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JOURNAL



Air Conditioning | Refrigeration | Heat Pumps

ACR & HEAT PUMP REGIONAL EXHIBITION

GLASGOW

5th November 2026

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Welcome to the October/November edition of ACR Journal.

This issue features an informative and comprehensive focus on refrigerants and cooling, exploring key developments and industry trends. Topics include why the transition to R290 represents positive progress for safety, life beyond high-GWP refrigerants, CO2 and advancements in response to increasingly stringent EU regulations, and why propane is emerging as a future-ready refrigerant choice

The ACR & Heat Pumps Regional Expo proved to be a great success, and the team is looking forward to bringing the event to Glasgow for the first time this November. This takes place on the same day as the IOR Scotland Dinner, just across the road. Be sure to register for your complimentary pass. www.acrjournal.uk/regional-exhibitions

Finally, the not-for-profit ACR & Heat Pumps Trainee of the Year Awards returns to Leeds on 3 December. Join us in recognising and supporting the next generation of talent entering our industry. Book your place today. www.acrjournal.uk/acr-trainee-of-the-year

To contribute to the next issue, please contact julietl@warnersgroup.co.uk.

Juliet

Juliet Loisel FinstR, Editor/Publisher

REGULARS

05. News

Key industry updates

40. Tools Talk – DiversiTech

46. The Innovation Zone

FEATURES

11. IOR Northern Region award dinner celebrates industry excellence

12. Highlights from Leeds ACR & Heat Pump Regional Expo: A record-breaking success

14. We take a look at retail refrigeration and the need to deliver consistent performance

16. Daniel McDougall, discusses how operators managing estates can act systematically to reduce costs and maintain stronger energy performance

18. A look at the refrigerant transition which is no longer a future concern for the HVAC industry; it's a present one

20. Exploring CO₂ and progress with the tightening of EU Regulations

23. With confirmation that the HFC refrigerant phasedown will continue, Peter Woods, explores the current state of play and what's required to adopt lower-GWP alternatives

24. Tim Mitchell, explains where R-290 can add most value

26. A discussion regarding the reduction of emissions and energy usage

29. A-GAS look at the digital evolution of refrigeration

30. HVAC/F-Gas transition, which is becoming a data and operational challenge, not just a refrigerant change

34. A case study looks at improved cooling efficiency and reduced energy consumption through a free cooling project

35. A look at the need for more efficient cooling as UK data centre demand rises

36. We explore how ground source heat pumps can help cool our homes

38. Unlocking the hidden potential of data centres through heat zoning

42. Inside Carrier's award-winning HVAC partnership at London Gatwick

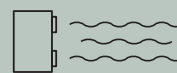
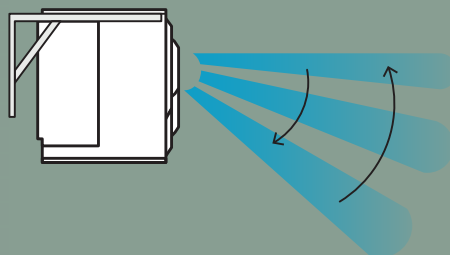
44. A look at PRTC which highlights its 35-year commitment to practical training, learner success and industry development



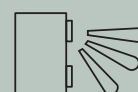
Jet Air Stream

The Jet Air Stream offers an energy efficient and sustainable solution for year-round heating and cooling in large spaces. Perfect for environments requiring high air distribution, such as gymnasiums, production facilities, and warehouses.

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Panasonic Heating & Cooling UK earns great Place To Work Certification™ for a 3rd Year

Panasonic Heating & Cooling Solutions UK Ltd. is proud to be Certified™ by Great Place To Work® for the 3rd year in a row. The prestigious award recognises positive workplace experience, sourced from employee evaluations. This year, 92% of Panasonic UK employees rated Panasonic as a great place to work, placing us alongside the UK's best workplaces, where the 2026 benchmark for medium-sized companies stands at 93%.

Great Place To Work® is the global authority on workplace culture, employee experience, and the leadership behaviors proven to deliver market-leading revenue, employee retention and increased innovation.

"Great Place To Work Certification is a highly coveted achievement that requires consistent and intentional dedication to the overall employee experience," says

Sarah Lewis-Kulin, the Vice President of Global Recognition at Great Place To Work. She emphasises that Certification is the sole official recognition earned by the real-time feedback of employees regarding their company culture.



"By successfully earning this recognition, it is evident that Panasonic stands out as one of the top companies to work for, providing a great workplace environment for its employees."

"We are delighted to achieve Great Place to Work status for a third year running, a reflection of our long-standing commitment to creating a positive and supportive work environment," said **Mick Langford**, Country Manager for the UK. "This recognition is testament to the invaluable contributions which our incredible team continues to dedicate, for which we are immensely proud and grateful".

According to Great Place To Work research, job seekers are 4.5 times more likely to find a great boss at a Certified great workplace. Additionally, employees at Certified workplaces are 93% more likely to look forward to coming to work, and are twice

as likely to be paid fairly, earn a fair share of the company's profits and have a fair chance at promotion.

https://www.aircon.panasonic.eu/GB_en

Global HVACR Women Week invites the international sector to build one connected community

Taking place from 25-31 October 2026, the international community week will connect local voices and create new relationships across countries, organisations and generations.

Rather than being a single centrally organised event, Global HVACR Women Week will provide a shared international focal point for activities created by groups, organisations, workplaces and individuals around the world.

Everyone taking part will be encouraged to reach beyond their usual circle by involving someone from another group, territory, organisation or generation. This might mean inviting an international guest to a webinar, connecting two groups in different countries, involving a student or early-career colleague, offering a first-time speaker an opportunity, or opening an existing activity to a new audience.

The invitation is expressed through three simple actions:

- **Show up** by attending, supporting and contributing to activities.
- **Speak up** by sharing knowledge, experiences, ideas and perspectives.
- **Lift others up** by creating opportunities for voices that may not usually be heard.

People can become involved by:

- organising or adapting an activity during 25-31 October;
- inviting someone from another country, group, organisation or generation;
- sharing a technical, professional or personal perspective;
- connecting two groups or communities that could learn from one another;

- interviewing or profiling women working across the sector;
- creating an opportunity for an emerging or first-time speaker;
- attending and supporting activities organised by others;
- adding a photograph to the 2026 global community collage, creating a visible picture of women across the international HVACR community; or
- sharing their plans with the organisers as the international programme develops.

Further announcements during October will introduce participating groups, countries, contributors and activities as the international community takes shape.



To learn more, take part or share an activity, visit:

<https://www.globalhvacrwomenweek.com/>



Ventil8 Day Exchange

In support of

World Ventil8 Day

Thursday 5 November 2026
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BUILDING ENGINEERING SERVICES ASSOCIATION

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World Ventilation Day takes on overheating

With global temperatures surging to unprecedented heights, this year's World Ventilation Day (WV8D) is a critical and timely opportunity to analyse overheating in the built environment, according to the Building Engineering Services Association (BESA).

The demand for air conditioning is soaring right across the planet, but BESA along with other major like-minded industry bodies, companies and individuals will also use WV8D as a platform to explore how other solutions like ventilative and evaporative cooling, passive design, and intelligent ventilation strategies can play their part in addressing overheating, reducing energy consumption, and harmful emissions.

BESA is hosting a World Ventil8 Day 'Exchange' at the Building Centre, London on Thursday, 5 November – as this year the traditional 8 November date falls on a Sunday.

The event is sponsored by Mitsubishi Electric Living Environmental Systems UK, Eurovent and S&P who will help bring together expert insights and real-world case studies that demonstrate how smarter

design can improve occupant comfort, reduce energy consumption, and deliver more climate resilient buildings.

The 2026 event will mark the fifth staging of an international awareness campaign which was created to promote the role of building ventilation in supporting health, well-being, and productivity. It was founded by a coalition of scientists, academics, engineering bodies and environmental activists.

All share the overarching ambition of demonstrating how ventilation can make a healthier and more sustainable world by reducing exposure to air pollutants and infectious diseases, which aids human productivity, improves sleep, and reduces mould and damp in buildings.

Mums versus Mould

The problems experienced by social housing will come under the microscope at BESA's event with an update on the impact of Awaabs Law on addressing a growing health crisis. **Lisa Malyon**, founder of the Mums Versus Mould campaign and the UK Centre for Mould Safety, works with

families dealing with the health hazards of mould and damp in their homes. She will be leading a discussion about how the industry can help find wider and longer lasting solutions.

The agenda for BESA's World Ventil8 Day Exchange will also feature practical insights from across the UK industry with contributions from engineers, contractors, consultants, housing professionals, policy makers and industry leaders.

Topics include Smart Ventilation and Emerging Technology which will focus on the use of AI tools to improve indoor air quality (IAQ) and carry out tasks like continuous monitoring and ventilation performance assessment. There will be a series of short sharp 'Pecha Kucha' sessions covering industry standards and guides including: DW145, TR19, and DW154, and a detailed look at the whole life cost of improving ventilation and how to build a business case for retrofitting systems in buildings.

To see the full programme and register for the event on 5 November visit:

<https://tinyurl.com/ymr3rt53>

Spotlight by the Copper Sustainability Partnership (CuSP)

UK's water infrastructure needs a reliable, sustainable fix as billions of litres of water are lost due to leaks.

As an investigation has revealed that water companies are losing 2.6 billion litres of a water a day due to aging and unsuitable infrastructure, the Copper Sustainability Partnership is urging the government to crack down on unsuitable piping materials and choose copper for stronger, more reliable piping systems.

Water UK has revealed that due to the current hot weather, the drier soil conditions are causing current plastic piping to move and crack due to pressure, increasing the likelihood of new bursts. With more than half of England now under a hosepipe ban, loss through leaks in the UK's water infrastructure are far outweighing the water that is saved through people not using hosepipes.

Solution

The Copper Sustainability Partnership (CuSP) wants to spotlight copper as a solution to this water crisis, with the resilient material being used successfully in plumbing for generations.

Plastic pipes have increasingly been used in the UK's water infrastructure due to its lower upfront cost, but many councils and water companies do not consider the long-term effects and extra costs of using the unreliable material.

Plastic is easily affected by heat and changes in environment, from warping and UV degradation in the heat and sunlight, to dents, bends, and cracks under pressure from fluctuating hydration levels in soil and concrete, which as it gets dryer can crack and shift underground.

Andrew Surtees, Co-Founder of CuSP



CuSP

Copper Sustainability Partnership

"Choosing copper is only the start to transforming the UK's water infrastructure, but it will provide a strong base for which water management companies can build upon, as they can trust that copper will last for generations."

Problems

These problems don't just affect the wider UK infrastructure, but also local domestic plumbing. Burst pipes and water leaks, known to insurers as 'escape of water incidents' now account for more than a third of property damage claims, with up to £1.3 million being paid out each day to fix them, according to data from the Association of British Insurers (ABI).

When looking at a durable material for plumbing, copper is often valued for its durability, resistance to high temperatures and long lifespan. Although plastic is a cheaper alternative in the short term, copper's benefits outweigh the initial costs, with less leaks, safer water, and it's the sustainable option for a better future.

Andrew Surtees, Co-Founder of CuSP, said: "Too long have water companies been able to get away with using plastic as a cheap way to 'fix' the aging UK water infrastructure, without thinking of the long-term effects of the material. The heatwaves that are causing this water crisis are due to

climate change and the non-recyclability of plastic is a leading cause for this.

"The government needs to be championing materials that are durable, reliable, and recyclable, contributing to a safer, more sustainable future for our water infrastructure."

As water companies rush to fix leaks and bursts, greater emphasis is needed on long-term resilience rather than a cheap and quick fix.

Copper can withstand decades of temperature fluctuations, pressure changes and environmental stress whilst also contributing to cleaner safer water, with its antimicrobial properties.

Andrew continued: "Choosing copper is only the start to transforming the UK's water infrastructure, but it will provide a strong base for which water management companies can build upon, as they can trust that copper will last for generations."

Founded by LawtonTubes and Mueller Europe (WednesburyTube), CuSP comprises of two competing copper tube manufacturers who have joined forces to promote the environmental benefits of copper and speak out against the plastic greenwash.

www.cuspuk.com



acrjournal.uk

Supporting your knowledge made easy with the IOR EngTech Section

Imagine having instant access to hundreds of trusted technical resources, practical guidance from experienced engineers, and new learning materials delivered regularly, all for just £45 annually. That is exactly what the IOR EngTech Section offers.

For 25 years, the IOR EngTech Section has been dedicated to supporting the knowledge and development of engineers and technicians working across service, maintenance, installation and commissioning roles. Designed with technicians and field engineers in mind, the section provides independent, peer-reviewed technical information that can be applied directly in the workplace.

Membership is available to both individuals and companies, with many employers choosing to enrol their entire team of field engineers. Subscribers benefit from unlimited access to hundreds of technical bulletins and guidance documents, covering a wide range of refrigeration, air conditioning and heat pump topics.

Every quarter, members receive access to the latest IOR EngTech publications, including industry news and three new technical bulletins written by technicians, for technicians. These resources are designed to provide practical advice, improve understanding of key systems and components, and support good practice across the sector.

This year alone, the EngTech Section has published bulletins covering:



- AHU fan belts
- Liquid refrigerant receivers
- AHU filters
- Water chiller evaporators
- The Building Safety Act and its impact on HVACR

And there is plenty more to come. Upcoming bulletins will explore important topics including:

- Pressure relief and safety devices
- Live working

- Mechanical and electrical isolation
- AHU actuator checks

Members can access all content via the IOR website or through the IOR Technician App, making it easy to download guidance and technical bulletins whenever and wherever they are needed. Whether you're on site, travelling between jobs or looking for a quick reference, the information is always at your fingertips.

With 12 new technical guides added every year and a vast archive of existing resources available immediately upon joining, the IOR EngTech Section represents excellent value for anyone looking to stay informed, build technical confidence and support best practice in their day-to-day work.

Joining is simple

Register online, complete your payment details, and you'll gain immediate access to the wealth of technical knowledge available through the IOR. Why not invest in your knowledge today? Scan the QR code to sign up to the IOR EngTech Section technical mailing.



TRANE TECHNOLOGIES NAMES ADAM WITTWER PRESIDENT, COMMERCIAL HVAC EUROPE

Trane Technologies (NYSE: TT) announced that

Adam Wittwer has been named President, Commercial HVAC Europe, effective October 1, reporting to Jose La Loggia, Group President, EMEA and Asia Pacific.

Wittwer will lead Trane Technologies' Commercial HVAC business in Europe, with responsibility for overall business performance, strategic growth and continued focus on delivering innovative and sustainable customer solutions that help customers improve building performance and resiliency.

Wittwer brings more than 20 years of leadership experience across Trane Technologies, including deep roots in Commercial HVAC and a strong track record of leading businesses through growth and complexity. He most recently led Trane Technologies' Thermo King Americas business. Previously, he was vice president of energy services for the company's Commercial HVAC Americas business. He also served as general manager of one of the company's largest commercial HVAC regions, leading all areas of the business across California and the southwestern United States.

Wittwer holds a bachelor's degree in electrical engineering from Purdue University and an MBA from Indiana University Bloomington.



www.tranetechnologies.com

NEW BESA PRESIDENT URGES INDUSTRY TO 'TAKE PRIDE'

Anna Shephard has been elected to serve as President of the Building Engineering Services Association (BESA) for 2026/27.

During her inaugural speech to BESA members, guests and leading industry figures, she urged everyone working in the building engineering sector to "take pride" in the increasingly important role they play in improving the built environment.

With building services now accounting for more than 50% of the value of most construction projects, she believes there has never been a better time to be part of the industry.

"We are heavily involved in some of the fastest-growing sectors, including digital infrastructure, healthcare, life sciences and the energy transition. This creates a positive outlook for the future," said Ms Shephard.

During her speech to the annual BESA President's Lunch at the Oxo Tower, London, she drew guests' attention to the Association's newly published Top 30 M&E Contractors Report, which reflected the robust performance of the building engineering sector in the face of challenging economic conditions.

To read more visit:

www.acrjournal.uk/news/new-besa-president-urges-industry-to-take-pride/



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Driving the change our industry needs



Graeme Fox is Technical Director for RACES and Schemes Director at The F-Gas Register

We've all read and heard so much about "the skills crisis" over the years that we've become a little bit desensitised to it. It doesn't have the same impact it did 20 years ago, and the urgency of the problem has been diminished in some people's eyes, or has become seen as such a gargantuan issue that is too big to tackle.

But the work going on with the Building Safety Regulator's office (BSR) has focussed my own mind back onto a subject I've been asking the industry trade bodies to deliver for 25 years now – so rather than keep on trying to get others to understand the urgency, I've taken the bull by the horns and just started doing it! Driving forwards the changes that the industry knows it needs and has long called for.

The Building Safety Act when implemented fully will require anyone working in the built environment to have their competency evidenced. Now, if you

Graeme Fox CEng, Technical Director at Refrigeration and Air Conditioning Engineers Society (RACES) and Schemes Director at The F-Gas Register, discusses the industry's skills gap and the challenge of recognising experienced workers without formal qualifications. A new industry working group, supported by NOCN and the Building Safety Regulator, is developing an experienced worker accreditation route to address the issue.

attend the Government led meetings or trade body committee meetings, this is often put simply as "must hold NVQ Level 2 or 3 and have x number of years' experience" – but what do you do if you don't hold those formal qualifications?

There are approximately 75,000 people with an f-gas qualification already working in the sector, and only around 11,000 with an NVQ level 2, let alone the few thousand with the Level 3. This leaves around 65,000 people – experienced workers and most of them absolutely competent in real terms – but only holding an f-gas qualification and with no means of proving they are competent at what they do.

The IOR led Industry Skills Alliance (ISA) has been focussing on the ideal pathway into our industry – and nothing was being looked at about the issue of those already in the sector – so I teamed up with **Kris Dean** of awarding body NOCN, the lead on the ISA Skills working group, to pull together a handful of experienced employers and trainers from my network – all of them passionate about finally delivering what our industry has long needed.

As this edition is published, the working group will be meeting up for the 2nd time and starting to put some real structure to the planned "experienced worker route" to accreditation. Our kick off meeting in late August had some fabulous insight from employers and trainers alike and the collaborative nature of the approach was a breath of fresh air for someone like me who has been trying to deliver change against a wall of bureaucracy for decades!

And, to really give the working group some power behind it, I've also met with the BSR team who have promised to share with the group the working documents that the lead **Mussa Awaleh** and I helped shape a few years ago as part of the BEIS minimum technical competencies framework. Mussa and his team aim to be joining our next working group meeting to help us deliver exactly what industry needs.

After more than 25 years asking for this, is it possible that there is actually light at the end of the tunnel.....?

www.fgasregister.com



IOR Northern Region annual dinner celebrates industry excellence

The ACR Journal team was delighted to attend the IOR Northern Region Annual Dinner, held at the Hilton Newcastle Gateshead on 3 September.

Now in its 19th year, the event welcomed upwards of 200 attendees and proved to be a tremendous success. Guests enjoyed an entertaining evening featuring comedian Josh Daniels, with Alfie Joey acting as Master of Ceremonies and guiding proceedings throughout the night.

The evening also provided an opportunity to recognise and celebrate the achievements of individuals across the refrigeration and air conditioning sector, with particular emphasis on the next generation of industry talent.

Apprentice of the Year Awards

The Apprentice of the Year awards recognised the outstanding achievements and dedication of apprentices working within the industry.

The award winners were:

- **3rd Place:** Keiron Alpin – ADS Air Con
- **2nd Place:** Nathan McNiven – UNG
- **1st Place:** Jacob Keenleyside – Nationwide Heating & Cooling
IOR Apprentice of the Year winner, Jacob Keenleyside, was recognised for his impressive professional development, progressing from an apprentice requiring guidance to a dependable engineer trusted with increasing levels of responsibility.

Having achieved key industry qualifications through Northumberland College, Jacob has continued to develop the technical expertise and confidence required to work independently on complex air conditioning, refrigeration and chilled water systems.

His achievement is a testament to his commitment, hard work and the value of developing skilled professionals within the industry.

Lifetime Achievement Award



A special highlight of the evening was the presentation of the Lifetime Achievement Award to Dave Marwaha, Managing Director of KGM Refrigeration UK, in recognition of more than 60 years of dedication to the refrigeration industry.

Dave began his career in 1962 as an apprentice at J&E Hall in Dartford. Over the following six decades, he progressed through various engineering and service roles before establishing his own business

and ultimately becoming Managing Director of KGM Refrigeration.

This prestigious recognition celebrates not only an extraordinary career but also Dave's dedication, perseverance, engineering expertise and lifelong commitment to the refrigeration sector.

For everyone at KGM Refrigeration UK, the award represents a significant milestone and a fitting tribute to his lasting contribution to the industry.

Acknowledgements and event support

Special thanks go to headline sponsor Daikin Applied Service for its support in making the evening possible.

The ACR Journal also continued its valued support of the event, helping to promote the dinner and providing the printed programmes for attendees on the night.

Looking ahead:

20th anniversary celebrations

The IOR Northern Region Branch Annual Dinner will celebrate its 20th anniversary in 2027.

Date: 16 September 2027

Venue: Crowne Plaza Newcastle

Further details regarding the anniversary celebrations will be announced in due course.

IOR Northern Region Golf Day 2026

The IOR Northern Region Golf Day returns on Friday, 12 June 2026, at Close House Golf Club & Hotel, Heddon on the Wall.

Event schedule

Time	Activity
08:00–09:30	Arrival, registration and breakfast
10:00	Shotgun start
15:45	Presentation, prizes and charity raffle

Course: Lee Westwood Filly Course (Yellow Tees)

Format: Texas Scramble

Handicap: 10% combined handicap, maximum handicap of 24

Drive Requirement: Three drives per player, including one on a par 3.

Special guest speaker

The afternoon programme will feature guest speaker **Geordie Tate**

(SIS / Special Intelligence Service), who will share insights from his 35-year career in covert operations and global counter-terrorism.

Supporting two worthwhile charities

All proceeds generated through the day's games, mulligans and raffle tickets will go directly towards supporting Care After Combat and 4Louis.

The golf day provides an opportunity for industry colleagues to come together, enjoy a day of sporting competition and contribute to two important charitable causes.

Further Information

For further information about the IOR Northern Region's 20th anniversary dinner celebrations or the 2026 Golf Day, please contact: Email: ionorthern@gmail.com

ACR & Heat Pump Regional Expo – Leeds: A record-breaking success!

The latest **ACR & Heat Pump Regional Expo** took place on 24 September 2026 at the Village Hotel, Leeds, welcoming more than 300 registered visitors to a sold-out event.



The exhibition proved to be an outstanding success, with exhibitors reporting that it was the busiest regional expo to date. The event provided an excellent platform for industry

professionals to connect, explore the latest technologies, exchange knowledge and discuss the future of the refrigeration, air conditioning and heat pump sectors.

Following the success of Leeds, anticipation is already building for the next event, which will take the ACR & Heat Pumps Regional Expo to Glasgow for the first time.

EXHIBITORS

The event welcomed an impressive line-up of 24 exhibitors, representing leading manufacturers, suppliers and organisations from across the industry:

- | | |
|---------------------------|----------------------------------|
| 1. Cool Designs Ltd | 13. Air Conditioning Accessories |
| 2. Diversitech | 14. UK Cylinders |
| 3. Bitzer | 15. RSL Group |
| 4. Hisense | 16. FETA |
| 5. Panasonic | 17. Logicool |
| 6. Fieldpiece | 18. Abbey Design Associates |
| 7. TEV Limited (MARSTAIR) | 19. Conex Bänninger |
| 8. J & E Hall | 20. Inficon |
| 9. Munters | 21. Airzone |
| 10. F-GAS Register | 22. Soleco Engineering S.r.l. |
| 11. DK Heat Recovery | 23. O-HX Organic Heat Exchangers |
| 12. APJ European | 24. Reliable Williams Aircon Ltd |

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Technical Seminars

The seminar programme provided valuable insights into some of the key challenges and opportunities facing the RACHP sector.

Featured presentations included:

- **Graeme Fox (F-Gas & RACES):**
Is the RACHP Sector Ready to Tackle the Skills Crisis?



- **Nigel Upson (DK Heat Recovery):**
Overcoming Barriers to the Deployment of Heat Recovery
- **Mike Lucken (Conex Bänninger):**
>B< MaxiPro press fittings for Air Conditioning and Refrigeration pipe work installation



ACR & Heat Pump Regional Expo heads to Scotland for the first time!!

Following numerous requests from industry professionals, the ACR & Heat Pump Regional Expo is heading north of the border for the very first time!

The Glasgow exhibition will take place on 5 November 2026, coinciding with the highly anticipated IOR Scotland Annual Dinner, providing an excellent opportunity for industry colleagues to attend both events.

Hosted at the Village Hotel, Glasgow, conveniently located directly across the road from the IOR Scotland Dinner venue, the exhibition promises another valuable day of networking, technical learning and industry engagement.

Glasgow Expo – Event Details

Date: Thursday, 5 November 2026

Venue: Village Hotel, Glasgow

Technical Talks: 8:30am – 10:00am

Exhibition Opening Hours: 10:00am – 3:00pm

Register for Your FREE Glasgow Expo Pass

Admission is free, and visitors are encouraged to register in advance.

Register now: www.acrjournal.uk/regional-exhibitions-glasgow

Technical Seminars – Glasgow

Visitors will also have the opportunity to attend a programme of technical presentations delivered by industry experts and leading organisations.

Confirmed seminar contributors:

- Yellow Jacket
- F-Gas Register
- Aventus Eco – Sean Hogan

Further details of the seminar programme will be announced in due course.



CONFIRMED EXHIBITORS

The Glasgow event is already attracting strong industry support, with the following exhibitors confirmed:

- | | |
|------------------------------|-----------------------------|
| 1. Diversitech | 13. Swegon |
| 2. Yellow Jacket | 14. BESA |
| 3. Cool Designs Ltd | 15. Abbey Design Associates |
| 4. Bitzer | 16. Blygold |
| 5. Panasonic | 17. Inficon |
| 6. Fieldpiece | 18. Wave |
| 7. J & E Hall | 19. Airobot Technologies |
| 8. Soleco engineering s.r.l. | 20. FM Products |
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Future-ready retail refrigeration

Simon Robinson, CEO of Pastorfrigor GB Ltd, takes a look at retail refrigeration and explains the need to deliver consistent performance across a range of operating conditions. As temperatures rise, maintaining precise temperature control becomes increasingly important to protect product quality and support reliable day-to-day store operations.



Simon Robinson, CEO of Pastorfrigor GB Ltd

As part of recent technical development work, Pastorfrigor assessed a Genova Overview Doors cabinet under elevated ambient conditions of 32°C and 55% relative humidity¹. Initial findings showed that the cabinet was able to achieve the required display-case temperatures under these conditions, providing useful insight into its ability to maintain refrigeration performance during periods of unusually high ambient heat. These elevated conditions are not intended to represent the cabinet's standard continuous operating environment.

For retailers, understanding how refrigeration performs in changing conditions is increasingly important as equipment needs to deliver reliable performance alongside energy efficiency and long-term operational value.

Energy efficiency

Energy efficiency has been a key focus of Pastorfrigor's continued product development. Between 2014 and 2026, energy consumption across its refrigeration equipment reduced from approximately 9 kWh/24h per metre to 2.6 kWh/24h per metre, representing an approximate 71% reduction in energy consumption².

This focus on reducing energy consumption is central to Pastorfrigor's approach to refrigeration, with its systems designed to support businesses in cutting energy costs and improving long-term operational efficiency.

The improvement is also reflected in real-world customer experience. In its 2023 Sustainability Report, Greggs reported that, after purchasing and evaluating Genova Overview cabinets, it found the model to be around three times as energy efficient³ as the model it had previously been purchasing, after which it became its standard model.

Independent testing and performance

The Genova OV was the first A-rated refrigerated multideck introduced to the UK market, with its performance independently tested and certified by TÜV SÜD. Independent testing provides an important benchmark for retailers when assessing refrigeration equipment, particularly as energy efficiency becomes an increasingly important part of the investment decision. Our performance is part of a wider commitment that we have to deliver refrigeration that combines practical performance with energy efficiency and long-term reliability.

Reliability

Reliability is fundamental to commercial refrigeration. Equipment needs to maintain consistent performance day after day, protecting products while supporting the smooth operation of the store.

The Genova Overview platform provides a strong example of this. Across more than 3,100 Genova OV Doors cabinets currently operating within Greggs stores, the recorded component breakdown rate during 2026 was just 0.68%, meaning 99.32% operated without a recorded component breakdown⁴.

This shows the overall reliability of the Genova Overview platform, especially across a large high footfall retail estate.

Reliability is central to Pastorfrigor's wider approach, as we are focused on delivering practical performance that is built to last and supporting customers beyond installation through nationwide service coverage and dedicated after-sales support.

Product performance is only part of the value we provide – we see our relationship with our customers as a partnership, and whether it is a few cabinets or thousands across a multi-site estate, we always strive to go the extra mile to make sure our customers remain satisfied.

That satisfaction has to start before installation. We visit sites ahead of installs to check practical requirements such as access and power supplies, making sure our customers know exactly what is required, taking the time to identify any potential issues as well as what is best placed for their individual site to ensure projects run smoothly from the outset. This can also include training to help teams build the knowledge they need to support equipment effectively, and this hands-on approach is a key part of the experience of working with us.

Sustainability and refrigerants

Improving environmental performance is an ongoing area of development for refrigeration. Reducing electricity consumption can directly reduce the operational carbon emissions associated with running refrigeration equipment. Our development figures demonstrate the scale of this opportunity, with energy consumption reducing by approximately 71% between 2014 and 2026⁵.

The Genova Overview cabinets also utilise natural R290 refrigerant with a charge below 150g, supporting retailers' sustainability objectives and reducing reliance on



higher-GWP refrigerants. Sustainability sits alongside energy efficiency and innovation at the heart of Pastorfriгор's approach, and we are committed to developing refrigeration solutions that support a greener and more efficient future for the UK's commercial refrigeration sector.

Refrigeration as an investment

The upfront cost of refrigeration is only one part of the investment decision. Retailers also need to consider energy consumption, reliability, product presentation and long-term operating performance.

The significant reduction in energy consumption achieved through Pastorfriгор's product development demonstrates how advances in refrigeration technology can deliver benefits beyond the initial installation, helping retailers reduce ongoing operating costs while maintaining the performance they require.

This is particularly relevant as retailers look at the total value delivered by their refrigeration equipment, rather than simply the initial purchase price. Energy efficiency, reliability and long-term operational performance all contribute to the wider investment decision.

Product presentation

Refrigeration has an important role beyond temperature control. Strong product

visibility, accessibility and effective use of available space can help retailers maximise the impact of chilled and frozen displays.

The Genova OV Doors have been designed around these requirements, combining a large throat opening with strong product visibility and a highly merchandisable refrigerated display.

Integral refrigeration gives retailers greater flexibility when planning and developing stores. Plug-in solutions can simplify installation and provide an adaptable approach to chilled and frozen display, making them particularly suitable for convenience retail and different store formats. Our wider product offer spans display refrigeration, bespoke systems and retrofit energy systems, allowing solutions to be considered around different business and operational requirements.

Technology and product development

Continued product development is central to improving refrigeration performance. Pastorfriгор's progression from approximately 9 kWh/24h per metre in 2014 to 2.6 kWh/24h per metre in 2026⁶ demonstrates how sustained development can deliver significant improvements in energy efficiency over time.

For retailers, this means refrigeration technology can continue to evolve

alongside changing requirements around energy consumption, sustainability, reliability and store performance. From our perspective, our approach is focused on developing equipment but also on combining cutting-edge design with practical performance that is built to last.

Future-ready refrigeration

The requirements placed on retail refrigeration continue to evolve, from the need to manage energy consumption and environmental impact to operating reliably during increasingly challenging ambient conditions.

Future development is about combining energy efficiency, reliable performance, sustainability and product presentation to create refrigeration solutions that meet the changing needs of modern food retail. Our focus is on delivering innovative, sustainable and energy-efficient refrigeration while supporting customers' long-term success through reliable performance, expert support and continued product development. 

Source

1. Pastorfriгор Internal Data Read - Genova Overview Doors
2. Pastorfriгор Internal Data Read - Genova Overview Doors
3. Greggs 2023 Sustainability Report
4. Pastorfriгор Internal Data Read - Genova Overview Doors x Greggs
5. Pastorfriгор Internal Data Read - Genova Overview Doors
6. Pastorfriгор Internal Data Read - Genova Overview Doors

Running on empty: The hidden costs facing cold store operators

Energy prices, refrigerant transition, ageing plant, and net zero obligations are converging on the cold storage sector simultaneously. **Daniel McDougall**, Key Account Manager – Technical Sales at Star Refrigeration Ltd, discusses how operators managing estates ranging from legacy sites to modern CDCs can act systematically to reduce costs and maintain stronger energy performance.

Cold stores have always presented a demanding environment to work in: tight margins, 24/7 operational requirements, and the operational risks associated with refrigeration failure. What has changed in recent years is the number of significant pressures arriving at once.

Electricity costs remain at the top of the list of challenges. The cold storage sector is one of the most energy-intensive in UK industry, with refrigeration typically accounting for 60 to 70% of a site's total electricity consumption. For a large temperature-controlled distribution centre running a multi-megawatt refrigeration system, even a small movement in the electricity price has a substantial effect on the annual operating budget.

Grid constraints add a further layer of complexity. As electrification accelerates across the economy, many industrial sites are encountering limitations on grid capacity that affect their ability to expand, upgrade, or maintain current operations without significant infrastructure investment. Cold stores that cannot access additional grid capacity may face hard choices about how to manage existing load – although these choices become considerably easier when the refrigeration plant is operating at peak efficiency.

At the same time, many of the refrigeration systems underpinning the UK's cold chain are ageing. Much of the estate was built during the logistics investment boom of the 1990s and 2000s, and systems that were engineered for conditions, load profiles, and operating costs that no longer apply are now being asked to meet modern demands. Industry estimates suggest that 46% of UK cold stores still rely on HFC

refrigerants, many of them in plant that was designed long before today's energy costs, ambient temperature trends, or regulatory requirements were foreseeable.

The refrigerant pressure is not going away

The F-Gas phasedown is a structural, long-term constraint; since 2020, virgin refrigerants with a GWP above 2,500, including R-404A and R-507A, have been banned for servicing larger systems. Reclaimed refrigerant provides a temporary route, but that exemption runs until 2030 only.

In November 2025, DEFRA consulted on accelerating the HFC phasedown significantly beyond current targets, with proposals pointing toward a 98.6% reduction in HFC use by 2048 and a potential full phaseout by 2050. Whilst the government confirmed in 2026 that it would not legislate a faster immediate timetable, it was equally clear that tougher regulation is still coming. For operators running older HFC plant, this is a present risk that narrows options and inflates refrigerant costs.

Cold stores already running on natural refrigerants – ammonia (R717) or CO₂ (R744) – are in a significantly stronger regulatory position. However, the performance and lifecycle questions remain regardless of refrigerant type. Ammonia and CO₂ systems can operate for decades, but they require specialist engineering management, rigorous safety compliance, and proactive maintenance to deliver that longevity reliably.

The real cost of running a cold store

Cold storage procurement and capital planning conversations tend to focus on the upfront cost of refrigeration plant, a



Daniel McDougall, Key Account Manager – Technical Sales at Star Refrigeration Ltd

figure which is more visible, and easier to compare with other quotes and put in a budget. The scale of operating cost that follows receives less attention but is substantially larger.

Over the full 20 to 25-year life of an industrial refrigeration system, lifecycle cost typically breaks down as follows: capital investment at approximately 15%, maintenance at approximately 15%, and energy consumption at 60 to 70%. For every £1 spent purchasing a refrigeration system, operators typically spend £6 to £10 running it over its life. This shifts the focus from the idea that the compressor is the investment – it is in fact the two decades of electricity bills that follow.

Improving operating efficiency is the primary financial lever available to cold store operators. A 10 to 15% improvement in refrigeration efficiency, which is routinely achievable through systematic performance management, can deliver returns far exceeding the cost of the intervention, and can do so within a relatively short payback period.

60–70% of lifecycle cost is energy – not capital

10–30% annual electricity savings achievable through advanced maintenance

20% average saving on overall operating costs for customers on advanced maintenance programmes

What the data reveals: CDC case study

The argument for data-led lifecycle management is best shown through the case study of a system whose operators applied rigorous operating evidence to future-proof the site.

A large refrigerated Central Distribution Centre, built in 2005, operates a two-stage pumped-ammonia refrigeration system serving chilled, produce, and frozen storage chambers: a business-critical installation at the heart of one of the UK's largest supermarket supply chains. The original plant included three fixed-speed GEA high-stage screw compressors, specified for a cooling duty of approximately 5,679kW.

As operational patterns changed over time, performance data from Star Refrigeration's Ethos energy optimisation platform showed the high-stage compressors were frequently running at less than 65% of their design capacity, a range at which fixed-speed machines are inherently inefficient. When a fault affected a compressor capable of providing 2.2MW of cooling capacity, the default response would have been a straightforward like-for-like replacement at a fraction of the cost of an engineered alternative.

Instead, Star Refrigeration's energy management approach treated the fault as an opportunity. Drawing on historical operating data, live plant information, and compressor capacity modelling, the team built a detailed engineering case for replacing the original unit with a modern 1.45MW variable speed drive (VSD) compressor - smaller than the original but precisely matched to the site's actual demand profile.

Although the capital cost of the proposed new unit was approximately three times that of a like-for-like replacement, the projected energy savings more than justified it. Predictive modelling had estimated annual savings of around 534MWh; actual

operating data currently shows the new VSD compressor is on track to deliver approximately 579MWh of annual electricity savings - exceeding the forecast. The investment is on course to pay back in under two years, and the project's success has since led to an identical upgrade on a second high-stage compressor at the same site.

From reactive maintenance to lifecycle management

The case is instructive both for its results and the conditions that made them possible: years of operational data, a deep engineering relationship, and the analytical tools to translate data into a defensible business case. These conditions are the product of a systematic approach to asset management.

Lifecycle performance management for cold store refrigeration brings together a number of vital complementary disciplines:

- **Planned preventative maintenance:** scheduled servicing to preserve reliability and maintain compliance documentation.
- **Condition-based monitoring:** continuous assessment of plant health, enabling targeted intervention before failure.
- **Performance optimisation:** digital twin benchmarking that compares actual operation with the design ideal, identifies efficiency losses, and recommends improvements, often through low-cost control changes.
- **Predictive maintenance:** advanced analytics that reduce emergency callouts, wasted energy, and unplanned capital expenditure.
- **Lifecycle capital planning:** forward-looking plant analysis which allows operators to budget for upgrade or replacement in a managed, predictable way.

When the full cost of refrigeration plant is accounted for, lifecycle performance management becomes the only viable approach to running one of the most capital-intensive and energy-intensive assets in the business.

The cost of standing still

A cold storage operation where the choice of plant and refrigerant is based purely on capital cost, or where maintenance is predominantly reactive, carries a high level of financial risk.

Energy overspend accumulates in systems running below their efficiency potential. Emergency repairs and unplanned downtime result in costs which far exceed those of planned intervention. In unmonitored systems, missed optimisation opportunities compound over years of like-for-like replacement decisions. And capital planning uncertainty - the inability to forecast future expenditure with confidence - makes budget cycles harder to manage and investment cases harder to build.

The tools to address this are available and proven. Digital twin modelling, AI-assisted energy analytics, and condition-based monitoring are in active use across the cold chain sector today, delivering measurable results. The challenge for the sector is the organisational shift required to move from reactive asset management to proactive lifecycle planning, and to build the long-term engineering relationships on which that depends.

For operators of cold store refrigeration plant, the question is not whether lifecycle performance management is worth pursuing. The energy data, the efficiency case, and the evidence from operational projects make that clear. The more urgent question is whether the cost of standing still - in efficiency losses, refrigerant exposure, missed optimisation, and deferred carbon reduction - can continue to be absorbed. ❧

<https://www.star-ref.co.uk/>

Why the shift to R290 is good news for safety

According to **Graham Smith**, Applied Commercial Director UK&I at Carrier, the refrigerant transition is no longer a future concern for the HVAC industry; it's a present one.

AquaSnap® 61AQ
2 circuits front



With the EU's F-gas phase-down tightening quotas year on year and a GWP threshold of 150 applying to many self-contained and monobloc heat pumps up to 50kW from January 2027, specifiers and installers are already asking which refrigerants will still be viable in five or ten years' time.

At Carrier, we've spent the past decade evaluating that question in detail. We've been testing, engineering and bringing solutions to market across a range of refrigerant alternatives, from R32 through to R290. That work has led us to a clear conclusion: propane (R290), with its ultra-low GWP (0.02), strong efficiency, high operating temperature capability and favourable regulatory outlook, offers a compelling balance of performance, practicality and safety.

What's encouraging is that the market is reaching the same conclusion at scale. In recent years, independent data from Heat Pumps Watch shows R290 captured 38% of new EU residential heat pump certifications in 2024, up from just 3% in 2021¹.

For specifiers, design engineers and installers working across commercial, mixed-use and high-rise residential schemes, understanding why and how R290 is safely designed and installed is the essential first step.

No perfect refrigerant

The industry has spent the past decade exploring alternative approaches, and every option has demanded a trade-off. R410A delivered reliable, non-flammable performance for

years, but its GWP of approximately 2,088 puts it on a collision course with EU climate policy.

R32 became the natural successor and improved efficiency, but it remains an F-gas. In addition, R32's GWP of 675 still sits well above the 150 threshold, which is set to be applied to self-contained, and monobloc heat pumps up to 50kW from 1 January 2027.

Lower-GWP blends such as R454B (GWP around 466) narrow that gap without closing it, and the R1234ze (GWP below 1) addresses the environmental challenge but typically requires larger equipment, adding cost and complexity. Alternatively, the CO₂/R744 (GWP of 1) is non-flammable and widely available, but its high operating pressures demand specialist compressors and more intensive servicing.

There is no refrigerant that wins on every measure. Choosing one means deciding which trade-offs a building, its installers and its long-term running costs can best absorb.

Why R290 strikes the right balance

According to the IPCC Sixth Assessment Report², R290 has a 100-year GWP of just 0.02, and because it isn't a fluorinated gas, it sits entirely outside the F-gas phase-down.

On performance, it holds up across a wide temperature range and reaches the higher flow temperatures that radiator-based heating systems need. Carrier's

AquaSnap® 61AQ, for example, uses R290 with a GWP 99.7% lower than the R407C refrigerant used in its

Graham Smith, Applied
Commercial Director UK&I
at Carrier





previous generation, while matching the output of the R407C model it replaces.

The trade-off, and one Carrier won't sidestep, is flammability. R290 is classified A3, and getting the balance right has meant designing specifically around that classification, not treating it as a footnote.

Addressing the question everyone asks

Mention propane, and many people instinctively think of flammability. That's understandable. As noted earlier, R290 carries an A3 classification, meaning it is low in toxicity but highly flammable.

The important point, however, is that flammable does not mean unmanageable. The HVAC industry has a long track record of safely handling technologies with inherent risks, from natural gas and electrical systems to pressurised pipework and liquid fuels. The key is not the absence of risk, but the presence of well-developed standards, engineering controls and training. In that respect, R290 follows a familiar pattern: a technology with a known risk that has been made safe to work with through the right design, standards and training.

Safety engineered in, not added on

Well-designed R290 systems isolate refrigerant components into dedicated, sealed enclosures, incorporate leak

detection as standard and are built to defined refrigerant charge limits rather than treated as a scaled-up version of an A1 system. This isn't safety bolted on afterwards; it is safety designed from the starting point. It's also safety governed by EN 378 and IEC 60335-2-40, which set out charge limits, ventilation requirements and equipment protection appropriate to the space a unit sits in.

What this means in practice

Safety design only works if the people specifying, installing and servicing R290 systems are equally prepared, so practicality must be part of the same conversation.

That starts with skills. R290 servicing and installation require training beyond what's needed for A1 refrigerants, and Carrier has developed dedicated training programmes to support the safe handling, installation and servicing of its R290 systems. This training recognises that confidence in the technology depends as much on a well-prepared supply chain as it does on the equipment itself. It also means engaging with EN 378 and IEC 60335-2-40 at the design stage of a project, not retrofitting compliance later. This ensures plantroom layout, ventilation and refrigerant charge limits are settled before installation begins rather than causing delay on site.

It's a reasonable question for any specifier to ask whether choosing R290

now creates practical risk later, but the direction of the market seems to answer that. With R290 now accounting for over a third of new EU heat pump certifications, and manufacturer investment concentrating on propane platforms, the servicing and installer base is growing with it.¹

Where this leaves specifiers

From January 2027, many self-contained and monobloc heat pumps with a GWP of 150 or more will no longer be placed on the EU market. As a result, specifiers will increasingly ask whether a given system is aligned with upcoming regulations and long-term service availability. Getting familiar with R290 now puts specifiers and installers ahead of a conversation the rest of the market will be having by default.

None of this is about persuading anyone to overlook flammability. It's about recognising that flammability, properly designed for and properly resourced, is a manageable characteristic rather than a barrier. R290 isn't being adopted because the industry has stopped worrying about safety. It's being adopted because manufacturers have done the engineering work to make safety, performance and practicality compatible. Understanding how that balance was achieved is the first step before any product conversation begins.

www.carrier.uk 

Source

1. Heat Pumps Watch, "R290 Accounted for 38% of New EU Residential Heat Pump Certifications in 2024," 2026. Available at: <https://naturalrefrigerants.com/news/heat-pump-watch-r290-eu-residential-heat-pumps-certificates/>
2. IPCC, Sixth Assessment Report (AR6), Climate Change 2021: The Physical Science Basis, 2021. Independently reported at: <https://www.acrjournal.uk/news/propane-as-a-refrigerant-for-the-hvac-industry/>

CO₂ and progress with the tightening of EU Regulations

By **Enrique Vilamitjana**, Managing Director of Panasonic Heating & Air Conditioning Europe.

From 2027, the EU's revised F-Gas Regulation cuts the amount of virgin HFC refrigerant permitted onto the market from 42.9 million tonnes CO₂-equivalent to 21.7 million tonnes, almost halving supply (Regulation (EU) 2024/573, Annex VI). For organisations such as retailers, food service operators, cold chain logistics firms, pharmaceutical and healthcare cold storage providers, and hospitality businesses still running high-GWP systems, this increases the pressure to secure alternatives before availability tightens and prices climb further.

That pressure was reinforced on 17 July 2026, when the European Commission published its Electrification Action Plan, setting an indicative target of 46% electrification of final energy consumption by 2040 and committing to a dedicated EU Cooling and Heating Action Plan (COM(2026) 595 final). For the refrigeration sector, the shift away from high-GWP gases is not an isolated F-Gas deadline, but one part of a much broader, structural move towards electrified, low-carbon heating, cooling and refrigeration units across Europe.

Panasonic has been building towards this moment since 2009, when it began manufacturing CO₂ refrigeration condensing units in Japan. The company now marks 15 years of innovation in CO₂ refrigeration, a milestone that sits within its broader 65-year history in cold chain technology. This sits alongside Panasonic's wider experience in developing and producing its own CO₂ compressors, a capability that dates back to 2001 and further reinforces the depth of its technical expertise in natural refrigerant technology.

This long-term commitment reflects decades of engineering expertise and supported by measurable performance data, not a response to recent regulatory change.

"We didn't start developing CO₂

"The company now marks 15 years of innovation in CO₂ refrigeration"

systems because a deadline forced our hand. We started because we could see where the industry needed to go, long before regulation caught up," said Enrique Vilamitjana.

The Measurable Impact of CO₂ Refrigeration

According to performance data supplied by Panasonic research in Japan, CO₂ systems were found to cut freezer energy consumption by 25.4% and refrigeration energy consumption by 16.2% against R404A inverter units, the refrigerant that was the industry standard at the time the research was carried out. R404A has since been banned from use in new EU equipment since 2020, which only strengthens the case for CO₂ against the benchmark it was originally measured against. Total CO₂ emissions, combining refrigerant leakage and energy use, were down 67%.

The comparison against R404A is particularly significant because R404A was historically regarded as one of the stronger-performing refrigerants for cold chain application. As many current lower-GWP HFC/HFO replacement blends involving thermodynamic trade-offs that can affect efficiency, the Panasonic's research suggests the potential energy-saving benefits of CO₂ could be even higher in some applications than the original R404A benchmark indicates.

That combination of proven performance among all climates in Europe and a supply chain under increasing regulatory pressure, is why the timing of this milestone matters. As the sector gathers at Chillventa 2026 in Germany this October, the conversation among industry leaders, retailers, specifiers and the wider cold chain supply base will move from whether to plan a natural refrigerant transition to how quickly it can be done.

A proven example of Panasonic's 20HP cold chain solution using the natural refrigerant R744 (CO₂) is Dunstable Farm Ltd near Holsworthy, Devon, home to the award-winning Farmer Tom's Ice Cream. The project showcases how Panasonic technology can deliver efficient, sustainable refrigeration for food production.

Enrique Vilamitjana, Managing Director of Panasonic Heating & Air Conditioning Europe





A refrigerant older than the industry realises

CO₂ may be widely regarded as the future of low-carbon refrigeration, but its history stretches back much further. Long before synthetic refrigerants entered the market, R744 was a mainstay of commercial, industrial and marine refrigeration, widely used from the late nineteenth century through to the 1920s.

According to ASHRAE's historical account, CO₂ fell out of favour during the 1930s, because newly developed synthetic refrigerants such as R-12 were perceived as easier to handle and operated at lower pressures. As a result, many applications shifted away from CO₂ despite its long track record in commercial and marine refrigeration.

Advances in compressor technology, intelligent controls and system design have made CO₂ a practical solution for modern cold chain applications. As a natural refrigerant with a Global Warming Potential (GWP) of just 1, CO₂ (R744) offers a climate-friendly alternative to conventional HFC and HFO synthetic refrigerants, enabling Panasonic to deliver sustainable refrigeration solutions at scale.

The evolution of Panasonic's cold chain business

Panasonic's cold chain business traces back to 1960, when the company launched its first ice cream stocker in Japan. Two years later, in 1962, it began production of its first condensing units, the technology base for everything that followed. That puts the business at approximately 65 years old, with condensing unit manufacturing itself now in its 64th year.

PHVACEU entered the European CO₂ refrigeration market in 2017 as part of Panasonic's long-term commitment to sustainable refrigeration. Launching with a single 2HP ML/LT condensing unit, the company established a foundation for growth in the emerging natural refrigerant market. Since then, Panasonic has steadily expanded its CO₂ portfolio, which today offers a comprehensive range of solutions for the small capacity refrigeration segment across multiple applications.

Panasonic continues to offer products manufactured in Japan while, at the same time, expanding its European manufacturing capabilities through Panasonic Cold Chain Poland (PCCPL) in Wroclaw. Through continuous development of the business across Europe, the portfolio now benefits from products supplied from both locations.

The measurable impact of CO₂ refrigeration

Research conducted by Panasonic in Japan found CO₂ systems cut freezer energy consumption by 25.4% and refrigeration energy consumption by 16.2% against R404A inverter units, the refrigerant that was the industry standard at the time the research was carried out. R404A has since been banned from use in new EU equipment since 2020, which only strengthens the case for CO₂ against the benchmark it was originally measured against. Total CO₂ emissions, combining refrigerant leakage and energy use, were down 67%.

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A commitment to CO₂ long before natural refrigerants returned to the spotlight

While CO₂ has become a focal point of the refrigeration industry's transition to lower-GWP refrigerants, Panasonic's commitment to the technology predates the current regulatory landscape by many years. The company's 15-year CO₂ milestone reflects sustained investment in natural refrigerants long before they became an industry priority, building the experience and technical expertise that underpin its cold chain business today.

The milestone provides Panasonic a different story to tell than competitors now pivoting to natural refrigerants in response to regulation. Sixty-five years after its first ice cream stocker, and with a refrigerant whose own history stretches back further still, the company's position is that the most future-proof technology in cold chain right now is also one of its oldest. ➡



Dunstaple Farm Ltd Becomes First to Use Panasonic's 20HP Sustainable Cold Chain Condensing Unit Outside of Japan

CASE STUDY – Dunstaple Farm Ltd

A proven example of Panasonic's 20HP cold chain solution using the natural refrigerant R744 (CO₂) is Dunstaple Farm Ltd, based near Holsworthy in Devon, home of the award-winning Farmer Tom's Ice Cream, chose a Panasonic 20HP cold chain solution that utilises the natural refrigerant R744 (CO₂), was specified - the first of its kind in the UK and outside of Japan - installed by experienced and cooling specialists, Keep It Cool Refrigeration, along with the support of the Panasonic team and **Mervin Chumun**, Technical & Applications Manager for distributors Hawco.

Challenge

Dunstaple Farm Ltd sought to replace their existing freezer system with a more

reliable, sustainable and energy efficient solution to reduce their carbon footprint and increase productivity. They installed two Panasonic 10HP LT CO₂ systems into their new low temperature ice cream cold store. It was then decided to replace another system used for "blast freezing" the ice cream with a similar unit.

Solutions & tech applied

A Panasonic 20HP cold chain solution that utilises the natural refrigerant R744 (CO₂), was specified - the first of its kind in the UK and outside of Japan - installed by cooling specialists, Keep It Cool Refrigeration, along with the support of the Panasonic team and Mervin Chumun, Technical & Applications Manager for distributors Hawco.

Farmer Tom's Ice Cream was first established over 25 years ago at Dunstaple Farm in Devon by Tom James. Now working with his two daughters, Beth and Molly, along with an enthusiastic team of 8 colleagues and chief taste tester Ted the dog, around 15,000 litres of top-quality ice cream in 45 different flavours are produced weekly during the summer season, utilising locally sourced Devon cream and milk. Farmer Tom's products can be found in many outlets across the Southwest of England. The business is committed to growing sustainably, both in its production and operations processes.

www.aircon.panasonic.eu

Life beyond high-GWP refrigerants

With confirmation that the HFC refrigerant phasedown will continue as planned in the short-term, **Peter Woods**, Director of Technical Services for Climate Centre, explores the current state of play and what's required to adopt lower-GWP alternatives.

Following a consultation late last year, Defra has announced that more work is needed to agree changes to the HFC refrigerant phasedown.

Defra's proposal was to reduce the amount of HFCs that can be placed on the market in Great Britain beyond current legislative limits. Instead of the mandated 22.6% reduction in the period 2027-2029 (24% quota vs baseline), Defra had proposed a high ambition alternative 47.7% reduction (16.2% quota). There was concern from the industry that such a dramatic reduction would have severe impacts on the whole RACHP industry, particularly the AC service sector.

The high ambition cut would have significantly restricted supply and pricing, and the proposed time scales were simply not enough notice for the market to adapt. In particular, there was concern that systems could be replaced too early and bad practices would be evident, such as retrofitting with illegal refrigerants or R32 which is not designed to be used in these systems.

Instead, the existing phasedown steps will apply for 2027 - a reduction in quota of 22.6% from 1st January 2027 - before a further 12.5% reduction in 2030. Defra remains committed to introducing 'ambitious reform' to the HFC phasedown and will outline next steps later this year.

Next steps for the industry

Despite this short-term delay to any further acceleration of the phasedown, we must still be prepared for a significant drop in refrigerant availability which is coming in just six months.

Low-GWP refrigerants remain the future and systems should be built to accommodate R290, CO₂, R32 and R454B. There is simply not enough CO₂ refrigerant available in the market and supplies are very vulnerable due to lack of production plants in the UK. CO₂ and ammonia are a waste product of the chemicals industry, and we have already seen two major shortage events in the last four years.

Existing systems using refrigerants such as R410A / R404A / R507A / R448A / R449A / R134a remain legal, but the quota reduction will impact availability and prices.

Expect higher prices for higher-GWP refrigerants and increased use of reclaimed refrigerant, but even that brings its own challenges.

Recycled vs reclaimed

It's important to establish the difference between recycled and reclaimed refrigerant.

Recycled refrigerant is product recovered by a contractor, put through a recovery machine (to remove particles and moisture) and then reused by that contractor. This product is not available to the wider market and can only be used by the original contractor or end user.

Reclaimed refrigerant is a product recovered and returned to a refrigerant re-processor who will return the product, by chemical process and analysis, to virgin specification. This product can then be traded to the wider market.

Even before the reduction in quota, there is only a small amount of materials such as R448A and R449A coming back onto the market as reclaimed refrigerant to service existing systems. Inevitably, as quotas reduce and prices increase, we expect even less will



Peter Woods, Director of Technical Services for Climate Centre

come back post 2027, and by 2033 it is almost certain there won't be enough used material coming back to satisfy service demand.

Training requirements

The other consideration is what's needed to support safe installations, and gaps in skills and competency were another concern over the immediacy of an accelerated phasedown.

All contractors working with refrigerants must be F-gas Registered, but lower-GWP gases such as R32 (A2L - lower flammability) and R290 (A3-highly flammable) bring additional health and safety considerations and new training requirements.

While the risks of ignition are low with A2L refrigerants, engineers must be aware of safety considerations as detailed in EN378. However, with no national competence standards and outdated qualifications, as well as no mandatory training for flammable or high-pressure refrigerants, further work is needed. If we are to accelerate the transition to low-GWP alternatives, we must develop an effective training and competence framework - as the EU has done - and avoid the risk of unsafe or non-compliant installations. 📖

www.wolseley.co.uk/climate-centre



Propane - the future-ready refrigerant choice

As the heat pump and chiller market moves rapidly towards lower-GWP solutions, in Klima-Therm's view, propane is one of the most practical refrigerants available, delivering high efficiency with no F-gas or PFA 'forever chemical' issues. **Tim Mitchell**, Sales Director at Klima-Therm, explains where R-290 can add most value.



While Propane, or R-290, has a long history in refrigeration applications, it can definitely still be considered a modern solution. Firstly, by virtue of the fact it is not a fluorinated gas, R-290 is inherently better for the environment, offering a solution for now and the future. It is relatively unaffected by price fluctuations, scarcity or the need to redesign systems. Propane, therefore, should not just be viewed simply as an 'eco' choice, but as a risk-management choice. The refrigerant is globally abundant, well understood as a commodity and comparatively inexpensive to source.

Propane is also well suited to the demands of high temperature heat pumps. Due to its positive thermodynamic properties, it supports applications where water temperatures are required at up to 85°C. Apart from applications that demand high temperatures, such as certain industrial processes, R-290 heat pumps are a particularly good option for the retrofit market, where replacing all pipes and heat emitters from the outset is not always the most financially viable or practical option.

Efficiency gains

Thanks to propane's good heat transfer characteristics and favourable volumetric capacity, a well-designed R-290 system can deliver strong heating output from a relatively compact refrigerant circuit. The associated efficiency gains are particularly evident for heat pumps operating in demanding temperatures or in colder ambient conditions.

Tim Mitchell, Sales Director at Klima-Therm



It is also a single-component refrigerant, which, unlike blends, does not suffer temperature glide during phase change. This can also simplify things from a product design and maintenance view, simplifying heat exchangers, commissioning and refrigerant charging, leading to stable operation, straightforward servicing and lower running costs driven by reduced electrical input.

Applications where R-290 makes most sense

In commercial applications, propane is particularly compelling where sustainability pressure, high hot-water demand and retrofit constraints all come into play. Hotels, universities, supermarkets, restaurants, theatres, nursing homes and hospitals are obvious examples. These buildings often need dependable heating and hot water, have limited tolerance for disruption and may be looking for a direct route away from fossil-fuel boilers.

R-290 is also well suited to packaged chillers and polyvalent units, where simultaneous heating and cooling



Most modern commercial units are built for easy component access, with onboard controls, integrated sensors and modular arrangements that support staged maintenance and minimise downtime.

The proof is in the pudding

For Klima-Therm, the case for R-290 has been proven over many years of real projects. While propane is flammable and must be respected, it is not inherently difficult when the equipment, siting and maintenance strategy are right.

Overall, propane heat pumps and chillers offer a whole host of benefits, combining ultra-low climate impact, F-gas resilience, high-temperature capability, efficient thermodynamics and practical serviceability, making R-290 one of the most persuasive refrigerant choices now available for commercial heat pumps.

Award winning propane polyvalent heat pump

Klima-Therm supplies a wide range of propane HVAC solutions, including the award winning Rhoss UniPACK (-P and -P EXP) range, pioneering reversible heat pumps and multipurpose polyvalent (four-pipe) units.

Representing a significant advancement in sustainable cooling and heating solutions, UniPACK delivers exceptional efficiency, low environmental impact and versatility, with 11 sizes in both high efficiency and super-silenced versions.

Cooling and heating capacities range from approximately 50 to 160kW, with larger capacities to come online very soon, and they are suitable for diverse commercial applications including hotels, restaurants, supermarkets, theatres, universities, hospitals and nursing homes.

www.klima-therm.co.uk

can significantly improve whole-building energy performance. On sites with year-round cooling loads and hot-water demand, heat recovery can turn a cooling requirement into a useful source of heat rather than a wasted by-product.

The only caveat is that propane is not a direct replacement for every application. It must be used in equipment designed, certified and installed for an A3 (non-toxic, flammable) refrigerant. Charge size, location, access, ventilation, hazard zones and ignition-source control all need to be addressed at design stage. These are not reasons to reject the refrigerant, simply the normal engineering disciplines required to use it safely. The mitigations required for its use are actually almost nothing in most commercial applications where plant is already in open air, in secure and monitored locations, away from high voltage infrastructure.

As mentioned, a properly designed propane system should be straightforward to maintain, by virtue of the fact that R-290 is a single-component refrigerant with strong performance characteristics.

Safety first

While it cannot be denied that R-290 is flammable, in our experience, this shouldn't be an issue in properly designed systems installed, commissioned and maintained by trained engineers.

To ensure safety, as with any complex mechanical installation, a site must be assessed for plant location, airflow, drainage routes, nearby electrical equipment, confined spaces and future maintenance access. Outdoor monobloc and packaged plant arrangements can help keep the propane circuit outside occupied spaces, while modern units incorporate low-charge circuit design, gas detection, forced ventilation of technical compartments, suitable component selection and control interlocks.

Commissioning and maintenance teams must be competent to work with flammable refrigerants. Leak tightness, isolation procedures, ventilation checks, safe recovery, hot-work controls and the condition of detection systems are all part of the service regime. The important point is that these requirements are known, manageable and already embedded in commercial propane plant.

Energy efficiency, good for your pockets as well as the environment

By **Neil Roberts**, Technical Sales Director at Climalife UK

Before 2022 energy efficiency was seen as more of an emissions mitigation strategy with benefits, to help to stave off the impacts of global climate change. Fast forward to today and energy efficiency has now become established as a critical tool to keep down operating costs. It has always been known that refrigeration and air conditioning are large consumers of energy so even modest gains in energy efficiency can deliver significant savings over the lifetime of the equipment. System design and refrigerant choice are major considerations, however there are other actions that can be taken to maintain or improve energy efficiency, reduce total emissions and in most cases, they will even pay for themselves within the lifetime of the equipment.

Good maintenance and correct control settings

This is probably the easiest strategy to employ but often end users do not see the benefits of spending money on a system that appears to have nothing wrong with it. Simply cleaning the heat exchangers, using reliable gas detection methods, ensuring fans are operating correctly and optimising the system operating parameters can have a significant impact on system emissions.

Even moderate condenser fouling can increase the system's condensing temperature. Equally if the system has a high/condenser pressure controller, checking the setting is not causing the system to operate at excessively high conditions or is set correctly for the refrigerant used (for example after a retrofit) can have a big impact.

Figure 1 shows the impact of increasing condensing temperatures with R-448A at low (LT) and medium temperature (MT) conditions and R-32 for air conditioning.

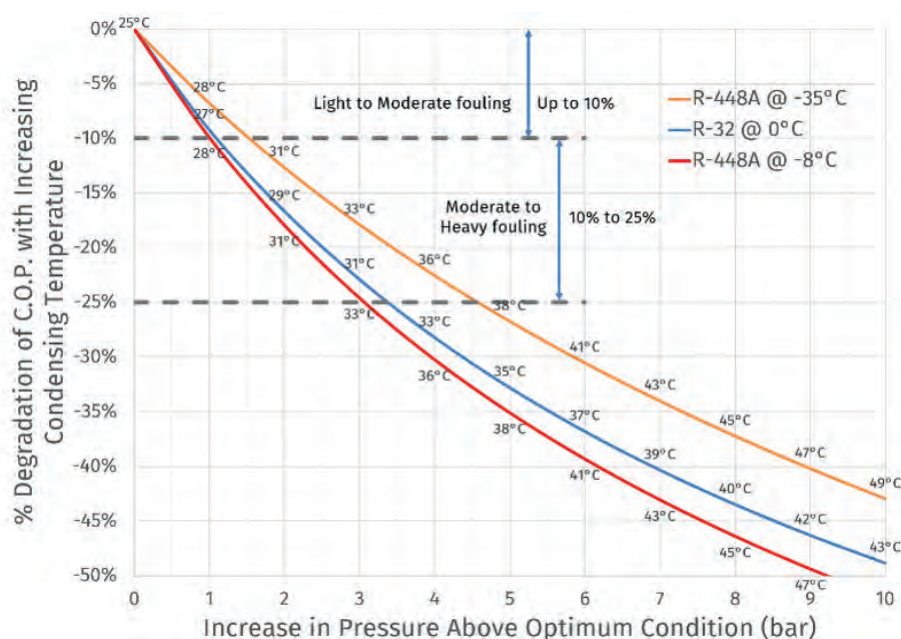


Figure 1 - % Decrease of COP with increasing condensing pressure due to fouling

Even a very small increase in the condensing temperature can lead to significant decreases in energy efficiency, for example, an increase from 25°C to 27°C condensing temperature can lead to a 5-8% loss of compressor energy efficiency.

Pressure increase caused by condenser fouling is easily prevented by regularly cleaning the condenser coil to prevent build-up of debris that can block the air flow through the coils, thereby maintaining the optimum energy efficiency.

If condenser fans fail or malfunction, the

COP could easily drop by 25% or more.

Systems which have been retrofitted and have high pressure controllers can often lose some of the energy efficiency benefits available if the controllers are not correctly adjusted. For example, if a R 404A system is retrofitted to a lower GWP alternative, it is very likely the alternative product has a lower pressure temperature relationship (Table 1). If the pressure controller is not lowered to match the new refrigerant, then the energy efficiency of the system could be 5-10% lower than for the optimum setting.

Refrigerant	Pressure difference to R-404A @		
	25°C	35°C	40°C
R-407A	-0.710	-0.753	-0.767
R-407F	-0.141	-0.023	0.056
R-448A	-0.392	-0.395	-0.276
R-449A	-0.401	-0.464	-0.491

Table 1 - Pressure differences of R-404A

Refrigerant choice

Different refrigerants do have different energy efficiencies when used in the same equipment and so it is important that the system is set up correctly to ensure optimum energy performance. Equally using the same refrigerant in both medium temperature and low temperature applications, whilst convenient, may not deliver the highest achievable energy efficiency.

For example, using theoretical cycle calculations for MT (-8°C mean) and LT (-35°C mean) refrigeration conditions¹ it can be seen in table 2 that all the lower GWP like for like alternatives for R-404A have a higher energy efficiency. It can also be clearly seen in table 2 that using two different refrigerants in the MT and LT systems has the potential to significantly increase the energy efficiency even further.

Technology choice

Choosing a refrigerant with low GWP does not necessarily mean good energy efficiency. Every refrigerant has a fundamental thermodynamic energy efficiency, and this can vary significantly, especially when the heat produced goes to waste, as is the case in the majority of refrigeration systems. Figure 2 compares a R-744 booster system, separate MT and LT R-454C systems and a mechanically

Refrigerant	GWP(AR4)	COP. difference Compared with R-404A	
		MT	LT
R-448A	1387	+3%	+5%
R-449A	1397	+3%	+5%
R-454A	239	+3%	+5%
R-454C	148	+3%	+5%
R-455A	148	+1%	+4%
R-513A	631	+5%	Not Suitable
R-1234yf	4	+4%	Not Suitable
R-1234ze	7	+7%	Not Suitable
R-290	3	+6%	+8%

Table 2 - Theoretical cycle calculation comparisons

subcooled R-454C system, showing the combined emissions reductions and electricity costs compared to R 449A separate MT and LT systems baseline. The operating parameters are given below¹ using the average UK business electricity costs for July 2026 (£0.23/ kWh), 12-month average CO2 emissions per kWh in July 2026 (0.124 kg / kWh), 10% annual refrigerant leakage rate and 75% compressor run time.

System energy efficiency can also be greatly increased by using heat recovery but this is often just seen as an increase in the capital cost rather than considering the return on investment. Heat recovery can be employed using any refrigerant and should become common place in the quest to increase energy efficiency and reduce operating costs. ➡

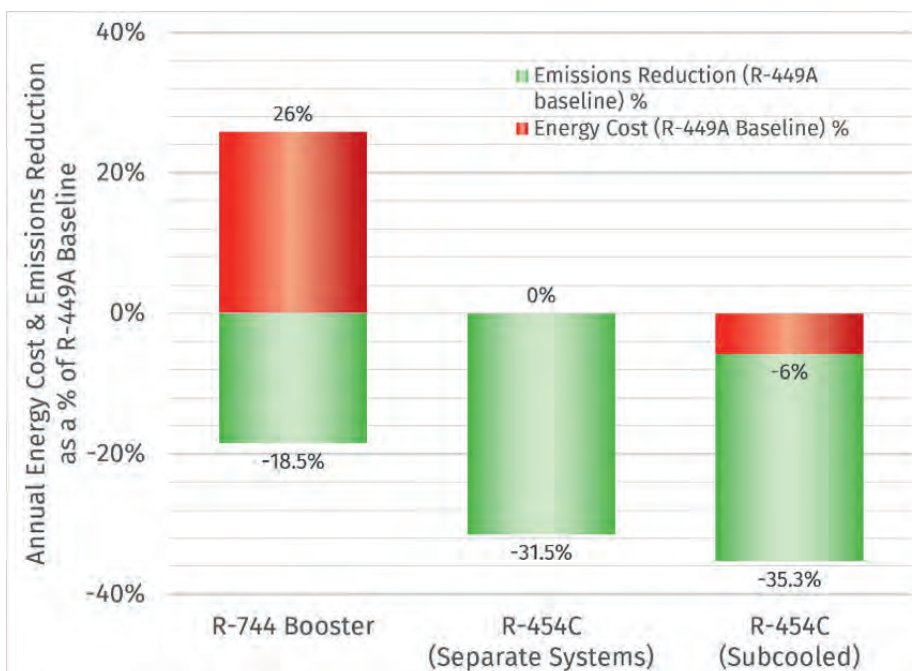


Figure 2 - Comparison of annual compressor energy cost and emissions reduction compared to a R-449A baseline.

"Low GWP does not necessarily mean high energy efficiency and a poor choice of refrigerant technology may even lead to an increase energy usage, operating costs, and total lifetime emissions. Expert advice to select the best solutions is available."

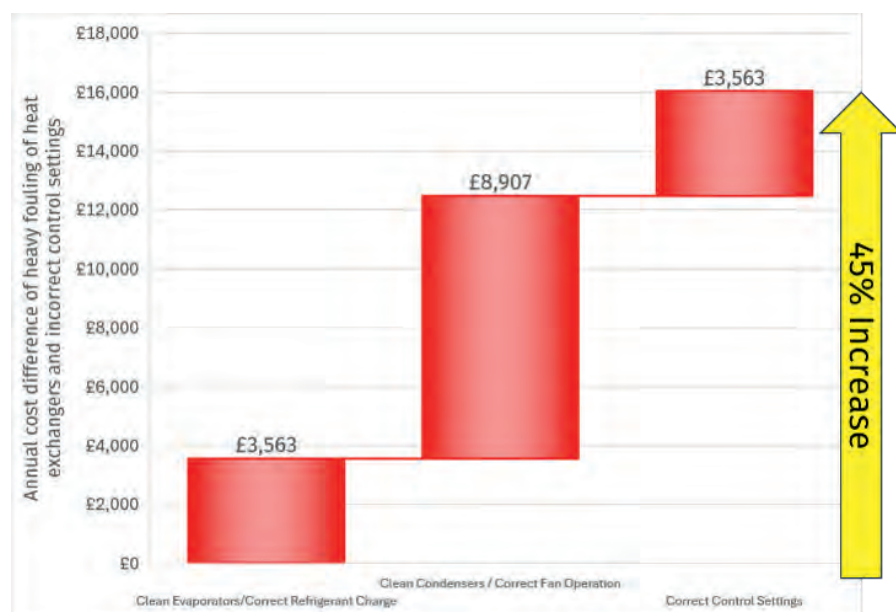


Figure 3 - Pressure differences of R-404A

Show me the numbers!

We all know improving energy efficiency benefits the environment and reduces costs, but it does require investment in maintenance and correct settings. Is it worth it?

Consider a user with a MT and LT system both with 30kW cooling capacity operating at the same conditions¹ as the previous examples with the same electricity cost (£0.23/kWh). A heavily fouled evaporator could increase annual running costs by £3563; a heavily fouled condenser could cause £8907 additional running costs and incorrect control adjustment another £3563. This equates to a 45% increase in compressor electricity costs with additional expenses highly likely from prolonged fan operation, not to mention the potential consequential losses if the system fails because of the increased running hours to maintain setpoint.

In summary

With government setting targets for reduced emissions and energy usage, it is clear the refrigeration industry has an important role to play. To achieve the maximum reductions available, it is important to thoroughly investigate all the options and not just make decisions on a single parameter, such as refrigerant GWP. As shown in this article, low GWP does not necessarily mean high energy efficiency and a poor choice of refrigerant technology may even lead to an increase energy usage, operating costs, and total lifetime emissions. Expert advice to select the best solutions is available. The Climalife team has the tools and knowledge to help you achieve an eco-efficient future. 🌱



Source

1. Theoretical calculations made for a 30kW LT, 30kW MT cooling load. Superheat (13K, 5K useful), subcool (2K), 15°C ambient temperature with 10K condenser DT and compressor efficiency 0.65 MT and 0.64 LT. Values were the same for all refrigerants.

The Digital Evolution of Refrigeration

How Technology is Changing the Industry

The refrigeration industry has always been built on technical expertise, practical problem-solving, and strong customer relationships. Those fundamentals remain as important as ever. What is changing is the technology supporting the people who do the work.

Technology is now becoming part of everyday work in refrigeration. Tools such as AI, automation, mobile apps, online platforms and smart sensors are helping businesses work more efficiently, support engineers on site and give customers quicker access to the information they need.

For many years, refrigeration businesses have relied on manual processes, paper forms, spreadsheets, phone calls, and disconnected systems to manage day-to-day operations. While effective in the past, these methods can create unnecessary administration, and delays in accessing information.

Smarter Systems

One of the biggest changes is the move from reactive working to predictive working. Smart sensors and connected systems can monitor temperature, pressure, energy use, equipment health and operating conditions in real time. This gives businesses earlier visibility of potential issues, helping teams respond before small problems become operational disruption.

AI and automation are also changing how information is processed. Instead of relying on people to manually check records, interpret spreadsheets or chase updates, digital tools can highlight exceptions, identify trends, support forecasting and reduce repetitive administration. In practical terms, this means teams can spend less time managing paperwork and more time focusing on technical decisions, service quality and customer outcomes.

Less Manual, More Mobile

For engineers and contractors, mobile technology is particularly important. Work that once depended on paper forms, office follow-ups or delayed system updates can increasingly be completed on site. Information can be captured at the point of



Author: Simon Launder,
A-Gas Chief Technology Officer

RefHub™
 Powered by A-Gas

activity, photographs or supporting details can be added where needed, and records can be made available more quickly to the people who rely on them.

Together, these technologies are helping the industry become more efficient and better connected. Better Improved data supports better planning, while digital records reduce duplication and make it easier for teams to find and use the information they need.

From Digital Tools to Connected Ways of Working

The most successful digital change happens when technology feels useful, not forced. A platform should not simply recreate a paper process on a screen. It should remove friction from the task, reduce unnecessary steps and make the right information easier to access at the right time.

The industry is moving away from disconnected tools and towards more joined-up digital experiences. Customers, contractors and suppliers increasingly expect simple, practical ways to complete tasks, view updates and access records without moving between multiple systems.

For refrigeration, this matters because the work is operationally complex. Equipment, cylinders, returns, service activity, customer records and reporting all depend on accurate information moving

between different people and processes. When that information is easier to capture and easier to share, the whole process becomes more reliable.

Modern Move for DEFRA

A practical example of this shift is the move towards Digital Waste Tracking. The Digital Waste Tracking Service is a UK Government initiative, led by DEFRA, designed to create a clearer digital record of waste movements by replacing fragmented paper-based records with more consistent information that can be shared with regulators.

From October 2026, Phase 1 of the requirement will apply to sites that hold the relevant waste permits in England and Wales.

RefHub - Digital Change in Practice

For A-Gas, RefHub is one example of this broader digital shift. RefHub has been developed to bring key customer tasks and information into a more connected environment - making technology a practical part of how customers already work.

RefHub gives customers a digital way to complete key activities, including refrigerant & waste returns, and access relevant information from desktop or mobile devices.

By moving these processes online, RefHub helps reduce reliance on paper-based workflows, improves visibility and supports a simpler way of managing refrigerant-related activity.

As the platform develops, it will continue to support areas such as cylinder visibility, inventory management, cylinder rentals, reporting, and customer self-service.

Looking Ahead

As technology continues to develop, the businesses that embrace change will be best placed to meet future customer expectations. This does not mean replacing the expertise and relationships the industry is built on - it's about using digital tools to make processes simpler, information clearer and service more responsive. Working with partners who are committed to this more connected way of working will be key to creating a smoother, more reliable customer experience.

**"THE OBJECTIVE IS NOT
 TO CHANGE THE JOB.
 THE OBJECTIVE IS TO
 MAKE THE JOB EASIER."**



Beyond the phase-down:

Is the HVAC industry's compliance infrastructure ready for the next generation of refrigerants?

In this article **Elle Sherwood**, Marketing Executive at Collabit Software, discusses the HVAC/F-Gas transition, which is becoming a data and operational challenge, not just a refrigerant change. She says, connected digital records can improve traceability, compliance, and planning, while AI can help assign qualified engineers, reduce unnecessary travel, and prevent mistakes before they happen.



Elle Sherwood, Marketing Executive at Collabit Software

The refrigerant conversation in HVAC and F-gas is changing quickly.

For years, the focus has quite rightly been on the gases themselves. Which refrigerants are being phased down, what replaces them, what lower GWP actually means in practice, and how engineers, manufacturers and contractors need to adapt.

Those questions are not going away. If anything, they are becoming more important as Great Britain moves towards the next significant step in the HFC phase-down from 2027.

But there is another part of the

conversation that feels much less developed. We talk a lot about changing the refrigerant.

We talk far less about whether the operational systems sitting behind the industry are ready for that change.

And that matters, because the more complicated the refrigerant landscape becomes, the more valuable accurate information becomes with it.

A refrigerant transition is not only a technical transition. Increasingly, it is a data transition too.

The hidden complexity behind compliance

It is easy to think about F-Gas compliance as a series of rules attached to a piece of equipment.

Use the correct refrigerant. Carry out the right leak checks. Make sure the engineer is qualified. Keep the relevant records. On paper, that all sounds relatively straightforward.

In reality, every one of those requirements depends on information being available at the right time.

A business needs to know what refrigerant is in an asset, how much is there, what its CO₂e value is, when it was last checked, whether a leak was found,

what happened next, which engineer attended and whether that engineer was appropriately qualified to carry out the work.

Then add the refrigerant itself into the picture.

Where did it come from? Which cylinder was used? How much was added or recovered? Where did the recovered refrigerant go afterwards?

Very quickly, what appears to be a technical compliance issue becomes an information-management issue as well.

The problem is that many businesses are still trying to answer those questions using information held across several different places.

An engineer may complete a job sheet in one system. The asset record sits somewhere else. Refrigerant movements are recorded in a spreadsheet. Qualifications are held separately. Customer documentation is stored in PDFs or email chains.

None of those things is necessarily wrong in isolation.

The problem comes when somebody needs the full picture.

And usually, that is the moment when the weaknesses in the process become visible.

When an engineer problem is not really an engineer problem

We saw an interesting example of this recently at an industry technical brunch.

During a presentation on compliance non-conformances, examples included repeat visits and engineers arriving on site for work they were not appropriately qualified to carry out. Those situations can easily be framed as engineer mistakes.

But it raised a bigger question for us.

If a business already knows what qualifications an engineer holds, what the job requires, what asset is involved and what work needs to be completed, why was that engineer able to be scheduled onto the job in the first place?

At that point, the issue is not simply the person turning up on site.

It is the system that allowed the situation to happen.

The same is true of repeat visits.

Sometimes a second visit is unavoidable. Sometimes it happens because the right part was not available, the job was more complex than expected or circumstances changed on site. But sometimes the information needed to complete the work already existed somewhere within the business. It simply did not reach the planner or engineer at the right time.

That distinction matters. If the industry treats every operational non-conformance as an individual mistake, it risks missing the underlying process that keeps producing the same outcome.

Good systems should not just record failures once they have happened.

Where possible, they should make them harder to create in the first place.

Traceability is becoming part of good refrigerant management

That becomes particularly important when you look at refrigerant traceability.

A refrigerant does not simply appear inside an asset.

It moves through a chain.

Supplier. Cylinder. Contractor. Engineer. Site. Asset. Recovery. Reuse, reclamation or disposal.

The further the industry moves into a more varied refrigerant landscape, the more useful it becomes to understand that journey properly.

Knowing that "refrigerant was added" is only one part of the story.

A useful record should tell you what refrigerant was used, how much was added or removed, which cylinder it came

from, which asset it was related to, which engineer carried out the work and when it happened.

That is something we have focused on heavily within Collabit.

Cylinders can be tracked by serial number, refrigerant type, capacity and remaining quantity. Additions and removals remain connected to the relevant job and asset history.

CO₂e can be calculated against the asset, with the relevant threshold information visible without teams having to manually work through separate gas tables and spreadsheets.

The important part is not that these records are digital.

It is that they are connected.

The engineer, job, asset, cylinder and refrigerant movement all become part of the same history.

So, when a compliance manager, customer or auditor asks what has happened to an asset over its lifetime, the answer does not need to be pieced together from several different sources.

That, to me, is where digital traceability stops being a convenient admin tool and starts becoming part of good refrigerant management.

Better compliance should mean less admin, not more

There is an obvious danger here.

Whenever regulation becomes more demanding, the instinct can be to collect more information.

More forms. More boxes. More reports.

That is not necessarily the same thing as better compliance.

Engineers already have enough to think about on site. They are dealing with the technical work, safety, customer expectations, time pressures and whatever unexpected problem is sitting in front of them that day.

The answer cannot simply be to make them administrators as well.

The better approach is to capture information once and allow it to flow through the rest of the operation.

If an engineer records that refrigerant has been added or recovered while completing a job, that information should be able to update the asset history, refrigerant record, service history and customer documentation without somebody entering it again later.

That sounds simple, but it changes quite a lot.

It reduces duplication. It removes opportunities for information to be copied incorrectly. And, perhaps most importantly, it makes the compliance record a natural result of the work being completed rather than something the business has to reconstruct afterwards.

That should be the direction of travel.

Less administration, but better information.

From proving compliance to actually using the data

There is another reason this matters.

Most businesses collect compliance information because they have to.

But once that information is structured and connected properly, it starts becoming useful for much more than proving that a process was followed.

A contractor might begin to see that one asset is repeatedly leaking. Another is consuming far more refrigerant than similar systems. A customer estate might have a particularly high dependence on older, higher-GWP refrigerants.

Suddenly, the same information that was originally collected for compliance purposes can start informing operational decisions.

Do we repair this asset again?

Is it time to retrofit?

Would replacement now make more sense than another year of reactive maintenance? Which parts of the estate are likely to become more expensive or difficult to support as the phase-down continues?

This is where good compliance data becomes genuinely valuable.

It stops being a record of what happened yesterday and starts helping a business decide what to do tomorrow.

The next step is using the data before the job happens

This is the part of the conversation I find most interesting.

At Collabit, we have spent a lot of time connecting the information HVAC and F-Gas businesses already generate.

Assets, refrigerant records, cylinders, jobs, leak checks, PPM, reactive work, engineer skills and certifications, remedials, service history and supporting documentation can all sit within the same operational picture.

That gives businesses much greater visibility and traceability.

But once that information is connected, another question appears.

What else can you do with it? ➡

That is where we have started moving beyond digitisation and automation into AI-assisted planning.

Collabit AI Planner uses the operational data already within the system to help build the schedule.

Before it even starts planning, it checks whether the information required to create a workable plan is there and flags missing inputs early.

It can then consider engineer skills, capacity, workload, job requirements and location when allocating work. It groups jobs into more efficient site visits and optimises routing, with the potential to reduce drive time by up to 30%.

The obvious benefit is efficiency.

Less planning admin. Fewer unnecessary journeys. Better use of existing capacity.

But there is a more interesting compliance angle.

The planner is not simply asking, "Who is free?"

It can also ask, "Who is actually appropriate for this job?"

If a particular task requires a certain skill or certification, that can become part of the planning decision from the start.

That is a very different way of thinking about compliance.

Instead of identifying that the wrong engineer attended after the event, the information already held within the system is being used to reduce the chance of that happening at all. Every planning run, change and outcome can also be tracked, giving teams visibility over how a schedule evolved and why certain decisions were made.

For me, that feels like the natural next step. We have spent years digitising records. The next stage is using those records intelligently.

So, what are we really preparing for?

The refrigerant transition will clearly require new technical knowledge, different equipment and continued investment in skills.

But it may also force the industry to think much harder about the operational

infrastructure supporting all of that work.

Because as the rules become more complex, disconnected information becomes harder to justify.

And as businesses generate more compliance data, simply storing it is no longer enough. The opportunity is to use it. To prevent avoidable non-conformances. To make better planning decisions. To understand refrigerant use more clearly. To give engineers the right information before they arrive on site. And to create a compliance record that does not have to be rebuilt every time somebody asks for it.

We have spent a lot of time discussing which refrigerants the industry will use next.

Perhaps the more interesting question now is whether the systems behind them are ready for what comes next. Because the refrigerant transition is not only changing what goes into the equipment. It is changing what businesses need to know about it.

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TE Connectivity cuts energy demand and improves injection moulding efficiency with free cooling

TE Connectivity has improved cooling efficiency and reduced energy consumption at its Hastings site through a free cooling project delivered with ICS Cool Energy.

TE Connectivity a global manufacturer uses process cooling to support injection moulding operations, where stable temperatures are critical to maintaining machine performance and product quality. Having worked with ICS Cool Energy on temperature control for a number of years, the manufacturer was looking for an opportunity to upgrade older equipment and introduce free cooling to improve efficiency and reduce operating costs.

By installing a new system with free cooling capability, ICS Cool Energy helped TE Connectivity reduce chiller run-time, lower electricity consumption and improve reliability across a critical manufacturing process. The project has also given the business a strong platform for wider sustainability improvements, with the free cooling approach now being considered at the manufacturer's other sites.

Challenge

At TE Connectivity's Hastings facility, process cooling plays an essential role in supporting injection moulding operations. Cooling is used to control temperatures around the moulding process, including heated tools, barrels and other critical machine components, helping to prevent overheating and maintain stable operating conditions.

For a manufacturing process that depends on temperature stability, any loss of cooling performance creates operational risk. If temperatures rise too far, machines can alarm and stop, affecting production continuity and potentially product quality.

As they looked to reduce energy use and improve environmental performance, the Hastings team wanted a more efficient solution that would not only improve reliability, but also use low ambient conditions to reduce mechanical cooling costs during cooler periods of the year.



Solution

Building on its existing relationship with the site, the manufacturer approached ICS Cool Energy to upgrade the moulding process cooling system and integrate free cooling capability.

The project included the installation of a set of run standby chillers, both able to work alongside the free cooler. This arrangement gives the site both resilience and flexibility, allowing units to be alternated to support servicing and routine maintenance.

The free cooling system reduces reliance on compressor-driven mechanical cooling by using lower ambient temperatures to assist the process whenever conditions allow. This has enabled the site to cut energy use significantly, particularly during cooler months, while maintaining the temperatures required for injection moulding operations.

Results

The project has delivered both operational and energy-saving benefits for TE Connectivity. By installing new chillers with free cooling, the site has improved the reliability of a critical utility supporting

its injection moulding process, while also reducing electricity consumption.

Talking about the results **Benjamin Hall**, Maintenance & Facilities Manager at TE Connectivity, said: "We've seen energy bills come down drastically, and the system has been running very well. Free cooling has been a major factor. The chillers are usually running at 60 to 80 kilowatts, while in winter, the free cooler is running at around 5 kilowatts. That's a massive difference. Just as importantly, the support from ICS has been strong throughout, and that has helped build confidence in the solution."

Alongside lower energy use, the new system has helped maintain more consistent process conditions, reducing the risk of overheating and unplanned stoppages on moulding machines.

The success of the installation has also had an impact beyond the Hastings site. As a sustainability champion within the business, Benjamin has been using the project as an example when discussing energy-saving opportunities at other TE Connectivity locations in the UK and Europe.

Benjamin, continued by saying: "Energy use and environmental performance are both major priorities for us, so being able to show what free cooling can deliver in a live manufacturing environment is really valuable. It is something I have been keen to promote at other sites because the difference in energy demand is significant."

Rod Avery at ICS Cool Energy added: "This project highlights the value of free cooling in helping manufacturers reduce energy use and support stable process conditions. By working closely with TE Connectivity, we were able to upgrade critical cooling infrastructure and deliver a solution that improves reliability while supporting longer-term sustainability goals."

www.icscoolenergy.com

Urging UK data centres to prioritise energy-efficient cooling

Pieter Swart, Grundfos Head of Specification, Fire & Modular Systems at Grundfos, highlights need for more efficient cooling as UK data centre demand rises.

As investment in UK data centres continues to gather pace, Grundfos is urging operators to prioritise energy-efficient cooling infrastructure to help manage rising power demand and improve operational performance.

The call comes as the rapid expansion of AI places growing demands on energy resources, while concerns have also been raised about the potential impact of further data centre development on UK water supplies¹.

Cooling can account for up to 40 per cent of a data centre's total energy consumption², meaning improvements to pumping systems, controls and water management can have a measurable impact on operating costs, energy use and long-term performance.

For operators, consultants and contractors, this makes the efficiency of the systems used to keep facilities cool an increasingly important consideration.

"Data centres are an essential part of the digital infrastructure we all rely on, but they also have significant energy requirements and, depending on the cooling technology used, can require substantial amounts of water.

"Balancing Power Usage Effectiveness (PUE) and Water Usage Effectiveness (WUE) often involves trade-offs. For instance, improving PUE by adopting water-based cooling systems can increase water consumption and affect WUE. On the other hand, reducing water use to improve WUE can increase energy consumption and impact PUE.

"That's why it's important to consider both metrics together when designing sustainable and resilient data centres," says Pieter.

"The challenge is to make sure that as data centre capacity grows, the systems supporting these facilities are designed and operated as efficiently as possible. The good news is that much of the technology needed to do that already exists."

Improving cooling efficiency

Pumping systems play an important role in moving cooling water around a data centre and can operate continuously throughout the year. Even relatively small improvements in system efficiency can therefore make a difference over the lifetime of a facility.

Variable-speed pumps and intelligent controls can adjust performance in response to changing cooling demand, helping avoid unnecessary energy consumption while maintaining the flow required by the system.

Existing data centres can also offer opportunities for optimisation. Once a facility is operational, operators have a clearer picture of its actual cooling requirements, allowing them to assess

the performance of existing pumps and controls and identify where system efficiency could be improved³.

"Efficiency isn't simply about choosing an efficient pump," Swart explains.

"You need to look at how the whole system operates - how much flow is actually required, how demand changes and whether pumps are working harder than they need to.

"Matching pump performance more closely to cooling demand can reduce unnecessary energy use while still providing the reliability a data centre needs."

Water management is another consideration. Depending on the cooling system and the requirements of the individual site, water reuse can help reduce consumption, while waste heat recovery can provide opportunities to put waste heat to use elsewhere.

Looking ahead

"Every facility has different cooling and water requirements, so there isn't one solution that works everywhere. Our role is to work with consultants, contractors and operators to understand what the system needs to deliver and develop the right solution around that.

"As data centre capacity continues to grow, efficiency will become increasingly important. When equipment is operating around the clock, even relatively modest improvements can make a meaningful difference to energy use and operating costs."

<https://www.grundfos.com/uk> 



Pieter Swart, Grundfos
Head of Specification, Fire &
Modular Systems at Grundfos

Source

1. <https://www.theguardian.com/environment/2026/jul/21/not-enough-water-for-uks-datacentre-plans-trade-body-says>
2. <https://www.gov.uk/government/publications/uk-compute-roadmap/compute-evidence-annex-changes-corrected-23-april-2026>
3. "Water and energy policies will 'make or break' UK's AI future" 16:34–17:13: <https://www.youtube.com/watch?v=W6IDyVjHxjY>

Rethinking overheating:

How ground source heat pumps can help cool our homes

Neil Fitzsimons, Managing Director at Power On, discusses how networked GSHPs can provide low-carbon heating in winter and energy-efficient cooling in summer, helping high-rise developments tackle overheating while reducing energy use.

The UK has experienced one of its hottest summers on record, bringing the challenge of overheating firmly into focus. Yet cooling is still often treated as a separate problem, requiring additional equipment, energy and investment. But what if the infrastructure installed to heat our homes could help keep them cool too?

For high-rise and high-density developments in particular, networked ground source heat pumps (GSHP's) could offer a surprisingly simple answer: providing low-carbon heating and hot water in winter, while also enabling low-energy cooling in summer.

Of course, networked GSHP's are known for their great merits in providing low-carbon community heat and hot water, meeting the Future Homes Standard with carbon emissions reduced by 75-80% from day one. They are up to five times more energy efficient than gas and 30% more efficient than individual air source heat pumps.

In addition to this, all heat networks, including networked GSHP's, are also regulated by Ofgem. But if this is not reason enough to consider their installation, they can also provide passive cooling.

As the UK faces hotter summers and growing pressure to deliver low-carbon homes, developers and their engineering teams need to think about heating and cooling together, rather than treating them as entirely separate challenges.

An increasingly urgent challenge

The need to tackle overheating is becoming increasingly difficult to ignore. The latest English Housing Survey¹, published in July, found that around

3 million homes in England were reported as overheating in 2024, with the proportion of homes affected rising from 7% in 2019 to 12% in 2024.

And this summer has demonstrated just how quickly the issue can escalate. The UK experienced its fifth heatwave of the year in August, with temperatures reaching 38.1°C at Kew Gardens – the hottest day of the year so far.

These figures highlight why overheating can no longer be viewed simply as an issue of occupant comfort. As temperatures rise, the ability to keep homes at a comfortable temperature is becoming an increasingly important consideration in the design and specification of new developments.

Why high-rise developments are particularly vulnerable

High-rise and high-density developments are particularly susceptible to overheating for several reasons. These include the significant amounts of glazing often used in construction and also the internal heat gains from occupants, appliances and lighting, which all contribute to the overall temperature within the building.

Windows may not be fully opening due to safety concerns, noise or air pollution, and limited shade at height and in urban areas can also be a factor.

The challenge is that many of these factors are inherent to the way high-density developments are designed. Maximising natural light, making efficient use of land and creating comfortable, well-connected urban homes can all increase the potential for heat to build up indoors. This makes an effective and appropriately designed cooling strategy particularly important.

Not only do networked GSHP's provide cooling, they also do not contribute unwanted heat to the building. Unlike combustion-based heating systems (such as gas boilers), networked GSHP's do not burn fuel to produce heat. They are designed to transfer heat, not generate it, extracting heat from the ground and moving it to the building's heating system.

From winter heating to summer cooling

A GSHP is a renewable heating system that extracts low-temperature solar energy stored in the ground using buried pipework. This is transferred to a discreet heat pump within each dwelling where it is compressed into a higher temperature.

Networked GSHP's utilise one ground array to provide heating for multiple properties. These are ideal for high-rise, high-density developments and are the solution to providing low-carbon heat to entire communities, for the lowest cost and grid impact.

Remarkably, networked GSHP's are also able to provide environmentally friendly and extremely low-cost cooling systems, effectively as a simple 'add-on' to the heating network.



Neil Fitzsimons,
Managing Director
at Power On



Ground source drilling at the Hartlepool Marina

How can the same system provide cooling?

Heat pumps offer cooling using the same unit as they do for heating. GSHP's can, therefore, both heat and cool a home using the same set-up, simply by adding a cooling module.

In warmer weather, a GSHP system can operate in passive or active cooling mode depending on the set-up. Passive cooling is ideal for homes and apartments, while active cooling is better for commercial spaces with consistently high temperatures. While GSHP's can offer active or passive cooling, air source heat pumps can only offer active cooling.

The low-energy potential of passive cooling

Networked GSHP's can provide heat in the winter as the ambient ground temperature is warmer than the air temperature and therefore can provide warmth when passed through a heat pump. With the ambient ground temperature in the summer being cooler than the temperature in the building, the same system can, therefore, be used for cooling by simply bypassing the heat pump in the warmer months.

Known as passive cooling, all that is required is a small circulation pump and fan to distribute the cool air around the property, which can be achieved at a fraction of the cost compared to traditional air conditioning.

Passive cooling provides much-needed comfort in the summer, uses very little

energy, and does so without a bulky outdoor air conditioning unit.

For residential developments in particular, this can be a significant advantage. Rather than installing a separate, energy-intensive cooling system, the existing ground source infrastructure can be used to help manage indoor temperatures during warmer months.

When active cooling makes sense

Active cooling reverses the heat pump cycle, pulling heat out of the building and returning it to the ground. It is best suited to buildings with higher or continuous cooling needs, like industrial or commercial units.

While GSHP's can offer active cooling, which acts like air conditioning, where they really excel is in passive cooling, which is a more efficient and sustainable form of cooling that offers overheating protection.

In active cooling with networked GSHP's, the heat pump operates like a refrigerator, absorbing the heat from the building and releasing it to the ground. While this is more energy-intensive than passive cooling, it is still more efficient than traditional air conditioning.

Why cooling should be part of the design conversation

Overheating cannot always be solved by simply adding air conditioning once a building is occupied. Cooling requirements should be considered from the earliest stages of design, alongside orientation, glazing, shading, ventilation and insulation.

This is particularly important in high-rise developments, where retrofitting cooling systems can be disruptive, expensive and space-intensive. Designing a system that can provide both heating and cooling from the outset can help avoid introducing additional plant and equipment that was never considered in the original building design.

For engineers, the attraction is therefore not simply that a GSHP can cool a property. It is that cooling can be integrated into an existing low-carbon heat network, creating a more joined-up approach to the building's energy needs.

A win-win for developers, engineers and residents

Networked GSHP's are a low-carbon, low-cost innovation. Their cooling capabilities are almost a by-product of the heating and hot water solution, making them a win-win option for the developer and the homeowner alike. They also support the Part O Building regulations, which focus on mitigating overheating in new residential buildings.

With networked GSHP's still being relatively new in this country, many building services and environmental engineers may not be aware of their cooling capabilities and advantages. They are, however, in the perfect position to introduce this very ecologically sound and inexpensive way of providing cooling for high-rise, high-density developments.

<https://www.poweron-uk.co.uk>

Source

1. <https://www.gov.uk/government/statistics/english-housing-survey-2024-to-2025-weather-resilience-in-housing-fact-sheet>

Unlocking the hidden potential of data centres through heat zoning: Success, requires a shift in perspective

Bryony Evans, Intermediate Environmental Consultant at chapmanbdsp, discusses that Heat network zoning could turn data centre waste heat into a valuable local energy source, supporting decarbonisation while creating benefits for nearby communities.

As AI, cloud usage and digital services continue to drive demand for data centres, much of the conversation to date has centred on one issue, electricity. While these facilities are often viewed as major energy consumers, they also produce something of increasing value to the UK's net zero ambitions, heat.

Every day, data centres generate significant amounts of waste heat as servers are cooled. Historically, most of this heat has been discharged into the atmosphere, despite the fact that heating buildings accounts for a substantial proportion of the UK's carbon emissions. The opportunity to connect these systems is becoming increasingly immediate with the Energy Act became law in October 2023, draft heat-network zoning maps were published in September 2024, and detailed zoning regulations are being finalised in 2026, with the first zones expected to begin development later this year. This could enable data centres to play a much bigger role in the UK's wider energy system.



Bryony Evans, Intermediate Environmental Consultant at chapmanbdsp

Heat network zoning identifies areas where heat networks are likely to be the most cost-effective and low-carbon way of supplying heating to buildings. Instead of each building relying on its own heating source, heat can be generated or recovered centrally and distributed through a shared

network. For data centres, this presents an opportunity to rethink their role. Rather than being viewed solely as consumers of electricity, they can become suppliers of a valuable energy resource, providing reliable, heat to nearby homes, hospitals, universities and commercial developments.

As the demand for digital infrastructure continues to rise, particularly with the rapid growth of AI, it is increasingly important that data centres are considered as part of a connected energy ecosystem rather than standalone assets.

The opportunity and the challenges

The technology to recover waste heat has existed for many years, yet relatively few projects have been delivered in the UK. The reasons are rarely technical alone. Heat cannot be transported over long distances as efficiently as electricity, meaning there needs to be a suitable heat demand close to the data centre. In many cases, developments have been built without nearby heat networks, while the commercial incentives to invest in new infrastructure have been limited. As a result, vast amounts of usable thermal energy have simply gone to waste.

Today, however, the landscape is changing. Heat network zoning, alongside greater policy support and growing pressure to decarbonise buildings, is encouraging developers and local authorities to think differently. Increasingly, waste heat recovery is being considered during the earliest stages of site selection and masterplanning, rather than as an afterthought.

Countries such as Denmark and Sweden have shown what is possible when energy infrastructure is planned holistically. There, industrial waste heat, including that from

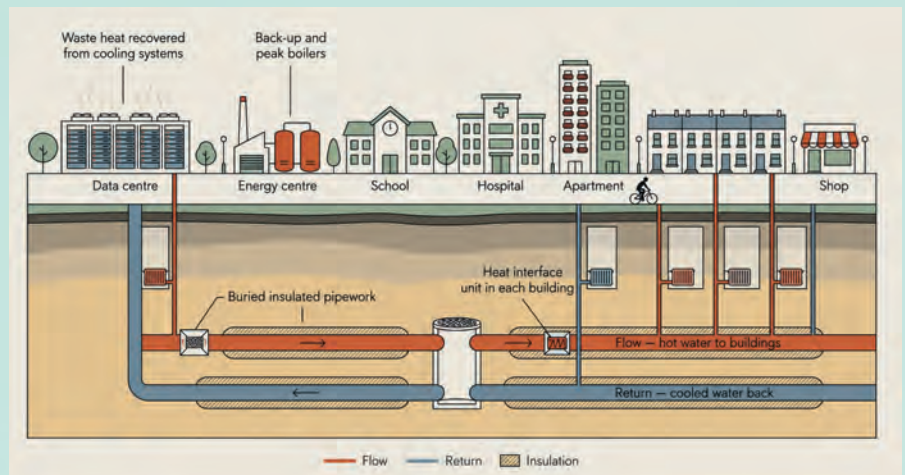


data centres, is routinely captured and fed into extensive district heating networks that serve entire communities. The difference is not simply technology. These countries have invested in district heating infrastructure for decades, supported by long-term policy certainty and coordinated planning.

The UK starts from a different position, with heat networks serving only a relatively small proportion of buildings. This means new infrastructure often needs to be developed alongside new data centres, requiring collaboration between developers, local authorities, utilities and network operators. While this creates additional challenges, it also presents an opportunity to embed heat recovery into future developments from the outset rather than retrofitting solutions later.

Although waste heat recovery is often highlighted as a sustainability success story, delivering projects remains complex. The heat produced by data centres is typically low-grade and often requires heat pumps to raise temperatures before it can be distributed through a network. Building the necessary infrastructure requires significant upfront investment, while commercial agreements must align multiple stakeholders over the long term.

Timing is another challenge. A data centre may be operational years before surrounding developments requiring heat are completed, making coordination



essential if opportunities are not to be missed. This is where heat zoning can make a real difference. By identifying future areas of heat demand and encouraging early collaboration, it creates a framework for connecting developments that may otherwise have been planned independently.

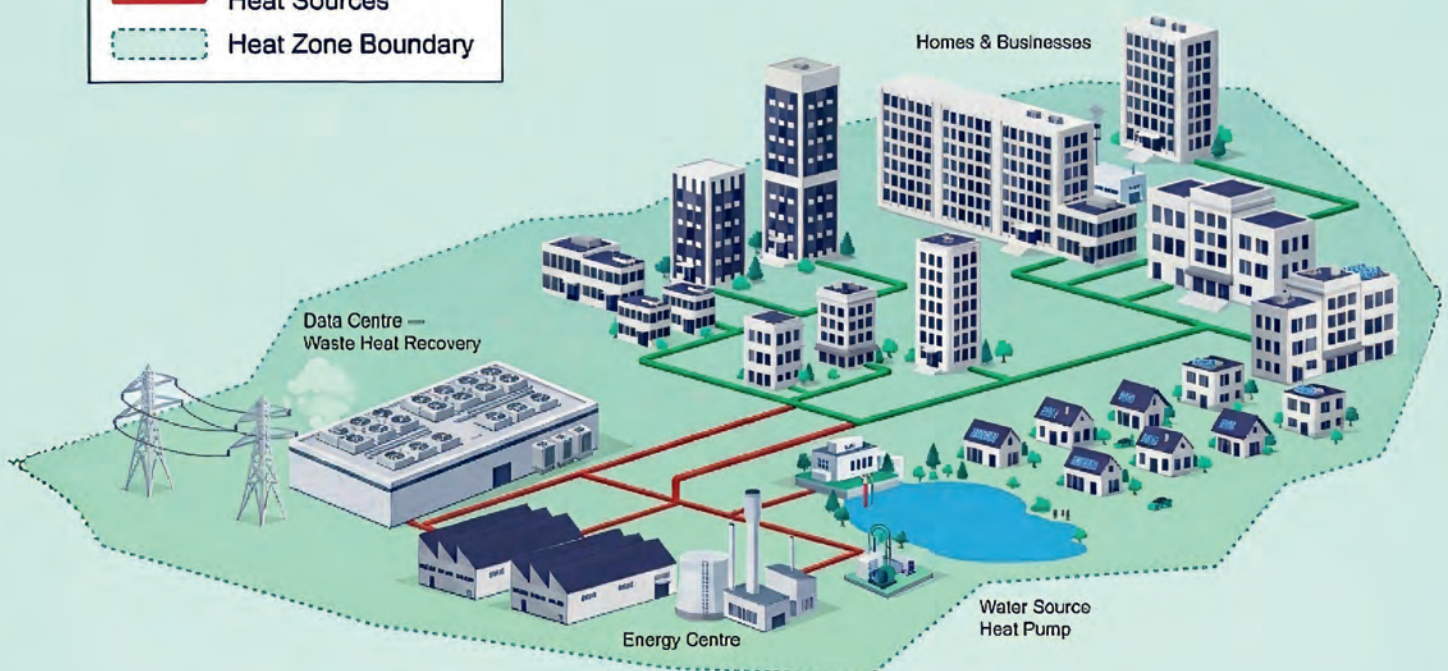
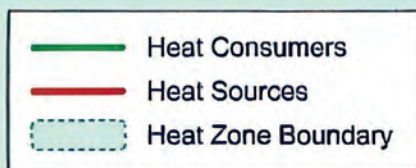
Turning waste heat into a community asset

As data centres become increasingly prominent across the UK, there is growing public interest in the benefits they bring to local communities. Waste heat recovery offers an opportunity to demonstrate that these facilities can contribute far beyond digital connectivity. By supplying low-carbon heat to neighbouring developments, data centres can help reduce emissions, improve the viability of heat networks and support wider local sustainability targets.

There is still considerable untapped potential. Too often, data centres are planned in isolation rather than as part of wider energy infrastructure. Greater collaboration between developers, planners and energy providers could help unlock shared benefits for both operators and the communities around them.

Ultimately, heat network zoning has the potential to change the role data centres play in the UK's energy transition, but success will depend on a collective willingness to rethink established approaches and embrace long-term, joined-up planning. As digital infrastructure continues to expand, waste heat should no longer be viewed as an unavoidable consequence of growth, but as a valuable asset capable of supporting both economic development and decarbonisation goals.

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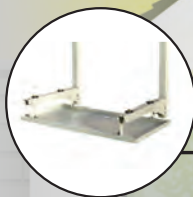


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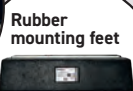


Isolators



Condensate tray

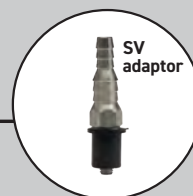
Adjustable feet



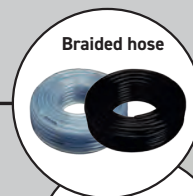
Rubber mounting feet



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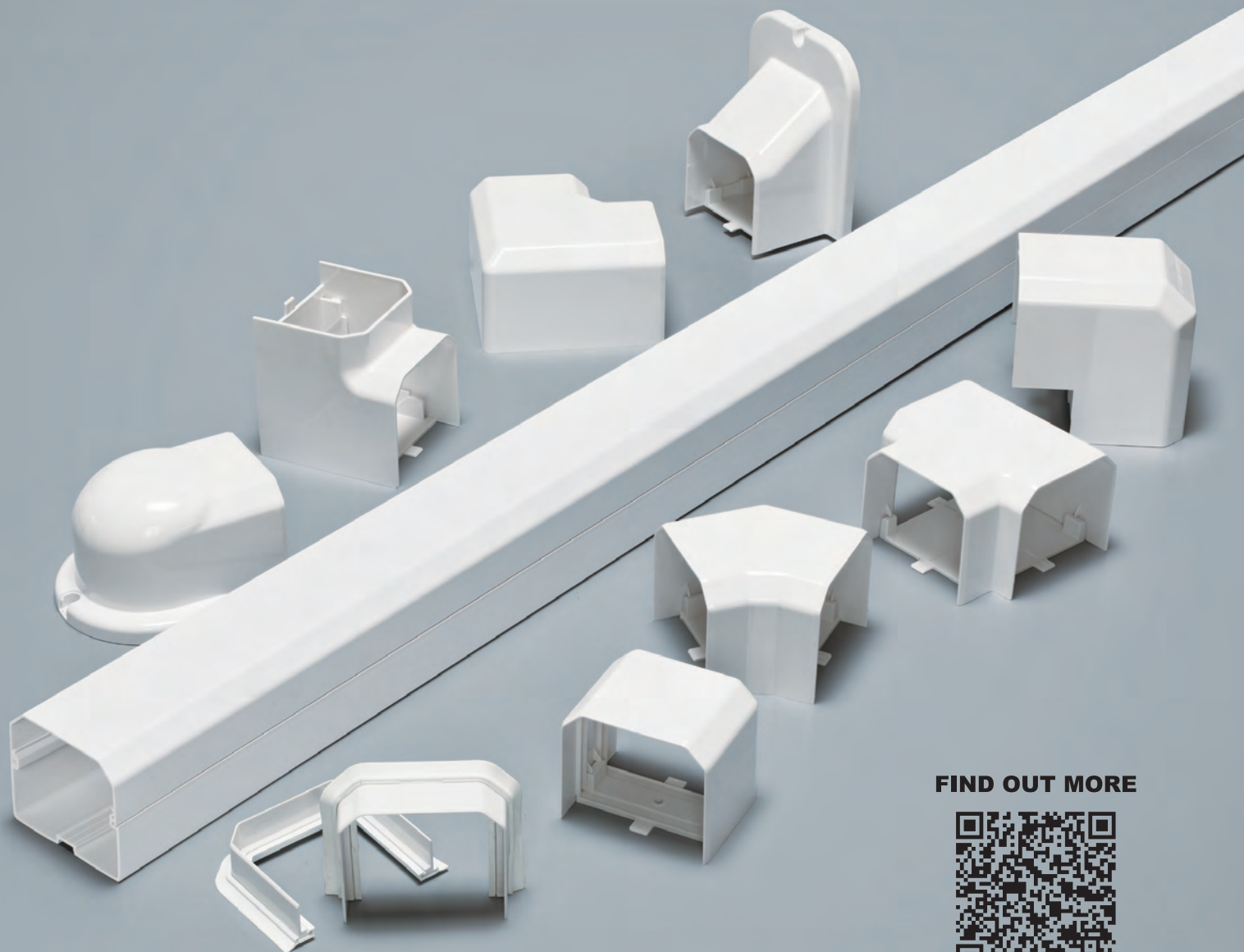


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Inside Carrier's award-winning HVAC partnership at London Gatwick

Adam Wright, Business Development Manager at Carrier, explains why the HVAC industry must move away from short-term, reactive fixes and embrace a comprehensive lifecycle solutions and service approach. He outlines how we can modernise our existing buildings, why we must change our maintenance mindset, and how a landmark partnership at London Gatwick Airport has created a blueprint for the future of critical infrastructure.

Organisations face a massive, multi-decade challenge: keeping vital equipment performing at its peak, maintaining compliance with evolving environmental legislation, and supporting their own emissions-reduction and operational objectives. It is a complex puzzle, and solving it requires more than just calling a technician when something breaks; it requires a trusted partner to guide them through this long-term operational shift.

Existing buildings hold the key

When we talk about reaching net zero, it's easy to focus on new 'eco-buildings' with solar panels and smart glass. Approximately 80% of the buildings¹ that will be in use in 2050 are already standing today. In the UK, the existing non-domestic building stock is responsible for a staggering 23%² of our built environment's operational carbon emissions.

If organisations are to reduce emissions from existing buildings, we cannot wait for them to be demolished and rebuilt. Indeed, some estimates suggest that up to 87% of

the performance² improvements needed for the UK real estate sector to achieve a 1.5°C-aligned pathway must come from existing buildings.

How do we do that? We need to stop treating HVAC systems as an afterthought. For decades, many facilities have operated on a 'run-to-fail' approach – leaving critical equipment operating in dark plant rooms until they break down, then rushing to pay for costly emergency repairs.

For instance, no fleet manager would dream of running their delivery vans without regular servicing, waiting for an engine to seize before booking a mechanic. It would be expensive, highly disruptive, and terrible for fuel efficiency. Yet many high-value, energy-intensive building services are still managed this way today.

If we are serious about decarbonising existing buildings, reactive maintenance must be replaced with a proactive approach to lifecycle asset management, can help improve operational efficiency and may reduce energy consumption where optimisation opportunities are identified.



Adam Wright, Business Development Manager at Carrier

Modernisation as a first resort

An integrated approach to lifecycle management bridges the gap between day-to-day operational reliability and long-term decarbonisation. Rather than treating service as a series of isolated events, forward-thinking organisations take a holistic view of asset performance, bringing together digital intelligence, targeted modernisation and robust contingency planning.

Intelligence, modernisation and resilience

It starts with digital intelligence and continuous remote monitoring. In today's connected world, there is no longer any need to rely on guesswork. By integrating cloud-based diagnostic platforms and advanced controls with a building management system, organisations can access real-time performance insights across their estates. Continuous telemetry helps identify efficiency drifts, emerging faults and operational anomalies before they escalate into disruptive and costly failures. As a result, maintenance evolves from a reactive necessity into a predictive, data-driven discipline.

But digital insight is only as valuable as the action it enables. This is where targeted modernisation becomes crucial. Meeting modern efficiency standards does not require writing off existing machinery. Through data-driven audits and performance assessments, we can pinpoint specific areas



A Carrier chiller at London Gatwick



significant for Gatwick's long-term goals?

John: Given the high Global Warming Potential (GWP) of traditional fluorinated greenhouse gases, effective F-Gas containment is a critical – and legal – operational priority. By identifying and mitigating leaks at an early stage, we have reduced annual F-Gas emissions, supporting Gatwick's stated objective of achieving net-zero Scope 1 and 2 emissions by 2030. At the same time, improved refrigerant management has helped optimise chiller performance.

There is a broader point here: proactive asset management delivers far more than compliance. When organisations take a strategic approach to maintaining critical equipment, environmental performance, operational resilience and financial efficiency can all improve together.

Adam: Looking ahead, how does this partnership support Gatwick over the next 10 to 20 years?

John: We are constantly planning for the future. Our regular condition reports and detailed asset assessments help Gatwick make smart, data-driven capital decisions about which ageing systems to modernise or replace.

One example is Jubilee House, where an ageing chiller had reached the end of its operational life.

We replaced it with a modern chiller utilising R-1234ze refrigerant, which has a GWP of less than 1. This upgrade forms part of the airport's wider decarbonisation programme while improving operational resilience.

Today, our focus is on supporting Gatwick's next phase of infrastructure modernisation and emissions-reduction initiatives.

This includes transitioning away from fossil fuels by replacing traditional gas boilers with heat pumps and other electrification technologies, helping Gatwick continue its long-term emissions reduction programme. It is a true long-term partnership that demonstrates how a lifecycle approach can support the management and modernisation of critical infrastructure. ➡

www.carrier.uk/en/commercial/service.html

Source

1. <https://ukgbc.org/our-work/climate-change-mitigation/>
2. <https://ukgbc.org/wp-content/uploads/2024/01/Retrofitting-Office-Buildings-Building-the-Case-for-Net-Zero.pdf>

ripe for upgrades – such as retrofitting variable-speed technology to legacy motors or preparing systems for future heat pump integration. Depending on the baseline efficiency of the legacy system, these targeted interventions can extend asset life and may help reduce energy consumption, operating costs and associated emissions, with outcomes varying according to site-specific conditions.

Finally, any effective lifecycle strategy must account for the unexpected, particularly when managing critical infrastructure where downtime is not an option. This is where structured contingency planning and temporary resilience come into play. By combining proactive maintenance with rapid-deployment rental climate solutions, operators can safeguard operational continuity in both planned and unplanned scenarios. Whether managing a planned overhaul or responding to an emergency outage, having a structured, rapid-response backup plan in place ensures critical environments remain operational, protecting both business continuity and occupant comfort.

Inside Gatwick: A Q&A on award-winning lifecycle service

To understand how this long-term lifecycle strategy works in a 24/7 international airport, I sat down with **John Lam**, Modernisation Sales Manager UK&I for Carrier's operations at London Gatwick.

Adam Wright: Let's start with the sheer scale of the operation. Gatwick welcomes over 43 million passengers a year and operates around the clock.

Maintaining climate control across a busy international airport is no small task. What are some of the biggest challenges involved in keeping London Gatwick's critical cooling infrastructure running reliably around the clock?

John Lam: It's a massive undertaking.

We manage around 50 large chillers across the North and South terminals, forming the backbone of the airport's district cooling network. This infrastructure doesn't just keep passengers comfortable; it protects critical IT servers and terminal operations that are essential to the airport's day-to-day performance.

We take a hybrid, high-touch approach to service delivery: a dedicated technician is on-site every single day, supported by a Business Development Manager who oversees the security and logistical coordination required in a highly regulated airport environment. This on-the-ground presence is complemented by continuous remote monitoring and digital diagnostics. Together, these capabilities enable us to identify performance deviations early and address emerging issues before they escalate into costly failures, helping to maximise reliability, efficiency and operational resilience across the estate.

Adam: This partnership was recently named 'Air Conditioning Project of the Year' at the National ACR & Heat Pumps Awards. What did that win mean to our team and how does it tie back to the work we're doing at Gatwick?

John: Winning that award was a huge moment for us. For the team on the ground, it was fantastic recognition of their hard work in a highly secure, high-pressure environment. But for the wider business, it validated that moving away from transactional, reactive maintenance towards long-term, collaborative partnerships is the right path forward.

The award recognised the measurable environmental and financial improvements we have achieved together. Since 2021, Carrier's proactive maintenance and asset management programme has helped reduce annual F-Gas refrigerant losses across the airport by more than 50%.

Adam: Why's that reduction so

Training excellence: A journey to award-winning success

Tamsin Donohoe, Company Director at Practical Refrigeration Training Centre (PRTC) celebrates its success, highlighting its 35-year commitment to practical training, learner success and industry development.

When our name was announced as Training Provider of the Year (College/Academy) at the 2026 National ACR & Heat Pumps Awards, we felt immense pride. For a business that has spent more than 35 years supporting the Refrigeration, Air Conditioning and Heat Pump (RACHP) industry, recognition from our peers was both humbling and deeply rewarding.

The awards evening was a fantastic celebration of achievement across the sector, recognising innovation, professionalism and excellence while reflecting on the people and organisations shaping the future of our industry.

For Practical Refrigeration Training Centre (PRTC), winning this award recognised the dedication, expertise and commitment of our team, alongside the learners, employers and industry partners who have supported our journey.

Built on industry experience

Years before PRTC was founded, father and son **Steve** and **Glen Greenbank** worked as subcontractors from one van, completing commercial and industrial installations. The business grew into compressor rebuilds and later expanded into Pendle Refrigeration Wholesale. Throughout this time, they both shared a passion for passing on their knowledge and Steve soon recognised a growing need for specialist refrigeration and air conditioning training.

That vision led to the creation of PRTC and since its establishment in 1990, we have remained focused on delivering practical, industry-led training. Our training facilities are built around working replica systems designed and developed by our own team, enabling learners to gain hands-on experience in realistic environments. Combined with the knowledge and



Tamsin Donohoe, Company Director at Practical Refrigeration Training Centre (PRTC)

experience of trainers who have worked extensively within the industry, this approach helps make technical theory both practical and relatable.

Although the industry has changed dramatically, our goal remains the same: to provide training that reflects real workplace demands and equips engineers with the skills to succeed.

More than training

At PRTC, training is more than a compliance requirement. We believe it develops confidence, competence and professionalism, creating safer engineers, stronger businesses and higher standards across the industry.

Supporting the growth of the RACHP sector has always been central to our business. Over the years, we have worked alongside numerous organisations, developing their training rigs, providing specialist support and supplying assessors to help other providers strengthen their own training provision.

We believe the industry is strongest when organisations work together to share knowledge, improve opportunities and raise standards across the sector.

As technologies and environmental legislation continue to evolve, the RACHP industry needs engineers who are adaptable, knowledgeable and committed to continuous professional development. Training provides the foundation for this growth, ensuring individuals are equipped





Hands-on experience

not only to meet today's requirements but also to embrace the opportunities and challenges of tomorrow.

A small family business with a wide reach

Although PRTC remains family-run, we have continually supported the wider industry through partnerships and specialist work.

This has included working with Vetassess as their only assessment centre in Europe for engineers seeking skills recognition for migration to Australia. We have proudly supported WorldSkills by providing facilities for training and assessment activities and have partnered with numerous colleges and training organisations to support apprenticeship delivery throughout the UK.

These partnerships keep us closely connected to industry needs and ensure our training evolves alongside emerging technologies and employer expectations.

Championing learner success

Learners are at the heart of everything we do, and supporting their development and celebrating their achievements is incredibly rewarding.

The National ACR & Heat Pump Trainee of the Year Awards (ToTy) are an important platform for recognising learner success, giving apprentices the chance to showcase their technical ability, professionalism and commitment.

In 2025, PRTC learners secured Gold, Silver and Bronze in both the Refrigeration and Air Conditioning categories, marking the third consecutive year our apprentices achieved the highest positions in both disciplines, a remarkable accomplishment that reflects their dedication and hard work.

As a training provider, we strive to go above and beyond in creating opportunities

for learners to succeed. Whether supporting them through qualifications, competitions or career progression, it is always a privilege to see our learners' efforts recognised and their success remains a source of enormous pride for the whole team.

The people behind the success

Behind every successful learner is a dedicated team of trainers, assessors, curriculum developers and support staff working tirelessly to help individuals achieve their goals.

Much of this work happens behind the scenes, from adapting teaching approaches, providing additional support, mentoring learners through challenges and helping individuals rebuild confidence when setbacks occur.

Winning Training Provider of the Year recognises not only PRTC as an organisation, but every member of staff who goes the extra mile to support learners, employers and industry partners.

A particularly meaningful achievement

This achievement is especially meaningful as we remember our company director and owner, **Karen Greenbank**, who we sadly lost in early 2025. Karen's vision, passion and commitment helped shape the Training Centre we are today, and her influence continues to be felt throughout PRTC.

Karen believed that as the industry continuously evolves, our training should never stand still. She encouraged innovation, invested in learner support and championed flexible approaches to education.

Her dedication to improving learner experiences, expanding remote learning opportunities and continuously enhancing our services remains embedded within everything we do. She was instrumental in shaping the

success of PRTC and her influence continues to guide our future direction.

It was with great pride that we accepted this award. While it acknowledged the hard work and dedication of our team, it also served as a fitting tribute to Karen's memory, recognising the lasting impact she had on PRTC, our learners and the wider industry.

Looking to the future

Receiving Training Provider of the Year is an incredible honour and has already had a significant impact on the business.

The award validates our team's dedication, raises the profile of technical training and reinforces the importance of investing in skills development across the RACHP sector.

This recognition motivates us to keep improving and developing new ways to support learners and employers at a time when skills shortages, emerging technologies and evolving legislation continue to shape the industry.

By maintaining strong relationships with employers, professional bodies and awarding organisations, we can help ensure training remains relevant, practical and aligned with industry needs.

We are excited to develop new partnerships and strengthen collaborations with organisations such as the Refrigeration and Air Conditioning Engineers Society (RACES) and DN Colleges Group, expanding opportunities for learners and employers.

As we celebrate this achievement, we would like to thank the ACR Journal, Heat Pumps Today and the organisers of the National ACR & Heat Pumps Awards for bringing industry professionals together to celebrate innovation, achievement and excellence.

Among the publications serving our sector, ACR Journal has long been one of our preferred reads. Its coverage of industry developments, training and workforce excellence provides a valuable platform for sharing knowledge and promoting best practice.

At its heart, PRTC has always been about people and our passion for the industry. We are elated to have won Training Provider of the Year (College/Academy), and this recognition reinforces the belief that has guided us for more than three decades: when we invest in people, we strengthen the industry for generations to come. 🏆

<https://www.prtc.co.uk/>



The Innovation Zone

The guide to what's new for ACR Journal readers, offering vital industry news.

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

MAXIPRO RANGE GROWS TO MEET DEMAND FOR BIGGER, FASTER HVAC INSTALLATIONS

Conex Bänninger has strengthened its market-leading >B< MaxiPro range with the launch of a new size; 2 1/8", designed to meet the demands of larger commercial refrigeration installations.

Engineered for speed and reliability, >B< MaxiPro has revolutionised pipe jointing in air-conditioning and refrigeration. Its quick, flame-free press technology delivers secure, permanent joints while dramatically reducing installation time and offering far greater on-site flexibility compared with traditional brazing.

Mike Lucken, Technical Sales Manager – ACR at Conex Bänninger, said: "The new 2 1/8" fitting expands the >B< MaxiPro portfolio, which already includes sizes from 1/4" up to 1 5/8".

<https://conexbanninger.com/>



GRUNDFOS LAUNCHES GENIECON INTELLIGENT CONTROL PLATFORM FOR HVAC APPLICATIONS

Grundfos has extended its GENIECON intelligent control platform to include HVAC applications, enabling building operators to control and monitor HVAC and pressure boosting systems through the same platform.

Previously used primarily for pressure boosting, GENIECON can now also be used with Grundfos DELTA HCU for HVAC systems. The expansion is designed to simplify the management of complex building services while helping operators respond to growing demands for energy efficiency, reliability and greater visibility of system performance.

GENIECON controls multiple pumps working together within a system and adjusts their operation according to actual demand. In HVAC applications, parameters including flow, pressure, temperature and temperature differential can be dynamically controlled in line with system requirements.



The platform can also integrate with BMS, SCADA and other building automation systems, allowing pump and system data to form part of the wider view of building performance.



"Buildings are becoming smarter, and expectations around energy efficiency, reliability and access to performance data are increasing. But greater intelligence shouldn't mean greater complexity for the people responsible for running them," says **Glynn Williams**, Senior Area Sales Director for UK & Ireland at Grundfos Commercial Building Services.

"Bringing HVAC and pressure boosting onto the same control platform gives operators a clearer view of how their systems are performing. It allows them to respond to changing demand, monitor operation more easily and identify potential issues earlier, without having to manage multiple separate controls."

Grundfos.com/uk

The **ACR** & **HEAT PUMP** **Trainee** Of The Year **Awards**

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