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www.daikin.co.uk/VRV5



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www.lg.com/uk/business/residential-air-conditioner



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World Refrigeration Day is just around the corner with its focus this year on creating a legacy to attract new blood into our industry. In what will be a programme of fantastic events, as we start to move out of the restrictions that suppressed last year's celebrations, we have to ask ourselves - are we doing enough collectively throughout the rest of the year to make our industry attractive to a young audience? I'd be interested to hear what schemes and approaches are taking place.

The comments I have received from people contributing to this edition are that even though enhancements in product technology and automated diagnostics help bridge our self-declared skills gap, it is in no way adequate to replace the fundamental training provided by our institutions and training providers. The consensus being that product-specific activity plays a key role, but an appropriate level of core training is essential. Appropriate being a choice word and a discussion for another time.

Elsewhere, Brexit has caused quite a bit of confusion in terms of F-Gas quotas, with some contractors and wholesalers struggling to understand the government's guidance for compliance with the UK F-Gas quota, its purchasing and reporting. Equipment and refrigerant manufacturers have to find alternative supply routes to avoid expensive duplicate costs, especially where business in Northern Ireland is concerned. Smaller wholesalers who import equipment from organisations with an EU presence but not directly in the UK are, for the most part, left with little or reluctant assistance in obtaining F-Gas quota allocation from their suppliers. This is simply due to the lack of a clear understanding across the supply chain.

Finally, it's a pleasure to feature Linda McVittie in Women in ACR for this edition. Linda is a well-respected industry advocate and, hopefully, we can learn from the hard work that people like this have carried out to make our industry more diverse, and channel those ideas into attracting that new generation.

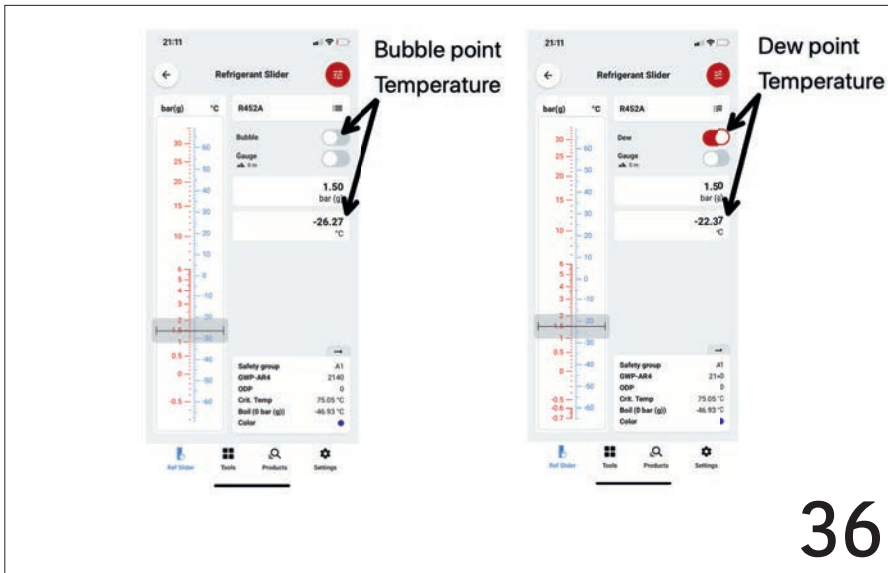
I hope you enjoy this edition of ACR Journal,

Andy



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Aerofoil Energy and Armstrong FT honoured with Queen's Awards

Aerofoil Energy and Armstrong Fluid Technology have been recognised with a Queen's Award for Enterprise.

Aerofoil Energy received an Innovation award for its pioneering use of shelf-edge technology to improve the energy efficiency of display refrigeration, a feature of the food retail industry that accounts for 3 per cent of the UK's entire consumption of electricity.

CEO Paul McAndrew said: "Open-fronted supermarket fridges are a great way to display food and make it easy for customers to choose, but they are very power-hungry. Our unique innovation, the Aerofoil, has provided our clients with a straightforward solution that significantly reduces the fridge's power consumption whilst improving the convenience and comfort of the shopping experience."

Armstrong FT, meanwhile, became the first company from the commercial HVAC sector to receive a Sustainable Development award for its work in the design, engineering and manufacturing of intelligent fluid flow equipment, control solutions and digital technologies.



Executive chairman Charles Armstrong said: "Sustainability is a key driver within our business. We are leading the way in developing innovative energy-saving solutions that help customers to reduce their environmental impact."

Pump Manager, Armstrong's intelligent performance management technology



Paul McAndrew, CEO of Aerofoil Energy

Star extends warranty on new installations



Cooling equipment being manufactured at Star Refrigeration's Westway factory

Star Refrigeration is now offering a two-year warranty on all new industrial contract installations.

The extended warranty, on orders placed from January 2021, is included as standard for all new installations, including the award-winning Azanechiller 2.0 and Azanefreezer 2.0 products and Star's Envi range of CO2 packaged refrigeration solutions. The warranty will apply to all future upgrades of the modular systems.

Dr Lewis Brown, Contracts Director of Star Refrigeration, said: "We are proud of our products, our engineering ability and our highly qualified staff. Current customers who invest in our ongoing aftercare packages receive unrivalled 24/7 support with their systems, however we wanted to go that bit further for our customer base. The extended warranty is a great benefit with no additional cost to the customer, and is testament to the confidence we have in the systems we are installing.

"To offer an inclusive warranty for two years means we must deliver on quality every single time. We can also offer extended warranties and a number of enhanced maintenance packages on request for customers with additional requirements."

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

Honeywell pledges to be carbon neutral by 2035

Refrigerant manufacturer Honeywell has pledged to be carbon neutral across its facilities and operations by 2035.

Chairman and CEO Darius Adamczyk said: "Honeywell has a long history of improving our own environmental and sustainability profile while providing innovative products and services that improve our customers' profiles as well. We will continue to invest in our plants and in new technologies that will reduce our carbon footprint and contribute significantly to global efforts to mitigate climate change."

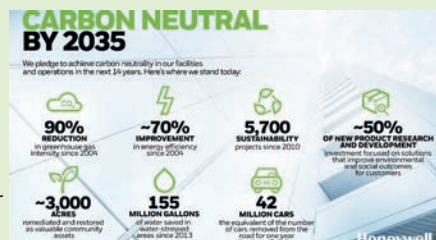
Honeywell says it has reduced its greenhouse gas intensity by more than 90% since 2004 and aims to complete more energy savings projects, converting to renewable energy sources, completing capital improvement projects in its sites, electrifying its fleet of company vehicles and using credible carbon offsets.

The company says it wants to help other companies and customers reach carbon neutrality through its products and technologies. It says its Solstice line of low global warming potential refrigerants, propellants and solvents has avoided emission of over 200 million metric tons of carbon dioxide equivalent from being released in the atmosphere according to our estimates, equivalent to removing more than 42 million cars from the road for one year.

Recent developments have seen US company Whole Foods Market adopt Solstice N40 (R448A) in its stores as it seeks to reduce greenhouse gas emissions under the US EPA's GreenChill programme. Honeywell has also announced the first adoption for N40 in Vietnam, by the chain LotteMart, and the first application for a cold storage warehouse owner in China with Universal Studios Beijing.

In addition, Solstice N41 (R466A) was recently recognised by the Japan Society of Refrigeration and Air Conditioning Engineers (JSRAE) as a new, inert refrigerant. This is seen by Honeywell as a key milestone as Solstice N41 it moves towards commercialisation.

www.honeywell.com



TF Solutions becomes Mitsubishi Electric wholesaler

TF Solutions has become a wholesaler for Mitsubishi Electric's range of HVAC solutions. The move sees the company expand from being a Value Added Reseller (VAR) of the manufacturer's product range to now offer their customers product "off the shelf".

TF supplies Mitsubishi Electric's range of products including heat pumps, e-series chillers, air handling units, air conditioning and Lossnay mechanical ventilation.

"We are currently moving through a period of rapid growth and expansion," said TF Solutions managing director, Andy Cherrill. "The time is right for us to take the next step so that we continue to meet and enhance our customers' requirements. We know that the market for sustainable and energy efficient products is expanding rapidly and our customers need product choice and design support as they look to capitalise on new opportunities. With Mitsubishi Electric now held in stock across all of our branches, this complements our current stock offering of Fujitsu and Samsung."

Gary Lamsdale, distributor, wholesaler & VAR manager for Mitsubishi Electric, said: "We're delighted to support TF Solutions as they grow their business. "Andy and his team share the same ethos of being there for customers and we will be working with them to help them and their customers capitalise on the growth in demand for sustainable, energy efficient solutions."

TF Solutions operates out of branches in Leeds, Stockport, Burton, Northampton, Bristol, Dunstable, Crayford, Guildford and Smethwick, selling RACHP products and ancillaries. The company continues its expansion plans with a Wandsworth branch opening in May, and further new branches planned this year, including the company's first branch in Scotland.

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

Andy Cherrill, MD of TF Solutions



BRINGING EQUIPMENT OUT OF LOCKDOWN

Williams has updated its guides on bringing refrigerators, freezers and coldrooms back to service safely as the government's roadmap out of lockdown continues.

The guides cover everything operators need to know about recommissioning equipment after a long period of downtime, so they can be sure that it will be ready when they need it, avoiding the issues that can occur if the tasks are not done properly.

The Quick Operators guide for fridges and freezers sums up the process in four steps, while coldrooms require more attention.

As well as guides aimed at the needs of operators, Williams has created separate, more technical versions aimed at engineers and dealers. They allow dealers to offer a full service and accurate advice to their clients.

The guides, and contact information for the support team, can be found in the info centre on the Williams website.

www.williams-refrigeration.co.uk

IOR joins Cool Coalition

The Institute of Refrigeration has joined the Cool Coalition, a global initiative which supports the UN Sustainable Development Goals and Paris Agreement around cooling, with the aim of transitioning to efficient and climate-friendly cooling.

Through the Cool Coalition, the IOR will join leading international organisations such as the International Institute of Refrigeration and EPEE to work on strategies and technical solutions to reduce carbon emissions. The coalition represents 23 countries and 47 international and civil society organisations, as well as businesses and universities.

The IOR's work as part of the coalition will be focused through its Beyond Refrigeration initiative, which identifies seven critical areas and is preparing a template which provides a step-by-step approach to help end-users of all sizes to review where they are now and what they need to do to start making changes that will lead them towards Net Zero aspirations.

<https://coolcoalition.org/>

Marstair extends A2L range

Marstair has added to its line-up of equipment for A2L refrigerants with the launch of its A2LcabinetMatch retail condensing units.

The launch follows the arrival of the A2LsysteMatch and A2LcellarMatch and the A2LcabinetMatch is said to be engineered to deliver a 93% reduction in system refrigerant GWP.

Following recent investment in newly built R&D testing facilities at Marstair's UK manufacturing plant, months of comprehensive testing have been completed, ensuring A2LcabinetMatch has been developed in accordance to BS EN 378: 2016 standards.

As a result, a range of condensing units aimed at convenience and retail stores are now available, which can be mix-matched with refrigeration cabinets to suit specific store temperature requirements. The initial duty range of 2.3-6.8kW is suitable for most cabinets without doors up to 3.75m long and with doors up to 7.5m long. Larger SMC units suitable for 7.5m cabinets without doors will be available later in the year. Systems are also suitable for a variety of A2L refrigerants, including R454A, R454C and R455A.

sales@marstair.com



PASTORFRIGOR EARNS A RATING ON NEW ECODESIGN LABEL

Essex-based Pastorfrigor GB is celebrating an 'exceptional' new ecodesign energy label A rating for its latest Genova Overview range of integral plug-in refrigeration solutions.

A new version of the EU energy label came into effect on March 1 and is now applicable to refrigeration and freezers in all supermarkets and convenience stores. The UK has continued with the new energy label changes, and has committed to matching and even exceeding the EU's ecodesign standards in order cut energy bills and carbon footprint.

With more products achieving ratings as A+, A++ or A+++ according to the past scale, the recent change sees a return to a simpler A-G scale designed to strengthen manufacturers' sustainability credentials by feeding in more ambitious designs into future energy-related products.

Simon Robinson, managing director at Pastorfrigor GB, said: "This is massive for Pastorfrigor to be the first to an A rating when a B would have been considered exceptional. The new regulations emphasised that an A-rated cabinet was not to be expected in 2021 and the best in class would be a C rating. To receive an ecodesign A rating is exceptional.

"The difference in energy consumption between A and C can be as much as three times the energy used. This fact highlights the scope there is for improvement in our market and how far ahead of the game we are with our new Genova OV."

The full Genova OV range is available using the natural refrigerant R290 and has a maximum charge per system of just 150g, making it a very green solution. GD cabinets are the lowest

energy in class delivering an additional 25% energy saving over the older Genova model, while its BT Frozen food cabinets are also available on R455a, which is a new blend with a very low GWP at just 150.

The system is said to allow significant reductions in consumption and noise, layout flexibility with the widest modularity, immediate installation, wide product range and tailor-made solutions.

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

Genova Overview from Pastorfrigor



NUAIRE AIMS FOR 'SAFE HAVEN'

Ventilation manufacturer Nuair has launched its Haven terminals, designed to reduce or prevent the risk of spreading airborne pathogens and other pollutants in shared spaces.

Current Public Health England guidance states that: "The transmission of COVID-19 is thought to occur mainly through respiratory droplets generated by coughing and sneezing and through contact with contaminated surfaces. The predominant modes of transmission are assumed to be droplet and contact."

The patent applied for Haven has an extract capability whereby dirty or contaminated air can be removed from the indoor space and discharged to the building exterior, ensuring a consistent and optimally ventilated environment within individual workspaces. Air filtration of all known grades including Carbon Absorption, Coarse Particulate to HEPA, and more can be incorporated to offer additional peace of mind to the building owners and its occupants.

Managing director Wayne Glover said: "The launch of Haven comes at just the right time for employers and their teams, with health being at the top of everyone's agenda in the current climate. We believe that this unit addresses the shortfalls of common air

ventilation practices and instead offers a straightforward method of ensuring that each occupant receives the correct amount of supply and extract ventilation for their general health, comfort, and wellbeing. Not only can this prove reassuring to employers and team members, but it can help to reduce workplace illnesses also."

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

Nuair's Haven terminal



New guidance on HVAC sensor selection

The Building Controls Industry Association (BCIA) has released a new Technical Guide on the selection of HVAC sensors used in Building Energy Management Systems (BEMS).

Sensors measure the controlled variable (temperature, humidity, pressure etc.) and transmit it as a measured value to the controller. It is crucial that the sensor should provide an accurate measurement of the controlled variable at the reference point in the control loop. Failure to meet the desired conditions satisfactorily can lead to poor control, energy wastage and occupant complaints.

The Good Practice Guide – Control Sensor Selection and Installation can be downloaded from the Resources section of the BCIA website.

<https://bcia.co.uk/resources/>

Aqua announces substantial investment

Philip Wilson and Russell Wilson have joined the board of temperature control specialist Aqua, with the substantial investment forming part of a large-scale growth plan as the company celebrates its 20th anniversary.

They bring extensive industry experience to the Aqua business, having been intrinsically involved with ICS Cool Energy, and join the board alongside Aqua founders Kevin Lancaster and Simon Davies. Philip Wilson takes on a non-executive director, consultative role, with Russell Wilson active within the hire side of the business.

Aqua was founded in 2001, focusing primarily on industrial and process cooling across the UK and overseas. The service side of the business was formed five years later and Aqua acquired Stadco Cooling from the Stadco Automotive Group in 2010. Aqua won a Queen's Award for Enterprise: Innovation in 2015, and 2018 saw the launch of the hire division.

Simon Davis said: "Aqua has established itself as a market leader for technically led cooling solutions but Kevin and I recognised we needed capital investment to move to the next level. We have a great team with an over-arching belief that we can be number one in our industry. Phil and Russell joining us will be key to delivering that aspiration. This is such an exciting time for Aqua, I'm really thrilled about where we will go next."

Russell Wilson said: "We aim to combine Aqua's 20-year legacy and reputation with our industry experience, to create something really quite special for the marketplace."
<https://aquacooling.co.uk/>

From left, Simon Davis, Kevin Lancaster, Philip Wilson and Russell Wilson



Aermec unveils 3-pipe hydronic system

Aermec has introduced a new fan coil unit using three water pipes aimed at helping customers achieve near zero energy buildings.

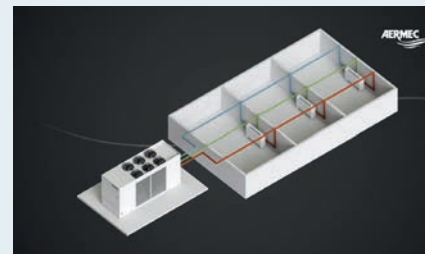
The 3WP system, launched at Mostra Convegno's on-line MCE event, claims the advantages of refrigerant-based VRF systems with four-pipe hydronic FCUs.

Traditional two and four-pipe hydronic HVAC systems are widely used, but Aermec's three-pipe system uses less pipework, requires less investment and reduces the costs of installation.

The 3WP is said to offer a cost-effective HVAC solution as one of the key benefits is that it offers greater flexibility in system capacity and distances, it is also easier to design and repair which reduces overall costs.

The 3WP system ranges from 40kW to 400kW in a single unit and up to 950kW in a cascade. Compared to previous technologies, Aermec says the performance and efficiency has significantly increased without compromising the thermal capacity.

www.aermec.co.uk



Coolair invests in staff training

Air conditioning specialist Coolair Equipment has invested in a new staff training portal, aimed at improving employees' professional and personal development.

The portal, which is provided by Staff Skills Training, offers a range of courses to meet the professional health and safety requirements for engineers working on site. It also provides courses on physical fitness, lifestyle and mental health and wellbeing – one of Coolair's key areas of focus for 2021. It is hoped that all members of staff, whether office-based or engineers, will complete two courses a year.

Neil Gibbard, Coolair Equipment's managing director, said: "We've wanted to increase our training capacity for some time and have been searching for a partner able to provide the best range of course content in the most user-friendly and accessible format for all our teams to use. The SST portal is easily accessed from all electronic devices so coursework can be picked up any time, anywhere."

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



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Firefighters home and dry with Condair

Firefighters at a new training centre in Cheshire are using a Condair dehumidifier to dry out protective kit at the end of each wet training session.

The equipment for Cheshire Fire and Rescue Services at Winsford was specified by building services company T Clarke for the centre's drying room as part of the new build project.

Equipment ensuring the strict control of moisture in a drying room is essential to save firefighters' gear from the effects of water damage after a call-out or a training exercise. It's vital that they have access to a drying facility to prevent extensive damage and potentially significant replacement costs for the fire service.

The Condair DC 50W unit installed by T Clarke has a dehumidifying capacity of up to 49 litres per day (@30°C/80% RH). Capacities in Condair's wider condensing dehumidifier range from 49 to 930 litres per day with airflows of up to 8,000m³/h. They can provide dry air directly to a room or be connected to a building's ducted ventilation system. Models are also available with an external condenser that can expel the heat generated during the drying process remotely and therefore manage temperature control as well as humidity.

www.condair.co.uk



LG earns IAQ recognition

Commercial air conditioning technology from LG Electronics has earned recognition from a number of international organisations for its ability to improve indoor air quality.

Now available in the UK, the LG DUAL Vane Cassette is the world's first HVAC solution to receive Underwriters Laboratories' GREENGUARD Gold Certification for low volatile organic compound (VOC) emissions. It was also recognized by Intertek for reducing the presence of harmful particles in indoor air. Its outstanding air purification capabilities are possible thanks to LG Plasmaster Ionizer '+' technology, which emits over 3 million ion clusters to attract and carry away allergens and bacteria.

Further recognition came from TÜV Rheinland, which certified LG's 5-step air purification system for effectively removing ultrafine dust, allergen and harmful bacteria including Staphylococcus aureus from the air. The LG DUAL Vane Cassette's air-cleansing and allergen-removing capabilities are also certified by the British Allergy Foundation.

LG national specifications sales manager, Vish Sodhi, said: "These trusted certifications attest to the importance LG places on prioritising its customers' well-being. HVAC plays a central role in making indoor environments comfortable and safer for their occupants and LG will continue to deliver solutions that meet the highest international standards for healthy operation and effective performance."

partner.lge.com/uk

LG's DUAL Vane Cassette



Climalife introduces A2L charge calculator

Refrigerant specialist Climalife has launched a web-based application which enables air conditioning and refrigeration professionals to simply calculate A2L charge sizes.

Climalife's A2L charge calculator tool covers a total of 36 refrigerants, including A2Ls. The first step is to select a refrigerant. The user will receive a regulatory reminder showing the environmental impact, together with recommendations. For example, if the choice is for a product with a high GWP, more environmentally friendly solutions

will be suggested, without removing the initial choice that was made.

To carry out the calculation, the user simply needs to fill in certain fields, such as the application (comfort or other), the location of the refrigeration system, the dimensions of the room, the characteristics of the installation (hermetically sealed or not) and the density of people per metre².

The calculator determines the estimated charge as well as an indicated limit, according to the toxicity of the product and its flammability. This is an

initial value as stipulated in EN378-1, to which additional measurements are added if allowed.

<https://a2l.climalife.com/en/landing>





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ARTCOOL

2.5 / 3.5 / 5.0 / 7.0 kW
£582 / £683 / £937 / £1,159

JAVAC Maxy Flame Kit

TOOLS TALK

Introducing the Maxy Flame Kit (MFK) from JAVAC - the MFK is a portable welding and brazing kit, packed with extra features designed with the engineer in mind.

One of the main reasons behind the development of the MFK was the increasing restrictions around the use of Acetylene on site. This inevitably has created the demand for another welding & brazing solution for Engineers.

You will find the usual components within the kit including; regulators, arrestors, goggles, ignitor and shank. However, it's the trolley and hoses within the kit that have been adjusted and modified to improve the Engineers experience.

Firstly, the hoses within the kit have been extended to 5 metres in length allowing for better access to those hard to reach areas. Previously, Engineers had been forced into buying additional, longer hose sets to complement their existing kits, as hoses that were included in the original kits were often too short. Therefore, with this additional hose length it should have everything the Engineer needs to get the job done.

The second amendment is the bespoke trolley. It has a dual Maxy Gas cylinder holder and a footprint to fit a 5-litre oxygen

cylinder, along with an extended handle for ease of transportation. The adaptable trolley will also support a mid-size nitrogen cylinder giving the Engineer flexibility on site. When using disposable cylinders of high-performance fuel gas (Maxy Gas) and used in conjunction with oxygen, the MFK will attain temperatures of 3000 degrees – suitable for brazing up to 2-inch pipe.

A must-have on site, this product will be available to the market mid-June.

www.javac.co.uk

(Gas cylinders not included)



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MAKING A DIFFERENCE AROUND THE WORLD

Remanufactured compressors - a sustainable alternative

Graham Prince, J & E Hall business manager for remanufactured compressors, explains how a new lease of life can be given to this key component in a refrigeration system.

There are millions of compressors in use around the world in a wide variety of applications. In the air conditioning and refrigeration industry, there's a view that when a compressor reaches the end of its useful life, it is only fit for the scrap heap.

This could not be further from the truth. Focusing on developing a low carbon economy growing in significance, it has never been more important to extend a compressor's life. That's one of the reasons why at J & E Hall we place so much emphasis on remanufacturing compressors. The time, cost and environmental benefits are enormous.

Tried and tested

Our compressor remanufacturing takes place under one roof in Doncaster. J & E Hall technicians have developed an efficient batch process method to convert a failed or worn compressor into an efficient new machine – meeting with the original manufacturer's specification – in as little as 24 hours.

When a scroll, screw or reciprocating compressor arrives on site, every part is inspected from top to bottom. All parts are thoroughly cleaned and renewed where necessary, and the motor is always replaced with one that has been rewound. A report to the customer then follows, detailing any faults or damage.

Our Doncaster site is a one-stop-shop for compressor remanufacturing. With all the

services needed to return a heavily used machine to first-class condition, this includes the critical area of motor rewinding which is at the heart of the remanufacturing process.

Our skilled technicians can overhaul open drive motors and, in the machine shop, we have the precision engineering expertise to construct tooling-jigs if required.

Performance is then checked rigorously against OEM specification. Only after this is successful is the machine resprayed, packaged and sent to the customer. All J & E Hall remanufactured compressors are supplied with a year's warranty – the same as a new machine.

Environmental benefit

J & E Hall adopts a highly skilled and sustainable approach to remanufacturing compressors. What cannot be used again is disposed of in an environmentally friendly way. Steel, most other metals and even the wooden pallets they arrive on can be recycled. With all our remanufacturing services under one roof, we can keep transport costs to a minimum.

Compressors can be remanufactured on the customer's premises or at our Doncaster site. J & E Hall can remanufacture compressors running on a wide variety of refrigerants, including natural refrigerants like ammonia.

With most compressors giving good, honest service for 20 or more years, handing them a




Graham Prince,
J & E Hall business
manager for
remanufactured
compressors

new lease of life will provide you with extra payback on the compressor and help highlight any other faults hidden in the refrigeration or air conditioning system. Importantly, it may also save the time and expense of replacing an entire refrigeration pack with a new one.

Cost reduction

We tackle a wide variety of remanufacturing jobs. They can range from compressors found in roof-top air conditioning systems in supermarkets, offices, and hospitals to compressors in refrigeration packs driving efficiencies in breweries, cold stores, and other food processing sites.

Choosing a remanufactured compressor will always be a winner with your customer. The public is growing more aware of the importance of knowing how products are made and where their place lies in a low carbon society.

Add this to the fact that a remanufactured compressor provides typically a 40 per cent saving on the cost of buying a new one and the short turnaround time, then you have good reasons for choosing a remanufactured compressor. 

Before and after images of a V127 reciprocating compressor remanufactured by the J & E Hall team





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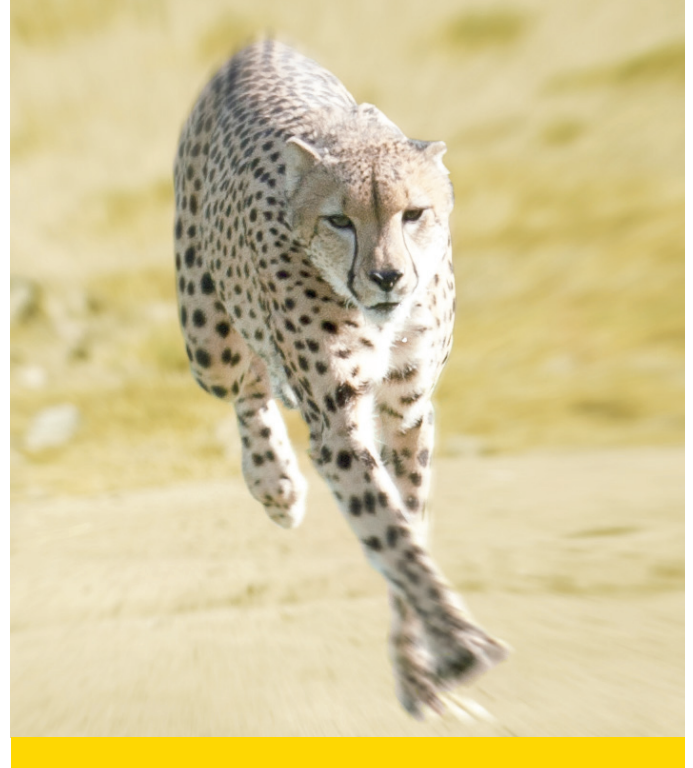
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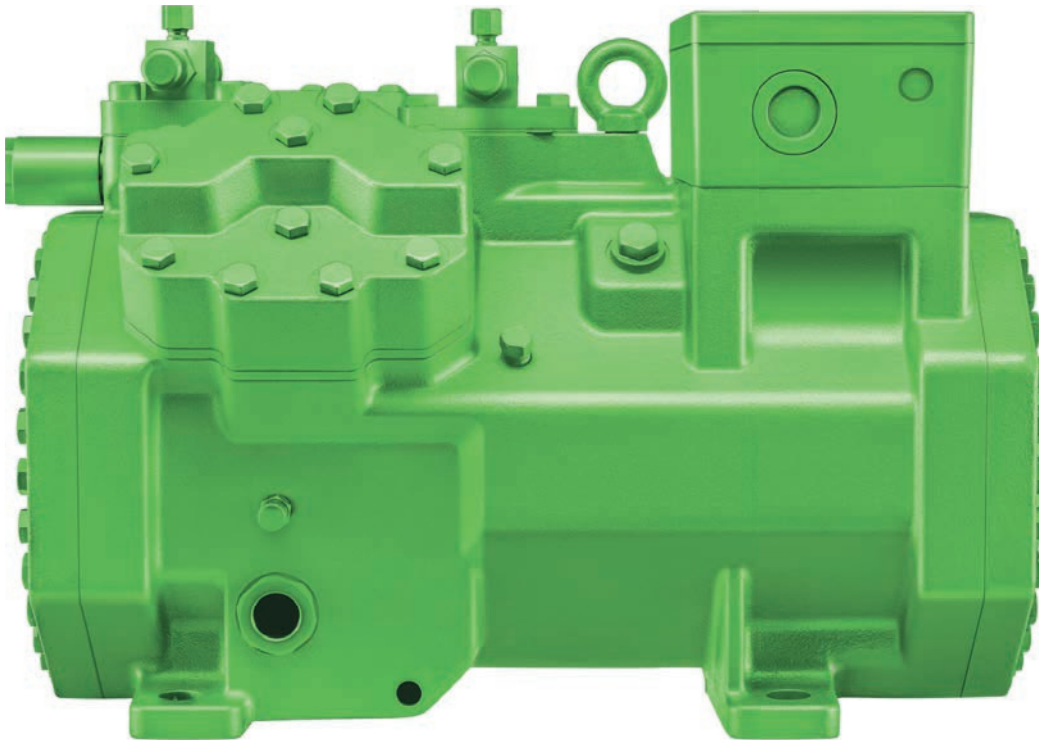
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Intelligent compressors are at the centre of the industry's digital transformation



Digital transformation with intelligent compressors

Kevin Glass,
managing director,
BITZER UK

Kevin Glass of BITZER UK discusses how intelligent compressors can help bridge the industry's skills gap.

The need to minimise operating costs and reduce the impact of refrigeration systems on the environment has never been more significant. The key is timely information about how systems perform in the real world and the ability to adjust and optimise them easily.

The latest intelligent compressors, and the networks they are part of, provide us with direct access to real-time and historical data, which opens up tremendous opportunities to improve performance, minimise costs and reduce environmental impact.

The new digital infrastructure – the foundation for this revolution – is now being put in place. At its heart are intelligent compressors and refrigeration systems connected into a higher-level network for monitoring and sophisticated data analysis.

At this supervisory level, which gives rapid access to the wealth of data and

insights, the power and potential of digital services come into play.

Strategic priority

BITZER has been working on developing the new digital infrastructure for some time. Once the potential benefits became apparent, we made it a strategic priority. After successful trials in Europe and South America over the past two years, we are now globally rolling out our BITZER Digital Network (BDN).

The BDN brings together the company's in-depth product and application knowledge with real-time intelligence and data from working systems. We use this to provide customers with actionable insights that can be used to improve all aspects of system performance.

It also gives access to the latest technical information relevant to compressors and components in systems.



This includes everything from an electronic parts database, online documentation and software, in addition to compressor monitoring and advanced analysis.

I believe digitalisation has come at a critical time for the industry and helps address some of the key challenges we face.

Bridging the skills gap

Through the retirement of experienced people, we lose a lot of knowledge and skills from the industry with every passing

year. Such deep experience is not easy to replace and cannot be formed out of thin air. It takes long-term, in-depth training, which in today's competitive commercial environment is challenging. The Artificial Intelligence aspects of digitalisation help fill the gap.

In addition, as we all know, our industry operates in a highly time-sensitive environment. However, with the considerable value of food stocks and industrial products dependent on refrigeration today – not to mention the massively expanding computer server industry – downtime can result in colossal and unacceptable losses.

Through predictive analysis and genuinely intelligent preventive maintenance, digital networks enable us to pre-empt issues, dramatically increasing reliability and minimising downtime.

In the event of a breakdown, contractors can diagnose a problem remotely and identify work that needs to be done before attending a site. Any replacement

components required can be sourced in advance, so everything is on-hand for a first-time fix.

Overcoming the need for multiple visits to inspect and diagnose the problem and then return to repair and replace parts delivers significant savings.

The nuts-and-bolts of how the system works in principle are relatively easy to describe, even if there is a large amount of digital processing going on behind the scenes.

Networking and security

IQ modules connect to the digital network via a gateway. Each unit can be registered and viewed on a customer's accounts. It shows compressor status, operating temperatures and pressures, diagnostics, and any warnings and alarms.

There is no need to export data to another programme. Users simply log in to their account and run a report from inside the BDN. This can be customised in multiple ways to focus on particular issues and over various time-frames.

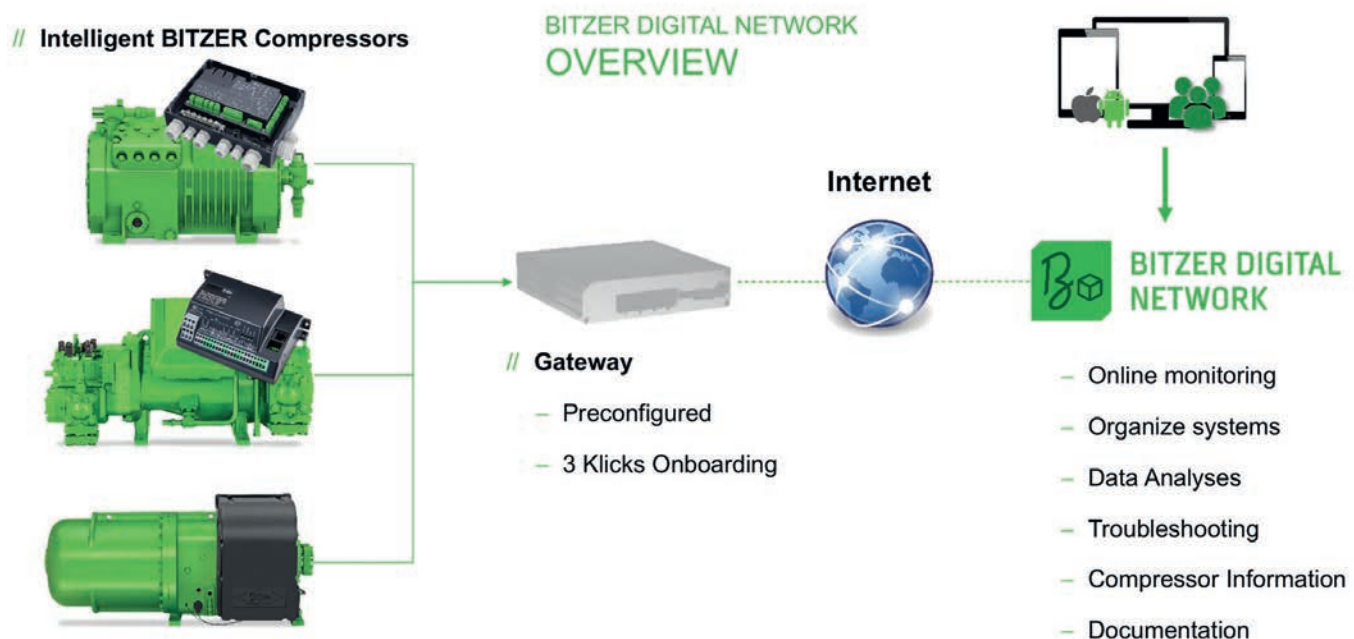
Data security has to be a priority, and the network uses the highest standards of encryption and online security available. Password-protected accounts are assigned to individual users, with different types of user given access to different types and levels of information. This tiered approach is important given the richness of data available.

Although building from a relatively low base, we anticipate these networks will grow rapidly as the advantages become apparent and – importantly – when customers have a go themselves and come to trust the new approach.

We are now working with customers to demonstrate the system and how it can deliver new digital-based services to end users.

I believe it won't be long before remote reporting systems becomes the default solution. The benefits speak for themselves, and once customers experience this type of system access, it will become normal to expect it. 📡

The real-time monitoring service gives access to current compressor status, alarm descriptions and trouble-shooting insights derived from data analysis



Toshiba's new triple rotary compressor pushes VRF boundaries

David McSherry, TCUK's sales manager for Toshiba and DX, highlights the role of Toshiba's pioneering new compressor in delivering exceptional efficiency and other performance benefits in the company's latest variable refrigerant flow system, SMMS-u.



David McSherry, TCUK's sales manager for Toshiba and DX

At the heart of Toshiba's latest VRF, the SMMS-u is a ground-breaking new triple rotary compressor developed in-house, which significantly improves energy efficiency and overall reliability. And with a refrigerant pre-charge almost 50 per cent less than the previous model, it also offers significant safety and environmental benefits.

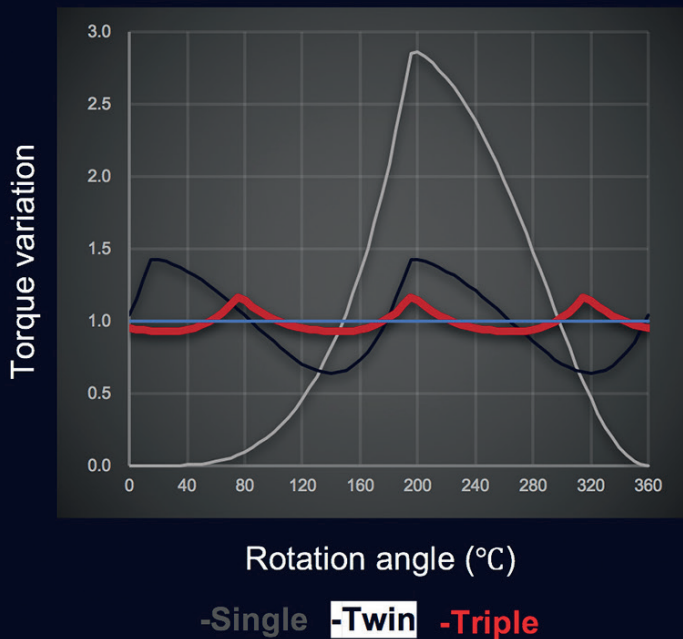
In recognition of its efficiency, the Japanese government-backed Energy Conservation Centre has awarded SMMS-u

the country's highest technology award for innovation in this product and business segment.

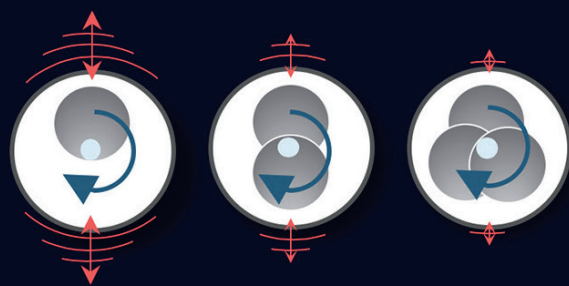
Volumetric efficiency

One of the keys to the new compressor's efficiency is its new multi-port design, which results in a significant reduction in pressure losses within the system. The previous generation of two-stage rotary compressors had just two ports; the new Toshiba triple unit has six.

Vibration comparison



Vibration image



Single > Twin > Triple

Decreasing vibration

reliability of compressor

Reduced vibration with triple rotary compressor

The increased number of discharge valves smooths out the dynamics of gas flow within the compressor. It enables the higher volumes of refrigerant passing through the larger unit to be discharged much more efficiently, without consequential losses incurred with a conventional arrangement.

The discharge ports themselves are in two forms: the main valve and a sub-valve, with the size of each optimised to reduce losses due to over-compression and to handle large volumes of refrigerant vapour.

This design maximises compressor efficiency at both high and low load. This is important since air conditioning in most climates – and indeed in the UK and other Northern latitudes – tends to operate at part-load most of the time.

Reduced vibration

Another significant benefit of the triple rotary design is reduced vibration. The three compression chambers are positioned above one another on the vertical drive-shaft at perfectly offset 120-degree angles.

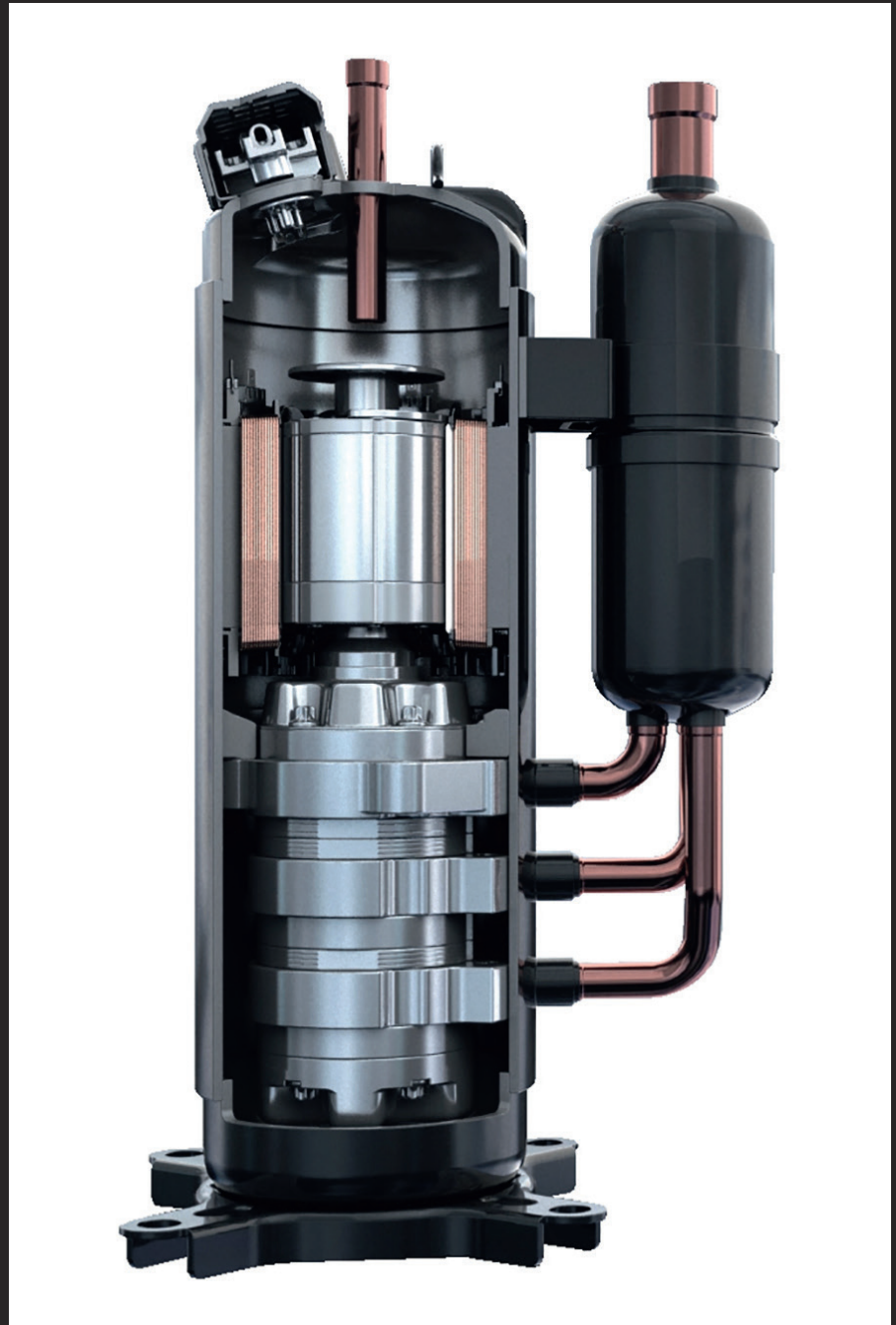
This results in a very balanced configuration, with the forces generated during rotation and compression countering each other and enabling the assembly to rotate smoothly on the drive shaft. The result is a significant reduction in mechanical vibration. It also reduces wear on bearings and leads to improved reliability and extended operational life.

With three compression chambers arranged vertically on top of one another, the design creates a highly compact unit capable of delivering high cooling capacity in a small space. For example, a single Toshiba triple rotary compressor can displace up to 120 cubic centimetres and deliver up to 20 horsepower (56 kW).

Special treatment

Reliability and efficiency are enhanced further with Diamond-like Carbon (DLC) treatment on key contact and wear points such as compressor vanes. DLC was developed for use in high-tech and extreme performance applications such as Formula 1 racing and aviation.


When combined with the new chassis design of SMMS-u, this results in an



exceptionally compact unit that allows more cooling and heating capacity than ever before to be delivered from a restricted space. It also helps installers with logistics on site.

Further benefits include:

- A new oil management system ensures continuous compressor lubrication and overcomes the need for piping for an oil balance circuit, speeding up installation on site.

- A sensor-based defrost system that only initiates defrost when necessary, maintaining up to five hours of continuous heating, ensuring the comfort of building occupants at all times. In applications with multiple systems, the intelligent control system staggers defrost cycles across the systems to maintain overall performance, ensuring occupants' comfort. 



New refrigerant quota system changes the way we work

A-Gas managing director John Ormerod highlights how the new refrigerant quota system operates in Great Britain and where the challenges lie.

Our departure from the European Union on January 1 has changed how the cooling industry operates in Great Britain. England, Scotland and Wales are now outside the EU and equipped with the power to set their own agenda to meet the low carbon challenge.

But within this framework, we are still following the latest F-Gas Regulation protocol which began in 2015 and continues until 2030. Our mission to reduce the use of high global warming HFC refrigerants is still very much at the forefront of our thinking.

UK refrigerant quota

Since the beginning of the year, a quota system has been in place to govern the import and export of HFC refrigerants

between Great Britain and the rest of the world, including the EU. This system controls the amount of virgin refrigerant passing between us and the outside world and ensures that we keep to the rules laid down by the F-Gas Regulation.

Virgin HFC refrigerants feature in the quotas, but reclaimed gases are unaffected. This means the more we can reclaim, the more we can sell outside the quota system and, in turn, make available to the market.

The Department for Environment, Food and Rural Affairs (DEFRA) now governs what we do in Great Britain regarding the F-Gas Regulation. Before we left the EU, DEFRA investigated refrigerant supply into the UK and allocated quotas to companies based on their historical trading.



A-Gas managing director, John Ormerod

Eleven per cent of the allocation was set aside for new entrants to allow for flexibility in the system. This has led to a more fragmented market and it can be complex to understand. HFOs are not part of the quota system, but HFO blends are if they have an HFC component in them – N40 (R448A) is an example.

Initial disruption and problems with pre-charged

That aside, it is early days, and because the industry had ample time to prepare for the changes, disruption in England, Scotland, and Wales has been kept to a minimum. Of course, it hasn't helped that we've been off work and in lockdown for more than a year.

There's been some disruption at the ports. This cannot be blamed on the quota system, but more our departure from the EU at a multi-layered level, and the transportation of gases has been slowed as a result.

The big question is will we have enough virgin refrigerant for our home market? In all, 7.3 million tonnes of CO2e gases have been allocated to the cooling industry, but is this pitched at the right level to meet demand in Great Britain? For many of us, that's the great unknown. No industry likes uncertainty, and clearly, only time will tell.

We have also lost the advantage of being part of the free movement of refrigerants within the EU. Although there was no tracking of the amount passing between the United Kingdom and the continent, historically, this would have undoubtedly contributed to the overall refrigerant pot available to the UK.

The good news is that there has been no shortage of refrigerants so far, but there has been a slight increase in price due to this year's F-Gas step-downs leading to a cut of 29 per cent in the availability of the virgin product.

One area of difficulty relates to the import of cooling equipment containing refrigerant into Great Britain. Traders have to account for the refrigerant in the pre-charged equipment they are importing. Many of these businesses buy from Asia and then export to the EU. With free movement of goods within the EU gone, they now have to pay twice for the privilege of crossing borders.

This is making them less competitive, and unsurprisingly these businesses are not happy with the current situation.

Simplifying the process

Looking at the market in general, some supply chains have lengthened, and it may

be taking a week or two longer for goods to arrive. At A-Gas, we are limiting the movements of refrigerants between our sites on the Continent and Great Britain because of the complexities of the quota system. They are operating as separate entities. We do this to maintain the smooth running of the business.

The Northern Ireland protocol has created some difficulties too. Northern Ireland stayed within the EU F-Gas Regulation system, but we have customers in the province that we have historically supplied from mainland Great Britain. Under the new system, we would need an EU quota to service customers in Northern Ireland, which increases the complexity of the whole operation. We have chosen to service Northern Ireland from our German site to keep it within the EU quota system and simplify the process.

A further complication is the repatriation of used refrigerants classified as waste. Historically it was never an issue to bring these gases back to mainland Great Britain but now it requires an import quota to move them across the Irish Sea. This again is a tricky issue, so we have decided that waste from Northern Ireland should be sent

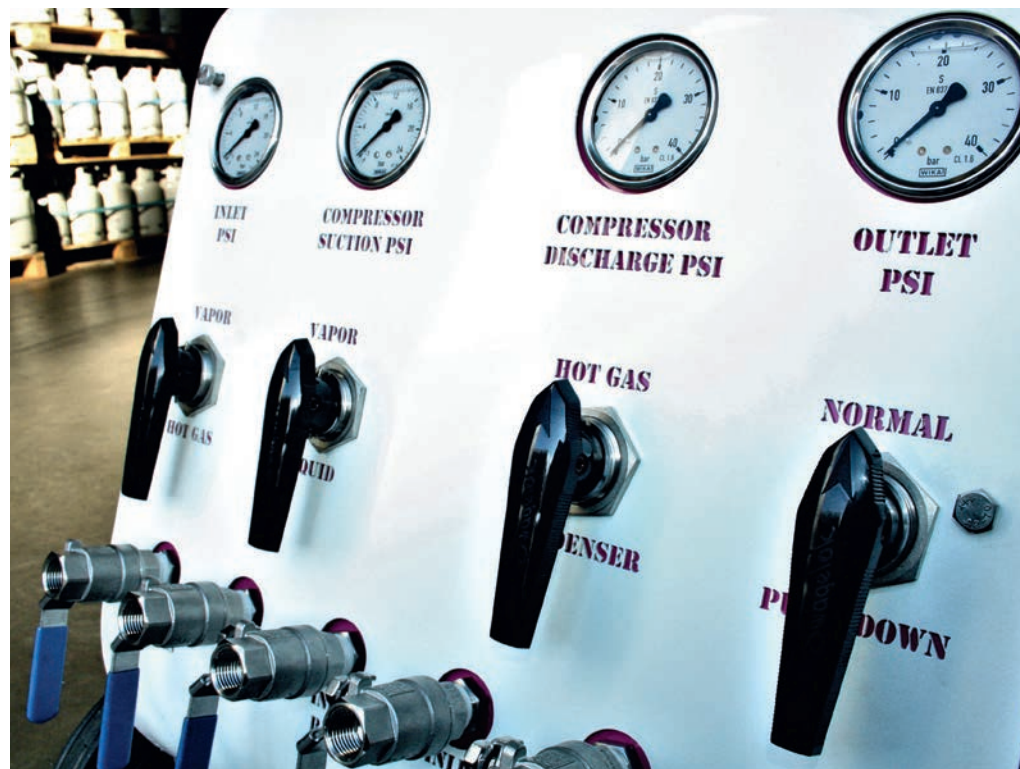
to our reclamation site in the Netherlands to keep it within the same F-Gas quota system.

Making changes

More change could also be on the way. Later in the year, the F-Gas Regulation will go out for consultation for further amendment in 2023. This review will happen on both sides of the English Channel, and who knows, we could end up with the two F-Gas systems going in differing directions.

At A-Gas, there's no doubt that our exit from the EU and the pandemic has changed the way we operate, but I'm happy to say business continues as usual. The pandemic has affected our ability to travel as a lockdown would, but I am grateful to our employees for showing great flexibility in these difficult times. Working from home has become the norm for some.

With their help and the assistance of everyone who has stayed on-site or on the road, a seamless supply chain has been maintained. With the vaccination programme in the UK making good progress, we are more positive in our outlook than we were at the beginning of the year. 🇬🇧





Delivering solutions, developing skills

Gary Stanley,
sales account
manager, TQ
Environmental



The need for the right leak detection system has never been greater, whether meeting legal requirements or protecting a business from potentially losing thousands of pounds worth of refrigerant and damaging the environment.

We are committed to delivering the best possible solution, both in terms of equipment and training engineers to the highest level.

Gary Stanley of Yorkshire-based TQ Environmental explains the importance of leak detection and developing the skills to provide this crucial service.

TQ Environmental is a UK manufacturer, using local suppliers to help us bring our systems to market, and we have recently celebrated our 30th anniversary. We have our own training centre within our HQ, close to the M1, where we offer presentations and training on our full range of systems for interested engineers, contractors, consultants or end users.

Because we recognise the importance of giving our customers the skills to do the job, we operate an open door policy so guests can visit and view the entire manufacturing and testing process.

What is leak detection?

The continuous emission and ambient air pollution monitoring and analysis of air samples to determine whether there is a leak. Leak detection is usually a fixed installation with sensors located at points where refrigerant might be expected to accumulate in the event of a leak.

Fixed leak detection overview

Fixed leak detection systems will immediately alarm if there is a leakage of toxic, flammable or asphyxiate gases, thus enabling businesses to comply with the latest F-Gas regulations as well as Health & Safety at work regulations and EN378 & EN14624 standards.

Having a fixed system can provide businesses with a healthier and safer environment for staff and members of the public on their sites. It is an early warning system which can save people's lives. Leak detection systems can also help the environment by reducing the leakage of refrigerant gases into the atmosphere, also saving money on refrigerant costs if a leak is detected.

Leak detection applications

Leak detection systems can be found wherever commercial and industrial refrigeration systems are installed,

both onshore and offshore. This include power stations, hospitals, oil rigs, retail, supermarkets, food distribution centres, ice rinks, ships, breweries, meat processing plants, schools' hotels, car parks and recycling facilities.

Choosing a system

Consider which gases must be measured and in what quantities, as well as the specific requirements on site. Also, what would be the most appropriate sensor technology to use i.e. infra-red, semi-conductor, pellistor or an aspirated system. How many sensors are required and where should they be positioned to ensure maximum coverage?

When ammonia detection is required, for example, it is common practice to have a hard-wired fixed leak detection system installed. This would consist of a central main control panel which gives alarm levels in its display and locations of individual hard-wired sensors. thus, giving you continuous detection coverage. Also, via an output from the main control panel

a building management system or fire alarm system can be connected to the leak detection system. This system would require simple calibration at least once a year.

An aspirated / sampling system which has an infra-red sensor located in its control panel is another type of a leak detection system which is in the marketplace today, using infra-red technology this aspirated system can sample different detection points at timed intervals. Benefits of this system are its multi-port sampling capability, the opportunity to monitor several gases, programmable zone locations, it is an attractive solution where the infra-red sensor has long life expectancy. Again, this system requires simple calibration once a year.

Residential, hotels and office locations may also be required to have a fixed leak detection system. This would depend on the categorisation of a room where an air conditioning system has been installed and what access is permitted to that room, this is explained in more detail in BS EN378.

In hotel rooms if leak detection is

required, you would have an individual hardwired room sensor which will alert the occupant in the room, if there was a refrigerant leak detected, this would consist of an alarm buzzer being activated in the sensor. The sensor can also be connected to the fan coil in the room which will notify the air conditioning system that a leak has occurred. Alternatively, you can also have a standalone leak detection system, which will run independent to the hotels air conditioning system, this would consist of a hardwired room sensor which is connected to an area alarm panel which would cover each hotel floor (usually situated in dry riser). This in turn would be connected a main panel situated in the reception area. This panel would give reception information as to which room sensor is in alarm allowing the hotel staff to contact the occupant in the room and make sure that they are safe and well. This system would also require a function test each year to make sure that each sensor would be in working order.

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Crucial role on road to net zero



climalife[®]

Dave Richards, head of sales, Climalife UK

Climalife UK head of sales, Dave Richards, looks at leak detection and why it has a vital part in achieving the UK 2050 net zero targets.

F-Gas regulations plan for a 79 per cent decrease in total CO₂ equivalents (tCO₂e) for HFCs placed on the market by 2030, with a further slight reduction to achieve the Kigali Amendment goal 2036. The overall aim is to reduce and contain refrigerant emissions by taking every step to adopt responsible refrigeration practises.

A leaking system costs money and will go on costing money until the leak is fixed. Fixed leak detectors ensure a leak is identified quickly and also helps the equipment owner remain legally compliant with F-Gas legislation.

Leak detection and prompt action following a leak being detected can help maintain the optimum system efficiency, avoiding an increase in energy

consumption, reducing the amount of refrigerant lost to the environment and the amount needed to restore a system to the correct level.

System requirements

Reducing emissions of global warming gases is a key aim of the F-Gas legislation. The requirement for leak detection, inspection and leak check frequency depends on the total CO₂ equivalent tonnes (tCO₂e) charge of the equipment. It is mandatory under the F-Gas regulation (EU517/2014) for systems with a refrigerant charge of 500 tCO₂e or more to be equipped with fixed leak detectors. F-Gas compliance also requires regular refrigerant leak checks and immediate repairs should any leaks be found.

In addition to industry-specific legislation, the UK Government is looking for net zero carbon emissions by 2050. Managing refrigerant usage and minimising leaks is key to the industry playing their part to achieve this target.

Owners and operators of the system have the overall responsibility for the legislation, and therefore they are responsible for:

- Preventing refrigerant leakage
- Ensuring that leak checks are carried out
- Repairing any leaks as soon as possible
- Arranging proper refrigerant recovery
- Maintaining records of any refrigerant losses, additions and servicing

Detect leaks early to reduce refrigerant loss

When it comes to F-Gas compliance, detecting a refrigerant leak early means that the leak can be fixed as swiftly as possible. This also means that the leak cannot grow into a large-scale loss, and the equipment can continue operating with little to no downtime. From a financial perspective, the cost to replace the lost refrigerant is significantly reduced by early leak detection, minimising any potential

The Multi-Zone enhances effective refrigerant management, detecting leaks early to enable cost savings by reducing refrigerant recharge, improving energy efficiency, and reducing the risk of refrigeration failure and produce a loss.



damage to the environment. A simple leak detection system can save over half of the potentially lost refrigerant from a system.

With some refrigerant costs starting to rise again this year and many systems holding thousands of pounds in value of refrigerant, it is easy to see why an early warning leak detection system is such a good idea.

It is essential to ensure the right leak detection equipment is selected. The leak detection system needs to withstand heavy usage and keep up to date with changes in refrigerant technologies.

Leak detection systems may seem like an unwanted expense initially, especially when budgets are tight. However, any refrigerant leaks detected and resolved sooner rather than later will have financial benefits that should more than offset the initial equipment outlay. It is also important to consider that when any refrigerant prices rise, the cost of resolving any leaks will increase too.

The impact of refrigerant leaks are:

- The environmental impact
- The cost of replacing lost refrigerant
- Safety compliance
- The cost of product or service loss
- Increased energy consumption

One of the most significant F-Gas objectives was to reduce F-Gas usage and prevent leaks. This continues to be an essential part of the process, and there are some excellent tools available to help identify leaks before they become a costly problem.

Low-level refrigerant leak detection

Finding leaks, especially low-level leaks that can accumulate over time, can often be difficult as they can be hard to locate. Several factors can influence this, such as airflow, refrigerant density, equipment location, the type and nature of refrigerant equipment.

Airflow and refrigerant density

Low-level refrigerant leaks often go undetected over time and are only identified when the refrigeration equipment fails through a loss in refrigerant charge. If the low-level refrigerant leak were situated in a sealed area such as a walk-in freezer or cold store, the refrigerant would build up over time and cause an alarm notification. Similarly, a higher-level leak that is diluted in large volumes of air or is acted on by airflow will often go undetected at low levels.

Minimum Detectable Level

In general, an aspirated infrared fixed leak detection system is most effective for detecting low levels of refrigerant leaks. Aspirated systems provide monitoring with the lowest comparable Minimum Detectable Level (MDL) and provide the highest accuracy down to 1 ppm. An aspirated system is cost-effective for monitoring larger areas, as the system draws samples from different locations around the site to a single gas detection unit. What's more, aspirated systems can be connected to the automated alarm

What are the key factors for responsible refrigeration and easing quota pressure?

- Using low GWP refrigerants
- Quota free refrigerants
- Using products from a renewable source where possible
- System cleaning and maintenance
- Good system lubrication
- Leak detection equipment and procedures for checks in place

and notification systems so even low-level leaks can be addressed quickly and effectively.

Solutions available

Many different factors in our industry will help influence the success of the UK 2050 net zero targets. It is important that every one of those factors, which includes leak detection, is considered when installing and maintaining a system. As an industry, we must do all we can to play our part in finding ways to meet this target and continue to meet the F-Gas phase down steps.

Selecting the best solution for your business or application may seem daunting. Still, the expert team at Climalife in the UK, working in partnership with Bacharach, can advise you on leak detection solutions by providing tailored guidance on the location of equipment, type and number of sensors to use. This will start you on the journey to achieving environmental excellence and saving money by stopping refrigerant leakage and maintaining optimum energy efficiency. 

How many kg of refrigerant is 500 tCO₂e ?

Refrigerant	GWP	kg = 500 tCO ₂ e	Refrigerant	GWP	kg = 500 tCO ₂ e
R-134a	1430	350	R-448A	1387	360
R-404A	3922	127	R-449A	1397	358
R-407A	2107	237	R-450A	605	827
R-407C	1774	282	R-452A	2140	234

Is it back to the future for training?

Ben Bartle-Ross of Mitsubishi Electric on why the way many engineers develop their skills has probably changed for ever.



Ben Bartle-Ross

So, things are getting back to normal are they? If you believe the headlines, then it almost looks like there never was a pandemic and the situation with COVID has been sorted – well here in the UK at least.

We see trial concerts and gigs on our TV, people filling parks and beaches and, if you've been on a motorway in the morning, we are almost back to rush hour standards of traffic at times.

But a quick view of a newsreel from other parts of the world belies the sense of normality and highlight why we still need to be cautious, even though our own vaccine programme is steaming ahead and the market is optimistic – to say the least!

Domestic trends

Here in the world of training, I think it's fair to say that absolutely everything has changed. We now deliver all of our training online and we are reaching more and more engineers than ever before.

And this is just as well because levels of interest in renewable heating and air conditioning has gone through the roof. I think there are two factors at play here:

Firstly, spending a year at home has meant that people haven't spent as much money on commuting ... or on holidays. Many have also missed the comfort of air conditioning they get in their office and

remember the heat of last summer, when nowhere in the house escaped being baked. So, anyone with spare budget, who can see another hot summer coming, is seriously considering investing in air conditioning, at least for the bedroom and perhaps the home office.

Secondly, the world of residential heating has woken up to the end of gas and oil. Yes, there are still some who believe that hydrogen offers a way to extend the life of the gas network, but in their heart of hearts, I think that even these people realise that, even if this was more than just theory, we simply have to stop burning things!

And then there are the early adopters who are so far ahead of the rest of the market that they are poised to grab each and every opportunity as it comes along.

Planning for the future

These companies have seen the way the wind is blowing and made sure that their engineers are fully trained in renewable heating. They have not only added another string to their bow, they have positioned themselves well for the huge demand that is coming.


If you don't believe me then look at the government's own figures, which point to the installation of 600,000 heat pumps a

year by 2030, which is not that far away now!

So, many companies have taken a serious look at renewable heating, whether for the domestic or commercial market and are now ready to capitalise on the opportunities that are increasing day by day.

They are aware of the technology and understand how it works differently to carbo-based heating. They know how to size and spec it and are already doing this, so are able to respond quickly to any new enquiry. I know because I've now seen hundreds of their engineers on our virtual courses.

But don't worry if you're not part of this wave of renewable heating yet. There's still plenty of time to make sure you and your engineers are quickly brought up to speed. And with our comprehensive virtual training, you won't even have to leave home!

Find out more at <https://les.mitsubishielectric.co.uk/installers/installer-training> 

IOR flying the flag in Scotland

Known for its friendly professional approach, a renowned annual dinner and high quality of service to members, the Institute of Refrigeration Scotland Branch is ringing the changes through 2021. Lizzie Dunlop explains how.

Formed in July 1975 as a branch of the Institute of Refrigeration, IOR Scotland has arranged a programme of technical meetings, training and networking events for our members in Scotland every year. Our membership consists of people from different refrigeration and air conditioning sectors that come from all over Scotland. As a branch, we have gone from strength to strength in the past few years with 2021 starting with a bang as our new chair was announced.

Familiar faces

In April, Danny Watson MInstR took over from the wonderful Julie Murray MInstR, who has been our chair for the previous three years. Jason Fraser MInstR has stepped into Danny's old position as vice chair and is well known for having spent the past few years helping the committee in Aberdeen. We have also seen our committee grow from eight to ten, with Adam Strachan AMInstR from Star Refrigeration and

Ross Kirkland AMInstR from Kirkland Refrigeration both joining the team.

We are very proud to be growing our committee with fresh faces while being very fortunate to have the guidance and knowledge from three past chairs still sitting on the committee.

Events

This year we are still in the planning stages of what our events calendar will look like. We aim to have a mixture of online and in-person training sessions as soon as the regulations allow us, including our very popular and subsidised A2L refrigerant course.

Our ever-popular golf day planning is in 'full swing', and bookings for our Texas scramble are now open. This year's event is being held on August 20 at the Dalmahoy Golf Club in Edinburgh. Places for this event are limited, so please book fast.

The crown jewel in our events calendar is our wonderful IOR Scotland Dinner. Now in



Lizzie Dunlop

its 41st year, it is an event not to be missed. Due to the pandemic, we had postponed the dinner last year, but this one is looking very positive and likely to go ahead in November as planned. The event is set to be held on November 18 at the Crowne Plaza in Glasgow. We were overwhelmed with dinner applications and the event sold out within a record five days last year, with everyone wishing to carry over their places for this year! We do have a waiting list for cancellations, so please get in touch.

For information about or to book on the IOR Scotland Golf Day, Please contact danny.watson@kooltech.co.uk

Enquiries with regards to the IOR Scotland Dinner, please contact either julie.murray@kooltech.co.uk or lizzie.dunlop@danfoss.com

The IOR Scotland committee members are: Danny Watson MInstR, Jason Fraser MInstR, Linda Mcvittie FInstR, Norrie Fraser MInstR, Andy Butler FInstR, Julie Murray MInstR, Alistair Fowler MInstR, Lizzie Dunlop AMInstR, Adam Strachan AMInstR and Ross Kirkland AMInstR.



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Fluid management: Time to take a proactive approach

Managing cooling and heating fluids is key if process efficiency is to be optimised and operating costs minimised. Hydratech, the UK's leading formulator of hybrid glycols and specialist heat transfer fluids provide a range of services to maximise thermal efficiency, minimise downtime and extend component life. Hydratech's suite of Fluid Management Services™ include:

Consultancy - application and selection

Heat transfer fluid characteristics have a direct and long-lasting impact on system performance, production output, energy consumption, maintenance and down-time. Selecting an appropriate formulation, mixing ratio and compatible inhibitor package can be a daunting task for those not familiar with fluid thermodynamics, toxicity, corrosion chemistry and aerobic bacteria.

Hydratech have been assisting customers with fluid selection for 25 years, utilising over 100 years combined experience in all aspects of cooling and heating applications.

Pre & Post Commission Conditioning

It is not uncommon for the maintenance of cooling systems to be overlooked, leading to potential issues, including; advanced corrosion, biological fouling and sediment formation. All of which will have a direct and negative impact on heat transfer, pumping performance and energy costs.

Ultimately, pipe-work corrosion can lead to failure, leaks and untimely shut-down. Prior to any remedial repairs it is likely the cooling and/or heating fluid will be drained down and disposed of.

New fluid is needed to recommission the associated system. However, due to system contamination by corrosion, algae, sediment etc. any new fluid will also become contaminated, so it is recommended (necessary) that such systems are reconditioned prior to recommissioning.

Hydratech are very familiar with the requirements of BSRIA BG/29 (Pre-commission Cleaning of Pipework Systems guidance) and manufacture a range of cleansing and conditioning chemicals to help contractors and end-users meet those requirements.

Fluid Monitoring Program

Selecting an application-specific heat transfer fluid or water treatment package is the first important step in maximising system performance. It confirms an awareness of individual system design, thermal and pumping demands, and how energy efficiency (CoP) can vary according to fluid characteristics.

To sustain specified thermal and pumping performance over extended periods of time, the fluid, pipework, heat-exchangers, pumps etc. should remain in 'as new' condition, there should be no degradation of the mechanical or fluid components. This can be achieved provided;



- Corrosion resistant and compatible metals of construction have been selected.
- The system has been properly pre-commission cleaned and preferably passivated prior to filling.
- A compatible (synergistic) long-life inhibitor formulation has been added to the heat transfer fluid.
- Air (oxygen) ingress has been minimised and preferably eliminated.

Hydratech recommend periodic analysis of the heat transfer fluid, to verify long-term condition of the fluid and system.

How it works: Customers are supplied with pre-packaged and labelled bottles for collecting and despatching of samples to Hydratech's lab for periodic analysis. A report is provided for each fluid sample analysed - containing confirmation that the concentration, pH, total dissolved solids, turbidity etc. of the fluids are within acceptable limits. If any results are outside these limits, it may be recommended that a more in-depth test is carried out.

Fluid Maintenance

Each sample tested through the Fluid Monitoring Program™ has an associated report, which details all the relevant results together with any recommended actions. It is often possible to correct corrosion, scale and biological issues by adding appropriate doses of booster inhibitor(s). Hydratech manufacture many different inhibitor formulations for regular or shot dosing of closed loop cooling systems.



For more information on Hydratech's Fluid Management Services™, or their range of hybrid glycols and heat transfer fluids contact:

t. 01792 586800
e. info@hydratech.co.uk
w. www.hydratech.co.uk

Cooling champions – leave a legacy

With World Refrigeration Day just around the corner, founder Steve Gill explains why it is essential to leave a legacy of attracting new people into the RACHP industry.

Who researches how food can be preserved from its source to the table and how vaccines and medicines are shipped worldwide? Who enables data centres to function? How can climate change be stabilised while not sacrificing modern convenience? Who safely manages the processes that will allow air to be cooled? Who considers the problem of how the quality of indoor air be improved and disease transmission prevented?

The people, ‘cooling champions’, and the careers that make modern life possible will take centre stage for this year’s World Refrigeration Day. The aim is to put a face and human story to our industry and what we do as an introduction to lifting the lid on our hidden industry.

It is estimated that over 15 million of us work within refrigeration, air conditioning, and heat pump sectors worldwide. I have been told that we are a small industry in which everyone knows everyone else, and at times it certainly does feel like that, but 15 million is a considerable number. Even with my extensive network, I can’t claim to know even a fraction of these people. Who are they, where are they, and what do they do?

One of the aims of this year’s campaign is to put a face, or as many faces as we can, to these ‘cooling champions’ by

inviting everyone to submit their story to us via the WRD website. How many will we reach? A hundred, a thousand, a million? It will be interesting to see this community, won’t it?

Change the message to suit the audience

As hopefully you will know by now, World Refrigeration Day aims to raise awareness and understanding to the public of the significant role that the refrigeration, air conditioning and heat pump industry and its technology play in modern life and society. To do this, we must change the language that we are using to suit the intended audience. This, for many, is a challenge.

How do you explain to a child or young person what we do? Do we praise the complexity but hidden beauty of a psychrometric chart? Do we talk about the chemical composition and performance benefits of different refrigerants? If you do, I can guess the reaction. We need to adjust what we say to make it accessible to these young people and their influencers – parents and teachers – to understand. Like many other things in life, this becomes easier to do if we know how, and in that lies the problem. We, as an industry, complain on the one hand

Steve Gill



that there are not enough people entering our industry. Still, on the other hand, we do not equip ourselves with the tools to enable us to reach out in a way that is appealing to them.

This problem of communication style and content is not restricted to the UK. It is a global issue faced by our industry colleagues around the world. World Refrigeration Day has brought together the international community to seek to address these issues and share successes. If you have suggestions or materials that work already, please share them with us, or please consider what we can do and share your suggestions. Together we can create a library of resources for all to use not just on June 26 but all year round.

World Refrigeration Fortnight!

This year, June 26 – World Refrigeration Day – falls on a Saturday. This allows us to extend the celebrations to one week on either side of that weekend so that we have two weeks to spread events across. The initial WRD in 2019 was an immediate success, with physical events taking place in at least 153 countries around the world. Since then, the world has changed due to the pandemic, with last year’s occasion being mainly virtual. This year will probably be a mix but still predominantly an online affair. Spreading WRD across two weeks will help avoid the online congestion of everyone cramming their events into the same day.

If you are planning an event, physical or virtual, do let us know. WRD is your day – show your face and join the global community telling the world what we do. www.worldrefrigerationday.org



Preserving the taste

Peter Woods, technical sales director, Wolseley Climate's refrigeration division

Peter Woods, technical sales director for Wolseley Climate's refrigeration division, looks at the challenges of process cooling and suggests ways contractors can get the most out of equipment.

The UK loves convenience foods, and the statistics show it. In 2019, chilled products had a sales value of c£1.6 billion, with frozen food at around £700 million. That's a lot of food. It also represents a significant investment in the equipment needed to make sure food reaches us on time and, more importantly, safely. The food industry is one of the most heavily regulated in this respect, and so it makes sense to review equipment and make sure it's primed to work effectively and efficiently.

The physics of industrial blast freezing and chilling is complex. For food to be chilled or frozen, heat needs to be drawn away from the surface area and the core of the product at the right speed and over a specific period to preserve the quality and keep the product within its cold chain parameters. Getting it wrong can have serious consequences impacting the product quality or potentially resulting in product loss.

From chilled abattoirs to production lines, every application is different, and there's no 'one size fits all' solution. For Wolseley Climate's technical engineers, most customers' projects generally begin with a specific objective: for example, to reduce temperatures from 'A' to 'B' over 'X' number of hours in batches of 'Y'. Very often, it's the product that dictates the cooling cycle time. In products like beef, fast freezing prevents the build-up of large ice crystals that spoil the meat. In other cases, it's the production capacity cycle that needs to be considered.

Calculating load

The first objective of any project is to determine the extraction load, and this is calculated using Wolseley Climate's in-house selection programs. We use the specific heat of the product above and below freezing and the latent heat of fusion, the entering temperature, leaving



temperature and cycle time to calculate the kW duty required.

When a cooling process starts, the product will rapidly give up heat from its surface. The amount of heat extraction will reduce as the surface temperature becomes cool, while the core of the product will always give up its heat more slowly depending on its depth or density. This means the air temperature in batch cooling or freezing needs to be between 5 and 6K below the desired temperature of the product to allow it to give up its core heat effectively.

The initial duty surge in batch cooling must be considered in the system's design to prevent compressors from operating outside of their envelope. Features such as suction pressure regulators, maximum operating pressure valves or electronic expansion valves, suction accumulators and compressor unloading can be incorporated in the design to ensure reliable operation and long service life.

Lack of flow

Another key consideration that is often overlooked is to define the correct airflow path through the product and back to the evaporator. High air velocities are required to push the air through the product, and the product needs to be stacked to allow the air to pass through. Too close and the resistance will prevent the air from reaching all areas, and uneven cooling will occur. The air path should pass through the product and then circle back from the floor into the cooler. Obstructions and a poor air path will lead to short cycling of the fan discharge air directly back into



A2L refrigerant pack



the evaporator, increasing cycle times and energy cost, as well as uneven cooling.

From a technical point of view, the space itself is the single most important factor. Left to its own devices, air will follow the path of least resistance, and so it needs to be actively managed to ensure the correct path. It's good practice to take velocity readings throughout the room to identify any dead air spots or return air paths. Without this detailed insight, it becomes a question of guesswork. It's common to see equipment not working efficiently due to poor room design. A simple baffle may be all that's needed to improve the airflow path and make it work properly.

Component selection

Critically, it's important to manage superheats and control suction return temperatures and pressures into the compressor. This calls for a maximum opening pressure device on the evaporator, which can be a suction pressure regulator, a MOP valve or an electronic expansion valve, all of which will efficiently control superheat gain on the evaporator and therefore reduce strain on the condensing unit. This is the key to safe and efficient operation.

The dimensions and materials of the packaging, and even the nature of the product itself, also play a part in the specification process. So, for example, products or packaging which is especially dense will make it harder to get cold air through it to extract heat. Similarly, certain foodstuffs, including cheese, fish and offal, give off ammonia which will quickly degrade aluminium rendering it useless. (This is especially the case in maggot farms incidentally, a surprisingly big sector dedicated to UK anglers). The choice here is to accept the damage and regularly replace the evaporator or invest in a more expensive – but durable – solution. This might include an electro-tinned copper coil or high grade (316) stainless steel evaporator with 40 per cent copper mix to accommodate heat transfer rates. The upfront costs may be higher, but the long-term return on investment balances this – a conversation worth having when specifying solutions.

Refrigerant choice

Another key consideration relates to F-gas legislation and the use of refrigerants which is forcing users to seek alternatives,

including CO₂. Because of the higher associated costs with maintaining the CO₂ plant, we find that most users prefer switching from high to lower GWP gases such as R448/449 and are starting to look at A2L options. These gases are readily available and offer good efficiency, so they represent the best value solution. But as with anything, it's vital to undertake any conversions in line with the manufacturer's instructions, not just to validate warranties and prolong service life but also to ensure food safety. If the system runs outside its envelope, the result could be failed equipment and failure to meet stringent food regulations.

Finally, there's the question of regular and ongoing maintenance. This should include coil cleaning, leak monitoring and an annual check on the evaporator temperature difference to ensure superheats are correctly set. For maximum efficiency, pro-activity is strongly recommended here.

While there are understandably budget pressures on food manufacturers which influence equipment and maintenance, the consequences of failure are also significant. With so little margin for error, it's important to get things exactly right. 🏠



The Panasonic system inside the showroom

Driving up comfort for car showroom

HVAC solution from Panasonic transforms heating and cooling for retailer.

Panasonic distributor AMP Air has worked with CSD Air Conditioning to deliver an energy-efficient HVAC solution for independent car retailer Motorpoint in Chingford, north east London.

Motorpoint had been struggling to maintain a comfortable temperature year-round in its showroom, finding the store either too hot in summer or too expensive to heat during the winter months.

AMP was appointed and drew up plans for the project, working with Motorpoint to produce a bespoke design featuring a triple split cassette system with nanoe X installed, which would work in tandem with a single split 7 kW system in heating and cooling the building.

As well as customer comfort, health and safety were equally important when it came to choosing the nanoe X system. The technology collects invisible moisture in the air and applies a high voltage to produce “hydroxyl radicals contained in water”. Hydroxyl radicals inhibit the growth of pollutants such as certain bacteria and viruses.

Motorpoint approved the project and the go-ahead was given for installation to begin ahead of the new-look store re-opening.

‘Huge difference’

CSD Air Conditioning was brought in for the installation work by contractor Frank Adams and got to work on fitting the new system for the showroom. Carlo Scaramuzza, the owner of CSD, said: “We had no issues at all with AMP Air during the project; everything went according to plan and was delivered on time. We were impressed by the quality of service and have no concerns whatsoever about the quality of the systems installed – everything was fully operational and had no technical faults. It ended up being one of the smoothest projects we have ever delivered – everything went according to plan during installation without a hitch.”

“Thanks to the Panasonic products provided by AMP, the finish on the project looks immaculate.”

Robert Jones, general manager of Motorpoint Chingford, said: “We are extremely grateful to AMP Air and CSD Air Conditioning for their recent installation in our showroom. The new HVAC system has made a huge difference to our working environment and ensures that not only the team but also our customers, remain comfortable at all times.”

www.aircon.panasonic.eu/



The installation has improved comfort for customers and staff



The new-look Motorpoint showroom in Chingford

More evidence of nanoe X protection

Panasonic has announced further details of how its air purifying nanoe X technology is helping to improve protection and inhibit the growth of certain viruses – including SARS CoV-2 – and driving European air conditioning sales.

An event in Germany brought together executives associated with the technology, including Akihito Hirohata from the Panasonic nanoe X R&D team, plus Bruno Boisson and Luck Ty from viral research organisation Texcell.

Both virus specialists explained how the nanoe X device had not only removed the novel Coronavirus from a gauze in a 45l box, but also that using Panasonic's Etherea air conditioning unit in a 6.7m³ room-sized testing chamber, they tested and proved that the technology inhibited the new Coronavirus in 8 hours by more than 90 per cent and in 24 hours by 99.78 per cent.

Uwe Sprengart from Panasonic Technical explained: "One of the key reasons that nanoe X is so effective is that the particles

work within the air, but are also effective on surfaces and within fabrics. You just have to search for 'hydroxyl radicals, detergent of the atmosphere' and you will see several reputable sources, including NASA, referencing this.

"Air purification occurs outside of the air conditioning unit by actively propelling hydroxyl radicals into the room. This inhibits proactively certain bacteria, viruses and smells where they occur and doesn't fight them only when being sucked into the aircon unit itself.

"This is a different method compared to devices that neutralise air passing through the devices, and which require periodic filter cleaning to maintain the claimed properties. The fact that these particles



can then land on surfaces and penetrate textiles to reduce the odours, and inhibit bacteria, mould and certain viruses, is a game changer."

Enrique Vilamitjana, managing director, Panasonic Europe, spoke about some of the new business opportunities nanoe X is driving. He said that it is a key element in air conditioning sales increasing by almost 50 per cent in the models with this technology, and he sees this trend continuing in both residential and commercial markets and across all the main regions in Europe.

Paul Aitchinson, product manager and technical expert for Panasonic, outlined the expansion of the company's commercial product portfolio. He said: "nanoe X technology provides us with endless opportunities for different rooms and spaces, for a cleaner environment. We want our customers to challenge us with different uses and potential applications, where we can investigate, test and optimise. The future is looking very bright for nanoe X technology." 📧



WindFree wall mount with
PM1.0 air filtration



Wellbeing from home

Andrew Faulkner, product manager at Samsung Climate Solutions, considers the implications for health and wellbeing as more employees spend at least some of their week working from home.

There is a lot of speculation about the future of the 'office' as the main place of work in the future. In general, there's a feeling that quite a lot of people want to be able to get back to face-to-face meetings, but with the option to continue working from home for some of the week.

While internet connectivity and video conferencing software support that option for many workers, there are aspects of the office that are more difficult to replicate at home. Some of these impact health and wellbeing, two significant factors for any home worker and their employer to consider.

One of the benefits of an office working environment is that it can be planned, designed and operated to provide a safe and comfortable space for occupants. In the past, the notion of 'health' in buildings focused on physical safety issues, such as fire regulations. Over time, we have seen a new interest in energy efficiency and carbon reduction.

More recently, however, there is growing interest from clients, designers and operators in buildings as spaces that support human comfort, productivity and wellbeing. In May 2020, the Chartered Institute for Building Services Engineering (CIBSE) published

TM40: 2020 Health and wellbeing in building services. This points to the growing awareness of and evidence for links between buildings and occupant health.

From a building services point of view, this means the provision of ventilation, cooling and heating. As we are increasingly aware, the air we breathe impacts significantly on our health. Office ventilation systems are designed to support good indoor air quality (IAQ) and to protect occupants from outdoor pollutants – and those created indoors too.

The home office environment

But what about the home office environment? Can we provide a similar standard of climate control and indoor air quality at home as we do in an office space?

IAQ is an important issue because if people are spending more time working from home, they are less likely to be in a space with ventilation designed for health and comfort. If we're honest, the average 'home office' is likely to be a spare bedroom or the dining room table.

The new home office may well be a converted garage or even a specially-constructed office 'pod'. Garden office



Andrew Faulkner, product manager at
Samsung Climate Solutions

construction companies have found themselves very busy in the past year, and research from the Home Builders Federation¹ shows that almost half of people would prioritise some kind of home office space when looking for a new property.

But these outside constructions are not necessarily built with ventilation and cooling in mind. And while we like to think of our homes as comfortable and clean, they are often a source of pollutants that have a negative impact on our health. Indoor pollutants can be created by cleaning products, moisture in the air (from bathrooms or kitchens), or cooking activities.

The latter is one source of particulate matter (PM) which is air pollution produced by a combination of suspended solid and liquid particles in the air. It's present indoors and outside.

Particulate matter (PM)

PM is measured according to particulate size (in microns). Leading health organisations classify PM10, PM2.5 and PM1.0 as harmful for humans. This means that their inhalation is linked to conditions such as asthma and lung cancer, as well as heart disease and cancer. PM1.0 particles can be inhaled to the deepest area of the lungs and then enter the bloodstream, damaging arteries and tissues.

While opening windows can help dilute indoor particulate matter, the benefits of this simple approach are very dependent on your location. An inner city home is likely to face issues of outdoor pollution entering the home in this way. And for asthma and allergy sufferers, even a rural location can be surrounded by airborne irritants, such as pollen.

Removing particulate matter is therefore key to health in our homes. While the installation of whole-house ventilation systems is very challenging in an existing

home, it is possible to apply air filtration. This can play a very important role in maintaining healthy indoor air quality by eliminating potentially harmful PM, and the technology to achieve this in the domestic market is available today.

One example is the Samsung WindFree TM Pure 1.0. This is a wall-mounted air conditioner for homes that fits into a small space and can be installed quickly. It has a built-in PM1.0 filter, which can remove particles as small as 0.3 microns. It also sterilises micro-organisms using an electrostatic charger, providing cleaner and purer air in homes. The WindFree TM Pure has a sensor that measures the presence of PM10, PM2.5 and PM1.0 in the indoor air and can clean itself with an AI-enabled function.

The unit's self-cleaning function is known as 'Freeze Wash'. The heat exchanger within the unit is cooled to -15°C to coat it with frost. When it enters 'defrost' mode, the melting ice removes certain types of bacteria within the heat exchanger.


Smart controls

Climate control at home is another issue to consider. As the UK faces hotter summers, home workers will undoubtedly miss the comforts of cooling that's often

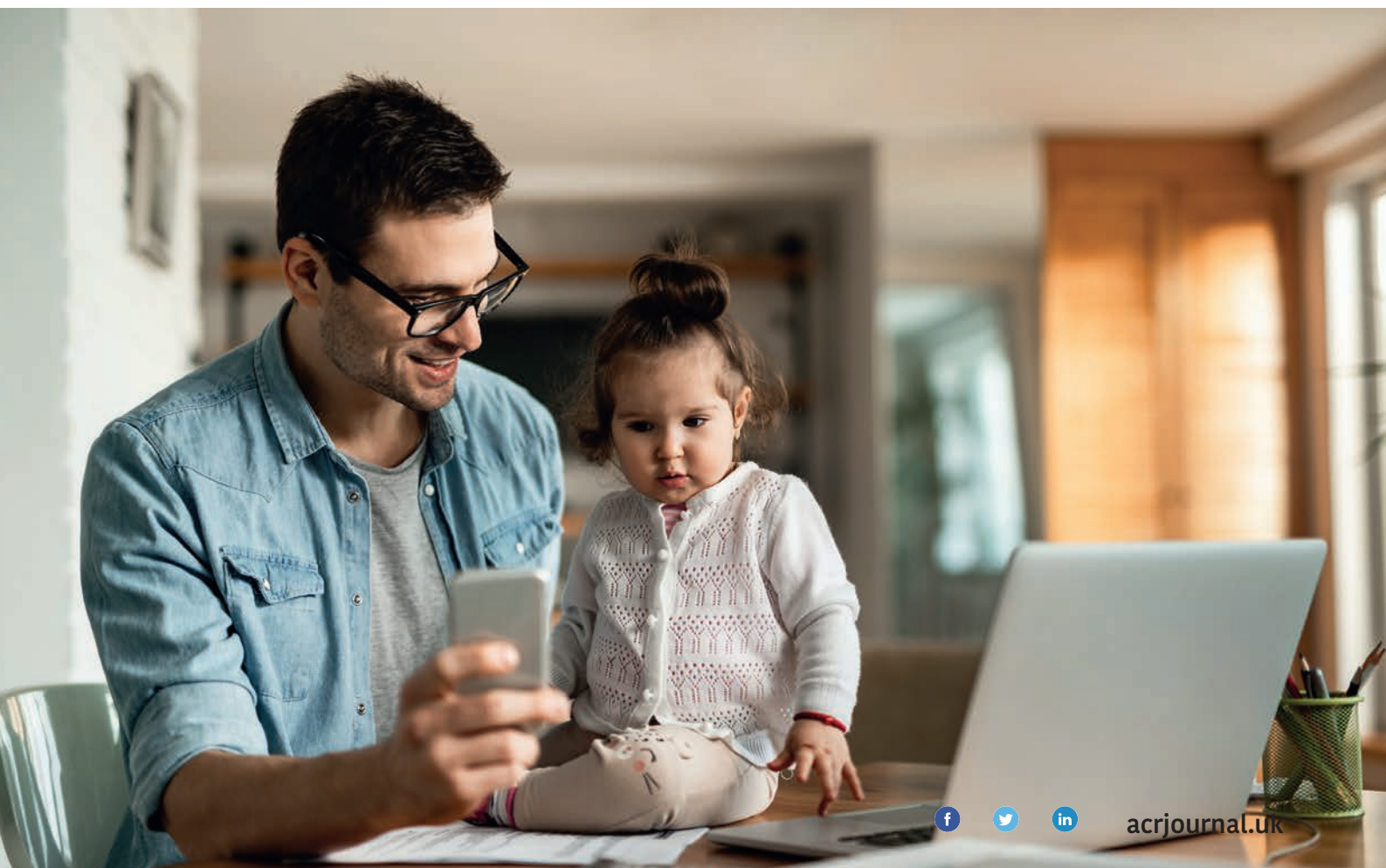
found in our offices. And overheating at home can be just as damaging to health as pollution.

Desk fans seem like a simple solution to alleviate the problems of an overheated hot home or garden office space. However, they can exacerbate the problem of IAQ by stirring up more particulates and dust. In addition, they may move air, but they don't cool it.

Home air conditioning is now a more realistic option for many householders. The Samsung WindFree TM Pure includes the unique Samsung WindFree TM technology that uses thousands of micro-holes to disperse fresh air uniformly without unpleasant blasts of cold air.

As many more people are now offered the option to work from home more frequently than ever before, we need to remember that well-designed office buildings support occupant health and comfort. But it is now possible to offer similar air filtration and climate control in the domestic environment affordably and efficiently. 

1. <https://www.thisismoney.co.uk/money/mortgageshome/article-8482785/Enough-space-home-office-selling-point-house-hunters.html>



Bubble and dew: what's the point

Mark Denford of the Grimsby Institute explains why it's important to understand refrigerant properties and correctly apply system diagnostics.

The fundamental properties of refrigerants are overlooked by a lot of commissioning and diagnostic engineers. Superheat and subcooling values are essential to any refrigeration or air conditioning engineer as they generate a fine line between system reliability and effective, efficient operation. Too little suction superheat and there is a risk of liquid refrigerant entering a compressor, too much and system capacity and efficiency are reduced. Reduced refrigerant subcooling lowers the amount of energy that can be absorbed in the evaporator; too much can cause liquid to pass through the evaporator and enter the compressor along with reduced condenser capacity.

Azeotropic refrigerants are composed of a single refrigerant and only have only one boiling point. This means that it will condense and evaporate at the same temperature at any given pressure. Zeotropic refrigerants, however, have

more than one boiling point; this is due to the refrigerant's more complex chemical formula or composition. Let's take, for example, R452A, a low global warming potential alternative for R404A and R507, and used in low-temperature refrigeration. It's composition is 11 per cent R32, 59 per cent R125, 30 per cent R1234yf. These three refrigerants all have different properties for evaporating and condensing temperatures at any given pressure, so a thorough understanding of the bubble point and the dew point is important for system commissioning and diagnostics.

Condensing

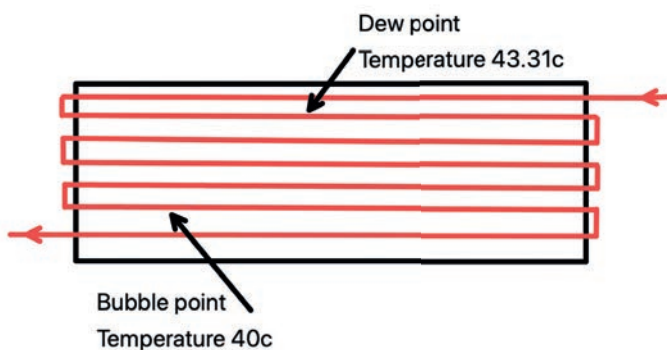
R452A operating at a discharge pressure of 18.06 Barg (Bar Gauge) has a dew point temperature of 43.31°C, and a bubble point of 40°C. When the refrigerant is at the dew point temperature, the first part of the refrigerant composition starts to condense and the first liquid droplet forms



Mark Denford, senior trainer consultant

at 43.31°C. As further energy is rejected, the refrigerant composition further condenses until all the refrigerant has turned to liquid - this is the bubble point, a term used to describe the moment when the last bubble of the vapour condenses into liquid and would occur when the refrigerant temperature reaches 40°C.

When calculating system sub-cooling values, the bubble point temperature on the discharge pressure side of the condenser is used, this temperature is subtracted away from the condenser outlet liquid line temperature. Further removal of energy from this point will subcool the refrigerant liquid.



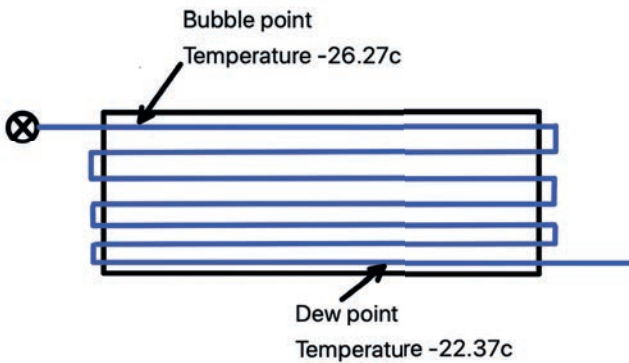
Bubble point Temperature



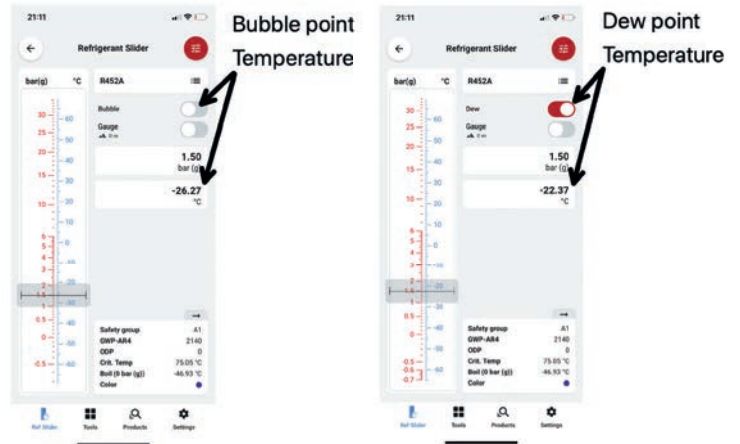
Dew point Temperature

Refrigerant flow through a condenser, illustrating the points at which R452A refrigerant starts to condense and at which it is saturated liquid.

Comparator to show refrigerant properties of a zeotropic refrigerant in a condenser



Refrigerant flow through an evaporator, illustrating the points at which R452A refrigerant starts to evaporate and at which it is completely vapour



Comparator to show refrigerant properties of a zeotropic refrigerant in an evaporator

Evaporating

R452A, operating with suction pressure of 1.5 barg, has a bubble point temperature of -26.27°C and a dew point temperature of -22.37°C . This means the first part of the refrigerant composition starts to evaporate at -26.27°C . The first vapour bubble forms at -26.27°C , and as it continues to absorb energy, the refrigerant evaporates until the last composition of the liquid has turned to vapour. This moment is called the dew point - a term used to describe when the last droplet of the liquid refrigerant evaporates into vapour, and this is when the refrigerant temperature reaches -22.37°C . Any further absorption of energy will cause the vapour to become superheated.

When calculating superheat values, we subtract the dew point temperature at the evaporator outlet pressure from the evaporator outlet suction line temperature.

Glide

Zeotropic refrigerants have a mixture of refrigerants that make up their composition, so it is important to know that the difference between a refrigerant bubble and dew point temperature is

referred to as glide. In the evaporator, the glide is the difference between the bubble point (the temperature at which liquid starts to evaporate) and the dew point (the point in which all liquid has turned to vapour). In the case above, the glide would be 3.9 Kelvin (K) ($-26.27^{\circ}\text{C} - -22.37^{\circ}\text{C}$) and would result in an average evaporating temperature of -24.32°C ; halfway between bubble and dew point temperatures. Regarding the condenser, the glide is still the difference between bubble and dewpoint.

Comparator

Let's look at this on a refrigerant comparator, traditionally a handheld slider, but now much easier to use via apps such as the Danfoss Refrigerant Slider. If a system operates with suction pressure of 1.5 Barg, as it enters the evaporator, it starts to evaporate at a bubble point temperature of -26.27°C . Changing over to the dew point at the same system pressure, the last part of the refrigerant mixture liquid is evaporating at -22.37°C ; this is the dew point.

It is important to remember that when we are calculating our superheat value at

this point, it is our dew point temperature that we need to subtract from our evaporator outlet suction line temperature. The difference between the bubble point and dew point at this moment is our temperature glide.

With regards to the condenser side of our system, operating with a discharge pressure of 18.06 barg the bubble point is 40°C , and our dew point is 43.31°C . Therefore, as the refrigerant enters the condenser, the first part of our refrigerant starts to condense (dew point). As further energy is rejected, the refrigerant continues to condense, and the bubble point is reached - the point at which the last vapour bubble condenses. It is important to remember that when we calculate our subcool value, our bubble point temperature is subtracted from our condenser outlet liquid line temperature.

Only by having a firm understanding of the properties of the refrigerants we use can engineers truly commission and diagnose the systems on which they are working. Automated system diagnostics are a great feature to bridge the skills gap that we currently have, but nothing can replace dedicated fundamental training. 📖

Cold Chain Federation steers temperature-controlled logistics in right direction

The Cold Chain Federation is the only trade association dedicated to the UK's temperature-controlled logistics industry. Tom Southall, policy director, explains what services are available to members.



The Cold Chain Federation can trace its history back to its formation in 1911. It currently has approximately 150 members that consist of businesses across the cold chain, including those involved in farming, manufacture, third-party logistics, foodservice and retail. Our members operate approximately 500 cold stores and 30,000 temperature-controlled vehicles across the UK.

The cold chain is critical to the UK economy, safeguarding the nation's chilled and frozen supply chain and maintaining the security, quality and availability of food, pharmaceuticals, and other produce. Together with its members, the CFF represent a powerful voice to policymakers on issues affecting the cold chain, such as Brexit, supply chain disruption, air quality emissions from refrigerated transport and perhaps the most existential risk facing our future - net zero.

The Net Zero Project

The cold chain must continue to grow to meet the demands of society whilst also rising to the challenge of decarbonising and eliminating harmful air quality emissions from our buildings and vehicles. This is a challenge that can only be overcome by working across the supply chain to identify and implement policies and investments to bring about real change. Last year CCF launched the 'Net Zero Project' – a long-term commitment to support our members in adjusting to expected challenges on the cold chain from the Government's pledge to have a net zero economy by 2050. Further publications expected in 2021 include roadmaps for how the industry can decarbonise our temperature-controlled buildings and vehicles.

Member benefits

The Cold Chain Federation also offers a suite of other benefits to members, including:

- Cold Chain Compliance – Our range of definitive 'assured advice' is the only place to get guidance focusing solely on the specific key Health and Safety and Food Safety risks involved with operating in the cold.
 - Cold Chain Connect – A regular, free-to-access webinar-based learning resource covering a range of regulatory, technology and industry topics.
 - Cold Chain Energy – Advice to help businesses manage energy more effectively, including achieving energy efficiency as part of their Climate Change Agreement target, which the Federation administers. Support includes our Energy Efficiency in Cold Stores Guide, specialised events and data support to help businesses understand their progress.
 - Cold Chain Insight – Information on the latest in cold chain academic research, industry surveys and publications produced in collaboration with selected partners.
- Events – The CCF organise business events, including conferences, socials

like our golf day and Expert Groups for members to come together and share expertise on issues such as compliance, warehousing and operating temperature-controlled fleets.

Putting forward opinion

The Cold Chain Federation is a proud member of ACRIB, which provides a professional forum to contribute and learn from other members on technical refrigeration matters such as the F-Gas phase out, building standards for cold stores, improving skills and qualifications in the RACHP industry and discuss other, often complex, refrigeration compliance issues. This, in turn, allows us to provide a better service to our members on these topics and support ACRIB by giving a view from the cold chain industry.

To find out more about the Cold Chain Federation, visit:

<https://www.coldchainfederation.org.uk/>,

or contact membership director, Sharon Mughal: sharon@coldchainfed.org.uk / 07717 014072

To find out more about the member organisations and the work of ACRIB, visit <https://acrib.org.uk/>

The Air Conditioning and Refrigeration Industry Board (ACRIB) is a central forum for trade associations and professional bodies from all sectors and interests in or served by the RACHP industry. Established for over 20 years, ACRIB is involved in supporting the UK Government in implementing F-Gas legislation, providing a balanced input to policymakers and legislators and responding to legislative consultations and meeting with Government representatives while offering technical advice and industry guidance on good practice.



WOMEN IN THE ACR INDUSTRY



Linda McVittie, sales manager, J & E Hall

Tell us about your job

My job is to assess and calculate clients' cooling requirements, then design and propose the best solution. If I am successful with my technical proposal, I hand over the project to my contracting team to install and commission the turnkey project. The industries I encounter include food, beverage, pharmaceutical, building services and leisure. I have specialised in the design of ice rink refrigeration plant since the late 1990s. The projects I've been involved in include Murrayfield, Braehead, Aberdeen, Dundee, Kirkcaldy, Stirling, Lockerbie, twin rinks in Sheffield, Newcastle and North Ashfield.

As one of the handful of female pioneers trying to forge a path in a male-dominated environment, what were the key qualities you needed?

When I decided to embark on gaining

Linda McVittie, sales manager for J & E Hall in Scotland, explains what it's like to be a woman working in an industry dominated by men and how this has not stopped her from forging a successful career.

technical knowledge, initially, it was to improve my capabilities in my job role as a sales office administrator at Star Refrigeration.

Some people thought I had gone mad attempting to combine degree studies with having a husband, two young sons and a full-time job. Having been away from academia for nine years and only completed on-the-job learning about refrigeration for six years or so, thankfully, I didn't go full throttle into the Engineering Degree and CEng accreditation. I started by completing Refrigeration City & Guilds courses via distance learning.

At that time, I felt that, as a female, I needed this level of qualification to gain credibility in the refrigeration industry. I was meeting on site with engineering managers, and some would look over my shoulder and watch for the refrigeration engineer to appear – thinking it couldn't possibly be me. I am grateful to Star Refrigeration, especially Andy Pearson, who I worked alongside in technical sales, for their support and encouragement at the time.

In 1993 my Higher qualifications in maths and sciences, City & Guilds qualifications and on-the-job training gained me entry on to a four-year one-day plus one evening a week BSc degree course in Building Services Engineering at Glasgow Caledonian University. The course comprised a perfect mix of relevant subjects and designed for mature students. I was with a group of seven male classmates and really enjoyed my years at the university.

What advice can you give to a young woman starting now?

No matter where you start, access and learn about all the diverse areas of refrigeration, and if you need additional studies or training, don't be afraid to seek it out. It might not happen overnight, but you can eventually settle into a long and rewarding career in an area you enjoy. I am involved in the Women in Refrigeration, Air Conditioning, Heat Pump (RACHP) network, and this is one of its initiatives.

I see a tremendous increase in the support, encouragement, and opportunities available for young people to join the refrigeration industry. It's great to see J & E Hall taking on more new apprentices this year and continuing to support women in industry initiatives. Refrigeration was a very male-dominated industry, and there were no obvious opportunities for females when I first started my career unless you sought them yourself. I'm sure there will be a levelling out in the ratio of males to females in the not-too-distant future.

What are some of your career highlights?

Apart from working for great companies, meeting great people and completing some exciting projects throughout my career, I'd say:

- Achieving my degree in Building Services Engineering (BSc) at Glasgow Caledonian University and continuing to work and learn the remainder of the week and holidays as a sales technical engineer (1993 to 1997).



Coolair supports women in ACR



- Achieving Chartered Engineer status (CEng) through the Engineering Council after a technical appraisal and project submission (2004).
- Becoming a Member of the Institute of Refrigeration (IOR) (MInstR) (1998).
- Joining the Committee of the IOR Scottish Branch in 2001 and being part of a team that actively support the refrigeration industry in Scotland by providing training courses and seminars, social events and the ever-popular annual IOR Scottish dinner.
- Taking on the post of treasurer of the IOR Scottish Branch.
- Becoming the first female chairperson of the IOR Scottish Branch since its formation in 1975 (2007 to 2009).
- Being nominated for Fellow Membership of IOR (FInstR) (2009).
- Taking on the post of secretary of the IOR Scottish Branch.

What changes have you noted in your 38 years in the industry, and how do you see things evolving?

There have continuously been new things to learn and challenges to face. These range from refrigerant gas legislation and phase-outs to technical developments in equipment, components and control systems to increase plant efficiency, reduce energy usage and minimise the impact on the environment.

The future for refrigeration is in natural refrigerants such as ammonia, CO2 and, in applications where the use of these may not be feasible, the relatively new options of low GWP HFOs and HFO/HFC blends. It will always be a balancing act to achieve the most efficient, environmentally-friendly solution that meets current regulations and is within the client's budget for every application.

How challenging has the past year been?

Refrigeration is a relatively small, close-knit, specialist industry. Due to Covid-19 restrictions, it has been disappointing not to visit clients and sites, join workmates in the office and meet up with ex-colleagues, friends and acquaintances.

What are your hopes as you experience the late stages of your career?

In the autumn of my career, I want to share my knowledge and experiences with others. I'd also like to put my name to a few more refrigeration plant installations as I look back and see many of my previous installations still operating successfully or, if they are very old, now replaced for new ones.

When I eventually hang up my refrigeration, calculations, and design books, I'd like to think I will be remembered

as having worked hard and positively impacted the refrigeration industry. Through the things I have done in my work and IOR activities and encouraging people, both male and female, into the industry.

What do you enjoy doing when you are not working?

I enjoy family life and socialising. I am married and have two sons – one is employed in refrigeration – and two (soon to be three) young grandchildren. I enjoy activities such as swimming and yoga. I took up golf a few years ago, and I enjoy being out in the fresh air, the associated social events, the 19th hole – and hitting the ball sometimes! 🏌️



Linda presenting the IOR Scotland Kooltech Award at the IOR Scottish Branch Annual Dinner during her term as chairperson

MARTYN IVES, DISTRIBUTION SALES AND TECHNICAL DIRECTOR, FUJITSU GENERAL AIR CONDITIONING UK

Fujitsu General Air Conditioning UK has announced organisational changes that see **Martyn Ives** promoted to distribution sales and technical director. It is the first time in 20 years that a member of the UK team has been promoted to a director role within the organisation.

Ives commented: "I've been with Fujitsu for 26 years now and during that time I've built up my knowledge of not only the products but also the organisation. It's a fantastic company to



be involved with and I'm extremely honoured to work with a fantastic team. I hope to keep contributing to the high level of service that we all provide."

Further changes see James Richardson promoted to technical services manager and Stuart Eagleton will move focus to applied sales and key accounts. Giles Pratt is promoted to direct sales manager and Trevyn Holland promoted to direct sales support specialist. Andrew Wheeler, previously of Trane, Daikin Applied and formerly McQuay, has joined the applied consultant sales team adding to the team's experience in specifying and designing chillers and air handling units.

Ian Carroll, chief operating officer, Fujitsu General Air Conditioning UK, said: "This restructure allows us to channel our efforts in maintaining the growth that we have seen over recent years and the take up of our applied products. We are well known for our service levels and it is important that we are continuously improving. It is a marked achievement by all those involved that have earned promotion at all levels. In particular, Martyn's product knowledge, dedication and high work ethic is outstanding. I am proud to recognise his performance with his new role."

www.fujitsu-general.com/uk/

CRAIG MCLACHLAN, NATIONAL AIR CONDITIONING MANAGER, CMS

Gateshead-based facilities management company Commercial

Maintenance Services UK (CMS) has appointed **Craig Mclachlan** to lead its newly-launched air conditioning division.



CMS has always dealt with air conditioning as part of its range of business-critical services, including heating, plumbing, electricals, and refrigeration, and the launch of a dedicated team reflects the growth of the technology in Britain, as well as the importance of maintaining correct levels of ventilation.

Mclachlan has worked in the air conditioning sector since joining Demeva Refrigeration in 1991. He has since worked as an engineer with AKS Air Conditioning before joining Clover Technical Services as a facilities manager. Latterly he was air conditioning manager with Bmech Services.

Nic Smith, co-owner and managing director of CMS, said: "Most buildings, whether offices, shops, schools, leisure centres or warehouses, have commercial air conditioning to cool, heat and circulate the air to maintain correct quality and temperature. We also work with many hospitals, care homes, and hotels where the importance of air conditioning was highlighted during the pandemic as a way of reducing virus spread. Many existing clients are increasingly asking us to maintain their air conditioning and this move is about improving the quality and range of our service."

<https://cmsltd.co.uk/>

TIM SCOTT RETIRES FROM CONDAIR

Tim Scott, sales & marketing director at humidity control specialist Condair, is retiring after 32 years with the company.

Having originally joined the business, known then as JS Humidifiers, in 1988 in the sales department, he became service director 13 years later and then sales & marketing director in 2007.



Tim has seen the company expand its operations and become an integral part of the global Condair Group in 2014. He said: "I feel really privileged to have worked with such amazing people, including my direct colleagues and also the wider network of customers, suppliers and distributors. The company has always had a strong family feel, coming from its origins as an owner-operated organisation. A company ethos of fairness and equity, alongside taking pride in our performance and a definite focus on enjoyment and social fun, has meant the last 32 years have been an absolute pleasure."

Tony Fleming, Head of Condair's Northern Europe sales operations, said: "Tim has led the company in a fair-minded, positive and calm way that has made the business not only a successful organisation but a very nice place to work. We wish him every happiness and good fortune in his future endeavours and thank him for the dedicated contribution he has made to Condair."

www.condair.co.uk

(l-r) Andrew Robinson, Joe Nolan



JOE NOLAN, OPERATIONS DIRECTOR, EXI-TITE IRELAND

Specialist HVAC wholesaler, Exi-tite has appointed **Joe Nolan** as operations director to support the organisations recent expansion into the Republic of Ireland.

With over 35 years of experience in the design, manufacture and sales of air handling units, Nolan will oversee operations at the new office and warehouse premises located at Carlow. Nolan commented: "Exi-tite are a company that hold a good reputation for inhouse design services as well as project delivery. I'm looking forward in continuing to develop a close customer base in Ireland and use my experience in developing a committed knowledgeable team."

Andrew Robinson, founder of Exi-tite said: "Joe adds a valuable skillset to the company. We already operate in Ireland as well as the UK, but Joe's appointment signals our intention to expand further in the Irish market. He will oversee operations as we continue to design, supply and support, air conditioning, air handling units and ventilation systems."

www.exi-tite.com



ADRIAN LEWIS, CONSULTANT ACCOUNT MANAGER, DAIKIN

Weybridge based Daikin have appointed **Adrian Lewis** as consultant account manager – London South. With 14 years industry experience, most recently for LG Electronics with 10 years as application engineer, Lewis adds experience of technical design and application across an array of air conditioning and water heating disciplines.

Commenting, Lewis adds: "I'm excited to be starting this new venture with Daikin; a company with such a good reputation and long history. I'm sure that my system design experience and technical knowledge will allow me to work closely with customers on their projects to find solutions that meet their expectations.

"The team at Daikin are a hardworking, professional bunch of people, who have made me feel welcome and allowed me to settle in quickly. I'm looking forward to see what the future holds."

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



DR ANDREAS J SCHMID, GROUP CEO, SECOP

German-based commercial refrigeration specialist Secop has appointed **Dr Andreas J Schmid** as group chief executive officer. Secop designs and manufactures hermetic compressors and electronic controls for refrigeration solutions in stationary and mobile cooling

Dr Schmid has more than 20 years of international experience as

a board member, managing director, and manager with Funkwerk, Schaltbau and FCT.

He said: "The Secop brand is powerful, offers unique solutions, possesses leading knowledge and operational expertise with a tradition of high quality, innovation, application engineering, and customer service. I am proud to join the Secop team and look forward to working with the board of directors, employees, customers, and partners worldwide."

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

The Innovation Zone



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**If the resistor activates for 1hr every 6, the energy consumption will be:
with SCADR01: 210Wh
without SCADR01: 300Wh**

Hr	Power (W)
1	20
2	20
3	20
4	20
5	20
6	200
7	20
8	20

DELIVERING ENERGY AND MONETARY SAVINGS

The EsseCI SCADR01 is a patented PTC cartridge resistor that reduces the energy consumption of refrigeration units by 25-30 per cent compared with traditional cartridge resistor systems used to evaporate defrost water in refrigerated counters.

This intelligent device is focused on saving energy consumption, as its adaptive capacity means it only activates based on the presence of water in the condensate pan, thus greatly reducing the energy consumption when the pan is empty.

The SCADR01 is available in two different versions:

- A stand-alone space-saving controller, targeted at OEMs of PTC cartridge resistors, which can also be retrospectively installed into all types of refrigerated counters with a condensate pan using a PTC cartridge resistor.
- In an EsseCI electronic thermostat with a standard 32 x 74mm case for OEMs of refrigerated counters, which adds the function of a PTC cartridge resistor control to the standard outputs of compressor, defrost and fan, all in one device and ideal for incorporation in new OEM refrigerated counter applications.

Both versions give an immediate reduction in wasted energy, cost savings to the end user and a greater respect for the environment.

For more information on the EsseCI SCADR01 products and the complete product range, contact Interactive Components Ltd.

e-mail: info@icctd.uk

Tel: 0845 521 3605 / 07836 694463

Or visit: <http://www.esseci.com/en/> and click the SCADR01 box.



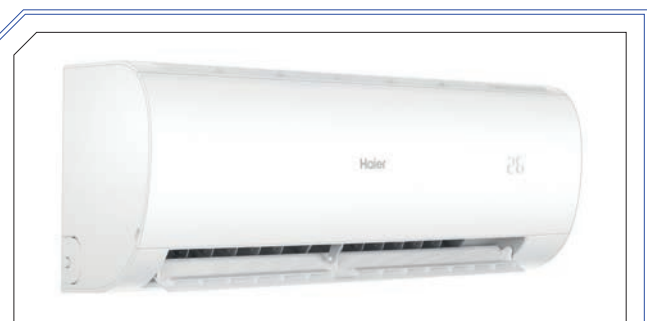
TRANE UPGRADES FLEX20 RANGE

Trane has announced the latest upgrades in its Flex20 range of scroll water-cooled chillers and water source heat pumps.

The Flex20 units, designed to provide year-round comfort and process cooling and/or heating efficiency within a small footprint, are now available in up to 700kW of capacity from a single unit and feature the new Trane Symbio 800 controller for building automation and connectivity.

The compact, modular design offers scalability and flexibility of configuration allowing to combine up to six units to meet the building's capacity and performance requirements. With the increased capacity by the single Flex20 unit, building owners and facility managers can adapt their system's capacity to the changing heating and cooling demand throughout the lifespan of the building.

<https://www.trane.com/commercial/europe.html>



HAIER UNVEILS PEARL LINE-UP

Haier has launched a new range of air conditioning units which are said to offer greater protection against airborne health hazards. The Pearl units also feature self-clean technology and come with an in-built wi-fi module giving flexibility and control.

The Pearl range features Haier's newly-certified UVC Generator which has proven to be effective in inhibiting the Covid-19 virus with a 99.998 per cent efficiency. The UVC Generator is a small device installed on the evaporator inside the indoor unit. It generates UVC rays near the air inlet when the function is turned on which instantly inhibits the airborne hazards when the air passes through the area exposed to UVC rays, delivering healthy air to the user.

Haier HVAC Solutions European general manager Bob Cowlard said: "The Pearl range provides the ultimate comfort for your home and office, and it looks superb. Haier understands how important clean air is to our health. The Pearl range includes new market-leading technology that can protect against hazards in the air."

<https://www.haierhvac.eu/en>

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 robyn.teague@warnersgroup.co.uk



Aermec NMSI hybrid chiller



Aermec UK MD Paul Lawrence

AERMEC EXTENDS CUSTOMER WARRANTIES

As part of a major service initiative, Aermec is now providing all UK customers, including Northern Ireland, with a free two-year warranty as opposed to a standard one-year warranty.

Aermec UK managing director Paul Lawrence said: "Aermec doesn't just sell HVAC systems, we build relationships. Our two-year warranty provides peace of mind, convenience and customers can be assured they have invested in reliable products backed up with an outstanding warranty scheme from a company they can trust."

The two-year warranty will be applicable from the date of delivery to site or 18 months from commissioning. Longer warranties – up to five years – can also be provided, conditional on an Aermec PPM package being in place.

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



PANASONIC EXPANDS VRF OFFER

Panasonic Heating & Cooling Solutions is expanding its wide range of VRF products with the introduction of its new R32 Mini VRF ECOi LZ Series.

The new line-up includes five new compact outdoor units (4, 5, 6, 8 and 10 HP) and a wide choice of ceiling-mounted or wall-mounted units, as well as adaptive duct type units for vertical or horizontal installations, providing capacities from 1.5 kW to 16 kW.

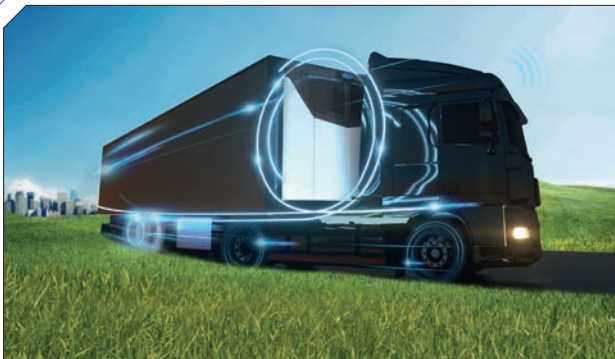
The R32 Mini VRF ECOi LZ offers five outdoor condensing units together with the most flexible range of connectable R32 VRF indoor units, including various units incorporating nanoe X technology.

It uses R32 refrigerant that efficiently carries energy, whilst reducing environmental impact with an improved SEER/SCOP. The extended operating range allows for heating down to -20°C and cooling up to 52°C^[1]. The all-new 8 HP (22.4 kW) and 10 HP (28 kW) units are impressively quiet, and the entire range has an increased capacity ratio of 150 per cent^[2].

[1] Compared to Panasonic's original Mini VRF of 46°C

[2] Compared to Panasonic's original Mini VRF of 130%

aircon.panasonic.eu
www.armacell.co.uk



CARRIER TRANSICOLD LAUNCHES LYNX

Carrier Transcold has launched its Lynx Fleet solution for over-the-road refrigeration transporters in Europe. It applies advanced IoT, machine learning and analytics technology to connect the cold chain in the cloud, automate key processes and deliver real-time visibility and insights throughout the cargo's journey.

The suite of Lynx tools provides Carrier customers with enhanced visibility, increased connectivity and actionable intelligence across their cold chain operations to improve outcomes for temperature-sensitive cargo, including food, medicine and vaccines.

The Lynx digital solution is part of Carrier's Healthy, Safe, Sustainable Cold Chain Program to preserve and protect the supply of food, medicine and vaccines.

Carrier.com/Lynx



AIR PURIFICATION WITH PLASMA QUAD CONNECT

Mitsubishi Electric has launched a bolt-on air purifier said to be able to neutralise six key indoor pollutants, as well as inhibit 99.8 per cent of SARS-CoV-2.

The Plasma Quad Connect can be added to Mitsubishi Electric's air conditioning for both new and existing indoor units across the M Series, Mr Slim and City Multi ranges. It works like an electrical curtain to catch and neutralise even microscopic particles in the air, to significantly improve indoor air quality.

The technology has been independently tested against SARS-CoV-2 by the Microbial Testing Laboratory, Japan Textile Quality and Technology Centre in Kobe, Japan. Plasma Quad Connect has also been found to be effective against bacteria, dust, viruses, mould and allergens such as pollen, in addition to microscopic particles down to PM2.5.

<https://les.mitsubishielectric.co.uk/indoor-air-quality>

Janet marks Invertek's golden moment

Long-serving manufacturing technician Janet Evans was chosen to assemble a special golden drive to mark the sale of Invertek's two millionth drive.

Janet has worked with the variable frequency drive manufacturer for 18 years and works on one of the company's global assembly cells, where each drive is built to order, tested, and packed before being consolidated and despatched internationally.

She said: "I felt very privileged to have assembled the two millionth drive. I've seen the company grow and develop over the years. It's amazing to think so many of the drives I've assembled are being used all over the world."

The milestone comes after Invertek announced record sales during 2020 and the first quarter of 2021. It follows significant continued year-on-year growth since the company was established in 1998. In November 2019 it was acquired by Sumitomo Heavy Industries, a leading global manufacturer and distributor of power transmission and control equipment.



Shaun Dean with Janet Evans following the production of the two millionth Optidrive VFD. They are watched by, from left, Adrian Ellam, finance and operations director, Glyn Jones, R&D director, Rhydian Welson, sales and marketing director, and Dr David Jones, R&D director

The two millionth drive is part of an order placed by Hiflex Automatiseringstechniek BV, Invertek's sales partner in the Netherlands. The Optidrive E3 will be sent to their headquarters in Ridderkerk, Rotterdam.

Shaun Dean, CEO of Invertek and

senior vice president of Sumitomo Heavy Industries, said: "VFDs are playing a major part in helping reduce carbon emissions globally through efficient motor control. We're very proud of how our inverter technology is helping contribute to that."

J S Wright extends netball backing

Mechanical and electrical services specialist J S Wright has renewed its sponsorship of a leading junior netball club for the third consecutive season.

The company, which is based in Birmingham and has an office in London, will remain the principal sponsor of Parkside in Sutton Coldfield whose girls currently play at Under 12 to Under 15 levels in the Birmingham Intermediate Netball League (BINL) and at Under 14 and Under 16 levels in the National League.

David Griffiths, Parkside Netball Club chairman, said: "Given that most of last season was cancelled, the club is extremely grateful that J S Wright has continued to support us in these

difficult times. The support has proved invaluable in giving the increasing numbers of girls across Birmingham that are keen to take up netball the opportunity to train and play in a safe environment, gain confidence and achieve their potential, and make lasting friendships."

Andrew Smith, J S Wright national design and estimating director, whose daughter Lily plays for the club, said: "As a company that is committed to providing a safe and inclusive career path for our young people, we are delighted to continue to support a club that both nurtures the sporting ambitions of young girls in the community and aids their fitness, confidence and mental health."



New players at Parkside Junior Netball Club sport their new JSW-branded hoodies alongside their trainers

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EnviroVent donates 1,000 trees on Earth Day

Ventilation manufacturer EnviroVent marked Earth Day (April 22) by donating 1,000 trees to be planted as part of its commitment to the environment, offsetting 300 tonnes of CO2.

The pledge has been made in partnership with the organisation MoreTrees and will see EnviroVent make further commitments in the next 12 months as part of the company's wider Planet Friendly campaign. This equates to around 1,500 tonnes of Carbon Dioxide removed from the atmosphere, which would mean the company could offset its carbon footprint* within an estimated 9-10 years.

In addition to its 1,000 trees pledge, EnviroVent will also plant one tree for each ATMOS whole house ventilation system the company sells into a homeowner's property (including landlords and letting agents) over the next 12 months. To further boost the number of trees it plants, EnviroVent will also be hosting a range of fundraising activities amongst its staff.

Jane McLean of EnviroVent



Jane McLean, quality & environmental systems manager, said: "We are really excited to be launching our new partnership with MoreTrees on Earth Day – as a business, we're 100% committed to reducing our carbon footprint. We have been focused on reducing our impact on the environment for many years and this initiative, as part of our Planet Friendly campaign, shows a further commitment to sustainability which means those buying

our ventilation systems can be safe in the knowledge they are giving back to the planet."

MoreTrees partners with non-profit NGOs (non-government organisations) around the world, who work with local communities to plant trees in forests while reducing extreme poverty and combating deforestation.

*This is an estimated carbon offset over a 25-year growth period of the tree.

www.envirovent.com

Beijer Ref pedal power boosts Prostate Cancer UK

A small but determined team from wholesale group Beijer Ref has been cycling 100 miles during May to raise vital funds for Prostate Cancer UK.

Cycle the Month is a virtual challenge for cyclists, with supporters cycling 100 miles their way, over a day, a weekend, a week or across the whole month to raise money to help beat prostate cancer, which is now the most commonly diagnosed cancer in the UK.

Team Beijer Ref comprised:

- Russell Cook (MHI business development manager for projects)
- Jenny Dean (MHI Direct national sales manager)
- Michael Goman (MHI business development manager for specifications)
- Nathan Fox (MHI Direct account manager)
- Adam Campbell (FridgeHub area sales manager)



Hit 100 miles and help beat prostate cancer



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