

# THE A C I R

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## JOURNAL



Essential Information for the Air Conditioning and Refrigeration Industry

**NATIONAL  
ACR & HEAT PUMP  
AWARDS  
2025**

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Fujitsu General Air Conditioning UK has extended the AIRSTAGE split systems line-up with the launch of the compact and efficient Eco+ wall mount unit. Operating on lower GWP R32 refrigerant, it delivers extended functionality at a competitive price point. The Eco+ is available in capacities 1.5kW (Multi Split only), 2kW, 2.5kW and 3.4kW. SEER of up to 7.8 and SCOP to 4.4. Take control from anywhere with the Airstage smartphone app.

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Welcome to the June/July issue of The ACR Journal. In this edition, BESA lawyer Abiola Aderibigbe describes how to remain on top of contract negotiations. Miriam Rodway of the IOR provides an update on the noticeable trends revealed by the Transport, Industrial & Commercial Refrigeration Project. Honeywell's Julien Soulet identifies the advantages of using HFO refrigerants to make data centres more sustainable.

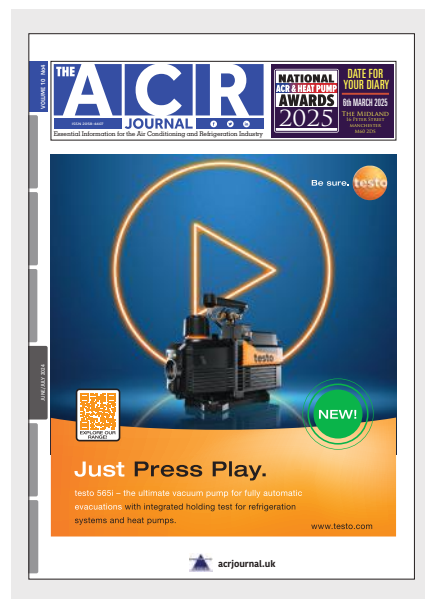


Prepare to be inspired by Michelle Pike's success story. The visionary founder of Hitchin-based Principal Climate Technologies, Michelle continues to expand a customer-centric specialist wholesale business and is this edition's Women in the ACR Industry.

In the run-up to InstallerSHOW 2024, it's fantastic to see so many releases cross my desk with organisations announcing that they are attending and what innovative new products and services will be on show. It isn't easy to cover them all, especially in the magazine, but we endeavour to cover as much news as possible on our extensive digital platforms and social media. If you think you have something to shout about, whether staff accomplishments, case studies or company news, you are always welcome to send it to me.

Hopefully, I'll see many of you at the InstallerSHOW.

*Andy*



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## Deane Flint joins Fujitsu as Chief Operating Officer

Deane Flint has joined Fujitsu General Air Conditioning UK as Chief Operating Officer. Ian Carroll moves to become Deputy Chief Executive Officer and retains overall responsibility for UK operations.

Flint was most recently Head of Northern Europe for HVAC at Haier and previously spent 20 years at Mitsubishi Electric, latterly as Branch President UK & Ireland. At Fujitsu, he will be responsible for day-to-day operations and developing market share.

He said: "I'm delighted to be joining Fujitsu, a company that I have respected for many years. I have learned a vast amount in the last three years being on the other side of the supply chain, all of which I now look to bring to Fujitsu. I am confident we can build on what has already been created by the team and develop the business for the future."

Carroll recently celebrated 10 years at Fujitsu, having joined the business in 2014 as Sales and Marketing Director. He has served as Chief Operating Officer since 2018 and overseen record sales growth for the past three years.

He said: "After 10 years, the company and staff mean a lot to me so selecting a candidate was always going to be tough process. As soon as I met with Deane, I knew he would be a good fit and I am delighted he has decided to join us.

"Deane has extensive knowledge of the UK market for air conditioning, heat pumps and applied products, and I'm confident that working together we can continue to grow Fujitsu General Air Conditioning in the UK and Ireland."

- Changing Faces: P38-39.



Deane Flint has been appointed COO at Fujitsu

## Hunt on for HRS Achievement Award 2024 winner

Hampshire Refrigeration Society is seeking nominations for the HRS Achievement Award 2024.

Nominations for the sixth annual award should be for an individual who has shown exceptional skills, support, vision in furthering the advancement of the refrigeration, air conditioning and heat pump industry.

If you, or someone within your organisation, fall into this category, please add your nomination with a brief summary of why you or a colleague should be considered. Nominations should be submitted before July 5 at: <https://form.jotform.com/240782993646370>

The recipient of the award will be announced at the 37th Annual HRS Golf Day, which takes place this year on July 25 at Old Thorns in Liphook.



## AncillaryHUB boosts Beijer Ref installer support

Wholesale group Beijer Ref UK & Ireland is stepping up its ancillary offering with a dedicated service for air conditioning and refrigeration installers.

AncillaryHUB is available through wholesalers DW, HRP, RW and DWG, both in branch and online. It covers the full range of air conditioning and refrigeration ancillary equipment, such as copper pipe and cable tray, through to condensate pumps, pipe clamps and wall fixings.

Installers can benefit from several new incentives, including dedicated delivery of ALL components for a project in one vehicle, an AncillaryAPP to order goods from site, improved opening hours and delivery vehicles using the latest route optimisation software.

There are also extra incentives for MHI Dealers and Partners who decide to use the 'one-stop-shop' facility by purchasing air conditioning and ancillaries together. They automatically receive a 'money-back' rebate offer when ancillaries are purchased. Details of the MHI Dealer and Partner programme can be obtained through any HRP, DW, RW or DWG branch.

Julie Murray, Head of AncillaryHUB, said: "We are proud of our existing strong market position in ancillaries and look forward to taking this to the next level. Many installers purchase equipment from one supplier and ancillaries from another. The money-back offer for MHI Dealers and Partners provides a real incentive to buy everything together from a Beijer Ref wholesaler, while the redefined delivery options are already proving a success."



Free next-day delivery before 9am is available for orders placed before 5pm the previous day. Text or email notifications are sent when the materials arrive on site. The service is supported by an improved delivery fleet featuring the latest route optimisation technology to stay ahead of the traffic. If installers would prefer to collect from a branch, this can be done from as early as 6.30am at their chosen AncillaryHUB outlet.

Supporting AncillaryHUB is a new installer-friendly AncillaryAPP. This can be used to place orders or obtain a quotation quickly without the need for phone calls or going through online ecommerce options.

## Climalife marks 150 years of Dehon Group

Refrigerant specialist Climalife's team in the UK is celebrating the 150th anniversary of parent company, The Dehon Group.

Dehon is a family-owned company with brands around the world such as Climalife, Inventec, SMB Auto, Matelex and Soderec, with historical roots stretching back as far as 1874.

The company was founded in Belgium under the name Etablissements Joseph Peintre and in the early days focussed its business on refrigerants at a time when industrial refrigeration was taking its first steps.

After the First World War, Joseph Peintre tasked Osée Dehon with growing the business, seeing it expand into more countries, and who later went on to succeed Peintre. The refrigeration adventure continued with the distribution of new refrigerant products called "FREON" and in the 1950s, these fluids opened the way to new applications and an expansion of product range.

Over the years to come, and with more Dehon family members taking on responsibility for the business, the company grew and diversified, meeting major challenges such as the ban on CFCs and HCFCs. In 1989, Dehon Service France was ahead of its time, pioneering the recovery and recycling on fluorinated greenhouse gases and rigorously monitoring products to end of life.



A third generation of family members took over its management in the 1990s seeing the company expand internationally and strengthen its diversification into new products. More recently it has seen a fourth family generation be involved in the company success, supported by over 700 team members in more than 15 countries.

The Climalife team in the UK were proud to celebrate with senior board and Dehon family members at an event hosted in Bristol.

## Strong line-up at Cold Chain Hub 2024

Cold Chain Hub 2024 will take place at Birmingham's NEC on October 9-10. With a focus on sustainability, the exhibition and conference will showcase innovation across the cold supply chain.



An outside area will feature the latest in portable cold stores and refrigerated trailers, rigids and panel vans, including electric vehicles. The event will also feature a free-to-attend conference across both days, with a focus on refrigerated transport and cold storage.

Meanwhile, the TCS&D Awards Dinner will take place on October 9 at the National Motorcycle Museum, close to the NEC.

This will be the first time since 1981 that the event will be held at the NEC.

As well as a new venue, the event has already attracted first-time exhibitors including Acrobat Vehicle Rental, Fischer Panda, FridgeXpress, Seymour Manufacturing International, Mitsubishi Heavy Industries Thermal Transport Europe GmbH, RTS/Lamberet, Tiger Trailers, Principal Logistics Technologies, Rack Collapse Prevention and Building Automation Products Inc.

The list of exhibitors is live at [www.tcsdevents.com](http://www.tcsdevents.com)

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## A2L solution proves a cut above for meat specialist



The units cool the meat store, which is maintained at 1°C

SK Refrigeration, Heating and Cooling has installed a refrigeration system running on A2L refrigerant R454C for a leading meat processor in Gloucestershire, one of the first such projects to be installed in the UK.

Based on three high-efficiency BITZER ECOLITE condensing units with a combined cooling capacity of 42kW, the installation replaced an end-of-life system cooling the processor's fresh meat storage area.

With a GWP of just 148, R454C replaces high GWP refrigerants such as R404A, R507A, R407A and R407F in direct expansion applications, and R407C for use in air conditioning and heat pumps. The new system was designed to maintain a temperature of 1°C in the 315cu m storage area, with a throughput of some 5000kg of meat per day.

Refrigeration options considered included a conventional system running on R449a, which although having an A1 safety classification has a much higher GWP of 1397. The client chose the R454C ECOLITE-based solution due to the reduced environmental impact, lower energy running costs and future F-gas compliance under the critical <150 GWP threshold.

The three ECOLITE LHL5E/4CES-6Y-40s condensing units are connected to a series of indoor cooling evaporators via three circuits, each with a system charge of 13.5kg.

BITZER's ECOLITE range of air-cooled condensing units is based on highly efficient BITZER ECOLINE compressors with sophisticated capacity control, optimised condensers and variable speed fans.

All 11 models in the range are suitable for low and medium temperature applications, as standard.

The design is suitable for use with a wide range of refrigerants, including several proven A2L fluids, with an operating range from -45°C up to 0°C without liquid injection.

Matt Dolphin, Director of SK, said: "Due to the A2L classification, the project entailed a lot of detailed design work to ensure it met the client's brief and UK safety compliance requirements. The project reflects our focus on delivering solutions that are both environmentally sustainable and highly efficient, reducing running costs for end users while minimising environmental impact."



The BITZER ECOLITE condensing units operate on low-GWP R454C refrigerant

## Charlotte Robinson wins Women in Cooling competition

Refrigeration engineer Charlotte Robinson, of Catalent Pharma Solutions, has won the 2024 AREA World Refrigeration Day Women in Cooling video competition.

The competition, which was launched last year and recognises the vital contributions of women in the refrigeration industry, saw eight professionals vying for the title. They were:

- Charlotte Robinson – United Kingdom (winner)
- Katie Cronin – Ireland
- Tie Kieuw Lee – Netherlands
- Chloe Jennings – UK
- Sharon Byrne – Ireland
- Carmen Rodriguez Ortiz – Ireland
- Zdenka Bukovinová – Slovakia
- Joanne Mitchell – UK

This year's event was notable for its emphasis on practical and design skills, with Robinson's entry highlighting the importance of problem-solving abilities in maintaining and optimising refrigeration systems.

The award ceremony took place at the historic Titanic Museum in Belfast. Robinson received a €1,000 cheque from World Refrigeration Day, while her travel, accommodation and dinner expenses were covered by the hosts, BESA RACHP Group.

Steve Gill, founder of World Refrigeration Day, said: "I am thrilled to congratulate Charlotte on her well-deserved victory. This competition celebrates not just individual achievement, but the collective progress and inspiring potential of all women in refrigeration, air conditioning, and heat pumps. Let us continue to support and amplify the visibility of such talented professionals, paving the way for a more diverse and inclusive future in our field."



Charlotte Robinson receives the award from Steve Gill of WRD

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## Luke Haile heading WorldSkills



Luke Haile of Lightfoot Defence will represent the UK in refrigeration and air conditioning at WorldSkills 2024 in Lyon in September.

The former apprentice, from Hampshire, trained at Eastleigh College and won the WorldSkills UK-RACHPSkills UK gold medal in 2022.

WorldSkills UK, a four nations partnership between education, industry and UK governments, is responsible for selecting, mentoring and training Team UK. Luke's training is overseen by Mark Forsyth, a WorldSkills UK training manager and owner of Coriolis International Limited.

The UK has been taking part in the WorldSkills Competition since 1953 and the event is used by governments around the world, economists and global business leaders as a litmus test to measure preparedness to optimise future economic growth.

WorldSkills Lyon 2024 will host over 1500 young people from 65 countries, who will compete in 62 different skill disciplines.

## CDL opens new branch to support expansion

Independent air conditioning distributor Cool Designs Ltd (CDL) has opened a major new branch at Holmes Chapel, near Crewe, in the latest stage of the company's ongoing expansion.

The site, located near the M6, includes a showroom, offices, workshop and conference

centre, plus an additional 11,000sq ft of warehouse space, enabling CDL to increase equipment stocks and further enhance support for its growing customer base in the Midlands and south of England.

The company's Warrington branch will now become a dedicated air conditioning and heat pump training centre and equipment testing facility. The Toshiba, Carrier, CIAT and Fujitsu distributor has also taken on new sales, office support and warehouse staff to cater for continuing growth.

The Holmes Chapel site has been equipped with a high efficiency Toshiba VRF system and heat exchangers, ensuring heating and cooling running costs and carbon emissions for the building are minimised.

Darrel Birkett, CDL's Managing Director, said: "The new site gives us rapid access to the national road network to speed delivery times to customers. With four dedicated delivery vehicles based here, we can serve a wide area very efficiently. It's also a great location for customers to visit our new showroom and conference centre, enabling us to host events in-house."

The move is the latest milestone in a journey that has seen CDL develop from being a regional air conditioning supplier in 2003 to a leading national distributor with a turnover of £28m, supporting customers across the UK.

It has recently expanded from its core area in VRF and split systems into larger applied equipment, such as chillers, air handling units and heat pumps.



The new CDL facility at Holmes Chapel, near Crewe



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## Deluxe compact swage tool kit (1964041)

The Hilmor Compact Swage Tool is thoughtfully designed to fit into the smallest of spaces and can knock out the picture-perfect swage in just one shot. An innovative hydraulic mechanism and release button let you take care of any job single-handedly.



## Ratcheting plastic tube cutters (1885393)

These ratcheting plastic tube cutters are rugged and durable, made with an ergonomic cast-aluminium body and a high-carbon steel blade. All of these features help increase productivity and the life and durability of the tools.

## Ratcheting 9-in-1 multi-tool (1891259)

It only takes a simple twist of the hand to drive a screw, nut or bolt in no time. Nine different bits are at your disposal. A ratcheting mechanism and an ergonomic rubber grip come as standard.  
Bit sizes include: #1 & #2 Phillips, 3/16" & 1/4" slotted, #2 square, 1/4", 5/16", and 3/8" nut drivers, and valve core remover.

## Screwdrivers

All the Hilmor screwdrivers are created to perform and get work done. They are designed to last with a heat-treated, chrome-plated shaft, with no risk of stripping out your screws. The line-up

# TOOLS TALK

includes - Keystone, Cabinet and Phillips tip; Terminal block; Precision and screwdriver sets; Stubby and multi-tool.

## Hex key sets

Hex head screws have nowhere to hide with the Hilmor hex key sets. They are available in both standard and metric sizes (all eventualities covered) and are slip-resistant ensuring that you never lose your grip - and always keep your cool.

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**NEW**



SEE OUR RANGE



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Technology is changing ever faster. This demands smart tools that can keep up. That's why Testo's fully networked HVAC/R product world offers a quick and easy solution to the complex challenges of today – and tomorrow. Whether it's refrigeration systems, air conditioning units, hybrid systems, or heat pumps,

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- ▶ Suitable with refrigerants of classes A3 and A2L
- ▶ Configuration, monitoring and data management - with the testo Smart App
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# Gamification to help plug the skills gap



I've written before about the virtual reality (VR) training that we recently introduced as a way of helping HVAC engineers to understand how our larger equipment works.

And now, we're using this 'gamification' of our equipment to reach out to a generation brought up on immersive gaming.

VR allows you to explore inside the world of HVAC, and literally 'see' the internal workings and components of chillers, heat pumps and larger equipment.

We are now taking our VR package out on the road, where we aim to help show students and school leavers how they can join the renewable future by training as an HVAC engineer.

We developed the system so that you can 'go inside' our equipment and study each component and gain a much better understanding of how they work, how they can be commissioned and where to look if something is not working as it should be.

## Always improving

We've already won awards for the work we did redesigning our training after the pandemic, when we realised that we could make training easier for engineers and reach far more, if we developed online learning that allowed people to choose when to do it.

But we are never one to stand still or rest on our laurels, so me and my colleagues have built this to develop a new way of introducing larger products to engineers.

The virtual reality tool brings larger equipment to engineers and allows them to go inside the unit to show the various components such as the compressor, the circuit boards, the expansion valves and chamber, etc.

This enables the people installing, commissioning and maintaining these sophisticated pieces of equipment to gain a clear understanding of how they work.

They can do this online or using our virtual reality headsets in our training facilities.

We also realised that we could take this exciting new development out into

the wider arena and use it at educational events to target the engineers of tomorrow – Something the industry must achieve if we are to recruit the skilled engineers we need to help us achieve net zero.

Follow the link below for an idea of how the system works and to see a virtual tour of our Hatfield Showroom and the equipment in it.

<https://www.thinglink.com/card/1779525289395618660>

## Creating danger

The VR system has real benefits for training because, in addition to gamifying the learning experience, it allows us to create virtual 'dangerous situations' that engineers will need to navigate around with equipment, including health and safety issues, which increases the training but limits the risks

So far, we have filmed virtual tours of the insides our commercial CAHV air source heat pump and residential ecodan heat pump, along with our

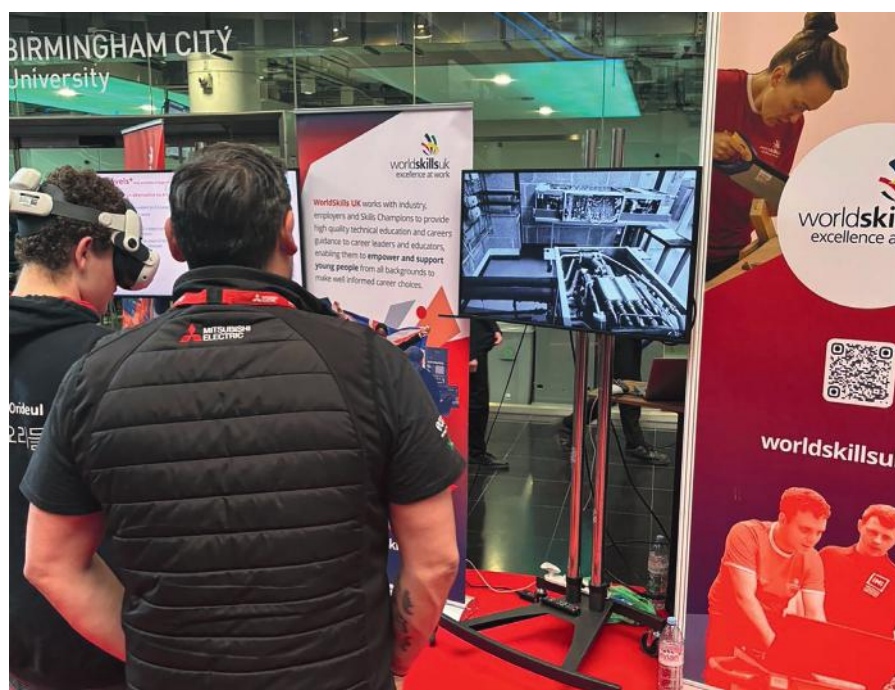
MEWall IT Cooling system, and our unique Hybrid VRF air conditioning.

Each of the films allows us to focus on individual components within the products, so anyone can look at the footage and navigate their way around the entire system, pausing for useful information along the way.

And we're not stopping there as we will look at all the myriad of other equipment that we can't quite squeeze into our training suites, such as other chillers, air handling units, more ground and air source heat pumps, our Lossnay ventilation systems, other IT Cooling systems and our new refrigeration units.

The added benefit of the gamification of HVAC is that it reaches out to students and other young people in a way that they can engage with, so that we can encourage more 'new blood' into our industry and begin to tackle the skills gap and shortage of qualified engineers.

Ben Bartle-Ross is a Technical Trainer



# GRANT AERONA<sup>3</sup>



A+++

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DISCOVER THE RANGE  
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# Hands on training showing great success in Wetherby

Publishing Editor Juliet Loiselles describes her visit to the Weatherby-based Beijer Ref Academy, where she joined the team to discover why hands-on training is the foundation of their success.



It's been nearly 2 years since the Beijer Ref Academy opened its doors, and after looking around the facility, it was easy to see why the centre has been such a success.

Clair Deighton, Product Development Manager, Beijer Ref UK walked through the history and why a hands-on training academy was opened. The team identified a real need for refrigeration product and system training to help facilitate the transition to natural refrigerants. Simply put, it was felt there was a gap in the market which needed to be invested in.

Clair says "It was important to us that the training was mainly 'hands on' and less theoretical."

The centre and courses were designed to support not just apprentices/trainees but also qualified engineers. Beijer Ref say they strive to provide a value-added service for their customers, and hands on training is viewed as an important part of this.

Beijer Ref have always been great supporters of training, so much so they were integral to the launch of the ACR Trainee of the Year Awards, which now incorporates Heat Pump engineers, over a decade ago.

## Training courses

With nine skilled trainers, it's usual to hold courses three/four times per week, which has subsequently produced in excess of 4500 hours of training over the past 12 months.

With the drive to natural refrigerants, the City & Guilds accredited CO<sub>2</sub> training courses have proved increasingly important. The percentage of CO<sub>2</sub> courses run in year one was 18% overall, year 2 has seen a positive increase of these courses, now raised to 38%.



Some of the courses include;

- |   |        |
|---|--------|
| 1. F-Gas Category 1                                   | 5 days |
| 2. F-Gas Category 1                                   | 2 days |
| 3. Introduction to CO <sub>2</sub> (as a refrigerant) | 2 days |
| 4. Installing & commissioning CO <sub>2</sub>         | 1 day  |
| 5. Basic refrigeration electrics and safe isolation   | 1 day  |
| 6. Hydrocarbon and flammable refrigerants             | 1 day  |

## Future plans

The focus is to have no more than a 2-hour drive time to any of the Beijer Ref Academies.

In addition to the academies based in Walthamstow, Sheffield and Wetherby, the summer of 2024 will see the opening of the Glasgow training academy, swiftly followed by Belfast.

## Training sites

1. Beijer Ref Academy - Wetherby
  2. Beijer Ref Academy - Glasgow (Summer 24)
  3. MHI Training Academy - Walthamstow
  4. Beijer Ref Academy - Belfast (Coming soon)
  5. DW Industrial Academy - Preston
  6. MHI Training Centre - Sheffield
- [www.beijerrefacademy.co.uk](http://www.beijerrefacademy.co.uk) 



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1) Size 50. According EN14825 and Following COMMISSION REGULATION (EU) 2016/2381. 2) Size 70. According EN14825 and Following COMMISSION REGULATION (EU) No 813/2013. 3) (Scale A+++ to D). According EN14825 and Following COMMISSION REGULATION (EU) No 813/2013.

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# Carrier welcomes Viessmann to the team

ACR Journal Editor Andrew Slater joined more than 200 VIP guests at the Carrier Residential and Light Commercial (RLC) EMEA customer event at the AJ Bell Stadium in Salford, home of Sale Sharks rugby club.

Carrier believes the recent acquisition of Viessmann Climate Solutions enables it to offer an unrivalled range of products and solutions to the market.

The customer event was hosted by Carrier Solutions UK (formerly Toshiba Carrier UK) and David Dunn, Sales Director Northern Europe Carrier RLC EMEA, described the new structure as “one team with one point of contact for multi-brand support”.

He added: “We’re thrilled to welcome Viessmann Climate Solutions alongside our established brands. This combination of brand powerhouses positions us to offer an unparalleled portfolio of products and solutions to the market across all tiers, opening up exciting new opportunities for our partners.”


The newly formed Carrier RLC EMEA includes Carrier, Toshiba, Viessmann, Riello and Vokèra. According to Dunn, the company intends to become the global leader in climate solutions with a product range that targets all sectors by sharing technology and engineering capabilities and an increased depth of industry and product knowledge.

Learning about Viessmann’s “fully electrified portfolio” that focuses on ‘energy independence with a complete

renewable package, attendees also heard first-hand how their video help desk service improves engineer customer service, and how the Viessmann One Base digital integration and services platform helps tie solutions together on site.

Product and industry presentations demonstrated the latest products such as the Carrier Aquasnap R32 Monobloc air source heat pump, the Riello RS ULX (Ultra-Low NOx) burner, Toshiba’s new DAISEIKAI 10 air conditioner and USX high-capacity heat pump, and a preview of the upcoming Vokèra hybrid-ready boiler ranges.

In addition, details of new customer loyalty schemes and Toshiba’s City & Guilds-certified training were also presented.

The event also provided an exclusive pre-conference viewing of a Sale Sharks’ training session, offering a unique behind-the-scenes experience. Following the conference, attendees enjoyed a gala dinner with guest stars from the Sale Sharks and some light entertainment. The evening featured a customer awards ceremony, which acknowledged those who had made significant contributions to Carrier RLC EMEA businesses. 



# Vital Energi on top at BESA Scotland golf day

The ACR Journal and Heat Pumps Today joined more than 70 members and guests for the Building Engineering Services Association (BESA) Scotland's third annual golf day.

Competition was fierce, but Vital Energi's team of Stephen Traynor, Lee Duckworth and Stephen Martin came out on top in the team competition, with Groupe Atlantic's Charlie Newell, Billy Ritchie and Paul Welsh in second and Protech Heating's David Goldie, Gary Steel and John Johnston taking third place.

The event at the Cardrona Hotel, Golf & Spa in Peebles, organised by the association's head of devolved nations, Iain McCaskey, and member engagement manager Martina Stocker, also raised £362 for Maggie's cancer charity.

Individual winners were Lee Currie from Mitsubishi MEP who hit the longest drive, and the two balls that landed closest to the pin belonged to David Smith from ECG Facilities Services and Rob Vine of Applied Renewable Energy. Photos of all the action can be viewed here:

<https://jamieagnewphotography.pixieset.com/besagolfday2024/>

BESA immediate past president Rab Fletcher said the golf day was now firmly established as a key part of the association's calendar as it gave members the chance to network and build relationships.

"Having the chance to meet and chat away from the day-to-day pressures of the business is more valuable than ever," he said. "Talking to other BESA members proved to me once again how much we

have in common and how much to gain from getting to know one another better. I'm already looking forward to next year."

Plans are already well advanced for BESA Scotland Golf Day 2025 which will take place on Friday, April 25. You can book early at <https://uk.eventsforce.net/besa/47/home>. Also, anyone interested in sponsorship should email [martina.stocker@theBESA.com](mailto:martina.stocker@theBESA.com) or [iain.mccaskey@theBESA.com](mailto:iain.mccaskey@theBESA.com).



# Isowall CONSULTING

TWO NEW REPORTS two reports

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Panel Forecast 2024 – 2028

AND

Exploring Growth Opportunities in  
Emerging Markets

These reports provide growth forecasts  
and LIST ALL significant Commercial  
Cold Store Panel makers

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Forecast 2024 - 2028

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# Contracting in the built environment – how to navigate the minefield

Late payment and unfair contract conditions are major barriers to growth for many SMEs. Specialist contract lawyer Abiola Aderibigbe from the Building Engineering Services Association (BESA) offers some vital advice on what to do and, crucially, what not to do in any contract negotiation.

Being part of today's construction supply chain calls for commercial, contractual, and legal awareness. That's a lot to ask of any contractor, but particularly of small companies with limited resources who really want to focus as much of their effort on delivering the best possible engineering outcomes.

SMEs dominate the construction industry, but around 45% report late payment as a major obstacle to their success – compared with a national figure of 33% for all other business sectors, according to the Confederation of British Industry (CBI).

It means many of our SMEs spend a disproportionate amount of time chasing payment and sorting out complex legal agreements because of the widespread use of onerous/adversarial contracts. The level of risk forced down the construction supply

chain to smaller businesses is little short of scandalous and undermines so much of the good work our industry can deliver.

The cash flow pressure on small businesses hampers their ability to invest in the recruitment, skills and technical developments that are essential if the country is to meet its targets for cutting carbon emissions and improving the built environment for the benefit of all society.

Too many larger firms expect sub-contractors to take on extensive obligations, onerous dispositions, and unlimited liability. Taking on such outlandish obligations is not a great place to be for the sake of your business. However, all is not lost. At BESA we spend a lot of time advising members about how to negotiate better terms and avoid the biggest contractual pitfalls.



Abiola Aderibigbe is group head of legal & commercial at BESA.

Here are a few key pointers to take into consideration when negotiating your next contract agreement:

#### **Base Date:**

The base date serves as a critical reference point that defines the project's initial conditions including costs, laws, regulations, and market conditions. It is a good idea to ensure that this date is as close as possible to the date of commencement for the project.

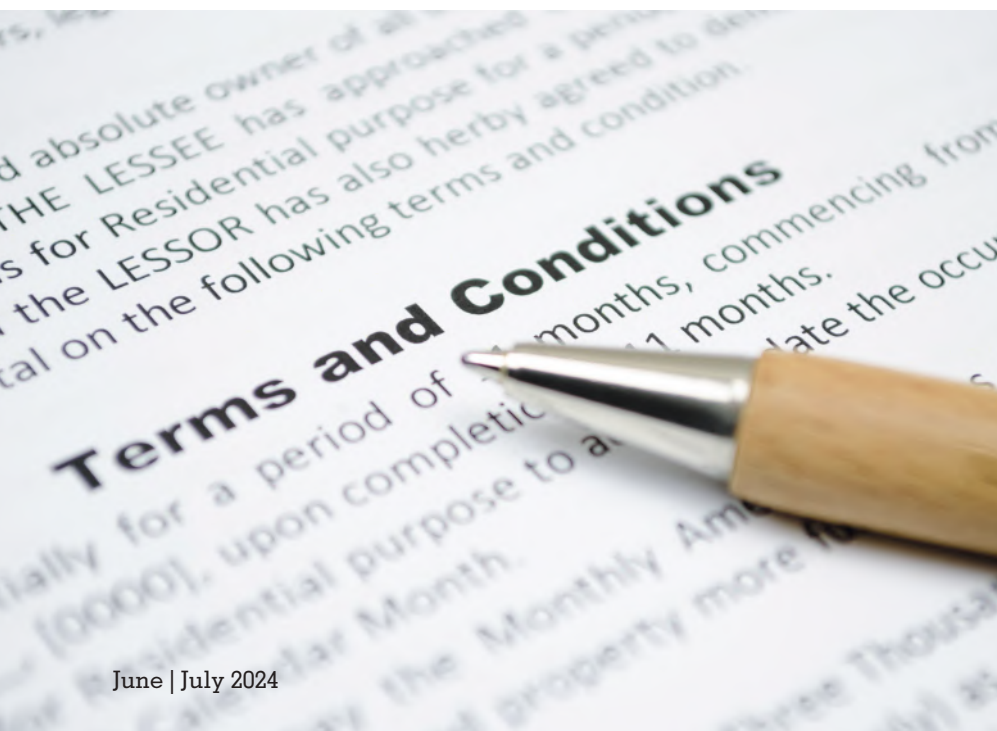
#### **Collateral Warranties:**

Collateral warranties (CWs) are contracts associated with your construction contract (the "underlying contract"). It allows for you to "warrant" to a third-party beneficiary that it has fulfilled its obligations under the underlying contract. It provides security and privity to the third-party beneficiary, while mirroring the responsibility in the underlying contract.

In industry, it has become standard to request for these, however it is essential there is a limit to the amount of these a contractor is required to give. Therefore ideally (subject to commercial circumstances), you should be looking to give no more than 2 CWs.

#### **Fluctuations:**

The aim of fluctuation provisions is to transfer some of the effect of increased cost during the execution of the contract to the counterparty. Therefore, it enables a contract to consider the impact of the cost of goods, materials, equipment, and labour, caused by circumstances such



as rising inflation costs, economic and geopolitical factors.

Having these clauses in a contract, can help a contractor/sub-contractor mitigate some of their exposure to potentially uncertain market conditions.

**Insurance (Employer’s Liability, Public Liability, Professional Indemnity & Contractor’s All Risk):**

It is standard to expect that construction contracts would insist on a contractor/sub-contractor holding a level of insurance covering matters like Employer’s Liability, Public Liability, Professional Indemnity and Contractor’s All Risk.

However sometimes the levels of insurance demanded can be excessive when compared with the level or type of work being provided. So, you should try to ensure that the agreed figure is proportionate to the contract sum. Also, the basis on which insurance is procured is important.

Typically, in industry the basis of insurance would be either on a per occurrence/per event basis i.e. “each and every” OR on an aggregated (“in annual aggregate”) basis. Per occurrence (“each and every”) limits and (“annual”) aggregate limits both define maximum insurance payouts. However, they do so in different settings.

Per occurrence limits define how much a policy will pay for any one incident or claim, while an aggregate (annual) limit defines how much the policy will pay over the policy’s (annual) duration. For example, if you have £10m cover (for the duration of year) on a per-occurrence/incident basis, and five incidents occur, theoretically, your total exposure could be £50m (i.e. £10m x5 incidents).

However, if you have £10m cover (for the duration of year) on an aggregate basis, even if 10 incidents occur within the year, the total exposure would still be £10m. Hence why an “annual aggregate” basis is usually better to protect a contractor/sub-contractor’s exposure.

**Liquidated & Ascertained Damages (LADs):**

LADs are clauses in a contract which stipulate the amount of money that would be payable as damages for loss caused by a breach of contract (e.g. delays, disruption etc.) they are NOT penalties and are not intended to be punitive. Rather, LADs



should be a genuine pre-estimate of loss, so as not to impose a punishment for a breach of contract, which is disproportionate to any legitimate interest of the innocent party.

Finally, LADs cannot be unconscionable or extravagant. Therefore, when negotiating these (either on a daily, weekly, or monthly basis), you should ensure that the sums agreed make commercially reasonable sense and be reasonably justified.

**Parent Company Guarantees (PCGs):**

PCGs are a form of security requested by an employer from the parent organisation of a contractor to help bolster the financial reliability of the contractor by providing the employer with some security if the contractor breaches its contractual terms or becomes insolvent.

Essentially the parent organisation guarantees the performance obligations of the contractor. A PCG is a contractual promise, so granting it comes with exposure and risk consequences to the parent organisation. Therefore, before agreeing to such a request, you must ensure that its use makes commercially reasonable sense.

**Performance Bonds:**

A performance bond is a financial guarantee used in the industry as a means of security against the risk of a contractor/sub-contractor defaulting on its obligations. The surety/guarantor providing the bond is usually a bank, insurance company or other independent financial

institution. The amount of bond is typically a percentage of the value of the contract sum and they are in place for the duration of construction works expiring on practical completion or completion.

Some bonds expire after the defects rectification period and they can be “on demand” or “conditional” but in the UK, conditional bonds are more common. This means payment is usually conditioned on the beneficiary of the bond establishing the contractor/subcontractor’s default and amount of loss suffered.

Agreeing to this increases the contractor/sub-contractor’s level of risk because it can be a large financial undertaking and exposing you to further possible financial obligations. So, these should only be agreed if you determine that it is a commercially sound decision.

**Unlimited Liability & Limitation of Liability (Cap):**

Unlimited liability should not be accepted under any circumstance. Therefore, it is essential to ensure that you insist on inserting a cap on liability which limits your maximum exposure under the contract (save for personal injury, fraud and death which cannot be limited by law).

BESA’s legal & commercial team is dedicated to pointing out the above risks and many more within your contract agreements to improve negotiations and help the industry work to safer, fairer, and more business helpful terms and conditions.

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

# Towards Net Zero: how do we change the culture of an industry?

Mirian Rodway, Institute of Refrigeration (IOR) and TICR communications lead, examines the trends revealed to date by the Transport, Industrial & Commercial Refrigeration project led by London South Bank University.



One year ago, the TICR ((Transport, Industrial & Commercial Refrigeration) project set out to improve our understanding of the emissions from these critical cooling sectors first by estimating the total volume by sector and secondly by conducting site investigations to identify the main sources of direct (refrigerant leakage) and indirect (energy use) emissions. The principle being that you must be able to measure your start point in order to be able to more accurately track the impact of measures taken to reduce emissions – whether this is on a national basis or business site by site. The project team, led by London South Bank University, have now nearly completed their detailed desk research and data analysis as well as having conducted over 50 site-based energy inspections. The project focuses on six distinct sectors - transport, large commercial, industrial cold stores, datacentres, food/drink manufacturing and chemical/pharmaceuticals. There are some very interesting trends beginning to emerge, and these findings will eventually be the basis of recommendations for end

users and policy makers to help make progress towards Net Zero.

### 1. Cross sector issues are emerging

There is a lot more in common between the six individual sectors that the project has focused on than was originally expected. Despite the sectors being very differently organised and operated the same issues came up repeatedly - as described below. This shows that there is much that can be learned from other sectors using refrigeration technologies, and that sharing of approaches and technologies could be very useful.

### 2. The information gap

This was one of the most immediately challenging aspects of this work. Whilst researchers were able to identify high level data to estimate energy consumption and emissions on a national level, or even by sector under the Climate Change Agreement, there is very little detail of where the emissions are coming from. For example published data suggests that the food and drink manufacturing sector accounts for 17% of the total turnover of UK manufacturing and 13% of carbon

emissions for that sector – whilst more recent reports indicate that their overall emissions are reducing particularly direct emissions (Scope1) as a result of improved containment, but as they do not submeter the energy consumption from refrigeration processes it is difficult to estimate whether this aspect of their emissions (Scope2) is increasing or decreasing. Nevertheless, emerging data from our research is indicating that cooling accounts for 7% of the sectors emissions so it is important that this is addressed directly. The site surveys carried out identified that most sites do not have any submetering of power used by their refrigeration systems and do not use monitoring systems that would allow them to evaluate the impact of control strategies or manage component functioning or impact of replacement. End users are therefore not sufficiently well informed to manage current emissions or identify potential savings from improved practices or new systems.

### 3. Inconsistent practices

Good practice is not being applied consistently. In spite of requirements



such as F Gas Refrigerant management obligations or voluntary agreements such as the European Code of Conduct for Data Centres, many of the sites surveyed did not put into practice processes that have been proven to reduce emissions – both direct and indirect. End users didn't have access to F gas logs at site level for example and as a result were not monitoring refrigerant use as an indicator of poor system performance. A philosophy of maintaining systems for reliability rather than identifying opportunities to maximise efficiency was apparent across all sectors. A good example was the finding that simple tasks such as regularly cleaning a condenser could achieve a power saving of up to 24% and yet this is not being done regularly, thoroughly or in some cases correctly. Up to date guidance on how to achieve efficiency is needed and will be just one of the published outcomes of this project.

#### 4. Using new technology to best effect

Lots of technical solutions are available. The project has been exploring the potential for new technologies and approaches to help end users to reduce energy and improve refrigerant containment. There are many such technologies available and many of them are not expensive and do not require major system change such as strip curtains or doors, variable speed fans and high efficiency compressors. However they have in some cases not been applied correctly and so are not achieving the potential efficiencies promised. In other cases for example in the pharmaceutical sector, systems had not been modified to take into account changes in the process requirements, they had repeatedly been changed to adapt to the use of different refrigerants without being optimised for efficiency, and no overhaul of the system had taken place over a significant period of time other than having components replaced for essential service work. The TICR project will be producing an innovation matrix later this year to help identify potential energy saving solutions such as use of heat recovery, integration of renewables, low GWP refrigerant options etc. There can be a bewildering range of technical solutions available but there is a growing resource of case studies to show where and how these have been successful



applied. The need to optimise systems should also be prioritised when systems require service or other essential changes.

#### 5. System owner knowledge gaps

Lack of knowledge and understanding is a barrier to emissions reduction for many system owners. With most sites not having a specialist refrigeration engineering expert in place they are reliant on contractors with whom they are not in regular contact and who are often changing repeatedly. The project strongly recommends that end users or system managers should undergo training to ensure they have a basic awareness of how the system operates and how maximising operating parameters can have a positive effect efficiency. TICR is planning to provide some training type resources for non-engineering professionals as part of its outcomes later this year.

#### 6. Behaviour change

Behaviour is a critically important factor. End users need to be more proactive in managing their refrigeration equipment. It is anticipated that the results of the project that will be presented as Guidance Documents, Benchmarking Reports and Technology Roadmaps will help end users realise the importance of managing their refrigeration systems effectively to achieve their net zero targets and objectives.

#### 7. Lots of missed opportunities

In general, the research is identifying many missed opportunities to reduce both indirect and direct emissions across all sectors. A co-ordinated approach backed up with policy recommendation may help to point the way forward.

The TICR project is continuing to work closely with industry groups on how these findings can support businesses to reduce costs and improve environmental performance. Towards the second half of this year there will be a series of TICR talk webinars to explore findings and recommendations for each of the sectors. Accompanying each will be the publications of new Guidance. As this project is funded by Government (DESNZ) the results are expected to feed into future action plans and policy discussion such as cooling outlook documents that the UK may produce.

In the meantime findings so far are providing evidence of what the refrigeration sector has always known – that if a refrigeration system is designed and installed correctly at the outset and the end users has in place appropriate service, maintenance and management practices, then that system will help them to reap significant energy benefits for the life of that plant – and that that might be the next 20 years. 🏠

# Heat Pumps and Air Conditioning: Choosing the right refrigerant

Change is happening rapidly in refrigerants as we look to reduce our carbon emissions and create a better world to live in. Low global warming potential (GWP), energy efficient refrigerants with low installation and maintenance costs are in demand as we put in place the building blocks for a low carbon future.

Human comfort, at work and in the home, is growing in importance. New builds and retrofits are becoming more energy efficient as we get better at keeping the heat in and the cold out. By reducing heat loss and removing draughts we are creating a demand for more efficient heating, ventilation and air conditioning systems.

The Government has made no secret of the fact that it wants to create a society with a much-improved carbon footprint. Gas boiler installations will be outlawed in new homes from 2035. Side by side with this the Government wants the installation of 600,000 heat pumps a year by 2028. There will be a revolutionary shift away from natural gas boilers to heat pumps in new builds and retrofits. More than 80 per cent of homes are heated by natural gas or other fossil fuels which are huge emitters of carbon dioxide, accounting for around 14 per cent of greenhouse gas emissions in the UK.

The energy efficiency benefits of heat pumps are impressive. The amount of energy needed to run them is dwarfed by the amount of energy they produce – a ratio of around four to one – and that makes them a good choice.

Refrigerants wise there are various options for heat pumps. Some manufacturers are sticking with HFC refrigerants like R32 and R410A, while others where it is possible to have a self-contained heat pump system outside the home are opting for natural refrigerants like propane (R290).

The key performer will be the mildly-flammable A2L R32. It's GWP is about a



third of R410A (GWP 2088) – a huge drop. It's a more efficient refrigerant which means you end up using a lot less gas in the system. This makes R32 an attractive proposition for domestic air conditioning and heat pump installations.

Ultra-low GWP refrigerants like propane

(R290) are on the rise in the heat pump market and, at times, are being pushed as the one-size-fits-all answer. Propane does however bring with it safety concerns due to its A3 flammability safety classification.

In some applications this can be managed adequately, but in others propane may not be the appropriate solution. This is where the air-conditioning market is often overlooked. Most, if not all, air-conditioning systems sold these days are heat pump-based and do a great job heating and cooling large spaces. Office accommodation is a good example of how this works well.

Where propane-based systems would not be permitted for safety reasons, the use of low flammable refrigerants like R32 in these applications can facilitate the use of heat pumps.

R32 demonstrates excellent efficiency in heat pump systems, is a very stable refrigerant and is very difficult to ignite. Only a naked flame – and not a spark – will ignite this gas as there's not enough energy in the spark to do so. That aside, R32, like all refrigerants, should be handled with care, and engineers should ensure they have the right tools for the job. Standard recovery units and vacuum pumps are not appropriate. There are dedicated recovery units and recovery cylinders available for use with R32, along with manifolds and hoses.

If you are unsure about how to make the switch to R32 or R290 then consult your refrigerant or heat pump supplier.

R32 is already available from A-Gas through our wholesale partners [A-Gas](#)

## Want to meet the A-Gas team?

A-Gas will be exhibiting at The Installer show on stand E556 where our experts will be there to advise on the supply of low GWP refrigerants, lifecycle management of gases and end of life destruction of refrigerants to prevent harm to our planet.



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# European cold room panel market to 2028

Stephen Visvalingham of Isowall Consulting explains why the cold room panel market is not only an important sector of the panel market, but also of the wider commercial refrigeration market.

The cold room panel market represents a growing part of both, with a greater technical emphasis due to its focus on insulation value and ongoing storage of perishable products. The features of the market can be summarised as follows:

- Panels are thicker due to the need for insulation value and sell for a higher price
- Due to 'technical specification' panels have a higher sales value
- Due to specification selling higher pricing is accepted
- Sales are often in a 'project basis' rather than a material basis
- Specialist Installers, experienced in the cold room or refrigeration market are utilised
- Being food related the market is less affected by general economic conditions

The market is divided into smaller commercial cold rooms and larger Industrial cold rooms or warehouses. Globally the food industry continues to expand and refrigerated food stuffs are regularly shipped around the world. Often the supply source of frozen or chilled product is in excess of 8000 km from the end market. Cold storage becomes a necessary service for both supplier and client and the cold chain between them.

Isowall estimates global growth in 2023 to be +3.0% in this market and in Europe to be +2.0%. Growth in 2024 is anticipated to be +2.03% in the EU and +3.08% in the rest of Europe excluding Russia. These rates suggest total output in the two markets will exceed 12 million square metres in 2024.

Isowall's forecast to 2028 and individual country growth rates and volumes is



**Stephen Visvalingham, Head of Research and sub-editor of the Isowall Global Directory of Cold Room Panel Producers**

available in the 2024 Forecast Report. Not all markets will grow at this overall rate and some will grow faster and offer real opportunities for expansion.

Some analysts have been downbeat regarding the next five year forecasts. This, however, is not the 1970s as the strong US Dollar and Euro, the financial strength of institutions, a higher but sustainable oil price and monetary policy that is credible suggest low but stable growth and that inflation will be controlled without a significant recession.

Trends and changes on the market are reviewed and discussed in detail, including technical changes, machinery changes and the raft of testing and approvals that are likely to be demanded by 2028. Government legislation and the requirement of health and hygiene certification will see the extension of EU regulation to new markets. Its enforcement will be greater.

For a full understanding of the opportunities and challenges of the cold room market, this report provides a unique opportunity to view a dynamic refrigeration and insulation market where opportunities are available beyond the insulated panel market.

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



A typical cold room with shelving

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# Supporting the sustainability of data centres

By Julien Soulet, Vice President and General Manager, Fluorine Products EMEA, Honeywell Advanced Materials.



The demand for digital services – video conferencing, streaming and social media platforms, the use of artificial intelligence chatbots and more – has escalated the need for data centres. These massive digital

warehouses store and manage everything done online, enabling businesses to store and access data securely and efficiently while providing the processing power needed to run complex applications and services.

These facilities have become increasingly important and are one of the major reasons we can access data and purchase items at our fingertips. However, these data centres are significant contributors to global



electricity consumption, with projections indicating a rise to 4% by 2030.

This surge in data utilisation also raises a critical concern around excess heat generation. Cooling systems already account for approximately 40% of total energy consumption in these facilities, so there is an urgent need for intelligent solutions to increase efficiency and reduce environmental impact.

### Challenges with cooling data centres

Presently, many data centre complexes rely on either traditional air conditioning methods or they employ water-based evaporative cooling systems. While the latter is cost-effective, it requires the use of millions of gallons of water. For example, in 2021, Google released a report citing that their data centres collectively consumed around 4.3 billion gallons of

water – about 450,000 gallons of water per data centre daily. With many of these facilities being constructed in drought-stricken areas, we need to reduce reliance on water-intensive cooling methods.

Additionally, traditional refrigerant and air conditioning methods play a significant role in exacerbating the climate crisis by releasing potent greenhouse gas (GHG) emissions into the atmosphere. Despite the phasedown mandated by the Kigali Amendment to the Montreal Protocol, emissions from refrigeration and air conditioning are projected to double by 2030 and triple by 2050, contributing 7% of global GHG emissions. This is significant because studies show that if we do not work to reduce GHG emissions, up to three-quarters of the world's population could be exposed to periods of life-threatening heat and humidity by the year 2100.

While the urgency for action is clear, navigating the complexities of change presents challenges. With data centre complexes becoming an increasingly important part of today's economy, their performance and reliability must be maintained. Facility operators are increasingly transitioning away from traditional refrigerants with a high global warming potential (GWP) to address climate concerns, and many are turning to hydrofluoroolefins (HFOs) as a high-performance, low-GWP alternative.

### Advantages of HFO refrigerants in cooling systems

As organisations, governments, and the International Energy Agency push for collective action to curb emissions and combat climate change, HFOs are becoming an increasingly important piece of the puzzle.

HFOs offer significant advantages over traditional refrigerants, which are being phased out across the UK and globally due to their high global warming potential (GWP). When used in data centres or other facilities that need cooling solutions, HFOs offer a significant reduction in greenhouse gas emissions. Additionally, they are safer than CO<sub>2</sub> or propane and allow for more

efficient operations. One study shows propane systems consume 5-21% more energy than HFO solutions and CO<sub>2</sub> systems consume 8-50% more.

Energy-efficient refrigeration plays an essential role in achieving climate change goals set by initiatives like the UK's net zero strategy and REPowerEU. Numerous organisations in industries across food storage, transportation, retail refrigeration, and small and medium-sized enterprises have already made the transition to sustainable refrigerants. Data centres must now follow suit in adopting new cooling system solutions.

Recognised by the European Commission as a climate-friendly refrigerant alternative, HFO technology, such as Honeywell's Solstice portfolio, can help reduce carbon footprints. Since its introduction in 2011, the use of Honeywell Solstice technology has helped avoid the potential release of the equivalent of more than 326 million metric tons of carbon dioxide into the atmosphere. That's equivalent to the carbon emissions from more than 77 million gasoline-powered passenger vehicles a year.

Deploying HFO technology can drastically help data centre operators tackle their energy consumption challenges while supporting their sustainability targets and performance standards.

### Creating a sustainable, green future

Data centres are vital to our modern society, but their rapid expansion raises environmental concerns when it comes to cooling the energy-intensive servers inside.

The transition to low-GWP HFO refrigerants can help companies meet both their environmental and business goals. These technologies provide energy-efficient alternatives to many of the cooling methods being used at data centres today. The adoption of HFO refrigerants will be a crucial step forward in reducing the environmental impact of data centres and fostering a greener, more sustainable future for digital infrastructure as the industry continues to expand and innovate. 



1. Calculations are based on actual sales of Solstice products (in lbs) from Jan 2010 through Dec 2022 and utilize the EPA GHG equivalency calculator for conversion.

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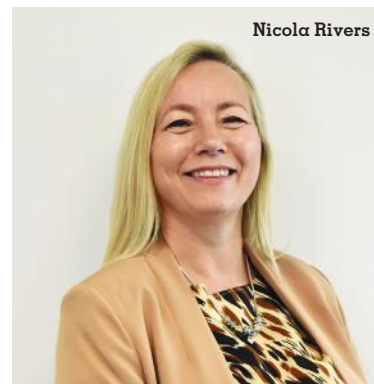
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Manufactured in U.K



# Adopting a strategy to mitigate overheating in our nation's homes

By Nicola Rivers, indoor climate specialist at Zehnder Group UK.



Overheating is a prevalent problem in residential buildings. CIBSE defines residential overheating according to its fixed temperature test as, 'when the internal temperature threshold of 26°C is surpassed for over 3% of the time'. Exceeding this temperature threshold for extended periods can affect occupant thermal comfort, health and wellbeing as well as productivity.

Within the UK Building Regulations, Approved Document Part O provides further guidance to building designers on mitigating overheating in residential buildings and reducing the effects. Its prescriptive approach to optimising glazing, solar shading and natural ventilation clearly outlines preferred solutions to keeping a building cool.

But problems occur when external factors dictate that passive ventilation can't be used to control internal temperatures. For example, if planning dictates that windows cannot be opened, for risk of noise, security or pollution, Part O lists alternative means - from acoustic façade ventilators and mechanical ventilation to mechanical cooling. The predicted effectiveness of these solutions must be modelled in accordance with TM59 to demonstrate compliance with Part O.

Traditional methods of combating overheating often rely on air conditioning units. Roughly 2 billion air conditioning units are now in operation around the world, with 70% of these units being in residential. This excessive demand results in significant implications for electricity grids today and in the future.

Climate change has led to increasing summer temperatures and Met Office future climate projections, under a high emissions scenario, suggest the temperature of hot

summer days could increase again by between 3.8 and 6.8 degrees Celsius, in future decades. Our recent summers have already been characterised by extremes in the UK's climate.

In the summer of 2022, temperature records soared beyond 40°C for the first time and large parts of the country experienced unprecedented discomfort through overheating, causing many to have to flee their homes in search of cooler and safer dwellings. This means that the use of air conditioners is set to soar even further, putting evermore pressure on global electricity demand.

To remain on track to reach Net Zero targets by 2050, increased adoption of the highest-efficiency technology needs to be firmly integrated into building design from the get-go. Now is the time for a different approach in the UK than always turning to air conditioning.

## The importance of indoor air quality

In addition to putting strain on the national grid through the systems considerable use of energy, air conditioning units also run on planet-harming refrigerant gases that are irreversibly bad for the ozone. The cooling industry accounts for 10% of all global CO<sub>2</sub> emissions\* through the cooling system technologies that we deploy, contributing even further to global warming.

They are also expensive to run, adds another service on top of the standard workings within the building and tend to sit dormant through the winter months when the temperatures fall again.

But most worrying is how air conditioning can have negative effects on a building's indoor air quality (IAQ). By merely recirculating air, these systems

can reintroduce potentially harmful particulates such as dust and allergens, compromising occupants' health and comfort. It's important to remember that cool air doesn't mean fresh, clean air.

People wrongly assume that the air inside a building is clean and safe but indoor air is typically two to five times more polluted than outdoor air due to airborne chemicals and particulate matter. Without effective ventilation, stale air containing harmful gases and particles can become trapped polluting the air.

Combining ventilation with active cooling however, not only provides cooling in the hotter months, while supplying clean and fresh, filtered air into the property but also can be used to warm the air in colder months adding to greater energy efficiency. One system, that works all year round to provide an optimal and comfortable indoor climate.

## Using ventilation as a strategy and solution to mitigate overheating

Mechanical ventilation with a tempered air system can offer a better solution to overheating issues in residential properties and can be designed in conjunction with dynamic thermal modelling.

These systems can significantly reduce cooling requirements, as demonstrated by a recent study implementing the Passive House standard in Tall Residential Buildings, which saw a reduction of up to 40% in cooling needs due to improved enclosure performance.

Mechanical ventilation systems, such as Mechanical Ventilation with Heat Recovery (MVHR), often serve as the foundation for addressing overheating concerns as they are adaptable to ensure compliance with best practice guidance like CIBSE TM59. However, our approach extends beyond



mere ventilation and cooling; it involves optimising the overall indoor climate to create a comfortable and healthy living environment throughout the year.

Adopting a comprehensive hierarchy of ventilation and cooling solutions, Zehnder offers a variety of standalone options as well as integrated ones to ensure the ideal solution is specified for buildings at risk from overheating.

These include various solutions, such as purge ventilation which utilises acoustically treated inline extractor fans, radial ducting to minimise noise and leakage, and pre-insulated ductwork ensuring continuous insulation. Additionally, chilled water coils which also work in conjunction with the MVHR system when linked to a centralised chilled system or reversible heat pump, can provide pre-heating in the winter and pre-cooling in the summer on the supply/intake air.


Our flagship solution, the Zehnder ComfoAir Q600 with ComfoClima, addresses overheating using tempered-air technology, making it perfect for new builds contending with environmental

**"Building designers need to consider the impact of overheating from initial design stage – designing for the future climate predictions and safeguarding residents against the dangers of forthcoming heatwaves"**

obstacles such as noise pollution or lack of shade. This system integrates heating, cooling, and ventilation functionalities, adhering to Part O/TM59 standards across a range of settings, from residential to care homes. Its innovative features, notably a reversible heat pump module, guarantee energy-efficient performance throughout the year – and its use of the lower GWP refrigerant R32 within an efficient, sealed cycle minimises environmental impact that will remain compliant after 2025.

These solutions can be seamlessly integrated into various building projects, effectively streamlining overheating concerns, delivering a 'fit for purpose' product for diverse construction projects and ensuring cost-effective and efficient planning and implementation.

So, as temperatures soar and buildings become tighter and taller, in line with efficiency and sustainability goals, the need to address the risks of overheating is more important than ever before. Taking control and understanding the best way to mitigate these issues is the first step in an effective overheating strategy.

Right now, over 4 million homes in England report problems with overheating, and more new builds are set to face these same issues as the call for energy efficiency increases. Building designers need to consider the impact of overheating from initial design stage – designing for the future climate predictions and safeguarding residents against the dangers of forthcoming heatwaves. 



# 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 [victoria.brown@warnersgroup.co.uk](mailto:victoria.brown@warnersgroup.co.uk)

## CONEX BÄNNINGER GOES LARGE WITH >B< MAXIPRO

Global fittings manufacturer Conex Bänninger has expanded its award-winning >B< MaxiPro range with the addition of a 1 5/8" fitting.

Conex says >B< MaxiPro has revolutionised air conditioning and refrigeration installation since its launch in 2017.

Contractors will now be able to carry out installations ranging from 1/4" up to the new 1 5/8".

Ged Grimes, UK & Ireland Business Unit Director, said: "Conex Bänninger has established a reputation for continuous development of high-quality products. Introduction of the 1 5/8" >B< MaxiPro fitting gives contractors the opportunity to carry out larger air conditioning installations.



**Ged Grimes says the new >B< MaxiPro size will allow contractors to carry out larger installations**

Visit <https://conexbanninger.com/en-gb/> to find out more about free >B< MaxiPro training.

## CONDAIR HELPING KONVEKTA HIT 92% ENERGY RECOVERY

Condair's ME evaporative humidifier is being incorporated into Konvekta's exhaust air cooling systems to help deliver up to 92% annual energy recovery to its clients' buildings.

A Konvekta exhaust air cooling system pre-cools incoming fresh air to reduce a building's need for mechanical cooling. The Condair ME humidifier is used in this system to provide very low energy evaporative cooling to the warm air extracted from the rooms. Before the cooled extract air is vented externally, it is run through a heat recovery system and provides up to 10K of cooling to the incoming fresh air supply. A cooling effect from 32°C outside air temperature down to 22-23°C supply air temperature can be reached, without any mechanical cooling.

The Condair ME in-duct adiabatic humidifier can be used to provide humidification or cooling to an air handling unit. Its evaporative matrix is located inside the duct and has water flowing down its surface. Air passing through the matrix is humidified and cooled without any aerosols being produced inside the AHU. The Condair ME has an innovative hydraulic pump module that can be located either inside the duct or externally, which allows servicing to happen without any AHU downtime. Units are available in sizes ranging from just 60x62cm to over 4x4m, with total outputs from a single unit of up to 1,200kg/h. In terms of cooling, this can equate to 822kW of adiabatic cooling from as little as 1kW of consumed electricity.

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



## ECO+ ADDED TO AIRSTAGE SPLITS RANGE

Fujitsu General Air Conditioning UK has extended its AIRSTAGE split systems line-up with the launch of the Eco+ wall mount unit. Operating on lower GWP R32 refrigerant, it is designed to provide extended functionality at a competitive price point.



Sitting alongside the standard split and Eco ranges, the Eco+ (models: ASEH\*\*KNCA; \*\* 05, 07, 09, 12) includes integrated Wi-Fi for simple connection to Fujitsu's AIRSTAGE mobile app. The Eco+ is available in capacities 1.5kW (Multi Split only), 2kW, 2.5kW and 3.4kW. It offers A++ efficiencies with SEER of up to 7.8 and SCOP to 4.4 (ASEH07KNCA).

The compact indoor unit is just 784mm wide, with a large louver design for maximum air distribution, while soft lines and colour tones mean it is suitable for a wide range of interiors.

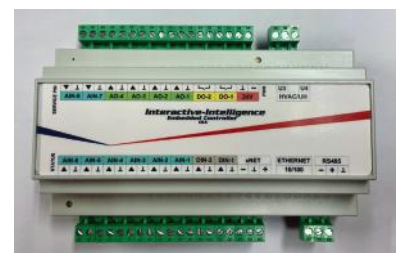
Systems can be designed with a pipe length of 20m and an elevation of 15m. They are pre-charged for a 15m pipe run, thus reducing the costs of additional refrigerant.

Heating is available down to -15°C ambient temperature and Eco+ is able to hold a room at 10°C for energy saving frost protection of the building fabric. Blue Fin anti-corrosion heat exchangers on the outdoor unit allow for installation in harsh environments.

<https://webstore.uk.fujitsu-general.com/>

## TCUK LAUNCHES EMBEDDED BMS

Toshiba Carrier UK has introduced its Interactive Intelligence II embedded building management system, a powerful web-based solution providing centralised control and monitoring of systems and equipment.



The updated solution controls and monitors all aspects of an air conditioning system and is installed in a customer's premises, enabling systems to be optimised for occupant comfort and energy efficiency. It also allows communication to other standard BMS protocols, ensuring seamless accessibility for both Toshiba and third-party systems.

Fully enclosed in a DIN rail mountable enclosure, this offers many options for fixing in different locations. The new solution eliminates the need for a dedicated PC and additional gateways, providing a compact and efficient one-box solution as it is fully networkable. The device can be programmed to support up to 128 indoor units, which can be further expanded by utilising additional modules, enabling this cost-effective and versatile BMS to be used on small, medium and large projects.

For more information, visit [www.toshiba-aircon.co.uk/](http://www.toshiba-aircon.co.uk/)

**NEW MOBILE HUMIDIFIER FROM CONDAIR**

Condair is launching the new Condair PureHum 1000 Pro, a mobile humidifier that is ideal for areas up to 1,000m<sup>3</sup>. Advanced features include phone-based app control, UV-water sterilisation, multiple air filtration options and an 8-speed auto-adjusting fan.

Mobile humidifiers are often used in museums and art galleries, where humidity control can be a temporary requirement during an exhibition period. A mobile humidifier is a great solution, as it is easy to set-up, use and then store when not needed. The Condair PureHum 1000 Pro is ideal for this application, due to its subtle but modern design, tamper-proof control system and lockable castor wheels.

A large 50 litre water tank means the humidifier can be used where there is no available plumbing and won't require frequent re-filling. A UV-water sterilisation system treats the water to kill germs and combat microbial growth. The humidifier can also be plumbed-in with a mains water connection and drain. In addition to the integrated controller, a PureHum app allows users to control the humidifier and see all operating parameters from their mobile phone.

The PureHum Pro 1000 can offer the additional benefit of air purification as well as humidity control. As standard the unit comes with fine dust and F7 air filters. Optionally a HEPA H10 filter can be chosen, which is capable of capturing 85% of particles over 0.5 microns in size. Lastly an activated carbon filter can also be employed to remove odours and gases from the air, including volatile organic compounds (VOCs).



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

**PRIZES GALORE TO BE WON ON CONEX BÄNNINGER'S INTERACTIVE STAND**

Conex Bänninger, a global leader in the manufacture of high-quality fittings, valves and accessories, will have an enhanced interactive stand (5D19) at InstallerSHOW 2024.



Stand features will include an interactive touch-screen display to locate products, a 'Head-to-Head' >B< Sonic challenge for installers to win great daily prizes; and products and systems from within the IBP Group.

A mix of plumbing, heating and ACR solutions will include >B< MaxiPro's new larger size 1 5/8" fitting, >B< Press, and Conex Compression. Visitors can have a 'sneak' preview of new products including >B< Flow, the new 'Y' joint compatible with >B< MaxiPro.

InstallerSHOW 2024 is at the NEC Birmingham, June 25-27.

<https://conexbanninger.com/en-gb/>

**TROX EXTENDS WALL DIFFUSER RANGE**

TROX has extended its portfolio of wall diffusers with the launch of two new models - CHM and CHS - designed to provide additional advantages in rooms with and without suspended ceilings.



The TROX CHS installed

Increasingly, air distribution systems are required to operate effectively in spaces without suspended ceilings. The air exchange then often takes place via the corridors, through the walls. With these demands in mind, TROX has added two new models to its range of wall diffusers, which offer additional aesthetic and acoustic advantages in these applications.

The multifunctional CHM has an optional volume flow limiter accessible from the room side. It can meet the requirements of a wide range of applications due to its different diffuser faces and optional additional functions. Installed with the TROX PURELINE slot diffuser, for example, a particularly clean air discharge can be achieved without dirt deposits on the wall.

The CHS wall diffuser has adjustable air control blades and an optional splitter for cross-talk sound attenuation for different wall thicknesses, to improve acoustic performance.

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

**MITSUBISHI ELECTRIC WELCOMES MECH-IF**

Mitsubishi Electric has launched an air-cooled chiller with a new proprietary single screw compressor designed to offer greater energy efficiency and high reliability for a longer operating life.



The MECH-iF range offers capacities from 345kW to 921kW and is available with R1234ze (G04) or R513A (G05) refrigerant and the new variable speed compressors.

MECH-iF is viewed as a milestone in the company's air-cooled screw chiller portfolio, paving the way for the development and integration of proprietary core technologies.

The MS variable speed compressor is designed with Symmetrical Compression Load for reduced and balanced loads to ensure bearing lifetime of over 150,000 hours (17.5 years).

Variable Vi technology allows the automatic internal volume ratio adaption by means of the integrated slide valve, ensuring the best efficiency in any working condition.

In addition, a patented oil return circuit ensures the complete lubrication of the bearings, the perfect coupling between the casing and the screw, and total sealing between moving and static parts.

<https://les.mitsubishielectric.co.uk/products/commercial-heat-pumps-and-chillers/chillers/traditional-chiller-range/mech-if-air-cooled-chiller-range>

# WOMEN IN THE ACR INDUSTRY

Michelle Pike is Managing Director at Hitchin-based Principal Climate Technologies, a specialist wholesale supplier of Daikin air conditioning, ventilation and heating solutions.



Michelle Pike of Principal Climate Technologies

## What was your first job?

My first job was as an administrator for an insurance broker. It was only part-time because I was also working as a trainee working pupil for the then-European eventing champion Jane Thelwall. Horses have always been my passion so I would leave my desk and hot-foot it to the event yard where I'd spend hours every day.

## What does your current role involve?

I established Principal Climate Technologies in 2018 which in all honesty was nerve-wracking! I'd been working in air conditioning distribution for over 20 years and had built up great relationships with air conditioning contractors. The threat of redundancy with my last employer left me with a choice of moving to another sales role or setting up my own business.

My knowledge of Daikin products and my long relationship with the distribution team led to me being offered a deal from Daikin to be a specialist wholesaler. But I didn't want to be just another wholesaler. I understood the needs of contractors well so I set out to provide a new type of wholesale service – one that provided specialist knowledge of Daikin solutions and a full range of value-led support services.

Fortunately, many of the customers that I'd worked with over the years became my first Principal Climate customers, and they still are.

I now have a fantastic team and remain hands-on with our growing customer base. I make a point of speaking with all of my customers, checking every detail of their orders, and providing them with a continual flow of information. I do all that I can to make their projects a success, even if it means sometimes putting a kit in my car and taking it to a site myself to get it there quickly.

## What attracted you to the industry?

I never set out to work in the air conditioning industry but it turned out to be a perfect fit for me because I've always been very organised, I'm scrupulous about detail and I'm good at making things happen.

I started my full-time career as a secretary and landed a role in the distribution department at Mitsubishi Electric. Soon after I became PA for the European Air Conditioning Managing

Director which then led to my first role in sales as Distribution Support Manager. During my 10 years at Mitsubishi Electric, I gained a thorough understanding of air conditioning products, distribution, and contractor needs – I even managed to find time to get married and have two children!

My technical knowledge of products then led me to become Operations Manager for a Sanyo/Daikin distributor where I stayed for just over 13 years before setting up my business.

## What excites/interests you about the industry?

As someone who enjoys working in a fast-paced environment, I'm excited and inspired by the speed at which new products are entering the market and the advancement we're seeing in both technology and refrigerants that are helping to lower CO<sub>2</sub> emissions.

We're now introducing heat pump technology that enables commercial and domestic users to integrate heating, cooling, hot water and solar systems – a complete energy-efficient solution for buildings.

Digital technology is constantly advancing too, helping to make the servicing of HVAC equipment so much easier for engineers. While equipment will always need to be physically maintained, digital technology can now detect faults and allow engineers to resolve them remotely – it can even tell them what



Rugby-mad Michelle is a keen Saracens supporter



Michelle eventing in the early 1990s

part is required, order the part, and automatically log the information.

**How would you like to see your career developing?**

I can honestly say that starting my business was the best work decision I've ever made. It was scary at first because I had to build the brand from the ground up in a very competitive marketplace, but I had a lot of support from family, friends, and of course, many fantastic customers who knew and trusted me.

I was an unknown in the wholesale industry at first, but by sticking to my principles of providing service excellence above all else, we have built a solid and growing business and we have just signed our third three-year deal with Daikin so I must be doing something right!

**What is the best piece of advice you were ever given?**

I'm an optimist so I always try to look at the positives and possibilities. Plus, I've always taken the view that if you don't try, you'll never know.

Having said that, I never set out to have my own business but I knew that I had as much knowledge as any other HVAC wholesaler on the market.

Unsurprisingly, my main fear was because I'm a woman and the air conditioning industry is still very male-dominated. Even though I was trusted and respected by so many contractors and industry peers, I was worried I would be laughed at.

I can honestly say that aside from a few raised eyebrows here and there, I was worrying about nothing. When it comes down to it if you provide a great service that's all that matters.

**What do you see as the challenges facing the industry?**

I would say that the one thing that the industry could do better is to educate the wider public about air conditioning. There's still a huge misconception that air conditioning systems only cool and that they are harmful to the environment.

Manufacturers tend to focus on making products for contractors to buy and install so it's left to them to explain the benefits to end users – commercial and domestic.

If product information and advertising could better communicate the way that air conditioning works and the cleaner refrigerants that are used today, more people would invest in the technology.

**What would you say to other women who are considering coming into the ACR industry?**

Don't hesitate! The ACR industry is diverse and incredibly supportive of women. LinkedIn is a great place to start doing some research. There are groups focused on promoting women in ACR, and it's easy to see the number of women who are working for manufacturers. There are also increasing numbers of female air conditioning engineers who are active on social media.



At the new Daikin training facility in Birmingham

**Is there a little-known fact about yourself that would surprise other people (secret skill, unusual hobby etc)?**

I've had a passion for horses since I was a young girl, but I'm also a massive rugby fan – partly due to my son playing the sport but also because I love the game. I'm a huge Saracens supporter and you'll find me (or hear me!) at most of their matches.

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

## SIX NEW FACES BOOST FUJITSU TEAM

Fujitsu General Air Conditioning UK has welcomed six new recruits, further strengthening the business across key areas including technical, training, operations and customer services.

Technical Services Manager **Lewis Jones** has spent almost 27 years in the air conditioning and refrigeration industry. He has worked with Fujitsu for the last 10 years at distributor TF Solutions, where he progressed from being the sole technical support engineer to Head of Technical. He said: "I have always enjoyed working with the Fujitsu family and I'm extremely excited to join this fantastic company."

**Eddie Wright** also joins from TF Solutions, as a Technical Services Engineer. Wright entered the industry 17 years ago as an apprentice and rose through to ranks to lead engineer, overseeing large projects and multiple engineers. He moved to TF Solutions in 2022, providing technical support to branch staff and assisting engineers on site with breakdown issues. He said: "I am looking forward to getting to know all the people who have been so welcoming."

Business Development Manager **Erin Cousins** is the third new face to have made the move from TF Solutions, where she was a Regional Account Manager. Cousins joined the industry 18 years ago as a temp for a refrigeration wholesaler before becoming a Sales Engineer. She said: "I have been lucky to be involved in many amazing HVAC projects, working with some wonderful customers. It now feels great to have joined the Fujitsu team."

Head of Training **Craig Webb** brings with him a passion for renewable technologies, the fight against climate change and continuous learning and development. He previously spent five years at both Daikin and Mitsubishi Electric, where he focused on air-to-water heat pumps for the domestic market. He managed Mitsubishi Electric's Pre-Sales Technical Team, taking it from six engineers in a single location to 14 across England and Scotland. He was also



Fujitsu's new recruits, from left, Lewis Jones, Eddie Wright, Craig Webb, Erin Cousins, Louisa Drakou and John Azurin

responsible for developing the Aftersales Technical Helpdesk. He said: "Fujitsu has an excellent history and reputation within the HVAC market and I'm looking forward to being a part of that."

Operations analyst **John Azurin** has spent the past two years as a regulatory and data analyst in the chemical industry. Despite coming from a different background, a significant proportion of his experience was dedicated to IT and reporting, and he is now supporting Fujitsu's IT systems, reporting and support. He said: "I've felt supported by everyone, which I greatly appreciate. I am looking forward to learning and contributing more as I progress and develop my career within the industry."

**Louisa Drakou** has joined the business as a Customer Services Administrator. She said: "I am absolutely thrilled about my new job at Fujitsu. The team is lovely, friendly and hardworking, I feel supported and motivated and look forward to the challenges work life brings me every day. I'm grateful to be part of such a fantastic team."

<https://www.fujitsu-general.com/uk/>

## FREEK SNIEDERS, MANAGING DIRECTOR EMEA, A-GAS

Refrigerant specialist A-Gas has appointed **Freek Snieders** as Managing Director for Europe, the Middle East and Africa (EMEA).

As part of the A-Gas executive team, he will be responsible for driving growth in the region by providing refrigerant circularity and end-of-life solutions for customers in the HVACR industry.

Jack Govers, Chief Executive Officer, A-Gas, said: "Freek is a great addition to the A-Gas team; his extensive expertise in the EMEA and speciality chemicals sector will help drive and evolve our lifecycle refrigerant management offering across the region, supporting our customers and the industry moving forward."

Snieders said: "I'm excited to join the A-Gas team and become part of this significant opportunity to make an important contribution towards the circular economy and to build a sustainable future. This diverse region has great potential for further growth, and it is an absolute privilege to build and lead the team to success."

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



Freek Snieders, A-Gas

## RACHEL BRIDGES, MANAGING DIRECTOR, ALFA LAVAL

**Rachel Bridges** has been appointed as Managing Director in the UK for global heat transfer, separation and fluid handling company, Alfa Laval. She is the first female to take the post.

Having spent 20 years at Cummins – a global power technology company – in both the marine and aftermarket businesses, Bridges will now oversee business in a number of sectors including marine, energy, food and beverage, and water management.

She said: "I've been connected to Alfa Laval for a long time and know it's a fantastic company to work for; many of the people I met early on in my career are still here which is testament to its ethos. It's a force for good in the engineering world as its technologies, culture and services are all charged for a sustainable future. There's a lot of crossover in the products and sectors that Alfa Laval serves, and I'm really energised by the fact I can apply my marine experience across this unique industry."

Bridges says she is also passionate about driving Alfa Laval's sustainability and diversity, equity, and inclusion (DE&I) strategies forward in the UK. In her previous role, she was a leader focused on DE&I and active supporter of the Women's Affinity groups which provided guidance and mentorship for girls and women across the world. She would also regularly support STEM focused activities helping each problem solving and creating thinking skills from a young age.

Bridges' predecessor, Micael Hellborg, remains within Alfa Laval as he takes on the role of Global Multibrands Manager in Sweden.

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



Rachel Bridges, Alfa Laval

**THIERRY JOMARD, CEO, LENNOX EMEA**

Lennox EMEA has appointed **Thierry Jomard** as its new Chief Executive Officer, succeeding Ricardo Freitas.

With a 27-year career in the HVAC industry, Jomard has held various leadership positions globally, notably at Carrier and FläktGroup. His expertise in general management, operations, project management and engineering functions saw Lennox select him as the right person to drive the business towards its next phase of expansion and innovation.

Jomard will maintain the existing organisational structure at Lennox EMEA, with the Executive Management Team continuing to report directly to him. He says he is committed to fostering a culture of collaboration, with plans to actively engage with employees across different facilities and sales offices.

<https://www.lennoxemea.com/en/>



Thierry Jomard, Lennox

**ADAM TAYLOR, CHAIR, BESA IAQ GROUP**

**Adam Taylor**, CEO of ARM Environments, has been elected as chair of the indoor air quality (IAQ) group of the Building Engineering Services Association (BESA).

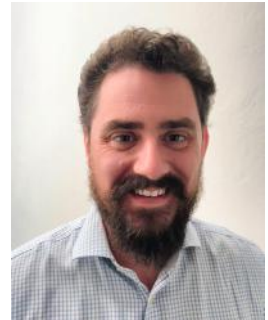
He takes over from Nathan Wood, Managing Director of Farnwood M&E Services, who served as chair for five years and is now taking up a new position as head of special projects focused on helping BESA establish competence standards for ventilation design, installation and commissioning.

During Wood's time in office, the group produced a series of best practice guides to IAQ including a rapid response to the Covid-19 pandemic. It also forged a close working relationship with leading air quality and child health campaigner Rosamund Adoo Kissi-Debrah.

Taylor said: "This is an amazing time to be taking up the reins. Hardly a day goes by without IAQ hitting the headlines and our industry is deeply involved in a range of vital activities aimed at improving the health, wellbeing, and productivity of building occupants.

"I am also hugely indebted to Nathan for his inspirational leadership over the past five years – and am delighted that he will continue to play a central role by taking on several key projects that will help take our guidance, training and thought leadership onto the next level."

<https://www.thebesa.com/besa-focus-areas/indoor-air-quality>



Adam Taylor, BESA

**LEE ARIS, NATIONAL MANAGER, ELTA TRADE**

Following the 2023 launch of Elta's dedicated residential ventilation division, Elta Trade, **Lee Aris** has been appointed as National Manager.

Aris, who has previously worked for Elta Group as a branch manager at Idealair Group; a distributor of fans, heating, and ventilation equipment in Melbourne, Australia, has an extensive knowledge of the industry that he will bring to the role. Born in the UK, he moved to Australia in 2017, and in 2020, he was appointed to help establish Idealair's Melbourne branch and build a team of ventilation and air distribution experts.

Based in Kingswinford, West Midlands, Aris will aim to expand Elta Trade's reach in the UK and ensure that electricians, plumbers, and homeowners working on air movement around the country have compliant equipment available for purchase at a local stockist. He will be hosting trade mornings for contractors to attend and provide new point-of-sale (POS) materials and display units for distributors to promote Elta Trade products.

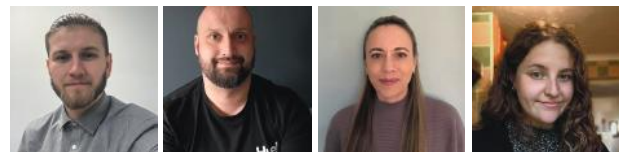
Aris said: "It's brilliant to be back in the UK and working with Elta Trade to ensure that tradespeople handling air management systems in residential properties have the necessary equipment and assistance on hand. Since its launch last year, Elta Trade has expanded its reach considerably and I aim to continue this through my work."

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



Lee Aris, Elta Trade

**FOUR NEW FACES AT CLIVET UK**



Samuel Powell, Clivet

Paul Williams, Clivet

Kirsty Smyth, Clivet

Jade Guest, Clivet

Clivet Group UK has welcomed four new starters to support growth in the company's sales and support functions.

**Samuel Powell** has joined as Sales Support Engineer, having developed his experience in an HVAC company. He began as an application engineer, then become a technical support engineer and finally a technical manager.

**Paul Williams**, who joins the business as a Pre-Sales Engineer, began his career as a service engineer and after later moved to a sales role, taking care of distributors in the HVAC sector.

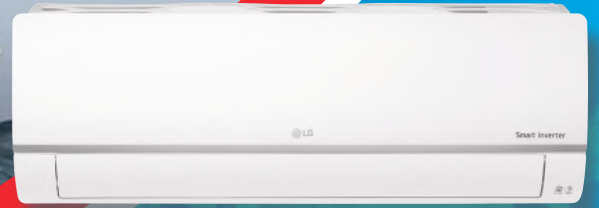
**Kirsty Smyth** has been appointed South Central Sales Manager, bringing a wealth of experience to the business, while **Jade Guest** has joined as Service Co-ordinator.

Kevin Harrison-Ellis, Head of UK Sales, said: "I am delighted to welcome Kirsty, Samuel and Paul to the external sales team and Jade into the service department. With these latest additions we have a really strong, diverse and outstanding group. They add experience and knowledge to what is already a great team. I am looking forward to working with them all to continue the success and growth of Clivet Group UK for many years to come."

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

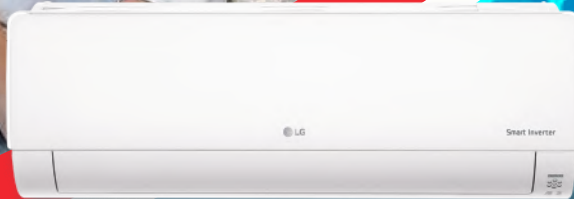


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