

MBS

MODERN BUILDING SERVICES

The independent journal for
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SEPTEMBER 2023

SAMSUNG Climate Solutions



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A high temperature,
low noise heat pump
ideal for the residential
retrofit market



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the box with
packaged plant
rooms



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fittings safety
and quality



25 The power
of synergy
in Building
Services

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WELCOME TO THE SEPTEMBER ISSUE OF MODERN BUILDING SERVICES

So here we are, Autumn has arrived. By all accounts it's been an extremely busy summer for the sector. Historically, the next few months are notoriously busy for myself and the rest of the industry press. No doubt I'll see many of you out and about at the various events being held – please do say hello.

The next big event is the CSA (Commissioning Specialists Association) Awards being held in London on the 5th of October. I'm extremely proud to be chosen as a judge for the 3rd consecutive year. Modern Building Services are long standing sponsors of this event and it was extremely positive to see record numbers of quality entries for 2023.

This issue covers a wider variety of topics than usual. Even BESA (Building Engineering Services Association) are asking "Do we really believe in Net Zero" – turn to page 8 for the full comment piece.

On page 25, Mike Gittoes from Wave Engineering has provided a thought-provoking piece on the power of synergy in Building Services. The benefits of early integration outlined in this article include increased efficiency, optimal design, enhanced sustainability, risk mitigation, and collaborative advantage.

Next issue

Smart Buildings
Installers View – making installations effective & efficient
Heating – technologies & techniques

If you'd like to discuss contributing, please contact me on julietl@warnersgroup.co.uk

Juliet Loiseau

**CompCIPHE / MInstR
Publisher/Editor**



Samsung's heat pumps, called Eco Heating Systems, are Air Source heat pumps that use electricity and ambient energy available in outside air to generate heat and produce hot water for the home. Our commitment to driving energy efficiency is clear in our innovative cooling, heating, domestic hot water, and smart building solutions. Designed to suit every space, we can help create memorable experiences in any business or home environment.

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MODERN BUILDING SERVICES

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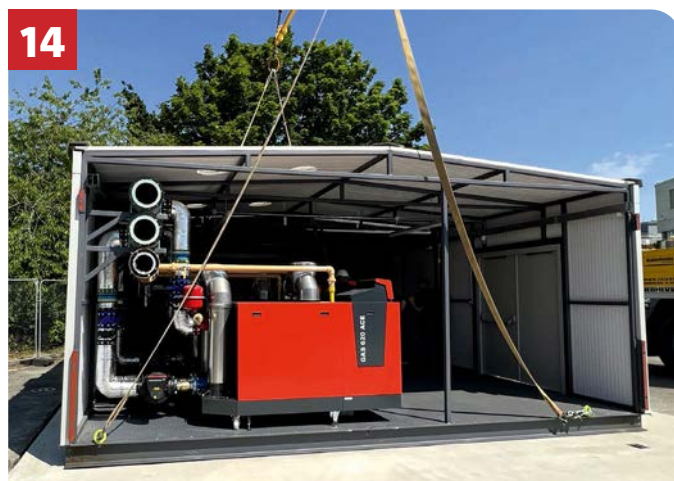
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Smart Building Awards 2023



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CIBSE welcomes new regulations that enable the Building Safety Act to be fully implemented

CIBSE welcomes the publication of new regulations for Higher Risk Buildings (HRBs) and the major changes to the Building Regulations that will enable further elements of the Building Safety Act to be fully implemented in England on 1 October 2023.

Building Regulations (Amendments etc) (England) Regulations 2023 introduce new dutyholder and competence requirements for both practitioners and clients. Part 2A includes 17 new regulations covering the duties, competence and behaviour of clients, designers and contractors.

For those responsible for managing an occupied HRB or for managing building work in or to create a new HRB, there are two new sets of regulations. The Building (Higher-Risk Buildings Procedures) (England) Regulations 2023, which sets out the new building control system for HRBs. While the Higher-Risk Buildings (Management of Safety Risks etc) (England) Regulations 2023 cover aspects of the operational management of all HRBs in occupation.

The regulations revise the rules for deposit of plans and further embed energy related procedures into UK law. They also strengthen Regulation 38 on the provision of fire safety information, which applies to all building work.

CIBSE will be working together with the Construction Leadership Council and its constituent bodies to provide further industry guidance on these regulations and on how clients, principal designers and contractors and Accountable Persons can meet the new obligations in a safe, reasonable and proportionate manner.

www.cibsejournal.com/technical/building-regulations-updates-competence-and-compliance

www.cibsejournal.com/technical/building-regulations-update-duties-and-competence

Pump sector welcomes announcement on CE Marking

The British Pump Manufacturers Association (BPMA), has welcomed the recent announcement from the Department of Business and Trade regarding the indefinite extension to the use of CE marking for UK businesses.

The CE (Conformité Européenne) mark is used across Europe to certify that a wide range of items – including pumps and related equipment - meet stringent product safety standards. As a member of the European Union, the UK had for decades adopted the use of this safety marking for products being sold both within the UK and throughout the European continent.

However, as part of a wide range of proposed post-Brexit legislative changes, the Government had planned for this safety marking to be replaced by a new UKCA (UK Conformity Assessed) mark for all goods sold in Great Britain from the end of 2024; a deadline which had already endured several postponements and extensions.

UK businesses and their respective trade organisations have for many years been calling on the authorities to extend the use of the long-established CE mark, explaining that forcing them to meet the new UK rules, which simply duplicates EU product standards, would add a



significant and unnecessary cost burden to UK industry. With the UKCA mark not being recognised in the EU, and only required for goods being sold in Great Britain, manufacturers would have needed to adopt both conformity protocols for products destined for both marketplaces. Notably, this would have also been the case for all overseas manufacturers wishing to sell products into the UK.

The BPMA has been key among this growing voice of objection, having pushed for the retention of the CE Mark from the moment a UK replacement had been suggested. Wayne Rose, Director and CEO at the BPMA said of this latest announcement: "Our pump manufacturing members have always been at the forefront of technology adoption, whilst seeking improvement gains for both sustainability and energy efficiency. They have also led the way in developing the current European safety standards, and so we welcome this decision by the Department of Business & Trade, as a common sense and pragmatic approach to assisting UK Industry."

The full announcement can be found here: www.gov.uk/government/news/uk-government-announces-extension-of-ce-mark-recognition-for-businesses



INFORMED THINKING

MBS has teamed up with the Building Engineering Services Association (BESA) to share their knowledge, policy and thinking.

Do we really believe in **net zero**?



By BESA Chief Executive Officer David Frise

The Building Engineering Services Association (BESA) says the government and the Labour opposition are too quick to retreat on important environmental policies in the face of voter opposition, and that makes it hard for building services businesses to plan for the future.

Along with its partners in the umbrella body Actuate UK, BESA commissioned the Energy Systems Catapult (ESC) to dig into the skills issues hampering the engineering

services sector's response. This, along with the latest quarterly Building Engineering Business Survey (BEBS), which is carried out by BESA in partnership with fellow trade bodies ECA, SELECT and SNIPEF, confirmed that zero targets set for 2050 will not be met unless we address our skills gap.

However, skilling up the workforce is still not an investment that many built environment businesses are willing to make, despite the challenges and huge

opportunities that this agenda presents – even without clear moral and social obligations to deliver change.

Despite all the talk around decarbonisation of buildings and the tough new safety culture introduced by the Building Safety Act promising to transform the culture of construction supply chains, this remains an industry fixated on cost and reticent to invest in the improvements it needs to flourish into the future, according to the research.



“There is a huge, missed business opportunity here,” says BESA Chief Executive Officer David Frise. “The best firms look to differentiate themselves from the rest of the market by scaling up, skilling up and making themselves stand out from the crowd. Some are doing it, but not many.

Transform

“We also talk and talk about reaching out to a new generation of skilled people who can help us transform our businesses by adopting modern digital technologies. We need thousands of people who can harness AI and other transformative techniques, but we are not recruiting them.”

Yet, 61% of respondents to the business survey reported high numbers of vacancies, which underscores the demand for building services expertise. However, BESA members say they are finding it increasingly difficult to recruit suitably qualified staff, as their time is often consumed by chasing payments rather than investing in training, recruitment, and staff retention.

“Our report showed that there is a strong feeling that the net zero process should be ‘depoliticised’. Trade associations and other sector bodies can take the lead on setting standards to help individual companies and industries who will be doing the actual work to deliver the necessary projects.”

73% of respondents to our business survey felt that the sector, as it is now, will not be able to deliver quality net zero buildings at scale. 68% of respondents did not feel it was easy for their company or organisation to find people with the right skills and 63% said it would still not be easy to find staff with the right skills in five years’ time.

Against this backdrop, political uncertainty is not helping. The result of the Uxbridge by-election clearly swung away from Labour because of determined local opposition to the extension of London’s Ultra-Low Emission Zone (ULEZ).

The seat resigned by Boris Johnson remains in Conservative hands because of a single environmental policy – one that has far-reaching consequences for climate change and air pollution. This has prompted something of a political ‘wobble’ on the part of both Labour leader Sir Keir Starmer and London Mayor Sadiq Khan – will they stick to their guns or take the easy way out?

Voters want change but not at any (personal) cost and the government will continue to ‘govern by announcement’ to try and avoid a political backlash. In the meantime, our industry is left in a difficult position.

The built environment is the UK’s second biggest source of carbon emissions behind road transport. It is responsible for more than 17% of the UK’s total. To keep the country on track towards a net zero economy by 2050, emissions from our sector need to fall by 43% by the end of this decade. That’s steep.

Overall greenhouse gas emissions are down by 46% since 1990 and in the built environment they fell by 15% in a single year (2008). However, they have pretty much flatlined since and the recent 2023 Progress Report to Parliament produced by the Climate Change Committee (CCC) said confidence that the UK would meet its climate goals was “diminishing”.

The CCC, which was set up under the Climate Change Act to advise the government, was particularly critical of the slow pace of heat decarbonisation. It said just 72,000 new heat pumps were installed in the UK last year against a target of 130,000.

We currently have slower installation rates of heat pumps than 21 other European countries and are installing ten times fewer than France, which is already installing over 600,000 a year (our 2028 target) and has a similar heating market, according to research from the MCS Charitable Foundation.

“The built environment is pivotal – not just because it is such a big emitter but also because it underpins so much of our economic and social activity,” says Frise. “We must upgrade thousands of buildings to make them fit for the future and to meet net zero. As well as reducing environmental harm, this could have major social benefits by providing upgraded facilities for work, leisure, healthcare etc. with lower running costs, better air quality and improved comfort.”

Ambitious

The government’s ambitious £20bn hospital building and refurbishment programme is a case in point because it sets out to improve the “patient experience” and speed up recovery times to shorten waiting lists. This is not just about reducing energy use and carbon emissions.

That is the ambition, but it won’t happen unless the industry develops the necessary capacity and skill – and that requires investment, which is manifestly missing.

“Also, the government issues statement after statement about the need for net zero, but it is not capable of delivering it,” said Frise. “Many in our sector don’t believe the government should be driving change anyway as it does not have a good record on sticking to long term plans.

“Our report showed that there is a strong feeling that the net zero process should be ‘depoliticised’. Trade associations and other sector bodies can take the lead on setting standards to help individual companies and industries who will be doing the actual work to deliver the necessary projects.”

However, the ESC report concluded that there was no ‘net zero culture’ in construction and one would be needed to shift the focus away from cost and onto quality. There are examples of net zero best practice out there, but they are not the norm.

“Finding that culture depends, not just on adopting low carbon solutions, but on accepting a new approach to the way we work together as supply chains, including fair and on time payment so companies can invest and diversify,” adds David Frise.

“The industry and the government need to keep their promises and meet their obligations. These things are important in all walks of life but even more critical when it comes to retrofitting the built environment to improve quality of life and tackle climate change.

“There has to be a cost but what sort of future will we have if we aren’t prepared to pay it?”



Read the full skills report on

www.actuateuk.org.uk/media and on the Energy Systems Catapult website.
www.theBESA.com

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PEOPLE



Spirotech key southern region sales appointment

Spirotech has appointed Dean Oliver as Area Sales Manager (Commercial) responsible for developing the South and London areas.

He joins the company from City Plumbing Supplies, where he gained experience across several branches before becoming Assistant Manager at the Canterbury branch. Prior to that he was a Deputy General Manager at the Wickes Broadstairs outlet.

Commenting on his appointment, Dean said: "I am really pleased to have joined Spirotech and look forward to further developing its customer base from consultants through to the merchants, whilst looking after our existing customers.

"Whilst my sales experience is primarily within the domestic market, I am looking forward to this new challenge. My area extends from Broadstairs all the way down to Southampton and out towards Windsor and Reading, as well as some of South and West London."

www.spirotech.co.uk



New appointment in Scotland

Passivent has appointed Tony Kelly as Business Development Manager for Scotland. He is to work closely with architects, consultants and contractors to deliver tailored solutions focused on energy performance, air quality, and thermal comfort.

Tony has over 30 years' experience working in the ventilation industry and has held various

roles, including both installation and sales. He's been involved with projects spanning almost every sector; from domestic to industrial including factories, hospitals, pharmaceutical facilities and schools. He'll be on hand to help with building specification and criteria on both new build and retrofit projects, providing assistance with airflow calculations as well as hosting CPDs.

With new regulations being introduced and the rising prominence of the Passivhaus standard, the role ventilation systems play in terms of the energy efficiency rating and air quality of a building can't be understated. By bolstering its team of ventilation experts, Passivent is able to work closely with customers to offer specialist advice to suit a broad range of projects.

www.passivent.com



The Hudson Group appoints industry guru as Group Technical Consultant

Hudson Group has appointed industry guru Trevor Tomkins to work across and represent the three businesses which comprise the Group; RMS, Armorduct and Milton.

Trevor, who has been in the electrical and cable management sectors for over four decades, will bring his years of experience to support customers across the Group, primarily focussing on projects in corrosive and hazardous environments.

Trevor will be responsible for meeting with consultants, engineers and end-users to provide technical information and recommendations around the Hudson Group's cable management systems as well as outlining the capabilities the systems provide and offering innovative solutions when used in major heavy industrial, infrastructure and renewables-based projects. Trevor will also offer certified training sessions around how to use these systems to maximum effect.

Trevor began his career at Shell plc and has since held technical sales and senior management roles across a number of national and international companies, helping to design the temporary and permanent lighting systems for the service tunnels contained within the Thames Barrier and work on the cable management systems on the Channel Tunnel.

www.hudsoncmg.com



Aermec appoints Andrew Hawes

Industry stalwart Andy Hawes has joined Aermec as General Manager, Technical Services as part of the company's further expansion and vision to make Aermec UK a Centre of Excellence within the HVAC industry

Hawes has over 35 years' experience in the HVAC industry. He is a Chartered Engineer, a Fellow of CIBSE and the Institute of Refrigeration, a member of ASHRAE as well as the Institute of Acoustics and holds a Post Graduate Diploma in Acoustics and Noise Control.

Andy Hawes' experience is extensive and across many sectors including industrial, commercial, MOD and railways as well as R&D. Posts held include Director of Special Projects, Senior Technical Services Manager, commissioning consultant and design consultant dependent on project requirements. Hawes' expertise in commissioning and commissioning management covers commercial buildings, hotels, hospitals, pharmaceutical applications, and mission critical datacentre projects.

www.aermec.co.uk



High quality, sustainable environments to support wellbeing and productivity



Mark Rooney, Rental Divisional Director at Premier Modular, discusses how offsite manufacturing can assist in the timely delivery of essential facilities and services, and support on site workers efficiently, effectively and sustainably.

With the rise of recent infrastructure plans demanding complex outputs and tight deadlines, it's essential that these vital projects are delivered rapidly, within the scheduled timeframes.

Current trends in infrastructure
Infrastructure projects support the vital supply of facilities or systems required by society, such as energy, transport and science services, so speed of delivery is key.

Good infrastructure is a central pillar of a healthy, modern society. High-quality projects will always deliver long-term benefits, including economic growth and employment opportunities, as well as the

provision of world-class services for those who depend on them.

In 2023, the key trends within infrastructure development have been to achieve sustainability targets and minimise the impact projects have on the environment, from inception to well beyond completion.

As the construction industry accounts for 38% of global carbon emissions, many businesses are responding with urgency. With net zero targets looming and regulation around sustainability increasing, it's essential that the industry continues to innovate and collaborate to stay on track.

Overcoming constraint and sustainability challenges

Many infrastructure projects involve working in highly constrained sites, for example, beside railway tracks or amongst existing structures on nuclear power sites. Working on such sites, access issues are common, slowing down programmes and delaying completion. However, with modular

building, contractors deliver more efficiently and effectively.

When working on restricted sites, speed of delivery is essential. If the flow of work is delayed at any point, it could cause a knock-on effect that ultimately delays completion. Reducing build programmes significantly, offsite construction enables groundworks to be prepared simultaneous to building manufacture, which takes place in a controlled factory environment.

With the importance of sustainability at the front of the public and industry consciousness, modular buildings offer an important and practical solution. Modular buildings are recyclable, reconfigurable and can be easily relocated and reused on other sites. Offsite manufacturing also means less waste.

Flexible funding and time optimisation

Speed and sustainability aren't the only benefits to modular building. There are financial

options and frameworks, such as LHC, to take advantage of that can work with different budgets and specific project requirements. As well as this, the optimised project management and logistical planning of offsite building, ensures efficient delivery and accurate scheduling which in turn reduce the number of subcontractors on site along with predicted project time.

Fast-tracked infrastructure support
Case study 1: Supporting site teams working on HS2

In order to support phase one of HS2 - the new high-speed railway linking London, the Midlands, the North and Scotland - Costain Skanska JV (SCS JV) required welfare facilities and project offices for 15 sites along the track.

To accommodate for SCS JV's site demands, temporary building solutions were offered in line with Building Regulations Part L to comply with fire ratings for facilities to be in use for at least five years.



Working within short programmes and highly-restricted sites close to live railway lines meant liaison with Network Rail was essential to inform thorough logistical planning – particularly during building installation.

After a four-week programme, over 15,000m² temporary buildings were provided, consisting of more than 500 modules built to SCS JV's specific requirements and specifications.

The new buildings supported the welfare of construction and admin teams, providing:

- Open plan offices
- Meeting rooms
- Breakout spaces
- Drying rooms
- Toilets
- First aid rooms
- Canteens.

The buildings were installed and working within a day including lighting, air conditioning, fire and security alarms, partitions and doors.

As the new facilities are expected to be utilised for at least the next five years, numerous sustainable features have been offered to minimise their environmental impact, including:

- Rainwater harvesting – to provide water for site operations and personnel
- PIR lighting sensors
- Low water consumption showers.

Case study 2: Boosting productivity at Wembley Stadium

John Sisk, the main contractors for a residential redevelopment around Wembley Stadium, needed office and welfare facilities for site personnel.

A healthy and motivated workforce was required during construction, so it was essential that all health and safety precautions and regulations were met.

Following a six-week site programme, the 2,710m² four-storey welfare facility was ready for operation. Its 2.7m ceiling height provided the building with an open and airy atmosphere for a comfortable workspace. The building was also designed with two external staircases, an internal staircase and a platform lift for easy accessibility. Facilities to aid construction workers' wellbeing and productivity included:

- Changing and drying rooms
- First aid facilities
- An induction room
- Office space
- A canteen area with a commercial kitchen
- Meeting rooms
- Toilet facilities.

The fast-paced programme allowed for John Sisk's teams to get on site and begin construction immediately to deliver the project on time.

To further support project managers and the marketing department, a viewing deck was provided on the roof of the building, enabling a spectacular site view at a prime location for overseeing the project.

Efficient programme delivery based on a collaborative approach

A flexible approach, from design to handover, provides clients with the ability to deploy hi-spec and bespoke buildings at short notice.

Given some modular buildings are intended to remain on key

infrastructure sites for many years, they have a small carbon footprint; the quality of the build is necessarily robust, yet buildings will be reused or reconfigured once their temporary purpose is fulfilled.

By providing high quality, bespoke project offices, welfare facilities, ancillary buildings and residential accommodation, leading civil engineering contractors and end clients can achieve sustainable project completion, without compromising on timescales or quality.



More information can be found at www.premiermodular.co.uk





Thinking outside the box with packaged plant rooms

By **Tony Falconar**, National Sales Manager at Baxi Packaged Solutions



It's well established that prefabricated heating solutions can deliver important time-saving benefits. Now an enterprising NHS Trust is pioneering the use of packaged plant rooms as a flexible solution to overcome complex retrofit challenges across its estates and meet its sustainability targets.

As organisations work towards improving building operational efficiency and limiting greenhouse gas emissions, heating is frequently one of the first areas identified for improvement. But providing a more efficient, modern heating and hot water system can be problematic in certain existing buildings and sites, especially where continuity of service must be prioritised.

Hospitals are a case in point, where ambitious climate goals can add to the complexity of the task.

One Scottish NHS Trust, however, has discovered a flexible solution that covers all the challenges associated with retrofit, minimising disruption, maintaining efficient building operation and making significant progress towards its climate goals. How? By using prefabrication; and in particular, prefabricated packaged plant rooms, as part of its roadmap to net zero.

Overcoming project complexities

NHS Greater Glasgow and Clyde (NHS GGC) is the largest Health Board in Scotland. Amongst its vast and diverse estate is the Queen Elizabeth University Hospital which was built on the site of the former Southern General Hospital in Glasgow's Govan district. While the majority of the hospital's facilities date back to 2015 (the year of its opening) some buildings, including the 1970s maternity unit, were retained from the previous hospital.

Perhaps unsurprisingly, therefore, when the existing boiler plant serving this facility reached end of life and needed replacing, the NHS GGC estates team identified a number of factors that made the refurbishment more challenging.

Energy efficiency is vital, especially in older buildings, as it reduces energy consumption, emissions and costs. The urgent requirement was to improve the efficiency and reliability of the heating system serving the maternity unit, which could be achieved by installing more energy-efficient modern condensing boilers.

Continuity of the heating service was a critical requirement for patient care, meaning that disruption had to be kept to an absolute minimum. However, due to the size of the building, installing temporary plant to avoid shutdown was not an option. Asbestos issues that could present a safety risk to the boiler replacement project and future maintenance work also needed consideration.

Finally, a master plan for the overall site was already in development, potentially including future connection to a district heating system. This meant that

NHS Scotland Climate Emergency and Sustainability Strategy

NHS Scotland is aiming to become a net-zero health service by 2040 at the latest to play its part in tackling the climate crisis. As building energy use makes up the largest proportion of its greenhouse gas emissions, it has set the following goals:

- Reduce greenhouse gas emissions from its estate by at least 75% by 2030 compared to a 1990 baseline
- Use renewable heating systems by 2038 for all NHS-owned buildings
- Have net-zero emissions for all of its buildings by 2040 or earlier where possible

At the same time, Scottish Government has an aim for all public sector buildings to use zero emissions heating by 2038. In light of this, NHS Scotland's new facilities must either be designed to use renewable heating systems from the outset or to have a clear plan to do so by 2038 where a renewable heating system is not currently practicable.

“It is essential that, when dealing with existing healthcare estates, we use pioneering techniques and out-of-the-box thinking to arrive at solutions which cater for a range of requirements”



the boiler replacement solution at the Maternity Unit needed to be future proof.

Pioneering techniques

To overcome all these project hurdles, the NHS GGC estates team took the decision to install the new boilers in a bespoke prefabricated plant room.

“It is essential that, when dealing with existing healthcare estates, we use pioneering techniques and out-of-the-box thinking to arrive at solutions which cater for a range of requirements,” they explained.

In this instance, the solution was selected to design and build the externally sited packaged plant room. The plant room is designed to connect to a new low loss header and plate heat exchangers in the main building and provides sufficient space to accommodate this equipment if required at a future date.

Optimal outcome

When decarbonising older buildings and their heating systems, planning a phased refurbishment programme, as the NHS GGC estates team did, is advisable to achieve optimal outcomes and long-term goals. This is successfully illustrated by this project which has been designed to deliver multiple benefits.

Flexible future use

As the container will last for 20 to 25 years, there is the opportunity to use it for other sites, meaning that the intermediate solution for the Maternity Unit is not wasted. BPS has designed the solution specifically to ensure flexibility for future use.

Health and safety

The plant room is a safe space for operatives, helping the NHS estates team ensure best practice compliance with all health and safety regulations.

Exceeding expectations

“We’re delighted with how the project has gone at the Maternity Unit as well as with our experience working with the team,” Craig Gallacher says.

Quality assurance and reduced emissions

BPS’s offsite fabricated solution is factory-made, fully tested and quality-assured. Thanks to the use of specialist machinery, improved control procedures and comprehensive end-of-line testing, the highest build quality has been achieved with greater efficiency and with a lower carbon footprint.

Time savings

Using this prefabricated solution has considerably reduced installation time at the Maternity Unit compared with traditional onsite methods, minimising onsite labour and making it easier to meet the tight schedule.



More information can be found at www.baxi.co.uk/baxi-packaged-solutions





The golden thread and competency in the fire stopping sector



Zoe Galloway, Technical Sales Manager, Passive Fire Protection, Walraven looks at what changes are coming and what should contractors look for in a manufacturer of fire stopping products to help them deliver compliant and effective installations?

Since the tragedy of Grenfell and the subsequent tightening of regulations in the fire industry, there are some important changes ahead for all those involved in the fire protection industry. As of October 2023, The Building Safety Act 2022 will become law.

The Building Safety Act 2022
This new legislation reflects the enquiries post-Grenfell which found that the UK was not delivering on building safety, and that competency, quality assurance, and roles and responsibilities across every stage of the building lifecycle were falling short.

This new regulatory framework requires that those responsible for the design, construction and completion of 'higher-risk' buildings must:

- 1. Meet competency requirements:**
All appointed individuals working on higher-risk buildings must possess the necessary skills, knowledge and experience to deliver their roles. Companies must also be able to demonstrate their organisations have the right capabilities and skills.
- 2. Designate statutory duty holders:** These duty holders will be held accountable during the design and construction phases of buildings. With an emphasis on inspections during gateways 2 and 3, the new regulations will ensure that building safety is thoroughly considered at every stage of the process.
- 3. Create a 'golden thread' of information:** This requires that all building information

and processes are complete, accurate and stored digitally, to facilitate audits and approvals for each gateway. This ensures data availability for effective decision-making, maintenance and safety management.

- 4. Deliver mandatory reporting:** Safety risks during the design, construction and occupation stages of high-rise residential buildings must be reported to the newly established Building Safety Regulator. This reporting requirement aims to enhance transparency and facilitate timely action in addressing potential risks.

A closer look at the golden thread
One of the most prominent changes due to be implemented later this year is the 'golden thread' for construction, which will dramatically change how buildings are constructed.

A key outcome from Dame Hackitt's Independent Review

of Building Regulations and Fire Safety, the golden thread describes a framework for organising building information.

The golden thread is a term used to describe the concept of maintaining a clear and consistent record of the design, construction, and maintenance of a building's fire protection features. This includes everything from the materials used in the building's construction to the placement and maintenance of fire doors, fire-resistant walls and floors, and other passive fire protection measures.

The golden thread is important because it ensures that all parties involved in the building's design, construction, and maintenance have a clear understanding of the fire protection measures in place and their intended purpose. This helps to ensure that the building is built and maintained in a way that minimizes the risk of fire and maximizes the safety of those inside.

The golden thread and competency

To help contractors deliver this 'golden thread' of information, they will need to work with manufacturers who can support them and also demonstrate their competence in the sector.

What does competence mean for manufacturers of firestops, like Walraven, and what should contractors look for when choosing a fire stopping manufacturer to work with?

Competence in manufacturing can encompass a whole range of activities from process optimization and quality management to delivering technical support and collaboration alongside independently tested and approved products that comply to regulations.

The ASFP Red Book states:

"If you are installing fire protection, then as with those specifying the materials and/or the contractor, you also have a legal obligation to ensure that the materials you install are adequate under 5.3 and 5.4 of the Regulatory Reform (Fire Safety) Order 2005 and national equivalents in Scotland and Ireland."

So how do you ensure the materials you specify or install are adequate? One way is by using a manufacturer whose products have an ETA certification.

What is an ETA?

ETA stands for European Technical Assessment and is a voluntary scheme that manufacturers of

firestop products can undertake in order to obtain a CE mark for their construction products.

Passive Firestop products (such as collars, sleeves, sealants, wraps etc) are currently not covered by a harmonised European Standard (hEN) and therefore adoption of such schemes is an entirely voluntary process undertaken by the construction product manufacturers.

The assessment of products is based on well-founded and harmonised technical specifications. The ETA provides full details of the assessed product ranging from a detailed description of the product itself and its components, to performance related information for its intended uses.

The ETA documentation gives full transparency to specifiers and end users, allowing them to assess the product's suitability for the installation before it is specified or selected on a project. Without this clear documentation there is a risk that a firestop product is selected and then deemed unsuitable when it comes to the installation phase.

Ongoing assessment and competence

Furthermore, following an ETA and once a CE Mark is acquired, the manufacturer is required to undergo systematic auditing by 3rd parties (Notified Bodies). This involves periodic inspection of the CE Marked product in order to confirm there have not been changes to its

manufacturing that would alter its properties and performance, thus rendering the ETA invalid.

ETAs are part of a 3rd Party Accreditation scheme which is highly spoken of these days and plays a critical role in enabling manufacturers to demonstrate competence thereby helping to build trust between manufacturers and specifiers/contractors.

As already mentioned, an ETA is currently a voluntary but powerful document. Manufacturers who choose to provide this documentation, like Walraven, are able to provide all the information required about a products' properties and performance, thereby enabling contractors to make a suitable product selection much more easily, with documentation which can be used to support the golden thread.

Can products without an ETA be trusted?

There are many firestop products on the market without 3rd party verification (like ETA's) because ultimately this is a voluntary scheme that not all manufacturers will sign up to. These products may have some performance data published by their manufacturer, supplier or distributor but how detailed is it and can it be trusted, especially when we are talking about potentially life-saving products?

The reality is that determining the performance of a firestop in different installation scenarios

is a complicated matter. ETA testing subjects' products to a range of defined testing programs to be able to document specific performance criteria that can be relied upon going forward due to the continuous auditing.

With the forthcoming 'golden thread' requirements and increased need for all parties involved in firestopping to demonstrate competence and provide information to back up product selection choices, ETAs will likely play an even more important role going forward.





When should you clean a cold water storage tank?

By IWS Water Hygiene

Sounds simple. When it looks dirty, right? Yes, but there are other things you need to consider. Things that need time and a degree of specialist knowledge to spot. As a Facilities Manager, you may not have the capacity of familiarity to do this yourself and will therefore seek help from external suppliers. Here is a quick guide to help you make the right choices and keep your systems safe.

Why do water tanks need cleaning?

Technically, what are commonly known as tanks are in fact cisterns. But to avoid confusion let's keep to standard vernacular for now.

Storage tanks come in many sizes and are used in numerous applications within a facility. They can be smaller than the ones found in your loft at home or larger than the loft itself.



They can act as header tanks for hot and cold water systems or store the drinking water for the whole building.

The design and installation of tanks has evolved over the years but, regardless of their construction, tanks will always be at risk from contamination. If contamination was allowed to build up over time, harmful bacteria, including Legionella, will proliferate and be distributed to all outlets throughout the property.

It is therefore essential to keep your tanks clean and free from anything that can allow bacteria to flourish. You should also ensure that the water turnover is sufficient to avoid stagnation.

Maintaining cold water storage tanks

Many water hygiene maintenance regimes are generic and provide a one-size-fits-all approach. The regime chosen for your facility may therefore not be the most cost-effective, nor provide you with sufficient information to decide when your tank should actually be cleaned. Here is the recommended guidance to help you create the most appropriate regime for your facility:





1. Inspect each tank annually as required by the HSE's Technical Guidance HSG274 Part 2 and carry out all remedial works as required – Typically this is outsourced to a specialist who will report their findings and quote to bring everything up to the required standard, including cleaning if required. This will keep you compliant, but will require you to monitor performance and validate their recommendations.

2. Annually clean and disinfect all tanks in line with BS 8558:2015 and Published Document PD 855468:2015 – Irrespective of the condition, each tank will be mechanically cleaned, residue removed, flushed and disinfected every 12 months by a specialist company. This will give you a high level of assurance and budget security. However, the cost and disruption caused may not always be necessary as you may actually be cleaning tanks that are already in a satisfactory condition.

3. Ensure your property and all its assets are risk assessed, and act upon its recommendations – The Risk Assessment will be completed by a qualified technician, sometimes independent of the water hygiene monitoring service provider. The frequency of assessments will be dictated by the risk offered by the property itself, but when completed will give you an independent and verifiable opinion on the condition of your tanks and what is required to meet standards. Tanks should

continue to be inspected regularly to ensure cleanliness and reduce the potential risk of bacterial growth.

The L8 Approved Code of Practice requires that anyone working on tanks should be trained, experienced and physically capable of completing the tasks safely. You may choose to outsource the inspection, clean and disinfection and remedial works to a specialist provider or utilise a combination of in-house and specialist resources.

Top tips on maintaining the cleanliness of cold water storage tanks

Start with regular and meaningful inspections of tanks. Inspections should look at the condition of the tank as well as test the quality of the water. As a Facilities Manager, make sure the following are being checked as a minimum:

- Sediment levels at the bottom of the tank – Build-up of sediment provides the ideal environment for bacterial growth. The tank needs to be cleaned and disinfected in line with PD 855468:2015.
- Biofilm Levels – Biofilms act as a protective 'hide-out' or shelter for potentially harmful bacteria, including Legionella. Again, clean and disinfect.
- Debris or foreign objects that don't belong in the tank, which can contaminate its contents. Clean and disinfect the tank.
- Mould on the tank walls. In these circumstances the tank should be cleaned and ventilation to




the room improved. If the mould spores are under the tank lining, then the tank should be re-lined.

- Appraisal of temperature monitoring data and any laboratory analysis undertaken. This can give an early indication that the stored water quality is deteriorating.

Make sure the inspections are carried out at the correct frequency and the service records are

legible and comprehensive. Talk to those who are completing the inspections and have them explain what they found and what their recommendations are. This will ensure that you remain compliant and your systems are safe to use.



More information can be found at www.integrated-water.co.uk

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Ensuring water fittings safety and quality



The Vital Role of Certification in the UK's Golden Thread Legislation by **Simon Warburton**, Certification Manager, NSF

In the ever-changing landscape of building regulations, the UK's Golden Thread legislation stands out as a profound shift in the construction industry's approach towards accountability and traceability. At its core, the Golden Thread is a digital record of a building's information, highlighting the need for meticulous attention to detail in building projects throughout the structure's life span. It provides a clear and transparent record of all decisions, processes, and changes that occur throughout the life cycle of a building.

While the Golden Thread encompasses a range of critical data, including building designs, materials used, and installation procedures, one key aspect requiring careful consideration is

the certification of water fittings which helps ensure that the items being installed in the plumbing systems comply with necessary legislation like the Water Supply (Water Fittings) Regulation 1999. For building specifiers and installers, understanding the significance of water fittings certification is paramount to upholding the principles of the Golden Thread legislation, which is to ensure that all building installations, including water fittings, meet the required safety and quality standards.

This new legislation has brought a renewed focus on these crucial components' quality, safety, and regulatory compliance. It underlines the importance of maintaining a clear and accurate record of all water fittings used in a building, including their specification, installation, and maintenance.

The Crucial Role of Water Fittings Certification

Water fittings certification plays a vital role in ensuring the safety and compliance of a building's water supply systems. Certification involves rigorous testing and evaluation of water

fittings used in the supply of clean and safe drinking water products, such as pipes, taps, valves, and other components, to ensure compliance. By undergoing independent testing, these products can be evaluated for their performance, durability, and resistance to various conditions, including pressure and temperature fluctuations. Certifying bodies such as NSF are accredited organisations that evaluate water fittings' compliance with national and international standards, including British and European standards such as NSF REG4.

Incorporating water fittings certification into the Golden Thread initiative will accurately record approved water fittings used in a building. This information can be useful for ongoing maintenance, renovations, and inspections. It helps ensure that water fittings are installed correctly, are fit for purpose, and comply with relevant regulations and standards. It also enables building owners and regulators to trace and verify the quality and safety of the water supply system throughout the building's lifecycle.

Building Specifiers: Empowering Informed Decisions

The importance of water fittings certification cannot be overstated for building specifiers. As they choose the products and systems to be used in construction projects, they must prioritise safety, efficiency, and durability. In the UK, unfortunately, plumbing products made by manufacturers and merchants are not regulated at the point of sale, meaning there are products on the market that don't comply with UK plumbing regulations. The burden of responsibility lies with the specifier and installer of these parts. By selecting certified water fittings, specifiers can have confidence in the product's performance and compliance with industry standards and important legal requirements.

Moreover, water fittings certification enhances traceability and accountability, aligning with the principles of the Golden Thread legislation. With certified products, building specifiers create a well-documented information thread that can be accessed throughout the building's lifecycle. This thread facilitates maintenance and renovations, reducing risks associated with using uncertified or substandard components. →

Worryingly, certification experts such as NSF have witnessed first-hand a need for more awareness amongst the UK's building specifiers and installers of the shift in the UK's water regulatory landscape. In the last three years, the industry has evolved significantly and now includes alternative accredited certification schemes beyond WRAS, such as NSF REG4 1+ and NSF REG4 S3, which offer new pathways to compliance with UK Water Fittings regulations and bylaws. Historically, specifiers would look for WRAS-approved products; however, since 2021, a number of alternative Regulation 4 compliance schemes have been launched to streamline a way for plumbing product manufacturers and materials suppliers to demonstrate conformance to UK regulations and gain timely access to the UK market.



Proving compliance

The NSF REG4 certification scheme for the UK market allows plumbing products and materials that are in contact with drinking water to demonstrate compliance with the UK's Water Supply (Water Fittings) regulations and bylaws. The scheme is UKAS (The United Kingdom Accreditation Service)- accredited to ISO/IEC 17065, and provides an alternative to WRAS for proving compliance. This certification applies to all mechanical products and non-metallic materials that are in contact with drinking water, including valves, backflow prevention devices, taps, mixers, shower heads, pipes and fittings, tanks, cisterns, and water meters – in fact, all products that are connected to the water supply, as well as: all non-metallic materials, including plastics, rubbers, coatings, types of cement, resins, and sealants.

Installers: Meeting Regulatory Requirements and Building Trust

In the UK, as professionals involved in installing and maintaining drinking water fittings, plumbers and installers play a critical role in ensuring water fittings' safety, quality, and compliance with relevant regulations and standards.

Since they carry the main burden of proof of their compliance with Regulation 4 of the Water Supply (Water Fittings) Regulations, confidence in the compliance status is crucial to their work. By using certified products, installers demonstrate a commitment to safety and quality, building trust with clients and project stakeholders.

Navigating the certification process can sometimes be challenging for installers. However, there are best practices to streamline the process. Staying informed about industry updates, collaborating with certified suppliers, and understanding the certification criteria are key steps in ensuring successful compliance. Certifiers such as NSF are ready to help those involved in specifying and installing water fittings understand the importance of using products that have been assessed by an independent body and where to get more information on these products.

Industry Impact: Embracing a Safer Future

The impact of water fittings certification reverberates throughout the construction industry. By adhering to stringent certification standards, stakeholders collectively contribute to improving building safety and quality. Certified products minimise the risks of water-related incidents, such as leaks, burst pipes, and water contamination.

Additionally, certified water fittings promote sustainability and resource conservation. Water-efficient fittings can help reduce water consumption, leading to lower utility bills and a decreased environmental footprint. By embracing certification, the construction industry actively participates in building a sustainable and safer future.

Water fittings certification is a pivotal aspect of the UK's Golden Thread legislation, as it emphasises the importance of accountability and traceability in construction projects. Building specifiers, fitters and plumbers all play critical roles in upholding the principles of the Golden Thread by prioritising certified water fittings.

Certification ensures water fittings' safety, quality, and compliance, empowering building specifiers to make informed decisions and installers to meet regulatory requirements and build trust with clients. The broader impact of certification on the construction industry is significant, promoting building safety, sustainability, and overall quality.

By prioritising water fittings certification, the UK's construction industry can continue to thrive, providing safe and efficient buildings for generations to come. Together, we can embrace the Golden Thread and create a future built on accountability, traceability, and excellence in construction.

To find out more about NSF's REG4 Certified Water Fittings, System Components and Materials or search for certified products, you can visit nsf.org or info.nsf.org/Certified/WaterReg/

About NSF

NSF is an independent, global services organisation dedicated to improving human and planet health by facilitating standards development and providing world-class testing, inspection, certification, advisory services and digital solutions to the food, water, health sciences and consumer goods industries. NSF operates in 180 countries and is a World Health Organization (WHO) Collaborating Centre on Food Safety, Water Quality and Medical Device Safety.

Simon Warburton

Simon Warburton leads water certification for the UK market and has over 30 years of experience at the specialist NSF testing lab for water fittings and materials in South Wales.

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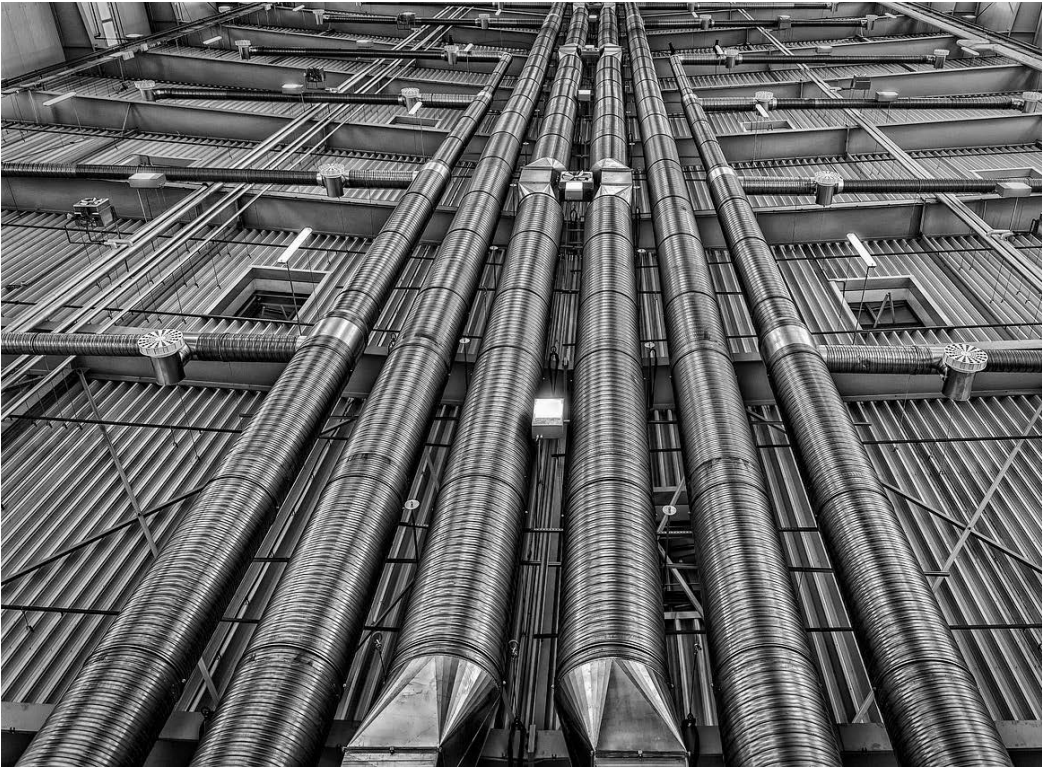
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The **Power of Synergy** in Building Services



By **Mike Gittoes**, Business Development Manager, Wave Refrigeration

In the construction industry, the integration of building services at an early stage is a critical factor in achieving efficient and sustainable building design. However, this approach is often overlooked with different specialists being involved at different stages of the project. If Building services, including HVAC (heating, ventilation, and air conditioning), mechanical and electrical services and refrigeration, are planned and implemented as separate entities, this leads to inefficiencies,

increased costs, and missed opportunities for optimal design. However, progressive industry professionals are now recognizing the significant benefits of integrating these building from the project commencement. This article will outline the advantages of early integration, including increased efficiency, optimal design, enhanced sustainability, risk mitigation, and collaborative advantage.

1. Increased Efficiency

Integrating building services like refrigeration, HVAC, and mechanical and electrical systems from the initial design phase allows for seamless coordination between different project contributors. This collaborative approach ensures that each service is correctly sized, specified, and installed in a manner that maximizes efficiency. By considering these elements holistically, redundant components are minimized, leading to reduced

energy consumption and improved operational performance.

Additionally, early integration allows for a more streamlined installation and construction process, ultimately minimizing downtime. Coordination between service providers and other trades on a construction site is enhanced, reducing conflicts and potential rework, leading to significant cost savings.

One excellent example of integrating building services to maximize efficiency and sustainability is the incorporation of heat recovery from refrigeration systems. In commercial buildings, refrigeration systems are crucial for maintaining optimal temperatures in various settings, such as supermarkets, restaurants, or food processing facilities. However, these systems generate a significant amount of waste heat that is typically released to the atmosphere.

By integrating heat recovery technology during the initial

design phase, this waste heat can be captured and repurposed for other applications within the building. For instance, the recovered heat can be utilized to provide hot water for kitchens, washrooms, or space heating in adjacent areas. This integration not only reduces the reliance on traditional water heating methods but also reduces overall energy consumption and carbon emissions.

2. Optimal Design

One of the main benefits of integrating building services early on is the ability to achieve optimal design. By collaborating with experts in mechanical, electrical, HVAC and refrigeration systems during the design phase, architects and engineers can better understand the constraints and requirements of each system. Consequently, the building's design can be tailored to accommodate these services efficiently. →



Considering building services' requirements from the beginning enables architects to incorporate essential elements such as ventilation ducts, electrical conduits, and utility spaces seamlessly into the design. This integration ensures a cohesive and unified appearance while eliminating the need for costly and unsightly retrofits after construction is complete.

For instance, during the initial review, the mechanical engineer may identify that the planned HVAC duct runs clash with the planned electrical and plumbing infrastructure, making installation and maintenance challenging. By addressing this issue early on, the experts can work together to reconfigure the layouts and make adjustments to the architectural plans. This could involve relocating the ductwork, adjusting the placement of electrical conduits or plumbing pipes, or modifying the equipment locations.

Through this collaborative effort, the experts can achieve streamlined layouts, ensuring that the building services seamlessly integrate with the architectural plans. By optimizing the placement of equipment and rerouting ductwork, they can create efficient pathways that minimize space requirements, reduce material waste, and enable easier access for maintenance.

3. Enhanced Sustainability

In today's era of heightened environmental consciousness, the

early involvement of recognized experts specializing in sustainable building services is of paramount importance. These experts possess the knowledge and experience to incorporate energy-efficient solutions, innovative technologies, and sustainable practices into the project design. By integrating these elements from the outset, projects can effectively minimize their carbon footprint, achieve higher levels of sustainability (BREEAM), reduce energy consumption, and achieve

long-term operational cost savings.

Let's consider a real-world example to illustrate the impact of early involvement of sustainable building services experts. Suppose a company plans to construct a new office building with the goal of achieving a high level of energy efficiency and sustainability. Early involvement of experts specializing in sustainable building services can significantly shape the design to meet these objectives.

During the initial design phase, the experts can thoroughly assess

the building's orientation, solar exposure, and natural ventilation opportunities. Using this information, they can implement passive design strategies such as strategic shading elements or window placements that maximize natural daylighting while minimizing solar heat gain.

Incorporating experts in sustainable building services early on allows them to conduct detailed energy modelling analyses. Through these analyses, the experts can evaluate different design scenarios, including the selection of energy-efficient building materials, insulation, and glazing systems. By thoroughly assessing the building envelope's thermal performance, they can minimize energy loss and optimize the HVAC system's efficiency, resulting in reduced heating and cooling demands.

Renewable energy systems are another crucial aspect that sustainable building services experts can advise on from the early stages. They can assess the feasibility of incorporating solar panels, wind turbines, or geothermal systems into the building's design. By accurately estimating the potential energy generation and integrating these systems into the overall project plan, the experts can help the project achieve a higher level of energy self-sufficiency and reduce reliance on conventional power



sources. This is especially crucial when integrating heat pumps into a design as it can potentially limit the need to upgrade the power supply to the building.

4. Risk Mitigation

Risk mitigation is a crucial aspect of successfully executing complex projects, particularly those involving multiple building services. These projects often come with inherent challenges and potential pitfalls that can result in costly errors if not properly anticipated and addressed. By having experts with a comprehensive understanding of these specialties involved during the design phase, the likelihood of oversights and errors can be minimized, ultimately ensuring safety, reliability, and compliance with regulatory standards throughout the project.

Incorporating knowledgeable professionals early on also helps promote collaboration and synergy among different stakeholders involved in the project. These experts can bridge the gap between various disciplines and ensure efficient coordination among them. By fostering effective communication channels and encouraging interdisciplinary collaboration, they enable a more seamless integration of HVAC, mechanical, electrical and refrigeration services into the overall project design. This integration not only minimizes potential conflicts between different systems but also optimizes their performance, promoting reliability and longevity throughout the project's lifecycle.

Furthermore, having experts with a comprehensive understanding of the buildings services during the design phase allows for value engineering. By analysing various design alternatives and considering factors such as energy efficiency, maintenance costs, and equipment selection, these specialists can suggest cost-effective solutions that maintain safety and compliance while reducing long-term operational expenses. Value engineering ensures that the project is not only executed successfully but also provides sustainable and efficient services without compromising quality.

5. Collaborative Advantage

In complex projects, the collaborative advantage gained from the early involvement of experts across multiple disciplines is invaluable. When experts

from different fields effectively communicate and collaborate, their collective knowledge and experience can greatly benefit the project. By fostering open lines of communication, these experts can enhance coordination, reduce conflicts, and establish a harmonious work environment that promotes innovation and success.

Let's consider an example to illustrate the importance of collaborative advantage in project execution. Imagine a large-scale construction project that involves the construction of a new hospital. This project requires collaboration among architects, structural engineers, MEP (mechanical, electrical, and plumbing) engineers, and interior designers, among others. Each discipline brings unique expertise and perspectives.

Through early involvement, these experts can establish an effective communication framework right from the project's inception. Regular interdisciplinary meetings and consultations allow the experts to share their insights, discuss design challenges, and propose innovative solutions. For example, the architect can present the vision for a spacious and aesthetically pleasing patient room layout, and the MEP consultant can provide feedback on how to integrate the necessary mechanical and electrical systems

without compromising the design or efficient functionality.

In this collaborative environment, conflicts and incompatibilities can be proactively addressed. For instance, the structural engineer and MEP consultant may realize that the proposed HVAC system's size and installation requirements conflict with the structural constraints of the building. By openly discussing these concerns and considering alternative design approaches, the team can find a solution that satisfies the requirements of both disciplines without compromising the overall project objectives.

In summary, by fostering open lines of communication, this collaboration enhances coordination, reduces conflicts, and creates a harmonious work environment that encourages innovation. The experts' collective knowledge and diverse perspectives contribute to finding optimal design solutions, streamlining coordination, and achieving project goals effectively. Through their collaboration, the project benefits from a cohesive team with a shared vision, leading to successful project execution and stakeholder satisfaction.

Conclusion

Integrating building services like HVAC, and mechanical, electrical and refrigeration systems at an

early stage is vital to achieving efficient, sustainable, and cost-effective building designs. The benefits of early integration outlined in this article include increased efficiency, optimal design, enhanced sustainability, risk mitigation, and collaborative advantage. Construction industry professionals must recognize the immense value in integrating building services from the start, and actively seek the expertise of specialists in these areas to ensure the success of their projects. As the industry continues to evolve, those who embrace early integration will reap the rewards of improved building performance, reduced costs, and increased client satisfaction.

Effective multi-discipline project management is also crucial for ensuring the successful implementation of early integration of building services. Companies like WAVE specialize in providing comprehensive solutions for integrated building services. By engaging such companies, project teams can benefit from their expertise in coordinating and managing diverse disciplines involved in the construction process.



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How manufacturers are supporting the sustainability agenda



By **Tom Murray**, UK Sales and Marketing Director at Polypipe Building Services

With changing environmental regulations construction industry professionals are taking a broader view of the products they select, with factors like full lifecycle embodied carbon being a key consideration. Tom Murray explains how manufacturers are supporting the construction industry's sustainability agenda and move towards building decarbonisation.

There's no doubt that the push to meet the government pledge to Net Zero has gathered pace over

the last 12 months. With around 39 per cent of the total UK carbon emissions being generated by the construction industry there is a clear need to ensure everyone in the sector is playing an active role in addressing this issue.

As the largest buyer within the industry the government has led the way in driving change, which is being reinforced through professional bodies such as the Low Energy Transformation Initiative. This originally aimed to influence policy relating to London's built environment to meet Net Zero Carbon and has now been extended to all UK zero carbon policy and regulation.

The London plan

Another gamechanger has been the publication of strategies by local authorities, including The London Plan published by the Greater London Authority. This serves as a blueprint for the future development and sustainable growth of the city and calls on

developers to provide whole life-cycle carbon assessments resulting from a building over its entire life including demolition and disposal.

This has led to more demands on building services than almost any other sector to provide carbon data due to products being used within large buildings providing a high number of dwellings. While this has been done for some time within concrete and steel companies whose building materials contribute significantly to the embedded carbon of the building, it is now becoming common across other types of manufacturers as specifiers seek granular data to create a whole picture of a building. This is also in anticipation of the fact that whole life cycle carbon assessments are likely to become mandatory, and it's also possible that insurers will favour sustainable developments in future with one of the UK's largest insurers recently stating its intention to be a market leader in underwriting sustainable construction developments.

What this means for manufacturers is an increasing demand for them to provide carbon data and complete transparency about their products, and to provide proof that they meet market leading sustainability standards if they are to have a seat at the procurement table. Environmental Product Declarations (EPDs) play a crucial part in this, and Polypipe Building Services is on that journey in completing these for our range of products. EPD's detail the environmental impact of a product and are created using Life Cycle Assessment methodology which measures GHG emissions throughout the product's life from raw material extraction through to transportation, manufacturing, application, and end of life use including recycling. Importantly, they offer a standardised baseline for product comparison, offering transparent, objective information about product carbon footprints so construction professionals can make more informed sustainability comparisons and decisions.



Developers need to understand the environmental impact of their projects and we are seeing a growing demand for EPDs as evidence of objective third party verified data regarding the performance of our products, together with certifications such as BES6001 which proves the materials for our products have been responsibly sourced. These are now becoming an essential part of the construction industry's journey towards carbon net zero, and we anticipate demand for them to grow year on year as EPDs will fast become the credible way to directly compare products and contribute towards building certifications such as BREEAM and LEED. Sustainability accreditations like these can also support tender bids, so there's a strong incentive for construction professionals to scrutinise every aspect of a build's climate impact.

Carbon assessments

Evidence of this drive towards whole life-cycle carbon assessments and data gathering can be seen as many large companies and organisations within the sector are already backing carbon assessments, including ARUP, WSP, Atkins, Lendlease and RIBA to name a few. As a plastic drainage and water supply specialist manufacturer this is something we can embrace.

Improving our carbon footprint and playing our part in helping the supply chain to build better has always been important to us as a manufacturer, we're aiming for 62% of our products to be manufactured with recyclable materials by 2025 and a 65% reduction in carbon intensity. We are already working with other

industry partners to ensure a supply of used PVC materials, such as from window frames, which is then used to produce new drainage products.

Our own manufacturing site already operates a zero-waste policy, and this means we not only recycle and reuse pallets and plastic packaging for example,

but we also pick up any product offcuts from customers generated on projects which are brought back and reprocessed.

Carbon data from many of our own initiatives then feed back into our Genuit group commitment to meet our Science Based Target which demands we reduce our scope one and two emissions by 30% by 2027. The Science Based Target Initiative (SBTi) is the gold standard in decarbonisation because it requires companies to commit to a science-based approach and target which is aligned to limiting global temperature increase at 1.5 degrees centigrade to avoid the worst effects of climate change. Genuit is one of a small but growing number of UK PLCs to have an approved SBTi target, and we are extremely proud as their subsidiary business to play our part in this public commitment to net zero and to support our industry proactively in the mitigation of climate risk.



More information can be found at

www.polypipe.com/buildingservices



Hybrid air conditioning is key to lowering the costs and carbon emissions of modern buildings



Jobin Varghese, Product Manager for VRF and HVRF Air Conditioning Systems at Mitsubishi Electric looks at how a water-based air conditioning system can help lower running costs and reduce carbon emissions while removing the need for leak detection.

The UK has become used to Variable Refrigerant Flow (VRF) air conditioning and especially modern systems that can simultaneously heat and cool different parts of a building to offset energy consumption. VRF systems are very efficient, extremely controllable, and offer design and operations flexibility that mean they can be fitted in modules, making them much more versatile than 'traditional' methods of heating and cooling a building.

At the same time, specifiers are looking for ways to reduce the impact of HVAC systems and one

way is to lower the global warming potential (GWP) of the refrigerant used in the VRF system. Indeed, the industry has moved to R32 as the main refrigerant of choice, and this has seen a drop in GWP from 2,088 for R410A to 675 for R32 systems.

Hybrid VRF (HVRF) air conditioning takes this to another level because the refrigerant is only used between the outdoor compressor and an internal Hybrid Branch Controller (HBC) box, so there is far less R32 needed. From the HBC box, the system uses water to transfer heating and cooling to each room or space. This means there is no refrigerant in the majority of the system and no refrigerant in occupied spaces – meaning there is no need for expensive leak detection equipment in applications such as hotel bedrooms or student accommodation.

Keeping things simple

BS EN378 is a requirement to install detectors where there is any potential for leaked refrigerant to stagnate. Adding individual leak detectors in each room is expensive, both in installation terms and in ongoing maintenance, as each of these detectors has to be checked and recalibrated every year. These semiconductor-based leak detection sensors can also be prone to false alarms if they detect concentrations of chemical substances such as perfume, deodorant or paint, which can disrupt hotel occupants and cause issues when changing the interior of a building from CAT A to CAT B.

Additionally, the next step of the F-Gas Regulations phasedown in 2024 is calling for an additional drop of 14% in the quota of HFC's on the market, and this is likely

to see a rise in the cost of higher GWP refrigerants and probable shortages. HVRF therefore proves the ideal solution for customers looking to future-proof their air conditioning by utilising the lower GWP refrigerant and reducing overall refrigerant volume.

By combining R32 with the merits of a Hybrid system, more than an 80% reduction in CO2 equivalent can be achieved as it uses up to 40% less refrigerant, when compared to an R410A VRF system. Plus, the HVRF system still offers full heat recovery and simultaneous heating and cooling so it can deliver the modern levels of energy efficient comfort expected by building occupants.

What sectors is HVRF suitable for?

HVRF is suitable for wherever VRF can be applied so we don't see any limitations. It will also prove



ideal for any building that needs to prioritise energy efficiency, a reduction in GWP and lower carbon emissions, with easy to control and monitor internal comfort.

For offices and other commercial buildings, HVRF offers the full flexibility and comfort levels of VRF air conditioning and can help simply transform spaces from a CAT A to a CAT B fit out, as water pipes can be isolated from the Hybrid Branch Controller box making changes to building layout straightforward.

In the hotel sector, where guest comfort is an absolute requirement, legislation is also focusing attention on energy use and limiting the use of refrigerant in occupied spaces. HVRF removes the need for leak detection reducing both installation and annual maintenance costs.

In education, HVRF provides a truly integrated and flexible solution that can deliver comfort through temperature stability, remove refrigerant from any occupied spaces and reduce noise.

In the health sector, HVRF offers milder off-coil temperatures to ensure patient comfort, with no refrigerant in indoor units.

Maximising comfort

HVRF is a unique system whereby the outdoor unit is connected with a 2-pipe heat recovery VRF system, and water is used between the HBC and indoor units. This not only reduces overall refrigerant but also helps to deliver comfortable and stable air temperature control with better off-coil temperatures, reducing any risk of 'draughts'.

The system has been available in the UK for more than five years now and has been installed in a huge variety of applications, from hotels and offices, to schools and universities. In the case of Durham University, a Hybrid VRF air conditioning system was chosen as part of its journey to being one of the most sustainable universities in the UK. This system has also supported the university's environmental goals by providing heat recovery to meet the need for simultaneous heating and cooling. Moving energy where it is needed reduces power input by up to 30%, offering flexibility, operability, comfort and control. These systems are ideal for buildings where there are different heating and cooling requirements throughout the building.

Maximising flexibility

Thanks to the introduction of a Vertical HBC, in addition to the usual ceiling version, HVRF can be installed in even more applications than ever before.

This floor standing solution has all the key components accessible from the front and at floor level during commissioning, ensuring simple installation of additional water-side ancillaries, such as expansion vessel, water filling loop and isolation valves.

For systems with outdoor units larger than 40kW, the Vertical HBC offers a more cost-effective solution which is simpler to install than the Horizontal HBC system.

The need to future-proof buildings

Buildings are currently responsible for 40% of annual global CO₂ emissions. With the global building floor area expected to double by 2060, achieving zero emissions from construction is a priority, and installing efficient air conditioning systems with a low environmental impact will be key.

HVRF proves the ideal solution for customers looking to future-proof their air conditioning in line with the next stage of the F-Gas

Regulations and the phase-down of high GWP refrigerants.

As a system, Hybrid VRF provides the perfect system for both reducing refrigerant volume and utilising the lower GWP refrigerant.



Armstrong Fluid Technology launches new range of pressurisation units

Armstrong Fluid Technology has launched the 3760 range of pressurisation units for HVAC applications. These compact units are designed to maintain the minimum system pressure of sealed systems up to 300,000 litres with some models also offering combined vacuum degassing and automatic chemical dosing as needed. Pressurisation only models are available for both floor and wall mounting, and floor-standing dual/multi models are also included in the range. Each unit combines a range of features to improve efficiency, save money, and reduce maintenance costs.

The 3760 Pro Floor Standing Pressurisation Units are digital units, designed for use on sealed systems, which offer enhanced BMS connectivity for multi-level monitoring. The unit's controller maintains accuracy at the same time as reducing downtime, as changes can be made on the live system. With built-in dry run protection, anti-seize routine, and flood protection, they notify excessive starts and limit pump run time. These units are available in three models - 2LP, 2MP, and 2HP - with top up delivery pressure ranging from 1-8 bar. There is also the option of the DualSys model, which can control two sealed systems with the same benefits.

In addition to the 3760 Standard PRO models, the range includes ProVDG Pressurisation Units which combine pressurisation and vacuum degassing capabilities. These help prevent damage to pumps, heat exchangers, and valve seals by reducing magnetic accumulation. By effectively removing dissolved gases from the system, they also reduce system resistance and improve pump efficiency, allowing lower operational speeds. This results in improved heat transmission by keeping water at its optimal thermal potential, which saves time and money. These models also feature built-in dry run protection, anti-seize routines, and flood protection, providing notification of excessive starts and optimising pump run time. These units are available in three models - 2MP, 2HP, and 2UHP - with top up delivery pressure ranging from 1-8 bar.

 www.armstrongfluidtechnology.com



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- RC trigger function and vibrating load buttons
- Voltage range up to 1,000 V (testo 745)
- Waterproof and dustproof according to IP 67 (testo 745)

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testo 755-2 + testo 745 - Current-voltage tester & Non-contact voltage tester

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- DIN EN 61243-3:2014 and DIN EN 61010?1:2011 certified
- Single pole voltage testing to determine quickly whether conductors are live
- Voltage range up to 1,000 V (testo 745 & testo 755-2)
- Waterproof and dustproof according to IP 67 (testo 745)

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Lochinvar launches high temperature low GWP heat pump

Low carbon heating and hot water equipment manufacturer Lochinvar has unveiled a new range of high temperature air-to-water heat pumps capable of producing hot water up to 70degC while still achieving high energy efficiencies and reduced environmental impact.

The Amicus Altus is available in three possible configurations: Two-pipe heating only, two-pipe heating or cooling, and four-pipe simultaneous cooling with heating and heat recovery, making it suitable for most types of commercial project.

The high temperatures achieved makes the Amicus Altus especially useful as a direct low carbon replacement for gas boilers in buildings with high hot water demands without requiring a substantial remodelling of the heating and/or hot water systems.

This makes the new range a valuable addition for specifiers looking for solutions that support net zero carbon strategies and help to reduce energy bills without major upfront capital costs.

The new range also operates with the very low global warming potential (GWP) refrigerant R290 (propane), which is one of the most climate-friendly refrigerants on the market. It has a GWP of just three compared to the popular traditional alternative R410A which is typically used in this type of application and has a GWP of 2,088.

R290 also has an ozone depletion factor (ODP) of zero and, according to the Intergovernmental Panel on Climate Change (IPCC), its GWP over a 20-year period remains below one – making it more environmentally friendly as a refrigerant than carbon dioxide (CO₂). Another benefit is that it does not contain any poly-fluorinated chemicals (PFAS) which are now subject to stricter restrictions in the UK and Europe.

Future proof

By going with this non-HFC 'alternative' refrigerant, Lochinvar has produced a future-proof solution that is in step with the latest UK regulations which require the industry to move away from higher GWP substances.

Under the current phase down timetable, the UK is looking to eliminate fluorinated gases (f-gases) from most heat pump applications by the end of the decade. This is in line with the European F-Gas Regulation that the UK continues to mirror despite its departure from the European Union.

The Altus units are also fully cascadable with outputs from 88 to 880kW and deliver an impressive Coefficient of Performance (CoP) of up to 5.5 – seasonal COP is around 3.95. They can also operate in heating mode down to external air temperatures as low as -20°C.

With built in controls and a BMS fault and remote on/off signal that prioritises hot water production, this small footprint unit is easy to install

and commissioning; and is supported by Lochinvar's offer of free site visits for every installation.

"We are delighted to be bringing such an impressive step forward for heat pump technology to the market," said Lochinvar's product engineer Steven Hunt. "Air-to-water heat pumps are generally highly energy efficient, but the Altus also delivers hot water temperatures comparable to those end users are used to with conventional gas boilers.

"This, allied to the low GWP and zero ODP factors, make them an attractive choice for anyone specifying a retrofit project with high performance and low environmental impact in mind."

Air-to-water heat pumps can be integrated into a variety of heating systems, which makes them a flexible option for different types of buildings and installations; and although the initial installation cost will be higher than for a gas boiler, the long-term savings are potentially far greater and the building's carbon footprint substantially reduced.

This new product follows last year's launch by Lochinvar of the UK's most powerful heat pump water heater, the Amicus Aquastore.

It has an output of 8kW and 455 litres of hot water storage capacity in a compact monobloc package combining heat pump and storage vessel. It can deliver up to 65degC hot water in both efficiency and hybrid modes and up to 490 litres in a peak hour with a 50degC temperature rise.

Popular

The Aquastore and now the Altus are the latest additions to the extensive and popular Amicus range of air source heat pumps (ASHPs) which includes models delivering domestic hot water capacities from 7.7kW up to 210kW for a wide range of projects including large residential; medium and large commercial; and industrial applications.

"Heat pumps are playing an increasingly important role in helping the UK transition to low carbon heating and the Amicus Altus is just the latest in a line of innovations designed to make the technology available to the widest possible range of users with minimal disruption to the existing building services," said Hunt.

"As well as our on-site support and technical back-up, another benefit to our customers is that Lochinvar can provide all the components needed to provide a complete low carbon system with heat pump technology at its heart. This considerably simplifies the specification, design, and installation process," he added.

 www.lochinvar.ltd.uk



Copeland Innovates Integrated Scroll Compressor Solution to Enable Quieter Heat Pumps

Low noise emissions critical to encouraging more widespread adoption

Heat pumps play a central role in moving away from fossil fuels to heat buildings and homes. As a more sustainable alternative, they bring ambient heat to the required temperature level with minimal energy input. However, a decisive factor for their legal conformity, acceptance and adoption is noise, especially in urban residential areas. At the 20th European Conference on Refrigeration and Air Conditioning in Milan, Italy, Copeland™ presented innovative technology and complete compressor solutions that enable exceptionally quiet operation. With the help of the new Copeland YHV*RG and YHV*RT scroll compressors, original equipment manufacturers can develop efficient heat pumps that meet the particularly high requirements for low noise in the residential sector, but without the need for elaborate sound insulation.

Copeland solution combines low noise with efficiency and sustainability

The core of Copeland's complete solution is a new type of variable speed scroll compressor designed specifically for heat pumps with R290 (propane) or R454C refrigerant. These scroll compressors generate a lower sound pressure than other scroll compressors: Compared to a standard Copeland compressor, the newly developed scroll compressors of the YHV low-sound series operate at full power with a 10 dB(A) lower sound pressure.

The low sound scroll compressors are complemented by the highly efficient Copeland EV3 drive and the advanced superheat envelope controller (SEC). They continuously monitor performance and ensure that all operating parameters are within their defined safety margins.

Because the Copeland low-sound solution package combines quietness with the highest energy efficiency (A+++) and refrigerants with low global warming potential, it also ensures compliance with the F-Gas regulation, thus making it a future-proof investment.

New Copeland scroll compressors are the key to less noise, lower system costs

"The Copeland package with scroll compressors, perfectly matched components and advanced control technology allows for the design of very quiet and compact heat pumps," explains Enrico Fraccari, Director Marketing Residential Comfort, Europe for Copeland.

"For manufacturers, this also combines great potential savings in material and labour costs; lower system costs in turn improve their competitiveness."

Copeland's new YHV low sound scroll compressors allow the construction of heat pumps with significantly lower operating noise levels.



www.copeland.com/en-gb/products

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