

The magazine of the Chartered Institution of Building Services Engineers





VIESMANN

VITOCROSSAL 200 TYPE CI3

Explore compact design with high efficiency.

The new Vitocrossal 200 (Type CI3) gas condensing boiler is a highly efficient solution for apartment buildings, commercial enterprises and local authorities. With its handling width of 75 cm, the boiler is also recommended for projects in buildings where space is limited. In addition, it has a modest footprint of just 0.75 to 1.07 m² (80 to 640 kW).

Features and benefits

- + 80 to 640 kW
- + Cascade operation up to 5120 kW (8 appliances)
- + Twin burner available on the 480 to 640 kW models
- + Standard seasonal efficiency [to DIN] of up to 97.7 % (Hs) [gross cv]
- + Long service life due to modulating MatriX cylinder burner
- + High operational reliability thanks to Inox-Crossal stainless steel heat exchanger
- + Efficient combustion control thanks to self-calibrating O₂ sensor
- + Quick installation due to integrated wheels and transport pallet

Find out more





Weather watch

he heat waves across Europe last month were particularly unusual, arriving so early in the summer season. In France, it was the second-hottest June since records began in 1900, while provisional data from the Met Office indicates that the UK had its second-warmest June since 1884.

Such weather results in demand for air conditioning soaring, putting extra pressure on electrical infrastructure and carbon targets. CIBSE's Weather Data Sets provide designers with temperature predictions that allow them to assess overheating risk and optimise passive cooling in their designs.

On page 34, CIBSE's Zoe De Grussa introduces the latest Weather Data Set, which is due to be released this month. To provide more accurate and localised data, it uses the latest Met Office UK Climate Predictions, has improved solar radiation data, and is split into 28 climatic zones. It will be a vital tool for engineers wanting to minimise the carbon footprint of buildings in an ever-warming climate.

New CIBSE President Vince Arnold delivered an inspiring inaugural address on the importance of volunteering and the power of 'paying it forward' – encouraging members to pass on the career support they have received to the next generation of engineers.

Arnold has been working with CIBSE for more than 25 years, particularly in training and competency, but has been giving his time to others since the age of 10, when he volunteered for the St John Ambulance Brigade. This led to him joining the Air Training Corps at 13, which gave him the experience to become an officer in the RAF Volunteer Reserve at 22. All this helped to develop the leadership and interpersonal skills that he applied to his building services career, rising to become a company director in a large consultancy.

Arnold encourages everyone to volunteer, to help nurture the next generation of engineers and for the sense of fulfilment that comes from making positive impacts.

Our cover feature looks at how Savills transformed the energy performance of 20 Fenchurch Street, one of the most iconic buildings in the City of London. It won a CIBSE Building Performance Award in the Facilities Management category, partly because of its creative use of gamification to encourage tenants to cut energy waste, including a Strava–style league table that compares energy performance.

Alex Smith, editor asmith@cibsejournal.com

Editorial

Editor: Alex Smith
Tel: +44 (0)1223 378034
Email: asmith@cibsejournal.com
Technical editor: Tim Dwyer
Reporter: Molly Tooher-Rudd
Designer: Kevin Reed
Chief sub-editor: Jo Halpin

CIBSE Journal is written and produced by CPL One Tel: +44 (0)1223 378000 www.cplone.co.uk 1 Cambridge Technopark, Newmarket Road, Cambridge CB5 8PB.



Editorial copy deadline: First day of the month preceding the publication month

Advertisement sales

Display and sponsorship Jon Morton jon.morton@redactive.co.uk
Tel: +44 (0) 20 7324 2786
Products & services Daniel Goodwin daniel.goodwin@redactive.co.uk
Tel: +44 (0) 20 7880 6217
Recruitment advertising
cibsejournaljobs@redactive.co.uk
Tel: +44 (0) 20 7880 6215
Advertising production Jane Easterman jane.easterman@redactive.co.uk
Tel: +44 (0) 20 7880 6248

The opinions expressed in editorial material do not necessarily represent the views of the Chartered Institution of Building Services Engineers (CIBSE). Unless specifically stated, goods or services mentioned in editorial or advertisements are not formally endorsed by CIBSE, which does not guarantee or endorse or accept any liability for any goods and/or services featured in this publication. We remind all readers that it is their responsibility to verify advertisers' products claims.

Contributors



Laura McMahon CIBSE's role in Ireland's decarbonisation strategy and the need for more women in the industry



Anastasia Mylona What the Spending Review means for the building services sector and its path to net zero



Zoe De Grussa CIBSE's latest Weather Data Set and how it will help designers make accurate assessments of overheating risks



Tim Dwyer
The Journal's
250th CPD
module looks at
the application
and potential
of ambient
heat networks



ENTRIES OPEN

The CIBSE Building Performance Awards are back for their 20th year with over 20 categories to recognise and celebrate engineering excellence in the built environment.

These awards, reward the people, products and projects that demonstrate engineering excellence in the built environment.

Entries close: 5 September 2025



@CIBSEAwards
#BPA2026

Sponsors















Contents

News

6 News 10 CIBSE news

Events & Training 10 Looking ahead

Voices

14 Building on spending

Anastasia Mylona on the policy gaps in embodied carbon and skills in the government's Spending Review, which commits £80bn to decarbonisation

50 Q&A: Community impact

CIBSE Ireland chair **Laura McMahon** discusses key priorities, sector challenges, and her vision for a more inclusive and sustainable engineering future

Features

16 Forward thinker

New CIBSE President **Vince Arnold** on the value of 'paying it forward' by mentoring and supporting future engineers

19 Joining the conversation at the InstallerSHOW

The Institution hosted its own platform at the InstallerSHOW, curating the Build2Perform theatre. **Molly Tooher-Rudd** and **Alex Smith** report from across the event

20 Walking the talk

Improving building performance at 20 Fenchurch Street through data-driven facilities management and occupier engagement. **Andy Pearson** reports

Technical

Air conditioning, fire and smoke design & management, heat networks/heat pumps

29 Clearing the smoke around firesafe materials

Gypsum-based systems may be wrongly specified for smoke shafts in high-rise buildings, as they are not tested for critical pressure and leakage conditions. **Alex Smith** summarises new guidance

30 Gateway to failure

A case study from the Building Safety Regulator shows some of the failures causing 70% of all designs to be rejected at Gateway 2 of the building control regime for higher-risk buildings

32 Departure from the norm

A.G. Coombs Group and Exergenics delivered major energy savings in the chiller systems at Sydney Airport, at minimum cost. **Molly Tooher–Rudd** finds out how

34 Weathering the heat

CIBSE's latest Weather Data Set enables designers to more accurately model overheating in their buildings. **Zoe De Grassa** reports

37 Hot-water boost to heat network efficiency

Jacobs has designed a Generation 4.5 heat network using a boost electrode to deliver domestic hot water, operating at a 45°C flow temperature for 80% of the year. The company's **Adam Selvey** explains how it works

CPD

41 Ambient loops and 5thgeneration heat networks: a low-temperature future

Classified

45 Products



www.cibsejournal.com

The official magazine of the Chartered Institution of Building Services Engineers

SOCIAL MEDIA



@CIBSEJournal



CIBSE LinkedIn



CIBSE Journal newsletter



www.cibse.org

For cibse

Journal production manager: Nicola Hurley Tel: +44 (0)208 772 3697, nhurley@cibse.org

CIBSE, 91–94 Saffron Hill, London, EC1N 8QP Tel: +44 (0)208 675 5211 ©CIBSE Services Ltd. ISSN 1759–846X

Subscription enquiries

If you are not a CIBSE member but would like to receive CIBSE Journal, subscribe now! Costs are £80 (UK) and £100 (international). For subscription enquiries, and any change of address information, please contact Nicola Hurley at nhurley@cibse.org or telephone +44 (0)208 772 3697. Individual copies are also available at a cost of £7 per copy, plus postage.

CIBSE Journal, ISSN 1759-846X (USPS 4070) is published by CPL One, 1 Cambridge Technopark, Newmarket Road, Cambridge CB5 8PB, UK.



Subscription records are maintained at CIBSE, 91–94 Saffron Hill, London, EC1N 8QP, UK.

ISSN 1759-846X (print) ISSN 2756-1895 (online)

Credits

Cover iStock.com / CHUNYIP WONG p8 FaulknerBrowns p8 iStock.com / Teamjackson p10 iStock.com / Teamjackson





ABC audited circulation: 19,220 January to December 2024 Printed by: Warners Midlands PL.C

Building Safety Regulator moved from HSE

Fast-track safety vetting process announced as plans put in place to make BSR an executive agency of government department

he Ministry of Housing, Communities and Local Government (MHCLG) is taking over control of the Building Safety Regulator (BSR).

As part of a wide-ranging shake-up, the BSR is being taken out of the Health and Safety Executive (HSE) and will become an arms-length body of the MHCLG.

Andy Roe KFSM, who recently stepped down as commissioner of the London Fire Brigade (LFB) and was the incident commander who lifted the 'stay put' order for residents on the night of the Grenfell Tower disaster, has been appointed chair of the BSR's shadow board, pending its establishment as an executive agency.

Charlie Pugsley, deputy commissioner of the LFB, has been appointed new chief executive of the BSR. This follows the departure of building safety director Philip White, who will continue his other role as the HSE's chief inspector of buildings.

Responding to industry concerns about

delays in the safety vetting of applications for new tall buildings, the MHCLG has also announced the introduction of a new fast-track process, bringing building inspector and engineer capacity directly into the BSR.

In addition, the BSR is being bolstered by the addition of 100 new staff.

The shake-up at the BSR, which was set up in 2022 to deliver post-Grenfell reforms brought in by the Building Safety Act, follows the opening of an inquiry by the House of Lords' Industry and Regulators Committee into the organisation.

Earlier last month, the Association of Construction and Quality Professionals called for the removal of the BSR from the HSE.

While paying tribute to the HSE's role in setting up the BSR, Roe said BSR processes must 'continue to evolve and improve, to ensure that it plays its part in enabling the homes this country desperately needs to be built'.

See page 30 for a case study from the BSR focusing on fire safety design failures.

World set to exceed 1.5°C warming limit by 2028

The Earth's carbon budget for limiting global temperature rises in line with the Paris Agreement will be exhausted in little more than three years if CO_2 emissions continue to increase at their current rate, an international group of experts has warned.

The latest Indicators of Global Climate Change study, published in the journal *Earth System Science Data*, estimates that the world can only emit 130 billion tonnes of carbon to keep worldwide temperatures within 1.5°C of pre-industrial levels – the benchmark agreed at the 2015 COP global warming summit.

The study, produced by 60 international climate scientists, estimates that the observed global surface temperature rise in 2024 was 1.52°C, of which 1.36°C can be attributed to human activity.

UK risks missing 2030 clean-power target, says House of Lords

The government is in danger of missing its 2030 Grid decarbonisation target unless it drastically steps up the scale and pace of energy generation and network infrastructure development, a House of Lords Committee has warned.

In its report, Power struggle:

Delivering Great Britain's electricity grid infrastructure, the committee says: 'Time is already running out, and there is no room for complacency. The government and the sector will need to ramp up their efforts to have a chance of success.'

It recommends the government

publishes key metrics for meeting its clean–power target every six months. These would include the amount of electricity generation that networks have connected to the Grid and progress on the 80 transmission network projects identified as necessary for meeting the target.

Axe falls on Public Sector Decarbonisation Scheme

Government confirms no more funding beyond 2028

The Public Sector Decarbonisation Scheme (PSDS) has been axed as part of June's government-wide Spending Review.

According to a circular issued by the Net Zero Buildings Engagement Unit in the Department for Energy Security and Net Zero, ministers took the 'very reluctant' decision not to support further investment in the funding initiative.

All current PSDS projects remain fully funded, but there will be no additional support from the scheme – set up to provide grants for heat decarbonisation and energy efficiency projects in non-domestic civic buildings, such as hospitals and libraries – beyond 2027/28.

The circular added that the government is looking at ways to incentivise the public sector to take steps to decarbonise its estate. The Spending Review signals that these could include regional and place-based initiatives, such as devolution deals between the government and elected mayors. Only small and medium-sized non-domestic properties are eligible for the Boiler Upgrade Scheme, which offers grants for replacing fossil-fuel boilers with low carbon options, such as heat pumps.

Salix, which administers PSDS on behalf of the government, said it will continue to support projects in phases 3c and 4 of the scheme until they are 'complete and operational'.

Boost for Boiler Upgrade Scheme

There will be progressive annual increases in funding for the Boiler Upgrade Scheme (BUS) until the end of this decade, as the government fulfils its election pledge to double support for domestic energy efficiency and low carbon heat.

The Treasury's Spending
Review allocated £13.2bn during
this parliament for the Warm
Homes Plan – double the sum
earmarked for such upgrades. As
part of this overall settlement,
funding for BUS will increase each
year to 2029/30.

The government also said the WHP will include significant funding to deliver heat network schemes, and the Warm Homes: Local Grant scheme will work with councils to deliver retrofits to lower-income households until 2027/28.

COMPLETE

ENERGY EFFICIENT SOLUTIONS FOR ANY VALVE REQUIREMENT

For more than a century we have designed market leading solutions. Our variable flow valves, with outstanding hysteresis performance, can help reduce energy consumption by up to 27% based on a 10% improvement in the controlled flow rate. So, why not take comfort in our efficiencies.

Find out more at Cranefs.com/solutions











CRANE

FLUID SYSTEMS

Benefits of moisture recovery outlined

Eurovent has published a guide to moisture recovery in ventilation and air conditioning systems. The European association of heating, ventilation, air conditioning and refrigeration manufacturers published Eurovent 17/14 in June. It provides an overview of available heat and moisture-recovery technologies, sets out principles for their correct application, and explains the benefits of moisture recovery in terms of energy and cost savings and improved indoor air quality. The document also discusses the application of moisture recovery from extract air in general ventilation and combined ventilation and air conditioning systems.

SMEs report sharp Q1 growth in sales revenue

Small to medium-sized UK construction manufacturers saw a 130% increase in sales revenue in the first quarter of this year, compared with the previous three months, new figures show. The findings, based on direct data from more than 600 firms using Unleashed's inventory management software, show that the average **SME** construction manufacturer recorded sales revenues of £616,879 in Q1 2025. This was a 130% increase compared with Q4 2024 and a 42% rise on Q1 2024. Unleashed said steadily falling bank rates were fuelling the uptick in revenues.

Metering to target easy wins at CIBSE HQ

CIBSE is installing additional metering at its Saffron Hill headquarters to identify preventable energy waste. It is working with HyScore to install circuit–level metering on distribution boards and create a customised dashboard to display the data in user–friendly graphs. This will allow the Institution to glean actionable insights for energy efficiency and cost reduction, as part of its journey to net zero carbon.



Take your marks: GLA appoints Crytsal Palace consultants

Morgan Sindall Construction has been appointed by the Greater London Authority to rejuvenate south London's iconic Crystal Palace National Sports Centre. Max Fordham will provide decarbonisation and sustainability services for the Grade II-listed centre, while FaulknerBrowns will be the main architect. The project will include the overhaul of the swimming pools, diving tower, indoor facilities, external pitches and athletics stadium. A new glazed screen will control the challenging environmental conditions between wet and dry leisure activities.

Revised rules say most new homes must have solar panels

The 'vast majority' of new homes will have solar panels installed in the future, the government has announced as part of a wide-ranging shake-up of Building Regulations.

Changes set to be outlined in the long-awaited Future Homes Standard (FHS) introduce new energy efficiency and low carbon heating benchmarks for residential development.

The proposed FHS, which is due to be published this autumn, will amend Building Regulations to 'explicitly promote solar for the first time', the government has said, subject to 'practical limits' and with flexibility for new homes surrounded or heavily shaded by trees.

In a 2023 consultation on the draft FHS, the previous, Conservative,

government proposed that new-build homes would need solar panel coverage equivalent to 40% of the building's floor area.

If this was not possible, the consultation said no panels would be required. This, said the government, would have allowed for 'too many exemptions'. It added that developers unable to meet the 40% coverage benchmark will now be required to install a 'reasonable amount' of solar panels.

Progress on the FHS, which was first mooted during Theresa May's Conservative government in 2019, has been held up by housebuilder concerns that it could add up to £4,000 to the construction costs for a typical new home.



Mazzarella takes on top role as Rehva president

CIBSE member heads up European-wide association

CIBSE member Livio Mazzarella has been installed as president of Rehva, the Federation of European Heating, Ventilation and Air Conditioning Associations.

A professor at the Politecnico di Milano, Mazzarella specialises in HVAC, renewable energy, applied thermodynamics, heat and acoustics. His expertise spans energy modelling in buildings and community systems, contributing extensively to research and education in building physics and HVAC technologies.

Mazzarella has been actively involved in Rehva for 15 years and has served as a board member since 2022.

A member of the Associazione



Italiana Condizionamento dell'Aria, Riscaldamento e Refrigerazione since 1979, he represents the Italian association within Rehva, and has served as a member of its council and executive board.

He took over as Rehva president at the federation's annual meeting in Milan last month and succeeds Cătălin Lungu, from Romania, who served in the role from 2022 to 2025.

EU on track to achieve 2030 targets

EU member states have 'significantly closed' the gap to achieving the bloc's 2030 energy and climate targets, according to new European Commission figures.

The commission's assessment of countries' National Energy and Climate Plans shows that they are on course to reduce net greenhouse gas (GHG) emissions by around 54% by 2030, compared with 1990 levels, if they implement existing and planned national measures and EU policies.

As a result, the EU, collectively, is closing in on a 55% reduction in GHG emissions, as committed to in the European Climate Law. The figures also show that member states have 'substantially improved' their plans following recommendations by the commission in December 2023.

SIMPLY BEST IN CLASS

We manufacture in the UK a range of safety and pressure relief valves as well as control valves in gunmetal and stainless steel suitable for a wide variety of fluids including steam, hot water and air.

NABIC valves are ideal for vented and unvented heating systems, hot water and steam boilers, compressed air systems, pump relief and bypass.

So, make sure you choose the best.



NABIC®

OUR GENIUS IS SAFETY VALVES

Double winners for 2025 Ken Dale Travel Bursary

Klaudia Rudzionek and Charlotte Hodgson win for their research proposals on water reuse and NABERS

laudia Rudzionek and Charlotte Hodgson have been named joint winners of the Ken Dale Travel Bursary. Both presented such strong, well-developed proposals, with clear value to the building services industry, that the judges decided to award two bursaries. Each will receive up to £4,000 to support their research.

Rudzionek, a public health engineer at Arup, has been selected for her proposal 'From scarcity to sustainability: a global comparative study of building water reuse strategies'. Exploring how building-water reuse can help

mitigate global water scarcity, she plans to travel to water-stressed regions in Italy, South Africa, Hong Kong and Uzbekistan. Rudzionek will investigate technical and socio-political influences on water-saving strategies, and aims to identify scalable solutions for sustainable and resilient building design.

Hodgson, senior sustainability consultant at Hilson Moran, won for her submission 'From design to operation: exploring the collaboration between design and operation teams in NABERS-accredited buildings in Australia and New Zealand'. Her research will examine how effective collaboration between design and operational teams supports long-term performance outcomes in NABERS-rated buildings across the two countries.

The Ken Dale Travel Bursary awards up to £4,000 to early-career CIBSE members who wish to spend up to four weeks researching global engineering innovations connected to their work. CIBSE would like to thank the judging panel for their time, insight and consideration during the process

For more, visit www.cibse.org/kendale





Training



New course: Whole Life Carbon Assessment Practitioner training

This on-demand course covers the practical application of the theory covered in the Whole Life Carbon Assessment (WLCA) foundation training. It runs through a full WLCA, covering all the elements and following industry best practice.

The course, developed by CIBSE in partnership with Construction Carbon and Amazon, comprises seven modules, with an assessment and cost plan at the end. It is delivered by experienced trainers using real-world case studies, to help attendees apply whole life carbon principles directly to projects.

To enrol in the programme you must have completed the WLCA Foundation training. For further information, visit: bit.ly/CJWLCT25

For full details and booking:

www.cibse.org/training

Mechanical services explained

14-16 July

27-29 October 12-14 November

Electrical services explained

15-17 July

22-24 September

ISO 50001:2018 Energy Management System/Low Carbon Consultant

17-18 July

Low and zero carbon energy technologies

21 July

21 October

The importance of energy efficient buildings

22 July

Electrical services overview

25 July

Below-ground building drainage

29 July

Low carbon consultant

building design

30-31 July 24-25 September

Introduction to the Building

1 August

1 October

International building services projects

5 August

4 December

Mastering the application of

heat pumps

12 August

Low carbon consultant building operations

13-14 August

Building services explained

18-20 August

10-12 September

Design of ductwork systems 2 September

Design of heating and chilled water

pipe systems

4 September Analysing heat pump systems

5 September

Fire safety building regulations: Part B 9 September

Commissioning Code M:

Commissioning management 26 September

BS9251 Automatic water suppression

systems overview 29 September

Advanced simulation modelling for design for performance

1-2 October

Designing water efficient hot and cold supplies

2 October

Earthing and bonding systems

6 October

Embodied carbon in MEP design: How to use CIBSETM65

7 October

Leadership identity and

self-awarenes 16 October

17 December

Air conditioning inspection

12 November

Energy Savings Opportunity Scheme

13 November

Implementing BS 8519:2020 for Life Safety, Fire–Fighting and

Critical Applications

19 November

Understanding the law for engineers 25 November

Energy surveys

New officers elected to CIBSE

Vince Arnold is the new CIBSE President and the Board welcomes new members Peter Anderson, Aleksandra (Sasha) Krstanovic and Dejan Mumovic

Vince Arnold FCIBSE took up office as CIBSE President at the Institution's AGM on 10 June, taking over from Fiona Cousins FCIBSE.

Arnold's Presidential address highlighted his commitment to mentoring, with the theme 'paying it forward'. Read the *Journal*'s interview with him on page 16.



CIBSE also welcomed David Cooper FCIBSE as President Elect, as well as the new CIBSE officers and Board and Council members, including:

- Immediate past-president Fiona Cousins FCIBSE
- Vice-presidents: David Stevens FCIBSE; Mike Burton FCIBSE; Mark Walker FCIBSE.
- Honorary treasurer: Les Copeland FCIBSE
- Board members: Peter Anderson FCIBSE, Aleksandra (Sasha) Krstanovic FCIBSE, Deian Mumovic FCIBSE.
- New Council members: Darren Coppins MCIBSE (corp);
 Bobo Ng MCIBSE (corp);
 Sophie Parry FSLL (non-corp).

The elected Board members who continue their term are Vincent Ma FCIBSE and Ted Pilbeam FCIBSE.

Visit: www.cibse.org/board



From left to right (top row) Dejan Mumovic, Peter Anderson, Mike Burton, Ted Pilbeam, Mark Walker; (middle row) David Stevens, Sasha Krstanovic, Vincent Ma, Les Copeland; (bottom row) David Cooper, Vince Arnold and Fiona Cousins

In July-August

CIBSE ANZ: Reality capture in the built environment

16 July, Arup, Melbourne

Reality Capture is a technique of recreating a space or construction project in a 3D format. This session will cover what reality capture is and the advantages of performing it 'in house'. It will discuss barriers to adoption, risk, and some common modelling traps.

CIBSE ANZ 2025 Seminar series: Building performance: imagination to reality

29 July-26 August

The ANZ Seminar series will run weekly over five weeks. Inspired by the CIBSE Building Performance Reimagined report, this series transforms bold ideas into actionable strategies for resilient, high-performing buildings, through case studies and expert insight.

Visit bit.ly/CJANZBPR25

The UK NZCBS implications for the healthcare sector

19 September, online

Organised by the Energy Performance group. Philip Tamuno, head of sustainability and net zero at Homerton Healthcare NHS Foundation Trust, and Julie Godefroy, head of net zero at CIBSE, will focus on the UK Net Zero Carbon Buildings Standard (NZCBS) in the healthcare sector.

CIBSE Young Engineers Awards

9 October, University of London

The 2025 CIBSE Young Engineers Awards will be the 30th edition of an event that showcases the innovative thinking, hard work and exceptional skills of graduate, undergraduate and apprentice engineers. The awards also highlight employers who demonstrate outstanding commitment to developing and nurturing young talent. Entries are open until 31 July. www.cibse.org/yea

Leading Hong Kong CIBSE member elected to IETA

CIBSE Hong Kong Region past chair Ir Prof P L Yuen has been elected chair of the International **Engineering Technologists** Agreement (IETA) for a two-year term, after serving as deputy chair since 2021. He was also re-elected as chair of the Seoul Accord. Prof Yuen, a former **CIBSE Board member and** vice-president, received a CIBSE Gold medal in 2024. His new highprofile roles reflect his expertise and raise the profile of CIBSE and the exceptional contribution of our members in the Region.

The CIBSE Hong Kong Region is the largest international CIBSE region and has approximately 3,200 members.

Call to safeguard equality, diversity and inclusion

The CIBSE Equity, Diversity and Inclusion (EDI) Committee has published a call to action on how the industry can respond to a rollback of EDI initiatives in some American businesses, following policy reversals in the US.

This raises concerns about the implications for multinational companies, including those in the building services and construction sectors.

The EDI Committee urges professionals, employers and industry leaders to take proactive steps, including: reaffirming a commitment to EDI; maintaining EDI initiatives; supporting employee networks; showcasing diverse role models; and encouraging inclusive recruitment practices.

The full article and call to action is at bit.ly/CJDEI25

Property benchmark includes NABERS UK as energy rating

NABERS UK has been accepted as a valid energy rating for the Global Real Estate Sustainability Benchmark (GRESB) and will be available for selection in the 2025 Real Estate Assessment.

GRESB is a leading global standard that assesses and benchmarks the environmental, social and governance (ESG) performance of real estate and infrastructure assets and portfolios. It provides standardised and validated ESG data to investors and managers.

NABERS UK rates the energy efficiency of office buildings, diving into the performance of individual buildings, measuring the actual energy use of offices, and identifying areas for savings and improvements.

Its framework complements GRESB assessments, which offer a holistic portfolio view.

For more information, visit: www.cibsecertification.co.uk

Carbon façade study makes Rehva student final

Prusicka's undergraduate project focuses on operational and embodied carbon in façades

University of Sheffield graduate Karolina Prusicka – a sustainability and physics engineer at Buro Happold – represented CIBSE in the Rehva Student Competition at the Clima 2025 conference in Milan.

Her entry, based on her final-year degree project, investigated how façade design influences embodied and operational carbon in high-rise residential buildings.

Using a parametric model and multi-objective optimisation, the study analysed more than 600 façade configurations. Its findings show that operational carbon (OC) is strongly influenced by the window-to-wall ratio, while embodied carbon (EC) is more sensitive to material choices and shading approaches.

Under low carbon Grid scenarios, EC often becomes the dominant contributor to total emissions, with strategies that reduce OC, such as



increased insulation or solar shading, potentially adding significantly to EC.

The study concluded that optimising façade design for future performance requires a careful balance between EC and OC.

Prusicka was one of 13 finalists from across Europe. The competition was won by Beniamino Fambri, of Italy, with a paper on the detection and diagnosis of water-to-water heat pump faults using artificial neural networks.

Support CIBSE's values through a gift in your will

CIBSE's values are to lead, empower, champion and inspire better-performing buildings for society and the environment. By supporting CIBSE through a gift in your will, you'll be directly aiding this mission.

As a registered charity, CIBSE operates for the public benefit, and any legacy or donation, large or small, makes a difference to our work – such as supporting members through the benevolent fund, or promoting building services to younger generations through CIBSE's Education Fund. Alternatively, if you have a project that interests you, get in touch and we can work with you to make it happen.

Bequests are not subject to inheritance tax in the UK. Those leaving more than 10% of their taxable estate to charity can reduce the rate of inheritance tax from 40% to 36%.

There are several ways to leave a gift to us in a will:

- Residuary gift: the remainder, or a percentage of the remainder, of an estate after all other gifts to family and friends have been distributed.
- Pecuniary gift: a specified sum of money.
- Restricted gift: the money can be used to support a particular CIBSE activity.
- Specific gift: an object that is part of the estate. It might constitute a collection of specimens, manuscripts, drawings or other valuables.

To discuss potential legacy gifts, contact legacies@CIBSE.org

New Fellows, members and associates

FELLOWS

Chan, Ming Yee

North Point, Hong Kong

Batha, Fiona

Farnborough, United Kingdom

Brazill, Keith Thomas John

Limerick City, Ireland

Horsley, Keith

Wadestown, New Zealand

Luo, Jiannan

London, United Kingdom

Mannion, Andrew James

Carshalton United Kinadom

Marklund, Anthony Kiell Moorooka, Australia

Naik, Maniunath

Dubai, United Arab Emirates

Rezvan, Mohammad

Enfield, United Kingdom Salehi, Ebrahim

London, United Kingdom

MEMBER

Abdi, Zakaria

London, United Kingdom

Arnold, Alexander

Alty, Stephen Paul

Abergwyngregyn, United Kingdom

Barnes, Rachael Louise

Durham, United Kingdom

Brit, Ali

Birmingham, United Kingdom

Chambers, Robert

Littlehampton, United Kingdom

Chan, Naai Tuna NT. Hong Kong

Chan, Wai Tong

NT, Hong Kong

Charistos, Stefanos

London, United Kingdom

Cheng, Man Fai

Tai Koo, Hong Kong

Cheung, Ming Kit

Shatin, Hong Kong Cheung, Yat Chor

St Albans, United Kingdom

Chow, Kwai Luk Kowloon, Hong Kong

Christou, Nikoletta

London, United Kingdom Chuana, Wai Pina

Siu Sai Wan, Hong Kong

Currie, Colin

Troon, United Kingdom

Dewar, Jamie Richard

London, United Kingdom

Dooley, Stephanie Joanna

Bristol, United Kingdom

Fan, Hin Tung

Hong Kong, Hong Kong

Forapani, Elena

London, United Kingdom

Fourie, Jean

Bristol, United Kingdom

Groves, Richard

London, United Kingdom

Hemawardena, Tharindu Dilshan

Howe, David

Kinnegad, Ireland Ibrahim, Mohanad Nagi

London, United Kingdom

lp, Hok Shan

Staines-upon-Thames, United Kingdom

Invernizzi, Greta

London, United Kingdom

Ismond, Addison

Blackpool, United Kingdom

Jaishankar, Apurva

London, United Kingdom Jarvis, Leah

Plymouth, United Kingdom

Kelly, Jody

London, United Kingdom

Knabe-Nicol, Cyril Colchester, United Kingdom

Kwok Kui, Man

Kowloon, Hong Kong

Lai, Wing Sum

Ap Lei Chau, Hong Kong

Lam. Cheuk Yin

NT, Hong Kong

Lam, Tin Hoi

Hong Kong, Hong Kong

Lau, Chun Yau

Towawan, Hong Kong

Leith. Peter

Leamington Spa, United Kingdom

Leuna, Wai

Tai Wai, Hona Kona

Li, Ka Yip Andrew

Kowloon, Hong Kong Lingard, Joe

Clitheroe, United Kingdom

Lister, James Daniel

Sheffield, United Kingdom

Tuen Mun, Hong Kong

McMorrow, Gabrielle

Washington, United States

Manktelow, Alexander London, United Kingdom

McQuade, William

New Cumberland, United States

Mois, Vasile Daniel

Brierley Hill, United Kingdom

Mok, Gary Wai Hang

NT. Hona Kona

Mok. Yu Hin

Tuen Mun, Hong Kong

Ng, Chun Ming

Sham Shui Po, Hong Kong

Na. Hon Sum

Kowloon, Hong Kong

Nishat, Asfia

Naunnawal, Australia

Nunns, Thomas

Watford, United Kingdom

Panchal, Amisha

Clacton-on-Sea, United Kinadom

Pun, Yuet Ting Angela

Bristol, United Kingdom Qiu, Jiayi

NT. Hong Kong

Servadio, Luca London, United Kingdom

Shah, Jaimin

Cambridge, United Kingdom Sin, Yin Sun

Shatin, Hong Kong

So, Ting Kit Kowloon, Hong Kong

Sung, Cheuk Hei

NT, Hong Kong

Sutherns, John Adam

Nottingham, United Kingdom Tang, Wing Kong

Tuen Mun. Hong Kong

Tsang, Kin Wai

Tuen Mun, Hong Kong

Tsui, Kam Man

Lok Fu. Hong Kong

Wallman, Steven

London, United Kingdom

Tring, United Kingdom Wilkinson, Righ

Wong, Ho Po Kowloon, Hong Kong Woosnam, Marcus

Eastcote, United Kingdom

Yip, Ka Yan

Taikoo Shing, Hong Kong

Yip, Wai Hung David

Kowloon, Hong Kong

ASSOCIATE

Clack, Joshua

Gloucestershire, United Kingdom

Craig, Joe

Manchester, United Kingdom

Critchell, Thomas

Romford, United Kingdom

Dodd Sachdev, Jack Newport Pangell, United Kingdom

Eccles, Matthew

Codsall, United Kingdom

Fountain, Samuel

Clevedon, United Kingdom Frost, Hannah

Sheffield, United Kingdom

Hobman, Thomas James Fareham, United Kingdom

Homewood, Joshua

Fareham, United Kingdom Horan, Paul

Manchester, United Kingdom Hurst, William James

Fareham, United Kingdom

Griffiths, Michael Ivybridge, United Kingdom

Johnson, Paul

Doncaster, United Kingdom Khan, Muhammad Ume

Leeds, United Kingdom

Kimber, Louis Gloucester, United Kingdom

LICENTIATE

Vekria, Rhushab Manchester, United Kingdom

Vowles, Kiye

Bristol, United Kingdom Ward, Isaac

Worcester, United Kingdom

Welsh, Kieran

Hull, United Kingdom

Williams, James Castle Donington, United Kingdom White, Bradley

Liverpool, United Kingdom Young, Freddie Haringey, United Kingdom

The perfect combination..... P-Sensor and the CMR Velogrid





CMR are the inventors and manufacturers of both the P-Sensor and the Velogrid. The Velogrids are made to measure to fit any ductsize up to 3m x 3m and the P-Sensor has a keyboard to easily enter: duct height - width - density - magnification factor and the scaling in m/s - m3/s - m3/h - l/s. It can even work out the Air Change rate. And the BMS gets three linear volume signal outputs of 0..10V 4..20mA and an addressable Modbus rtu bus.

22 Repton Court Repton Close CMR CONTROLS Ltd Basildon Essex SS13 1LN www.cmr-controls.com

Tel +44 (0) 1268 287222 Fax +44 (0) 1268 287099



cibse Journal 13 www.cibsejournal.com

Building on spending

The government's Spending Review committed £80bn to decarbonisation, but policy gaps remain around embodied carbon and skills, says CIBSE'S Anastasia Mylona

The UK's 2025 Spending Review marks a pivotal moment in the country's progress towards net zero. At a time of rising global temperatures and increasing pressure to reduce emissions, the government's investment decisions carry strategic opportunities and challenges for the construction and building services sectors.

With more than £80bn earmarked for climate-related investment across energy, housing and transport, the Spending Review lays out an ambitious, but uneven, road map. For CIBSE members and the wider building industry, the implications are farreaching, and span low carbon technology deployment, energy efficiency, and the challenge of reducing operational and embodied carbon.

Infrastructure and clean heat

Perhaps the most headline-grabbing measures are in the energy sector, with:

- £14.2bn for Sizewell C nuclear power station and a further £2.5bn for small modular reactors
- £9.4bn for carbon capture and storage (CCS), including £200m for the Acorn CCS cluster in Scotland
- £8.3bn in equity and capital support for Great British Energy, a new public vehicle to accelerate renewable generation.

These investments underscore a strong government focus on decarbonising electricity, a crucial enabler for the electrification of heat, transport and industrial processes. For building services engineers, this expanded low carbon Grid provides a long-term foundation for heat pumps, electric vehicles and smart Grid integration. However, questions remain about how quickly this clean power will be delivered and whether energy infrastructure planning can keep pace with demand.

Warm Homes Plan: a step change in retrofit funding

One of the most welcome developments



for the industry was the government's announcement of £13.2bn for the Warm Homes Plan (for 2025/26 to 2029/30), doubling previous commitments to energy efficiency. This includes grants for home-insulation upgrades, low carbon heating systems, especially heat pumps, and smart controls and digital energy management.

The plan aims to target fuel poverty and carbon savings, aligning with recommendations from CIBSE and others that a fabric-first approach must underpin any decarbonisation strategy.

This investment is a chance to embed whole-house retrofit practices, scale up supply chains, and deliver heat decarbonisation at pace. Yet successful delivery will depend on skills, standards and oversight. CIBSE members will play a critical role in retrofit design, ventilation integration, and ensuring that systems perform in practice, not just on paper.

What's missing?

The review has notable omissions. There is no new support for industrial energy users, risking a slowdown in materials decarbonisation and building product innovation. Embodied carbon, now accounting for more than 50% of total life-cycle emissions in many buildings, is not yet addressed in regulation or funding criteria.

CIBSE's TM65 series highlights the significant carbon locked into building

services equipment, materials and MEP systems. A national strategy to regulate or incentivise embodied carbon reduction remains a critical policy gap.

Skills and sector readiness

The review increases capital budgets for the Department for Energy Security and Net Zero by 16%, signalling intent to build delivery capacity — but this must be matched by workforce investment. Without scaling up designers, installers, heat pump engineers, energy modellers and commissioning experts, the building sector will struggle to deliver on the review's promise. CIBSE's ongoing work on competence and training, particularly for low carbon and retrofit design, will be crucial here.

Implications for the sector

For the first time, government funding is approaching the level required to drive a mass transition in the housing and energy sectors. But funding will not achieve net zero unless it is paired with clear regulatory direction, whole life carbon standards for all buildings – such as the UK Net Zero Carbon Buildings Standard – and support for professional scaling up and upskilling.

CIBSE members have a key role to play in ensuring integration of systems, delivering high-performing buildings that meet user needs, and embedding whole life thinking in every project.

The 2025 Spending Review sets the direction of travel for the next decade. However, real progress will depend on delivery – on turning capital into competence, carbon savings and climate resilience.

CIBSE members are well positioned to lead that transition, ensuring that every pound spent contributes not only to cleaner energy, but also to better-performing, healthier and more sustainable buildings.

Dr Anastasia Mylona,
 CIBSE technical director

Feedback

A seat at the table

After attending MIPIM and the UK's Real Estate Investment and Infrastructure Forum (UKREiiF) for the second consecutive year, I was struck by a recurring theme – or rather, the absence of one.

Discussions on regeneration, placemaking, investment and net zero focused on policy, planning and funding. We rarely hear specialist input on the infrastructure that determines the long–term success of a project. Building services engineering often operates in the background of these conferences, despite being critical to their outcomes. Mechanical, electrical and public health (MEP) systems underpin energy targets, occupier appeal and future adaptability.

We must treat building services as a strategic input, not a downstream technical task. The shift towards net zero, smart cities and high-performance buildings makes early MEP involvement more vital than ever.

Combined authorities and developers are under pressure to deliver value, decarbonisation and resilience. That won't happen without integrated building services engineering.

 Neil Baines MCIBSE, managing director at Steven Hunt & Associates

A costly lesson in ignoring best practice

Failure to follow CIBSE Guide B4 advice on reducing noise and vibration have led to years of complaints, legal costs and brand damage at a major UK supermarket – a clear example of what happens when best practice is ignored.

A poor–quality plantroom installation created long–term vibration issues for residents living in flats above the store, triggering legal action and an abatement notice. Only then, facing enforcement action, did the supermarket engage with building services and acoustic engineers.

This flagship supermarket had years of complaints about structure-borne noise and low-frequency vibration from its plantroom. The issue was passed to solicitors, rather than addressed technically.

For five to seven years, no real solution was implemented, resulting in mounting legal costs and worsening community relations. The situation escalated until the local authority issued an abatement notice, forcing action. With just six months remaining before closure, a fast and effective solution was essential.

Guided by CIBSE Guide B4, we supported installation and verified mount performance. Post-installation testing confirmed vibration and noise were reduced to acceptable levels and complaints ceased.

This case reinforces a crucial message: engage engineers early and follow best practice. If CIBSE Guide B4 had been specified and applied at design stage, the supermarket would have avoided such major disruption.

Jordi Femenia, sales manager, Mason UK

A template for office retrofits



A heat pump retrofit at offices in Manchester achieved an EPC uplift while tenants remained on site. Mitsubishi Electric's Graham Temple describes the smooth route to decarbonisation

xchange Quay is billed as Manchester's finest office campus and, for the landlord, Till Asset Management (Tillam), sustainability is no longer a 'nice to have', but an essential demand from each new tenant.

Tillam director Les Lang challenged air conditioning contractor Austin Broady to come up with a way of improving the Energy Performance Certificate (EPC) of Exchange Quay's Building Eight to B or better.

'We were asked to achieve this without the installation of a variable refrigerant flow [VRF] air conditioning system,' said Mark Broady, managing director at Austin Broady.

'We looked at replacing the 600kW gas-fired boilers, which were installed about four years ago, with air source heat pumps [ASHPs].'

After meetings with Oliver Broomfield, from wholesaler FSW, and Mike Hobson, from Mitsubishi Electric, Broady and the project team calculated the required kilowatt capacity and determined the number of heat pump units needed.

'In the past 10 years, the lowest daytime temperature was around 0°C, and sometimes down to –2°C two at night,' explains Broomfield. 'This meant we were able to specify fewer heat pumps than if we had designed the system by reading off industry guidelines.'

The solution involved installing 12 40kW CAHV ASHPs, Mitsubishi Electric's standard bearer for commercial heat pumps in the UK. The CAHV provides water flow temperatures of 25°C up to 70°C without boost heaters and – as in the case of Exchange Quay – multiple units can be cascaded to achieve up to 688kW.

The CAHV heat pumps are responsible for space heating on all 10 floors of Building Eight through 4-pipe fan coils, which were retained from the existing installation.

'The project's been really successful, as we've just had the coldest winter for 10 years,' said Lang. 'The system has worked perfectly, so we are now in a position where the gas will be removed from the building.'

Tillam is planning to upgrade further buildings on the campus, while Broady is sharing lessons learned at Exchange Quay with other commercial landlords who are having to retrofit heating without disturbing tenants.

 Graham Temple is marketing manager at Mitsubishi Electric



Forward thinker

'Paying it forward' not only equips the next generation of engineers with the skills and knowledge to deliver high-performance buildings, but it also provides some of the most rewarding experiences of a building professional's career, says new CIBSE President **Vince Arnold**

he importance of paying it forward was the key message in Vince Arnold's inaugural address as CIBSE President.

The future of the building services industry depends on those who 'inspire, mentor and lead', said Arnold, who urged the audience at the Royal Society in London to step up and pass on their knowledge, just as they were taught and inspired by the previous generation.

He added that a life dedicated to mentoring and volunteering had equipped him with the skills and leadership needed to build a successful career as a building services engineer. This began at the Post Office (PO), and has given him the satisfaction of seeing young engineers flourish under his guidance and tutelage.

Arnold's experience enabled him to make key contributions to building safety improvements after the Grenfell Tower disaster. He has also been instrumental in helping to raise competence in the industry, having sat on the Built Environment Competence Strategy Group and a number of other working groups and committees.

He has been a big supporter of CIBSE for the majority of his career and is a current Board Member. He has also been chair of the judges for the Apprentice of the Year for the past four years and a CIBSE Professional Review interviewer, at all levels, for more than 25 years.

The currency of volunteering

At his inauguration, Arnold called volunteering a special type of currency. 'It's that warm feeling you get from seeing those you are mentoring do well,' he said. 'Unlike a financial reward, this currency never diminishes; it grows, creating a ripple effect that strengthens our profession and ensures its future.' The time, energy and experience you give today 'will echo for generations to come', he added.

As a 10-year-old, Arnold joined the St John



CIBSE President Vince Arnold is urging members to give back to the industry through mentoring and volunteering Ambulance Brigade as a volunteer and has been paying it forward ever since. Driven by a passion for aviation, he volunteered for the Air Training Corps at 13, and gained valuable experience in leadership and personal development. At 22, he was commissioned as an officer in the RAF Volunteer Reserve and served for 13 years, all the while embarking on a successful career in building services engineering.

He started work as an electrical technician apprentice at the PO, which built and maintained its own buildings, so there were opportunities for Arnold to develop his electrical knowledge and put his leadership skills – learnt from volunteering – to good use.

It was while working as an electrician in Milton Keynes that he got his first taste of building services design. The electrician in charge of the project asked Arnold to attend project meetings, where he discussed electrical progress with the architect and design engineer. I was answering questions about electrical work and I really enjoyed the responsibility, he says. I thought, wow, this is something I want to do.'

Arnold calls it his Jungle Book moment,

because he told the building services engineer: 'I want to be like you.' In reply, the engineer told him to 'get a degree and get chartered', so Arnold embarked on a part-time, seven-year degree with the Open University, sponsored by the PO and managed by the Institution of Electrical Engineers. 'A phrase I hear a lot today is "earn while I learn", and it's how I did it,' he says.

Before attending an interview to become chartered, Arnold had to prove he had the same understanding as a recent full-time graduate by completing a technical review. This experience encouraged him to become a reviewer and he has been interviewing for CIBSE for more than 25 years now, including candidates on the technical report route.

'The interviewing experience is humbling, having struggled myself on the other side of the table,' he says. 'I enjoy it and find it rewarding.'

Arnold also lectured at the PO's training school, which he fitted out and managed. I enjoyed demonstrating skills such as arc welding to managers. It gave them an appreciation of how tough it was,' he says.

He was put on a management pathway and, after five years, was given an executive role, in which he managed UK engineering policy, guidance and standards on PO projects.

He was eventually headhunted by Royal Mail Engineering and Construction, part of the PO, and was soon heading up a regional office in Brighton. Here, he was involved in a wide variety of projects, from sub-post offices to complex sorting offices and mail centres.

In 1999, Arnold's consultancy was divested by Royal Mail and became the National Design Consultancy (NDC 2000). It had five years of guaranteed work from the PO and Royal Mail, but then had to compete for work.



Arnold, pictured during his time as an electrical technician apprentice with the Post Office

Collaborating for safety

Collaborating to improve building safety was a key theme of Arnold's presidential address. 'The Grenfell Tower Public Inquiry highlighted how vital collaboration is,' he said.

Building managers must work closely with designers, contractors and other stakeholders, he told the audience, to ensure that their actions are aligned, transparent and accountable. 'This is no longer optional — effective collaboration is now a legal and ethical obligation,' he added.

The industry has to make sure people are competent and trained, says Arnold. 'We've done a lot of work in our industry, but we're not there yet. Look at how many buildings are being stopped by the Building Safety Regulator at Gateway 2 because they don't meet the requirements of the Building Safety Act. We have to learn from these experiences.' See page 30 for a case study on design failure.

Managing change

'It meant that staff had to be competitive. We had to manage the culture change,' says Arnold, who was a company director and helped NDC 2000 move into other sectors, such as defence, government, retail and offices. 'The secret of managing starts with respecting the staff. It's so important that they feel they have you on their side. Managers have the right to manage, but staff have the right to be managed fairly.'

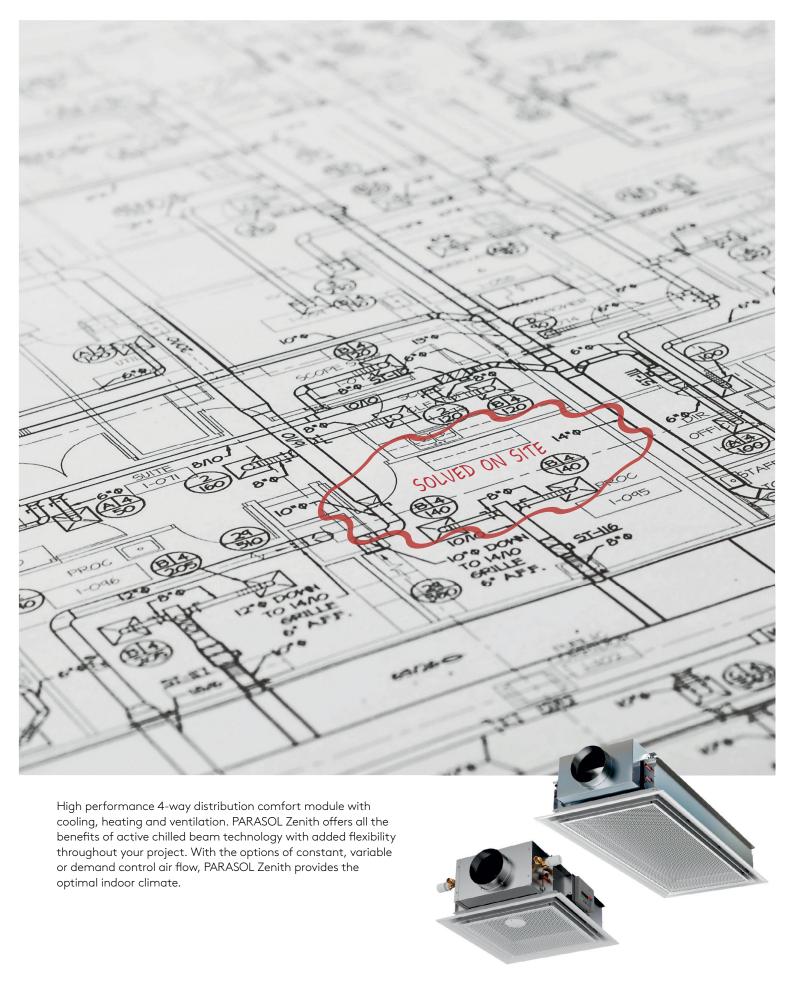
Mentoring, he adds, helps staff meet future challenges. They need to be mentored face to face; it's important that they collaborate with knowledgeable people.'

Collaboration, too – especially in the early stages of a project – is very important, says Arnold (see panel, 'Collaborating for safety').

While he acknowledges that allowing time for staff to volunteer is difficult, he believes the soft skills they acquire are of huge benefit to employers. They are improving their staff through volunteering. It develops people in ways they don't expect, because volunteering is not something you do every day in the office.'

Arnold had two opportunities to volunteer overseas. In Romania, in 1997, he helped refurbish the building services of a small hospital (sponsored by the Royal Mail) and was then asked to manage the construction of a school at an orphanage in Zambia in 2006. At his presidential address, he urged audience members to give back whenever they can and to never stop learning, reminding them that 'curiosity and adaptability drive success'.

Arnold says being CIBSE President is a red ribbon on his career, but he's not planning to stop once his term is over. I enjoy what I do, especially developing people, and helping them grow their knowledge and experience,





Joining the conversation at the InstallerSHOW

CIBSE hosted its own platform at the event in Birmingham, curating the Build2Perform theatre. Molly Tooher-Rudd and Alex Smith report on the expert-led panels and powerful calls for higher standards from across the three days

he InstallerSHOW, held at Birmingham's NEC from 24 to 26 June, welcomed thousands of attendees from across the building services sectors.

A key addition to this year's event was the CIBSE Build2Perform theatre, a stage packed with technical insight, CPD-accredited talks and real-world challenges, featuring sessions on heat networks, heat interface units, refrigerants, HVAC strategies, and retrofits.

With the UK experiencing two heat waves in June, the presentation on water scarcity, by Introba senior public health engineer Amanda Stanley FSoPHE, was timely. With Met Office 2025 maps showing rainfall well below average, she predicted that this year could match the drought of 2022, or even 1976, when communities relied on standpipes for drinking water.

To conserve water. Stanley said tighter regulations, alongside better education and more infrastructure repairs, were required. She cited figures from Thames Water showing that new homes were using an average of 145 litres per person per day – 35 litres more than design-stage calculations. (Approved Document G of the Building Regulations sets the default standard at 125 l/p/d.)

Stanley – who is on the steering committee for the Good Homes Alliance's guide on Water efficiency and reuse in housing, which is being launched this month – called for water neutrality and outlined three steps to achieving this: reduce use, through efficient devices and smart metering; reuse, through rainwater and greywater harvesting and treatment; and offset any remaining use.

Joshua Bird, founder of Rethink Buildings, talked about the challenge of fitting heat pumps in some buildings. He said that issues, such as high temperature demands, limited electrical capacity, noise, and space constraints often complicate retrofits.

However, he believes that 'every building can support a heat pump if properly assessed'. Using tools, such as flow sensors and real-time data, Bird showed how oversizing can be avoided, saving both cost and space.



CIBSE hosted Build2Perform at the InstallerShow for the first time

His key message was: 'Listen to the building.'

Joel Callow, founding director at Beyond Carbon, introduced a new toolkit to assess thermal comfort, natural daylight and Passivhaus performance metrics simultaneously. Using Rhino 3D, Grasshopper and Ladybug Tools, the toolkit helps designers to respond to evolving schemes in real time, without sacrificing performance in any one area. Callow said assessing criteria in isolation can result in poor outcomes – such as a Passivhaus building with insufficient daylight – requiring costly fixes.

The show's keynote featured energy minister Miatta Fahnbulleh, who was speaking after the Spending Review and confirmation of £13.2bn for the Warm Homes Plan. Focusing on the £1.3bn for the next wave of the Social Housing Decarbonisation Fund, she said that fuel poverty levels remain unchanged in a decade. 'The job is clear,' Fahnbulleh said. 'We must massively increase the number of upgrades happening over the next four years."

Addressing the politicisation of green policies, she added: 'Some political parties think net zero is too expensive. I see this with sorrow and sadness. Even if you don't believe in net zero, you should believe in energy security.' She urged decoupling from gas, saying: 'We have a duty and must bring energy bills down for good."

cibse Journal 19 www.cibseiournal.com



'Walking the talk'

At 20 Fenchurch Street, collaborative, data-led interventions have improved building performance dramatically. **Andy Pearson** looks at how proactive facilities management and occupier engagement have reaped huge energy savings

hen it opened in 2014,
20 Fenchurch Street was hailed
as one of the most sustainable
buildings of its type in London,
with a Breeam rating of Excellent.

Key to maintaining its sustainable operation has been the optimisation of the building's energy performance. The landlord, H-Properties, gave this new impetus in 2022, when Savills was appointed as facilities manager. It immediately introduced new initiatives to optimise the operation of the building services systems.

One year later, and despite a 37% rise in occupancy, Savills' interventions have resulted in a 22% reduction in water use, an 11% reduction in gas consumption and a 5% reduction in electricity use.

This impressive achievement was recognised at this year's CIBSE Building Performance Awards (BPA), where the scheme won the Facilities Management (FM) category.



The 2026 Building
Performance Awards are
now open for entries.
If your project is
making measurable
improvements in energy,
comfort or resource
efficiency – share it.
Enter now:
bit.ly/BPA2026

The award judges said Savills' entry showed 'how a proactive approach to FM can yield dividends over a relatively short timeframe'.

Nicknamed 'the Walkie Talkie', 20 Fenchurch Street is one of London's most iconic buildings. Its distinctive design, by Rafael Viñoly Architects, is the result of the increasing size of its floor plates, from the ground floor lobby all the way up to the transparent, three-level Sky Garden and observation deck that crown the 160m-high tower. Between the double-height ground-floor lobby and the rooftop public garden, there are 32 levels of Grade A office space.

As soon as it was appointed, Savills adopted a collaborative approach to working with its service providers. It moved its office from the 23rd floor down to the basement, to be close to their offices in order to improve collaboration and communication.

Cooperation was further enhanced through the introduction of early morning team huddles, led by Savills' team leaders, where the day's

20 cibse Journal www.cibsejournal.com

priorities were outlined and actions requiring a more coordinated cross-team approach were identified

In 2023, the newly appointed FM team worked on 'good behaviours' to foster a cultural change within all service provider teams and engage with occupiers. This 'environmental stewardship' ethos helped to promote no-cost solutions to lighting and HVAC energy waste simply by optimising timeclocks. This delivered a meaningful saving against 2022's energy consumption, despite a significant increase in 'return to the office' occupancy (36.6%).

Additionally, thanks to its 'digital led maintenance' initiative, the team was able to use data to identify water–saving opportunities, resulting in a near 22% decrease on the consumption in 2022.

As well as the daily huddle, Savills introduced weekly service provider meetings and monthly review meetings, at which service providers were expected to present their key performance indicators (KPIs), discuss their performance, and set future objectives to further improve their performance.

To help drive energy savings and optimise the building's operation, Savills introduced a variety of measures, including applying a low-temperature hot water (LTHW) 'hold off' — to make sure LTHW pumps do not operate when heating is not required during the warmer months — and adjusting plant running times, to better reflect changes in occupancy trends.

Savills also set out to optimise the valveexercising schedules for the two cooling and two heating plate heat exchangers on each floor (see panel, 'Smoothing energy demand by reducing valve exercise'). Occupiers were encouraged to reduce the number of hours the heat exchangers were in operation to

Smoothing energy demand by reducing valve exercise

Energy data analysis by the energy management team, using the smart building platform, found an energy spike produced by the chillers and boilers, and their pumping systems, at 02:00 hours every night.

Subsequent investigations found the cause to be the plate heat exchanger valve-exercise regime.

There are two cooling and two heating plate heat exchangers serving each of the tenant floors. Valve exercising is the planned, routine operation of the LTHW and chilled water valves serving the heat exchangers, to ensure they continue to function correctly.

The regime involves opening and closing valves through a full cycle, then returning them to their normal position. This stops them from becoming stuck because of inactivity and prevents costly repairs. The heat exchanger valves were scheduled by the BMS to exercise at 02:00 hours every night. However, the process of opening and closing the valves caused the central plant to operate, which resulted in the night-time energy-use spike.

To solve the issue, the BMS engineer was able to reduce the frequency of the regime so that the valves now exercise once a week. In addition, Savills implemented a central system hold to prevent the chillers starting up and boilers firing while water was circulated.

'The spikes were effectively reduced by 87% by reducing the exercise frequency to once a week, and then the plant "inhibit" helped smooth energy demand,' says Sean Harlow, Savills head of engineering at 20 Fenchurch Street.

Gamifying tenant energy performance

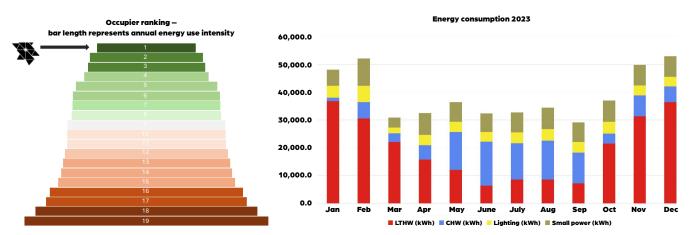


Figure 1: To incentive tenants to increase energy efficiency, Savills shares its ranking in quarterly reports The graph on the right shows consumption for heating, cooling, lighting and small power for the same tenant

www.cibseiournal.com

"Some tenants are driven to save energy by competition against their peer occupiers"

reflect their occupancy. Sean Harlow MCIBSE, Savills' head of engineering at 20 Fenchurch Street, says: '95% of occupiers have reduced heat exchanger operational hours by at least one hour per day and some have gone much further'

The Savills team engaged occupiers to also recommission the lighting controls system throughout the landmark building, to ensure lighting on the majority of tenant floors is turned off outside of business hours. In addition, it encouraged them to repair faults and recommission elements of the lighting control, including presence detection, to turn lights off at night and in unoccupied spaces during office hours. As a result of this initiative, Savills saved 3,780kWh of electricity over 13 months, which helped win it the Air Quality and Climate Action Award at the Clean City Awards.

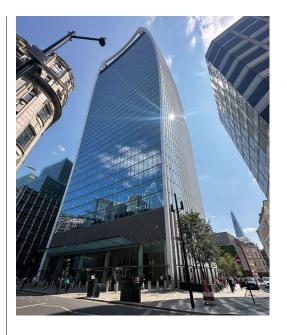
One of Savills' most significant interventions was to introduce comprehensive energy monitoring, by employing Atrius, a cloud-based smart building management platform. More than 700 sub-meters now collect data, which is analysed and displayed via the online platform. This has enabled occupiers to have access to live consumption data.

The energy management system is accessible by tenants to monitor their energy consumption and check for anomalies in energy use. 'The system's main aim is to provide occupiers with energy-use dashboards and to identify energy-use trends, with the greater aim that education on the cause of these trends would lead to good environmental behaviours,' explains Harlow.

The smart building platform is also used by Savills' external energy consultant EO team. It uses the energy data to identify further energy–saving opportunities and address anomalies in thermal energy consumption, which are discussed in its monthly meetings with the facilities management team.

H-Properties appointed Aecom for the property's Net Zero Pathway initiative, working with Savills' UK engineering team to support an aligned planned maintenance programme report and undertake a separate energy audit.

'Aecom and other partners have supported us in finding issues and in resolving these,' Harlow says. 'For example, during the Net Zero Comprehensive energy monitoring has been introduced at 20 Fenchurch Street, where more than 700 sub-meters collect data



Pathway works, we identified that pumping energies were not consistent and determined that a recommissioning exercise was required. This was done by the onsite engineering team and resulted in an energy saving of up to 30%.

At the same time, Savills started to build strong relationships with the occupants of the office floors. To encourage this association, Savills developed its 'Energy Strava' tool – a similar concept to the website used by athletes to compare their performance.

The tool anonymously ranks each tenant's energy performance relative to how others are doing, with the intention of motivating them to outperform their neighbours. Harlow describes it as 'the coolest engagement tool deployed'. While some tenants want to save energy for environmental or economic reasons, he adds, some 'are driven by competition against their peer occupiers'.

It's a tool that appears to be highly effective; Savills reports that more than 50% of tenants have requested its support to help them reduce their energy consumption to improve their Energy Strava ranking.

Harlow cites the example of one occupier who came bottom in the ranking. It engaged with Savills to try to understand the causes of its poor performance and the steps it could take to improve. 'We helped them on their energy journey,' he says.

He gives another example of a well-performing tenant that was 'floating' between second and fourth in the energy ranking. 'They proactively made adjustments to lighting and HVAC controls to make the necessary energy savings to reach the No 1 spot,' he says.

In the same vein, the 'Scavenger Hunt' is an occupier-specific questionnaire introduced by

Savills to increase energy engagement with tenants. Before a tenant takes up occupancy, Savills provides guidance to help occupiers recognise and adopt environmentally friendly fit-out practices. During their subsequent occupancy, Savills will work with the tenants to help them minimise energy use.

'Engagement has to be two-way, so I created a "Scavenger Hunt" for occupiers to answer questions about their HVAC system and its operation,' explains Harlow.

The questionnaire is followed up with a one to one with occupiers, after which their answers are analysed in the context of data from the building management system (BMS). 'We are able to have an informed discussion, which allows us to work with the tenant to optimise their HVAC services to improve their operation and provide better comfort and wellness,' says Harlow.

More recent interventions by Savills to save tenants energy include adding a ventilation night purge (between 2am and 5am) to the tenant floors when internal temperatures remain high. The primary ventilation system extracts warm air from high level on each floor,

which is subsequently discharged to the outside. Supply air dampers open to allow cooler air to be drawn passively onto the floors. The initiative works well and, thanks to the BMS modifications, the system can be enhanced by bringing the supply air fans into operation.

'The key benefit is that the on-floor temperatures are lower at the start of the day, so there is a lower chilled water energy demand,' explains Harlow.

Another modification that is used when it is warm outside is an exterior air temperature interlock to hold off the heating system. Heat captured from the ceiling voids is used to meet the heating demand of occupiers instead. 'The outside air temperature determines the operation of this optimisation rule,' says Harlow.

Since its BPA submission, Savills has continued its work to improve the building's energy performance. As a result, gas consumption has reduced by 37% compared with the previous 12 months, which – with Degree Day analysis – equates to a 42% saving. Electricity use has reduced by a further 4%, when compared with the previous 12 months, and landlord energy has reduced by 16.6%.

Sloping roof? No problem!



Walraven Yeti® Supports

Walraven Yeti® 480 feet can support M&E installations on surfaces with up to 7° pitch! The Yeti® foot was used on the new Everton Stadium build due to its many benefits, including:

- Non-penetrative fixing solution with high load capacity
- Fast installation the pitch adjustment can be made in seconds!
- Made of 98% recycled materials
- Certified noise reduction and UV resistance
- Optional ballast blocks for increased weight/stability

Alongside our versatile Walraven Yeti® feet, we provide full modular solutions for rooftop M&E installations and technical support in-house and on site.



walraven.com

walraven



FOCUS ON THE NEW CITY MULTI R32 VRF YXM RANGE

Delivering market-leading performance, our enhanced and expanded range helps you plan for the future.

Mitsubishi Electric's City Multi R32 VRF range is evolving and will soon be available in system capacities from 12 to 113kW, with both Heat Pump and Heat Recovery options. We've re-engineered our popular plug and play VRF system with a new ultra-compact modular YXM chassis design, flexible piping configurations, market-leading low noise levels and BS EN 378 part 3 compliant safety measures. Incorporating a unique patented Vertical Flat Tube (VFT) heat exchanger, the new **City Multi R32 VRF YXM** range delivers high seasonal efficiencies, low operational costs and a significant reduction in whole life carbon.

Available to install from Spring 2026, if you are a Consultant and have a medium to long term specification project suitable for our new **City Multi R32 VRF YXM** range and would like to speak to a Mitsubishi Electric Account Manager, or simply to register for future updates, please visit:

info.les.mitsubishielectric.co.uk/CityMultiYXM



CITY MULTI



R32
NEW YXM RANGE

MITSUBISH ELECTRIC

Special features

Planning rules fast-track heat pump installations in England

Permitted development changes ease size and boundary limits, supporting quicker rollout

ew planning rules designed to speed

up heat pump installations have come into force.
Changes to permitted development rights (PDRs) for heat pumps in England, which cut out the need to submit a full planning application, were introduced on 29 May.

The changes include increasing the size limit of heat pumps for dwellings from 0.6m³ to 1.5m³ and allowing air source heat pumps (ASHPs) to be installed within one metre of the property boundary.

Additionally, the number of heat pumps

permitted per detached dwelling has gone from one to two. The changes also allow ASHPs to provide cooling as well as heating, supporting the wider rollout of air-to-air models.

Restrictions will continue to apply to listed buildings, and the changes to PDRs for heat pumps do not cover Scotland and Wales.

When installed under a PDR, heat pumps must comply with a noise–assessment methodology. This assesses the upper noise limit at the nearest neighbouring habitable room's window or door, as part of the Microgeneration Certification Scheme Planning Standard.

Manufacturers announce more propane heat pumps

Hitachi Cooling and Heating has launched its next-generation airH2O 800 series of heat pumps, designed and manufactured in Europe to meet the rising demand for low carbon heating.

Running on propane (R290) natural refrigerant, the new air-to-water units, available in monobloc and hydrosplit formats, offer high efficiency, low noise, and advanced comfort for refurbishments and new homes.

Hitachi says the airH2O range is among the quietest on the market, thanks to noisereducing features such as vibrationabsorbing structures, optimised fans and a dedicated silent mode. The 8.5kW airH2O 600 model, for example, operates at just 41dB(A) at one metre, making it an ideal solution for installations where noise control is a priority. The heat pump boasts up to 12 integrated safety features, while built-in Wi-Fi and smart controls enhance convenience, offering users remote access.

Meanwhile, Mitsubishi Electric has announced it is phasing out Ecodan heat pumps using R32 refrigerant and replacing them with its extended Ecodan R290 range, which features 5kW, 6kW, 8.5kW, 10kW and 12kW models.

Air conditioning Heat pumps Heat networks

Fire safety

Meet us at the Annual South West SoPHE Networking Evening.



Meet us at the Annual South West SoPHE Networking Evening Manufacturers Presentation Tables: Free Food and Drink: Entertainment - www.jung-pumps.co.uk for full details.



Government backs airto-air heat pump trial

Pilot will explore viability of air conditioning in UK homes

Energy Systems (ES) Catapult is to run a trial of air-to-air heat pumps to see whether households could switch to a heat pump without the need for central heating plumbing.

The trial has been commissioned by the Department for Energy Security and Net Zero, and is focused on owner-occupied properties currently using electric resistive heating. These households may be able to reduce their energy bills and carbon emissions by switching to a heat pump, without the need for central heating plumbing.

Air-to-air heat pumps (AAHPs) heat or cool rooms by blowing air through indoor fan units, rather than circulating hot water through radiators. The technology is widely used in homes overseas and in UK commercial buildings (commonly known as air conditioning), but it remains little known as a low carbon heating option for UK homes. ES Catapult said, in some situations, it may offer specific advantages over air-to-water systems, including lower installation costs and the ability to cool spaces during warmer periods.

The trial aims to explore the practical barriers to adoption, gather insights into residents' experiences, identify suitable home types, assess system design and cost, and analyse the impact on energy use. Its findings will inform future policy and support

for the technology, said ES Catapult.

Participants are asked to connect their smart meter to Catapult's Living Lab – a network of more than 5,000 diverse UK households helping to test innovative energy solutions and track changes in energy use.

The trial will install heat pumps in 30 homes, offering a range of system types: single-room units, multi-room systems, and options that also provide hot water. Each participating home will receive devices to monitor room temperature, humidity and air quality, and electrical submeters



will be installed with the heat pumps.

Installations are being carried out by Robert Heath Heating and Daikin, with data analysis by University College London.

Owner-occupiers with electric heating can register their interest in taking part at: www.livinglab.energy/

The trial is part of the wider Homes for Net Zero programme, which includes research into decarbonising solid-walled homes with gas heating, and the use of heat batteries for space heating and hot water.

Air-to-air heat pumps: literature review

Flats, homes with high heat losses, and homes without radiator pipework could be well suited to AAHPs, according to a literature review by the government's Energy Innovation Research Office (bit.ly/CJAARev25).

Homes with high heat losses could also suit an AAHP, rather than the commonly installed air-to-water heat pumps, states the review, which was published in April, shortly before the government announced a proposal that would make AAHPs eligible for grants under the Boiler Upgrade Scheme. (bit.ly/CJBUSAA25).

The proposal states that AAHPs could be the most appropriate solution in space–constrained properties, particularly those that do not have hydronic heating systems.

The review found that AAHPs in the UK tend to be installed in poor thermal properties of a specific part of a house, rather than as a whole–house replacement for the central heating system.

It states that the widespread use of AAHPs in commercial buildings means that there are far more installers (50,000) for these systems than for air-to-water heat pumps (7,000).

Ground source heat pump tool encompasses more public sector buildings

A tool designed to test the feasibility of ground source heat pumps (GSHPs) for NHS buildings has been expanded to include other public sector buildings, such as schools.

The GSHP Screening Tool was developed by NHS England, Energy Systems Catapult and the British Geological Survey (BGS), with the support of the Department for Energy Security and Net Zero.

It combines geological data from the BGS and user–provided data to

estimate how much heating demand can be met through vertical closedloop boreholes.

The tool estimates installation and operational costs, and compares them with the current heating system, as well as an equivalent installation of an air source heat pump (ASHP). It aims to help users establish the availability of ground source heat in their area and potential benefits specific to their location, as well as any challenging ground or drilling problems and other

environmental constraints that may be present. It also shows the effect of potential building fabric improvements on the results.

When sites are feasible for GSHPs, tool users should contact relevant experts to move the project through to the design phase and encourage more Public Sector Decarbonisation Scheme funding applications for geothermal energy projects, says Catapult.

• The screening tool is available at: gshpscreeningtool.co.uk



The **UK's leading** commercial heating manufacturer

Your low carbon hybrid heating system partner.



SCAN ME



To view our full range of products visit: idealcommercialheating.com



elemental

19-20 November 25 Excel London

The new event for specifiers in the heating and cooling, water, air, energy and technology space - connecting them with the latest products, solutions and ideas in the drive towards Net Zero.



Sponsored by











Supported by





















































Clearing the smoke: firesafe materials in shafts

Gypsum-based systems may be wrongly specified for smoke shafts in high-rise buildings, as they are not tested for critical pressure and leakage conditions. **Alex Smith** summarises guidance issued by the smoke control industry

ew guidance has been issued because of concerns that inappropriate materials are being specified for smoke shafts.

In April, the Finishes and Interiors Sector (FIS) issued a safety alert concerning the use of gypsum-based systems in the construction of smoke shafts for mechanically ventilated systems in some high-rise buildings¹.

It advised its members that tests for gypsum-based systems do not replicate the pressure-differential conditions or measure leakage, which may be required for this application.

The FIS and the Smoke Control Association (SCA)² both recommend that materials for smoke control ducts and shafts are tested in accordance with BS EN 1366-8: Fire resistance tests for service installations. Smoke extraction ducts. This covers air leakage, integrity, insulation, and mechanical

stability under pressure, the specific requirements of which are detailed in BS EN 13501-4.

The SCA says the standards are considered a minimum requirement to meet The Construction Products (Amendment etc.) (EU Exit)
Regulations 2019.

In a Technical Note³ published in January, British Gypsum stated that while its GypWall Single Frame and Shaft systems are tested for fire resistance, they are not tested in accordance with BS EN 1366–8 or BS EN 12101–3, so it could not make any performance claims around these standards. BS EN 12101–3 is the specification for powered smoke and heat control ventilators.

British Gypsum's guidance note says 'systems should not be used as a replacement for ducting that has specific pressure requirements and is tested to different standards'.

The SCA statement says that,

as buildings increase in height, there is competition for space, which can constrain the size of smoke ducts or shafts, leading to larger fans and increased negative pressures in shafts and ducts. It states that this makes it even more critical that materials are tested to withstand these conditions.

Guidance on the subject has also been published by the Association for Specialist Fire Protection⁴, and the Gypsum Products Association⁵. ●

References:

bit.ly/CJGPDA25

¹ GypWall Systems and Smoke Shaft Guidance, British Gypsum, **bit.ly/CJGypSm25** ² FIS Safety Alert: Suitability of gypsum-based systems in the construction of smoke shafts, Finishes and Interiors Sector, **bit.ly/CJFISSh25** ³ Reaction to fire classification for protected/ smoke shaft walls. Interpretation of specific clauses within Approved Document B (AD. B),

⁴ Position on smoke shaft construction materials, Advisory Note 36, Association for Specialist Fire Protection, bit.ly/CJASFP3625 ⁵ SCA statement on smoke shaft construction materials, SCA bit.ly/CJSCASS25

Gypsum Products Development Association,

Viewpoint: the CIBSE Fire Safety working group

When smoke shafts are designed as part of smoke control systems, CIBSE's Fire Safety working group recommends:

- Functionality of the system design should be agreed at the outset of the building design and the shaft considered by the multidisciplinary design team at early design stages (RIBA 2 and before Gateway 1 of the Building Safety Act).
- Only one party should be the system 'designer', and they need to have the demonstrable competence to design the system and confirm the appropriateness of all elements within it. BS 7346-8 gives guidance

- on all the responsibilities and how they affect different parties.
- The designer needs to consider all applicable Building Regulations (such as the functional requirements of Part E, O, F, L, M and B) in the system design.
- The designer should use guidance applicable to the type of system chosen and follow a process such as BS 7346–8. They should also ensure that any relevant test evidence and classifications of the systems, their components and the construction materials are clear and appropriate.
- Any other professionals involved in specifications or installations that

- affect the design of the smoke control systems are advised to confirm with the designer to ensure that their elements meet the system designer's requirements.
- Maintain a golden thread of information on the performance, specification, components, classifications, construction materials and installation.
- Keep commissioning records and maintenance information so that elements are maintained and serviced for the life-cycle of the project.

If you have topics you'd like the CIBSE Fire Safety working group to address, contact **technical@cibse.org**

Gateway to failure

The Building Safety Regulator has published a case study that demonstrates some of the failures that are causing 70% of all designs to be rejected at Gateway 2 of the building control regime for higher-risk buildings

n late 2024, a newly constructed high-rise residential building was undergoing final safety inspections before occupation. Designed to meet modern safety standards, the building required thorough review by regulatory bodies, including the Building Safety Regulator (BSR) and London Fire Brigade (LFB). This review aimed to ensure that all fire safety systems, evacuation measures and firefighting provisions met the highest standards before residents moved in.

During the inspection process, BSR identified significant safety issues. The findings at a separate high-rise development undergoing review by BSR further reinforced the importance of strict regulatory oversight in ensuring compliance with the Building Safety Act 2022. An inspection by the principal fire engineer at LFB, discovered critical issues across multiple fire safety systems. Key concerns included:

- Firefighting facilities: inadequate compartmentation in risers, unsecured riser doors, incorrect lift operation in emergency scenarios, and ineffective communication systems in firefighting lifts
- Fire suppression systems:
 non-compliance with sprinkler
 system standards, inadequate
 water supply to upper floors, and
 potential failure of pumps because of
 poor installation
- Smoke control issues: ineffective smoke extract in residential corridors and basement areas, risking firefighter safety and reducing visibility in an emergency
- Power and emergency systems: non-diverse routing of primary and secondary power supplies, leading to increased failure risk during fires
- Wayfinding and evacuation measures: missing or unclear wayfinding signage, lack of an evacuation lift, and a single stairwell design, creating potential bottlenecks in an emergency.

With such significant deficiencies identified, BSR worked closely with the developers, fire safety engineers and LFB to ensure full remediation before occupation could be permitted.

They used the results of the survey to inform the development of their engagement strategy for the block.

The information gathered ensured their strategy met the specific needs and preferences of the residents.

The BSR's building control function played a pivotal role in ensuring that these critical safety issues were addressed before the building was approved for residents to move in.

Ensuring a safe building

The process of making the building safe included:

Rigorous inspection and verification:

- BSR conducted additional site inspections, cross-checking findings with LFB assessments to ensure fire safety measures met requirements in the Building Safety Act 2022 and Approved Document B
- Independent fire safety engineers were brought in to validate the integrity of passive and active fire protection systems.

Enforcement and compliance:

- The regulator blocked occupation approval until all deficiencies were fully rectified, ensuring that residents would not be placed at risk
- Formal compliance notices were issued to developers, requiring adherence to BS 9991, BS EN 81-72 and BS 9251 fire safety standards.

Collaborative problem-solving:

BSR facilitated technical discussions between developers, fire engineers and LFB, leading to practical solutions for complex safety concerns, including:

- Smoke control inefficiencies that required extensive system modifications
- Sprinkler system deviations that

- necessitated design reviews and upgrades
- Re-testing and full recommissioning of fire safety systems, mandated by BSR before approval would be granted.

Enhancing future safety standards:

- The case reinforced the need for stricter enforcement of fire safety rules in new high-rise developments.
- BSR used the findings to inform future policy updates and best practices for developers and building control professionals.

Following BSR's intervention, the developers implemented the required corrective actions, including:

- Securing all firefighting riser doors
- Reconfiguring firefighter lift controls to prevent unsafe lift operation in fire emergencies
- Upgrading the smoke control system to ensure effective smoke extraction and fire containment
- Installing a fully operational, standards-compliant sprinkler system
- Enhancing wayfinding signage and ensuring power supplies were separated correctly.

Once all systems were re-tested and certified, BSR granted final approval for occupation.

Conclusion

This case highlights the critical role of BSR in holding developers accountable for fire safety compliance. By preventing occupation until all deficiencies were resolved, BSR demonstrated its commitment to prioritising resident safety.

The case also reinforced the importance of collaboration between fire engineers, developers and BSR in achieving truly fire-resilient buildings.

For more design issues identified by the BSR, visit bit.ly/CJBSRPW25



FLOWGRID AIR VOLUME SENSOR

- · Accurate average air volume measurement
- · Multiple differential pressure sensing points
- · Averaging velocity pressure tank
- · Suitable for bi-directional volume measurement
- · Low velocity detection from 0.5 m/s
- Frame made in galvanised metal or stainless
- Standard mounting flanges 20-30-40 mm
- · Height manufactured in 100mm increments
- · Width manufactured in 50mm increments
- · Length 300 mm to fit the CMR Dampers
- Sizes 3000 x 3000mm have been manufactured
- · Custom made sizes can be manufactured
- 35 Years field application experience



CMR FLOWGRID

The FGG Flowgrid has been designed to measure air volume in ventilation ducts. The Flowgrid consists of a standard duct section with a length of 200 and 300 mm and is available with a 20-30 or 40mm duct connection flange to suit standard duct work

The CMR sensing probes are fitted across the internal duct frame area in predefined spacing. Each probe has a number of pressure inlet points to measure the impact and static pressure at the same time and provide an average velocity measurement.

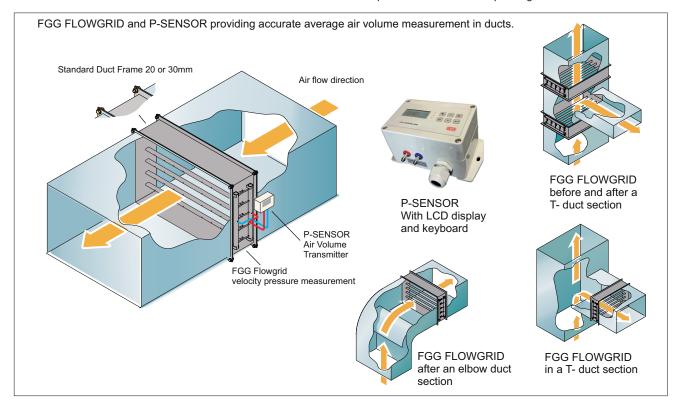
The result is a velocity pressure which ultimately provides a total air volume measurement. Both static and impact pressure have an independent pressure averaging tank which provides a smooth pressure signal of the whole measured area.

Another great advantage of the FGG Flowgrid is, that it can measure bi-directional as it is manufactured equally on both sides. This means, the air flow is measured in one direction and should there be a reverse flow, this can be detected and measured when using the CMR P-SENSOR.

The Flowgrids are manufactured in standard height increments of 100mm going up to a maximum height of 1200mm. Custom sizes can be made 3000 x 3000mm

The Flowgrids are installed in many projects such as

Commercial Buildings - Industrial Production Plants - Pharmaceutical Production - Validated Monitoring Systems Hospital Isolation Rooms - Operating Theatres - Data Centres



CMR is ISO 9001 and UKAS accredited





Departure from the norm



By harnessing advanced analytics and machine learning, A.G. Coombs Group and Exergenics delivered major energy savings in the chiller systems at Sydney Airport, at minimum cost. **Molly Tooher–Rudd** finds out how

cutting-edge digital optimisation project at Sydney Airport's Terminal 1 has not only resulted in a 33% boost to chilled water plant efficiency, but also recognition at the 2025 CIBSE Building Performance Awards (BPAs).

The project was led by A.G. Coombs Group, Australia's leading provider of specialist building services, and Exergenics, an Australian company that offers a cloud-based machine-learning platform to optimise the efficiency of chilled-water HVAC plants in commercial buildings. They teamed up with Sydney Airport to look at how existing chiller plant could be operated more efficiently without costly hardware upgrades or disruption to daily airport operations.

Their application of an optimisation engine based on an Exergenics patent leveraged operational data to recommend optimal control strategies that yielded significant energy savings. It also won the prize for Best

Digital Innovation – Project Delivery at this year's BPAs. (See panel, 'The optimisation patent'). The awards entry stood out as an example of how advanced data analytics and machine learning (ML) can transform legacy systems in ways that were unthinkable a few years ago.

The Terminal 1 chilled water plant is a critical asset for Sydney Airport, providing precise temperature control to keep millions of international passengers comfortable in a busy, energy-intensive environment (see panel, 'Inside the plantroom').

The optimisation project's objective was to enhance energy efficiency and reduce greenhouse gas emissions without significant capital expenditure or disruption to airport operations. Rather than relying on conventional tuning methods based on manufacturer data, the team used the airport's existing building management system (BMS) to gather detailed operational data.

There were four main phases to the

project: data collection and baselining; model training and optimisation; strategy implementation and remote witnessing; and measurement and verification. ML tools were used to determine the operational efficiency profiles of chillers, pumps and cooling towers, which change over time with wear and tear. An ML engine analysed the historical temperature, pressure, energy and flow data from the existing BMS to model and simulate plant equipment performance and system dynamics under a range of conditions.

As a result, the accuracy of the final control logic that was implemented on site using this approach is optimal for how the equipment performs in the field, rather than how it was designed to perform.

Once the modelling was completed, the software generated an updated functional description and scope of works for the existing controls team to implement on site. This provides a detailed explanation of how the BMS should operate to achieve specific control strategies or performance outcomes, without the need for new hardware.

The optimisation determined the set points and control parameters to achieve the highest possible efficiency from the chilled water system.

The energy savings were achieved through the implementation of the following optimised controls:

- Secondary pump staging and flow reset
- Update to chiller sequencing strateay
- Update to chiller stage up and down demand setpoints
- Implementation of a stagebased dynamic condenser water temperature reset algorithm.

The final step involved updating the plant's functional description and scope of works so that the changes could be implemented on site with minimal disruption. Throughout the year-long implementation, energy savings were rigorously verified under the International Performance Measurement and Verification Protocol, providing transparent, credible evidence of the results.

Key challenges included integrating

The optimisation patent

Chilled water plants can account for up to 40% of a building's energy use, so optimising their operation has major benefits. Accurately modelling these systems is highly complex, however, because of the many components and interactions involved. Traditional methods for controlling chiller staging and load balancing are often basic, imprecise and ad hoc.

Exergenics has developed an advanced control system for chilled water plants that includes one or more water pumps and a central controller. This system uses processors to analyse historical data and generate predictive models for chillers, pumps and building-load demands.

It then creates a full system model, simulates plant operation and calculates optimal control parameters to minimise energy use. The system determines and updates these parameters continuously to improve efficiency, ultimately delivering smarter, data–driven performance control for chilled water plants.



the optimisation into the existing BMS and minimising operational impact. These were overcome using a software-only approach. The project team worked closely with Sydney Airport's facilities management to ensure smooth implementation and ongoing performance monitoring.

In this high-security environment, the absence of additional hardware was essential. The optimisation engine ran in the cloud, using secure, air-gapped data transfer for rapid deployment and robust cybersecurity without disrupting operations.

The results

In the first nine months of operation, the chilled water plant at Sydney Airport's Terminal 1 reduced energy consumption by more than 890,000kWh, cutting greenhouse gas emissions by 704 tonnes of CO₂ and saving more than \$AUD 124,000 (£59,000) in energy costs.

The overall annual reduction in energy consumption was 1.74 GWh, 1,377 tonnes of CO_2 avoided, and

nearly a quarter of a million \$AUD in reduced energy spend. The project delivered full payback in 12 months, half the time originally projected.

The optimisation improved system performance significantly. Optimal secondary chilled water flow increased from 32.3% to 93.9% of operational hours, while optimal supply water temperature rose from 19.1% to 91.0% of operational hours. Secondary chilled water pump energy use dropped by 75%. These outcomes reflect better control over conditions that previously led to inefficiencies, such as excessive or insufficient flow and incorrect pump staging.

The methodology can be adapted for other facilities that rely on chilled water plants – from airports to hospitals, shopping centres and commercial towers. By leveraging data that buildings already collect through their BMS, operators can uncover hidden inefficiencies and correct them using software-based control improvements, rather than expensive capital upgrades.

The project will be shared – in the form of a case study and optimisation readiness/implementation guide – with stakeholders throughout the building services industry.

The CIBSE BPA judges not only praised the project's technical execution, but also its practical impact. With so many organisations under pressure to cut carbon and reduce operating costs, this project demonstrates how digital innovation can deliver immediate, measurable improvements while extending the life and value of existing systems.

Entry to the 2026 CIBSE BPAs is open until 5 September: www.cibse.org/bpa

In the plantroom

The plant in Sydney Airport's International Terminal Central Services Building includes:

- Eight chillers with a total refrigeration capacity of 26,230kW
- Seven cooling towers
- Five single-cell and two six-cell towers, and four secondary chilled water pumps, with a total capacity of 1,200 L·s⁻¹.

Chilled water is delivered to the international terminal through a secondary chilled water tunnel, approximately 0.5km long. Pipe sizes within the tunnel are 1 x 600mm and 1 x 350mm flow pipes.

Twelve branch connections feed out of the secondary pipework to separate terminal locations.



Weathering the heat

CIBSE's latest Weather Data Set enables designers to much more accurately model potential overheating in their buildings, helping them to provide comfortable spaces with minimum mechanical cooling. **Zoe De Grussa** reports

verheating in buildings remains a pressing issue in the UK, driven by rising average temperatures and more frequent and intense heatwaves caused by climate change.

A recent study by the University of East London (bit.ly/CJExHe25), which surveyed 1,580 households about the 2022 heatwave – when UK temperatures reached a record 40°C – found that 82% of households reported overheating. The study revealed a sharp rise in the use of air conditioning as a coping strategy, increasing from just 3% in 2011 to 20% in 2022, with 81% installing units between 2022 and 2023.

This growing reliance on active cooling in a housing stock largely designed for natural ventilation raises significant concerns about energy demand, affordability and resilience.

To optimise building design and minimise cooling, accurate and up-to-date weather data is essential.

CIBSE's 2025 Weather Data incorporates the latest climate science and offers more granular, location-specific datasets. It is a vital resource for analysing building performance, enabling robust assessments of energy and overheating risk.

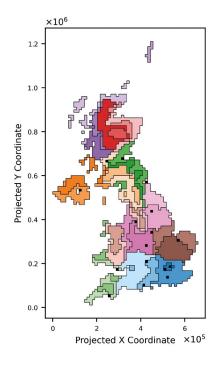


Figure 1: New Weather Data zone map. Black squares identify the city-based locations of CIBSE's previous UK weather files

These files will not be required for compliance purposes when launched; however, CIBSE hopes that, once adopted by the industry, they will be considered by policymakers.

They were developed through a Knowledge Transfer Partnership (KTP)

between CIBSE and the University of Exeter, with CIBSE KTP associate Hailun Xie playing a key role in advancing the methodologies used to generate the weather files.

The 2025 release has been tested by Loughborough University, led by Professor Kevin Lomas, with oversight and input from Inkling, Arup, and other industry and policy experts. The testing aimed to ensure logical and consistent variations in key weather metrics, both spatially and temporally, and to compare differences in energy use and overheating risk between the 2025 and 2016 datasets. The results are being prepared for publication.

Similar to the 2016 release, two types of Weather Data files are provided: test reference years (TRYs) and design summer years (DSYs). TRYs represent a typical weather year and are intended for annual energy assessments, while DSYs contain various hot-weather events and are crucial for conducting overheating risk assessments.

There are three DSY file types:

- DSY1: a moderate year containing heat events with a return period of seven years.
- DSY2: the year containing the most intense heat events.
- DSY3: the year containing the longest heat events.

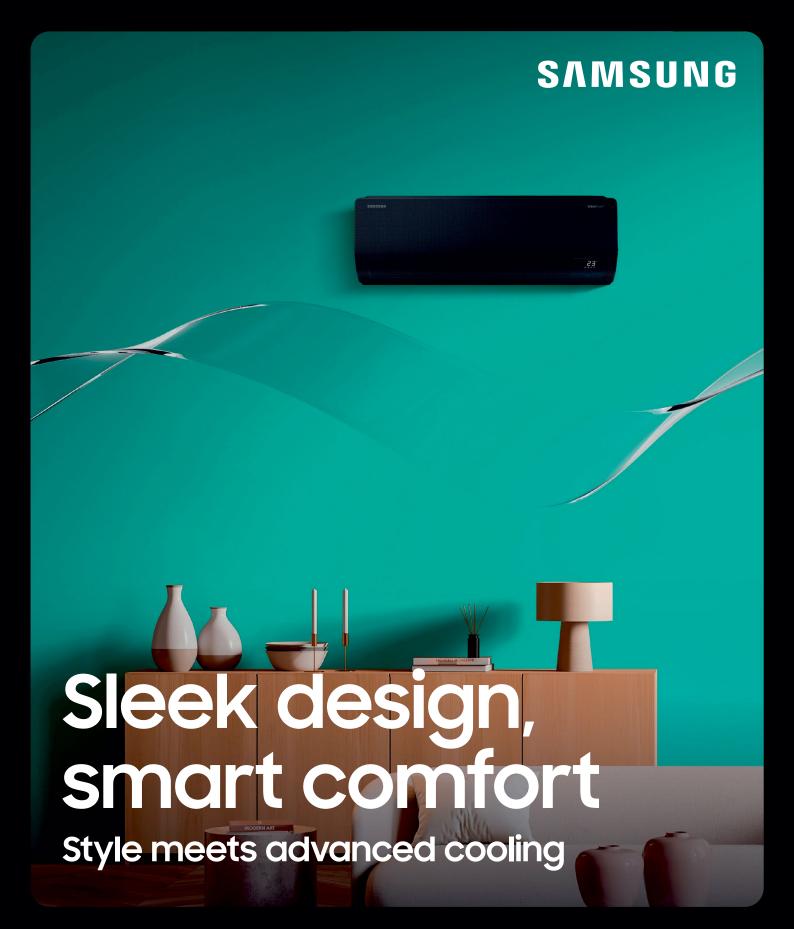
CIBSE will provide TRYs and DSYs for the 2030s (representative of 2019–39), 2050s (2039–59), and 2080s (2069–89). The 2030s timeline will replace the existing 'current' weather files, and the 2050s and 2080s timelines will form the new future Weather Data package. For more on emissions scenarios read this article online.

CIBSE will release the new Weather Data files on 14 July. ●

To receive a notification when they become available, visit www.cibse.org/weatherdata

What's new?

- **1. More up-to-date baseline:** the historical 30-year observation data used for the creation of the Weather Data files has been updated from 1984–2013 to 1994–2023, using primarily Met Office observations.
- 2. UK Climate Projections 2018 (UKCP18): baseline files have been morphed to UKCP18 climate projections released by the UK Met Office, to create the 2030s, 2050s and 2080s weather files (bit.ly/CJMAW25)
- **3. Improved solar radiation data:** incomplete data has been supplemented with Copernicus Atmosphere Monitoring Service data.
- **4. Improved UK climate representation:** there is now data for 28 climatic zones across the UK that are more representative of the local climate (Figure 1) (bit.ly/4kQOUq)
- **5. CIBSE Weather Data shop:** users will be able to identify quickly which of the 28 zones is the appropriate one for their project.



Introducing the WindFree™ Avant S2 Black, where modern aesthetics and cutting-edge technology come together. Designed in a sophisticated black finish, this air conditioner blends seamlessly with contemporary interiors while delivering gentle cooling without cold drafts through 23,000 micro-holes¹. With smart features like AI Auto Comfort² and SmartThings³ connectivity, it adapts to your lifestyle for effortless control and ultimate comfort.

Scan the QR code





Imperium[™] The power behind integrated heat pump systems

Lochinyar

Imperium



Complete Solution



Improved Efficiency



Remote Monitoring



Cost Savings



User-Friendly Interface



Easy Installation



Remote Support



Reliable Designs





Lochinvar is proud to reveal the new Imperium™ heat pump solution – a groundbreaking complete system solution designed to deliver unparalleled efficiency, flexibility, and control in commercial hot water systems. A solution for every environment. Call us today on 01295 269981



info@lochinvar.ltd.uk lochinvar.ltd.uk

Hot-water boost to heat network efficiency

Jacobs has designed a Generation 4.5 heat network that uses an innovative boost electrode to deliver domestic hot water, allowing the system to operate efficiently at a 45°C flow temperature for 80% of the year. The company's **Adam Selvey FCIBSE** explains how it works

he energy crisis of 2021–22
exposed significant flaws
in the UK's heat network
infrastructure. While domestic
electricity and gas tariffs were capped,
heat networks – unregulated at the time
– remained fully exposed to wholesale
market volatility. In one Edinburgh
scheme, tariffs soared by 450%, from 4p
to more than 22p per kWh.

This volatility has impacted low-income households disproportionately. Social housing providers – many of whose residents are on fixed incomes or Universal Credit – are under pressure to find heating solutions that reduce carbon and cost while addressing the persistent challenge of fuel poverty.

With new heat network regulations coming into force in January 2026, the sector must deliver systems that are not only compliant, but also equitable, affordable and future-ready.

Engineering consultancy Jacobs has developed a novel approach to network design that maintains comfort, reduces emissions and avoids pushing vulnerable users into fuel poverty. The result is a Generation 4.5 heat network.

This next-generation network operates with 45°C flow temperatures (W45) for most of the year – warmer than ambient 5th-generation networks, but cooler than the 55-65°C typical of 4th-generation systems. This 'smart middle ground' optimises carbon reduction, energy efficiency and affordability.

Dual-mode design

Lower network temperatures improve system efficiency and reduce heat losses – both of which help to mitigate fuel poverty. Traditional 4th-generation networks often maintain higher temperatures to ensure at least 50°C domestic hot water (DHW) at the tap.

While high-temperature heat pumps, such as CO_2 -based systems, can meet these demands, they often operate with a lower coefficient of performance (COP), increasing running costs. Maintaining high flow

temperatures year-round also increases the unit cost of delivered heat. A more dynamic, weather-responsive approach is needed.

Generation 4.5 heat networks operate at W45 most of the year, increasing to W60 only during colder periods. This dual-mode design supports hybrid systems that incorporate both passive and active heat sources, maximising efficiency in mild weather while ensuring comfort and resilience during colder months.

In one case study, reducing flow temperature to 45°C for 80% of the year improved the seasonal coefficient of performance (SCOP) from 2.4 to 3.9, making the system more cost-effective than gas on a per-kWh basis.

Ensuring DHW remains safe at lower flow temperatures is critical, as water must typically reach at least 50°C at the tap to mitigate legionella risk. To address this, the design team collaborated with manufacturer Modutherm to introduce a boost electrode on the primary side of the heat interface unit (HIU).

This small electric heater activates only during DHW demand when network flow is below 55°C, lifting water temperature to a safe outlet level – ensuring comfort and hygiene without compromising efficiency.

Realising the potential of Generation 4.5 required extensive prototyping. Working with Modutherm, the engineers tested a W45-compatible HIU incorporating an integrated immersion heater.

Seven temperature sensors monitored system behaviour (Figure 1), with the electrode activating only when flow temperatures dropped below 55°C and there was DHW demand. It deactivates if inlet temperatures exceed 60°C, creating a controlled cycling





The Modutherm electrode featured before and after insulation

pattern. Safety is managed via an 85°C thermostat and a 130°C thermofuse.

Control is embedded within the HIU to reduce dependence on the thermostat and prolong component lifespan. Test results showed stable DHW delivery, with the electrode fully energised during high-flow events and pulsing during low-flow draws. These trials demonstrated that it is now technically feasible to reduce flow temperatures while maintaining comfort and safety.

Bridging the 'spark gap'

To maximise the efficiency of the lowertemperature network in the case study, engineers specified propane (R290) heat pumps. Compared with synthetic refrigerants, such as R32, R290 offers a higher SCOP at low flow temperatures and supports greater system efficiency.

That performance gain is critical to bridging the 'spark gap' between electricity and gas. R290 also has zero ozone depletion potential and a low global warming potential. Safety is ensured through leak detection and automatic shutdown systems.

To avoid oversizing the boost electrode and minimise electrical infrastructure upgrades, flow restrictors were installed on outlets to control DHW draw rates. Instead of designing for all taps running simultaneously, the system was sized around the most demanding single use case: the shower. This approach kept the electrode rating below 7kW, avoiding expensive rewiring. Test data confirmed stable DHW delivery and reduced electrode wear because of intermittent cycling.

Balanced option

Lower-temperature networks also require radiator resizing to maintain thermal comfort. The team resized emitters where needed, especially in corridors adjacent to bathrooms, where thermal loads were higher. They also analysed building heat loss, which decreases significantly in milder conditions.

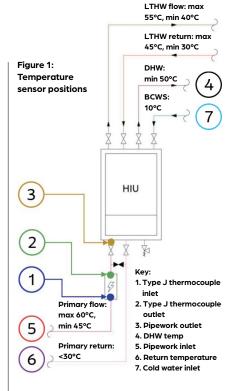
In many UK cities, more than 90% of the year is spent above freezing, making W45 a more appropriate baseline than worst-case winter assumptions. This ensures infrastructure sizing reflects real operating conditions, and reduces both capital and operational costs.

When compared with traditional storage heaters, fossil-fuel systems and even some 5th-generation designs, Generation 4.5 emerged as the most balanced option. It delivers a mix of low carbon, low cost and low risk.

The system is highly adaptable – suited to new builds with underfloor heating and to retrofits where conventional radiators remain. It integrates effectively with waste heat sources and supports smart, demandled control strategies.

Heat networks are monopolies by nature; residents cannot choose an alternative supplier. That makes it essential to get the design right – not just for compliance, but for fairness, comfort and long-term viability.

Generation 4.5 proves that heat decarbonisation can be delivered affordably, efficiently and equitably. With intelligent controls, propane heat pumps, DHW boosting and responsive network design, this



approach offers a replicable blueprint for clean, low-cost, low-risk heat.

As Ofgem regulations and assurance frameworks come into force, Generation 4.5 provides a ready-made path to compliance – and a practical step forward in delivering net zero ambitions.

- Adam Selvey FCIBSE is director of engineering design and innovation at Jacobs
- The article is based on the paper 45°C water for generation 4.5 heat networks, which was accepted for the 2025 CIBSE IBPSA-England Technical Symposium. Authors are Thomas Howes MCIBSE, senior mechanical engineer at Northrop Consulting Engineers; Adam Selvey FCIBSE, and Ryan Beale, building services engineer at Jacobs

Efficient. Scalable. Sustainable.

AW290

Reversible air source heat pump

- R290 refrigerant with heating up to 85°C
- A+++ (35/55°C) energy level with high COP
- Cascadable up to 16 units
- Three models: 35kW, 50kW, 100kW



www.modutherm.co.uk







YOUNG ENGINEERS AWARDS 2025

#WECHAMPION #CIBSEYEA





Employer of the Year

ENTER NOW

Sponsored by



Enter by 31 July 2025 cibse.org/yea



Scan Me







FCUs for hotels and commercial buildings



Fan coil solutions for hotels and commercial spaces need to meet occupants' requirements for comfortable levels of heating and cooling, while offering high energy efficiency and exceptional acoustic performance. These solutions need to be reliable, flexible to configure and offer intelligent, easy to operate controls.

When choosing the solution for your next development, think Ability fan coils.



Ease of installation



Improved efficiency



Reduced footprint for duty point



Multiple control and connection options



Commercial benefits

Discover what makes Ability the UK's leading fan coil unit manufacturer.

See how your project can benefit from our solutions' versatility, cost benefits and added value, through compact sizes, high energy efficiency, reduced carbon footprints and lower noise levels.

More info on our Fan Coil Units here



Ambient loops and 5th-generation heat networks: a low-temperature future for heating and cooling

This module explores the application and potential for ambient loops and 5th-generation heat networks

he decarbonisation of heating and cooling is a challenge facing the built environment, particularly in dense urban areas. Traditional high-temperature district heating networks, while effective in distributing heat, often rely on fossil fuel-based generation and can incur significant distribution losses. Fifth-generation district heating and cooling (5GDHC) networks offer a fundamentally different approach: lower-temperature, bidirectional, energy-sharing systems that operate at, or near, ambient temperatures. This CPD article explores the application and potential for these fifth-generation district network systems.

It is estimated that more than 3% of UK households are already connected to a district heat network, the majority of which are currently powered by natural gas or combined heat and power (CHP) systems. In 2021, the UK government² reported that heat networks could economically provide up to 20% of the UK's domestic heating demand. Government support has been instrumental in accelerating the adoption of heat networks across the UK. The boxout

'UK policy and funding support for heat networks' summarises how national and devolved policy frameworks – along with capital funding schemes, such as the Green Heat Network Fund³ – are helping to scale up deployment of fourth– and fifth–generation systems.

Many recent schemes are typically described as fourth–generation district heating (4GDH), characterised by lower distribution temperatures – typically 50–70°C supply, with return temperatures of 20–40°C. This shift enabled integration of low carbon heat sources, such as large–scale heat pumps and solar thermal collectors, while maintaining compatibility with existing building systems. These networks are commonly referred to as low-temperature systems and are predominantly designed to provide heating only in residential and smaller commercial applications. Heat is typically transferred to end users via heat interface units (HIUs), which house local heat exchangers that separate the district network from internal circuits serving dwellings or individual spaces.

In contrast, 5GDHC networks operate using an ambient loop – a primary distribution circuit that

UK policy and funding support for heat networks

Heat networks are a core component of the UK's strategy to decarbonise heat at scale. The London Plan and the Greater London Authority (GLA) actively promote district energy solutions, with new developments encouraged or required to connect to planned or existing heat networks. However, support for low carbon heat is not confined to the capital.

The UK government allocated £320m under the Heat Networks Investment Project (HNIP) to stimulate market growth across England and Wales up to 2021.¹¹

Building on this momentum, the Green Heat Network Fund (GHNF)¹² is now the primary capital funding mechanism for new low carbon heat networks in England. It supports projects that use renewable or waste heat, or high-efficiency heat pumps – including those operating at lower distribution temperatures, such as ambient loop or 5GDHC systems.

GHNF funding prioritises schemes that demonstrate robust carbon savings, technical viability and alignment with net zero goals. The fund remains active through to at least the 2027–28 financial year. Elsewhere in the UK, the devolved nations are also advancing heat network deployment. Scotland's Heat Networks (Scotland) Act 2021 sets statutory targets of 2.6TWh of network-supplied heat by 2027 and 6TWh by 2030 — equivalent to 3% and 8% of Scotland's current non–electrical heat demand.¹³

Northern Ireland is also in the process of developing enabling legislation to support the growth of its heat network sector, including future regulation and investment frameworks.¹⁴

PD programme leat networks



Continuing professional development (CPD) is the regular maintenance. improvement and broadening of your knowledge and skills to maintain professional competence. It is a requirement of CIBSE and other professional bodies. This Journal CPD programme can be used to meet your CPD requirements. Study the module and answer the questions on the final page. Each successfully completed module is equivalent to 1.5 hours of CPD. Modules are also available at cibseiournal.com/cpd

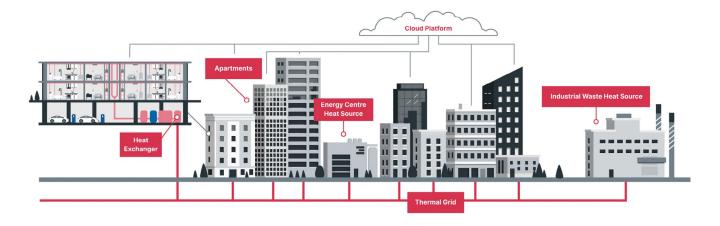


Figure 1: Example of a cloud–controlled ambient network being used in a district heating and cooling application, integrating a mixture of contributions to and from the primary ambient loop to service a variety of building types via heat exchangers feeding secondary loops (Source: Dimplex)

circulates water at, or near, the temperature of the surrounding environment, typically between 10°C and 30°C. These ultra-low temperature networks enable simultaneous heating and cooling across connected buildings through decentralised water-towater heat pumps, which extract or reject heat as needed. This arrangement supports bidirectional thermal exchange not only between buildings, but also within buildings, enabling redistribution of thermal energy between zones with different heating and cooling demands. This internal balancing capability enhances system-wide efficiency, reduces external energy input, and supports greater flexibility in meeting diverse occupant needs.

The size of 5GDHC networks can range from a single multi-unit building or estate to an entire district and, potentially, a whole town.4 Energy inputs to the loop can be highly diverse and might include: geothermal heat from boreholes; waste heat from data centres, local factories, underground transit systems or commercial refrigeration; and solar thermal energy. Additional sources include abstraction from rivers, lakes or canals using water source heat pumps, and thermal energy captured from wastewater and sewer systems via in-drain heat exchangers. Refrigeration systems in supermarkets and server rooms, or electrical substations, can contribute low-grade heat. District energy centres may host large-scale heat pumps to maintain loop temperatures and interface with thermal stores, such as borehole fields or large buffer tanks, enabling peak capacity management and timeshifting of loads. For example, waste heat generated during weekday industrial operations can be stored and redistributed across the full week.

In some transitional schemes, biomass or CHP may be used to supplement the system. However, long-term reliance on combustion

is typically avoided, as continued use of fossil-based sources can undermine the environmental advantages of low-temperature networks, as noted in IEA studies.⁵

Individual buildings – or end-user spaces such as apartments – typically employ decentralised water-to-water heat pumps. such as those discussed in CIBSE Journal CPD module 190 and illustrated in Figure 1, to extract or reject thermal energy, either directly from the ambient primary loop or via a secondary building-level circuit. A defining feature of 5GDHC is its capacity for bidirectional energy flow. For instance, an office requiring cooling in summer can provide thermal energy to a neighbouring residential block requiring domestic hot water. By dynamically balancing heating and cooling demands within and between buildings, these systems significantly reduce reliance on external energy inputs.

This approach has been implemented at scale in the landmark London redevelopment taking place in Silvertown, where a 5GDHC ambient loop serves multiple plots. A communal building-level ambient loop supplies decentralised in-apartment heat pumps, which provide heating and hot water. Cooling models will later allow rejected heat from comfort cooling to be redirected to the loop for reuse elsewhere, thereby increasing overall system efficiency and reducing peak load on the central energy centre.

Cooling, in particular, is an area where ambient loops can deliver clear advantages. They enable low-energy, reversible cooling using the same water-to-water heat pump systems employed for heating, often removing the need for rooftop chillers or air-cooled condensers. This reduces noise, frees up roof space and can be especially valuable in high-density developments. Traditional air conditioning systems typically discharge waste heat to the external

environment, exacerbating the urban heat island effect. In contrast, heat rejected during comfort cooling can be returned to the ambient loop and used elsewhere in the network.

The ambient loop functions as a shared thermal reservoir, supporting both heating and cooling cycles. It supplies ambienttemperature water to the condenser side of decentralised heat pumps during cooling operation and, using changeover valves, provides a low-grade heat source to the evaporator during heating. This continuous thermal exchange becomes even more efficient when combined with artificial intelligence (AI)-enabled control systems that forecast weather, occupancy and demand. These systems can optimise pump speeds, manage thermal storage and fine-tune heat pump operation. Machine learning also supports predictive maintenance, fault detection and real-time optimisation. Digital twins may be employed to simulate network behaviour under varying conditions, and provide valuable data for commissioning and performance management.

At the building level, the primary ambient loop typically connects via a plate heat exchanger to a secondary loop. This allows for hydraulic separation and independent control of pressures, water treatment and flow regimes. In some systems, this interface is housed within prefabricated modular energy hubs that include integrated control systems and decentralised plant. These compact units simplify installation, reduce onsite complexity, and are particularly valuable where plant space is limited. In an ongoing landmark London redevelopment, such modular hubs enabled rapid deployment and efficient integration with decentralised heat pump systems within each residence.

Within dwellings, compact water-towater heat pumps are typically used to extract energy from the ambient loop to meet space heating and hot water demands — and, where specified, cooling loads.

Thermal energy is stored in an integrated domestic hot-water cylinder, allowing the unit to respond flexibly to varying demand.

These systems, such as the example shown in Figure 2, are commonly installed within utility cupboards. Their ability to deliver simultaneous heating and cooling to different zones within a building further enhances system efficiency.

When paired with modest integrated thermal storage, they also support load shifting and improved responsiveness to time-of-use electricity tariffs.

Because ambient loops operate at near-neutral temperatures - typically between 10°C and 30°C – they enable more effective use of low-grade and waste heat while supporting continuous thermal energy exchange across connected systems. Their relatively small temperature differential with the surrounding environment significantly reduces distribution losses; multiple studies report heat losses as low as 1-3% in welldesigned ambient systems, compared with >8% in fourth-generation and significantly more in earlier networks. This improved thermal efficiency reduces the total energy input required from external sources, outweighing the increased pumping costs, resulting in lower-carbon emissions and enhanced overall system performance.

Ambient systems also enable the use of lower-cost thermoplastic pipework, such as



Figure 2: Compact water source heat pump with optional buffer vessel, integrated with a hot–water cylinder feeding an underfloor heating system and supplying domestic hot water (Source: Dimplex)

crosslinked polyethylene (PEX) or highdensity polyethylene (HDPE). Shared trench installation and reduced capital costs further benefit urban regeneration and new-build schemes. However, careful hydraulic design is still required to manage the higher flowrates needed for small temperature differentials, typically around 5-10K.

Effective design is critical to the success of 5GDHC networks. Loop sizing, pipe routing, pressure–drop management and selection of decentralised plant must be matched to building requirements. Accurate diversity assessments are essential to avoid oversizing the heat network itself. While this topic is partially addressed in CIBSE CP1 (see boxout 'CP1') and section 4.4 of the CIBSE Design Guide: Heat Networks, 6 there is currently no standardised guidance for distributed hot water storage systems – such as those used with decentralised heat pumps, as illustrated in Figure 2.

At the national level, the UK's legally binding net zero by 2050 commitment is accelerating the transition to electrified and low carbon heating. Local planning authorities are increasingly mandating connection to low carbon heat networks or requiring developments to be future-proofed. However, regulatory frameworks remain incomplete. Heat network zoning, tariff structures that reflect bidirectional energy exchange, and clear governance models are still evolving.

For example, the UK Department for Energy Security and Net Zero, through Ofgem, is developing the Heat Network Technical Assurance Scheme (HNTAS), ⁷ a quality assurance framework to ensure that heat networks in England and Wales are designed, built, operated and maintained to consistent technical and performance standards. CIBSE is currently revisiting CP1, while at the same time ensuring that it is consistent with HNTAS.⁸

5GDHC networks are inherently more complex than unidirectional systems. Maintaining hydraulic and thermal balance across diverse and variable loads requires advanced controls and real-time optimisation. While capital costs may be higher owing to decentralised, modular hubs and enhanced system monitoring, 4G networks also require plantrooms and monitoring. In contrast, 5GDHC systems can offer savings through the use of plastic pipework and by eliminating the need for dedicated cooling systems.

Ownership and governance models must adapt to reflect shared energy flows across buildings and users. Transparent billing mechanisms for heat, cooling and energy exchange are essential to encourage efficiency and equity. Maintenance burdens can also be higher, particularly where

CP1

The freely available CIBSE/ADE CP1 Heat Networks: Code of Practice for the UK¹⁵ sets out minimum requirements and best practice for network design, commissioning and operation, including discussing diversity factors. Though initially focused on higher-temperature networks, many of its principles remain applicable to lower-temperature systems, with the 2020 update supporting integration of low carbon heat sources. CP1 is currently under review.

individual heat pumps and thermal stores serve each dwelling. Compared with simpler HIU-based systems, these require consistent access, standardised components and proactive service strategies to ensure reliability in multi-tenanted buildings.

Whole life cost analysis and life-cycle carbon impact must inform technology selection. Decentralised systems offer control and flexibility.

However, centralised systems, with fewer components and unified servicing contracts, often deliver better economies of scale. Each scheme must weigh these factors against site constraints and energy objectives.

A recent review by Yao et al found that 5GDHC systems have strong potential to reduce greenhouse gas emissions through electrification and exploitation of waste heat. They also offer grid-side benefits by supporting thermal storage and load flexibility. However, the mass deployment of decentralised heat pumps can increase pressure on local electricity networks, requiring coordination with grid operators.

Benchmarking of operational performance remains limited, because of a lack of accessible data. Many real-world projects are not captured in academic literature. Initiatives to establish shared data platforms and case-study repositories will be vital in scaling up adoption and spreading best practice.

Looking ahead, ambient loop-based 5GDHC networks offer a scalable and adaptable framework for delivering low carbon heat in urban environments. They integrate well with smart grids, support future energy flexibility, and provide a pathway to decarbonising heat and cooling.

However, realising their potential will require coordinated progress in policy, planning, standards and professional practice. With appropriate regulation, investment and skills development, ambient loops can form a core component of resilient, low carbon cities equipped for the challenges of the 21st century.

© Tim Dwyer 2025.

Module 250

1.	wr	lat distinguisnes SGDHC networks from			to prevent system oversizing and optimise
	tra	ditional systems?			capacity planning
	Α	They are only suitable for industrial applications	_		
	В	They operate at or near ambient temperatures and	5.	Which UK government initiative currently provides	
		enable bidirectional energy exchange		ca	pital support for new low carbon heat networks?
	С	They rely exclusively on centralised combustion		Α	Energy Company Obligation (ECO)
		sources		В	Feed-in Tariff (FiT)
	D	They require rooftop chillers for cooling provision		С	Green Heat Network Fund (GHNF)
	Е	They use higher flow temperatures for improved		D	Net Zero Infrastructure Scheme (NZIS)
		heat transfer		Ε	Renewable Heat Incentive (RHI)
2.	Wh	nich of the following is a typical benefit of an			
	am	nbient loop–based system in a dense urban setting?			
	Α	Higher reliance on fossil fuels to ensure			
		year-round reliability	Name	- (1	
	В	Increased transmission temperatures to reduce	Name (please print)		
		pumping losses	Job 1	title	
	С	Mandatory use of rooftop air-cooled condensers	Organisation		
	D	Requirement for larger temperature differentials	Addr	ess	
		between flow and return			
	Е	Waste heat from one building can be reused			
		by another			
3.	What is a common material choice for pipework in		Postcode		
	ambient temperature heat networks, and why?		Emai	il	
	Α	Asbestos cement, because of its durability	Δre	/OU 0	ı member of CIBSE? If so, please state your membership
	В	Copper, because of its high thermal conductivity	numl		member of older. If so, prease state your membership
	С	Galvanised steel, for its structural strength			
	D	Stainless steel, because of its corrosion resistance	The	CIE	SSE Journal CPD Programme
	Ε	Thermoplastic materials such as PEX or HDPE,	Dimplex	artici	pating in this CPD module, you consent to sharing your details with
		because of lower temperature demands		lex. E	oimplex may contact you via email and/or telephone with further on and technical insight on its services. You have the right to opt out
4.	Wh	ny is system diversity assessment critical when	from such communications at any time.		
	designing a 5GDHC network?		I understand that I will receive marketing communications from Dimplex after		
	А	To comply with refrigerant safety codes	completing this module (please tick here). \Box		
	В	To determine the height of chimney stacks	Goto	Go to www.cibsejournal.com/cpd to complete the module online. You will	
	С	To ensure rooftop solar PV is sufficient for peak load	receive notification by email of successful completion, which can be used to validate your CPD records. Alternatively, complete this page and post it to:		
	D	To minimise the carbon factor of electricity supply		-	CIBSE, 91–94 Saffron Hill, London EC1N 8QP

References:

¹ Energy Trends: UK District Heating Statistics, UK BEIS, 2020, bit.lv/CJJA25CPD1 - accessed 20 June 2025.

² Opportunity areas for district heating networks in the *UK*, UK Government Department for Business, Energy and Industrial Strategy (BEIS) 2021, bit.ly/

CJJA25CPD2 - accessed 20 June 2025.

- ³ bit.ly/CJJA25CPD3 accessed 20 June 2025.
- ⁴ bit.ly/CJJA25CPD4 accessed 20 June 2025.
- $^{\rm 5}$ IEA Annex TS2 Implementation of Low-Temperature District Heating Systems.
- ⁷ bit.lv/CJJA25CPD5 accessed 22 June 2025. $^{\rm 8}$ Jones, P et al, Huge changes to regulate UK
- 6 CIBSE Design Guide: Heat Networks, CIBSE 2021.

heat networks - including technical standards, zoning and consumer protection, CIBSE Technical Symposium 2024.

9 Yao, S et al, A state-of-the-art analysis and perspectives on the 4th/5th generation district heating and cooling systems' Renewable and Sustainable Energy Reviews, Volume 202, September 2024, bit.ly/CJJA25CPD6.

10 Greater London Authority (GLA) (2021) The London Plan 2021: Spatial Development Strategy for Greater London, bit.ly/CJJA25CPD7 – accessed 22 June 2025.

¹¹ Department for Business, Energy and Industrial Strategy (BEIS) (2021) Heat Networks Investment Project (HNIP): Overview, bit.ly/CJJA25CPD8 accessed 22 June 2025.

¹² Department for Energy Security and Net Zero (DESNZ) (2024) Green Heat Network Fund: Guidance Notes, bit.ly/CJJA25CPD9 - accessed 22 June 2025. 13 Scottish Government (2021) Heat Networks (Scotland) Act 2021, bit.ly/CJJA25CPD10 - accessed 22 June 2025.

¹⁴ Department for the Economy (Northern Ireland) $(2021)\,Energy\,Strategy: The\,Path\,to\,Net\,Zero\,Energy,$ bit.ly/CJJA25CPD11 - accessed 22 June 2025. 15 CP1: Heat Networks: Code of Practice for the UK, CIBSE and ADE 2020, free download, bit.ly/ CJJA25CPD12.

Products of the month

Grundfos launches new generation of TPE3 inline pumps

The latest models offer Grundfos' highest-ever energy efficiency from 0.25 to 22kW

rundfos has introduced a new generation of its TPE3 inline pumps, delivering the company's highest energy efficiency yet across a wide power range. The updated lineup now spans motor outputs from 0.25kW to 22kW, featuring MGE motors with IE5 efficiency, enhanced hydraulics, and smart functions that reduce energy consumption, CO₂ emissions, and life-cycle costs.

The new TPE3 series simplifies selection, installation and commissioning through a streamlined range of 12 models,

covering nominal sizes DN32 to DN200. With improved hydraulics tailored to the inline design and MGE motors, the pumps offer greater performance with fewer variants. Integrated frequency converters, and sensors for differential pressure and temperature, are now available up to 22kW, expanding from the previous 2.2kW limit.

Operators benefit from easy connectivity via Bluetooth LE, enabling real-time communication with the redesigned Grundfos GO app. This app supports guided



commissioning, live data monitoring and advanced features such as AutoAdapt and FlowAdapt, while also allowing configuration of communication interfaces such as Modbus RTU and future BACnet support.

Physical slots for additional CIM modules and an Ethernet IP interface facilitate easy integration with cloud services such as Grundfos Connect, making the TPE3 highly adaptable across applications.

Grundfos plans to extend the TPE range further, offering TPE

1000 and 2000 series models with motors up to 90kW, all meeting IE5 standards. This means the full TPE range will soon provide ultra-efficient inline pumps from 0.25kW to 90kW. These pumps are ideal for diverse settings, including HVAC and district heating.

Sustainability is a key focus, with the TPE3 pumps carrying an Environmental Product Declaration certified to EN15804 and ISO 14025 standards.

● Visit www.grundfos.com/campaign/new-tpe3

Ideal's new guide to commercial heating systems

Ideal Heating Commercial has launched its new *Providing the specification edge* brochure, designed to help building services consultants, engineers and specifiers to design and specify commercial heating systems with confidence and clarity.

The brochure highlights Ideal Heating Commercial's expert specification team, dedicated to simplifying the specification process by offering guidance through every stage of a heating project. It begins with an overview of the company and its parent, Groupe Atlantic, spotlighting recent investments of more than £35m in low carbon heating research, heat pump production and national training facilities.

Showcasing a full range of high-efficiency products, including condensing boilers, ECOMOD heat pumps, and hybrid systems, the guide also includes BIM objects, Building Regulations updates, refrigerant options, funding schemes, and UK-wide training and CPD services.



Richard Brown, head of specification, said: 'Whether you're designing for a new build or retrofit, we have the in-depth industry and product knowledge to help you find the most efficient, cost-effective heating solution for you and your client'

Visit idealcommercial heating.com/ specification





Gravity or pumped drainage? Jung Pumpen has the answer

While experts agree that gravity systems are preferred for wastewater and sewage, pumped drainage is often essential where gravity isn't feasible.

Jung Pumpen's Compli lifting stations provide a reliable, easy-toinstall alternative. Trusted by specifiers, these systems offer proven reliability in challenging drainage scenarios.

For expert advice and model selection, contact the UK Jung Pumpen Division at Pump Technology, authorised by Jung Pumpen for equipment specification and supply.

● Call 0118 9821 555 or email Matt@pumptechnology.co.uk

Products & services



Company rebrand to mark Torin's 60th anniversary

Torin has celebrated 60 years of British manufacturing with a major rebrand.

The Swindon-based producer of energy-efficient fan technology. formerly Torin-Sifan, unveiled a new name, a logo featuring a motor, teal brand colours, and updated signage and website to reflect its shift to advanced EC motor technology.

Torin has also been investing in a Knowledge Transfer Partnership with the University of Exeter, part-funded by government agency Innovate UK, bringing together businesses and expert academics to tackle strategic innovation challenges.

● Visit www.torin.co.uk



Hamworthy Heating installs heat pump cascade at Cambridge primary school

Hamworthy Heating has supplied two Tyneham 290HT 27kW air source heat pumps with natural refrigerant for a primary school extension in Cambridge. Installed in a hydraulic cascade with a 500L buffer cylinder, the system ensures efficient, low carbon underfloor heating.

Rather than rely on a larger single heat pump running inefficiently at partial load, the cascade setup allows units to adjust their capacities as needed. This enables the school to achieve a more accurate match to its actual heating demand, while optimising performance.

• Call 01202 662 552 or visit www.hamworthy-heating.com

High-performance ventilation enhances guest comfort at York aparthotel

Domus Ventilation's high-performance rigid ducting has been installed as part of an MVHR system at a new luxury Supercity Aparthotel on Micklegate, York. This prestigious development, located in a conservation area, features 46 contemporary apartment suites, a restaurant and a bar.

The MVHR system extracts stale air and recycles its heat to pre-warm fresh air, enhancing energy efficiency and guest comfort. Central to this performance is Domus' 204x60 rigid ducting, precision-engineered for a secure,

low-leakage fit that ensures maximum airflow and minimal energy loss.

Domus sound attenuators were also specified. These absorb sound over a range of audible frequencies travelling through ductwork, such as the MVHR fan, external traffic noise or room-to-room crosstalk, making it an ideal addition in a hotel.

The system was installed by long-term Domus customer J H Shouksmith & Sons. Senior contracts manager Carl Turner praised the ease of installation and responsive support.

● Visit www.domusventilation.co.uk



Nuaire's BPS Passivhaus air handling units (AHUs) and XBC Passivhaus packaged heat recovery units have achieved Passivhaus certification. meeting rigorous standards for energy efficiency, thermal comfort and indoor air quality.

The AHUs and XBC units have been independently tested and certified. BPS models include dual compressors, highefficiency thermal wheels and low-leakage design, and feature acoustic insulation and high-grade filters for optimal air cleanliness. XBC Passivhaus units offer up to 95% heat recovery efficiency, F7 and G4 extract filters, L2 leakage classification, and minimal noise breakout. With electric or low-pressure hot water heating options and cooling modules, they ensure flexible and efficient ventilation. Both units use Class 3 dampers for airtight operation.

● Visit www.nuaire.co.uk/commercial/passivhaus



Ideal Heating Commercial CPD on surveying the modern plantroom

Ideal Heating Commercial has launched a new CIBSEapproved CPD titled 'Surveying the modern plantroom from boilers to heat pumps'. The course reflects recent advancements in heat source technology driven by legislation and innovation.

Focusing on practical solutions for decarbonising commercial heating, the CPD covers energy-efficient retrofits using heat pumps and hybrid systems that combine heat pumps with condensing gas boilers when heat pumps alone aren't feasible. It also reviews

relevant legislation, best commissioning practices, and potential risks during heating system replacements.

Designed for mechanical engineers, sustainability professionals, contractors and consultants, the CPD equips attendees with the skills needed to assess plantrooms and determine the most effective heating solutions amid industry changes.

● Visit idealcommercialheating.com/specification





Eribé Knitwear installs Advanced wireless fire-protection system

Scottish knitwear brand Eribé has enhanced fire safety at its Melrose site with an Advanced MxPro 5 intelligent fire panel and EMS Firecell wireless detection, installed by Safe Services.

The upgrade followed a 2024 risk assessment and ensures Category L2

protection. The retrofit avoided disruptive cabling, aligning with Eribé's business improvement plans.

The MxPro 5 from Advanced offers robust, fault-tolerant fire protection with false-alarm management.

● Call 0345 894 7000 or visit www.advancedco.com

Panasonic showcases net zero vision at InstallerSHOW 2025

Panasonic Heating & Cooling Solutions unveiled its road map to a sustainable future at InstallerSHOW 2025. Through a press briefing and panel discussion, the company spotlighted its latest innovations, including the Aquarea heat pumps using natural



refrigerant R290, and its role in key UK research projects, such as Salford's Energy House 2.0.

Panasonic also emphasised training and low carbon tech investment, supporting the upcoming Future Homes Standard. Experts stressed the importance of community engagement in achieving true heating decarbonisation at scale.

● Visit www.aircon.panasonic.eu



Sustainable heating delivered at National Wool Museum

Panasonic has supplied four Aquarea 30kW T-CAP M Series air-to-water heat pumps to the National Wool Museum in south-west Wales.

The compact, quiet units replaced gas boilers to enhance efficiency and reduce carbon emissions.

The installation – a first of its kind in the UK – met spatial and noise restrictions, while integrating with existing infrastructure.

The Panasonic M series units were easily integrated with existing radiators to deliver a high water-outlet temperature of up to 75°C, and they work in outdoor temperatures as low as -25°C.

 Visit www.aircon.panasonic.eu/GB_en/ happening/aquarea-t-cap-m-series



Advanced wins Fire Safety Project of the Year at FSM Awards 2025

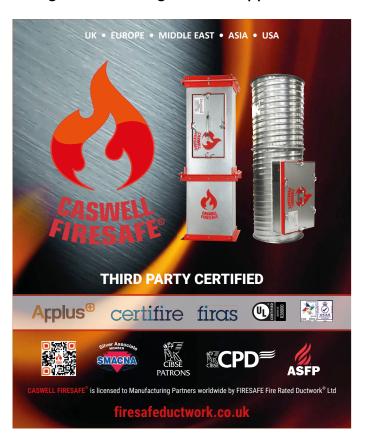
The AdvancedLive system installation at Blists Hill Victorian Town in Telford, delivered with Chubb Fire & Security, has won Advanced the Fire Safety Project of the Year at the 2025 Fire & Security Matters (FSM) Awards. The wireless solution showcased how the company's technology can be tailored to meet the challenges of a historically sensitive, multistructure heritage site.

Advanced was also commended as Fire Safety Manufacturer of the Year for its innovative MxPro 5 panel.

● Call **0345 894 7000** or visit **www.advancedco.com**

Directory

Your guide to building services suppliers



CIBSE Annual General Meeting 2025: minutes

The Annual General Meeting (AGM) of CIBSE was held on 10 June 2025, with attendees in person and online

The AGM started with a welcome from Ruth Carter (RC), CIBSE CEO. She thanked everyone for attending, both in person, at the Royal Society, and online. RC introduced the other key members of the panel:

- Fiona Cousins, CIBSE President
- Les Copeland, CIBSE Honorary Treasurer
- Vincent Marke, representing CIBSE's auditors, Crowe UK LLP

Nic Mills (NM), head of governance, shared housekeeping

procedures and details regarding the voting process. NM confirmed, as per the AGM calling notice, that voting would occur for three resolutions:

- 1. Appointment of the auditors for 2025
- 2. Membership subscriptions for 2026
- 3. Amendment to Regulation 71

NM confirmed that only corporate members (Fellows, Members, Associates and Licentiates) are entitled to vote. In–person attendees were given ballot cards and online participants would be prompted to vote via Teams.

Approval of minutes from previous AGM

Fiona Cousins (FC), CIBSE President, sought approval of the minutes from the 2024 AGM, which had been published in the July 2024 issue of CIBSE Journal and are available on the CIBSE website. There were no comments or questions on the minutes. The previous AGM minutes were signed and approved by FC.

Financial report

Vincent Marke (VM), from CIBSE auditors Crowe UK, presented a summary of the audit. VM confirmed that the audit was conducted according to international standards and confirmed that there were no matters to bring to attention regarding Crowe UK and its independence as auditors. VM formally announced that:

- The financial statements for 2024 were properly prepared, in line with UK accepted accounting practice and the Charities Act 2011.
- The audit concluded that the Chartered Institution of Building Services Engineers (CIBSE) complied with all relevant financial regulations and laws.

Review of the 2024 financial statements: Les Copeland – Honorary Treasurer Les Copeland (LC) highlighted that the financial year for CIBSE was 'exceptional', with notable growth across several income streams, particularly from membership, subscriptions, and trading subsidiaries such as CIBSE Services and CIBSE Certification.

Total income increased from 2023 by £1.1 million, reflecting a 12% growth. Expenditure rose by £728,000, partly because of the expansion of the Technical Department, which enabled greater engagement with technical issues in the built environment. The surplus for 2024 amounted to £607,000, an increase from £386,000 in 2023.

A key contributor to the financial success was the sale of the Balham headquarters, generating a £6.3 million profit, which facilitated the purchase of new headquarters at Saffron Hill, Central London. As a result, the net asset value rose significantly, from £3.3 million in 2023 to £10.2 million in 2024.

Regarding trading subsidiaries, CIBSE Services saw a £328,000 revenue increase, bolstered by the success of the sale of the 'Build to Perform' event and heat network training.

CIBSE Certification experienced a £180,000 revenue boost, driven by the

successful rollout of the NABERS UK energy certification scheme. The Hong Kong branch performed steadily, with revenues remaining consistent with the previous year.

In terms of expenditure, increased technical costs were linked to the expanded headcount and growth in response to the rising demand for technical support in the built environment. Membership team costs also grew, by £462,000, mainly because of a 4% salary increase and central support function recharges.

LC concluded by confirming that the financial results for 2024 positioned CIBSE strongly for future growth, with a solid financial foundation supporting ongoing development and strategic initiatives.

Resolution voting

Resolution 1: Appointment of the auditors for 2025

LC proposed the reappointment of Crowe UK LLP as auditors for the 2025 financial year and giving the board the authority to fix its remuneration. Seconder: Mike Burton.

Voting was carried out in person and online. Both proposals were approved with a majority vote in favour of the resolution. LC confirmed the motion was passed.

Crowe UK LLP was appointed as

auditors for the 2025 financial year and the Board has the authority to fix its remuneration.

Resolution 2: Membership subscriptions for 2026

LC proposed a 4% increase in subscription fees for 2026, in response to rising supplier costs and inflationary pressures. Seconder: Dave Cooper.

Voting was carried out in person and online. Both proposals were approved with a majority vote in favour. LC confirmed the motion was passed.

A 4% increase in membership fees for 2026 was approved.

Resolution 3: Amendment to Regulation 71

FC presented an amendment to Regulation 71, which would grant the Board the authority to resolve volunteer concerns in exceptional cases. Seconder: Dave Cooper

Voting was carried out in person and online. Both proposals were approved with a majority vote in favour. FC confirmed the motion was passed.

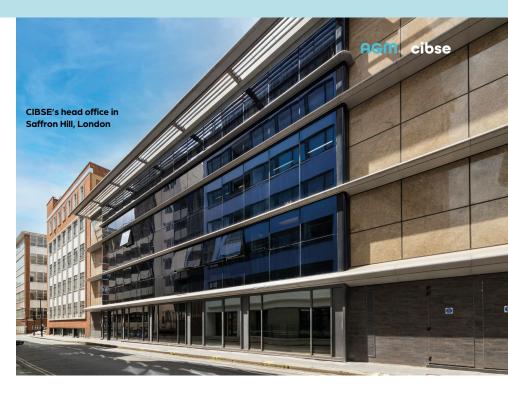
Amendment to Regulation 71 approved and published: (See CIBSE Regulations: www.cibse.org/charter-and-by-laws)

Annual report and key achievements: Fiona Cousins – CIBSE President 2024.

Fiona Cousins (FC) gave her final address as President of CIBSE, delivering the 2024 Annual Report and reflecting on a year marked by significant achievements. She expressed great pride in the organisation's accomplishments, particularly in terms of membership growth, a strong financial year, highlighting the ongoing value CIBSE offers to its members and the continued commitment to global technical excellence.

FC went on to unveil CIBSE's new strategic vision for the period 2025–2030, which focuses on supporting the global community, championing the building services profession, upholding exceptional technical professionalism, and engineering the future of the built environment.

FC introduced the Building for the



Future fundraising campaign, aimed at establishing a skills hub at CIBSE's new headquarters.

In closing, FC extended heartfelt thanks to Ruth Carter (RC), CIBSE CEO, the staff, and volunteers for their unwavering dedication and hard work. FC also expressed confidence in Vince Arnold's leadership as the incoming President, wishing him great success in the year ahead.

Recognition of long-service members and new Fellows

RC invited members to recognise those who had reached the significant milestone of 50 years of membership in 2024, as well as those who had been awarded the prestigious title of CIBSE Fellow. RC expressed sincere gratitude for the valuable contributions of these long-standing members and celebrated their dedication to excellence in the building services sector.

Formal appointment of officers, Board Members and new Council Members

RC presented the list of officers for 2025:

Vince Arnold: President
Dave Cooper: President Elect
Les Copeland: Honorary Treasurer
Fiona Cousins: Immediate PastPresident
Mike Burton: Vice-President

David Stevens: Vice-President
Mark Walker: Vice-President
Elected Board members: Ted Pilbeam,

Vincent Ma, Sasha Krstanovic, Peter Anderson and Dejan Mumovic

Newly elected Council members: Bobo Ng, Darren Coppins and Sophie Parry.

Acknowledgements of outgoing board members

FC extended thanks to all the outgoing Board members for their commitment and contributions to the institution:

- Ruth Kelly Waskett: Ruth was acknowledged for her contributions to CIBSE, especially her efforts in inclusion, diversity and representation. She played a key role in the Women in Lighting initiative, and was involved in the 2025–2030 CIBSE strategy and the CIBSE brand refresh project.
- Lionel James: Lionel's contributions, particularly in higher education for new entrants into the industry, were recognised. He was involved in numerous CIBSE committees, including education, training, and membership, and his impact on the engineering profession was acknowledged.
- Adrian Catchpole: Adrian's remarkable 30-plus years of service to CIBSE were celebrated. He has been instrumental in the governance review and leadership in various roles, including chairing the professional conduct committee and the equality, diversity and inclusion committee. His mentorship and dedication were highly appreciated.

This concluded the 2025 AGM.



As Ireland accelerates its drive towards net zero, CIBSE Ireland chair **Laura McMahon** discusses key priorities, sector challenges, and her vision for a more inclusive and sustainable engineering future

CIBSE Ireland plays a key role in advancing sustainable engineering and building performance across the country. Laura McMahon, chair of CIBSE Ireland and director of sustainability consulting at Lawler Sustainability, shares her insights on the sector's evolving priorities and how she thinks CIBSE can contribute to Ireland's decarbonisation strategy.

role with CIBSE Ireland?

I have been working in the building services and sustainability engineering sector for more than a decade. I graduated with a degree in building services engineering and over

What led you to your current

building services engineering and, over the years, I've specialised in sustainability consulting. I currently work as a sustainability engineer with Lawler Sustainability, where I focus on delivering low carbon, highperformance building solutions.

I'm proud to now serve as chairperson of CIBSE Ireland. As the third woman to hold this position, I hope to inspire greater diversity and visibility for women in engineering.

What priorities are there for the Ireland region?

Our key priorities centre on circularity, climate action, professional development, and inclusivity. We're working to support members through the energy transition, helping them understand and implement sustainable design, decarbonisation strategies and new regulations. We also want to strengthen the pipeline of chartered engineers in Ireland, improve visibility of CIBSE's work, and ensure equality, diversity and inclusion are at the heart of everything we do.

What are the biggest challenges facing the sector?

One of the biggest challenges for us is meeting ambitious decarbonisation targets while also addressing skills shortages and an



evolving regulatory landscape.
Additionally, there is a real need for better collaboration across sectors, clearer pathways to net zero and more support for younger engineers coming into the industry.

And, of course, we can't ignore the importance of addressing the issues with gender imbalance and representation within engineering.

How will CIBSE aid Ireland's decarbonisation strategy?

Ireland's Climate Action Plan outlines targets including a 51% reduction in greenhouse gas emissions by 2030 and a net zero goal of 2050. Buildings play a huge role in this and CIBSE has a critical part to play. Through guidance, CPD events and technical leadership, we're helping members deliver low carbon buildings that meet and exceed performance expectations.

"Our key priorities in Ireland centre on circularity, climate action, and inclusivity"

Where is the key sector growth in Ireland and how is CIBSE responding?

Key growth areas include data centres, retrofitting of existing buildings, and residential development driven by housing demand. CIBSE will respond by offering targeted technical events, training and resources that help engineers stay ahead of the curve. We're also placing greater focus on sustainability, digitalisation and performance-led design across all sectors.

What lessons could other countries learn from Ireland, and vice versa?

Ireland has made great strides in recognising the urgency of climate action and putting national strategies in place that will help to tackle this. I think our collaborative approach across government, academia and professional bodies is something other countries can learn from.

At the same time, we can learn from countries with more mature retrofit markets, or those that have successfully embedded low carbon thinking in education and regulation. It's all about knowledge sharing and staying connected globally.

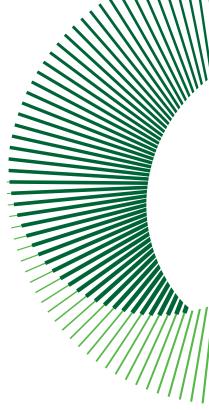
What are the key outcomes you hope to achieve in your term?

I hope to raise the profile of CIBSE Ireland, support more engineers in becoming chartered and improve awareness of sustainable design practices. I also want to strengthen the Young Engineers Network and support the incredible work of the WiBSE community. Most of all, I want to foster a more inclusive, connected engineering community that's equipped to take on the climate challenge and lead the way forward.

If you are interested in joining CIBSE Ireland, visit www.cibse.org/ get-involved/regions/ireland







Empower your career and drive sustainable design with CIBSE's new on demand training course

Empower your career and drive sustainable design with CIBSE's new WLCA Practitioner Training, equipping you with the practical knowledge and skills to deliver whole life carbon assessments aligned with the latest industry standards and best practice.

Register your place



Why take this course?

Gain essential skills and insights to deliver robust whole life carbon assessments:

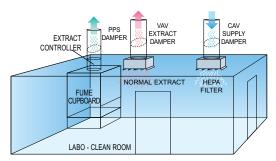
- Understand the environmental and economic drivers behind WLCA
- Learn key UK and international standards, including the 2023 RICS Standard
- Follow step-by-step guidance through WLCA principles and reporting
- Discover how to present results clearly to diverse audiences
- Be ready to apply your knowledge on live projects using your chosen software



Panel Mount Pressure or Velocity Transducers with remote alarms, analogue and digital interfaces. Traceable calibration certificates supplied as standard.

AIR MANAGEMENT SYSTEM

A complete turn-key system to control room pressure to +/-1Pa. Fume cupboard face velocity to 0.5m/s at high speed and provide constant air changes into the labo - clean room.



CAV AND VAV DAMPERS

Accurate air flow measurement with the unique CMR Venturi built into the airtight shut-off damper to control room pressure or constant volume.

Metal Damper

PPS EXTRACT DAMPER

Poly-propelene control and shut off valve incorporating the CMR Venturi Nozzle. This is essential when dealing with corrosive extract air especially from fume cupboard systems.



PRECISION COMPONENTS FOR VENTILATION AND PROCESS CONTROL

22 Repton Court, Repton Close, Basildon, Essex SS13 1LN. GB

Website: http://www.cmr.co.uk

Tel: +44 (0)1268 287222 Fax: +44 (0)1268 287099

E-mail: sales@cmr.co.uk



A Division of C. M. RICHTER (EUROPE) LTD