

REGISTERED THE ONLY OFFICIAL INDUSTRY PUBLICATION

# GasEngineer

Issue 178 March/April 2024

15  
YEARS

### Gas Safe Register updates

Milestones in 15 years  
of Gas Safe Register

On air with Tony Blackburn

### Technical

LPG cylinder location essentials

Commercial pipework

Spotting meter tampering



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## Editor's comment

The past few months have seen yet more U-turns than a driving instructor. Both sides of the Parliamentary divide have watered down their plans on environmental/low-carbon measures – most recently from Labour, which ditched its £28 billion green pledge, should it come into power.

The Tory government is reported to be thinking about binning its plan to fine boiler manufacturers for not getting enough heat pumps installed via the Clean Heat Market Mechanism, which was due to start in April. This was not confirmed as we went to press but there's no doubt that strong messages are being sent about the affordability and practicality – or otherwise – and will shift to a low-carbon landscape.

The lack of certainty and clarity, rowbacks and hot air over how the UK is going to reach its net-zero commitments is damaging trust and confidence – for gas engineers, households and those who make the products that warm our homes. And it's alarming when we've also seen recently that global warming exceeded 1.5°C over pre-industrial levels every day for the past year for the first time.

Change can be painful, but flip-flopping on future plans and policies is even more so.

**Nicki Shearer, editor**

Gas Safe Register, PO Box 631, DARLINGTON, DL1 9GD

**Email:** enquiries@gassaferegister.co.uk, register@gassaferegister.co.uk or technical@gassaferegister.co.uk

**Managing editor:** Sue Harker, sue.harker@gassaferegister.co.uk

**Editor:** Nicki Shearer, editorial@registeredgasengineer.co.uk

**News:** Jennie Ward, news@registeredgasengineer.co.uk

**Publisher:** Peter McCreary, publisher@registeredgasengineer.co.uk

**Technical consultants:** Rob Walkerdine, Carl Banister, Jonathan Palmer, Mike Cummings

**Production:** Mark Turpin

**Advertising enquiries only:** Ian Carter, ian@rgemagazine.co.uk

**Additional print subscriptions** £25 per year email: wgardiner@cirdata.com, Tel 01635 869 868

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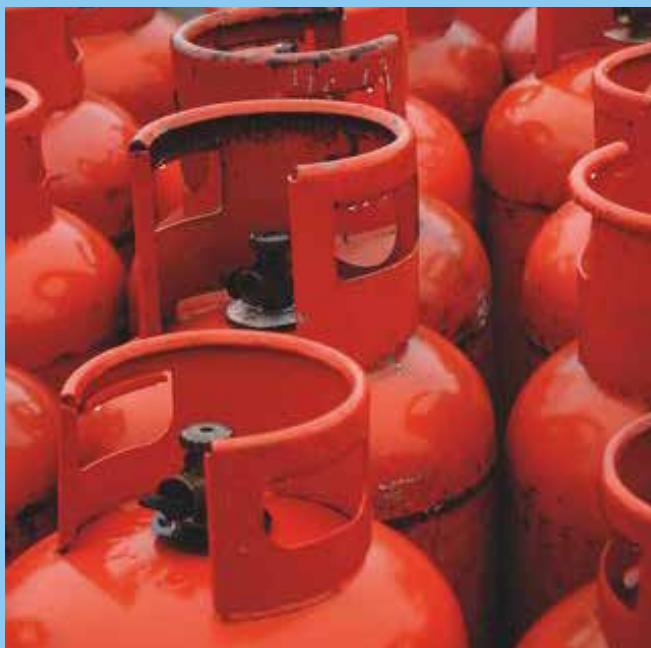
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# 15 YEARS

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Technical



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Industry standard Update



Pipework



Ventilation



Flueing



**Tech Talk  
Episode 4  
is now live**

Episode 4 of Tech Talk has landed on Gas Safe Register's YouTube Channel. In this episode, Stevie and Noel from the Technical Team get to grips with the topic of commercial pipework – picking up on some of the points in the in-depth feature on pages 26-28 of this issue. They'll also be talking about Gas Safe Register's virtual inspection events.

Tech Talk is a regular series that helps you stay up to date with the topics that matter to you and your work, and you can find them on Gas Safe Register's YouTube playlists.



# A reminder on sanctions

**T**he vast majority of gas engineers are registered, qualified and highly competent. But those who do not reach the usual high standards or who do not comply with Gas Safe's rules of registration and policies may face sanctions and suspension.

The Register may impose sanctions where there has been a breach of the rules or policies. Sanctions include removing registration, and suspension from either the Register or from specific work categories.

During December 2023 and January 2024, more than 650 businesses were suspended or notified that they will be suspended from the Register.

A registered business may be suspended in the following circumstances:

- Failing to demonstrate or apply gas safety competence
- Working outside the scope of work categories
- Not rectifying defects identified via a Defect or Building Regulation Non-Compliance Notice

**19** suspensions for failure to apply competence  
**6** suspensions for failure to rectify defects  
**255** suspensions for failure to allow work inspection  
**375** notified of intention to suspend for failure to allow work inspection

*December 2023-January 2024*

- Failing to allow inspection
  - Failing to attend any investigations when requested, following concerns raised about the gas work carried out.
- Where sanctions are applied, Gas Safe Register will provide guidance explaining the criteria

that will need to be satisfied to enable them to be lifted.

These criteria may include demonstrating competence through inspection, showing adequate management of gas work provisions, and providing evidence of specified training or reassessment.

You can read and download Gas Safe Register's Sanctions Policy at:  
[www.GasSafeRegister.co.uk/about-us/our-policies](http://www.GasSafeRegister.co.uk/about-us/our-policies)



## Don't forget to set up your 2FA

Have you set up 2FA in your online Gas Safe Register account yet? More than 2,000 registered businesses have already made sure that their details are safe and secure by verifying their identity when they log in.

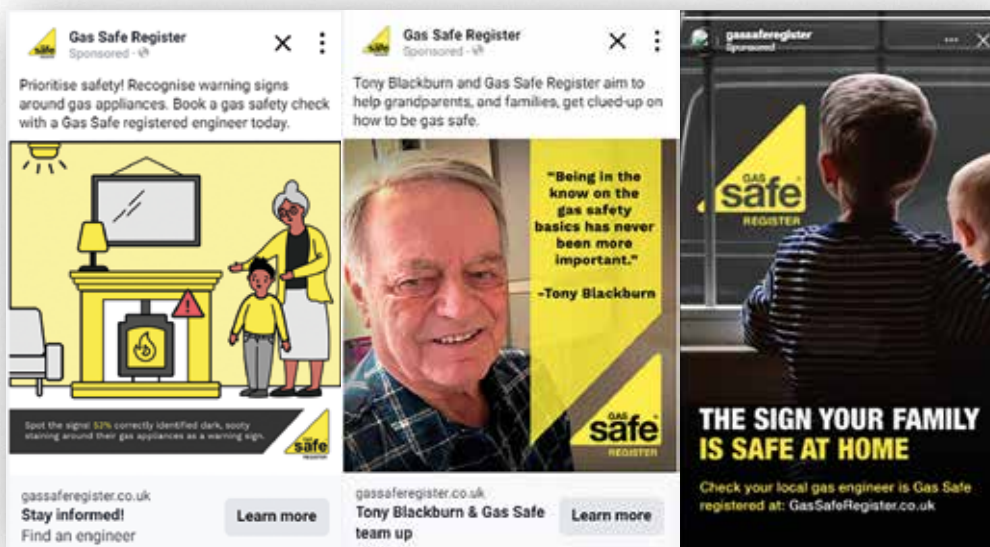
It should take just a few minutes and it's being rolled out in stages. When you log in, you'll see an Alert on your dashboard to upgrade your account by adding 2FA. When you've done this, whenever you log in, you'll be asked to

confirm your identity by text message or email, in addition to your password.

Please make sure you provide a valid mobile phone number and email address. This is because you'll receive a validation code that you

must enter to set up and confirm your 2FA.

If someone else manages your online activities for you, such as notification or renewing your registration, you must both set up 2FA and not share the same user ID.



Some of the posts and stories that have appeared on Instagram and Meta during the winter

Over-50s in Scotland are being reminded in newspapers, and through targeted online ads that Gas Safe Register is the only official gas registration body.

The campaign is a crucial reminder that the CORGI registration body was replaced and that they should always make sure that their gas engineer is Gas Safe registered.

TV ads are also running in Scotland.

## Sharing gas safety far and wide



Gas Safe Register runs PR and advertising campaigns throughout the year. These activities are targeted at different types of consumer with different messages and through a variety of media.

For example, the Register's recent partnership with DJ Tony Blackburn (*below*) has been highly successful in reaching older people: more than 100 media outlets including national papers,

local and regional radio stations, interviewed Tony and Rob Denman, Gas Safe's head of field and professional services, to share tips on how to keep the whole family safe.

To help keep younger audiences in the know, the Register has been working with Instagram influencers, Jess and Norma, who shared gas safety messages in an endearing video to their 287,000 followers.

Digital, social and print ads carry carefully targeted messages in different and memorable ways to reach their intended audiences. The aim of all this activity is to raise awareness of Gas Safe Register, the need to use a qualified gas engineer and to make sure that the engineer is registered – all of which helps to drive more business to registered gas engineers.

## Tony Blackburn helps grandparents tune in

Gas Safe Register teamed up with veteran DJ Tony Blackburn to help grandparents and families be more gas safety-savvy at home. The grandfather of two has been helping the Register as its new research found that grandparents who help with their family's childcare may be over-estimating how gas safe they are.

Most grandparents (87 per cent) agreed that they feel more obliged to ensure their home is a safe environment, given the caring responsibilities they have for their grandchildren.

But despite nearly half (46 per cent) claiming to be more clued-up on home safety

measures than their (now) adult children, when asked to identify the key signs that indicate gas appliances in the home could be faulty or unsafe, fewer than one-fifth (16 per cent) were able to correctly identify the seven crucial warning signs that could save lives.

Tony says: "There's no doubt that we grandparents play a distinct and important role in our grandchildren's lives, increasingly indispensable when it comes to alleviating childcare costs, as well as being on hand to impart valuable pearls of wisdom – and educating them on good music!



"I'm a stickler for making sure everything is working properly in my house... so my one piece of advice is to get clued-up on what the signs and symptoms of unsafe gas appliances can be. It could not only save your life, but those of your grandchildren and loved ones. Being in the know on the gas safety basics has never been more important."

# 15 years of change

**April 2024 marks 15 years since Gas Safe became the registration body. Here, we take a look back at some of the events and initiatives that have shaped this industry over that time.**

The government department responsible for energy has changed three times since 2009, from DECC to BEIS and now DESNZ. In that time, there have been 12 Secretaries of State for Energy under five Prime Ministers.

**W**hat were you doing in April 2009? For us, the presses had just rolled on the very first edition of Registered Gas Engineer, the new magazine for gas engineers from the new registration scheme, which soon landed on the doorsteps of (then) 58,000 registered businesses.

Since then, we've all seen the way we work shift and change – and often become more complex. People are more savvy about the way they want to heat their home, with sustainability becoming an increasingly important part of the conversation between gas engineers and their customers. Conversely, we've also seen the rise of online installation companies, where people book an appointment to get a new boiler fitted at the click of a button and don't have any conversations at all.

Gas boilers and low-carbon heating technologies have seen their moments in the spotlight yo-yo throughout.

Back in 2010, the

government-funded boiler scrappage scheme in England, Wales and Scotland saw £400 vouchers snapped up amid huge appetite at the opportunity to get rid of old gas-guzzlers for efficient appliances. In the same year, new regulations stipulated that only A-rated boilers could now be fitted.

## **The Green Deal**

But funding and support for renewables wasn't far behind, and 2011 saw the launch of the commercial renewable heat incentive (RHI), with the domestic version following a few years later.

Into 2012, and the launch of the £125 million Green Deal and money to support improving energy efficiency through a range of measures including heating and hot water appliances as well as insulation. Over the next couple of years, insulation would dominate take-up of the allowed measures despite criticism of the amount of red tape



involved. But despite a bit of tinkering around the edges of the scheme, the plug was pulled in summer 2015.

Fracking, too, has been on and off – although mostly off. After several halts and re-starts, the moratorium remains on extracting gas and oil from shale rock by this method.

Paris in 2015 was where the starting gun was fired on the UK's commitment to net zero by 2050, although not a lot happened in the next couple of years. Attention was turning to improving energy efficiency and the Boiler Plus regulations came into force in 2018. These mandated that, in England, additional energy efficiency measures must be fitted alongside new combi boilers, mostly in the form of snazzy controls.

Hydrogen and its potential to heat the UK's homes without

**“Paris in 2015 was where the starting gun was fired on the UK's commitment to net zero by 2050.”**



# 15

any carbon emissions started to raise its head in the middle of the decade. The major manufacturers set their research and development teams on to how to build a boiler that would run on 100 per cent hydrogen, and a trial at Keele University saw 20 per cent hydrogen blended with natural gas on campus. Back in 2019, we wondered if we were at the start of a new era, the culmination of which would be the full-scale conversion of the UK's existing gas infrastructure to run on hydrogen. But more on that later.

## 'Be more ambitious'

Now we're in 2019, which saw quite a raft of initiatives that signalled increasing interest in how low-carbon heating could help the UK meet its now legally binding commitment to net zero in 2050, perhaps triggered by the Climate Change Committee's warning that the UK needed to be more ambitious. First up was a consultation on amendments to the Building Regulations as an initial step towards the Future Homes Standard.

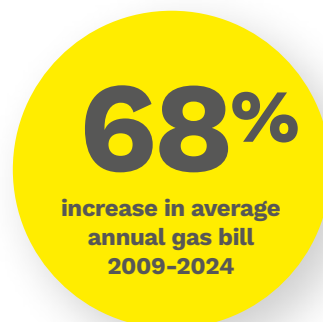
And there were changes on the domestic heating front, too, with BS 7593 now mandating additional requirements on water in heating systems, and manufacturers pledging to add

labelling to boiler packaging that the appliance should only be fitted by a competent gas engineer.

Hold on to your hats: we're about to hit 2020, and we all know what happened that year.

But before headlines started to emerge about a virus spreading from China, the UK officially left the EU, following the 2016 Brexit referendum, and the government said it would create a Building Safety Regulator, overseeing a more stringent regime for higher-risk buildings.

Come March and the country was staying at home,



along with most of the rest of the world. Non-essential shops were shut, as were all leisure activities. But gas engineers were still working: fixing and installing boilers and keeping the UK's homes warm and safe. The training and

## From the editor

The past 15 years have been quite the ride. From improving boiler efficiency to the birth (and perhaps death) of hopes for hydrogen as a replacement for natural gas in our homes, to the rise and rise of heat pumps, we've enjoyed keeping you up to date with the essential information you need, both to carry out your work and to understand the environmental and regulatory changes that may affect your business in the years ahead.

We'd love to know how your business has changed and how you are planning for the future – and we hope to share some of your experiences in a future edition. Please do get in touch at: [editorial@registeredgasengineer.co.uk](mailto:editorial@registeredgasengineer.co.uk)



## “Doomsayers feared another Green Deal type failure with the Green Homes Grant – and were proved right.”

assessment centres were closed and Gas Safe Register provided guidance on how gas engineers could maintain their competence when it came to renewing their ACS in this period. Technical assessments were carried out remotely.

Some boiler manufacturers shifted production to provide essential equipment such as ventilator casings and mask parts; some extended boiler warranty periods and provided free emergency repairs for NHS workers.

As the country emerged from its three-month lockdown, the shift to online/hybrid working remained, including training. The government got busy again with the launch of the Green Homes Grant, under which it paid for two-thirds of the cost of energy-saving home improvements in England, through vouchers worth up to £5,000. Doomsayers feared another Green Deal-type failure

# 15 years of change (continued)



and were proved right when it closed just six months later, amid criticism that it was poorly designed, overly complex, rushed and frustrating for installers and homeowners.

Prime Minister Boris Johnson set out his Ten Point Plan for a Green Industrial Revolution, which contained the first mention of the target to fit 600,000 heat pumps every year by 2028.

It was a frustrating start to 2021, with another nationwide lockdown following the resurgence of Covid. Gas Safe urged homeowners to prioritise gas appliance servicing as the country emerged once again

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editions of Registered Gas Engineer magazine

and there was a boom in UK holidays, with Gas Safe providing safety tips to people staying in caravans.

The year saw a flurry of surveys, strategies, reviews and announcements as attention turned again to net zero – the Hydrogen Strategy, with its promise of a sector development plan (and the opening of the Hydrogen Home in Low Thornley, Gateshead); the Heat and Buildings Strategy;

and a review after two years of Boiler Plus, which highlighted the lack of active monitoring and enforcement. A new grant scheme was announced that would start in England in 2022 – the Boiler Upgrade Scheme.

But early 2022 saw an event that would have an impact on the UK's energy bills like nothing before: Russia's invasion of Ukraine. Within months, the energy price cap rose by 54 per cent, with more hikes to come and the government stepping in later in the year to support all UK households on their winter bills to the tune of £400.

### Steady as she goes

The Boiler Upgrade Scheme (BUS) got off to a slow but steady start, and changes to the Building Regulations mandated the insulation of all hot water pipework and designing central heating systems to run at a lower flow temperature, as well as providing guidance on sizing heating and hot water systems.

Amid more criticism from the Climate Change Committee on progress towards net zero, the government pledged a review, which would have wide-reaching consequences.

Last year kicked off with a new department, DESNZ, whose aim was to bring down energy bills and ensure that the UK meets its zero-carbon commitment. Amid warnings that BUS was suffering from low awareness and take-up and that the 600,000 per year heat pump target was in

# 15

danger, the scheme was extended from 2025 until 2028, then the grant was bumped up to £7,500.

Plans for village trials on hydrogen fell by the wayside, first in Whitby and then Redcar.

### Gas boilers reprieved

As 2023 progressed, another raft of reviews, consultations and proposals got under way, with a flurry of announcements towards the end of the year that appeared to signal that the government was softening its former stance on banning gas boilers.

But then came the sucker punch that the Clean Heat Market Mechanism would come into effect in 2024, which would fine the big boiler makers for not installing a quota of heat pumps, which led to a hike in boiler prices. This was almost inevitably followed by news that the government was now thinking of backtracking on this too.

What's on the horizon now then? More heat pumps probably. But gas boilers are still here, and still need servicing and fixing – and will do for many years to come. ■

**“Early 2022 saw an event that would have an impact on the UK's energy bills like nothing before.”**



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find out more



# 15 years of gas safety

## 2009

Gas Safe Register takes over the registration scheme  
Feed-in tariff and plans for smart meters unveiled  
Gas Safe Enforcement Review starts, and more than 5,000 gas engineers and organisations take part

## 2010

Boiler scrappage scheme grants £400 off a new appliance  
Gas engineers must now hold CPA1 before they can take HTR1 and CEN1 assessments  
Gas Safe Register extends into Northern Ireland  
Building Regs stipulate only A-rated boilers to be fitted

## 2011

Gas engineers must complete Benchmark checklist when they fit a new boiler  
CENWAT replaces CEN1 and WAT1 assessments  
Hundreds of organisations pledge to support the industry's first Gas Safety Week

## 2012

CPA1 now a requirement for engineers working on gas boilers or fires  
Gas Safe delivers findings of its Competence Review  
London hosts the Summer Olympics  
Northern Ireland makes CO alarms mandatory when fitting a combustion appliance

## 2013

Flues in voids must be classified as At Risk if they cannot be inspected adequately  
Gas Safe and Coronation Street team up on CO storyline  
Gas Safe issues urgent advice to holidaymakers on the CO dangers of barbecues  
Gas Safe reveals Britain's unsafe gas hotspots

## 2014

Engineers must now record CO level and combustion ratio in flue when commissioning a boiler  
Gas Safe starts to share safety tips on Instagram  
Superhero Doug makes his first appearance in Gas Safety Week

## 2015

Major changes to Unsafe Situations with single message of DANGER DO NOT USE  
ErP Directive stipulates that heating appliances must show an energy performance label  
Nearly 200 countries pledge to cut CO in Paris Climate Agreement

## 2016

Introduction of mandatory inspection events  
 UK votes to leave European Union  
 Gas Safe launches Trust the Triangle campaign  
 The Decade Review: the industry's most comprehensive look at current and future challenges

## 2017

IGEM becomes the owner of the Unsafe Situations Procedure  
 Mandatory attendance events added to Gas Safe inspection regime  
 New Apprenticeship Levy starts for companies with payroll over £3 million

## 2018

Gas Safe's biggest consumer campaign yet is Don't Cut Corners with Gas  
 Updates to GSIUR come into effect  
 Top 10 unsafe cities revealed by Gas Safe Register  
 HSE confirms Capita will continue to run the registration scheme

## 2019

Government signals the end of gas boilers in new-builds from 2025  
 Gas Safe extends opening hours for Contact Centre and Technical Helpline  
 HSE RIDDOR forms moved to refreshed online platform  
 Fracking resumes at Preston, then stops again

## 2020

First Covid lockdown  
 Gas Safe hosts new Open Channel events Facebook Live  
 Gas engineers need to show competence in safe electrical isolation  
 Engineers can request a concession to the manufacturer's instructions in some circumstances

## 2021

Second Covid lockdown  
 Gas Safe trials virtual inspection events  
 Ebay bans sale of black spot CO indicators  
 Gas Safe extends to Jersey for the first time

## 2022

Russia invades Ukraine  
 Energy price cap rises by 54 per cent  
 Launch of Boiler Upgrade scheme in England  
 Part L changes affect heating and hot water systems  
 Death of HM Queen Elizabeth II

## 2023

Gas engineers able to book date and time for inspection  
 Home Energy Scotland grant and loan starts  
 Both proposed sites for hydrogen village trials abandoned  
 35,000+ heat pumps installed: numbers soar after increase in BUS funding

## 2024

2FA rolls out on Gas Safe Register's website, keeping engineer details safe  
 Clean Heat Market Mechanism due to go ahead: big 4 boiler manufacturers increase their prices

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# 15 years of change

**We've asked some of the industry's leading manufacturers what changes they have seen – and what they think lies ahead.**

# 15

## Change is happening faster

“ As we headed into 2009, the world was emerging from the most severe economic downturn since the 1930s – and low interest rates provided a much needed boost. Since then, I imagine many of us have experienced the cyclical highs and lows of the past decade-and-a-half, giving manufacturers and gas engineers plenty to navigate.

In recent years, for example, sales were riding high, and it was a strong market for heating engineers – before we were hit by a global pandemic. Recovery from that was followed by a materials shortage, product microchips remaining scarce, and shipping containers sitting in the wrong place across the world. Now the war in Ukraine, energy price increases and unrest in the Middle East continue to fuel what can feel like a volatile situation.

### Speeding up

Against this backdrop, and as Vaillant heads into its 150<sup>th</sup> year, something that stands out is the increased speed at which change is happening.

We have seen the introduction of the ErP Directive and Boiler Plus legislation, boosting the focus on efficiency; R290 replace F-gases due to its low global warming potential; and

connectivity becoming a buzzword.

Even government-funded customer incentives have moved at pace. In the past 15 years we have seen the Low Carbon Buildings Programme change to the solar grant and Feed-in Tariff, and the RHI giving way to the Green Deal, Clean Heat Grant, and now the Boiler Upgrade Scheme.

### Shifting skills

The shift to new low-carbon technology, especially heat pumps, is maintaining the pace of change. We are seeing 60 per cent of the training courses requested looking at expanding knowledge of heat pump technology – testament to the commitment of heating engineers wanting to shift their skill-set with an eye to the future.

The transition to low-carbon technology and uptake of heat pumps is going to continue and is fast becoming part of day-to-day life. What was previously 'on the horizon' is very much here and now.

### Getting connected

In the future, I believe we will be looking at wider integrated energy systems and connected smart controls, greater connection of low-carbon technology with local PV utilisation, battery storage and EV chargers, as we move towards electrification.

What is also reassuring is that this industry continues to be a strong choice for those wanting to start a career in the sector, with opportunities that are wide ranging and positive. There will always be a need for those who enjoy the plumbing element and want to establish themselves in installing bathrooms and general repairs, as much as for those wanting to make a move into new heating technologies.

**Mark Wilkins, Training and Technologies director, Vaillant**

”

**“This industry continues to be a strong choice for those wanting to start a career in the sector.”**

## You will help to shape the future

“The landscape for gas engineers has undergone significant changes, presenting both new opportunities and challenges.

But one major development has been their growing involvement in product design. Manufacturers now consult heating engineers at various stages, from the conception phase through to the installation of prototype products. This collaborative approach allows real-world insights to be integrated, leading to more practical and efficient solutions.

### Getting savvy

In response to government initiatives, gas engineers have faced the challenge of expanding their product offerings and diversifying their knowledge base.

The push for electrification, particularly with the adoption of heat pumps and hybrid systems, has required them to adapt and acquire expertise in these emerging technologies.

There has been an increased emphasis on heating design knowledge, with emphasis on accurate heat-loss calculations and appropriately sizing radiators or designing underfloor heating systems.

The government is considering implementing low-temperature heating design qualifications as a prerequisite for installers. This reflects a commitment to staying on top of technological advancements and aligning the workforce with the evolving needs of the market.

In the short term, the focus

is on running heating systems at lower temperatures, with an emphasis on design, controls and system balancing to enhance the efficiency and performance of heating systems.

“There has been an increased emphasis on heating design knowledge.”

As the industry continues to evolve, gas engineers will play a crucial role in shaping the future of heating technologies, ensuring sustainability and meeting the demands of an ever changing landscape.

*Martyn Bridges, director of Technical Services, Worcester Bosch*

”

## We're always able to adapt and evolve

“We all know that how we heat our homes must change to meet the UK's 2050 net-zero target and, understandably, this transition to low-carbon heat can seem daunting for some installers and consumers.

But it's important to recognise that the need to adapt and evolve is not

change. But adjust we all did and now who spares a thought for standard efficiency boilers?

In 2018, Boiler Plus introduced tighter boiler energy efficiency standards and the requirement for more efficient controls to improve the way people use energy in their homes. Another learning curve successfully managed.

More recently, stricter energy and carbon requirements in buildings have been introduced as an interim measure ahead of next year's Future Homes and Building Standard.

Part L also states that the heating system's flow temperature cannot exceed 55°C and should be below this temperature, if possible, to prepare a building for the future installation of heat pumps. Now, with hindsight, this 22°C temperature differential is

something we should have got to grips with back in 2005 to maximise the opportunity for a boiler to operate at its condensing efficiency. If we don't tackle this now, we'll have to address it in 10 years' time.

### Changes ahead

Looking forward, we are in the middle of a massive transition so great changes are inevitable. We're using technologies now that we likely won't recognise then – just as today we've forgotten about asbestos flues and back boilers. But some things will remain the same: people will still want heating and hot water and we at Baxi will always be there to provide support, whether that's with boilers, air source heat pumps or heat interface units. United we heat.

*Ian Trott, training manager, Baxi*

”

“We're using technologies now that we likely won't recognise in the future.”

something new. Our industry has shown a remarkable ability to evolve and upskill to meet new regulations time and again.

Take condensing boilers. When they were made mandatory on 1 April 2005, the industry had been given just two years to prepare for the

# ‘Half of jobs are geared towards saving energy’

**M**ore than half (54 per cent) of all jobs carried out by UK tradespeople over the past year have had an energy saving focus, up by one-third on the previous year, a Screwfix survey has found.

The latest survey questioned more than 400 tradespeople, with 86 per cent saying that homeowners were motivated to switch to energy saving products to save money on their bills. Just over one-third (36 per cent) said their main reason was to help tackle climate change.

At 44 per cent, energy saving lighting topped the list of efficient products tradespeople

were being asked to install, followed by smart thermostats (26 per cent). Loft insulation and new radiators followed closely behind with 25 per cent and 24 per cent, respectively.

## VAT is key

When asked what else is needed to increase the energy efficiency of UK homes, 74 per cent of those working in the trades felt that a reduction in or removal of VAT on products was key, an increase from the 64 per cent the previous year.

Some 61 per cent of tradespeople said providing grants for home improvements would help encourage

investment in energy efficient measures. The removal of VAT on labour also scored highly (at 33 per cent), as did a government-led incentive that would help boost uptake of energy efficient measures.

Jack Wallace, marketing director at Screwfix, says: “With the twin pressures of a cost-of-living crisis and high energy costs, the past 12 months have seen the volume of energy efficiency-related jobs undertaken by tradespeople rise significantly – with those surveyed saying over half of all their jobs (54 per cent) are energy efficiency based – up from 38 per cent a year ago.” ■



Anthony Sanders, a heating engineer from Smart Heating EA in Norfolk, was a Screwfix Top Tradesperson finalist in 2023. We asked him about his own experiences with customers and energy efficiency (right).

## What are the most common energy efficiency jobs?

Homeowners have become very aware of the benefits of having a high-efficiency boiler. There has been a huge increase in the number of jobs I’m being asked to do to improve boiler efficiency by installing smart controls and weather compensation units, which has been a great business opportunity for me.

When retrofitting smart controls with boilers that are already in place, it has become more common for customers to ask for products that can give them better sight of their energy usage, in turn saving them money.

Another job I have seen an increase in demand for is radiator upgrades. We have been busy changing older model radiators for modern options: these are designed to maximise the surface area and therefore radiate more heat in the same dimension space, or reduce the radiator size for the customer while maintaining the heat output. For installers it’s all about achieving the customer’s desired room temperature with reduced flow temperatures of 55°C or less.

## What’s your tip to increase efficiency and reduce bills?

It’s very important that customers fully understand their heating and boiler output needs – the legacy of oversized heating systems being specified and installed for many years. As an installer, it’s important that we’re correctly calculating customers’ heating and hot water requirements so the system is not over-sized. Otherwise, customers will be using more energy than required, which can increase their energy bills significantly.



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\*Valid for Excelerate members installing and registering between 1st February and 31st August 2024. £1,000 max. pay out per installer. Excludes Greenstar 1000. Choose from Amazon.co.uk Gift Cards, Tesco Vouchers, or The Dining Out Gift Card. Terms and conditions apply, see website for details.

# the good the bad & the ugly

Registered Gas Engineer wants to see your pictures – whether you’ve come across some horrors or instances of really good work. Please email your stories and pictures to [editorial@registeredgasengineer.co.uk](mailto:editorial@registeredgasengineer.co.uk)

## FROM **DEREK AIREY**

Derek was called to a funny smell in a customer’s boiler cupboard, only to discover that the chimney/flue had not been fitted correctly and had collapsed. Outside, the termination was at one with nature.



## FROM **PAUL HAWKINS**

Paul was tracing a smell of gas in a commercial kitchen: the appliance had been pulled out for cleaning, revealing that



a flexible pipe and gas lever had parted. The installation was made safe.



## FROM **DARREN GOUGH**

Darren was fitting a new boiler at a flat when he noticed this incorrectly sealed chimney/flue in the same building.



## FROM **NABEEL MIRZA**

Nabeel discovered this gas pipe with pin holes caused by corrosion because it had not been protected before being installed behind the wall.

## FROM **RYAN AARON**

It didn't take long for Ryan to find out why this boiler wasn't working – just take a look at the heat exchanger. Ryan replaced the boiler.





**FROM  
LEE DOWNIE**

Lee was replacing a boiler and, when he removed the chimney/flue, he saw that someone had added a drinks can into the end because the chimney/flue termination had rusted. Neither was there sufficient clearance to the window, and it hadn't been fully sealed to the wall.



**FROM  
PETER STEPTON**

Peter noticed this incorrectly positioned chimney/flue protruding on to a public footpath. He posted an advisory notice through restaurant's door.



**FROM  
JAMES MAY**

James discovered scorching on the inside of the boiler where his customer had boxed in the chimney/flue. The customer hadn't been able to get the boxing to fit so he removed the sampling point plugs – James found them on top of a cupboard. James explained to the customer the importance of leaving the test points in position.

**FROM  
BRIAN PREOU**

Brian was replacing a boiler, and it's just as well: the old appliance's chimney/flue was jointed inside the wall.

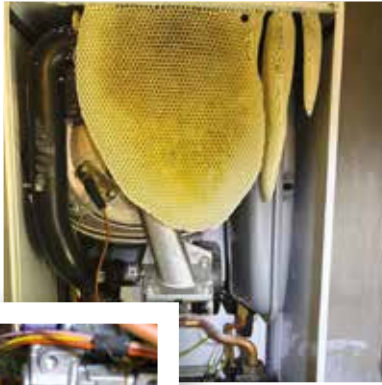




# the good the bad & the ugly continued

## FROM MARTIN HODGSON

Martin was called to a house where bees had been seen coming from the chimney/flue. The bees were removed and Martin returned the next day to find this. He made the boiler safe and then replaced it.



## FROM DARRIN WILLIAMS

Darrin was called to a smell of gas at a caravan, where the owner said he had isolated it under the caravan.

Darrin removed and replaced the drain valve and hose with the correct hose and an appropriate fitting.



## FROM IAN BINKS

The working pressure at this boiler gas valve was very low, so Ian investigated. He found the pipe and gas valve were blocked with copper sulphide flakes.



## FROM LEE MELLISH

Lee's customer had said there was a strange smell from the boiler. Lee saw that insulation panels had cracked and fallen on to the burners while still in operation. Lee made safe and then fitted a new appliance.





**FROM JOHN BUTLER**

John discovered an incorrectly installed cooking appliance when he was carrying out

a landlord's gas safety record check. He made the installation safe and brought it back up to standard.



**FROM MARK ADAMSON**

Mark found this boiler in the garage: the customer had built a lean-to and created his own chimney/flue extension. Mark made the installation safe and issued a warning notice.



**FROM DARRELL WILLIAMSON**

Darrell was concerned that this chimney/flue terminal was rusty and it had been boxed in. But it was even worse than that: he removed the boxing to find an unsupported, rusty chimney/flue pipe sagging from where water had collected. He made safe and condemned the installation. Darrell had only been asked to carry out a safety check but a new boiler has now been installed and moved to an outside wall.



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The consistent temperature and flow rate is achieved through a state-of-the-art water adjusting valve and a water mixing valve within the boiler which maximise hot water comfort by using sensors to keep the hot water outlet at a consistent temperature. If the water is not hot enough, the adjusting valve will slow down the water allowing it to heat up to the required level. However, if the water is too hot, the mixing valve will blend in cold water to bring the temperature down to the desired level, giving the customer a consistent level of hot water comfort.

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reduce their energy bills and carbon footprint while improving visibility over their heating systems. Navien's Smart Plus Controller provides zone control, which allows individual spaces to be heated to a specific temperature, at different times of day, meaning that unused rooms are not heated unnecessarily. This feature is ideal for any type of homeowner and is a sure way of improving energy efficiency.

Two additional features that ensure the NCB500 ON only uses energy when needed are smart forecasting and geofencing, these are particularly handy in winter when homeowners want to maintain the right temperature without using too much energy.

Smart forecasting uses live data to respond intuitively to the current local weather conditions to ensure the home remains at a comfortable temperature, without the homeowner having to lift a finger. In the same sense, its Geofencing capabilities will switch the boiler on or off based on the proximity of the homeowner to their home – which can be set up to a maximum of 5km – an especially useful feature when wanting to return home to a warm house without racking up a large bill.

Launching this year, these features can also be found in Navien's revolutionary ON AI Smart Plus Controller and ON AI app. Going one step ahead, this new technology unlocks the full potential of artificial intelligence in improving home heating. Designed to create an integrated system of home heating controls, ON AI incorporates seamlessly with the NCB500 ON to provide live system monitoring, and wireless updates and can give homeowners an in-depth analysis of their heating and hot water usage.

To give your customers peace of mind over the longevity of the boiler, the NCB500 ON Combi Crossover is backed by the efficiency and intelligence of Navien's pioneering technology, expert technical support and is available with up to 10-years warranty.

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NCB500 ON

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## Banning gas boilers is not the way forward

**Martin Garside,**  
Huddersfield

Why should my customers be made to carry the can for the boiler manufacturers, who should not be making us pay for their inability to sell more heat pumps?

My own inroads into heat pump training ground to a halt when the government extended the time allowed to fit gas boilers. They have

watered down their own aims and that will allow me to fit boilers for longer.

The case for heat pumps has not yet been made so I can understand why the manufacturers have not produced them. This levy [the Clean Heat Market Mechanism] will not make heat pumps any better for probably 80 per cent of the houses in the UK.

Research says that the boiler manufacturers will hit

their targets for heat pump registrations in the first year, so they will not have to pay a government fine. They are making us pay a back-door uplift in price: nothing to do with the Clean Heat Market Mechanism.

I will have to talk to my customers a little more and leave the decision of boiler manufacturer up to them. It might save them more than £120.

## It's time that our industry prioritised the planet

**Simon Ashman**

If the newspapers are to be believed, the Clean Heat Market Mechanism may be scrapped before even getting started. Why?

It seems key stakeholders in the oil and gas appliance manufacturer industry are mounting huge pressure on the government to ultimately protect their assets, ie, the boiler industry.

Naturally, it is not in the interests of a boiler manufacturer to be charged a £3,000 per unit fee if they fail to sell a volume of heat pumps equal to 4 per cent of their boiler sales. However, this is a negative perspective: why can't the industry accept that there is a greener alternative to the traditional gas or oil boiler? Especially when

alternatives allow us to be less reliant on external political influences associated with gas and oil supply/prices, while also reducing carbon emissions and ultimately getting us closer to net zero.

The irony is that most boiler manufacturers already have a suitable heat pump offering and, with the right approach, could achieve the quotas easily. Instead, many have tried to rebrand this initiative as a 'boiler tax', unjustifiably raising prices to avoid taking any responsibility. It comes purely from a place of fear for their own financial assets.

The frightening news that global warming has exceeded 1.5°C for an entire year should be a wake-up call for everyone.


Einstein is attributed with saying that the definition of

insanity is doing the same thing repeatedly while expecting a different result. We can't keep prioritising gas and oil boiler sales. Isn't it time that the industry prioritised the best outcome for the planet?

Boiler manufacturers must look at the infinite opportunities in this changing market. Surely that's the route out of this problem.

One thing is clear: gas and oil boilers are part of the problem and to encourage decarbonisation, right now, heat pumps are part of the solution. To be successful, boiler manufacturers must be prepared to evolve. This also requires industry lobbyists to be brave. The Clean Heat Market Mechanism could be a much needed catalyst for change, so why is it a problem?





**“The system designer must be aware of any future requirements and take account of this when sizing the pipework.”**

# Commercial pipework and jointing methods



Gas Safe Register's Technical Team provides an overview of commercial pipework and connection methods. This area of work is an extremely detailed topic and there are many aspects that a non-domestic engineer will need to consider. This article highlights some of the frequent enquiries that the Technical Team receives.

**This is the first in a series of articles that will focus on different aspects of commercial pipework.**

**P**lanning and design  
When planning/designing the installation, you must determine the materials and route of pipework. Various factors need to be taken into account when deciding on the route, which may include the position of pipework in relation to other services, and whether any major building work needs to be undertaken. Any building work may need to be approved before starting work.

All pipework must be sized correctly for the appliances that are to be installed. The system designer must also be aware of any future requirements and take account of this when sizing the pipework.

With the route chosen also comes the requirement for the correct ventilation of the pipework, if in a void/enclosed space, and which material and jointing method will be suitable for the location. For example, the requirements for pipework in a protected area differ from pipework being installed into a plant room.

A protected area could be part of a fire escape route or contain a stair/lift, and could include a communal area

such as a lobby or a covered external walkway that is used in the event of a fire. You'll need to comply with the relevant fire-stopping requirements in your UK nation.

When installation pipework is routed through a protected area, there are limitations to what material and jointing methods are used. These include, but are not limited to:

- Operating pressure (OP) does not exceed 75mbar
- Pipework must be carbon or stainless steel
- All joints are threaded or screwed
- Pliable corrugated stainless-steel tubing (PCSST) is of one continuous length with no joints
- Any PCSST used is designed by the manufacturer to fire test A of BS EN 1775<sup>(1)</sup>.

## Jointing methods for pipework

There are numerous ways to join commercial pipework, and this article details the most common methods. You may find alternative jointing methods are available but not all are catered for within the guidance

documents, and you will need to consult the manufacturers about their application.

## Carbon and stainless steels

You must consider the normal jointing methods available, and their limitations, depending on operating pressure and size. The most common types of jointing method found used on pipework is the use of screwed or flanged.

Welded joints are used widely in commercial installations. Anyone carrying out welding must be suitably trained and competent and hold a certificate of competence. If a welder is performing work on a site that comes under the scope of the Gas Safety (Installation and Use) Regulations 1998, they must hold relevant gas



## Scope of IGEM/UP/2 Edition 3

The document applies to installation pipework greater than 35mm in diameter, and nominal operating pressures up to 75mbar in domestic premises. For non-domestic premises, it covers a range of pipework up to 60bar. It covers natural gas, LPG and some biogases.

- It applies to new installations as well as to replacement of, or extension to, existing pipework.
- It covers specifically pipework made of steel, stainless steel, pliable stainless steel, corrugated tubing, copper and polyethylene.

# Commercial pipework and jointing methods (continued)

➤ qualifications and be registered. If they are not, they must be supervised by a qualified and registered gas engineer.

The pipe and fittings must be jointed as per IGEM/UP/2 Table 4 (see *table*), using the minimum practicable number of fittings.

Semi-rigid couplings, flange adaptors, compression or press fittings may be used as an alternative jointing method to welded or screwed joints for exposed above-ground pipework. However, they must be suitably resistant to mechanical damage and end loading. These types of joint may be used where it is deemed an advantage when installing, where there is a risk of fire from welding or where a clean environment is essential during the installation. Flange adaptors may only be used outside unless part of a meter installation.

## Non-metallic pipework

Where non-metallic pipework for natural gas and LPG is used outside, it must be buried or fully protected in a purpose-provided external enclosure/tubing or below-ground duct. Non-metallic pipework should not be in a fire-risk area or where mechanical damage could occur.

- When fusion welding, you should consult the manufacturer's instructions to ensure that the pipe and fittings can be fused correctly
- Butt fusion welding is a specialist subject procedure
- Solvent welding shall not be used on polyethylene pipework.

You must be qualified to carry out fusion welding of PE pipe, via EFJLP1.

Pipe nominal bore (mm)	Joint type		
	MOP ≤500 mbar	500 mbar <MOP ≤5 bar	MOP >5 bar
<25	Screw, weld	Screw, weld	Weld
>25 ≤50	Screw, weld	Screw, weld	Weld
>50	Weld	Weld	Weld

## Copper

When copper or brass capillary fittings are used for pipework with a maximum operating pressure (MOP) over 75mbar, they must not be soft soldered: you should use a hard soldered/brazed method.

Pressfit fittings are becoming more popular but there are limitations to their use and you should always consult the manufacturer first. In the absence of any manufacturer guidance, you should take the following points into account:

- They must be suitable for gas and installed in a readily accessible position to allow for inspection and maintenance
- Demountable pressfit joints shall not be used
- Copper press fit fittings shall be specified in accordance with BS 8537<sup>(2)</sup>
- They should be risk assessed for mechanical damage from vibration, heat and end-loading joints
- Maximum operational pressure should not exceed 5 bar
- Pipe diameter must not be larger than 108mm
- Jointing must be made with the appropriate tool/equipment
- Joints must not be painted (seek advice from the manufacturer)
- Joints must not be made by hot methods such as

welding or brazing

- Press fit fittings must not be used as a final gas appliance connection if subjected to vibration and/or heat.

## Pliable corrugated stainless steel tube

Corrugated stainless-steel tube (CSST) and pliable corrugated tubing (PCT) can be used where operating pressure is limited to 75mbar for CSST and 500mbar for PCT. These pressure limitations also apply to their respective fittings.

For fittings and jointing procedures, please consult the manufacturer's instructions, which may include:

- Instructions for construction
- Recommended maintenance programme
- Limitations on bend radii
- List and description of specified tools needed to perform jointing
- Fittings should not be disassembled/re-assembled unless permitted by the manufacturer
- Corrugated stainless steel tube must not be used as the final gas appliance connection if subjected to vibration and/or heat
- Joints must not be made by hot methods such as welding or brazing
- Appropriate torque values shall be used as specified by the manufacturer. ■



For detailed information on aspects of commercial pipework, please refer to IGEM/UP/2 Edition 3: *Installation pipework on industrial and commercial premises*. The information in this article is correct at the time of publication.

## Bibliography

### (1) BS EN 1775:2007

Gas supply – gas pipework for buildings – maximum operating pressure less than or equal to 5 bar – functional recommendations

### (2) BS 8537:2010

Copper and copper alloys. Plumbing fittings. Specification for press ends of plumbing fittings for use with metallic tubes





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# LPG cylinder placement

Gas Safe Register's Technical Team set out the requirements for the correct placement of LPG cylinders.



This article includes information provided in UKLPG's Code of Practice (COP) 33 – Use of LPG cylinders. COP 33 replaces, amalgamates and supersedes COP 24 part 1:2006 Use of LPG Cylinders at Residential and Similar Premises; COP 24 part 5:2000 The storage and Use of LPG on Construction sites; and COP 24 part 6:2000 Use of Propane in Cylinders at Commercial and Industrial Premises.

## System design considerations

### Low-level openings

Cylinders must be placed at least 2 metres horizontally from untrapped drains, unsealed gullies or openings to cellars. Cylinders must not be located and used in basements or cellars or other locations that may allow LPG vapour to collect.

When these measurements are not possible because of the layout of a property, a dispersion wall can be used to reduce the distances. This wall needs to be not less than 250mm high and be solid in construction, ie, with no perforations in the surface. The measurement to any low-level openings can then be measured around the wall.

This requirement is to minimise the risk of escaping LPG entering the water table and causing environmental issues or pooling in the drains or low-lying areas and being a potential fire/explosion risk.

### Other openings

Cylinders must be at least 1 metre measured horizontally or not less than 30cm vertically from the nearest cylinder

valve from fixed sources of ignition, unprotected electrical equipment or apertures in the property such as doors, openable windows, ventilation ducts, air bricks or flue terminals etc.

This requirement is to minimise the risk of escaping LPG entering the property in the event of a gas escape.

### Flammable materials/sources of ignition

The area around the cylinders, extending out a minimum of 1 metre horizontally, must be kept clear of litter, vegetation and other flammable materials, excessive heat sources and readily ignitable materials (including oil storage tanks).

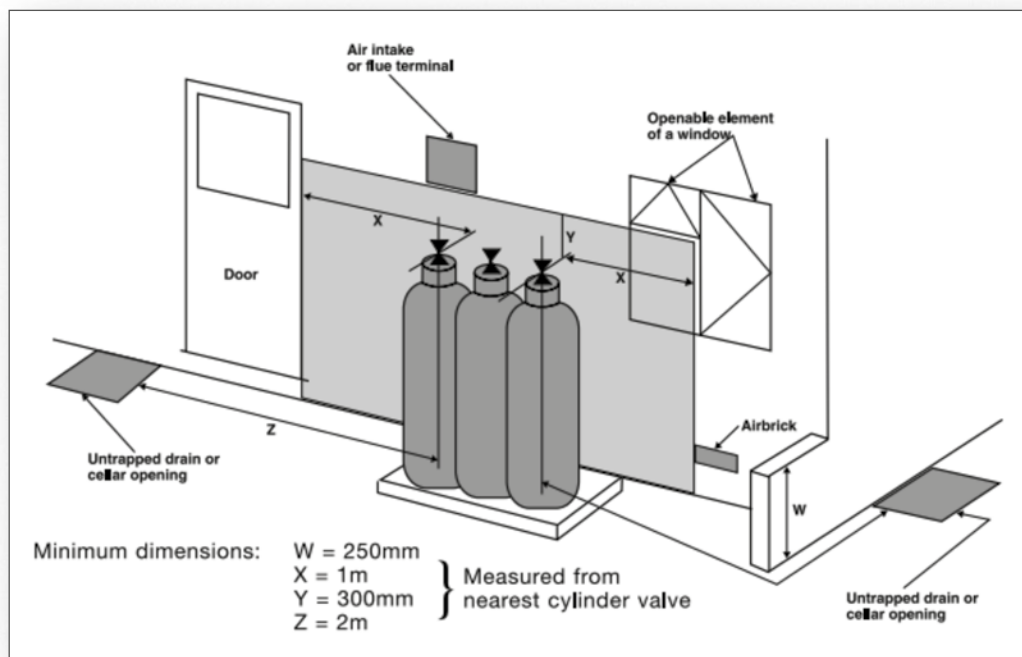
This requirement is to minimise the risk of escaping LPG creating or adding to a hazard if a fire breaks out.

### Environment

Cylinders should not be located within 3 metres of any corrosive, toxic or oxidising materials unless a fire-resistant barrier is in place. In an environmentally exposed area, such as coastal locations, consideration should be given to the degree of protection needed. This may mean locating the cylinders to a more sheltered face of the property or providing housing/shelter.

Any protection provided to prevent cylinders being exposed to the weather should be of non-combustible

**“Cylinder placement must be designed to minimise the risk of an incident.”**



The location of LPG cylinders

Source: Approved Document J



Cylinder placement must be designed to minimise the risk of an incident: following the diagram above demonstrates best practice in a domestic installation. When considering the location of LPG cylinders, it's important to understand that the gas is heavier than air.

material and should not hinder ventilation. Local building regulations must be considered because some areas require cylinders to be restrained by a chain, etc.

Propane cylinders should not be used inside residential premises other than for building and maintenance, then only using portable LPG temporarily.

A butane cylinder up to 15kg is permitted to be used indoors but must not be used or stored in a basement/cellar area and should only have a single cylinder connected to an appliance. A common example of this is a cooker supplied by a single butane cylinder.

### Cylinder housings/enclosures

You can buy cylinder housings or enclosures at various retail outlets and they can also be made specifically if required. In either case, the following points must be checked to ensure suitability:

- The opening will be sized to allow cylinders to be placed/exchanged as necessary with minimal inconvenience for maintenance and speed

in an emergency situation.

- The housing or enclosure is provided with effective ventilation by openings at both top and bottom equal to 1 per cent of its internal floor area.
- It has a strong enough base to fully support the weight of full cylinders.
- There is no sill at the bottom of the compartment access opening higher than the base on which the cylinders rest, to ensure that any escaping LPG does not collect and build up.
- It provides easy access to the cylinder valves in an emergency, and remains easy to maintain when the cylinders are in place.
- Shall be constructed of a material with a fire resistance of not less than 30 minutes, in accordance with BS 476, Part 7 – *Fire tests on building materials and structures – Method of test to determine the classification of the surface spread of flame of products.*

Although LPG cylinders should not be installed inside

More detailed information is given in CoP 33 2023 Use of LPG cylinders. This, along with other important standards and information, is available through Gas Safe Register's subscription service, through which you can view and print more than 80 gas-related normative documents that set the standards for safe gas work. You can find out more by signing into your online account at [www.GasSafeRegister.co.uk/sign-in](http://www.GasSafeRegister.co.uk/sign-in) and choosing Standards Subscription.

a residential premises, there are exceptions for commercial and industrial properties. In a commercial property where it is not practicable to have a hard-piped installation, for example, LPG cylinders may be sited inside where the total amount of LPG does not exceed 100kg. These scenarios may be prevalent in rural locations, where mains natural gas is not available.

Cylinders must be installed in an upright position, with the outlet of the valve at the top, on firm, level, hard standing. Cylinders that are liable to be knocked over shall be secured or provided with barriers. ■





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# BS 5440-1:2023 Chimneys, flue pipes and ventilation for gas appliances of rated input not exceeding 70kW net (1st, 2nd and 3rd family gases) – Part 1

Date issued: 24 January 2024



This Industry Standard Update (ISU) provides an overview of the key areas of change arising from the revised British Standard 5440-1:2008 Flueing and ventilation for gas appliances of rated input not exceeding 70kW net (1st, 2nd and 3rd family gases) – Part 1: Specification for installation of gas appliances to chimneys and for maintenance of chimneys.

## Introduction

During December 2023, BSI published a revised version of British Standard 5440-1:2023 Chimneys, flue pipes and ventilation for gas appliances of rated input not exceeding 70kW net (1st, 2nd and 3rd family gases) - Part 1: Design, installation, commissioning and maintenance of chimneys – Specification<sup>(1)</sup>. The new standard came into effect on 31 December 2023 and supersedes the previous edition<sup>(2)</sup> (March 2008), which is now withdrawn.

The following is a brief overview of the areas of significant change.

## General

Legislation, normative, references and current standards have been updated throughout where necessary.

## Definitions

There have been updates to some definitions, including those of communal flues and lightwells. Windows, vents and other pathways into a building are now simply referred to as openings into a building throughout the standard. It is clarified that weeps vents are not considered an opening into a building.

## Courtyards

Section 5.2.3 gives updated guidance regarding chimneys/flues outlets for room-sealed or fanned-draught non room-sealed appliances terminating in lightwells and courtyards. As before, a chimney/flue can terminate a maximum of 1 metre below the top level of an enclosed space such as a light well.

For new developments or complete building refurbishments, any gas appliance shall be connected to a communal flue system. However, the chimney/flue can terminate in an inner courtyard of an existing building, provided that the narrowest dimension across the open area of the courtyard is at least that of the height of the tallest structure forming the courtyard.

Where these restrictions cannot be met, appliances may be installed in the uppermost floor of the building, or the installation treated as that of a new development or complete building refurbishment.

Existing appliances fitted in courtyards that do not meet the correct criteria may be left operational as long as satisfactory combustion can be achieved and the appliance is operating safely.

## Chimney/flue routing

There is now guidance on the routing of a chimney/flue through fire compartments and other dwellings, with Section 7.1.1 stating that chimneys shall not pass through either.

## Chimney/flue termination

Figure C.8 in Annex C has been expanded to include additional scenarios and distances, including the following:

- A terminal diagonally across from an opening on a different wall
- A vertical terminal from another vertical terminal
- A vertical terminal adjacent from an opening
- A vertical terminal from a wall
- A terminal facing an opening.

It is important to note that the appliance manufacturer's instructions (MIs) may differ from the distances provided in Figure C.8. In these instances, the MIs take precedence for the installation.

## Chimney/flue installation checklist

A checklist (Table D.1) has been included in Annex D to assist the engineer when confirming whether a proposed chimney/flue location is suitable. If the installation cannot meet the criteria of Table D.1, then it may be deemed unsuitable as a location, and an alternative position considered.

## Summary

**As previously stated, this Industry Standard Update is only a brief overview of the information contained in the amended standard. Registered businesses should be aware that they have a responsibility to ensure they are fully apprised of all the requirements of the whole published standard and their practical application.**

## Bibliography

**(1) BS 5440-1:2023** Chimneys, flue pipes and ventilation for gas appliances of rated input not exceeding 70kW net (1st, 2nd and 3rd family gases) – Part 1: Design, installation, commissioning and maintenance of chimneys – Specification

**(2) BS 5440-1:2008** Flueing and ventilation for gas appliances of rated input not exceeding 70kW net (1st, 2nd and 3rd family gases) – Part 1: Specification for installation of gas appliances to chimneys and for maintenance of chimneys





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# British Standard 5440-2:2023 Chimneys, flue pipes and ventilation for gas appliances of rated input not exceeding 70kW net (1st, 2nd and 3rd family gases) – Part 2

Date issued: 24 January 2024



This Industry Standard Update (ISU) provides an overview of the key areas of change arising from the revised British Standard 5440-2:2009 Flueing and ventilation for gas appliances of rated input not exceeding 70kW net (1st, 2nd and 3rd family gases) – Part 2: Specification for the installation and maintenance of ventilation provision for gas appliances

## Introduction

During December 2023, BSI published a revised version of British Standard 5440-2:2023 Chimneys, flue pipes and ventilation for gas appliances of rated input not exceeding 70kW net (1st, 2nd and 3rd family gases) – Part 2: Installation and maintenance of ventilation provision for gas appliances – Specification<sup>(1)</sup>.

The new standard came into effect on 31 December 2023 and supersedes the previous edition<sup>(2)</sup> (December 2009), which is now withdrawn.

The following is a brief overview of the areas of significant change to the revised BS 5440-2.

## General

Legislation, normative, references and current standards have been updated throughout where necessary. The scope of the document now excludes cooking appliances in catering or educational establishments, as well appliances fuelled by 100 per cent hydrogen.

## Figures and tables

Figures and tables in the new standard have been updated and, in some cases, renumbered. For instance, Table 6 – Minimum permanent opening equivalent free area for flueless appliances – in the previous edition is now Table 4. The information contained in these tables remains unchanged.

## Ventilation provision

Air vents passing through a fire-rated compartment are permitted only where the ventilation opening is direct to outside, and no vent shall penetrate a protected area, as per Section 5.4.

Section 7.2.2 states that any new air vent shall not communicate with a roof space. Existing air vents communicating with a roof space may be deemed acceptable, as long as the total free area is satisfactory, and any opening is checked to ensure it is free of any obstruction.

In the previous version of the standard, a ventilation outlet connected to a cooker extract or gas tumble drier would not be considered an opening into the building, provided that the terminal was fitted with non-return flaps. This provision has now been removed, and therefore the ventilation outlet would now be considered an opening.

The method of measuring the equivalent free area of an air vent has been moved to Annex A.

## Summary

**As previously stated, this Industry Standard Update is only a brief overview of the information contained in the amended standard. Registered businesses should be aware that they have a responsibility to ensure they are fully apprised of all the requirements of the whole published standard and their practical application.**

## Bibliography

**(1) BS 5440-2:2023** Chimneys, flue pipes and ventilation for gas appliances of rated input not exceeding 70kW net (1st, 2nd and 3rd family gases) – Part 2: Installation and maintenance of ventilation provision for gas appliances – Specification

**(2) BS 5440-2:2009** Flueing and ventilation for gas appliances of rated input not exceeding 70kW net (1st, 2nd and 3rd family gases) – Part 2: Specification for the installation and maintenance of ventilation provision for gas appliances





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# From the helplines



**Gas Safe Register's Technical Helpline receives around 5,000 calls every month. The team deal with a variety of queries from gas engineers about the gas regulations and relevant guidance documents. The following questions are just some of those that have been asked recently.**

## Domestic pipework

**Q: What protection is required when gas pipework is buried in a solid floor or wall?**

**A:** In the first instance, follow the pipe manufacturer's instructions, with factory-applied protection preferred. If you are using PVC wrapping tape, you should apply in a spiral fashion with a minimum 55 per cent overlap.

Further guidance can be found in BS 6891.



## Non-domestic pipework

**Q: How can I extend an existing steel gas line/pipe if the original part is greater than 2 inches?**

**A:** The first joint from an existing steel installation that is greater than 2 inches can be a screwed joint. All joints on the new pipe installation must be welded or press-fit.

## Domestic boilers

**Q: I've been asked to fit a new boiler. Can I use the existing flue?**

**A:** Room-sealed fanned-flue gas boilers require a specific flue designed for the appliance.

You will need to get confirmation from the manufacturer to confirm whether the old flue is suitable for re-use. It will need to be inspected to determine whether the installer is happy to leave the old flue connected to the appliance.

You can find further guidance in BS 6798.

## Domestic ventilation

**Q: Can ventilation for domestic appliances be floor vents?**

**A:** BS 5440-2 Ventilation Section 6.2.2 gives guidance on underfloor vents where they communicate with other properties as being unsuitable. If the ventilation is ducted or contained to a single property, then it is an acceptable solution.



## Domestic flueing

**Q: I have been asked to renew a boiler where the flue terminates on to next door's land. Can I fit the boiler in the same place?**

**A:** No. The new installation must comply with current legislation, which means that the new terminal position must comply with Building Regulations, British Standards and the manufacturer's instructions.



## Bibliography

**BS 6891:2005** – Specification for the installation and maintenance of low-pressure gas installation pipework up to 35mm (R1/4) on premises.

**BS 6798:2014** – Specification for selection, installation, inspection, commissioning, servicing and maintenance of gas-fired boilers of rated input not exceeding 70kW net

**BS 5440-2:2023** – Chimneys, flue pipes and ventilation for gas appliances of rated input not exceeding 70kW net (1st, 2nd and 3rd family gases) – Part 2: Installation and maintenance of ventilation provision for gas appliances





# Know the signs

**Do you know the signs of gas theft and meter tampering? Have you been asked to tamper with a meter to make it run more slowly? Here, Cadent sets out what do if you find a meter that isn't as it should be.**

## What are the signs?

Tampering with a property's gas meter may cause the flames on the hob or gas fire to change size or to burn more yellow than blue, and pilot lights may go out often. But sometimes there are no signs at all until the build-up of gas explodes.

Gas engineers play a key role in identifying these unsafe situations in their customers' homes and reducing the risk. Dave Garner, director of Health and Safety at Cadent, says: "Theft of energy is an industry-wide issue, and one that can have devastating consequences. It is something that we are all working on together, to raise awareness and stop such dangerous activities."

Gas meter cheating can take many forms and even smart meters can be unsafe if tampered with. If you spot any of these signs, please report them to Stay Energy Safe:

- A smell of gas near the meter box

- The meter shows that credit has run out but gas is still available
- Dials on the meter aren't going around, even when gas is being used
- **Reversed meter:** when the flow of gas passes through the meter in the wrong direction. All gas meters flow from the inlet on the left to the outlet on the right

# 43%

of gas engineers and electricians have been asked to tamper with meters\*

- **Substitute meter** used to replace the official meter
- **Tilted meter:** this is only possible in specific circumstances – ie, the meter must have a mechanical index, be fitted with two flexible connections and not fixed to the floor or wall using a meter bracket
- **Bridged meter:** a bridge is anything other than the official meter that is used to connect the regulator or ECV to the outlet pipework. ■

*\*Direct Line business insurance, June 2023*



Reversed meter



Substitute meter



Tilted meter



Bridged meter

## How to report it

Stay Energy Safe is a way to pass on information about meter tampering anonymously. It's run by Crimestoppers. You can call free on 0800 023 2777 or fill in the online form at [www.stayenergysafe.co.uk](http://www.stayenergysafe.co.uk) You can remain 100% anonymous.











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# When things go bang

Accidental gas explosions don't happen very often. Only a tiny proportion of gas escapes have the potential to lead to an explosion and, of those, only a fraction actually lead to one. But we know you're interested, so in this article DNV shows us what can happen when things go wrong.



Our society depends to a large extent upon the controlled release of energy provided by the combustion of fuels, particularly gases. In many applications, this process is controlled by causing gas and air to burn within a flame stabilised upon a burner. Heat energy is then transferred by convection, conduction and radiation from the flame.

But there is risk involved in the process: at some stage the gas could escape, mix with air, and ignite to burn in an uncontrolled manner. Under certain conditions this could form an explosion, which results in a rapid, uncontrolled release of energy.

Specific conditions are needed, including the concentration of gas and a source of ignition, before an explosion can take place. But this isn't the only reason why gas explosions are infrequent. Considerable efforts are made to avoid any unwanted release of gas. In the UK, the gas industry is very careful in approving the design of both burners and burner

control systems so that safe combustion may be achieved. And safety standards govern the correct installation of gas pipework and appliances.

Ideally, these measures would eliminate the occurrence of explosions but, in practice, it cannot be guaranteed that a hazardous situation will not arise. Interference with, or failure of, control equipment can lead to accidental gas escapes.

## What is a gas explosion?

In a gas explosion, gas burns in an uncontrolled manner. This is in contrast to controlled combustion, such as when a flame is stabilised on a burner. Gas and air flow through the burner towards the reaction zone of the flame, called the flame front, which remains apparently stationary at the mouth of the burner.

However, if gas is accidentally released into the air without burning, it can mix with air to form an extended flammable mixture. If the mixture is ignited, the flame front will not be stationary but

will travel through the mixture.

The key aspect is the generation of pressure – really damaging pressures.

In a confined gas explosion, pressure is generated inside the confining enclosure as a consequence of the combustion process. Initially cold reactants, gas and air, burn to give combustion products at high temperature. If the volume expansion of the hot products is restricted by confinement, the pressure will rise – an explosion of gaseous reactants, initially at atmospheric pressure, that are completely confined inside an enclosure could generate a pressure higher than 8bar.

Most buildings cannot withstand a pressure of





**An explosion can be described as:**

- A release of mechanical, chemical, or nuclear energy in a sudden and often violent manner with the generation of high temperature and usually with the release of gases
- A violent bursting because of internal pressure
- The loud, sharp sound made as a result of either of these actions.

more than a small fraction of this value unless they are specifically designed to allow for such a loading. In fact, the typical failure pressure for a single-glazed window is around 20mbar-70mbar overpressure, and structural damage occurs at around 200mbar.

The weakest sections of the enclosure will fail before the maximum pressure is attained and enable gases to be vented from the enclosure.

This 'relieves' the pressure loading on the remainder of the structure. Deliberately incorporating explosion relief panels that fail at a low pressure can provide some protection to the integrity of the rest of the structure.

Once gases start to vent, the rate of change of pressure within the enclosure will be governed by the difference between the rate at which the flame, burning through the



**Stationary flame showing a defined flame front**

**Delegates at DNV's Hazard Awareness Course can experience large jet fires and explosions for themselves at close range**





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# “Specific conditions are needed, including the concentration of gas and a source of ignition, before an explosion can take place.”

## Some key terms

### Flammability

For the combustion of any gas-air mixture to occur, a flammable gas, an oxidant (usually air) and a source of ignition must all be present. In addition, the concentration of gas in the mixture must be within a certain range; if there is too much or too little gas, a flame will not propagate through the mixture. The top and bottom of this concentration range are known as the ‘flammability limits’ and are usually expressed as percentages of gas in air by volume.

### Ignition

If a gas-air mixture is contained within a vessel and heated, chemical reactions will begin. The mixture tends to heat up spontaneously, so accelerating the rate of chemical reaction. When the rate of self-heating exceeds the rate of heat loss, the mixture will ignite. In practice, ignition is more likely to occur by contact with a spark, open flame or a hot surface that is well above the auto-ignition temperature.

### Burning velocity

The burning velocity is the rate at which a flame burns relative to the mixture immediately ahead of the flame. In a flammable gas, this depends on the heat and mass transfer processes within the flame front – the thin, narrow reaction zone.

You can think of burning velocity in terms of the speed of a person walking along the aisle on a train viewed by someone sitting on the train. The person watching on the train is observing the rate at which the flame is burning – the burning velocity.

### Flame speed

The speed with which the thin reaction zone, or flame front, travels through a gas-air mixture, measured with respect to a fixed position, is the flame speed. Flame speed is determined partly by the burning velocity of the gas-air mixture and partly by the motion of the gases in which combustion is taking place.

In practice, flame speed is not usually the same as burning velocity. During combustion, the flame front is often also pushed forward by the effect of the expansion of the gases trapped behind it.

> gas-air mixture, generates an increased volume of gases, and the volume rate at which unburnt and/or burnt gases are vented through the relief opening.

If the rate of generation of volume by combustion exceeds the rate at which gases are vented, the pressure inside the confining enclosure will rise. Conversely, if the rate at which gases are vented exceeds the rate of generation of burnt gases, the pressure will fall.

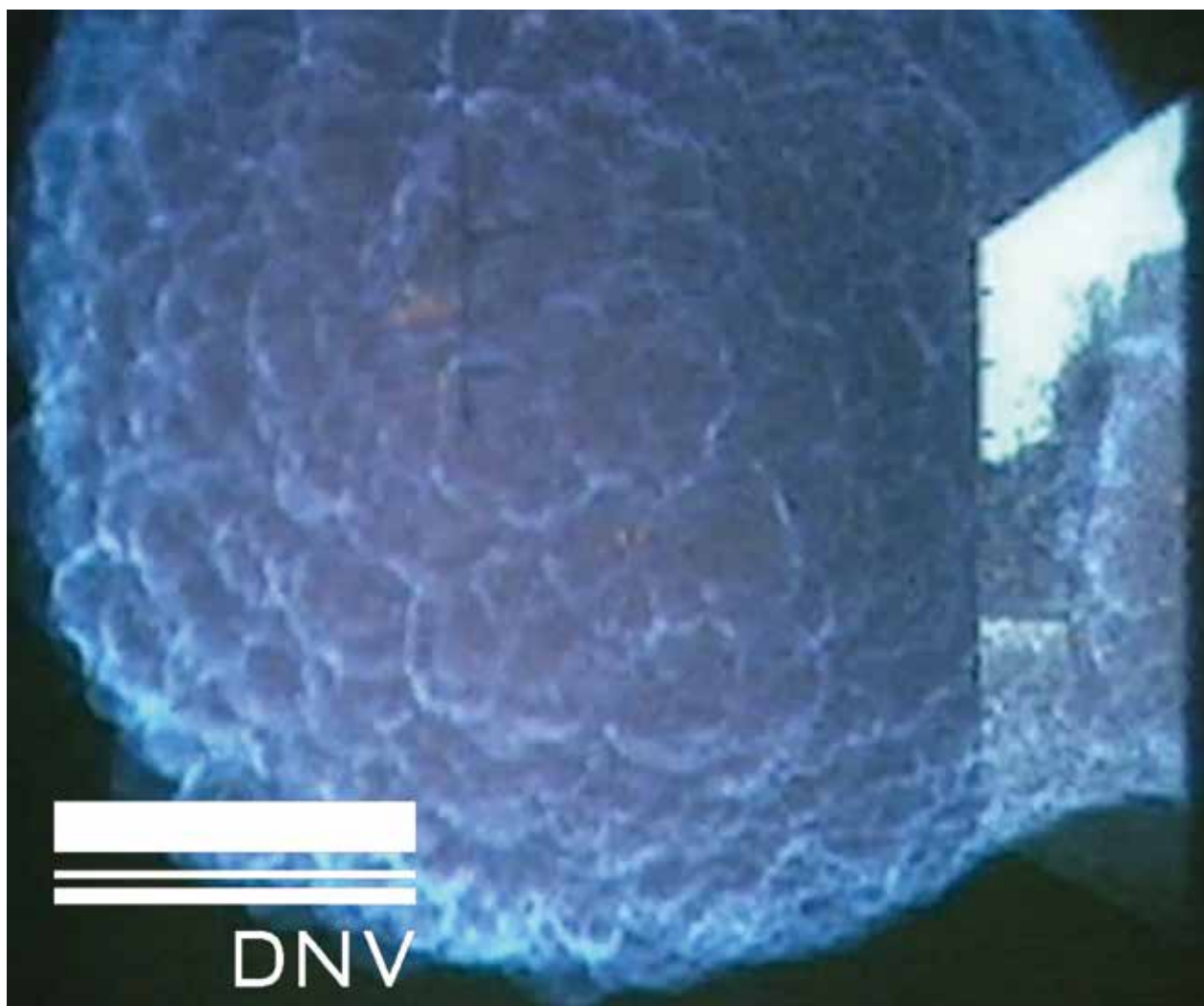
The timescale over which an explosion occurs will vary depending on the rate of combustion and the volume of enclosure in which it occurs. Typically, a natural gas-air explosion in an empty room with a volume of 30m<sup>3</sup> will last one to two seconds.

### Build-up

For a gas explosion to arise, there must first be a leakage that leads to a subsequent accumulation of a flammable gas-air mixture. There are techniques that can minimise the effects of an explosion (such as providing explosion reliefs) but ventilation can prevent the accumulation of sufficient gas to produce a hazardous situation once a release has occurred.

This is because a flammable mixture will only be formed if the rate at which the gas is being released is enough to reach a flammable concentration, given the ventilation rate of a room. Small leaks will not reach a flammable concentration if there is enough ventilation in the room, no matter how long the leak lasts.





### **Ventilation: general principles**

In most situations, ventilation will have a significant effect on the concentration of the build-up of a gas-air mixture following a gas release. In a highly confined situation, if a leak can displace the air but there is effectively no ventilation, then the fuel concentration continues to rise while the leak persists, until there is a concentration of 100 per cent fuel.

However, in most cases – particularly in buildings – there will always be some natural ventilation. This means that the concentration will rise only to a

limiting value, which depends on the relative leakage and ventilation flow rates. Sufficient ventilation can limit the gas concentration to a safe level and the hazard of explosion may be reduced.

Natural ventilation is usually sufficient to limit possible gas accumulation to flammable concentrations for most leaks and additional mechanical ventilation is not warranted.

However, in certain higher-risk situations, such as industrial or processing plant where there may be large inventories and high-

pressure pipework, mechanical ventilation may be installed to provide an additional safety system.

Natural ventilation of a room or building occurs both through intentional openings and through unintentional openings such as gaps in the structure around window frames and doors. The main driving forces for natural ventilation are provided by pressure differentials arising from any external wind forces or density differences caused by the temperature differences between the inside and outside of the building.

**High-speed image showing an explosion after a vent has opened**



**“Typically, a natural gas-air explosion in an empty room with a volume of 30m<sup>3</sup> will last for one to two seconds.”**

# The four stages of a gas explosion

## Stage 1

The expanding gases cause pressure to rise until the point where initial venting of the unburnt mixture begins.

## Stage 2

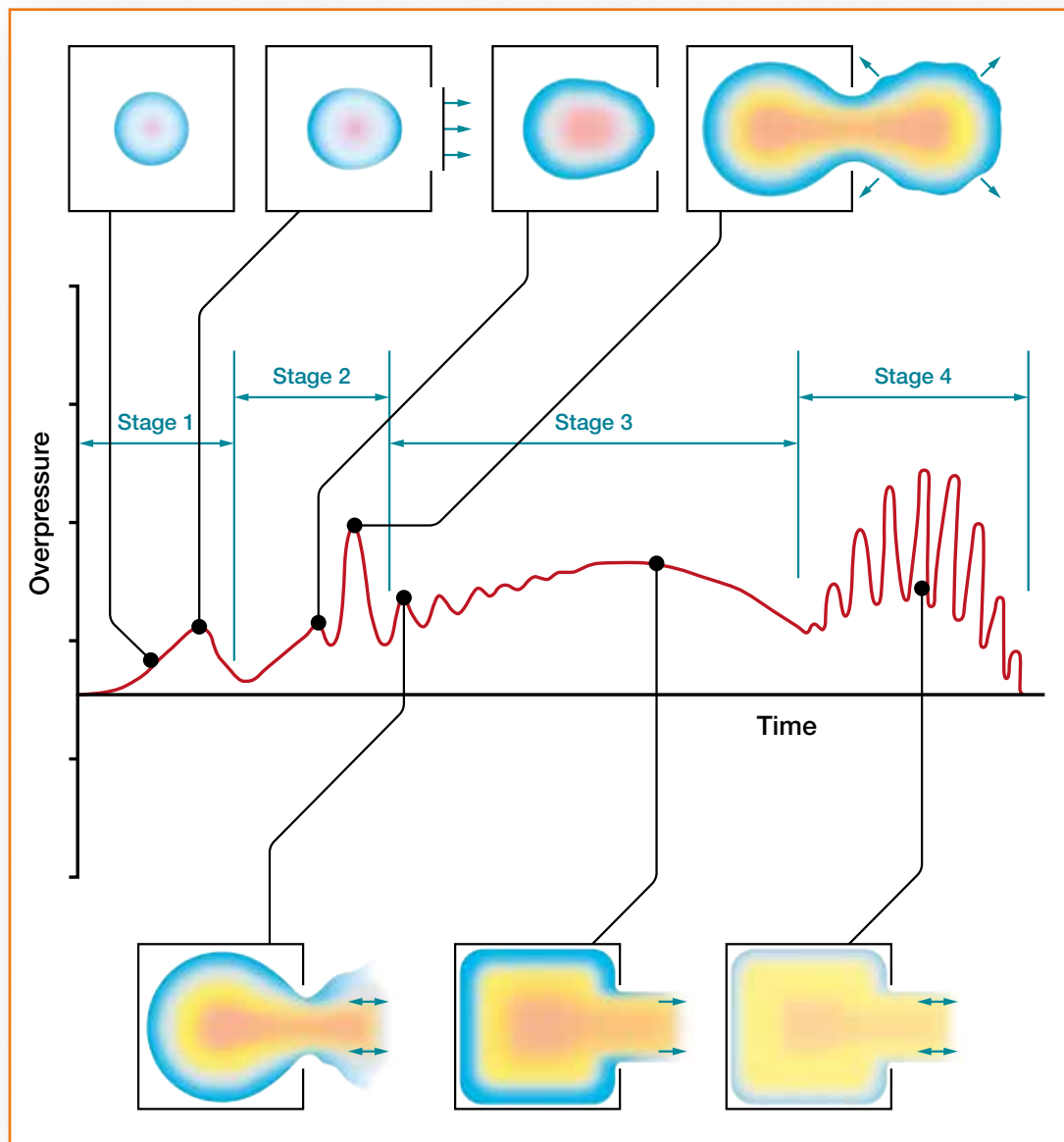
At the onset of this venting of combustion products, the density of gases reduces and the venting rate increases.

## Stage 3

Venting causes the pre-mixed unburnt gas-air mixture to be 'pushed' outside the enclosure. When the flame burns into this now external turbulent mixture, it causes an 'external explosion' and reduces the venting rate.

## Stage 4

Pressure now oscillates both internally and externally and the flame area continues to increase.





### > **Safety first**

Incidences of gas explosions are low, mainly due to the extensive safety measures and regulations in place. The UK gas industry exemplifies a commitment to safety, with stringent standards to ensure safety. Legal requirements further reinforce this safety net, governing the correct installation of gas pipework and appliances.

But despite the robust measures aimed at preventing explosions, unpredictable real-world scenarios can lead to hazardous events. Situations involving interference with or failure of control equipment can lead to accidental gas releases.

The role of gas engineers remains critical. Vigilance, adhering to established safety protocols, and a thorough understanding of the mechanics behind gas combustion and explosion are essential. By maintaining these high standards of safety and awareness, the risk of such catastrophic events can be kept to a minimum. ■

**Delegates can experience a confined vapour explosion from DNV's unique explosion chamber (or 'bang box') and feel the pressure wave and heat generated**

## Join DNV

DNV has a number of exciting and unique opportunities to join the team across skills and disciplines, including working on its hazardous awareness demonstrations. If you're interested in the being the person to 'press the button', visit [www.dnv.com](http://www.dnv.com)

For more than 40 years, DNV Spadeadam has conducted full-scale testing to assess the consequences of major hazards and their effects on people and properties. The results have been used to develop products, protect people and infrastructure from both accidental and deliberate threats.

DNV Spadeadam Research and Testing has played major roles in the research following incidents such as Flixborough, Buncefield and Piper Alpha. This research helps to understand the nature of fire and explosion events, so that facilities can be designed to protect people and the facility.

By doing things that are hazardous in their nature under controlled circumstances, DNV can understand what is happening and use these findings to make things safe. DNV investigators have been actively involved in the investigation of gas incidents such as those in Jersey, Croydon, Heysham, Cresslough, and many more.

DNV provides unique and world-class training courses for hazard awareness, hydrogen awareness and much more at the Spadeadam Research and Testing site. Training courses include being able to witness live demonstrations of gas explosions such as those described in this article. In addition, DNV provides DSEAR assessments, site inspections, compliance and much more.

**Jeremy Palmer, general manager at Drayton, looks at how the energy crisis has had an impact on people's behaviour when it comes to energy consumption, what it means for their planned home-improvement budgets, and how smart controls can help.**



# Unlock savings

**A** recent global survey by Drayton and Schneider Electric found that energy efficiency was the top priority at home in 2023.

The research revealed that 74 per cent of UK homeowners had adapted their behaviour to use less energy over the previous 12 months, mostly to reduce energy bills.

With heating and hot water accounting for more than half of the typical energy bill, this is no surprise. For example, 52 per cent of people lowered the temperature of their heating at home and 26 per cent measured or tracked how and where they are using energy. But only 14 per cent installed a smart heating control, and 12 per cent upgraded their radiators.

## Best investment

With seven in ten homeowners looking at how to cut their energy use at home, heating engineers are ideally placed to help them understand the best efficiency-improving measures that can deliver a return on investment.

Heating controls, at an average £100-£200, are a relatively low-cost investment that can provide big savings.

Simply upgrading from an outdated thermostat and programmer to a best-practice thermostat can make savings of up to 12 per cent, according to BEAMA, but opting for a smart control can save an additional 6 per cent.

## Smart move

The same BEAMA research found that upgrading from basic heating controls to a multi-zone system can offer savings of up to 19 per cent.

Alongside this, smart modes can enhance the boiler's performance. Using Wiser as an example, its Eco Mode combines optimum stop and weather compensation to study the thermal properties of the home. Once this is achieved, the system will learn to switch off the boiler sooner than scheduled while still maintaining the set point to reduce energy consumption.

Making sure that the

heating is not running when the property is empty is another key way to make savings. Many smart controls have functions such as Away Mode, that turn off the heating when customers are not at home instead of having to adjust the regular schedule.

Wiser user data has shown that using smart modes such as these can cut energy usage by an average of 16 per cent.

When your customers ask you for help on how to make quick savings on their energy bills, smart heating controls are a smart move. Better heating management doesn't need to be complicated and will help your customers to enjoy both a warm home and extra pennies. ■



Find out more at:  
[www.draytoncontrols.co.uk](http://www.draytoncontrols.co.uk)

**“Using smart modes can cut typical energy usage by an average 16 per cent.”**



# Recirculation and the forgotten utility

Sean Keleher, technical director for Navien UK, outlines the benefits of installing hot water recirculation systems to save energy and water in the home.

**M**any households will be looking for advice on how to reduce their usage and lower their water bills. Some tips and tricks are well known, from limiting shower time to not overfilling the kettle, but there are also lesser-known yet more effective ways to do this, such as a hot water recirculation system.

Every household in the UK uses an average of 350 litres of water per day. A combi hot water recirculation system can significantly reduce this, helping to use less water but more efficiently.

## How it works

Many of us know all too well that accessing hot water from the kitchen sink or shower is often met with an icy cold wait for the boiler to fire up. And while, traditionally, the solution to this is to install a bulky cylinder, today more advanced solutions are needed to meet the increasing demands of homeowners who want hot water on tap.

That's where hot water recirculation systems come in. They are designed for installation at the furthest accessible fixture away from the boiler.

They use a thermostatic valve to measure the temperature of the water flowing through the device. Once the water has reached 35°C, the valve blocks the circulation, cutting off the loop to ensure hot water is

accessible throughout the pipeline. The pump inside the boiler recognises this and stops circulating the domestic hot water until a hot water outlet is used, providing hot water in a matter of seconds.

Water is not left in the pipes to get cold and, with no reason to run the water, there is less wastage.

## Saving water

When the household typically has to wait 90 seconds for the water to heat up every time they take a shower, the amount of cold water going down the plughole adds up quickly.

Recirculation devices reduce that wastage significantly.

Once the domestic hot water recirculation system is up and running, homeowners will notice the benefits immediately, including boosted performance, time efficiency and a significant reduction in water usage, all of which are cost effective. The systems also benefit the environment because they save gas, so reducing impact on the environment and limiting CO<sub>2</sub> emissions. ■



## Navien's NaviCirc

NaviCirc provides the capability to circulate hot water around domestic properties and back to the boiler, ensuring hot water on demand. Working in conjunction with the Combi Crossover range, and available with the NCB700 ON Combi Crossover, customers will save energy, water and space.

Combi Crossover boilers meet every customer's needs, from those with smaller properties through to larger five-bed homes. Navien's ON technology provides endless and consistent hot water without temperature fluctuations to up to three showers at once through recirculation technology. [navien.co.uk/technology/navirc](http://navien.co.uk/technology/navirc)

**“When the household has to wait 90 seconds for the water to heat up, the amount going down the plughole adds up quickly.”**

# The art of the possible

Underfloor heating has come a long way over the past 25 years, with systems that make it easy for installers to fit almost anywhere. Chris Ingram, founder of Continal Underfloor Heating, explains how.



Once upon a time, installers could only lay underfloor heating on ground floors, either when laying a new screed floor or by digging up the existing floor and laying a new one over the top of a system of UFH pipes. But times have changed and now many different UFH systems can be fitted almost anywhere.

As well as efficient versions of the traditional solid floor and screed systems, installers can choose from suspended floor systems and overfloor systems, which offer all the traditional benefits of UFH with the addition of highly efficient, rapid response heat outputs and all the flexibility that installers need.

What's important is to look carefully at all the options and make sure you choose the right solution for the building you're working on – and remember that a combination of the following solutions may work best.

## Suspended floor

Suspended floor UFH systems are suitable for both new-build and retrofit, enabling UFH to be fitted directly on to timber or engineered floor joists with very minimal impacts on floor build-up heights.

Structural suspended floor systems comprise a composite chipboard panel with a heat dissipation foil to ensure excellent heat outputs

and quick response times. The chipboard panel is strong enough to replace the normal chipboard or plywood panel that has to lay over the floor joists, which means that UFH can be fitted on the first or second floor of any property without causing issues with floor heights.

## Overfloor systems

Overfloor systems make it possible for UFH to be installed in places where more traditional methods cannot be used. They can be installed on top of existing floors before being covered with carpet, vinyl, wood floors or tiles.

Overfloor systems typically consist of a high-strength insulated substrate board inset with grooves where the UFH pipes sit. This substrate is laid on top of the base floor: then, once the pipes have been set into the grooves, the floor covering is laid on top.

## Flexible finishes

UFH is commonly chosen by homeowners who are planning on tile, vinyl or wooden floors, but it is actually suitable for

almost any floor covering, provided that you know in advance and make the right system choice.

Hard floor coverings such as wood, concrete or tiles are more thermally conductive than carpets, making them better at transferring heat from an UFH system, but carpets can absolutely be used with UFH.

Carpets have insulating properties that help retain UFH warmth within a room, providing a luxurious and energy efficient solution for a warm, inviting home environment. We would always recommend that any carpet used, including the underlay, has a maximum tog rating of 2.5 to ensure that heat transfer remains efficient. ■

**Continal's overfloor UltraSlim system measures just 15mm thin, ensuring flexible installation options and fast response times**

Continal can supply every type of wet UFH system and its technical experts will always help you make the right choice, with a dedicated expert working with you at every stage of the project.



**“Remember that a combination of UFH solutions may work best.”**

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## Smart zoning made simple with Evohome system builder

The Honeywell Home **Evohome** smart zoning system has been made simpler with an online system builder tool. Users can build a tailor-made zoning solution using Evohome in just a few steps on a phone, tablet or laptop. No sign-up is needed to use the tool or download the detailed system builder evaluation.

The system builder tool is a four-step process that provides a detailed downloadable evaluation of all necessary parts needed to build the right Evohome smart zoning solution for the property:

- 1) Input property requirements, including details of the current heat source system
- 2) Input room details
- 3) Input accessories needed
- 4) Evaluation report produced,



which outlines part numbers and descriptions per room. Martin Wilson, North EMEA regional director at Resideo, says: "Our system builder tool now makes it even easier for installers to understand exactly what they

need to configure to put the power to smartly monitor and control home comfort into the hands of their customers."

Try it for yourself at: [www.resideo.com/gb/en/solutions/home-comfort/evohome](http://www.resideo.com/gb/en/solutions/home-comfort/evohome)

## Energy-saving hot water and heating with Mixergy Cube X

**Mixergy's** Cube X is an energy saving way to provide heating and hot water, especially when space is at a premium. It can be integrated into utility frame solutions, accommodating other appliances and saving more space in the home.

Its discreet size with patented volumetric heating technology provides hot water only or space heating and hot water. It's suitable for smaller apartments and properties that have been designed fabric-first.

The Mixergy Cube X is future-proofed by way of its unique modular lid that will allow for hot water today and space heating tomorrow. Using

the solar diverter, any excess energy generated by a solar PV system that would normally be sent back to the grid can be stored and used for hot water or heating.

It can connect with heat pumps to deliver both space heating and hot water, removing the need for two cylinders.

The smart technology uses machine learning to anticipate the home's needs, and smart tariff integration means greater cost savings.

The Mixergy Cube X can be installed without the requirement for G3 unvented certification.

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



## > Quick and easy connections

**Fränkische** has new fittings to connect copper or stainless steel pipes to its Alpex pipe system. The F50 PROFI SST/CU coupling ensures the direct connection of multi-layer composite pipes with copper and stainless steel pipes.

The lead-free coupling can be pressed on the metal side with the crimping contours M(apress), V(iega) and SA(hna); and the Alpex pipes can be connected by means of five crimping contours.

The fittings allow for connection of

multi-layer pipes to metal pipe in all frequently used pipe sizes. They are available for copper or stainless steel pipes with diameters from 15mm to 28mm.

The coupling has four large inspection holes in the fixing ring, which allows for verification of correct positioning. The leak-before-press function helps users see whether the coupling has been pressed properly during the pressure test after installation.

[www.fraenkische.com/en-GB](http://www.fraenkische.com/en-GB)



## Dial M for new Aquarea heat pumps

**Panasonic** Heating & Cooling Solutions has added to its Aquarea air-to-water heat pumps with the M Series. Its modular concept means more application choices and different indoor units, available in All-in-One and



Bi-bloc, as well as full Control Box or Remote controller-only essential functionality.

The advanced system uses natural R290 refrigerant and includes the T-CAP outdoor unit with a new injection compressor.

The M Series also has a hydraulic connection between indoor and outdoor units for straightforward installation without the need for refrigeration certification.

The outdoor unit can function as a standalone system with just an indoor remote control. Homeowners

can opt for enhanced functionality by incorporating the more advanced Control Box or also selecting between a Bi-bloc or All-in-One system. This allows the Aquarea M Series to cater to a variety of needs.

The M Series can deliver a maximum water outlet temperature of 75°C at -10°C outside temperature and 55°C hot water at -25°C outside temperature. The outdoor units maintain heating capacity down to outdoor temperatures of -20°C and can work down to -28°C.

[www.aircon.panasonic.eu](http://www.aircon.panasonic.eu)

## EvoLink Hybrid system hub provides low-carbon stepping stone

**Grant UK** has grown its hybrid heating range with the EvoLink Hybrid system hub. The wall-mounted, compact unit enables the Aerona<sup>3</sup> heat pump to be combined with an existing fossil fuel heat source, providing hard-to-heat homes with the opportunity to reduce their carbon emissions when a standalone heat pump may not be possible.

With a maximum output to the heating system of 32kW, the EvoLink can be connected to most existing domestic heating

systems and is suitable for kerosene and HVO boilers, as well as gas, LPG electric and modulating biomass boilers (with space heating up to 36kW).

Designed for installation indoors, the EvoLink houses the hydraulics and sensors required to combine the Aerona<sup>3</sup> air source heat pump with an existing heating system. The simple control interface is user-friendly, with 'comfort' and 'green' operating modes so that users can choose the mode that best meets their needs.

"By introducing a heat pump alongside the back-up of an existing boiler, the EvoLink helps households to immediately reduce their carbon emissions while also giving them time to reduce their heat loss in the years to come, which in turn will enable their heat pump to fulfil more of their heating demand and further reduce their dependency on fossil fuels," says Grant UK managing director Paul Wakefield.

[www.grantuk.com/products/hybrids](http://www.grantuk.com/products/hybrids)



## Daikin adds VRV 5 heat pumps for commercial buildings

**Daikin** is introducing two VRV 5 heat pump systems to its compact mini VRV and heat recovery versions. They provide extended capacities for the mini VRV of up to 33.5kW and a new top blow range reaching 56kW.

The VRV 5 is an air-to-air heat pump that provides heating and cooling, with extended piping lengths of up to 1,000m for all types and sizes of commercial buildings. The systems are compatible with a range of specially-designed R-32 indoor units including Biddle air curtains, offering maximum flexibility for all room configurations. Decentralised ventilation units and centralised air handling units can be integrated to ensure a healthy environment.

Intuitive controllers make operation easy and ensure the system runs in the most comfortable and efficient way. Energy consumption can be further reduced through connection to the Daikin Cloud Plus platform,

which provides continual energy monitoring and advanced insights. Diagnostics and field settings can be carried out remotely. [www.daikin.eu/VRV5](http://www.daikin.eu/VRV5)



## Henrad goes up with vertical rads

**Henrad** has unveiled its Compact Vertical range. The popularity of vertical radiators has grown hugely in the past couple of years, and the company says they are suitable for replacement heating systems and for new-build projects where the wall space for radiators may be limited.

Stelrad's head of marketing Chris Harvey says: "Vertical radiators are becoming almost the norm now, with many new-build properties having a mix of horizontal and vertical radiators.

"Verticals are becoming



popular in replacement heating systems where they can be added on walls that didn't necessarily have radiators previously.

"They add to the flexibility of a heating system design, allowing radiators to be fitted in many more locations than traditional horizontal ones without reducing the amount of heat they generate. They have become a vital part of the heating system and we're seeing them specified far more often than even we expected when we first began their manufacture."

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

## Baxi upgrades Assure boiler range

The **Baxi** Assure 500 2 range has been designed to make installation and maintenance more straightforward. The range, for social housing providers and housebuilders, comes in outputs of 24kW-36kW for combi boilers and 15kW-24kW for system models.

Improvements include a pre-heated siphonic condensate trap, which prevents freezing and boiler lockouts in adverse winter conditions, a combined pressure-relief valve and

separate primary boiler drain for quick draining and maintenance access, and removable colour-coded wiring blocks for easier wiring.

The boilers can be converted manually between natural gas and LPG without a kit. They are also compatible with the new one-person internal fit horizontal telescopic flue range for installation from inside the property.

Lee Caulfield, head of sales (residential specification), says: "These upgrades reinforce our commitment to being a partner for social

housing providers, supporting them with different approaches to decarbonisation that suit budgets and individual properties.

"Every house is different and requires different solutions to suitably improve it for the environment and tenants. We have over 150 years' experience of heating the UK's homes, making us well equipped to provide efficient products, design expertise, comprehensive training, commissioning, servicing and after-sales support."

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



# Renewables demand rising, say heating engineers

Heating engineers are fitting more renewable technologies thanks to growing demand from homeowners, according to research from Polypipe Building Products.

Its survey of 150 domestic heating installers found that 41 per cent of gas or oil boiler installers have now started to fit renewables. Additionally, 37 per cent said they're looking into more renewables and associated training, and 38 per cent said they're considering moving into renewables.

One-third said their customers are generally very passionate about reducing carbon emissions, and 29 per cent said their customers

only ask for renewable energy. Some of the demand for renewables is being driven by the economic climate and cost of energy: 18 per cent of installers said their customers are interested in renewables mainly because they want to reduce their gas bills.

Dan Love, head of commercial at Polypipe Building Products, says: "The fact that heating engineers are adapting their service offerings and to hear that over 40 per cent are now installing renewables is a big step in the right direction."

However, some installers remain steadfast in what they know, with 11 per cent of those mainly installing oil and/

or gas saying they have no plans to look into renewable heating solutions.

One barrier to uptake is a lack of training: 30 per cent said they want to book a heat pump training course but can't find one anywhere, and almost one-quarter said that there are not enough courses available.

Nonetheless, the survey found that many have already completed or sought out training on renewables. Almost one-fifth (17 per cent) said they have had heat pump training and feel confident in installation; 21 per cent said they've had training, but so far there has been minimal demand from customers.

## Samsung and social enterprise team up for trainees

Samsung Climate Solutions and social enterprise Your Energy Your Way have joined up on a trainee scheme designed to help boost the number of low-carbon heating installers.

It's designed to help close the skills gap by attracting a more diverse pool of technicians, especially women. By providing more supportive learning environments and access to a range of role models, the new traineeship aims to forge an alternative path for those wanting to re-train or enter the industry.

Leah Robson, managing director of Your Energy Your Way, says: "We wanted to create a course that trained you to install high-quality integrated low-carbon heating solutions, drawing on electrical, plumbing, technical, design, software, sales and customer service skills.

"We think we have found a solution by designing a training programme that is rooted in real-world experience, combined with payment of the Living Wage to bring new entrants of all ages and backgrounds into the industry."

Samsung is providing training, support, product awareness and mentorship.



## Vaillant and Derby College welcome first 10 low-carbon apprentices

Vaillant is supporting the first cohort of low-carbon heating technician apprentices by partnering with the Derby College Group. Vaillant will invest in 10 full-time, employed apprentices throughout their three-year course until they qualify as a Level 3 low-carbon heating technician.

In addition to their qualification, apprentices will

get a rounder view of working in the heating industry and how to conduct themselves in customers' homes, to offer excellent customer experience and service. This includes additional qualifications and skills, such as plumbing, bricklaying, plastering, electrics and customer service.

They will gain experience working across the Vaillant

business and their second and third years will include on-the-job training with qualified heating engineers to provide more first-hand installation experience.

Previously, sector-specific apprenticeships have focused on traditional gas heating systems, with students required to complete additional learning to install equipment such as heat pumps.



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# skillsandtraining

## Ideal Heating partners with Merseyside college



A new £500,000 green energy centre in Merseyside is being backed by Ideal Heating, as part of the company's commitment to attract fresh talent into the industry.

Heating engineers will be able to learn the skills needed to install, commission and service air source heat pumps at the Green Energy Skills Centre at St Helens College.

Ideal Heating is an employer partner and has equipped the facility with a range of products, including its Logic Air heat

pump and hot water cylinder, helping installers gain experience and confidence at working with these heating solutions.

It forms part of a commitment from Ideal Heating to support installers in the transition to low-carbon heating solutions, such as heat pumps, as well as to help attract young people into the industry.

Renewable energy lecturer Lewis Litherland worked as an engineer for British Gas before

making the switch into education. He says: "I'm very passionate about creating a centre like this in St Helens, as I've come from a similar economic background to many of our students, and I've been fortunate to have fallen into an industry that has provided me with great opportunities."

The Green Energy Skills Centre provides BPEC-accredited training courses on heat pumps.

[www.idealheating.com](http://www.idealheating.com)

## Ecotec Plus clocks up 7,000 training hours in first six months

Vaillant's reinvented Ecotec Plus boiler range amassed 7,000 hours' worth of training from professional installers in just six months.

With courses online and in the company's six Centres of Excellence, the Ecotec Plus training modules take installers

through the key features and benefits of the boiler, together with a step-by-step on best practice commissioning and fault-finding.

Mark Wilkins, Technologies and Training director, says: "Remastering a firm favourite was no easy task, but we listened carefully to our loyal installer base to uncover what enhancements they'd like to see on this model. The next-generation Ecotec Plus is a culmination of this hard work, encompassing hours of research and development and extensive in-field testing.

"It's always great to see the hard work pay off and the huge number of installers who have signed up to our new product training module is testament to this."

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



## Daikin bullish about training as Birmingham academy re-opens

Daikin's training academy in Birmingham has re-opened following a major redevelopment. The academy in Birmingham Business Park provides training on installation, commissioning, servicing and maintenance of residential and commercial technologies, including low-carbon heating, cooling and renewables.

Technical support teams are on the top floor of the academy, dubbed the Heating Hub, where installers and homeowners can get help with technical queries or questions about installation and operation.

Residential business manager Henk van den Berg says: "We are thrilled to re-open the Daikin Training Academy and believe it will help make Birmingham a hub for knowledge in the growing renewables industry.

"With the range of retrofit and new-build renewable

solutions on display in the centre, installers, social housing providers and developers from across the Midlands and further afield, will have an unrivalled opportunity to get to grips with these technologies and talk directly with Daikin experts about what may be suitable for their specific needs.

"In addition, the government's decarbonisation fund has given Daikin a grant that allows us to offer a limited number of free training places."

The installer training offer provides free local heat pump training and £100 off easy MCS accreditation until the end of March 2024. New installers can also get 40 per cent off the first heat pump they buy plus commissioning support for their first three air source heat pump installations.

[www.daikin.co.uk/en\\_gb/contact/training.htm](http://www.daikin.co.uk/en_gb/contact/training.htm)

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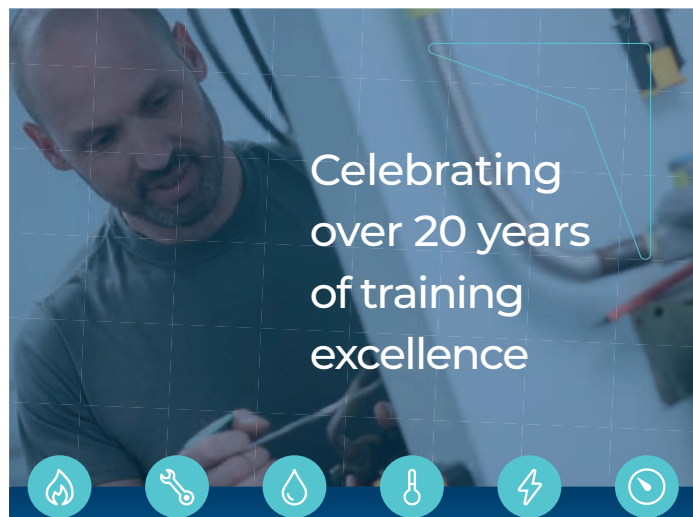
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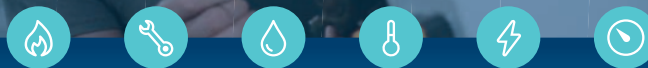
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to 640 kW

heating & cooling solutions



[https://www.aircon.panasonic.eu/\\_\\_\\_\\_\\_/happening/ecoi-w-aqua-g-blue/](https://www.aircon.panasonic.eu/_____/happening/ecoi-w-aqua-g-blue/)

1) Size 50. According EN14825 and Following COMMISSION REGULATION (EU) 2016/2281. 2) Size 70. According EN14825 and Following COMMISSION REGULATION (EU) No 813/2013. 3) [Scale A+++ to D]. According EN14825 and Following COMMISSION REGULATION (EU) No 813/2013.