

Spring Issue **March 2024**

# HOT & COLD

Brought to you by the **Association of Plumbing & Heating Contractors**

**APHC**

## **Demystifying The Application of VAT to Energy Saving Materials in Residential Properties**

APHC CEO answers some queries and discusses some key principles of how VAT should be applied in particular circumstances related to 'Energy Saving Materials'

## **Future Energy Use & New Build Properties**

We provide an outline of proposed changes from the Government relating to The Future Homes Standard (FHS) and the Future Buildings Standard (FBS) document that will affect future energy use and new build properties

## **APHC Member Spotlight**

Our first issue of this year kicks off with a Member Spotlight from our APHC President Andy Baxter, who owns High Efficiency Heating UK

## **TechTalk**

Our Technical Manager takes a look at the risks and technical considerations for installing a heat pump with R290 (propane) refrigerant

[www.aphc.co.uk](http://www.aphc.co.uk)



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## Business survey shows importance of WaterSafe scheme



More than half of those surveyed said they felt more confident using a plumber with the WaterSafe stamp of approval.



### Results of a survey carried out with 250 business leaders by WaterSafe reveal the wants and needs of decision-makers when it comes to their property's plumbing.

Two thirds of respondents said they had used the WaterSafe website to search for an approved plumber, with others stating common methods to find a plumber for their business include word of mouth, internet search and asking their local water company.

More than half of those surveyed said they felt more confident using a plumber with the WaterSafe stamp of approval.

And no wonder, as a third of people said they had suffered a 'botch job' by a plumber and had to employ a second plumber to fix the mistake.

Pipework which was not connected properly was the cause of the issue in nearly half the cases, with around a third saying the rogue plumber either didn't fix the problem they were called to repair, or they caused further problems such as a leak.

These results show the impact joining WaterSafe can have, particularly as NHS guidance advises all hospital trusts to only use approved WaterSafe contractors in

their premises, to safeguard public health.

In addition to your APHC membership, you could benefit from extra, free, promotion by WaterSafe and your local water company, as well as being listed on the WaterSafe directory, the largest listing of approved contractors in the UK.

It also allows you to self-notify certain types of work to the local water supplier and access free advice on the water regulations.

Delving further into the most common reasons businesses require a plumber, it will come as no surprise to any experienced contractor that fixing leaky taps and toilets and regular maintenance of heating systems came top of the list.

What's more, more than three quarters of property managers say they would like advice from their plumber on saving water and energy, as well as reducing their carbon footprint.

All APHC members who operate in the UK, hold a suitable plumbing-related NVQ Level 2 qualification and have a recognised water fittings regulations certificate, as well as suitable levels of public liability insurance, can currently join the scheme for free.

**If you're not already a WaterSafe member, head to [www.watersafe.org.uk](http://www.watersafe.org.uk) to find out more.**





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2300SB	2,325 litres	1,800mm	1200mm	1,680mm



**For more information:**

01889 567700 / [sales@tuffa.co.uk](mailto:sales@tuffa.co.uk)





# Demystifying The Application of VAT to Energy Saving Materials in Residential Properties

Over time Government has sought to incentivise the drive towards Net Zero by reducing the applicable VAT rate for the installation of certain 'Energy Saving Materials' but only in residential accommodation and charitable buildings.

We do receive regular queries on how VAT should be applied in these areas particularly relating to heat pumps, hence covering the key principles in this Hot & Cold article. Fuller detail can be accessed via the web by reading - **Energy-saving materials and heating equipment (VAT Notice 708/6)**.

The key background is that VAT laws were modified and with effect from **1 April 2022 until 31 March 2027**, a zero rate applies to the installation of certain specified energy-saving materials in residential accommodation & charitable buildings..

Let's take a look at how VAT is applied:

## a) New Dwellings

In the main the construction of new build dwellings is zero rated and therefore the installation of energy saving materials in them is zero rated – that's the easy one!

## b) The Installation of Energy Saving Materials in Existing Dwellings where the Work is Non Grant Funded

Firstly, by grant funding we mean the grant funded support available to low income households through schemes such as ECO4 (a wider definition of what constitutes grant funded work is provided in the VAT Notice). Please note that the Boiler Upgrade Scheme (BUS) is not an example of a grant funded scheme under VAT laws.

Under this item b) we're specifically covering the energy saving materials that can be **zero rated** as part of **non grant funded work**. There's a more detailed definition of each of the following in the VAT Notice:

- controls for central heating and hot water systems
- draught stripping

- insulation
- solar panels
- ground source heat pumps
- air source heat pumps
- micro combined heat and power units
- wood-fuelled boilers
- wind turbines
- water turbines
- water source heat pumps
- batteries and storing energy converted from electricity
- smart diverters

The zero rate applies to supplies of groundworks, or dredging a body of water in order to install pipework or other equipment necessary for the operation of a ground or water source heat pump.

The zero rating applies to both the supply and installation of the energy saving materials themselves e.g. an air source heat pump and it's installation but becomes more complex when looking at the installation of the air source heat pump as part of work taking place as part of a heating system install or indeed other work taking place in the property.



It's important to be aware of the key principles of how VAT requires to be applied in particular circumstances as the consequences of incorrect application around reduced rating can be sizeable.



Let's take a look at a couple of examples:

*Example 1 - the installation of an air source heat pump together with new radiators and pipework in a dwelling. This is carried out as a single job and for a single price. Larger radiators and pipework are necessary because the air source heat pump operates at a lower temperature than a traditional gas boiler. The customer regards the work as one supply of an air source heat pump.*

In this example, the installation of the new radiators and pipework are ancillary to the installation of the air source heat pump. This is a single supply that benefits from the heat pump install as well as the pipework and radiators (ancillary supplies) being zero rated.

So, an ancillary supply is a supply of goods or services that is a better means of enjoying the principal supply and in such case e.g. the supply/install of an air source heat pump and upgrade to the heating system which can be zero rated for the entire job including ancillary supply elements. If the job was for the supply and install of radiators and pipework without the heat pump, these are not energy saving materials and would therefore need to be standard rated.

*Example 2 - the installation of energy efficient heating and hot water controls as part of a full oil fired heating replacement in an existing property. In this case the heating and hot water controls are ancillary to the full heating system install and not the principal supply.*

While some components of the central heating system may benefit from a reduced VAT rate if supplied and installed on their own, where they are all supplied together, they form part of a single supply of a central heating system. Given that a full heating system installation does not fall within the definition of energy saving materials then the whole job (including the controls) must be standard rated.

### **c) The Installation of Energy Saving Materials in Existing Dwellings where the Work is Grant Funded**

Here we're looking at the application of VAT to **grant funded** work for low income households e.g via schemes such as ECO4.

In relation to grant funded work VAT can be applied at a **reduced rate of 5%** for the following:

#### **Heating Appliances**

- closed solid fuel fire cassettes
- electric dual immersion water heaters with factory-insulated hot water tanks
- electric storage heaters
- gas-fired boilers
- gas room heaters with thermostatic controls
- oil-fired boilers
- radiators

**Central heating systems** - the installation, repair and maintenance of a boiler, radiators, pipework and controls forming a central heating system.

This includes micro combined heat and power systems, which are heating systems that also generate electricity.

The reduced rate includes repairs and replacements of such equipment, whether or not the original system was installed under a relevant grant-funded scheme.

**Renewable source heating systems** - the installation, repair and maintenance of renewable source heating systems.

This means space or water heating systems which use energy from:

- renewable sources, including solar, wind and hydroelectric power
- near renewable sources, including ground and air heat

### **Key Takeaway Points**

It's important to be aware of the key principles of how VAT requires to be applied in particular circumstances as the consequences of incorrect application around zero or reduced rating can be sizeable. As part of a VAT inspection, it's possible for the revenue to 'trawl back' through 6 years of financial records and if VAT has not been collected where it should have been then the outcome is more than likely going to be a significant bill to pay which over time even for the smallest of VAT registered businesses could be several thousand pounds.

A question that often arises is 'can't I just break the one job down into several invoices, one aspect covering the eligible energy saving work and the other covering the standard rated work?' The simple answer to this question is no, how VAT is applied solely relates to what is the principal supply that's part of the purchase with the customer. So, zero rating the solar panel install and the ancillary work that is necessary associated with it's installation such as a replacement cylinder is fine. Carrying out a full plumbing and heating refurbishment to an existing property with multiple bathrooms, and a completely new heating system incorporating an air source heat pump could mean that the heat pump install is not the principal supply, in which case the whole job may need to be standard rated.

**If you'd like to talk through further practical application of VAT principles to Energy Saving Materials then please do contact the office on 0121 711 5030.**



# APHC Member develops The HEAT PUMP MOVER

Written by Mike Wyeth, MD and Founder of Lite Work Designs Ltd.



**If like me, you install a range of manufacturer heat pumps you'll know it's quite a challenge moving them across building or customer sites. Most of the time I work alone so I needed a safer and easier way of moving them, and I wanted to look more professional in front of my customers.**

I tried many designs, most of which failed but with each failure I started again, changed the design, and fixed the problem. This trial-and-error process led me to today's production version of the HEAT PUMP MOVER.

I install a range of heat pumps on a weekly basis using the MOVER. As well as making it safer and easier for myself, I'm more effective without delays as I can work to my own installation plan without the need for additional resources or having to arrange a mechanical handler to move a pump.

As a renewable energy business, I wanted to do my bit for the planet too and kept this in

mind when choosing materials for the MOVER. To keep costs down, the baseboard, posts and wheel arches are all made from 100% recycled household plastic which can be further recycled at the end of its life.

The baseboard is machined to hold any manufacturer's pump up to 200Kg. The pump foot is secured in the baseboard recess using the securing strap provided. We use a zinc coated, solid steel axle with pneumatic tyres to take the weight whilst providing the level of stability needed over mud, grass or stony ground.

The HEAT PUMP MOVER has been designed for heat pumps, but it can be used for more. The baseboard is 600mm wide and can accommodate moving an Integrated Unit, Water Cylinders and Radiators to name a few. The value and unique features of the HEAT PUMP MOVER are:

**SAFER:** Using the MOVER is significantly safer than physically lifting a pump across a site and reduces the risk of personal injury to yourself or your team. Manufacturers and customers love the MOVER as it reduces the risk of pump damage with the inevitable additional cost and delay.

**EASIER:** With the pump strapped in place, you simply pull the pump where you need it. This is achieved by making the MOVER an extension of the pump.

**MORE PROFESSIONAL:** Carrying a heat pump across a site isn't elegant. As an installer in a competitive market, you will want to look more professional in front of your customers.

**GREENER:** We have used a plastic base made from 100% renewable household plastic for all the major components - you will see each MOVER is unique. When you have finished with it, simply return to us and we'll get it recycled.

Our HEAT PUMP MOVER makes your life **SAFER** and **EASIER**, enabling you to provide a **MORE PROFESSIONAL** installation by reducing the risk of damage to yourself or the pump.

**Visit us at the Installer Show - NEC Birmingham Stand 146**  
**For more information or to order a Heat Pump Mover, please visit**  
**heatpumpmover.co.uk**





# Future Energy Use & New Build Properties – An Outline of Proposed Changes



**In mid December, the Government issued its long-awaited consultation on technical standards for new build properties. Up until the issuing of the consultation there had been significant speculation on how far the Government may be prepared to go with new build properties following the PM's slight reigning back of Net Zero proposals in the Autumn.**

The consultation is the final steps prior to full legislation being introduced and provides a strong indication of current Government thinking around new builds.

The Future Homes Standard (FHS) document will apply to new residential buildings, including homes and blocks of flats, while the Future Buildings Standard (FBS) document will apply to all other new non-domestic buildings.

The firm proposal is that low-carbon heat pumps or heat networks will provide heat to **new homes** in England from 2025 onwards, heating by fossil fuel based means will not be permitted. For **new non-domestic property**, heat will also be provided by heat pumps, or for 'top-lit' property (properties with low heat demands such as factories), by radiant electric heating and heat networks. **Alternatives, such as hybrid and hydrogen-ready boilers, "will not meet the proposed standards", the government has indicated.**

However, while its proposed performance requirements for new buildings envisage them being powered by renewables and other low-carbon energy sources, the government is not at this stage mandating the installation of rooftop solar panels on all new homes. Instead, it sets out two options – one with, and one without, rooftop solar – and seeks views on the preferred option. Blocks of flats over 15 storeys tall would be exempt from any rooftop solar requirement. For non-domestic property, the government is intending to mandate rooftop solar, giving two options for specified percentages of roof cover and recommending the higher level of coverage.

The proposals also address other factors relevant to a building's energy efficiency and performance, such as airtightness, building fabric, ventilation, and lighting, with minimum standards planned for each but a degree of flexibility for developers on how they meet the standards – including for different kinds of buildings. The government said it is not intended that these aspects, particularly in relation to building fabric, are significantly different from the 2021 Building Regulations Part L uplift.

The Government in its consultation proposals acknowledges that build costs are likely to increase. Where it has presented different options for elements of the new standards it proposes to introduce, the government has set out estimates for how they affect build costs but also the potential energy efficiency and emission reduction benefits that can be derived and resultant cost savings to building occupiers from operating the buildings.

The consultation also contains proposals to apply the new standards to dwellings created by 'material changes of use' as defined in

the Building Regulations, noting that 28,000 homes were created in this way in 2020-21 and were generally less energy efficient and produced more carbon. Views are sought on the best way to apply the standards to material changes of use creating dwellings and to extending this to material changes of use creating student or patient accommodation, care homes and hotels.

The consultation proposes that the heat pump efficiencies and lighting efficiencies requirements would apply to existing non-domestic buildings as well as domestic.

The consultation also deals with "performance gap" issues, recognising that poor build quality or poor commissioning of fixed building services is sometimes the cause of these. A voluntary system of post occupancy testing is proposed, with it envisaged that the results are made public, and if there were to be any "Future Homes Standard" brand this might only be available to those who had carried out such voluntary testing.

In relation to heat networks, the consultation paper makes it clear that new buildings can only connect to existing or new heat networks which can demonstrate they are adding new low carbon technologies or have existing unused low carbon heat, with a sleeving system proposed to apply to connections of new buildings to such heat networks.

The government plans to implement the two new standards at the same time, with legislation to be laid in 2024 and come into force at some point during 2025. Feedback being sought on whether the new standards should come into force six months or up to 12 months after the regulations are laid in parliament. A 12-month transitional period would thereafter apply 'to allow industry sufficient time to adapt whilst also driving forward progress towards the 2050 net zero target'.

**The consultation had a closure date of 6th March 2024, full detail can be accessed via the web by searching for The Future Homes and Buildings Standards: 2023 consultation.**

We will as ever provide future updates as legislation is introduced over the next few months.



# Business management made a walk in the park



Fergus is the UK's number 1 Job Management Software designed to make tradespeople's lives easier. Fergus is the brainchild of Dan Pollard, a veteran Tradesman. After going bust once and burning out Dan figured out that a trades business needs proper systems in place to keep it running – without running its owner into the ground.

In his search for great systems, he developed Fergus, and it was so good he was able to grow his business from 4 employees to 24 in less than 4 years.

Fergus streamlines and simplifies your workflows all in one place. It takes the stress out of running your business, always know what's on, what's coming next, and what actions you need to take to progress a job. It does end-end job tracking, helps manage and communicate with your team, gives quick quotes and invoices and offers supplier integrations.

Running a plumbing and heating business is no easy feat, especially when you're a one-person show managing contracts for local housing associations and letting agents. Over 20,000 tradespeople choose Fergus and we spoke to Paul, the owner of Cosy Home Services, who has turned his 27 years of industry experience into a thriving business. Paul's business is supercharged when he starts using Fergus, a comprehensive tool that has revolutionised the way he manages job admin.

Before using Fergus, Paul had tried a range of job management platforms, often finding that they would have some of the tools he needed but lacked in other areas. He was frustrated with the amount of time and effort he had to spend on paperwork, invoicing, and scheduling. He felt like he was losing control of his business and missing out on opportunities to grow.

Fergus has empowered Paul to reclaim his time and work more efficiently, offering him everything he needed to save time and grow his profits. Fergus is a cloud-based software that allows Paul to manage his jobs from anywhere, on any device. He can easily create quotes, schedule jobs, track time and materials, send invoices, and get paid online. He can also communicate with his customers and suppliers and access all his job history and documents in one place.

One of the standout features for Paul is the ease with which he can generate and send invoices. This level of efficiency has transformed his evenings – from spending 16 hours on paperwork to just an hour a night.

*"I can go to a job and when I come back, it's there on the system and within 3 clicks I can send that invoice to that customer and attach any legal documents to it straight away. It's saved me loads of time, which is absolutely brilliant, I'm really pleased with it."*

The ability to pre-populate routine information has also sped up his time filling in job sheets. The automation of repetitive tasks not only saves time on the job for him, but also significantly reduces the administrative burden.

*"There's lots of great things that on Fergus, like prepopulate things like your Gas Safe number onto the forms, and you can pre sign it."*

Fergus's intuitive design also allows him to complete tasks that used to take minutes in just a few clicks, effectively cutting his paperwork time in half.

*"In general, it's the time Fergus saves to do things. It does things in a lot quicker way than I would normally, so the value is the fact that I'm not losing time like before."*

The impact on his daily operations is evident, and the streamlined workflow has enabled him to focus on what matters most – delivering quality service to his clients.

*"Let's say I was spending 2 to 3 minutes per job sending out paperwork to a customer. I'm doing that in a few clicks now, so it's probably half in the time I'm now spending on paperwork, which is the beauty of it."*

Another standout feature for Paul is the search functionality offered by Fergus in providing quick access to customer information during phone calls. The ability to retrieve crucial information within seconds enhances his professionalism and client interactions.

*"When a customer I worked with a year ago phones me and wants a new quote, I can just type in the first line of their address and within 3 seconds I've got the information in front of me. I can then see what I've done at the property the last time I went and go from there."*

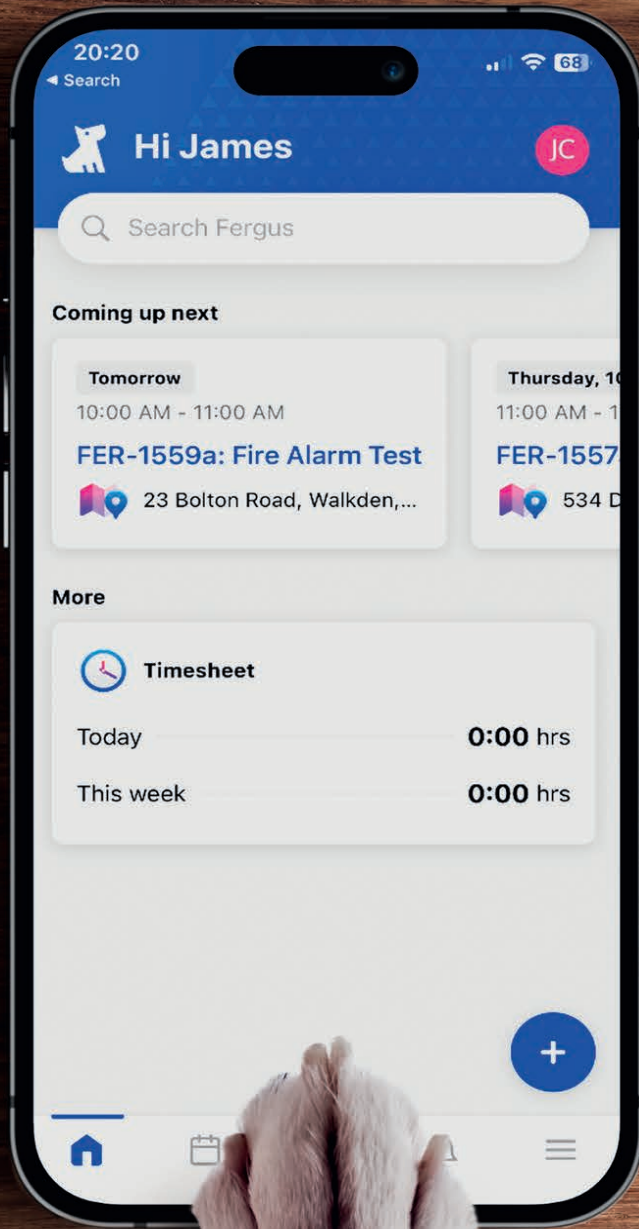
Paul's success with Fergus showcases the transformative power of leveraging technology in small businesses. The software has not only streamlined his administrative processes but also allowed him to provide a more efficient and professional service to his clients. He can now handle more jobs, increase his revenue, and improve his customer satisfaction.

As Paul continues to grow Cosy Home Services, Fergus is with him the whole way, proving that investing in the right tools can make all the difference in the world of business.

**Head to [www.fergus.com](http://www.fergus.com) to start your 14-day free trial today.**

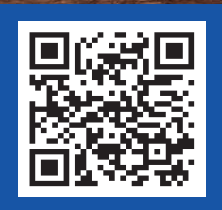


# Fergus

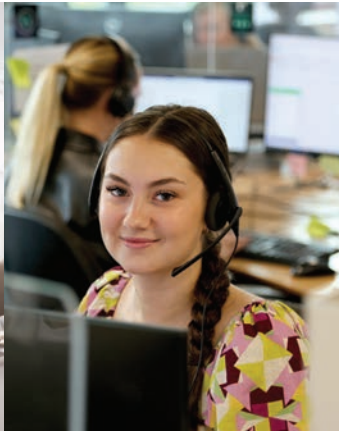


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## Why Bristan is the easy choice

### The UK's market leader for taps and showers

Bristan is the UK's number-one brand for taps and showers. For over 45 years, they have delivered reliable and long-lasting products, backed by award-winning customer service and solid guarantees.

With straightforward solutions for every bathroom and kitchen that you can trust time and time again, Bristan is the easy choice for taps and showers — every time.

Bristan has built its reputation as a trusted provider of bathroom and kitchen products since its inception in 1977. Since then, Bristan has developed an impressive portfolio of bathroom and kitchen products — inspired by customer needs, led by trends, backed up by engineering, and loved by installers.

As a result, Bristan is widely recognised as the UK's market leader for taps and showers and continues to grow rapidly in comparison to its competitors, now holding one-fifth of the market share among plumbing merchants.

### Industry-leading logistics

At the heart of Bristan's operations is the aim to get installers what they need, when they need it.

For more than 45 years, Bristan has maintained its position at the forefront of innovation across the industry by developing products and services that directly meet the needs of its customers. Bristan's next-day delivery, for example, was introduced back in 1994 and is a service that is as well-loved today as it was 30 years ago.

As a subsidiary of the Masco Group, Bristan has developed a robust supply chain that enables the organisation to ship more than 2.7 million items each year, assure the quality of every order, and maintain an average "On Time and In Full Order" delivery rate of over 95%.

### Customer-first approach

In keeping with its reputation as a supplier you can trust, Bristan has implemented a customer-first approach across all areas of

the business, including its award-winning customer service experience.

In addition to its passionate team of customer service advisors that know its products inside and out, Bristan has developed its Visual Remote Assistant. This industry-first technology facilitates easy identification of products and enables Bristan's team to solve customer enquiries remotely via video calling and in-call link sharing.

Bristan's customer service team is trained to handle 99% of enquiries right the first time so that installers can focus on their next job, knowing that their customers are being looked after the right way.

To offer further assurance in its services, Bristan's portfolio of products is backed up by exceptional guarantees which include up to 10 years on taps and 5 years on showers across various ranges.

Bristan's customer-first approach also extends to the development of its offering, from customer experience to product improvements.

To inform projects across the business, Bristan has created a dedicated Insights and Voice of the Customer team to conduct research and surveys to gain an in-depth understanding of the problems that both the industry and end consumers are facing.

Using data and insights from its customer base, installers and homeowners alike, Bristan develops its products with customers in mind — ensuring that their needs are met and their expectations are exceeded.

### Innovative solutions

Thanks to its customer-first approach, Bristan has developed a range of innovative solutions designed to meet customers' needs.

First launched over six years ago, Bristan's Easyfit range is well established as a favourite kitchen tap solution amongst installers due to the speed and ease of installation. Specifically designed to address the challenge of kitchen

taps being notoriously fiddly to replace, Easyfit makes light work of every kitchen tap installation with its Top Fix technology and five-step process which means kitchen taps can be fitted in a matter of minutes.

More recently, Bristan has introduced its innovative Eco Start and ThermoClick technology which aim to increase environmental and safety benefits respectively.

The Eco Start feature, available in selected kitchen and bathroom tap ranges, saves energy by ensuring cold water is set as the default central start position of the tap handle, meaning that hot water is only activated when the tap lever is moved from the central position and reduces unnecessary demand on hot water heating systems and energy usage.

The ThermoClick feature, available in various Easyfit taps including the upcoming Pine, Spruce, and Maple models, provides enhanced safety through the addition of a mid-point click that indicates when the water has reached the optimal temperature for washing your hands — ensuring a safe and comfortable handwashing experience every time.

Bristan's latest collections are also available in a range of trend-led designs and finishes, including its signature Chrome, Stainless Steel, Black, Brushed Brass, Gun Metal and Brushed Nickel.

Chris Tranter, Brand Product Lead at Bristan, says "At Bristan, we're dedicated to upholding our reputation as the go-to choice for installers.

"Our goal is to maintain the level of confidence entrusted to us by installers by continuing to provide long-lasting products, backed up by top-quality customer service and supported by our exceptional guarantees.

"With our range of kitchen and bathroom products, designed with customers in mind, installers can get the very best on the market as they're well-priced, easy to fit, and built to last."

**Find out more about Bristan products at [www.bristan.com](http://www.bristan.com).**



# SAVE MONEY AND ENERGY WITH ECO START

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TAPS



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COLD WATER



POSITION 2  
MIXED WATER



POSITION 3  
HOT WATER



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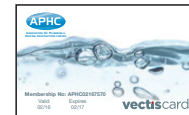
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# Member Spotlight: High Efficiency Heating UK (HEH)

**To kick off 2024 our first Member Spotlight of the year is from APHC member High Efficiency Heating (HEH). The business has been designing, installing, and maintaining heating systems for over 25 years and has hundreds of 5-star reviews from customers. We caught up with Andy Baxter, the owner of HEH, and current President of APHC, so he can tell us more about the business and what they have planned for 2024.**

**Tell us a little bit more about the history and background of High Efficiency Heating.**

HEHUK came about after a long discussion with my "boss", my wife Sharron. Whilst I was teaching plumbers in college from 2002-2004, I realised that the gas market was about to change with the introduction of condensing boilers, and this presented a great opportunity. Prior to teaching I had previously been a sole trader since 1994, however I knew that I could not handle this new market alone and needed the help of Sharron, who was a PA at the time. In 2004 we teamed up and rolled out HEHUK starting in a spare bedroom, then within 12 months we moved to a bigger premises in Ashton. Since then it has just been onwards and upwards and along the way we enlisted the additional help of our daughter too.

**You have over 750 5-star Which? Reviews and put emphasis on creating strong relationships with your customers, why is this so important to the business?**

You have to win your customer as soon as you can from their first impression of you and maintain the relationship throughout. The Which? reviews are a recognition of what we believe in and our focus on our customer satisfaction results in positive customer feedback on a fantastic platform.

Sometimes we get things wrong (not too much), but we always put things right and always tell the customer the facts as they value the honesty.

To sum up the business HEH are honest, efficient, and hardworking, that's our motto and our team believes in this and carries this in their work.

**What were the main reasons you decided to become an APHC member?**

Our Technical Sales Manager Richard Perrins has been an APHC member for many years and he was the one who introduced me to the APHC. Then with due diligence and my own homework it was easy to see the benefits that APHC could provide to HEH. The more you look at the APHC the more you will find to complement and support your business. We've taken advantage of many of the benefits and advice on offer over the years and it's made a real difference, now here I am as President of APHC.

**As you just mentioned, in 2023 you were announced as the President of APHC, what can we expect from you during your term?**

Well, I feel I'm still learning in this role and it's a privilege to be custodian for the next 2 years so I can get stuck in. Most recently I have been to Oldham College on an official visit representing APHC, it was a pleasure to look at what young plumbers of today were doing and think about how APHC can support the future generation. The industry is changing and APHC are at the forefront of this and working to adapt to best support businesses, it's great to be a part of it and whatever comes my way in this role I relish.

**What would you say are the most challenging aspects of our industry for you currently?**

Where to start with this question! Like many others trades plumbing needs more fully qualified quality plumbers and heating engineers. Over the past few years, we've seen a recession, the pandemic, and challenges to the economic climate as well as changes to the industry so training has had it tough. It needs to adapt but one thing that first needs addressing is the lack of qualified staff to teach in colleges or centres.

Another challenge is we are now in a race to act against climate change and have seen the introduction of renewable technology such as heat pumps that will make a difference in time. The next 'conversion' is under way, which



is exciting, but it is going to be hard work for installers, and we need to make sure all installers really understand low temperature heating.

In addition to this, we also need to take our customers on this journey of low-temperature heating with us, which is easier said than done, especially with the constraints of running the business at the same time. Education is needed for customers too but there's lots of conflicting advice out there and not all installers have the time to educate their customers too.

The final challenge is support around apprenticeships as these are the life blood of any business for the future. We're in negotiation with several colleges as we're going through a transitional period to help HEH with our apprenticeship intake.

**What do you expect us to see from the industry for the rest of the year?**

I do believe over the next year there still will be some uncertainty in the plumbing and heating industry, especially where new technology is concerned. We are already seeing it now with customers who cannot decide whether to install a gas boiler or heat pump and have seen so much confusing advice and information.

I'm also seeing more enquiries for underfloor heating, solar thermal and air-conditioning. I do think that we are becoming climate engineers, more multi-skilled than ever before, which is a good thing as it should generate more work for the future.

**What else does the future have in store for you and the business?**

We are changing our business model to reflect the type of work mentioned above and we have had to take our customers along this journey too. It's not going to be easy but we're up for the challenge to see what the next few years can give. We must work hand-in-hand with what we have whilst increasing our skill level to accommodate the future and this of course involves apprentices and extra training for existing staff. There will be an extra cost to businesses, and we will all go through it but hopefully we will reap the benefits in time to come.

**Find out more about High Efficiency Heating: [www.hehuk.co.uk](http://www.hehuk.co.uk)**





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Ref: 02/24



## What are the risks and technical considerations for installing a heat pump with R290 (propane) refrigerant?

Heat pumps are becoming more popular and more widely available, working by transferring heat from a low-temperature source to a high-temperature one, using a refrigerant as the medium. The refrigerant changes its state from liquid to gas and back again as it circulates through the heat pump system.



Selection of the refrigerant type for a manufacturer is a major commercial and technical consideration, it will affect the performance, efficiency, and environmental impact of a heat pump. There are many different refrigerants available, each with its own advantages and disadvantages. In this article, we will focus on R290, also known as propane, which is a natural refrigerant that has been gaining popularity in recent years. R290 is a flammable refrigerant in safety group A3 according to ISO 817 and ANSI/ASHRAE Standard 34.

### What is R290 and why is it used in heat pumps?

R290 is the technical term for the natural refrigerant we know as propane. Perhaps surprisingly, it is already used in many things of our daily life, such as refrigerators, air conditioning or even hairspray. Several leading heat pump manufacturers are now starting to introduce the environmentally friendly refrigerant in heat pumps.

R290 has clear advantages over alternative refrigerants, such as:

**Low global warming potential (GWP):** GWP is a comparative value that indicates the greenhouse effect of a greenhouse gas. The higher the value, the worse the impact on the climate. R290 has 3 times the climate impact of CO<sub>2</sub> and therefore has a GWP of 3. This is much lower than other commonly used refrigerants, such as R32 (GWP 675) or R410A (GWP 2,088).

**High efficiency:** R290 has a high output at low outdoor temperatures and an impressive coefficient of performance (COP) of up to 5.4 kW, resulting in lower operating costs and higher energy savings.

**High flow temperature:** R290 can achieve a high flow temperature of up to 75°C, making it ideal for use in existing buildings with radiators that may need higher temperatures. It can also provide hot water temperatures up to 70°C in heat pump mode, increasing the hot water comfort and eliminating the need for an electric immersion heater for legionella protection.

### What are the risks and technical considerations for installing a heat pump with R290?

Despite its benefits, R290 also has some drawbacks that need to be considered before installing a heat pump with this refrigerant. The

main one is that R290 is flammable, meaning that it can ignite if exposed to an ignition source, such as a spark or flame, in the presence of oxygen. This poses a potential safety risk for both installers and users of heat pumps with R290.

Understanding the risks associated with propane and implementing control measures is perhaps not a new area of knowledge and understanding for plumbers and heating installers who have worked on LPG and natural gas appliances and are now developing their skills to install heat pumps. However, there will be heat pump installers who have never worked on LPG or gas appliances and may not readily comprehend the risks.

Several measures need to be considered when installing and operating a heat pump with R290. Reviewing several manufacturers, they do all provide a comprehensive set of instructions relating to the safety of the refrigerant (propane). We predict greater regulation and standardisation across a manufacturers, however, in the meantime it is essential that installers follow Manufacturer's Instructions. We have listed some key safety installation points below:

**Choosing a suitable location:** The heat pump should be installed in an outdoor area with good ventilation and away from any sources of ignition or combustible materials. Remember, propane is heavier than air, so installers should avoid underground car parks, away from doors and windows and ventilation openings into the building cavity.

**Follow the requirements of a 'safety zone':** A safety zone is defined in the immediate vicinity of the outdoor unit, in which special requirements apply.

The following conditions must not be present or occur within the safety zone:

- Building openings, e.g. windows, doors, light wells, flat roof windows, etc.
- Building recesses
- Wall outlets that are not made gas tight. This also includes wall outlets that lie below ground level in the safety zone.
- Outdoor air and exhaust air apertures from ventilation and air conditioning systems

- Property boundaries, neighbouring properties, footpaths and driveways
  - Inlets to wastewater systems, downpipes and rainwater inlets etc.
  - Other slopes, troughs, depressions (this could include sumps for condensate)
  - Electrical house supply connections
  - Electrical systems, isolators, sockets, lamps, light switches
  - Snowfall from roofs
- Do not introduce ignition sources into the safety zone:
- Naked flames or burner gauze assemblies
  - Grills
  - Tools that generate sparks
  - Electrical devices not free of ignition sources, mobile devices with integrated batteries (e.g. mobile phones, fitness watches, etc.)
  - Objects with temperatures above 360 °C Note

Use correct safety markings and signs within the safety zone.

**Using appropriate equipment:** The heat pump should have a hermetically sealed refrigerant circuit with no service valves or connections. It should also have safety features such as pressure relief valves, temperature sensors and leak detectors.

### Following installation guidelines:

The installer should be trained and qualified to work with R290. They should follow the manufacturer's instructions and use proper tools and protective equipment. They should also avoid any damage or leakage of the refrigerant during installation or maintenance.

**Informing users:** The users should be informed about the risks of R290 (propane). They should also be instructed on how to operate and maintain the heat pump safely and correctly and be aware of the emergency procedures in case of an accident or malfunction.

### Conclusion

R290 is a natural refrigerant that offers many advantages for heat pumps, such as low GWP, high efficiency and high flow temperature. However, it also has some drawbacks, such as flammability, that require careful installation and operation.



## Technical Top Tip

**External insulation for pipes should be UV protected to prevent damage from sunlight and degradation.**

## Question

**Under Regulation 5 of the Water Regulations, the water undertaker must be informed when which one of the following operations is carried out?**

- A** Installation of a pump drawing more than 12 litres per minute.
- B** Installation of a bidet without an ascending spray or flexible hose.
- C** Installation of a bath with a capacity of less than 230 litres.
- D** Installation of an RPZ valve to protect against a category 2 fluid.

See page 23 for the correct answer.



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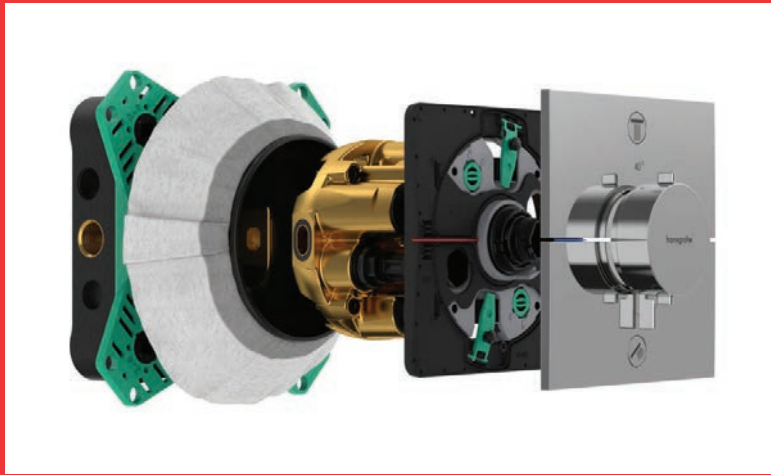


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#### **Available Colours and Designs**

Finish sets are available in a variety of shapes and finishes so that your customer can choose the right style to suit their needs. And with spare electrical ports, its ready for any future smart digital adaptations.

#### **Backward compatibility**

Finish sets that are designed for the previous iBox 1 can also be installed on the iBox 2, to enable this, an adaptor is required (13588000). The iBox universal 2 can be used with all existing and future pre-fab sets from hansgrohe.

#### **Mounting ring**

The integrated mounting ring allows the box to be installed in, on, or in front of the wall. The ring can be attached at the front or rear and allows

for mounting with any type of installation.

Once you have successfully installed the base set behind the wall, it's time for the design highlight to be installed in front of the wall. Two new hansgrohe ranges of pre-fab sets ensure soothing showering experiences on a whole new comfort level as well as more safety and flexibility in the bathroom.

#### **Integrated Sliding sleeve**

Installation without cutting: The sliding sleeve is very easy to slide in, regardless of the depth at which the concealed box is installed. This makes the waterproof box even easier, faster, and safer to install.

#### **Water Damage Protection**

The sealing sleeve is permanently attached to the sliding sleeve so that it cannot be lost or forgotten. This also simplifies installation as everything is always at hand. The sleeve is continuously elastic and waterproof.

#### **Simple, safe, and space-saving**

The new iBox universal 2 reduces complexity, can be used universally, and enables time-saving and error-free installation.

#### **Pre-installed function block**

The high-quality function block is manufactured using metal and delivered pre-installed. This enables fast and safe installation. Installation is now twice as fast with the new iBox universal 2 and pre-fab sets than it was with the previous model. It combines the proven advantages with plenty of new properties and additional uses. So you can do your job as accurately as possible in no time at all.

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## The race to net zero or a more nuanced stance?



**Renowned HVAC design Engineer and Managing Director RA Tech UK Ltd, Russell Armstrong, discusses how the use of small tech can help improve our carbon footprint.**

A seemingly controversial article was written by a well-known design engineer the other week and it touched on the subject of "Net zero" and it drew some very strong comments (both for and against).

However, I believe the approach he was taking gives us a middle road that brings us closer to the laudable goal of utilising the energy that we have more carefully, making savings where we can, within our scope and budget verses the draconian drive to get rid of "fossil fuels" at all costs.

It is argued that we have a finite amount of "fossil fuels" on this planet (let's not get bogged down with the discussion that it is quite possible that oil is constantly being produced within the earth's mantle all the time) and that we should all be moving at great speed to go for "sustainable" alternatives that are derived from wind, solar, wave and geo-thermal etc.

### Alternative solutions

That is one possibility, but what of making savings with what we already have? Cut down on consumption where we can and in the true light of valued engineering, make savings without compromising the installation!

With the use of innovative technology if we can reduce waste then surely that should be a good arrow to have in our armoury?

### Existing technology and why it is failing us

Take the humble tundish for example, tried, and tested and bringing the point of visible discharge from a dripping T/PRV right into your airing cupboard. The alternative was to run it (like a boiler) outside the premises where it could drip safely causing no harm.

However, it has a huge drawback in that virtually nobody actually looks to check to see if it is dripping or worse still, notices it is dripping but doesn't associate the dripping water with waste of understanding that something is wrong with the system!

In both instances we are throwing money (or rather hot water) literally down the drain. Obviously, this is a waste of water but, normally, when a T/PRV drips it is because the expansion vessel or air bubble has failed and when the water comes up to temperature and expands it creates the pressure that then causes the PRV to open and pushes HOT water out and down the drain, thus we are wasting the energy that was used to heat the water.

This waste continues to happen on every heat up cycle (or draw off) and re-heat of hot water. We have seen time and time again of tundishes covered in limescale and that is all you need to see to know that litres and litres of water, almost invariably hot water, has been dripping down the drain.



### WHY?

Personally, I think that many homeowners or building users don't associate the water dripping with a failure of the appliance, maybe they need a big sign on them saying "if water drips through here there is something wrong, please get it repaired" etc.

Or maybe there is another technical solution that is cheap to buy and effectively does the same unobtrusively but effectively?

### hotun detect

The hotun detect alarm unit fits neatly on the side of a hotun tundish and uses the benefits of modern micro circuitry to create an audible alarm as soon as the PRV starts to drip.

Everyone associates an alarm with a warning. The unit itself has a 72dBA alarm that without creating a big fanfare, gives a persistent reminder that something is wrong with the system that needs to be fixed.

The warning drives the customer to investigate what is wrong, maybe by phoning the installation engineer to see why there is this little beep coming from the cupboard.

However, the engineer can now explain that something has gone wrong and that it needs fixing, otherwise the discharge will continue to waste water and energy.



The engineer will also get to explain to the customer that by giving the water heater a service every year items like the expansion vessel or air bubble can be checked and fixed before any waste actually occurs. This is then a double benefit, we get safer installations, and the engineer picks up useful extra servicing work (when was the last time you heard that hot water heaters get routinely serviced?)

The technology in the alarm unit has many features. It has battery interrogation so that the service engineer knows when it is time to change the 2032 button cell battery and as back up to that, the unit has an inbuilt low level warning alarm.

It has an auto mute and auto reset function. The alarm sounds for 12 hours and then mutes itself automatically, after 24 hours it checks the sensor to see if the sensor is wet and if so, the alarm comes back on and starts chirping again. Even if the homeowner mutes the alarm, it will only stay muted for 24 hours and then starts chirping. If the home user resets the alarm, it will simply go again as soon as the sensor is wet. It will be gently persistent with this until something is done. We want the issue fixed and not ignored.

### Multiple benefits

By installing the alarm unit (which costs roughly £20) everyone benefits. The installer picks up useful remedial and servicing work, the customer doesn't waste water and energy unnecessarily and the environment benefits because we have stopped an element of waste and without waste, we cut energy consumption.

### What is not to like?

**For more information about hotun detect go to [www.hotun.co.uk](http://www.hotun.co.uk)**



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**Answer is A,** Installation of a pump drawing more than 12 litres per minute.



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