.

Training issues

Installers are at the heart of supporting the growing industry, and there are currently large skill gaps leading to poor installs and lacklustre performance. Many often comment on minimal training capacity, how available training is not currently up to standard, and the bureaucracy with becoming MCS accredited. The route to becoming an MCS accredited installer will be addressed through the MCS Scheme Redevelopment Consultation, and this will be crucial to driving installer uptake. Additionally, for those looking for an easier route to MCS today, the NIBE Pro partnership scheme streamlines the route to MCS accreditation.

Whilst high-quality, tailored installations are key to an efficient heat pump system, running costs can be artificially inflated due to high electricity costs, reducing the incentive to install a system. More detail on plans to rebalance energy levies this year will be crucial for lowering heat pump costs and driving consumer demand. Rebalancing energy levies can lower the cost of running an air source heat pump relative to a gas boiler by £250 lower per annum.

Industry and policymakers still have work to do. We are less than 5 years away from the 2028 target of 600,000 annual heat pump installations, and UK sales in 2022 were just over 10% of this.

Info
www.nibe.eu/en-gb

The ACR & HEAT PUMP Trainee Of The Year Awards

7th December 2023

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The Kensa Group announce new CEO appointment

The Kensa Group is pleased to announce the appointment of Tamsin Lishman as their new Chief Executive Officer as of the 1st October 2023, and the planned departure of Dr Matthew Trewhella, current CEO to the UKs leading provider of ground source heat pump-based solutions.

Tamsin Lishman

Tamsin's appointment has been confirmed by The Kensa Group Chairman, Lord Taylor, following a rigorous selection process. Tamsin will take her place formally as CEO on the 1st October 2023, with a transition period from the 1st September.

Dr Matthew Trewhella will remain as CEO in the meantime, continuing to focus on delivering the Kensa vision and strategy for energy security and affordability through the mass decarbonisation of heating and cooling with networked heat pumps. He will work closely with Tamsin to ensure a comprehensive handover and a smooth transition. As of Tamsin's formal take over as CEO, Matt will take up the position of Director of Strategic Business Development prior to his planned departure from the business on the 12th April 2024.

New speaker lined up

Matthew Aylott, Senior Policy Adviser at the Department of Energy Security and Net Zero, has agreed to be a part of the Ground Source Heat Pump Associations (GSHPA) conference this year.

Matthew will join an esteemed line up of speakers, including Dr. Jan Rosenow from RAP, Helen Melone from Scottish Renewables, Ian Rippin from MCS, Prof. Mark Palmer from Queen's University Belfast, Patrick Allcorn from DESNZ, Dr. Marie Cowen from the Geological Survey of Northern Ireland, Juliet Philips from the Electrify Heat Campaign, Joseph Ireland from Queen's University Belfast, a representative from the ADE, Jeff Hammond from IGHSPA, Stephanie Conway from Premier Business Insurance, Hull City Council, and our very own Laura Bishop.

The event is free for all our members. Secure your complimentary ticket today by registering through the link below and using the code GSHPA100.

www.eventbrite.co.uk/e/417906869697

Tickets are available for the much-anticipated GSHPA' Charity Dinner (please note that a separate ticket will be required for this portion of the event). It is dedicated to raising funds for two remarkable causes: The Teenage Cancer Trust and WWF.
To purchase charity dinner tickets, visit:
www.eventbrite.co.uk/e/417910891727

Unlocking the Heat Pump Revolution: Embracing a Bright Future

Charlotte Lee, Chief Executive of the Heat Pump Association reflects on the future for heat pumps

Four months in, and it's safe to say I've joined at an exciting and very busy time. The heat pump industry is undergoing a remarkable transformation, presenting us with a multitude of opportunities that can sometimes get lost amidst the challenges that are present but are often exaggerated and distract from the task at hand. There is much more to celebrate than suits those who try to keep the narrative on the negatives, so we need to pause and acknowledge the positive developments currently unfolding, whilst continuing to learn from the challenges encountered along the way.

Whilst my primary focus lies with heat pumps, it is clear that a diverse range of technologies and solutions will be needed to enable complete grid decarbonisation. The Climate Change Committee's (CCC) recent report highlighted the significant challenge we face, but it also acknowledged the growing demand for heat pump installers. The report noted that the current number of qualified installers in the UK is insufficient to meet this demand, with most of the (small) cohort already oversubscribed. Whilst there is a skills gap and a need for greater familiarity with low carbon heating systems, our emphasis should be on the opportunities ahead and finding solutions. The imminent launch of the Low Carbon Heating Technician Apprenticeship serves as a positive example of the industry's ability to deliver. Ultimately, the skills gap creates a fantastic career prospect for those considering entering the field and signifies the growing recognition and acceptance of heat pump technology among consumers.

Heat Pump Training Grant

Recognising this, the Government has introduced a £5 million Heat Pump Training Grant, aiming to retrain and upskill 10,000 engineers. Through training programmes and support, we can nurture a generation of experts who will champion heat pumps and drive decarbonisation on a practical level.

Charlotte Lee, Chief Executive of the Heat Pump Association reflects on the future for heat pumps

Installers are the ones who directly interact with consumers and are essential to the transition, and thus their position in the roll out of heat pumps and green technologies should not be undervalued.

We often call for more government support, but we must also recognise the encouraging signs of growth the heat pump industry has experienced in recent years. We've seen large house builders commit to installing heat pumps in new homes, prior to the introduction of the Future Homes Standard, demonstrating their commitment to decarbonisation. Our projections for the first half of 2023 estimate a growth in heat pump sales of around 10% based on 2022 figures. The Department for Energy, Security and Net Zero recently reported a 16% rise in applications for the Boiler Upgrade Scheme (BUS) in May compared to April, indicating increasing interest. Other funding schemes, such as the Energy Company Obligation (ECO), Home Upgrade Grant, and Social Housing Decarbonisation Fund have also witnessed record-breaking months for heat pump installations. Figure 1 shows the breakdown of installations under each scheme in April, totalling 2,242.

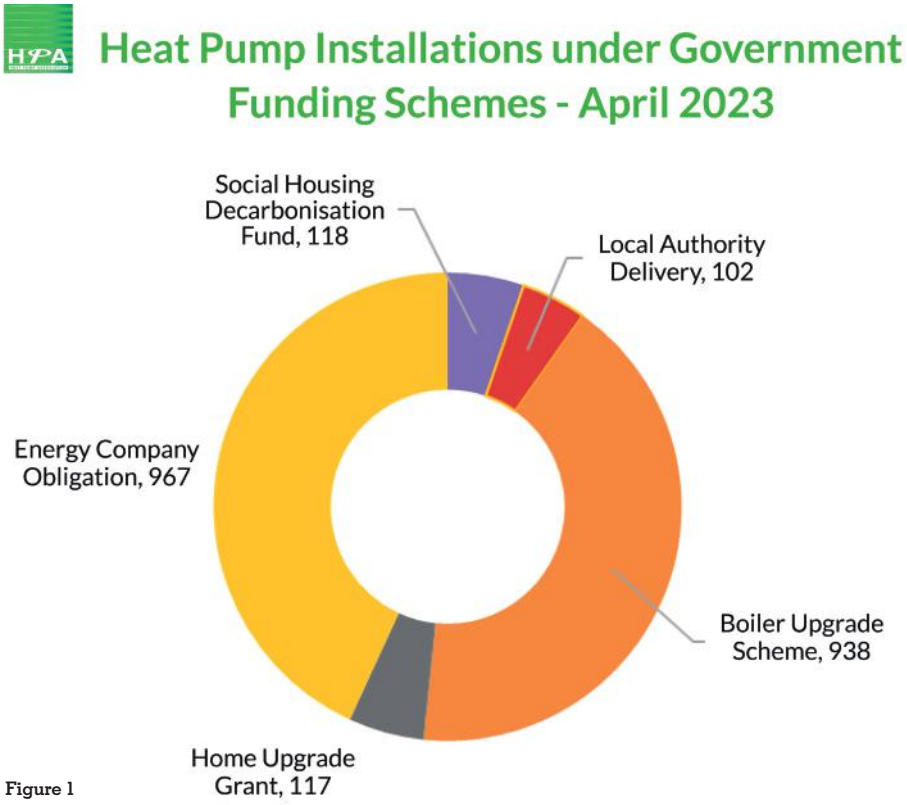


Figure 1

Positive indicators

Whilst we need to go further, these positive indicators highlight the progress made and emphasise the industry's potential for further growth and impact.

To further expedite the adoption of heat pumps, the Government has launched the Heat Pump Investment Accelerator Competition which focuses on fostering innovation, research, and development within the industry. This initiative plays a critical role in diversifying the UK supply chain and increasing domestic manufacturing capacity to support the deployment target of 600,000 heat pumps a year by 2028. The heat pump market has already witnessed significant expansion in terms of product variety and efficiency, allowing consumers to choose from a wide range of heat pump solutions that cater to their specific needs and preferences. From smaller 3kW heat pumps to larger 80kW heat pumps, reduced noise levels, refrigerants with lower global warming potential, and simplified controls, there are plenty of choices. This variety makes the transition to sustainable heating far more accessible and appealing for households so accustomed to fossil fuel heating.

Whilst the transition to heat pumps requires a level of familiarisation from homeowners and installers, it is encouraging to see recent research conducted by Nesta, which sheds light on the significant level of satisfaction among heat pump system users and indicated just over half (55%) of households requiring fabric efficiency upgrades.

The government-commissioned Electrification of Heat Demonstration Project, which received interest from nearly 9,000 households, further demonstrated the effectiveness of heat pumps, even in the UK's least efficient homes.

There are positive news stories out there

A recent report from the European Heat Pump Association showcased the substantial growth in heat pump deployment across several European countries, demonstrating that change is indeed achievable. As heating is predominantly driven by policies and factors such as necessity, cost,

familiarity and convenience, there is no escaping the role the UK Government must play in taking swift and decisive action to meet its target of 600,000 heat pumps per year by 2028. This can be accomplished by implementing the Future Homes and Buildings Standards in 2025, setting clear dates to end the sale of new 100% fossil fuel boilers, reducing electricity prices and improving installer training and standards across the entire heating industry. We can get there, but there must be political will and cross-party consensus to provide policy certainty for installers, manufacturers and homeowners.

Whilst there are challenges to navigate, the heat pump industry holds immense potential for driving the net zero transition. By addressing obstacles, leveraging research findings and prioritising the electrification of heat, we can create a sustainable future while catching up to and perhaps even surpassing our European counterparts. As an association, our objective is to promote the widespread adoption of high-quality heat pump systems. We are supporting the industry by developing comprehensive guidance, supporting training programmes, providing accurate, independent consumer information about heat pumps, and actively collaborating with the Government and stakeholders to advocate for policy changes that unlock the demand needed to meet our decarbonisation targets.

With the right support from the Government, collaboration among industry stakeholders, and engaged consumers, we can unlock the full potential of heat pumps and collectively contribute to driving the industry forward.

Info
www.heatpumps.org.uk

New approach to addressing heat pump inefficiency in hot water supply

How do you reconcile the need for a low flow temperature for efficient heat pump operation with the requirement for hot water for DHW? Viessmann Technical Director, Christian Engelke proposes an innovative European solution.

As heat pumps gain popularity thanks to their energy-efficiency and environmental credentials, there remain concerns and challenges that hinder their widespread adoption in commercial settings.

One of the major hurdles involves finding a balance between maintaining a low flow temperature for optimal heat pump efficiency while also ensuring that water remains hot enough for effective legionella management and to meet end-users' demands for domestic hot water (DHW).

In many cases, energy managers resort to running heat pumps constantly at 65°C to prevent the growth of legionella bacteria. While significantly lower than the 70-80°C required for conventional gas-boiler systems, this is far above the ideal heat pump flow temperature range of 35-55°C for space heating or up to 35°C for domestic hot water production. The latest UK Building Regulations mandate a flow temperature of 45°C for heat pumps to achieve maximum efficiency, while all new wet space heating systems should now be under 55°C.

It's true that heat pumps have the potential to yield CO_2 savings of up to 70% compared to electric boilers and up to 65% compared to A-rated gas boilers. However, these savings can only be achieved if the heat pumps are operated as intended. Running a heat pump at twice its optimal flow temperature can compromise its efficiency by around 200-250%. This is likely to lower its Seasonal Coefficient of Performance (SCOP) to below the required 2.8 to be classified as a renewable technology. Moreover, it can cause maintenance issues and reduce the system's lifespan. It's akin to trying to inflate an already full bicycle tire, straining the pump and consuming excessive energy for minimal results.

Despite the potential advantages, the cost and disruption associated with adapting or replacing existing radiator networks to accommodate heat pumps deters many organisations, especially those with limited

Christian Engelke, Technical Director at Viessmann

funding for plant room upgrades. While it may be tempting to opt for a like-for-like replacement of an old gas boiler with a heat pump, trying to operate it in the same manner results in unacceptably high electricity bills and other potential problems.

We're aware of several schools in England that were incentivised to install heat pumps but are now forced to switch them off because local government cannot afford the electricity to run them when faced with uncapped tariffs ranging from 60-100p/kWh. Electricity demand is high because of the need to deliver high flow temperatures around the school, and to meet the constantly required 60°C hot water requirements.

As a result, many of these establishments have resorted to switching off their heat pumps and reverting to gas heating. This is bad news both for the individual institutions, and public perceptions of heat pumps in general. It's an unfortunate misunderstanding that much of the public connects energy-friendly or zero-energy solutions with lower energy bills.

Using a centralised DHW booster

To address this predicament, Viessmann has developed a technology bundle that allows heat pumps to operate at low temperatures for maximum efficiency, while a centralised hot-water supply system delivers DHW at the desired temperature with zero risk of legionella. Optimising each energy requirement individually in this way, rather than raising the space-heating temperature unnecessarily to meet hot water needs, makes good sense, especially when you consider space heating typically accounts for around 80% of the total energy requirement.

Viessmann's new compact water source booster heat pump can be equipped with a buffer tank and combined with a Viessmann Vitotrans 353 freshwater module. The water in the low-temperature buffer cylinder is heated by a heat pump, for example a Vitocal 300-A, Vitocal 300/350-G PRO or the forthcoming Vitocal 200-A Pro air/water heat pump to between 25°C and 50°C – typically 35°C – for space heating. (A low-temperature heat network could also serve as the heat source.)

The buffer tank then serves as an energy source for further heat generation by a downstream plate heat exchanger in the form of a PEWO Titan HT booster heat pump, which can also be cascaded if necessary. The booster pump uses the heat from the tank, cooling it to a minimum of 20°C and raising the temperature on the heating water side to approximately 65°C for DHW. In this way, an instant supply of hygienic DHW is provided, resembling the functionality of a combi boiler, but on a larger scale. Since no potable hot water is stored, the risk of legionella is eliminated.

The water/water heat pumps, which are compact in design and range in output from 12 to 29 kilowatts, operate with one passage valve and one common circulation pump each. This optimises performance and enables a small spread to be used in circulation mode.

Although this method is relatively new to the UK, where high-temperature heating systems encompass both heating and hot water supply, it's widely and cost-effectively used in Europe. It's compatible with any type of heat generator and heat networks,

making it particularly effective for public buildings like schools and hotels.

Alternative to ambient loop set-up for apartment buildings

As we have outlined, in almost all cases it's inefficient for a commercial heat pump to adequately serve both heating and DHW requirements in commercial buildings, and this includes apartment blocks. However, there are a number of options available for those developing apartment buildings who do want to specify heat pumps for both functions.

One potential solution that allows for the separate boosting of DHW temperature into individual apartments is the ambient loop model. With this approach, lower (medium) temperature water is distributed into the network from a central plant room-based heat generator to then feed individual heat pumps in apartments. An ambient, open or shared loop system can be adopted with a boiler, CHP or heat pump supplying the building's base flow temperature.

There are problems with this approach though. While the heat pump unit may be suitable for the individual apartments and ticks the right boxes, there is still the challenge of fitting all the necessary associated equipment – hot water cylinder, heat pump and circulating pumps etc. – within the property. Most apartments are not designed to facilitate this provision.

The approach presented above allows the DHW booster heat pump(s) to be situated in the plant room, freeing up space in the apartments, while performing the same function. While they could be installed in each apartment, accompanied by a cylinder, the booster heat pumps discussed here, are primarily designed for plant rooms where they can be cascaded as per the requirement for the whole building.

There are other issues with open loop systems too, particularly if selected for environmental reasons. Using a commercial heat pump to heat up water to a certain temperature requires electricity, and then more electricity is needed to power the smaller heat pump in each individual apartment. If you need 100 kW of energy overall, the first heat pump needs to provide around 70% of this and the other heat pumps needs to provide the heat for the individual apartments. At apartment level, the heat pump is very efficient in its delivery of high supply temperatures, and the COP of the heat pump feeding the ambient loop may also be efficient but when you add the efficiencies of the two units together, they rarely come out as that efficient as a system.

There is also a noise level issue of small heat pumps in apartments.

Cost Analysis

Solutions like the DHW booster heat pump need to take hold if the apartment-block development and heat network sectors are not to become disillusioned with heat pumps, favouring easier but less cost- and carbon-efficient options like electric heating panels and storage heaters or electric showers for DHW. An analysis of the figures involved quickly demonstrates the significant impact of this new proposed approach on energy costs and carbon emissions.

Here is an overview example of that, for apartment block that requires 150 kW of space and DHW heating.

Apartment block heat pump design options

	OPTION 1 **Individual heat pumps in apartments with ambient loop**	**OPTION 2** **Low temperature heat network, with HIU and DHW booster heat pump**
Total heat demand (heating & DHW)	150 kW	150 kW
Annual heat energy demand	330,000 kWh	330,000 kWh
Electrical consumption for ambient loop (35/30°C)	55,000 kWh	73,000 kWh
SCOP for ambient loop	4.5	4.5
Electrical consumption for individual heat pumps	60,000 kWh	
DHW booster heat pump (30% of total heat demand)		22,000 kWh
SCOP for heat pump	5.5	4.5
Total electricity consumption	115,000 kWh	95,000 kWh
Total SCOP	2.8	3.5

Educational efforts and future prospects

By combining heat pumps with centralised hot water systems, it is possible to optimise energy efficiency, mitigate the risk of legionella, and achieve substantial cost savings.

However, the UK commercial heating sector may require increased education and awareness before it's ready to embrace a transition from hot water storage to a centralised hot water supply system, as commonly practiced in Europe. Nevertheless, the stakes are high. Insufficient understanding of heat pump operation serves as a genuine barrier to their adoption and proper utilisation, resulting in financial losses for organisations and impeding the country's progress toward meeting emissions targets. We'd like to see more organisations overcoming their hesitations and embracing this innovative solution, propelling the UK toward a greener and more sustainable future.

Info
www.viessmann.co.uk

Helping schools get the most out of heat pumps

As schools across the country face steeply rising energy bills, many are switching from old, fossil fuelled heating to energy efficient, environmentally friendly heat pumps. However, says Franco Cofano, Maintenance Portfolio Manager at LH, even the best heating solutions are useless if they fail to operate effectively; they must be properly installed and maintained.

Schools face skyrocketing costs for teachers and support staff, catering, and especially energy. This has created pressing need for local authorities to identify effective ways to deliver desperately needed financial savings.

A whole host of startling statistics make educational establishments a prime target for energy savings.

For example, heating accounts for at least half of a typical school's annual fuel use with school buildings consuming, on average, more than 200 kWh/m^2/year of heating energy and more than 70 kWh/m^2/year of electricity.

The Carbon Trust has estimated that UK schools spend £543 million annually on their energy bills. And the average primary school in the UK spends £31,000 each year on energy bills, according to financial website **https://www.businesselectricityprices.org.uk**, a figure that, it says, increases to £90,000 for secondary schools.

According to the Institute of Fiscal Studies, meanwhile, the cost of running a school in 22/23 was predicted to increase by 6% with a large proportion of this accounted for by higher energy costs.

Schools have the potential to reduce energy costs by around 20% and prevent 625,000 tonnes of CO_2 from entering the atmosphere, according to the Carbon Trust.

The question is: How?

Reducing energy consumption is one of the quickest and simplest ways to deliver direct savings and this is best achieved by installing high efficiency heating systems. The best heating currently available is heat pumps because they are significantly more efficient than traditional boilers and use cleaner electricity, so will reduce a school's carbon footprint.

A side benefit is that today's pupils are tomorrow's parents, and involvement in energy efficiency initiatives such as installing heat pumps at an early age is an effective way of changing behaviour in the long term.

However, even the best heating solution

is useless if it fails to operate properly and that is why effective installation and maintenance are critical. The best way to ensure both is to work closely with a supplier you can trust (see the box).

Maintenance is vital to the smooth running of any business that operates machinery. Good preventive maintenance will cut running costs and reduce the likelihood of potentially expensive breakdowns. It can also extend the lifetime of your equipment and provide peace of mind that you are doing everything you can to keep your process running and downtime at a minimum.

Maintenance agreements help reduce an organisation's legal liability. And handing the responsibility for maintenance to an expert third party can help to cut inventory costs because it negates the requirement to hold tools and spare parts.

But beware. Not all maintenance contracts are equal – it pays to be selective when it comes to choosing the right one for you.

Essentially, there are four maintenance contract options – an in-house service and maintenance team, OEM (original equipment manufacturer) specialists, a third-party maintenance provider, or a blend of these.

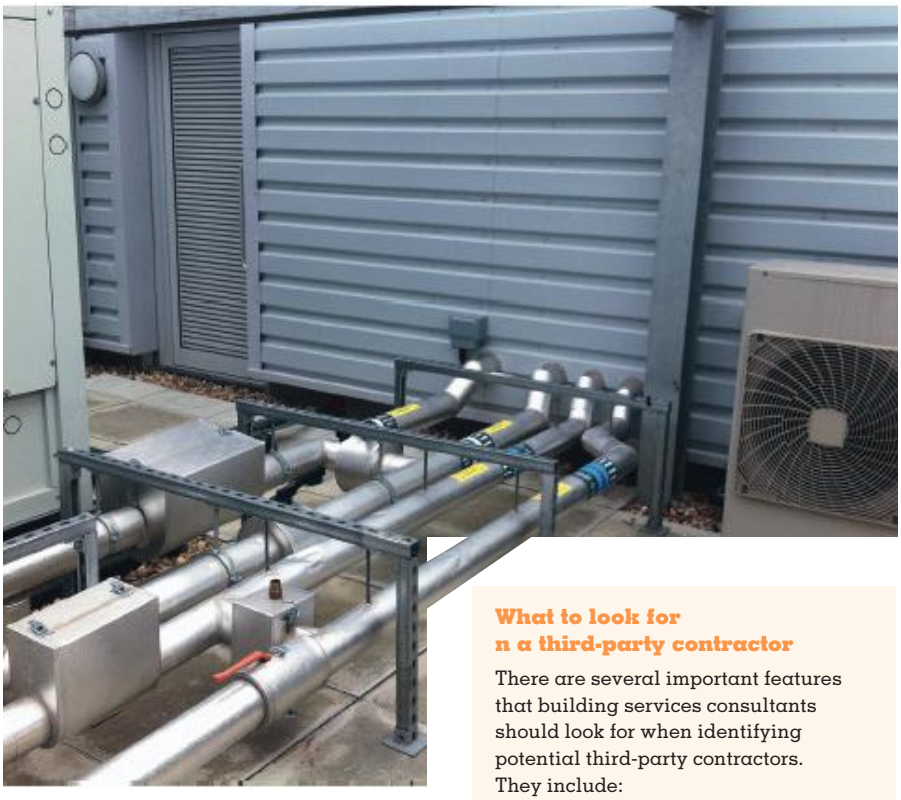
In-house maintenance teams are expensive in terms of staffing, training costs, and managing inventory. And employing an OEM specialist doesn't always allow the building occupier the opportunity to capitalise quickly on the latest technology.

That means that the third option – contracting a third-party to perform maintenance tasks as and when necessary – can offer the best value for money.

Our company, LH, provides specialist heat pump servicing and maintenance services to schools – among other commercial enterprises – throughout the UK.

But we also go further, providing a comprehensive range of services that support the maintenance we offer, including fault finding, commissioning & decommissioning, and specialist maintenance. It does so by employing cutting-edge technology to diagnose faults, including sophisticated infrared thermal imaging cameras which help identify and quantify heat sources.

Info
www.lh-plc.co.uk



Heat of the moment – the case for low carbon heating

A study called 'The School Decarbonisation Challenge' was conducted in 2021 by the Energy Systems Catapult, an independent, not-for-profit centre of excellence set up to accelerate the transformation of the UK's energy system towards Net Zero, on behalf of the Department for Education and former and BEIS.

It concluded: "The decarbonisation of gas fuelled space heating is the biggest challenge faced by the school estate. In practical terms this means a two-phase approach of firstly reducing energy needs (by improving building energy efficiency) followed by a transition to a low carbon heating solution."

The study determined that there are several options for low carbon heating, including district heat, CHP, heat pumps, hydrogen with the 'best' option for any individual school being strongly related to the building envelope, the building management and control, the occupants' behaviour, and the installation quality.

And, it established that space heating and hot water provision is by far the largest consumer of energy in the school estate.

It added: "Any realistic plan to reach a target of net zero carbon has to tackle this issue which means ensuring that effective control systems are in place which school staff know how to operate, combined with the undertaking of significant upgrades of heating systems, moving to low carbon heating alternatives (for example, heat pumps), and reducing energy use through fabric retrofit of the building stock.

What to look for n a third-party contractor

There are several important features that building services consultants should look for when identifying potential third-party contractors. They include:

- Quality and reliability – An ability to respond quickly to changing customer demands and unexpected crises.
- Flexibility – The capacity of the supplier to respond to the changing demands of the buyer so it is important that suppliers do not prioritise their larger customers at the expense of the smaller.
- Value for money – Cheapest does not always correlate with the best value for money. Customers must decide the balance they want to strike between cost, reliability, quality, and service.
- Strong service and clear communication – The aptitude of the supplier to deliver on time, or to be honest and give plenty of warning if they are unable to. The best suppliers encourage regular contact with their customers to discover their needs and how they can best be served.

IN PURSUIT OF SILENCE:
The Quiet Mark Certified Guide to No Heat Pump Noise

Top 10 Quiet Installation Checks to Support Specification

Martin Bridges, Worcester Bosch

Mark Wilkins, Vaillant

Brian Beattie, Warmflow

Hamid Salimi, Daikin UK

Neil Sawers, Grant UK

As the demand for low to no noise from heat pumps by consumers and trade increases, innovative design and supporting installation is now fundamental to grow contracts.

Drawing on the knowledge of the industry's technical experts from five Quiet Mark Certified heat pump manufacturers, we focus on the vital area of sound design to boost installation know how.

Quiet Mark certified heat pumps, both air source and ground source from leading manufacturers have been assessed on a like for like basis and have all achieved lowest noise levels out of market-wide comparisons. Born of UK's Noise Abatement Society charitable foundation Quiet Mark serves the same remit as the charity to abate excessive noise to support public health.

1 Tackling the main components of a heat pump customers report as causing noise disturbance, and where around the property the potential noise disturbances experienced:

Setting the scene Martyn Bridges, Director of Technical Services at Worcester Bosch shares "it is first important to differentiate between the two most common types of heat pumps installed in UK properties.

Ground source heat pumps uses a collection loop being buried in the ground to heat up the refrigerant within the heat pump itself, whereby an air source heat pump uses a fan to draw air through the externally sited heat pump. As a result, it is quite rare to receive any noise complaints from a ground-source heat pump. The very small number of issues people have with noise volumes are typically associated with an air source heat pump. These issues generally stem from the fan, compressor and quite often a circulation pump. However, at the moment they are mostly "one off" houses where they are installed rather than an estate or road of houses all having Heat pumps and as a result, are unlikely to cause any great concerns.

Air source heat pumps are a very quiet form of home heating. Homeowners & installers should look for heat pumps which are Quiet Mark approved which means they have industry leading levels of low noise when in operation.

Neil Sawers, Commercial Technical Manager at Grant UK adds "while the fan creates some noise, they are, in general, very quiet. It is actually from the compressor which generates lower frequencies and these are 'easier' to hear. That said, steps are taken to reduce this noise and the vibration transferred through the structure of the heat pump to minimise any impact on the end-user.

Air source heat pumps are outdoor units so when they are sited, it is important to factor in both the homeowner's preferences and any neighbouring properties. A correctly installed heat pump will not create significant noise, but it may be preferable to install the unit away from outdoor seating areas or away from windows of regularly occupied living areas within the home. It should not be sited too closely to a property's boundary with another property either – Building Regulations state that a heat pump cannot be installed within 1metre of the boundary of the curtilage of a property.

2 Minimising the impact of heat pump noise at design & specification stage for occupants.

Mark Wilkins, Technologies and Training Director at Vaillant says "when it comes to system design, installers can look to further minimise the noise impact for homeowners by addressing factors such as the installation site, clearance surrounding the unit, and any materials or structures which may cause noise to be reflected. To reassure homeowners even more, MCS accredited installers can also carry out a Noise Impact Assessment ahead of installation to establish the ideal location for the heat pump to be sited, further minimising sound levels of the unit."

Hamid Salimi, Product Manager – Residential, Daikin UK an MCS020 noise

assessment is carried out by the installer as part of permitted development. Also, correct sizing and siting of the outdoor unit will reduce sound.

Neil Sawers, at Grant UK "The planning and design of an air source heat pump system is crucial. A correctly sized and designed system will not only be more efficient, but it will also ensure that all the correct installation protocols are adhered to, which in turn will help minimise sound levels. A heat pump should not be installed on unlevel surfaces such as gravel, grass or shingle – instead, a sound, level foundation must be laid. The base needs to be firm and flat so that it is capable of supporting the weight of the heat pump while also reducing the transmission of noise and vibration.

Suitable bases include a flat trowelled concrete base which is 150mm thick or paving slabs laid on compacted hard core laid to a sufficient depth for the ground conditions. To further minimise vibration within the heat pump and the transmission of vibration into the ground, we recommend that a heat pump should be raised up from the base surface by approximately 100mm.

Specifying a low-noise model to make design and installation easier, more flexible:

Mark Wilkins at Vaillant "For homeowners considering a heat pump as their heating technology of choice, noise can be an important factor. For consumers, Quiet Mark provides a definitive guide when it comes to measuring sound, allowing for easy identification of the quietest, high-performance products on the market.

What's involved in the standard heat pump noise assessments and are these sufficient to get the results homeowners are looking for:

Brian Beattie, WarmFlow "Noise is assessed with a decimal metre directly beside the heat pump, this more than sufficient as most homeowners will not be that close to the outdoor unit. Most market leading Heatpumps have then been secondary assessed and received the Quiet Mark stamp of approval which is only available to heat pumps with low levels of noise operation.

Hamid Salimi, Daikin UK "There is a noise assessment by MCS called MCS020, which is part of permitted development rights. This assessment is quite thorough. It ensures that the outdoor unit is quiet enough so that it doesn't make noise when heard from the assessment position. This position is 1m away from a habitable room at the neighbouring property.

Neil Sawers, at Grant UK: Air source heat pump models undergo a wide range of assessments prior to being made available in the marketplace, testing their efficiencies through to sound levels. Here in the UK, heat pump manufacturers are required to test their heat pumps' sound levels in accordance with BS EN ISO 3743-1:2010. The outcome of the test produces a weighted sound power level dB(A) that can be used to calculate the pressure level depending on the number of reflective surfaces within 1 metre of the heat pump and the distance the heat pump is from the assessment position (usually the closest, habitable room window of the neighbouring property).

The Town and Country Planning Act (1990) has set a maximum noise pressure level at the assessment position of 42d(B)A, irrespective of the distance to the

heat pump. This number seems to work well in the majority of installations although it is difficult for the installer to actually measure this.

Where customers look to site their heat pump units: (away from living areas / in utilities or similar zones?) 5

Neil Sawers, at Grant UK: We always recommend that installers thoroughly discuss the final position of a heat pump with their customer, whether they be the homeowner or developer, to ensure that any potential nuisance factors are considered and avoided. A lot of customers prefer to have their heat pump located as discreetly as possible (for aesthetic, acoustic or other reasons) and this may include keeping the unit out of areas where children play, siting it away from opening windows and doors or locating a heat pump away from entertainment spaces within the garden.

Every installation is different and not all properties will have a choice when it comes to finding the most suitable location to site a heat pump, but it is always worth discussing the possibilities available. For example; a heat pump does not have to be positioned next to a wall of the house but instead an out-building may be more suitable, provided the necessary pipework can be accommodated.

Can specifying a low-noise model make design and installation easier/ more flexible? For instance, does it open up extra options for siting / reduce the need for mitigations like acoustic insulation? 6

Brian Beattie, WarmFlow: With Quiet Mark approved heat pumps, due to their low-level noise operation do not require additional acoustic insulation.

Neil Sawers, at Grant UK: Installing a low-noise heat pump model has several advantages. Firstly, developers, specifiers and installers can be assured that they are providing their customers with a product that has been thoroughly tested to

prove its quietness and low sound levels. Secondly, it can open up the scope for the range of applications suitable for a heat pump installation. For a heat pump to achieve MCS certification, it must adhere to minimal sound characteristic standards amongst other criteria. Heat pumps which are not MCS approved are not eligible for installation through the Government's Boiler Upgrade Scheme which is a source of funding available to eligible homeowners in the retrofit market.

Can any other measures be taken during the installation phase to help abate heat pump noise? 7

Martyn Bridges, Worcester Bosch: As the volume of heat pumps in use increases the government has been doing some work on whether their noise level is indeed an issue and whether tools are available to dispel noise with a report on the topic expected this summer. Worcester Bosch is a good example in this regard as you can fit a sound diffuser to our heat pumps which will take approximately 4 dBA off the noise level. If this isn't sufficient there is a further sound insulating hood you can fit as an accessory. However, this may not be the case with all heat pumps, and that's why it's worth selecting a heat pump with the optional accessories that can reduce its sound level.

Neil Sawers, at Grant UK: The key measures to take to reduce heat pump noise include: choosing an appropriate location to site the heat pump, laying a suitable foundation for the heat pump to be installed upon, fitting the heat pump onto suitable anti-vibration feet or mounting blocks, and ensuring the heat pump is set up, commissioned and maintained correctly. Calculate the potential noise level as previously mentioned and use screening to help reduce the noise level further.

Is it difficult to reduce heat pump noise post-install? 8

Brian Beattie, WarmFlow: Once a heat pump is installed, it is very difficult to reduce the noise without major reworking. If the heat pump needs to be relocated, it requires pipes, electrics and drainage to be relocated. This can be a major undertaking and can cost close to the original installation cost.

Martyn Bridges, Worcester Bosch: When the air temperature drops, and more heat is required, the noise coming from the heat pump's compressor and fan may increase, as they both will have to work harder.

Neil Sawers, at Grant UK: If the recommended installation protocols are not followed and the heat pump becomes noisy as a result, correcting these installation errors can be costly and time-consuming. For example; if an inadequate base is prepared for the heat pump, the heat pump will have to be temporarily disconnected from the system, the existing base either removed entirely or enhanced, with a suitable replacement base put in its place. This not only causes disruption to the end-user but it is not the best use of time for the heating professionals who have to correct the mistake. In conclusion, put the time and effort into planning, designing and installing a heat pump correctly and this should ensure that no costly post-installation remedies are needed.

What can be done to minimise the issue of heat pumps getting louder if they need to work harder to get a home up to temperature – identifying at the design stage whether a heat pump is the right solution: 9

Brian Beattie, WarmFlow: Heat pumps are generally sized to maintain a desired internal temperature in the home at a design ambient temperature. As such, when it comes to heating the home from cold, the heat pump is required to run harder to produce more heat in order to get to the desired conditions quickly.

This can create more noise especially if used in a radiator system which requires higher flow temperatures and therefore higher operating pressures within the unit. Higher operating pressures at higher compressor speeds are the worst conditions when it comes to the noise produced from the compressor. Higher heat output requirements also demand that the fan rotates faster and this also causes more noise. This can be factored in at the design stage by slightly oversizing the heat pump for the project

Neil Sawers, at Grant UK: A heat pump will make more noise if the temperature demand from the heat pump increases. The unit's fans will vary in speed, as does the compressor, based on the design and set up of the system and the ambient temperature. However, as the heat pump's noise power level will have already been tested at a flow rate of 55°C, this would be seen as the maximum noise level the heat pump would generate. Designing the heating system to operate at a lower flow temperature will then reduce the maximum noise level generated.

Short or long-term maintenance required to maintain low noise levels from a heat Pump: 10

Brian Beattie, WarmFlow: As with all home heating appliances it is recommended that they are serviced annually by a competent engineer. This will ensure the heat pump runs smoothly, efficiently and in line with the manufacturers parameters for many years to come.

Hamid Salimi, Daikin: We recommend servicing and cleaning the heat pump (especially the outdoor coil) on a regular basis to ensure that it remains clean and unclogged. If clogged, the system could get louder as the fan will speed up to ensure correct heat transfer through the coil. We also recommend servicing all the internal components and cleaning water filters and strainers to ensure the system works correctly. In addition, there may be an opportunity to include homeowner case studies in the article.

Martyn Bridges, Worcester Bosch: at Worcester Bosch recommend that your heat pump is serviced annually. However, some aspects of this process can be completed by the consumer. For example, make sure there are no leaves or other debris building up near the air inlets of your fan. There is a grill around this area of the heat pump and if objects gather around it, this will make the heat pump work harder and can also be sucked in increasing the noise of your heat pump over the longer term.

Info
www.quietmark.com

Being smarter

Whilst heat pumps are a very important tool for decarbonising homes as we move towards becoming a net zero United Kingdom by 2050, we shouldn't solely rely on them.

By Gareth Davies, Area Sales Manager/Technical, Go Geothermal Ltd

The Sustainable Energy Association recommends taking a 'technology neutral' smart approach to heat decarbonisation, using multiple low carbon technologies in homes and non-domestic buildings.

This includes all types of heat pumps, solar thermal systems, smart controls, and smart thermal storage.

Smart thermal storage, in particular, is key

Smart thermal storage can work with heat pumps to reduce electricity demand, bring down bills and progress the technology neutral approach.

According to Thermal Storage UK, smart thermal storage could be used to reduce peak electricity demand on the coldest day of the year by 1.6GW by 2030. And this could increase to 4.1GW if the benefits of flexibility to electricity networks is reflected in pricing.

Gareth Davies, Area Sales Manager/Technical, Go Geothermal Ltd

An air source or ground source heat pump will work more efficiently with less wear on the pump and compressor if it does not have to continually cycle on and off when the demand for heat is low. One of the ways to avoid the short cycling of a heat pump is for it to be linked to a thermal store. Traditionally, this thermal store consists of a buffer tank and separate cylinder, linked to a heat pump and perhaps other heating sources such as a solar heating system.

The UK has been slow to buy into the concept of thermal stores where the approach generally has been to keep everything separate, but these traditional cylinder solutions have limitations. This is

in stark contrast to mainland Europe where all-in-one solutions are preferred.

With retrofit now happening more in the UK, particularly in larger luxurious properties, we are now being asked for this 'all-in-one' solution, a sign that we are slowly beginning to move away from the 'rip out and replace' approach.

As an example; Go Geothermal have a unique product, the CTC EcoZenith intelligent thermal store, which can meet this need. It has the ability to control up to five heat sources independently, including heat pumps, solar thermal and heated swimming pools, and hot tubs.

It's an intelligent thermal store that can control many heat sources straight out of the box. It can also connect to previously uncontrollable heat sources, such as wood burning stoves.

Taking up a smaller footprint in the home than a traditional buffer/cylinder two tank arrangement it can produce up to 600 litres of hot water, with an electric immersion heater providing backup and boost capabilities.

"THE SMART WAY FORWARD"

A baffle plate within the system provides hydraulic separation so you can have different storage temperatures, which will give the heat pump more efficiency and its built-in intelligent controls makes it smart grid enabled, so it has much wider environmental benefits.

In homes/properties where there is an air source and ground source heat pump, the thermal store is able to prioritise so for example in the warmer months of the year, it can run the air source heat pump and give the ground time to recover and make the ground source more efficient when it does need to be used in the colder months.

So, with all-in-one thermal stores now the 'smart' way forward, it's imperative that customers are given support from the Government.

Whilst the Government' target of 600,000 heat pump installations a year by 2028 is welcomed, it's not just financial support for heat pumps which are needed to encourage more people to take the step to decarbonise their home or commercial property.

Complementary technologies for decarbonising heat and buildings, like thermal storage solutions have seen limited government support. This is harming the markets for other local carbon technologies and if the Government's net zero ambitions are to be realised by 2050, it's time they got smarter too!

Info
www.gogeothermal.co.uk

Can your choice of refrigerant and heat pump system enhance performance and improve energy efficiency?

Heat pump technology is a game changer for reducing emissions and providing homes with efficient heating, cooling and hot water all year round, but did you know that a new generation of refrigerants can also help to decrease energy consumption, reduce costs and cut systems emissions even further?

Heat Pumps convert the thermal energy stored in the air, water or underground into heating energy. Reversely, they can transfer and cool residual heat from a household to the outside environment, contributing to heating, cooling, ventilation and hot water needs in a very energy-efficient way, compared to traditional heating and cooling technologies. They also represent a more efficient alternative to electric sanitary hot water and floor heating systems.

Heat pump systems are complex, and all the individual factors that can improve the entire system's performance should be considered. Being able to leverage the thermodynamic properties of an efficient refrigerant to optimise the single-core components and the way they work together will therefore be essential for equipment designers and manufacturers.

The impact of climate protocols and regulation

With F-Gas Regulation EU 517/2014, the European Union has committed to a process of gradual reduction of the use of refrigerants with high global warming potential (GWP). Due to different operating mechanisms, HFC refrigerants with high GWP such as R-410A will be limited in new HVAC installations and their availability for the maintenance of systems in operation will gradually diminish. This initiative pushes for the adoption of next generation refrigerants, which can replace the previous ones, by offering excellent performance while significantly lowering emissions.

Next generation low GWP refrigerants

Hydrofluoroolefins (HFO) refrigerants in the Opteon™ XL range are low-GWP, making them a sustainable, long-term solution for use in heat pumps. They are non-ozone-depleting and comply with F-Gas Regulation EU 517/2014.

Incredibly versatile, they offer excellent performance in a wide range of applications, enhancing both system performance and efficiency. Their thermodynamic behaviour is similar to the refrigerants they replace, allowing simpler equipment design, installation and maintenance, and from a heat pump manufacturer's perspective, low-GWP Opteon™ refrigerants open up new possibilities for developing sustainable and cost-effective heat pump systems.

Designed to enable modern equipment to work safely and efficiently, they can be used in a wide variety of applications in manufacturing, retail and the residential sector, where they enable energy-efficient solutions for a wide range of applications.

Opteon™ XL20 (R-454C) for example, with a GWP below 150, would enable a 93% reduction in GWP versus alternative R-410A and a 78% reduction versus R-32 refrigerants.

Performance

Measurements and modelling carried out by an independent research institute in Germany concluded that when compared to standard R-290 (propane) equipment, heat pumps optimised for R-454C can enable up to 29% higher energy efficiency, as well as up to 49% greater heating capacity. This results in a reduction in indirect emissions of up to 22%. Importantly, direct emissions of R-454C optimised systems represent approximately just 1% of the total CO_2 equivalent system emissions.

Safety

Opteon™ XL refrigerants facilitate simpler equipment design, installation and maintenance. They also present a safer option when compared to other low-GWP alternatives. With an A2L safety classification, they have lower flammability and are non-toxic for their intended use. Much harder to ignite, they are considerably less likely to form flammable concentrations and to propagate flames than A3 refrigerants, resulting in an improved safety profile. The reduced risk of flammability with A2L refrigerants allows for charge sizes up to 12 times higher than propane (R-290) with A2Ls, which provides greater opportunity for system capacity and efficiency optimisation. Easy and safe to handle, store and install, they contribute to lowering overall handling costs, and when compared to A3 refrigerant alternatives, Opteon™ XL refrigerants allow a broader range of possibilities for indoor applications, where a constrained installation surface area might otherwise be a limiting factor.

Achieving your sustainability objectives

Central to transitioning from high GWP to next generation low GWP refrigerants, is both the need and desire to reduce energy consumption and to lower carbon emissions. Heat pumps, together with the right choice of refrigerant, can help achieve this. We estimate that full deployment of new residential heat pump installations optimised for XL20 can enable energy savings at EU level of more than 150TWh over the 2024–2030 period, compared to standard R-290 solutions. Furthermore, such a deployment could cut over 50 million tonnes of CO_2 emissions – equivalent to the EU27's entire yearly photovoltaic production, which would require the same area as 54,000 football fields of solar panels.

Providing a refrigerant that enables unparalleled performance and efficiency in heat pumps stands at the core of our sustainability objectives. Opteon™ XL20 helps our customers achieve their environmental objectives through improved performance, reliability, safety and energy efficiency.

You can find out more about the benefits of Opteon XL20 by downloading our infographic, Leading Efficiency and Savings in Heating: **https://tinyurl.com/56s748rb**

Illegal trade

Epidemic of illegal plumbing equipment will worsen with heat pump rollout – unless the Government steps in by Chris Skeen, Global Product Director at Grundfos

The illegal trade of falsely certified circulator pumps counts for at least 10 per cent of annual sales in the UK. With sales reaching around a million a year according to the BPMA, this amounts to tens of thousands of non-compliant devices being sold every year. There's a good chance one is in your home or workplace.

This was a conservative estimate. What's more, with heat pump heating systems there is often the need for more circulator pumps, sometimes three times that of a traditional gas combi boiler system. So, this issue could be exacerbated without the Government factoring a solution into its heat pump rollout plan.

The Government must act now to help the industry stop this epidemic which is bad for both compliant manufacturers and consumers trying to save on energy bills. It will only get worse when the nationwide rollout of heat pumps gains momentum.

The problem

A circulator pump pushes hot water around a heating system. To achieve an efficiency level that meets minimum European requirements, they must be fitted with smart technology that enables them to modulate their speed.

In contrast, pumps which do not contain this technology – and which can therefore be manufactured at a fraction of the cost – appear on the shelves of major wholesalers across the UK.

It's important to stress that the merchants are not at fault, nor are the plumbers who purchase these pumps and install them in buildings nationwide. They are being duped by fake "CE" labels that wrongly reassure onlookers that they have met strict eco-design rules.

"CE" labels generally stand for "Conformite Europeenne" to certify that a product conforms with European health, safety, and environmental protection laws. However, the subtly different labels applied to these pumps actually stand for "China Export", having been manufactured in the Far East and exported without mandatory testing.

Chris Skeen, Global Product Director at Grundfos

This issue has only been getting worse in recent years. Microchip shortages and a spike in home renovations over lockdown widened the gulf between supply and demand. Cynical exporters have thus seized the opportunity to fill this gap in the market.

The consequences

This is a bad time for consumers to have inefficient circulator pumps installed in their homes. Spiralling energy prices meant that two thirds of Brits were worried about being able to pay their bills last winter, with a lack of awareness around energy efficiency causing many households to lose out on potential savings.

Indeed, few people have heard of the humble circulator pump despite it being the third-biggest energy-sapping device in the home. On average, heating systems account for 60 per cent of household energy consumption, so the benefits of installing a more efficient circulator are clear.

A typical energy efficient electronic pump will cost around £100, but the falsely labelled alternatives can cost around half of this – until they are installed.

The average household will miss out on energy bill savings of up to £110 a year because the cheaper imports run at full speed all the time and are therefore far less efficient.

These losses will be compounded with the introduction of heat pumps, which can contain three times the number of circulators as a traditional gas combi boiler system. If the Government is serious about pursuing this technology as part of its strategy for achieving net zero, then it simply must act.

What's more, with cheaper imports undercutting compliant models that contain the right technology, the Government's failure to act on this issue inadvertently hampers British business. UK-based manufacturers are essentially being penalised for following the rules, likely leading to job losses when they can no longer afford to keep up with the corner-cutting competition.

The solution?

Government has to step in. Illegal pumps inflict negative consequences on UK consumers and businesses, and no other European country experiences this problem on anything like the same scale.

On the one hand, UK trading standards teams have taken down several websites advertising the products. On the other, there has been little attempt to act against them being sold in plumbers' merchants.

Moreover, there is no record of any fines being handed down in the UK to any of the companies breaching eco-design rules. These facts inevitably raise questions about the Government's commitment to improving energy efficiency.

Government must urgently come to the table with legitimate manufacturers to discuss the issue and improve public awareness. People must understand the problem's scale and its role in holding back efforts to improve energy efficiency.

After all, what other types of falsely labelled equipment could be entering the UK and being wrongly sold? For the Government to reassure consumers and businesses that it does indeed take the energy crisis seriously, it must clamp down on this illegal activity that is both financially and environmentally damaging.

Info
www.grundfos.com/uk

WOMEN IN THE HEAT PUMP INDUSTRY

Heat Pumps Today are very pleased to share some insight of Charlotte Lee, newly appointed and first Chief Executive of the Heat Pump Association (HPA)

CHARLOTTE LEE

How did you get into the heat pump industry?

I have always been interested in politics and engagement, having studied Politics and International Relations at university, and being the President of the university Debating Society many years ago.

My interest in sustainability was triggered by one of my university modules, which looked at the political importance of energy security on election results. I knew at that point I wanted to go into energy policy advocacy which saw me start my career as a policy advisor and move to head up the external affairs function of an installer certification body. This included representing installers across the building fabric and services sector. With the recent focus on energy security and grid decarbonisation in the UK alongside the Government target to install 600,000 heat pumps a year by 2028, the heating industry has been a particular area of interest and focus for me over recent years.

What was your first job?

I began my career as a policy advisor for a low carbon, sustainable energy consultancy firm based near Birmingham, and much of my work was for a trade association.

What excites you about the industry?

What I find most exciting is both embracing the opportunities and tackling the challenges of supporting the industry in meeting the Government's target of installing 600,000 heat pumps per year by 2028.

Charlotte Lee, first Chief Executive of the Heat Pump Association (HPA)

What does your current/new role involve?

As the first CEO of the Heat Pump Association, my role is to ensure that the Association is viewed as a well-respected, united voice for the heat pump industry, and that the industry and Government work in partnership to decarbonise home heating.

In order to achieve this, we need to continue to provide:

- The Government with well-reasoned, evidence-based policy proposals backed up with concrete economic analysis which will support growth in the heat pump sector.
- Consumers, specifiers and installers with factual and objective information about the benefits of heat pumps to grow awareness, interest and understanding.
- A strong collaborative voice for the industry on matters relating to heat pumps.

What do you see as the challenges facing the industry?

I believe the main challenges facing the industry today are consumer demand and the political climate. The technology and its efficiency are proven, and there are currently no reported constraints on supply. So, what is holding the UK back?

Heating is fundamentally a policy-driven market and a choice that most consumers make based on necessity, cost, familiarity, and ease.

Heat pumps lie at the heart of government policy for decarbonising heating. However, electricity prices are made more expensive by the application of Environmental and Social Obligations (so-called "green levies") that are applied to electricity bills and not to gas to the same extent. This means that heat pump customers are unfairly disadvantaged compared to those with a gas boiler, because they pay more for these environmental programmes than gas customers do. Well-designed heat pump systems installed and set-up correctly and used optimally will deliver operating efficiencies that make a heat pump considerably cheaper to run than a gas boiler. However, a simple "drop-in" replacement heat pump can result in higher running costs, and there is certainly a wide range of consumer experiences reported.

Consumer demand will be driven by price, as well as confidence in the systems. Reducing upfront and running costs of heat pumps and improving consumer confidence are central to the HPA's strategy this year and beyond.

In addition to this, it is politically challenging for any government to restrict consumer choice – which phasing out gas and oil boilers will do. This is heightened by the current high inflation rate which is exacerbating the cost of living. With the next election looming, the Government are understandably wary of off-siding the electorate.

However, the UK's legally binding Net Zero targets are non-negotiable, and are also now aligned with the need to reduce dependency on imported fossil fuels and insulate consumers against future pricing shocks. Whilst 2050 may seem a long way off for zero carbon, rapid progress towards it will also achieve these other objectives, which become stronger political imperatives. However, change at this scale does not happen overnight, and action must be taken now. It is vital that we move beyond spending review cycles to drive forward heat decarbonisation, and there is no doubt that the Government will have a key role to play in this transition. Strong, decisive action is needed now.

What would you say to other women who are considering coming into the heat pump industry?

Having started in this role very recently, I have received nothing but support, acceptance and engagement from all that I have met. Some have said I've been a breath of fresh air, providing a new perspective on previously accepted positions.

Women have a vital role to play in our industry, and with hybrid and flexible working becoming more common for all, work places are adapting to support family life.

Based on my personal experience, I would strongly encourage women to enter and remain in this industry to enable a diverse and representative range of views and ideas, which will no doubt drive growth and development within the sector.

Is there a little-known fact about yourself?

My claim to fame is that I was an extra in the 'Harry Potter, Chamber of Secrets' film when I was at school.

Outside work:

Outside of work I enjoy spending time with my two young children, socialising with friends and keeping active with my two cocker spaniels.

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.

Blygold coatings can help with...

- Reducing maintenance.
- Protecting the casing as well as the coil blocks.
- Extending the life of the equipment.
- Energy saving.

For more information, contact us on 01895 259346 or ben@blygolduk.com

White Paper encourages UK to embrace heat pump technology

With rapid and continued growth expected in the UK heat pump market up to 2028 and beyond, global certification body, Eurovent Certita Certification (ECC), has published a new white paper entitled, 'Installing Efficient Heat Pumps: A Challenge of Environmental Transition.'

Detailing the difficulties and opportunities facing the UK heating market as it moves away from fossil fuel boilers, the white paper highlights the importance of installing highly energy efficient heat pumps, in the challenge to decarbonise over 30 million heating and hot water systems in homes and businesses by 2050.

'Installing Efficient Heat Pumps: A Challenge of Environmental Transition,' gives an overview of aerothermal and geothermal heat pumps, and the issues in achieving carbon neutrality. Covering the background of decarbonisation, the factors driving heat pump sales, and the obstacles faced by the sector at large, the white paper moves on to practical installation advice, highlighting the huge impact that installation conditions have on the energy performance of systems.

Shining a spotlight

Citing the untapped potential of geothermal heat pumps - ground source heat pumps (GSHP) and water source heat pumps (WSHP) - the white paper shines a spotlight on the market in the UK, warning that it is currently underestimated by both manufacturers and installers. Geothermal energy offers a significant opportunity because the terrain is favourable in many regions, and many towns and cities are crossed by large rivers. From the homeowner installing a GSHP, to large scale commercial and industrial WSHP installations, the white paper drives home the message that this sustainable and highly efficient heating, cooling and domestic hot water solution is ideal for the UK market.

But it doesn't stop there. The revision of F Gas Regulations and development of low Global Warming Potential (GWP) refrigerants is also discussed. As is energy performance certification, which is key to enabling those specifying systems to choose the right product for every project. Covering MCS (Microgeneration Certification Scheme) for heat pumps and Eurovent Certified Performance (ECP), the white paper confirms why certification is vital to ensuring the roll out of reliable, high performing heat pump systems.

UK's previous reliance on gas

Sylvain Courtey, President of Eurovent Certita Certification said, "While globally, we all face the challenges of decarbonisation, the UK's previous reliance on gas means a swift and all-encompassing shift in energy and technology is required to meet net zero. Heat pumps, and in particular geothermal heat pumps, offer enormous potential and a solid solution to the UK's heating dilemma. While that does not come without substantial challenges, vast benefits can be harnessed by installing optimally designed and installed heat pumps, which perform exactly as expected."

As a third-party certifying body, Eurovent Certita Certification is dedicated to promoting efficient and environmentally friendly heat pump installations. The white paper offers an in-depth overview of installation best practices to contribute to the green transition, and foster sustainable and efficient heating and cooling solutions.

Info
White paper available to download:
www.eurovent-certification.com/en

The Innov

The guide to what's new for Heat Pumps Today readers, offering vital industry news.

New product launch from Blended Products

Blended Products are happy to announce a new addition to the Serviceblend range, Serviceblend AIR. Formulated specifically for air source heat pumps to help maintain optimal thermal conductivity whilst preventing unnecessary maintenance.

Serviceblend AIR is an all-in-one biocide and inhibitor for use in monobloc heat pumps.

"Some major manufacturers and installers of air source heat pump recommend frost protection valves, eliminating the need for anti-freeze. However, heat distribution systems still require a multi-metal inhibitor and a biocide solution to enable conformance with BS7593:2019. Serviceblend AIR fulfils these requirements in one convenient, concentrated formulation." - Dirk Van Lennep, Key Accounts

All-in-One

Serviceblend AIR rules out the need to manually measure the biocide and inhibitor as separate additives for easier installation.

NSF Approved Inhibitor

Serviceblend AIR contains a multi-metal corrosion and scale inhibitor approved under the NSF/CIAS Scheme product certification scheme.

Highly Stable Biocide Solution

Serviceblend AIR contains a biocide highly stable across a broad temperature range for ongoing, optimum performance.

"This is Blended's first formulation created specifically for air source systems, meaning we're able to help yet more of the heat pump sector. We're really looking forward to being able to talk more about this product at the InstallerShow" – Simon Barker, Commercial Director.

To find out more about the advantages of combining our biocide and inhibitor, get in touch with our team on 01652 680555, alternatively, Blended Products are exhibiting at this years Installer Show June 27th-June 29th.

www.blendedproducts.com

ation Zone

To advertise your product in 'The Innovation Zone' section please contact **hayleyc@warnersgroup.co.uk**

Fernox launches a dedicated filter for heat pump systems

Leading manufacturer Fernox has extended its portfolio with the new TF1 Sigma HP Filter, which has been specifically designed to protect air and ground source heat pumps.

Key to its performance is the utilisation of the innovative flow and filtration technology (patent pending), which allows the filter to be capturing all types of debris. The Fernox TF1 Sigma HP Filter is supplied with 22mm or 28mm full-bore valves as standard. The design of these valves is crucial as it means that there is no restriction of flow through the filter assembly, ensuring the heat pump can maintain the required COP (Co-efficient of Performance).

Following the robust design of other products in the Fernox TF1 range, the TF1 Sigma HP Filter is engineered as a sealed unit without a lid for greater integrity and security, reducing any potential for leaks. Fast and simple to service, unlike lidded filters, there is no need for replacement 'O' ring seals, minimising ongoing maintenance costs.

www.fernox.com/product/tf1-sigma-hp-filter

EnviroVent expands its ventilation range with whole house heat recovery system

EnviroVent has launched a new MVHR (Mechanical Ventilation Heat Recovery) range, which is Passivhaus certified*. The Sabik 350 & 500 series has been designed to provide balanced and sustainable ventilation for new and refurbished homes, incorporating modular features, with user-friendly controllability.

The Sabik 350 and 500 systems have significant airflow capacity of up to 414m3hr** and 601m3hr** respectively, and are suitable for handing airflow directions and drain on site to offer flexibility when it comes to ducting configurations. These modular units incorporate a range of features as standard, including integrated relative humidity sensor, touchscreen controller and frost protection.

Optional features of the Sabik 350 and 500 systems include a pre-heater, Volatile Organic Compounds (VOC) sensor, wall spacer bracket for tight installations, and constant flow module which provides the ultimate versatility.

Available in two sizes to suit different properties, the systems benefit from minimal noise levels thanks to reduced air leakage, as well as offering energy efficiency benefits which help to save on annual heating costs.

When connected to an AirSens® sensor, the Sabik 350 and 500 systems react automatically to changes in air quality, instantly increasing the extraction rate to maintain a healthy environment when needed.

www.envirovent.com

Hamworthy heating provides Shastid Energy with a quick and reliable solution

Following a long and established relationship, Hamworthy Heating, a trusted British manufacturer and supplier of commercial heating and hot water products has supplied Shastid Energy with a Tyneham Air Source Heat Pump for installation at its premises in Cambridgeshire.

One of the lightest commercial heat pumps on the market, it features a co-efficiency of performance (COP) rating of up to 4.85, to provide efficient, low-carbon heating. The seven models in the range have six nominal outputs of between 14 to 70kW, which can also be cascaded to achieve higher outputs in larger installations. Incorporating an inverter controller compressor to accurately match the heat demand, Tyneham heat pumps use R32 refrigerant to deliver increased efficiencies.

Designed with installers in mind, Tyneham heat pump components are conveniently housed in the main unit which is compact and lightweight for ease of commission and installation.

www.hamworthy-heating.com

A handy little tool from Makita

Makita has added a handheld blower to its expanding LXT cordless collection. The versatile 18V DAS180 LXT Brushless Blower is the latest product from the leading power tool manufacturer that is also capable of inflating and deflating, simply by changing the nozzle tip.

The new 18V DAS180 LXT Blower is powered by a brushless motor with variable speed control. Suitable for a wide range of applications, from cleaning off workbenches, machinery, cleaning and blocked filters, through to inflating inner tubes and play pools, this handy tool makes a useful companion to any kit bag.

The body is designed with an ergonomic rubberised grip and weighs only 1.7kg. Despite its compact size, the unit is extremely powerful and offers a maximum sealed suction of 10.3kPa. Its 4-stage air volume settings deliver a blowing force of up to 2.8N with a maximum 200m/second air velocity and air volume of 1.1m3/min.

Other features include a one-touch, tool-less nozzle attachment to quickly adjust the tool for each application. The variable speed trigger comfortably controls the blowing force and can be locked in the 'on' position for extended use. A tether feature offers a safe hanging point to secure the tool in overhead applications.

www.makitauk.com

INNOVATIVE, RELIABLE, EFFICIENT.

WARMFLOW

Zeno

Air Source Heat Pumps

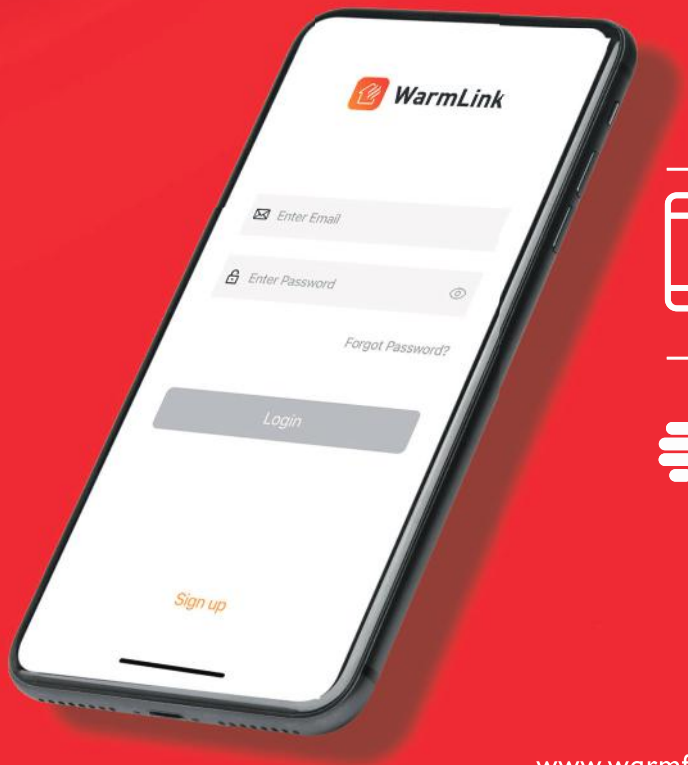
50 YEARS
KEEPING FAMILIES WARM

R32
REFRIGERANT GAS

QUIET MARK

WarmLink
Remote control & diagnostic capability

A+++



WARMLINK APP CONTROL

Remote control & diagnostic capability through the cloud based app.

USER-FRIENDLY TOUCHSCREEN INTERFACE

Covering all aspects of heat pump and system control

www.warmflow.co.uk