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Essential Information for the Air Conditioning and Refrigeration Industry

The ACR & HEAT PUMP Trainee Of The Year Awards 2025

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CONTENTS

Welcome to the August/September edition of *ACR Journal*.

The recent heatwave has been a stark reminder of just how important our industry really is. Over the past few weeks, engineers across the country have had to pause planned maintenance and dive into emergency call-outs. High head pressure problems have probably been the top culprit, hitting hardest for businesses that haven't kept up with routine servicing with panicked phone calls and a sharp realisation of just how expensive downtime can be.

Since our last issue, we headed to the InstallerSHOW at the NEC. This time around, there was a clear effort to give the cooling sector more space and visibility, which was good to see. Still, there's a growing amount of confusion around product categories. 'Heat pump' is fast becoming a blanket term for anything with a fan or a pump attached without clear understanding of its primary design application. The air conditioning world seems to be getting tangled in the heat pump melee, with lines blurring fast and definitions becoming a bit of a free-for-all. Right now, refrigeration feels like the only part of our sector that's still clearly defined!

In this issue, Pure Thermal takes a closer look at when a chiller isn't actually a heat pump, a useful distinction that seems more relevant than ever. We also explore the growing use of R290 in heat pump systems, and how virtual reality is helping to simplify and speed up plant room design, thanks to Ciright.

We're also delighted to feature Mariane Galpo Doyle from Exi-tite in our Women in ACR series. And finally, a special mention goes to Bob Yates of Vectaire, who ran from Land's End to John O'Groats in support of Humanity Direct, an incredible achievement for a great cause.

Andy

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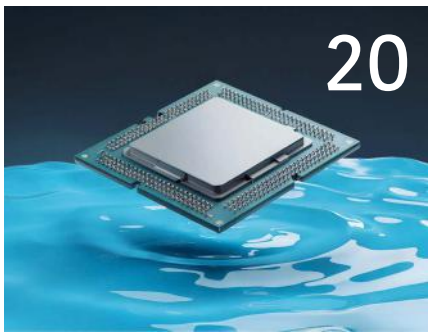

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BESA suspends 14 member companies


David Frise of BESA

The Building Engineering Services Association (BESA) has suspended 14 member companies for failing to comply with its independent audit process.

The association's Council, whose members are responsible for BESA's governance and ensuring that it continues to meet the vision and values of its founders, stated that it was taking "robust action" in the interests of the whole building engineering sector and its clients.

The 14 companies were all found to have failed to reach the standard required to meet BESA's Competence Assessment Standard (CAS) which covers business practices, financial solvency, insurance, health & safety, and technical proficiency.

It is also fully aligned with the industry benchmark provided by the Build UK Common Assessment Standard. Firms applying to join BESA or remain in membership must meet the standard.

Chief Executive Officer David Frise said: "BESA has never been afraid to robustly defend its remit and constitution. We do not suspend members lightly but take our wider responsibilities to the industry and its ultimate clients – building occupants – extremely seriously.

"The Grenfell: Uncovered documentary on Netflix was a timely reminder of why we must do everything we can to maintain the highest possible standards. It should remind us that every decision we make has a consequence – whether in the short-term or much further down the road for the people who inhabit buildings.

"The country should be able to depend on its building services industry to deliver work to the highest possible standards."

The BESA audit, which is carried out by a UKAS accredited independent part of the BESA group, asks prospective and existing members if they have all the skills necessary to deliver quality, safe work. It includes an on-site technical audit based on check lists linked to latest technical standards so clients, main contractors and the public can have confidence when appointing a BESA member firm.

"We have never been afraid to suspend members who don't meet our standards," added Frise. "It is always a last resort as we would much rather work with companies to help them improve, but when it is clear that is not possible, we have demonstrated that we will take the ultimate sanction."

Keeping it cool for African farmers

A collaboration between Aston University and RAD Global will help small farmers in east Africa keep food fresher for longer, preventing food waste and improving livelihoods.

Working with other partners they have developed pioneering cold storage boxes which can keep food fresh without access to grid electricity.

Whilst working in Uganda, Tim Messeder, founder of UK agricultural development company RAD Global, noticed that small scale fishing operations in Uganda had a major problem keeping their catch fresh. Fish caught from Lake Victoria and various remote fishponds across the country often needs to be transported for up to nine hours, during which time the harvest goes off. Surveys across the region reveal that 42% of traders experience fish spoilage due to inadequate cooling, resulting in lost income and increased food insecurity.

To help prevent waste, Messeder drew up a plan for a cool box that could keep fish fresh for up to 48 hours, could be transported on the back of a motorcycle and was affordable to people on very low incomes. He contacted Aston University and between the two they developed his idea into the prototype now known as RADiCool, which aims to extend the safe selling window for fish from 12 to 24 hours. The prototype development was supported by the Efficiency for Access Research and Development Fund.

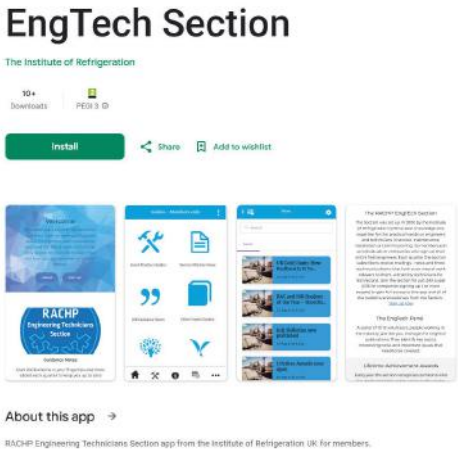
Purpose-built to fit on motorbikes, the system features a lightweight, insulated cold box powered by advanced phase change material (PCM) and integrated internet of things (IoT) technology for real-time temperature and GPS monitoring. The innovative system cools fish from 25°C to refrigeration temperatures within four hours and maintains cold storage conditions for over 24 hours, without additional pre-cooling capacity.

IOR's new app delivers on-the-go technical access

The Institute of Refrigeration RACHP EngTech Section has launched a mobile technician's app.

Designed to support engineers and technicians across the RACHP sector, the app provides on-the-go access to a wealth of technical resources and good practice guides. The full version is available exclusively to subscribers to the IOR Eng Tech mailing, students and IOR members.

The app also provides information about future webinars and industry news, and includes a push notification when new items are added. It is available for download here:



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Williams reveals carbon figures of core products

Williams Refrigeration has published embodied carbon calculations for all its core products.

The data uses the CIBSE TM65 mid-level calculation method for the figures, which have been independently verified by Greener Energy Futures.

Sales and Marketing Director Malcolm Harling said: "Talking to our business partners and end-user customers we realised early on that embodied carbon figures are set to become a 'must-have' for foodservice equipment suppliers.

"The engineering team, supported by our environmental consultants, have been working very hard to collate the data required to compute them as quickly and accurately as possible. Their success means we are amongst the first equipment manufacturers to have our calculations produced, third party verified and available within our Revit symbols in Specifi.

"There's no doubt that embodied carbon figures will help our industry become more sustainable as foodservice operators, manufacturers, consultants, designers and dealers work together to deliver carbon net zero."

The Williams' core products with embodied carbon figures include a selection of Jade counters and cabinets, blast chillers, Chef's Drawers, Onyx prep stations, UBCs (Under Broiler Counters), and the undercounter Amber and Aztra cabinets. Data sheets with the embodied carbon figures will be available via Specifi or direct from Williams.

Danny Lear after completing the March for Men

Danny Lear on the march for prostate cancer

Danny Lear, Aermec UK's Sales Manager for the London region, has completed a 10k walk supporting Prostate Cancer UK's March for Men.

The event took place in London's Battersea Park and participants could choose to walk 2.5km, 5km or 10km or anything in between, raising money for vital research and helping to spread awareness.

Despite the heat, blistered feet and some aching bones Danny managed to complete 10K with the aim of raising as much money as possible. To date, the total is £780, with further promised donations to follow. He said: "It is a fantastic charity to support as prostate cancer touches so many people and their families. I want to express massive thanks for everyone's support."

One particular highlight was when Danny went into a shop near Battersea Park station. The woman behind the counter asked what his T-shirt was all about, then promptly gave him £10!

Eurovent updates cabinet guidance

Eurovent has released updated versions of two guidance documents for commercial refrigeration equipment, with both including critical updates on refrigerated cabinets.

Eurovent says it has revised the recommendations to offer clear guidance for manufacturers, distributors, and end-users. It adds that he practice of placing incomplete refrigeration units on the market, units not equipped with essential components or deviating from declared product performance, has raised significant concerns across the refrigeration sector. Recommendation 14/6, third edition, provides guidance on the interpretation of Regulations (EU) 2019/2018 and 2019/2024, while Recommendation 14/7, second edition, aims to facilitate the work of the Market Surveillance Authorities. Both documents have been updated to clarify definitions of 'complete' and 'incomplete' delivery and to incorporate the FAQ of the European Commission recently published.

The documents can be downloaded free of charge on the Eurovent website:
https://www.eurovent.eu/publications/

Toshiba VRF extends reach in Manchester

Carrier Solutions UK has delivered a Toshiba SHRMe 3-pipe VRF system at The Reach Hotel in Manchester, formerly La Reserve Apartments. Working with A.C. Mechanical Services, the £2 million project transformed 80 serviced apartments into a 215-room luxury hotel.

The system includes 18 rooftop condensers, room-by-room flow selector boxes and standalone HRV units. It delivers ESEER ratings of 8 and above across most capacities, ensuring high seasonal energy efficiency. Integrated with the hotel's BMS, it offers simultaneous heating and cooling, improved air quality through heat exchangers and filters and simplified room controls for guest comfort and operational ease. Find out more about Toshiba VRF systems:
https://www.toshiba-aircon.co.uk/

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Humidity blossoms at Chelsea Physic Garden

Chelsea Physic Garden has recently installed a Condair ML high-pressure spray humidifier to maintain the perfect atmosphere for horticultural success in its restored Victorian glasshouses.

Founded in 1673 by the Worshipful Society of Apothecaries of London, Chelsea Physic Garden is one of the oldest botanical gardens in Britain, occupying four acres of land on the edge of the Thames. Today, it is home to more than 4,500 species of medicinal, edible and useful plants, and remains a vital centre for plant science and education.

John Constable, Glasshouses Manager & Gardener, commented, "Maintaining the right humidity is vital for the health of our tropical collection. Without it, we quickly see signs of stress in the plants - yellowing, crisping and even death. The Condair humidification system has enhanced how we manage the environment in the glasshouses. It gives us peace of mind that the conditions are right, so we can focus more on the plants themselves. It has made a noticeable difference to both plant health and how we work day-to-day."

The garden's historic glasshouses are key to cultivating sensitive tropical and subtropical species, such as cocoa and vanilla as well as a wide range of other tender ferns, epiphytes, woody trees and climbers. These plants rely on consistently high humidity to replicate their natural rainforest environments.

Previously, humidity was maintained by wetting down the heating pipes to create a steamy environment. The recent restoration of the glasshouses presented an opportunity to modernise features, including the introduction of an advanced humidity control system.

The Condair ML spray humidifier was installed by Parker Air Conditioning. A water treatment system both purifies and pressurises mains water, supplying it to a series of nozzles located around the greenhouse. These nozzles release a fine mist that is fully absorbed into the air, providing consistent, hygienic humidity without any wetting on surfaces or the floor.

The use of reverse osmosis water filtration and onboard UV-light sterilisation ensures the mist is hygienic and mineral-free. This not only maintains a healthy environment but also prevents any dust being released into the greenhouse from the supply water. In addition to precise humidity control, the system provides low-energy evaporative cooling, making it ideal for greenhouse environments.

www.condair.co.uk

Green Point in new training initiative

Green Point UK has launched a new training initiative to help contractors and service technicians gain confidence in diagnosing and maintaining BITZER compressors.

The sessions, from BITZER UK's remanufacturing and specialist service arm, are designed to give engineers the opportunity to get up close with screw and reciprocating compressors, see how they work and understand what can realistically be repaired in the field.

The practical training at Green Point's facility in Milton Keynes is tailored to the day-to-day challenges engineers face when maintaining systems for applications including supermarkets, cold storage facilities, data centres and marine vessels.

"Our aim is to demystify the compressor and give engineers the skills and confidence to make repairs on site, where possible," said Will Pribyl, General Manager at Green Point UK. "In many cases, we're showing engineers how to fix minor issues, like replacing a degraded gasket, that could otherwise lead to full compressor replacements. Repair is better for the environment, better for budgets and ultimately helps reduce downtime."

The initiative has been piloted with a handful of customers, including a recent visit from Ernest West & Beynon. Technical Director Andrei Stefancu said: "By equipping our team with up-to-date skills in servicing BITZER compressors, we uphold the highest standards of quality. This visit provided invaluable hands-on experience with the complete servicing of both screw and piston compressor technologies."

For more information, call 01908 622125 or email **sales@greenpointuk.co.uk**

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Running man Bob completes 1,000-mile mission

Vectaire's Bob Yates chose a remarkable way to celebrate his 60th birthday – running more than 1,000 miles from Land's End to John O'Groats to raise almost £6,000 for the Humanity Direct charity.

Bob, National Specification Manager for the ventilation specialist's New Build Division, tackled the Run Britannia event to support Humanity Direct's work to fund operations for children in Uganda who don't have access to the medial care they need.

Three years of preparation for the epic challenge culminated in eight marathons over the final five months before Bob headed to the start line at Britain's southernmost point in Cornwall. After clocking up a grand total of 1,031 miles and 28,605m of elevation over the next 35 days (including just four rest days), he completed the event in the far northeast of Scotland.

Bob said: "When I crossed the finish line, the sheer fatigue was overwhelming. I couldn't even begin to process the magnitude of what I'd achieved. I had set out to run — or walk when necessary —from the southernmost point of Britain to its northernmost tip. It took three years of preparation, gradually increasing training distances and complementing them with regular weekly strength work.

Incredible journey

"Compared to many of my fellow runners, I fared relatively well in terms of injury. But by the final week my body was hanging by a thread. Blisters, adductor strains and shin splints all made their presence felt. I normally avoid painkillers but by that stage they had become my constant companions — making the difference between being able to run and having to power walk.

"I was incredibly fortunate to have such a motivated support crew and my fellow runners were a brilliant bunch of like-minded individuals — united by a shared challenge and a common cause."

Humanity Direct has funded over 1,000 operations for children in Uganda, from skin grafts to neurosurgery, as well as surgery for hernias, cataracts, tumours and congenital defects.

Mission accomplished: Bob Yates in John O'Groats at the end of his epic journey

The charity also operates the Glasses for Classes scheme, which has conducted almost 34,000 eye tests and provided nearly 7,000 children with prescription glasses so they can see clearly for the first time.

At the time of writing, Bob's efforts had raised £5,674. He said: "To everyone who donated, left a message of support, or followed my journey: thank you. Because of your generosity, some disadvantaged children will benefit — and that's a fine legacy to leave."

Donations can still be made at: **www.humanitydirect.org/bob**

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Advertorial

Press Fittings vs. Traditional Brazing: A Practical Comparison for HVACR Installers

As HVACR systems grow more complex, contractors are seeking safer, faster, and more consistent installation methods. One area of innovation is pipe connection technology. While brazing has long been the standard for joining copper tubes, press fittings, such as those from RLS, are becoming an increasingly attractive alternative.

Though not suitable for every application, flame-free press fittings can deliver significant advantages in the right settings. Here's how they compare to brazing across six key areas:

Safety – Reducing On-Site Risk

Brazing uses an open flame, typically from an oxy-acetylene torch, which poses fire risks, particularly in confined spaces or occupied buildings. It requires hot work permits, fire watches, and sometimes specialist insurance.

Press fittings eliminate flames altogether. Installed using a mechanical press tool, they reduce fire risk and simplify compliance, making them ideal for schools, hospitals, and retrofit projects.

Installation Time – Faster, Simpler Connections

Brazing is time-intensive. It involves surface prep, flux application, nitrogen purging, heating, and cooling, taking several minutes per joint.

Press fittings can be installed in seconds after cutting and deburring. There's no need for gas, flame control, or purging, reducing installation time by up to 60% and helping teams meet tight deadlines.

Consistency – Reducing Human Error

With brazing, joint quality depends on installer skill. Mistakes in heating or fit-up can lead to weak joints or leaks.

Press fittings deliver a uniform, mechanical seal every time. Each fitting includes a factory-installed O-ring designed to seal under pressure. RLS fittings are tested to 700 PSI and approved for use with modern refrigerants, including A2Ls, offering more consistent results across teams.

Cost – Comparing Installed Costs

Press fittings may have a higher upfront price than brazing materials, but the overall installed cost is often lower. Reduced labour, fewer consumables, and no hot work overheads (e.g. permits, fire watches, gas) can result in meaningful savings.

In contrast, brazing involves ongoing costs for gas, flux, and torch maintenance, as well as higher labour and supervision requirements.

Training – Simpler to Learn and Apply

Brazing demands experience and skill in torch handling, purging, and pipe metallurgy. Training takes time, and mistakes can be costly.

Press fittings are quicker to master. RLS offers training focused on proper cutting, deburring, and tool operation, making it easier to onboard new staff.

Application Suitability

Brazing remains essential for some high-temperature or specialised applications. But press fittings are ideal for:

- Refrigeration and A/C systems
- A2L refrigerants
- Sites with flame restrictions
- Projects with tight deadlines (e.g. retail, healthcare)

RLS also offers XL fittings for pipe sizes up to 2 1/8", suitable for larger commercial systems.

A Smarter Choice for Today's Installer

While not a universal replacement, RLS press fittings offer a safer, faster, and more consistent alternative to brazing, especially in projects using modern refrigerants and working under tighter regulations. For many HVACR contractors, press-to-connect technology is a practical step forward.

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Have you got the right tools for the job?

TOOLS TALK

Luke Parry, Area Sales Manager and BOSCH expert at DiversiTech International, explains why the BOSCH RG-4.0 is the "must-have" recovery machine to own in your tool line-up for 2023.

This efficient, well-designed and robust machine makes refrigerant recovery easier and safer, while boasting the sleek "BOSCH" branding. Its 1/2 HP 1700-1750 rpm (110V) / 1/2 HP 1400-1450 rpm (240V) motor ensures it always delivers the best performance anywhere.

Future-proofing

The use of Hydrocarbon refrigerants has increased over the years within the industry. These refrigerants (R600 and R290) have a much lower environmental impact than HFCs. There is also further evidence that these natural refrigerants offer better performance – and are more efficient at absorbing heat.

The right tools for the job

With the growing use of hydrocarbons in the refrigeration industry, it is important to ensure that the right equipment is being used when servicing and maintaining any equipment.

There are very few options on the market for the safe recovery of hydrocarbons. The Bosch RG 4.0 is a refrigerant recovery machine which is suitable for recovering all HCFC, HFC, HFO refrigerants and is A2L compliant.

The proof is in the certification!

Being Bosch, the product development team were not content at stopping there. The Bosch RG 4.0 is also independently certified as being SAFE for USE with A3 refrigerants – which means just that – it's safe to use with Hydrocarbons!

(Certified by third party - latest RE-Certification. September 2022)

The Bosch RG-4.0 is available from leading wholesalers and all machines are backed by a UK-based Service Centre.

Recovery Rates (Max Capacity)	
PUSH / PULL	6.84 Kg/min
	410.5 Kg/hr
Liquid	2.03 Kg/min
	122.1 Kg/hr
Vapour	0.17 Kg/min
	10.7 Kg/hr

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When is a chiller not a chiller?

The answer, of course, is when it's a heat pump, **writes Garry Broadbent of Pure Thermal**. On a serious note, this question is one which is becoming increasingly relevant as energy efficiency and carbon reduction are now becoming the key specification drivers.

To put this into context, to date the repurposing of waste heat from cooling has not been the highest design priority where retrofit heat decarbonisation projects are concerned.

There appears to be three main reasons for this:

- The relatively low temperature of heat that can be generated from a heat pump that has 4-pipe functionality (4-pipe chiller) being only able to deliver a maximum output temperature of circa 60°C
- The perceived integration issues associated with recycling heat from a cooling system that may vary in output according to cooling duty at any time
- Due to the early stage nature of retrofit heat pumps, the funding that has been made available by the PSDS scheme has not in general encouraged integration with cooling systems.

These three factors have effectively combined to discourage more general repurposing and recycling of waste heat from cooling a building or process.

However, it's becoming very clear that industry is now looking to satisfy higher temperature retrofit heat pump projects with systems that deliver an annual COP in excess of 3.0 in order to combat the negative effect on heat pump application caused by the high cost of electricity when compared to gas.

Clearly this level of efficiency is not possible with an air source-only approach, where a 'must-have' high temperature retrofit application is considered, but this level of efficiency can be achieved by utilising the chilled water return as the heat pump source rather than air.

This makes us consider that we have perhaps been operating one dimensionally for the past 30 years or so. On this basis, identifying an application with a 52-week-per-year cooling demand has historically been viewed as a very attractive opportunity to apply a well performing chiller to deliver the most efficient cooling performance.

But now this opportunity can also be more widely viewed as an opportunity to provide high efficiency decarbonised heat as well as reliable cooling.

It's not as if this isn't being done already with two stage/cascade air source and water source systems. However, these cascade systems can be challenging for a user to accept due to the availability of space for the plant, the perceived duplication of heat pumps and the associated cost of installation.

However, we are now seeing technology moving forward and the challenges/barriers noted above can be removed by applying single stage chiller heat pumps that are able to comfortably deliver cooling. Crucially, these units are able to deliver heat outputs of 80°C even in external temperatures below -15°C.

This means that there is now the possibility to install a straightforward and easy to integrate single unit that will deliver simultaneous 4-pipe functionality providing both CHW and LTHW outputs.

So how can a chiller-heat pump be applied?

The big opportunity here is to consider retrofit efficiency and carbon reduction focused projects where the integration of the return circuit of a chilled water, or water glycol, cooling system is used as the source for a heat pump instead of air source.

If this type of application can be identified, then this represents the highest efficiency heat pump opportunity.

With this in mind, chiller replacement projects offer real potential but also applications where a chiller is not due for replacement are also attractive.

R290 4-pipe chiller-heat pump

Here the chiller-heat pump can be integrated within the chilled water return and, if practical, can provide a COP of over 5 which means that this type of application is by far the most efficient heat pump that the building or process can benefit from.

As an example, the single stage Pure Thermal A80 range is able to provide a cooling output down to -10°C and deliver a simultaneous heating output up to 80°C with full 4-pipe modulating functionality.

This provides an ideal option to replace a chiller in order take full advantage of any winter cooling load to simultaneously deliver 7°C cooling and 80°C heat outputs with a TER of 3.6.

The table on the facing page shows the A80 300.2 Chiller-Heat Pump using a 12°C chilled water return as its source.

However, with these retrofit applications it is important to note that if the input power to the existing chiller is deducted, because the existing chiller has been displaced by the chiller-heat pump, then the TER would then be 5.5.

Pure Thermal A80 300.2 Chiller-Heat Pump (Single Stage 4-pipe simultaneous functionality)		
Cooling capacity	kWt	134.2
Heating capacity	kWt	235.7
Power input	kWe	101
TER	W/W	3.7
TER (chiller input power corrected)	W/W	5.5
Condenser		
Fluid type	-	WATER
Medium inlet/outlet temperature	°C	70/80
Medium flow rate	m3/h	20.7
Condenser pressure drops	kPa	7.4
Evaporator		
Fluid type	-	WATER
Medium inlet/outlet temperature	°C	12/7
Medium flow rate	m3/h	23
Evaporator pressure drops	kPa	10
Refrigerant (Natural/Hydrocarbon)	HC	R290

To enable industry to move into these new areas of application it's clear that technology development, or more to the point compressor technology development, will play a key part in developing machines such as this type of 80°C single stage chiller-heat pump.

The 300.2, for example, unit utilises a purpose-designed higher refrigerant operating pressure R290 reciprocating compressor that has been designed to make higher temperature operation possible. In heating mode the 300.2 is capable of operating with a 80°C output temperature in external temperatures as low as -20°C which tells you something about the credentials of these high specification units.

Here we see the difference between a standard chiller-heat pump with a 60°C maximum output temperature and this 80°C high temperature reciprocating compressor unit that has an operating envelope that genuinely matches the demands of a high temperature heat decarbonisation project.

In terms of both heating and cooling, the development of technology is certainly moving forward at a pace to match the demands of our fast-developing market.

Based around maximising input power to deliver the most efficient levels of performance this example typifies where chillers and heat pumps can be optimised to deliver a combination of performance that has not been seen before in a single Monobloc unit configuration.

Across industry new ways to optimise heat pump efficiency are being developed alongside existing methods of applying heat pumps using direct refrigerant systems to provide heating and cooling, such as VRF/V or simple split AC units that are now commonly also referred to as air-to-air heat pumps.

But it's important to note that refrigerant drivers, F-Gas phase out and GWP mean that the need to reduce refrigerant system volume is also on the radar of a specifier/designer in terms of both practically minimising the risk of leaks and reducing TM65 lifetime carbon emissions.

Usually on a retrofit if a wet heating system is employed then it will be best to first visit combined cooling and heating as per the A80 type unit with R290 refrigerant before considering a new direct refrigerant retrofit system.

Hence the introduction of 80°C 4-pipe chiller-heat pumps creates more options where the priority is to provide a system that makes the strongest commercial case by delivering a TER 3.6 or TER 5.5 if the input power to an existing chiller is displaced.

In summary this represents a different way to view a chiller application.

Even if the simultaneous winter cooling load, that will act as the source for the heat pump, only represents 25% of the total buildings heating demand, then the chiller-heat pump should still be considered.

Why? Because this 25% will be the most efficient decarbonised heat available to the building and represents the most efficient method of applying a heat pump within that building. This demonstrates why reviewing the waste heat from chillers should always be the first step when considering the decarbonisation of a building or process/production facility.

Garry Broadbent of Pure Thermal

R290 in heat pump chillers: flexibility and performance for a low-GWP future

As the UK HVAC market accelerates in response to decarbonisation targets, questions around refrigerant choice, system efficiency and retrofit suitability are becoming central to system design. Darryl Smith, Managing Director of AUK Nationwide Heating and Cooling Distribution, shares his perspective on one of the industry's most talked-about solutions: R290 in heat pump chillers.

The HVAC market is shifting fast as the drive for low-carbon solutions intensifies. A key enabler of this change is the adoption of ultra-low GWP refrigerants, and R290 (propane) stands out as one of the most promising. For commercial and industrial projects, R290-based heat pump chillers are bringing high-temperature capability, efficiency and service simplicity to the forefront.

Among these, Clint's ECO-V-THERM range exemplifies how far these products have come, not just in environmental credentials, but also in technical flexibility and application suitability.

R290 is a natural hydrocarbon refrigerant with a Global Warming Potential (GWP) of just 3, significantly lower than commonly used refrigerants like R32 (GWP 675) and R454B (GWP 466). Like these synthetic options,

R290 has no ozone depletion potential, and it supports long-term decarbonisation through both direct and indirect emission reductions over the lifecycle of a heat pump chiller system. Its excellent thermodynamic properties make it a viable long-term solution in both comfort and process cooling sectors.

Small charge, big benefit

R290's thermodynamic efficiency allows systems to operate with significantly lower refrigerant charge volumes compared to synthetic refrigerants like R32 or R454B. In some commercial systems, the refrigerant charge can be as much as five to six times lower than an equivalent output system using R32, resulting in a package that reduces the refrigerant handling burden for engineers while providing high efficiency and environmental peace of mind for end users.

For example, a 164kW R290 Clint heat pump with two circuits requires just 7.5kg of refrigerant per circuit, totalling around 15kg overall. In contrast, an R452B-based system of the same capacity could require over 34kg, and an R454B system would also typically demand a higher charge volume due to its lower volumetric cooling capacity.

This reduction in refrigerant mass brings multiple benefits:

- Lower cost and environmental risk in the event of a leak
- Faster, simpler commissioning and servicing
- Easier compliance with safety standards and flammability classifications

Lower pressure, longer life

R290 operates at significantly lower pressures than many HFC or HFO alternatives. Even some of the newer low-GWP refrigerants like R454B (a blend of R32 and HFO-1234yf with a GWP around 466) or R513A (a blend of R134a and HFO-1234yf) still operate at higher condensing pressures than R290.

Where R290 typically operates in the range of 8–10bar, R32 systems can reach 15–17bar, and R410A can exceed 20bar. These higher pressures can place greater mechanical stress on system components, including compressors and pipework.

By contrast, R290's low-pressure profile helps extend equipment life, reduce the risk of fatigue-related failures and support long-term reliability. That's a key concern for facilities where equipment access is restricted or downtime is costly. It also supports longer service intervals and better total cost of ownership.

Flammability and regulation

R290 is rated as an A3 refrigerant: non-toxic but highly flammable. That classification understandably raises concerns but with modern system design, these risks are increasingly well managed.

One key factor is that heat pump chillers like ECO-V-THERM contain all of their refrigerant charge outdoors, within a factory-sealed unit. Unlike VRF or split air conditioning systems where refrigerant pipes run through occupied indoor spaces, chillers keep the refrigerant circuit entirely separate from the building interior. This not only reduces the risk of leaks into enclosed rooms, but also simplifies compliance with building codes and flammable refrigerant safety guidelines.

As a result, R290-based heat pump chillers are re-emerging as a popular choice among consultants and contractors, especially in settings where building control officers or fire regulations restrict the use of higher GWP or flammable refrigerants indoors. Their ability to decarbonise heating and cooling, while keeping refrigerant handling external is helping them gain traction as a compliant, future-proof alternative to VRF.

Installer-friendly and retrofit-ready

From the installer's perspective, R290 heat pump chillers deliver a rare combination of technical performance and practical serviceability, especially in retrofit scenarios.

We're seeing growing demand for high-temperature heat pumps that avoid the need for expensive and disruptive emitter replacements. In public-sector projects such as schools, healthcare sites, and social housing retrofit budgets are tight, and works often need to be completed with minimal interruption. Being able to retain existing radiators or terminal units reduces on-site complexity and shortens installation time. It also avoids the headaches of rebalancing pipework or adapting control strategies, factors that can delay projects or inflate costs.

From a maintenance standpoint, ECO-V-THERM units offer easy access, modular construction, and well-established components such as scroll compressors and EC fans.

For consultants and contractors, that adds up to a flexible, futureproof solution, one that balances low-carbon performance with the real-world demands of compliance, cost control and continued service delivery.

R290 might once have been viewed as niche or specialist, but the reality today is different. Thanks to manufacturers like Clint refining the technology into safe, standardised and high-performing equipment, it's now a mature solution that addresses the core needs of designers and installers.

With performance to rival synthetic refrigerants, minimal GWP, and clear retrofit advantages, R290 in heat pump chillers like ECO-V-THERM is not just a responsible option, it's a smart one.

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Find a job that AI can't replace

I saw an interesting article recently in the Observer newspaper with the title *"As the AI Jobs Armageddon approaches, it seems that only plumbers are safe …"*

https://observer.co.uk/news/business/article/as-the-ai-jobs-armageddon-approaches-it-seems-that-only-plumbers-are-safe

Whilst I don't agree with the scary headline, it is true to say that Artificial Intelligence, or AI, is changing our world in ways we haven't even begun to realise yet. Whether that amounts to 'Armageddon' remains to be seen!

But one thing does jump out to me from the article … There are some jobs that artificial intelligence simply can't do and, although the article focuses on plumbing, I would argue that in reality, this also extends to a lot of Heating, Ventilation and Air Conditioning (HVAC) jobs.

The article quotes Geoffrey Hinton the Nobel prize-winning academic who warns that a lot of 'intellectual and office-based jobs will be replaced by AI, however, the technology will find it harder to excel at physical manipulation'.

Don't get me wrong though, I'm no Luddite calling for the abolition of AI and trying to stop inevitable progress.

I know that there are areas in our industry that will definitely benefit from AI, so I think we should embrace the technology and use it to best effect in areas such as number-crunching, data mining and forecasting.

I'm also pretty certain that it could be incredibly useful in designing systems and maximising efficiency while minimising plant size.

Number crunching

We've just launched a case study on a 10-storey office block in Manchester where very localised weather data from the past decade helped the designers match the heating load for the building but reduce the number of commercial heat pumps needed.

Ben Bartle-Ross is a technical trainer at Mitsubishi Electric

https://library.mitsubishielectric.co.uk/pdf/book/exchangequay_casestudy#page-1

Not only did this reduce the upfront costs of replacing the building's gas boilers, it also helped the office block achieve an EPC rating of 'B'.

Using AI to explore past weather data could automate a lot of this work and mean that more systems are designed to deliver the comfort levels needed for the building occupants, while the number of external 'boxes' is kept to a minimum.

Now you might find it strange for an equipment manufacturer to advocate for less of our products, but we realise that it is actually the right thing to do. We plan to continue supporting people with the right equipment, based on the needs of the building.

And in a similar way, I advocate embracing AI, rather than fighting against it.

The ancient Greek philosopher, Heraclitus is quoted as saying that "the only constant in life is change," so we know nothing stands still … and AI is making rapid advances in ways we can't even begin to understand yet.

But we shouldn't fear it, as it will bring improvements.

AI is another tool in your toolbox

At the moment though, AI cannot install, commission, or maintain a HVAC system.

However, AI could for example really help HVAC engineers on the admin side of a job which can really free up your time to get actual physical work done.

Why not give it a go? Use an AI tool to work out your required equipment list for your next installation, based on previous jobs.

Depending on the information you feed it, you'll find that it will probably get most of it correct but not all of it. Then you go from being an author to being an editor, which is so much faster and keeps you in control of the overall job … and in a job!

So, whilst little in life is certain, if you or someone you know is looking for a 'future-proof' career, then I'd strongly suggest they get their hands on the 'tools' and train for a life in the HVAC industry.

They could do worse than start here: **https://les.mitsubishielectric.co.uk/installers/installer-training**

Ben Bartle-Ross is a technical trainer at Mitsubishi Electric

NONE LIKE IT HOT: the cooling conundrum

Modern, power-hungry data centres produce heat at levels for which traditional air cooling systems are often ill-equipped. Liquid-based cooling methods may provide an efficient alternative, but their implementation comes with a significant amount of risk for data centres that are not purpose-built to carry them. Amrik Sangha, a partner at Gateley Middle East, explains the risks and how to manage them.

Located along the Persian Gulf, the city of Ajman – and the Emirate of the same name to which it belongs – is home to both sandy beaches and mangrove forests. In October 2024, it was also announced as the new home of the United Arab Emirates' first AI-optimised data centre, which is due to complete in Autumn 2025.

"Our new data centre in Ajman has been specifically designed for the high computing power and scalability requirements of AI," said CEO Hassan Alnaqbi when the development of the 100MW, 100,000m^2 facility was announced at GITEX Global 2024.

"Our advanced cooling techniques and energy-efficient modular designs to maximise both energy efficiency and scalability integrated within this data centre will help the UAE anticipate and leverage this revolutionary technology, whilst at the same time supporting the nation's goal of building a more environmentally sustainable economy."

Similar announcements from other developers, governments, and businesses around the world are more than likely to follow.

Big business

The data centre market is booming, backed by growing business demand for computing infrastructure that can handle the greater power demands of technologies such as artificial intelligence (AI) and cryptocurrency mining. Governments are also keen to enhance their country's capabilities in these areas, offering numerous incentives and greater investment for businesses that can help to extend their computing credentials.

In September 2024, for example, the UK Government named data centres as a "critical national infrastructure" and invited local regions to submit applications for the development of 'AI growth zones'.

Over in the Middle East, the Kingdom of Saudi Arabia (KSA) has announced an AI-based initiative with funding of $100 billion via its Public Investment Fund. The KSA also launched a Cloud Computing

Special Economic Zone, with tax benefits and streamlined processes for foreign investors, back in 2023.

Small wonder, then, that the data centre market is worth more than $405 billion and growing at around 23.2% year-on-year.

Out with the old?

Whilst the demand for facilities capable of handling power-hungry, high-intensity workloads is a boon for new data centre development, it presents significant challenges for the more than 11,000 registered data centres that are already operational around the world, both in terms of their capability to meet these demands, and their ability to do so efficiently and sustainably.

Data centres currently account for 2-3% of global electricity consumption, as well as 15% of global carbon emissions. AI-based workloads are only making these appetites more voracious, with a report from the International Energy Agency (IEA) suggesting that data centres could consume more than 1,000 TWh by 2026 in a worst-case scenario.

This, in turn, increases the heat generated by the servers, data storage drives, and network equipment housed within the data centre, all of which must be ventilated and cooled if they are to be prevented from overheating and malfunctioning.

Cooling systems themselves are an integral part of any data centre and a significant contributor to its power consumption, in some cases accounting for 30-55%. Most existing data centres will also rely on traditional air cooling systems, which are increasingly inefficient when faced with more power-intensive workloads.

For new builds, such as the facility under development in Ajman, this is less of a problem because more energy-efficient forms of cooling, such as immersion, can be incorporated into the design.

Retrofitting these technologies to existing data centres, however, is much easier said than done.

Keeping it cool

Take immersion cooling as an example. This method submerges IT components into an inert, non-conductive (or 'dielectric') fluid, which absorbs and dissipates heat up to 20 times more efficiently than air.

Already touted as a more effective and efficient cooling method, immersion cooling may even be able to offer further sustainable benefits, such as recirculating extracted heat into district heating systems or using treated sewage effluent. That is, of course, if there is a blank canvas upon which to design and build.

For existing data centres, the options for exploiting these capabilities come with many limitations.

Exchanging air cooling systems for immersion cooling, for example, will not be a simple case of swap out and plug in. In many cases, it will even require a wholesale change to the data centre's structure, design, HVAC, MEP and functionality.

As the requirement for AI is also uncertain, many hyperscalers are now demanding a mixture of traditional air cooled and liquid cooled data halls on a 70/70 air to liquid split model. This is impacting the design of the building and floor loadings, thus also increasing costs.

This is because the weight of the cooling baths into which IT equipment would be submerged would require greater structural floor loading than traditional air cooling systems. Operators would also need to re-design the plumbing from a system in which water is kept out at all costs, to one in which water is allowed to flow inside.

Change management

Even if the fundamental structure of the data centre lends itself to immersion cooling, data centre operators would need to be mindful of the time and costs associated with installing these capabilities, particularly where resilience and continuity are concerned.

After all, few data centre operators would relish the prospect of a power outage or disruption to pre-existing customer agreements, particularly when such outages could cost the business up to $1 million, according to research by the Uptime Institute.

Due to the multi-disciplinary nature of data centre projects, any proposed retrofit or upgrade would require specialist guidance across investment, financing, real estate, construction, corporate mergers and acquisitions, commercial issues, and procurement.

Amongst other things, data centre operators would need to review the extent to which freedom and flexibility are afforded through existing leases, users licences, collocation agreements, outsourcing agreements, fibre access and ring agreements, right of use agreements, and power purchase agreements. For example, do any of these offer any room for early termination or re-negotiation?

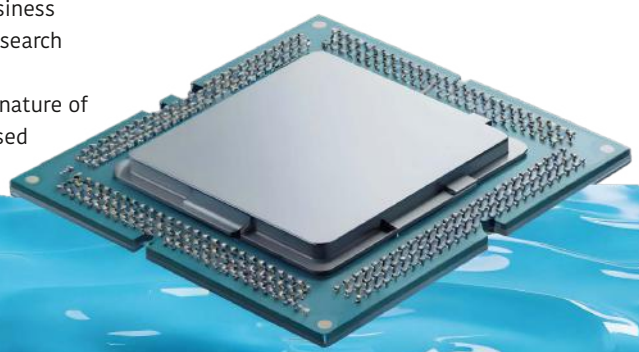
Even once these questions are answered, data centre operators will need to manage projects carefully to minimise disruption, prevent outages, manage stakeholder expectations, and mitigate other risks. For significant and invasive retrofits, such as those required for immersion cooling, implementation would need to be gradual and account for a period during which old and new systems would co-exist.

Mission impossible?

It is certainly an exciting time for the global data centre industry, and it will be interesting to see how new builds will incorporate more intensive workloads and split air to liquid cooling alongside better sustainability and efficiency.

Does this mean, however, that existing data centres are no longer fit for purpose? Whilst it is true that they have a greater number of barriers to overcome, it is nonetheless possible for existing data centres to evaluate their current layouts and structures and identify ways in which to harness new technologies and computing capabilities. Furthermore, they are still able to service the demands of cloud, which is also growing alongside AI.

There are, indeed, many opportunities for existing data centres to meet customers' evolving compuing needs. Providing, that is, that they start by getting the right advice.



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Refrigerant Recovery from Rooftop Coolers

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How Evolution Cooling and A-Gas collaborated to recover 220kg of R134a using rapid recovery

BACKGROUND

About Evolution Cooling

Evolution Cooling is a UK-based specialist in bespoke, energy-efficient cooling solutions. Known for their precision and innovation, the company serves a variety of critical industries, delivering cooling systems tailored to specific process needs.

About A-Gas

A-Gas is a world leader in the supply and lifecycle management of refrigerants and associated products and services. Through our first-class recovery, reclamation, and repurposing processes, we capture refrigerants and fire protection gases for future re-use or safe destruction, preventing harmful release into the atmosphere.

For over 30 years, A-Gas has supported our clients and partners on their environmental journey by supplying lower global warming gases and actively increasing the circularity of the industries we serve, building a sustainable future.

CHALLENGE

Evolution Cooling was recently contracted to decommission two large rooftop chillers containing R134a, a hydrofluorocarbon (HFC) refrigerant commonly used in cooling systems.

The task was inherently complex due to:

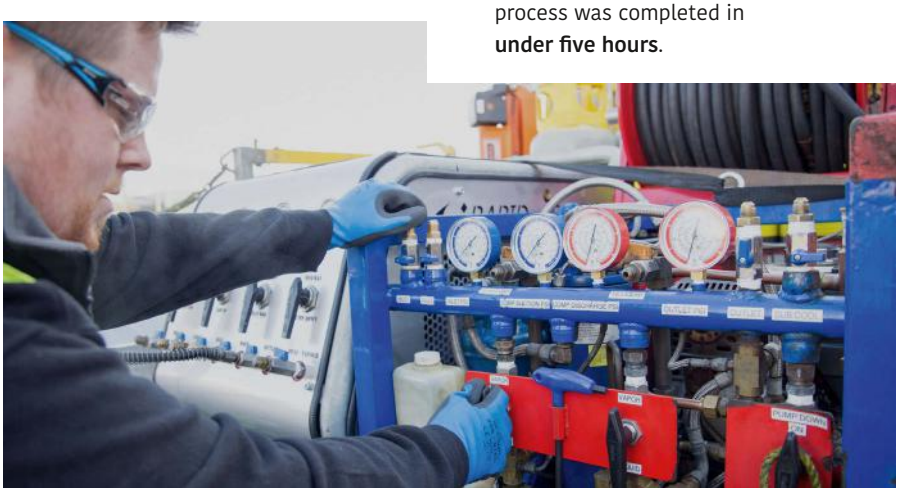
- Rooftop location and accessibility issues.
- Non-operational units, which meant refrigerant couldn't be pumped out.
- Environmental regulations, requiring strict control over refrigerant release.
- The total refrigerant volume was estimated at 220kg, a significant quantity with potential environmental consequences if not handled properly.

SOLUTION

To address the challenges, Evolution Cooling partnered with A-Gas, a global leader in Lifecycle Refrigerant Management. A-Gas deployed their Rapid Recovery service, a mobile, high speed refrigerant recovery solution designed for safety, efficiency, and sustainability.

PROJECT EXECUTION

- A-Gas began with an on-site inspection to estimate refrigerant volume and recovery time.
- Long flexible hoses were run to the rooftop, connecting the chillers to ground-level recovery machines.
- Using a **pull-pull method**, technicians ensured a steady and optimal fill rate into recovery cylinders.
- Despite logistical constraints, the entire process was completed in **under five hours**.



CONCLUSION

This case exemplifies how environmentally conscious industrial practices can be implemented at scale through A-Gas' Rapid Recovery:

- Evolution Cooling avoided environmental harm from refrigerant emissions.
- Time and labour were saved through fast, on-site recovery.
- Valuable refrigerant was reclaimed for future reuse, minimising waste or its potentially harmful release to the atmosphere.

AT A GLANCE

Challenges

- Safe recovery from two rooftop chillers.
- Inaccessible and unpowered systems.
- Environmental compliance.

Benefits

- 220kg of R134a recovered.
- Process completed in under 5 hours.
- Full regulatory compliance.
- Refrigerant recovery and reclamation reduces the need for virgin refrigerants, driving the circular economy within our industry.

"Great service from A-Gas Rapid Recovery.

Thanks for helping us decant the refrigerant from the large rooftop coolers before replacement.

They really are rapid."

EVOLUTION COOLING

A-Gas effectively manages the complete lifecycle of refrigerants, from providing the recovery solution to supplying the lower GWP alternatives.

www.evolution-cooling.com
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Bringing HVAC into the digital age

Joseph Callahan, CEO at Ciright, on how spatial intelligence is reshaping the industry.

You've probably heard the buzzword-filled slogan "the metaverse is the future of work" thrown around, but what does that actually mean? Especially for sectors like HVAC, which one wouldn't normally associate with extensive digitization.

The truth is that we are still exploring this new virtual frontier. However, its technology has shown the potential to make several key processes in the HVAC industry, including design, sales, and maintenance, much more efficient.

The technology that underpins the metaverse is known as spatial computing, a catch-all term for the range of technologies that allow interaction between the virtual world (i.e., the metaverse) and the physical world. Spatial computing requires a complex interplay of hardware and software to create these immersive environments and experiences, but this allows it to power a ton of devices and innovations that we already use every day.

Most people have likely already seen spatial computing technology in action, whether they know it or not. In the entertainment space, spatial computing is at play with virtual reality (VR) and augmented reality (AR) gaming, which have become very popular in recent years.

Virtual "try-on" features for online shopping are another prominent example of spatial computing technology. These features let customers see how a piece of clothing will look on them by superimposing a digital image of the garment onto an image or live video.

Although these applications of spatial computing are novel and innovative, they merely scratch the surface of what this powerful technology can do. Leaders in industrial settings, spearheaded by the HVAC industry, are finding new use cases for spatial computing that will transform how they do work. Using spatial computing technology, businesses in the HVAC industry can make their operations more efficient, productive, and safe, eliminating many of the obstacles that interfere with efficient operations.

Digital twins: Revolutionising efficiency in the HVAC industry

The HVAC industry is becoming particularly fond of digital twin technology. Digital twins are virtual replicas of a real-life asset, such as a machine, that are accessed via the metaverse, allowing users to visualize and interact with the machine in a virtual, three-dimensional environment. With its versatility and numerous use cases, this technology has the potential to revolutionize the applied systems industry.

Perhaps the most obvious use case of digital twin technology is that it enables better remote monitoring. For example, a business leader can outfit a physical machine with sensors that feed information to the digital twin platform, allowing the user to check the status and output of individual components and the machine as a whole. Often, this platform can be accessed from a cell phone or other mobile device, allowing business leaders to monitor their machines' operations from wherever they are.

This same capability can be used to empower businesses to perform predictive maintenance. When combined with the strength of AI-powered predictive analytics, the data supplied to a digital twin system can be used to predict when components might fail or need service. This allows business leaders to get ahead of any issues before they arise, avoiding consequences like damage or downtime.

Although digital twins exist on the level of individual machines, business leaders can combine multiple digital twins to offer a big-picture view of entire systems or supply chains. That way, when they run predictive analytics or simulations on these digitally replicated systems, businesses can optimize their processes and ensure they run as efficiently as possible. Digital twin technology can help businesses identify potential supply chain disruptions before they have a detrimental impact.

Another exciting use case for digital twins is employee training. HVAC machines and systems are incredibly complex, not to mention expensive and dangerous. Training employees on the machines themselves is a risky prospect that could cause damage to the machines or put the workers at risk because of their inexperience. In comparison, training employees on digital twins allows them to become more comfortable in a low-stakes environment with a realistic digital replica of the machine they will actually be working on.

Consumer-facing businesses are also using digital twin technology as a powerful sales tool by creating what is becoming known as "digital showrooms." By hosting accessible digital twins in the metaverse, businesses are showing off their products virtually, eliminating many barriers to access, such as a need to travel to a physical showroom to see a product. While this type of sales approach has long been used for virtual tours of homes and other similar applications, recent innovations have made it possible for the applied services industry to use this technology to sell complex machines.

How digital twin technology serves both businesses and customers

Digital twin technology is such an exciting innovation for the HVAC industry because it offers an incredible level of detail and interactivity that rivals — or even exceeds — that of physical models. It's important to note that, in the HVAC industry, the machines you are working with are massive in size. It's not like you can simply ship the customer a sample of a product; HVAC machines are much too big for that.

Indeed, one of the key benefits of the metaverse is its convenience and accessibility. Almost anyone with access to a computer can access the metaverse and the virtual showrooms it contains. Although specialized hardware like VR headsets can add a layer of immersion to the experience, it is possible for customers to use digital twin technology without ever having to leave the comfort of their home or office. Customers can also inspect individual components of machines in a way that might require disassembly in the real world.

These capabilities expand the base of customers that a business can target and allow those customers to gain better insight before making a purchasing decision.

Digital twin technology and the design process

Pioneers in the applied services sector are taking the technology one step further by introducing the "inception twin." Whereas digital twins are often created after their real-world counterpart, the inception twin — as its name implies — is created concurrently or even before the physical version.

The inception twin is poised to revolutionize the design process by giving businesses access to this invaluable resource early in the stages of development. The goal of the inception twin is to provide business leaders with a level of insight (specifically, foresight) into the design of their products, enabling them to hit the ground running in the later stages of the development process.

For example, inception twins can help streamline prototyping, saving businesses an incredible amount of money in the process. Building real-life prototypes can be expensive, and if you are tinkering with a product and have to start from scratch on a new prototype, this is a lot of time and money spent.

Digital twin technology can help businesses avoid this headache and expense by giving them a low-stakes opportunity to test new ideas. If an idea doesn't work, it's much easier to reverse on a digital twin than on a physical prototype. This can help business leaders ensure their designs are optimized for success before embarking on the physical building process.

With the help of digital twins and the spatial computing technology that powers them, businesses in the HVAC industry can make their operations safer, more efficient, and more accessible than ever before. By embracing this cutting-edge technology, HVAC companies can gain a competitive edge that will make them unstoppable forces in the market.

Joseph Callahan is the CEO of Sansar and Director of Portals Organization. His passion lies in exploring the transformative power of spatial computing, AI, and digital twin technology within the business landscape. In 1993 he founded Ciright, a general purpose technology company, which offers information technology services as a Platform as a Service (PaaS) model to businesses, governments, and non-profits.

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The new generation of Fieldpiece Digital Manifolds meets the international safety standards for electrical equipment used in the recovery and/or recycling of refrigerants, including flammable refrigerants classified as A2L, A2, or A3 under ISO 817. The certification assures users that the SM382VINT and SM482VINT have been verified and tested, as documented by DEKRA Testing and Certification GmbH. "At Fieldpiece, we are committed to continuously improving efficiency and, most importantly, ensuring the safety of on-site engineers," said Bas Kamermans, General Manager EMEA. "Our mission is to equip every technician with the tools they need to do their job easier, faster, and better."

What does this mean for you? Whether you're working with traditional refrigerants or flammable alternatives, the SM382VINT and SM482VINT deliver the confidence and safety required on the job.

Want to know more about the SMAN® Digital Manifolds?

Visit our website: **https://fieldpiece-europe.com/**

PANASONIC BACKING SKILLS DEVELOPMENT

Panasonic extended its support and sponsorship of World Refrigeration Day (WRD) 2025, which took place on 26 June during InstallerSHOW with the theme of 'Cool Skills'.

The continuing global awareness campaign incorporates initiatives to highlight industry skills development and training in the HVAC sector.

Recognising the importance of upskilling current installers as well as the next generation in the midst of regulatory evolution, Panasonic has expanded its training centres in the UK and recently launched a new training and energy demonstration facility in Cardiff, where the site operates on 100% renewable energy by utilising a mix of the latest heat pump, HX fuel cell and hydrogen technology.

This new investment seeks to further expand the company's commitment to HVAC&R training and complement its existing training facilities across the country.

John Kellett, UK & Ireland Country Manager for Panasonic Heating & Cooling Solutions, said: "It was a privilege to show our support for World Refrigeration Day 2025, and spread the important message to promote training in the heating and cooling sector."

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

WELCOME TO THE CLUB!

Clivet has introduced a new incentive scheme for the UK air conditioning and heat pump industry – the Clivet Club.

Free to join, the scheme rewards installers and contractors with points on every Clivet purchase, including air conditioning units, heat pumps, controllers, and batteries. These points can be redeemed online for over 200 rewards, from business essentials and luxury items to more than 60 holiday experiences – including UK breaks and long-haul getaways.

The scheme also features a Concierge Service, allowing members to exchange points for virtually anything – whether it's a new vehicle, bespoke holiday, designer jewellery, or gifts for the family.

Members benefit from an automatic 10-Year Warranty on all Clivet Edge products, enhanced service levels, and access to exclusive promotions.

Participation is open to anyone in the industry, regardless of current purchasing habits.

To learn more or register for free, visit **www.clivetclub.co.uk**

Clivet Club – rewarding your loyalty.

GEL-CLEAR UNVEILS UCP700+: THE CONDENSATE PUMP ENGINEERED FOR REFRIGERATED DISPLAY CABINETS

Gel-clear, the refrigeration drainage specialists known for practical innovation, has launched the **UCP700+**, a high-performance condensate pump designed specifically to overcome the unique challenges found in supermarket refrigerated display cabinets.
Unlike general-purpose condensate pumps, the UCP700+ is built from the ground up for the supermarket environment — where **biofilm buildup, restricted space**, and **repeated blockages** lead to frequent callouts, downtime, and water leaks.

"This pump was designed to solve real problems in the field," said Paurick Gaughan, Managing Director at Gel-clear. **"From biofilm resistance to better sealing and hose performance, every part of the UCP700+ exists because of what we've learned on site."**

Engineered for Refrigeration Environments

- **Ag+ Silver Ion Technology:** All internal surfaces are coated in a patented silver ion layer, preventing biofilm growth and protecting float switches and components for up to 8 years.
- **Biocidal Mesh Filtration:** A custom 60-mesh copper filter intercepts debris, preventing biofilms and reducing clogging risks.
- **Improved Tank Connector:** Designed for fast, secure installation with long-lasting seals and better mechanical reliability.
- **Swing out service:** Supplied with a 500mm flexi drain connector to allow a fully connected service 'swing out', simplifying future maintenance.
- **Kink-Proof Hose Compatibility:** Paired with a crush-resistant discharge hose, the pump operates more efficiently and with less back pressure — increasing service life.

Built for Remanufacture — and Built to Last

The UCP700+ is also designed for remanufacture, with all parts replaceable, extending the product lifecycle and reducing environmental impact. This makes it a standout with no proprietary 'Lock in' components.

"The real cost of a cheaper pump isn't the purchase — it's the failure, callout, and disruption that follows," added Gaughan. **"With the UCP700+, we're helping contractors and retailers break that cycle and reduce operational costs."**

Availability

The UCP700+ is available now from Gel-clear and its approved distributors.

About Gel-clear:

Gel-clear is an award-winning UK manufacturer of drainage solutions for commercial refrigeration.

Their products are engineered to address the root causes of system failure, with proven performance in many hundreds of UK supermarkets.

01254 760002
www.gel-clear.co.uk
info@gel-clear.co.uk

Gel clear
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WOMEN IN THE ACR INDUSTRY

In this issue, we meet Mariane Galpo Doyle, an Applications Engineer at HVAC supplier Exi-tite Group

What was your first job?
Office cleaner (to get daily funds for college).

What does your current role involve?
As an Applications Engineer I handle a range of responsibilities including contacting customers and suppliers, preparing quotations, product selection and design, as well as managing sales, purchasing and logistics.

My focus includes working on tenders from consultants and direct enquiries from contractors, particularly in the selection of air handling units, mechanical ventilation with heat recovery, fans, heat exchangers and air conditioning.

Our team supports a wide variety of projects and I have been involved in applications across several sectors in pharmaceutical, food processing, schools, swimming pools, hotels, retrofits and more.

What attracted you to the industry?
When I graduated in 2017 I had no clear direction on what path I'd be taking; I was just desperate to get experience in any field. I had waited for months for someone to recognise my CV, until one gave me the opportunity.

I knew nothing about the industry, but I had great supervisors who guided me to all the interesting opportunities and experiences that the industry can offer. Being surrounded by people with years of experience absolutely made a difference. Also, having a smaller environment to start with was a privilege as I got to build special connections with everyone and build a foundation of knowledge from different perspectives.

Mariane Galpo Doyle works on tenders from consultants and direct enquiries from contractors, particularly in the selection of AHUs, MVHR ventilation, fans, heat exchangers and air conditioning

I believe what drew me to stay was the confidence and trust that my supervisors placed in me, along with the opportunity to showcase my skills and have my voice heard.

What excites/interests you about the industry?
I find it fascinating how interconnected every phase of a project is — from the initial concept to the final commissioning. In many industries you learn how different roles and departments come together to make a project successful. But in HVAC this collaboration feels especially tangible as the work directly impacts people's comfort, health, and energy efficiency in buildings.

It excites me to be part of a journey that begins with raw data and how this data is transformed through stages like equipment selection, designing the system, supplier engagement, budgeting and customer interactions. It is rewarding to see a system go from concept to a fully operational solution.

Solving problems and being put in a difficult situation also excites me because that is when my skills and creativity are tested.

How would you like to see your career developing?
Long term and general, I see myself in a leadership role where I can guide a team, drive innovation and help shape strategy, while being known as someone who

supports and inspires others to grow and develop. My vision is to lead and contribute with purpose, making a meaningful impact in every role I take on.

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

"Do what makes you happy because in 100 years' time, none of this matters." (Not directed at me but to his viewers, I believe I've heard it from Niall Harbison, CEO of Happy Doggo, when he posted a video).

Society has shaped us to do things according to someone else's perspectives and expectations. But instead of living in fear of how others may view you, the quote above reminded me that we all live in a short space of time. Have courage to do what makes you happy and spend the time you have with people who truly matters.

What do you see as the challenges facing the industry?

I believe that one of the main challenges is the ongoing labour shortage. The industry relies on a wide range of professionals, from the consultants and designers to those who install and maintain the systems. With fast-paced technology, the newer generation tends to gravitate toward design and consulting roles and we find fewer people interested in hands-on trades such as plumbing and equipment installation. This imbalance can lead to project delays, costs increase and timelines become less predictable.

There is an increased pressure to reduce carbon emissions and transition to environmentally friendly HVAC systems. This requires innovation and investment in Research & Development. Additionally, companies need to study regulatory compliance, all of which can be complex and expensive. To address this, many businesses organise exhibitions, CPD sessions, and conferences to educate clients and demonstrate that their products meet current compliance standards.

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

Don't hesitate. There are many opportunities you can take in ACR industry whether you are interested in technical work, design, consulting, and project management. It may seem male dominated industry, things are changing, more women are entering the field and making a real impact. What matters most is your willingness to learn, work hard and bring your bright ideas.

Is there a little-known fact about yourself that would surprise other people?

Sing and play guitar 😊. I used to join singing competitions in the Philippines when I was a kid and became interested in playing instruments in secondary school. Guitar was my main instrument as I used it to write songs before. College happened and my engineering course was very demanding so the hobby slowly suffered. But just don't give me a microphone during a karaoke night as it may turn into a 5-hour concert and 3 encores!

Mariane says it's probably best to keep her away from the mic on karaoke night!

Unrivalled Heat Transfer Fluids & Expert Fluid Management Services

Since 1998, **Hydratech's** key objective has been the establishment of technical partnerships with those responsible for cooling system design, installation and operation. By understanding their exact application requirements, **Hydratech's** team of chemical, mechanical and sales engineers can specify the optimum fluid solution, and provide a full suite of maintenance services to ensure partners such as Arla, Muller, Ocado and Lidl benefit from improved system efficiency, extended system life and considerable energy savings.

Hydratech Products

Hydratech's market leading heat transfer fluids, glycol formulations, antifreeze solutions, corrosion inhibitors and water treatment chemicals are proven to provide precise, stable temperature control and comprehensive system protection. **Hydratech's** specialist fluid solutions are trusted by the likes of Waitrose and Sainsbury's to help improve the performance, efficiency and energy consumption of their chiller systems.

Hydratech Services

The **Hydratech Services** division provides specialist engineering and maintenance services to customers installing, commissioning, operating or optimising closed cooling and heating systems. By combining expertise in water treatment chemistry, fluid thermodynamics and mechanical engineering, **Hydratech Services** delivers a fully integrated, holistic approach to process and hydronic systems management. This in-turn maximises the potential for optimised performance, reduced operational costs and significant return on investment gains.

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VINCE ARNOLD, PRESIDENT, CIBSE

Vince Arnold has been officially confirmed as CIBSE President for 2025–2026 during the institution's AGM. He takes over the role from Fiona Cousins.

Arnold began his 45-year career as an apprentice electrician with Royal Mail before becoming a college lecturer in building services, during which he completed a part time degree and became a Chartered Engineer. He later held senior engineering roles at Royal Mail and in 1991 joined National Design Consultancy, eventually becoming a director and leading the London practice for nearly 20 years.

He joined CIBSE in 1998 and became a Trustee in 2020. Amongst numerous other roles he was chair of the Membership and Registration Panel for over 12 years and chairs the Apprentice of the Year judging panel. He said: "Becoming CIBSE President is an incredible honour and a privilege that I do not take lightly. CIBSE has been at the heart of my professional journey for many years, shaping my career, my values and my passion for paying it forward. To be where I am today, representing this global community of dedicated engineers, is truly humbling.

"It is a role that carries great responsibility - not just to lead, but to inspire, to give back and to champion the vital work we do in keeping buildings safe, efficient and future-ready. This presidency is more than a milestone for me; it is an opportunity to give back to the profession that has given me so much, and to help shape its future for generations to come."

www.cibse.org

CHRIS SMITH, HEAD OF TEMPERATURE CONTROL, AGGREKO

Energy solutions provider Aggreko has appointed **Chris Smith** as Head of Temperature Control for the UK and Ireland.

Bringing over 22 years of experience at Aggreko across Europe, Smith is set to lead Aggreko's support for industrial HVAC contractors, engineers and facilities management companies across sectors, including manufacturing, data centres and construction.

This includes providing temporary and supplementary cooling, heating and dehumidification solutions to assist on sites during maintenance works, system upgrades, temperature spikes and in emergency outages.

He said: "I'm ready to hit the ground running and help our customers futureproof their industrial HYVAC and process temperature control solutions so that it can combat any weather throughout the year."

https://www.aggreko.com/en/sectors/events/temperature-control

JILL NICHOLLS, DIRECTOR OF COMPETENCE & COMPLIANCE, BESA

The Building Engineering Services Association (BESA) has appointed a new director of competence and compliance. **Jill Nicholls** is stepping up from her current role as Head of Dervice Development to replace Helen Yeulet who is moving on to a new position as strategic consultant to the association focusing on key industry-wide projects and government skills policy.

In her previous role, Nicholls was responsible for driving up standards in skills and training across the BESA membership. She joined BESA last year after seven years at the Institute for Apprenticeships and Technical Education, where she rose to become Head of Construction and Transport.

BESA says Yeulet will now be focusing on deeper engagement with government to raise the profile of building services and ensure the industry is a key part of wider skills policy initiatives. She will also continue to leverage her expertise around applications for grant funding and develop the wider remit of the industry's umbrella skills bodies.

www.thebesa.com

JOHN PITTENDRIGH, BUSINESS DEVELOPMENT MANAGER FOR DATA CENTRES & DISTRICT ENERGY, AERMEC UK

Chiller manufacturer Aermec UK has appointed **John Pittendrigh** as Business Development Manager for Data Centres & District Energy.

Pittendrigh has spent more than 35 years in the HVAC industry and for the last 15 years has worked for a packaged plant manufacturer, selling energy centres, modular cooling systems (water cooled chiller plant rooms) and heat transfer systems. An advocate of heat export applications and harnessing excess heat, he is enthusiastic about building more efficient and sustainable data centres.

He said: "This is an exciting time to be joining Aermec. As a result of the company's continued investment in innovation, particularly in addressing the needs of the datacentre community, Aermec offers a diverse product range that I believe to be market-leading and creates huge potential for growth."

Andy Hawes, Aermec's General Manager Technical Sales, said: "We are pleased to be welcoming John to the team. He has considerable experience and a vast in-depth knowledge of the data centre industry where his contributions will be pivotal in supporting our business plans and adding value for our customers."

www.aermec.co.uk

The ACR & HEAT PUMP Trainee Of The Year Awards

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