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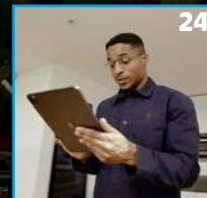


**Taking the opportunity to tackle the growing overheating crisis**



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**Overcoming the challenges of ductwork installation and testing**



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## WELCOME TO THE MARCH ISSUE OF MODERN BUILDING SERVICES

can just about see Spring over the horizon. The first quarter of the year is nearly behind us and I'd be very interested to hear from you on how your business is starting off 2024.

As you know, MBS is very proud to be a strong supporter of many of the most notable events within the industry. The CSA (Commissioning Specialists Association) awards dinner, BESA (Building Engineering Specialists Association) annual conference and awards dinner and of course The National ACR & Heat Pump Awards, a superb event held in Manchester every year. Turn to page 10 to view the enviable shortlist.

The need to decarbonise the UK's building stock has catapulted refurbishment and retrofit to the top of the political agenda. BESA Technical Director Graeme Fox says we must grab this opportunity to tackle the growing overheating crisis. Read more on pages 12 and 13.

A fairly new contributor to MBS, Andrew Robinson, Managing Director of HVAC supplier Exi-tite, explains the role of technical memorandum HTM-03-01 for ventilation in healthcare on pages 18 and 19.

Retrofit is also a hot topic, with Katherine Morton, Regional Design Lead at Stepnell, explaining how to optimise project outcomes when considering taking a new or refurb route for public sector buildings on pages 20 and 21.

I do hope you enjoy this issue and look forward to hearing about your first quarter of 2024.

*Juliet Loiseau*

CompCIPHE / MInstR  
Publisher

# MBS

MODERN BUILDING SERVICES

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See **www.modbs.co.uk** for our digital issues and to search all of our news, features and product updates.

## PEOPLE

**New MD and Finance Leader for ABM**

ABM, provider of facility services and solutions, has appointed a new Managing Director and finance leader.

Campbell Murdoch has joined the business as Managing Director for the Business & Industry division as part of the senior leadership team. Led by SVP & President for UK and Ireland Richard Sykes, Campbell will work alongside Jim Niblock, Managing Director for Transport & Aviation, and Ian Anderson, Managing Director for All Ireland.

With more than 20 years' experience in senior board positions, Campbell joins ABM from City FM where he held the role of Managing Director. Campbell will play a key part in delivering ABM's growth strategy which puts an immediate focus on the rapid expansion of the technical services offering.

Liz Freeman has joined the company as Shared Services Director, Finance, for UK & Ireland. Liz brings a wealth of sector experience holding senior financial roles over the past 20 years, most recently for OCS.

These appointments follow that of Niall Partridge as Finance Director for UK & Ireland and Simon Barnes as Vice President of Sales in the UK & Ireland at the end of 2023.

Richard Sykes said: "We have entered 2024 with an incredible team in place, ready to deliver on our strategy with efficiency and speed. Contributing industry leading credentials, Campbell and Liz are welcomed additions to the leadership and we are over the moon to have them on our team."

Alongside building the right leadership team, a significant part of ABM's immediate strategy has been to integrate teams under a One ABM approach. Following the move of the London Bridge office into the Transport for London (TfL) North Greenwich offices, the Blackjack Promotions team in Ireland has also moved into the ABM Ireland HQ (formerly Momentum Support).

Most recently, ABM announced the relocation of the two West London offices to a new head office at Heathrow.

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

**JTL appoints Sandra Warren-Smith as National Delivery Director**

JTL, a leading apprenticeship provider across England and Wales, has appointed Sandra Warren-Smith as its new National Delivery Director.

In her new role, Sandra will oversee the management of JTL's regional teams, training centres and apprenticeship programmes.

Sandra has an extensive experience contributing to the education agenda and creating career opportunities.

Prior to joining JTL, Sandra served as the Operations Director for Skills at PeoplePlus UK, where she led the delivery of high-quality skills and employability programmes whilst managing a large, diverse team.

Chief Executive of JTL, Chris Claydon, said: "We are delighted to welcome Sandra to JTL as our new National Delivery Director. Her extensive experience and dedication to quality and innovation in education settings aligns perfectly with our purpose and vision. Sandra's leadership will undoubtedly drive forward our mission of providing exceptional apprenticeship opportunities to individuals across England and Wales."

Sandra Warren-Smith's appointment follows the retirement of Judi Wheeler, who held the same role at JTL for eight years where she managed four regional teams to deliver apprenticeships, professional courses, and assessment services.

Chris added: "We extend our gratitude to Judi for her dedicated eight years of service and wish her all the best in her future endeavours."

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

**AZTEC SOLAR APPOINTS OPERATIONS MANAGER**

Aztec Solar Energy Ltd, the nationwide engineering-led consultancy and installer of bespoke solar photovoltaic systems (BESS) has appointed Andy Rowlands in a new role as Operations Manager.

Andy will manage and oversee the implementation to final delivery of projects for Aztec Solar Energy.

He will have a team of project managers, logistics and the design team reporting to him.

He brings more than 24 years' experience in the electrical industry of which the last three years have been in the solar PV sector.

Commercial Director Chris Cowling said: "Andy brings a wealth of knowledge and experience with him and is already introducing new processes that will help us evolve our current business and develop into new areas. He is a welcome addition to our expanding team."

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





### New General Manager for Fire & Security

Johnson Controls has promoted Sarah Dixon to General Manager, Fire & Security.

Sarah joined Johnson Controls as General Manager, Fire Suppression in 2020 and was promoted to Enterprise Sales Director UK&I after a two-year tenure.

During her time with the company, she has led her team in driving double digit growth for the Fire Suppression business and delivered on digital and sustainable outcomes for customers as Enterprise Sales Director UK&I.

Sarah has a passion for speaking internally and externally to promote diversity and inclusion within the industry.

Andy Ellis, Vice President and General Manager, UK & Ireland, said: "Sarah has an exceptional track record in strengthening teams and driving growth at Johnson Controls, and we are delighted she is continuing her career within the fire & security business."

"I've built so many great relationships and learnt from the best in my time so far at Johnson Controls. I am honoured I can still progress here and continue to work with leaders in the industry," said Sarah.



### Rina named as one to watch in 'Women in HVAC 2024'

Rina Vidri, who leads Primera's mechanical group, has been being named one of Engineered Systems' 20 to Watch: Women in HVAC for 2024.

Rina has worked in the industry for 32 years and leads the HVAC design process for all of Primera's projects as well as mentoring the next generation of engineers. Having begun her career as an associate engineer, she now oversees the work of more than 10 mechanical and plumbing engineers and has been involved in award-winning projects.

As a keen advocate of bringing more women into the industry, Rina advises them to seek internships and embrace challenge.

She said: "I like to solve problems and take a personal interest in mentoring junior engineers. In my Group Manager role, I can do both."



### Senior appointment drives focus on sustainable drainage and supply solutions

Polypipe Building Services has appointed Sean Norris as Advantage Services Manager to drive the company's focus on offsite prefabrication.

Sean's move across from his role as Product Manager within the Polypipe Civils & Green Urbanisation business follows a series of other senior appointments within Polypipe Building Services, as it increases its focus on providing sustainable solutions for customers.

Having joined Polypipe in 2010 as a Business Development Representative, Sean brings with him extensive knowledge of the building services sector and strategic projects. In his new role he will oversee an ambitious growth plan for the company's Advantage Service, which provides a bespoke fully fabricated drainage and supply systems solution for specifiers and contractors.

Sean said: "Everyone is talking about the importance of offsite and modular construction which is our biggest challenge and the largest opportunity for us. As a business we want to work more closely with developers and contractors to consider the challenges they face and how we can support – for example by implementing product development such as pre-insulating pipework to make installation easier.

"Because we can offer bespoke fabrication in-house at Polypipe Building Services the opportunities are endless, with offsite fabrication frequently being chosen as a preferred construction method by hotel chains and pub groups. The challenge for us is to understand how we need to evolve our products and processes to meet their needs."

Technical Director of Polypipe Building Services, Ian Crickmore, said: "Sean is a very welcome addition to the Advantage team and will play a key role in shaping the direction of our prefabricated service. Offsite construction will play a vital part within the construction sector as specifiers are being challenged to do more with less, while still delivering on quality and sustainability standards."





## 'Landmark' prosecution of online seller welcomed by REFCOM

The air conditioning and refrigeration industry's largest safety register REFCOM has welcomed the successful prosecution of online sales company Appliances Direct (AD) for breaching F-Gas Regulations.

AD's holding company Buy It Direct (BID) has been fined £37,500 following legal action taken by the Environment Agency (EA) acting on information provided by REFCOM in July 2020. This revealed that the company was selling split air conditioning heat pump systems without meeting its statutory obligation to ensure the appliances would be installed by properly qualified engineers.

The online sales firm was found to be in breach of F-Gas Regulation article 11 paragraph 5 which seeks to ensure equipment charged with refrigerant gas is safely installed to protect the public and the environment.

REFCOM produced a technical bulletin: 'A practical guide for wholesalers and distributors' in April 2017, which was approved by the EA, and set out the procedures that equipment sellers needed to follow to ensure compliance with the regulations. These include receiving confirmation from the buyer that the equipment will be installed by someone holding a valid F-Gas handling certificate or by an F-Gas registered contractor.

BID Chief Executive officer Nick Glynn had argued in the company's defence that purchasers "could not proceed to actual purchase without agreeing contractual terms which included installation by a relevantly-qualified engineer".

However, this was dismissed by the prosecutor on the grounds that there was "no evidence that the installation will be properly carried out". In fact, the judgement found that 94% of AD's sales to end-users were lacking evidence indicating compliance with the regulations.

"This is a landmark prosecution that sets a precedent for anyone trying to circumvent these important public safety regulations using online sales platforms," said Graeme Fox, Technical Director of the Building Engineering Services Association (BESA) which operates the REFCOM register.

"REFCOM and its members have been raising the alarm about online sellers for several years as they represent a vulnerability in the system that can lead to equipment falling into the wrong hands. Most distributors and wholesalers are fully aware of their responsibilities and ensure they receive confirmation of safe installation before selling refrigeration and air conditioning equipment, but we remain vigilant for any that might seek to act irresponsibly for profit.

"We will continue to work hard on behalf of the industry and its customers to ensure only properly trained, qualified and registered individuals and companies carry out this important work."

[www.refcom.org.uk](http://www.refcom.org.uk)

## First keynote speakers announced by Europump

The first two keynote speakers have been announced for an annual event being hosted by the British Pump Manufacturers Association (BPMA).

Europump (the European Pump Association), which represents 15 National Associations across Europe, is staging its 2024 Annual Meeting in the UK which the BPMA is hosting and WEG, producer of motor, drive, and asset management systems technology, is sponsoring, in May. The three-day event will take place at the De Vere Beaumont Estate near Windsor, Berkshire, from May 22nd to 24th.



Reflecting the current Europe-wide legislative agenda, as well as other topics affecting the international pump sector, it will feature a programme of meetings and presentations aimed at offering both intellectual and practical value to pump manufacturers.

In addition to sessions dedicated to the activities of the various Europump Commissions – Technical, Standards, Marketing, SME, and Blueprint – several invited speakers will also share their thoughts and expertise on issues including digitisation and AI, sustainability, the post Brexit political landscape and the economic standing of the worldwide pump market.

The first of these invited speakers to be announced is Stephen Phipson CBE, Chief Executive at Make UK. Taking to the stage on the morning of Friday, May 24th, immediately before the General Assembly, Stephen will provide an overview of the political arena in the UK and its impact on the manufacturing sector both at home and abroad. In a somewhat timely fashion, the implications of the impending General Election in the UK will also be considered.

The second speaker to be announced is Kiran Ahmed, Lead Economist, Global Industry Services at Oxford Economics. Kiran will present the key findings from the 2024 World Pump report, including the macroeconomic and industrial backdrop and how it impacts upon the international pump market. This presentation will take place during the afternoon of 23rd May as part of the Marketing Commission session.

BPMA CEO, Wayne Rose, said: "I have no doubt our audience will be captivated by the political and economic overviews presented by Make UK and Oxford Economics, and I look forward to announcing further keynote speakers in due course, who will be addressing some of the other key topics currently affecting the pump industry."

Running in tandem with the business agenda across the three days, will be a partner programme, which includes full use of the grounds and leisure facilities at the venue, a visit to Windsor Castle, a river boat trip along the Thames, and two gala dinners.

The online booking system is now live.

[www.Europump2024.com](http://www.Europump2024.com)



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SCAN ME



# FINALISTS 2024

The much-anticipated National Air Conditioning, Refrigeration & Heat Pump Awards 2024 will be held at The Midland, Manchester on March 21st, giving the industry a welcome opportunity to recognise outstanding people, projects and products.

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### REFRIGERATION PRODUCT

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AMChill Ultra-low Charge Ammonia Chiller
- Testo Ltd

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- Personal Refrigeration Ltd  
Rice Cook Ventilation & Cooling Project
- Organic Heat Exchangers Ltd  
Cool Net Zero Project
- Personal Refrigeration Ltd  
Air Handlers Northern. London Vet Specialists Project.
- Panasonic Heating and Cooling  
Riverdale Healthcare

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Bespoke R-449A Refrigeration System for 65m Ice Breaker
- BITZER UK and G&O Refrigeration Ltd  
Lee Valley Ice Centre
- Personal Refrigeration Ltd  
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- Mitsubishi Electric  
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- **Solid Energy**  
DH Sub Station Heat Pump 200kW  
5MW
- **Swegon**  
BlueBox OMICRON Zero

#### GROUND SOURCE PROJECT

- **Ecoforest**  
Daly Renewables single house installation
- **R A Brown Heating Services Ltd**  
Ground Source Heat Pump in The Old Rectory
- **Calibrate Energy Engineering**  
2-phase 3 Megawatt Modified Capacity GSHP  
in Scotland

#### DOMESTIC AIR SOURCE PROJECT

- **R A Brown Heating Services Ltd**  
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- **Viessmann**  
Blakemore Plumbing & Heating and Viessmann
- **Viessmann**  
Heat Different and Viessmann
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Batchelor makes a splash with multi zone  
pool project

#### NON - DOMESTIC AIR SOURCE PROJECT

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Weleda World Leader in Natural Cosmetics  
and cures
- **RPS Group**  
Decarbonisation of Wallesy Hub
- **ICG HEAT PUMPS**  
Kirkby Leisure Centre
- **Mitsubishi Electric**  
Decarbonising hot water in The Gym Group's  
Leyland site
- **Calibrate Energy Engineering**  
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ThermaSkirt
- **Discrete Heat**  
ThermAssured
- **Grant Engineering (UK) Ltd**  
Grant EvoLink Hybrid System Hub
- **Grant Engineering (UK) Ltd**  
Grant Aerona Smart Controller

- **SAMON**  
GLACIÄR MIDI Refrigerant Gas Detector
- **WAVE Refrigeration**  
Theoretical Performance Calculator

#### BEST IAQ INNOVATION

- **Martin Industries Ltd**  
AirX Pro
- **CIAT**  
CIAT EPURE® Filter

#### RACHP WOMAN OF THE YEAR

- Publishers vote

#### PHIL CREANEY'S ACR CHAMPION

- Publishers vote

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# Making retrofit cool



The need to decarbonise the UK's building stock has catapulted refurbishment and retrofit to the top of the political agenda. BESA Technical Director **Graeme Fox** says we must grab this opportunity to tackle the growing overheating crisis.



**R**ising global temperatures have prompted the Met Office to consider naming heatwaves (just as it already does with our increasingly frequent storms) for the first time, with an influential group of government advisors warning that rising summer temperatures could soon be responsible for up to 10,000 excess UK deaths every year. A new report from the Environmental Audit Committee

(EAC), prompted by the UK breaching the 40°C mark for the first time in 2022, has warned that we are poorly prepared to deal with this 'silent killer' and that deaths will be highest among vulnerable groups including the elderly and the socially disadvantaged. The 'Heat resilience and Sustainable Cooling' report says that both physical and mental health are affected by rising temperatures, with suicide risk believed to be twice as high when

the temperature reaches 32°C compared with 22°C. The committee of MPs also said high temperatures cost the UK economy £60bn a year owing to work-related accidents and lack of sleep. It said more than 4.6 million homes in England experience summertime overheating – underlining the huge scale of our retrofit challenge. **Complexion** This puts a whole new complexion on the debate between retrofit and rebuild on the road to net zero.

The business community is zeroing in on the reputational benefits of net zero alongside the very real efficiency improvements and cash savings.





With the need to retrofit both residential and commercial buildings to improve energy efficiency already established as part of the UK's net zero ambitions, addressing overheating must now be built into any comprehensive national retrofit programme.

Passive cooling measures, such as green roofs and solar shading, can mitigate some of the problem and would require no additional energy input, but similarly efforts to decarbonise heat and improve ventilation for health and well-being must be addressed simultaneously.

For example, improving building airtightness should not lead to additional overheating problems so long as the ventilation and cooling measures are designed alongside. In fact, the opposite is true as better building fabric with intelligent ventilation solutions makes it easier to control indoor temperatures and reduce other problems such as condensation and mould.

The EAC also recommended adding the use of ceiling fans to the building regulations, which is an example of how we could embed anti-overheating measures into existing mechanisms for incentivising quality improvements in both retrofit and new build.

However, delivering such solutions at the necessary scale will require a huge recruitment drive to address skills shortages. The EAC also reported a potential shortfall of 250,000 people in suitable roles by 2030, which it called the "net-zero tradespeople crisis".

All of this puts the current furore over the Labour party's decision to drop its plans for a £28bn 'green prosperity plan' into context. While this decision betrays the current confused state of political thinking around net zero, it also reveals a deep-rooted misunderstanding of the scale and nature of this opportunity.

Contrast that Labour 'ambition' with the \$2trillion a year in savings that global businesses could make from implementing easy to achieve energy efficiency measures, according to the World Economic Forum (WEF) and the financial consultant PwC.

Its report 'Transforming Energy Demand' was backed by more than 120 CEOs of large global corporations and concluded that retrofitting buildings alone could cut global energy demand by 12%.

It concluded that buildings were responsible for 30% of the world's energy usage in 2022 but that they also offer the greatest energy reduction potential of all economic sectors. WEF researchers calculated that energy intensity in buildings could be reduced by 38% using existing solutions.

The WEF also emphasised retrofit's wider benefits including reduced staff absenteeism and improved productivity (because retrofitted facilities are higher quality) and the creation of 3.2 million jobs worldwide to deliver retrofit programmes.

The WEF researchers concluded that energy efficiency was the most "under-addressed" aspect of global approaches to net zero. It claimed proven measures could deliver a short-term, cost-efficient reduction in energy demand of almost a third shared across the buildings, industry, and transport sectors.

#### Dividend

Even more significantly, it also estimated that retrofitting buildings can increase their value by up to 15% as they command higher rental or sales prices. Better buildings more than pay for themselves and society gets the wider health, wellbeing and quality of life dividend of a better adapted and more resilient built environment.

With the business community zeroing in on the reputational benefits of net zero alongside the very real efficiency improvements and cash savings, this gives our industry a fantastic opportunity to seize the agenda and drive both net zero and overheating work forward.

The Future Homes and Buildings Standards, which are due to come into force next year, could also play a big role by embedding the 'whole building' approach where better standards encompass fabric improvements, low carbon heating and both natural and mechanical ventilation with heat recovery solutions.

The surge in heat pump demand shows how financial incentive and legislation can work together to make progress, but individual technologies can only achieve so much. In fact, heat pumps are a good example of a solution that can only achieve its full potential as part of a wider whole building retrofit.

The Standards will also stress the key role to be played by heat networks in coming years as we seek to move from whole



A new report from the Environmental Audit Committee (EAC) has recommended adding the use of ceiling fans to building regulations.

building to whole community decarbonisation solutions.

The UK Green Building Council (UKGBC) has also highlighted the importance of retrofit for large office buildings to capture some of the 'easy wins' also identified by the WEF report through modest investment in low-cost, low-disruption measures.

It has issued a wake-up call for commercial building owners who are staring down the 'stranded asset' barrel due to the tightening of minimum energy efficiency standards (MEES), which it estimates could leave 77% of UK office stock unlettable by 2030 because they fail to achieve the minimum energy performance certificate (EPC) rating of B.

The UKGBC report concludes that "deep retrofitting" can cut operational energy use by as much as 65%, but that this could be achieved through a light touch step-by-step approach to minimise disruption and avoid the need for full-scale, intensive programmes.

However, it believes this should be supported with mandatory reporting of whole life carbon for major projects to allow a meaningful comparison between retrofitting and rebuilding so that the most effective (including cost-effective) solution can be selected for each building.

Money talks and that will be key to getting investors on board. But so does social need. Poor quality buildings are already contributing to an epidemic of poor respiratory health and placing a huge burden on the NHS.

With overheating set to worsen as summer heatwaves become ever more regular, the clamour for holistic retrofit programmes will only intensify and make ever more obvious economic and social sense.



More information is available at

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

The integrity of the installed ductwork relies upon its manufacture. Photo: xb100 on Freepik



# Duct work testing made easy



**Andrew Hamshere, MD** at Sensing Precision, discusses some of the challenges of installation and how testing can be facilitated.

**T**he efficient operation of building services which utilise ductwork for heating, cooling and ventilation is dependent upon air tightness which needs to be tested prior to or during commissioning.

This is not always easy, as when projects come towards completion there are often numerous different trades competing for the same space and time as the ductwork installer.

An additional complication is that ducts are often in voids, making them difficult, time consuming and costly to access, both to test and to facilitate any modifications required.

It is therefore of utmost importance that new ductwork is tested soon after being installed, and that there is access to duct leakage test machinery that is portable, easy to set up and simple to use.

#### Leakage prediction

It is possible to predict the likely leakage from ductwork during the system design. As leakage occurs at the seams and joints, it is proportional to the total surface area of the ductwork, taking into consideration the configuration of the system and the building it serves. This can be compared to actual leakage seen when tested.

A key variable here will be air pressure. Although there is no precise formula for calculating this, it's worth bearing in mind that leaks will increase in proportion to pressure to the power of 0.65. Other key variables will be the quality of the design, the workmanship in the installation of

the ductwork and the quality of the ductwork itself.

The operating pressure will vary throughout the system and, as leakage is related to pressure, the calculations are complex.

Acceptable leakage in good quality systems under normal operating conditions will be in the region of 6% for low pressure systems (Class A), 3% for medium pressure systems (Class B), 2% for high pressure systems (Class C) and just 0.5% for the highest pressure systems (Class D) DW/144.

#### Performance testing

The integrity of the installed ductwork relies upon its manufacture, and that depends upon the proper application of the correct sealant, gaskets or tape, and suitability for operating temperatures up to 70°C. Checks should be made to ensure the ductwork and materials used are suitable for

the purpose and satisfy the specified pressure classification. The quality of the installation will be down to subcontractor monitoring and testing prior, during and upon completion.

Conducting a duct leakage performance test is a simple process with the ALF duct leakage tester. A single operative can pressurise and examine the duct system for air leaks, in much the same way that a plumber pressure tests water pipes for leaks.

The test involves pressurising the duct system with a high accuracy volume flow measuring device that simultaneously measures air flow and its effect on the pressure within the duct system. The tighter the duct system, the less air you need from the fan to create a change in duct system pressure. Ductwork leakage measurements are used to diagnose and demonstrate leakage problems, estimate efficiency losses from duct leakage, and certify the quality of the duct system.





▼ It is therefore of utmost importance that new ductwork is tested soon after being installed.



When the air leakage testing is carried out, data can be captured and subsequently saved in a .txt format via SD card or output via mini-USB cable.

**Simplifying operation**

Helping with the effectiveness of the job, the enhanced control POD features additional low range pressure cells for both pressure and flow measurement to increase low end accuracy. There are auto zeroing solenoids on both channels to automatically take out any temperature drift in the pressure readings without having to pause/ stop a running test or manually zero between tests.

On-site testing for ductwork leakage is only required sporadically, so the simple operation of units like this removes the need to relearn technical skills each time. The closed loop PID control feature allows a closed loop-controlled leakage test to be run. The user selects from the following available test standards SMACNA, EN1507 / 12237 or DW/143.

Configurable test parameters include duct size, test pressure, test duration and test class. Once



configured appropriately, the ALF control pod will then calculate the allowable max leakage for the test. The control pod will then run the test and pressurize or depressurize the ductwork to the set test pressure and monitor the leakage rate. Based on the performance of the ductwork, the control pod will indicate confirmation of "pass" or "fail" of the ductwork leakage test.

Should the installer run into difficulty, they can also access a range of support videos.


Duct work leakage testers need to be easy to operate, while being compact, portable and easily manoeuvred, connected and operated by a single engineer. They allow the engineer to be provided with everything needed to test ductwork systems for leakage under both positive and negative pressure.

For example, Sensing Precision's range of ALF duct leakage testers remove the complexity that might be associated with operating a duct work leakage tester and other forms of testing equipment.

Not only is portability and ease of use a big benefit for the user of the air leakage finder, but duct work testing is also capable of providing significant cost saving benefits. Leaking ductwork will impact upon energy costs as well as its ability to provide a comfortable working environment for the building occupants.

Air tightness is therefore a consideration in the design, manufacture and installation

of the ductwork and HVAC equipment such as Air Handling Units, whether in new build or refurbishment. Testing during and after installation of ductwork or manufacture of equipment is key to ensuring air tightness, the efficient operation of the system, and to control energy costs.



More information is available at [www.sensing-precision.com](http://www.sensing-precision.com)

**ALF duct leakage testers are compact, portable and self-contained in one unit that can be manoeuvred, connected and operated by a single engineer.**



# ELTA

# RESTORING THE BALANCE

Over the last five decades, Elta Fans has evolved far beyond its origins as specialised fan engineers and manufacturers. It has expanded its portfolio to now include a comprehensive range of ventilation solutions that consists of air handling units, acoustic equipment, and controls, as well as the highest quality range of industrial, commercial, and residential fans.

In our 50th year, we are reflecting on our vast history and recognising our diversified product range, as we transition from Elta Fans to Elta.

We are committed to reshaping the world's understanding of air quality by **restoring the balance**, for healthier, cleaner, and safer indoor spaces internationally.

We are Air Movement and Air Quality. **We are Elta.**



# Elta sets roadmap for ambitious growth, international expansion and new era for 'Air Movement, Air Quality' in 50th anniversary year

Mark Rickard, CEO



**T**his new year marks the start of a new era for Elta as it celebrates 50 years in business and accelerates its agenda to move the dial on indoor air quality.

Major investment will be made into the company's manufacturing capabilities this year and as of this month, the

business previously known as Elta Fans will be repositioned as Elta. This is a poignant branding transition for the company as it signifies an identity that better represents the company's full capability beyond fan manufacturing.

As well as its industry-leading fan technology, Elta will continue to invest in its air handling units, noise control equipment and controls to provide markets with holistic solutions that futureproof against the demanding challenges of modern society. Elta's engineering expertise and bespoke manufacturing approach are both fundamental to this and will therefore see a significant investment into its factories which will help meet increased demand for full system specifications.

Sister companies, Fantech Ventilation in Ireland and Duct Products in Northern Ireland will also be unified under the Elta brand to create a cohesive presence across the industry and geographically.

'Air Movement, Air Quality' is the company's new mantra which will encapsulate its vision, mission and comprehensive range of solutions.

CEO at Elta Group Mark Rickard said: "This strapline underscores two pivotal aspects that are at the heart of our business. Air Movement signifies our commitment to engineering excellence, innovation, and precision in every aspect of our products. Air Quality emphasises the role we play in ensuring cleaner, healthier and safer indoor environments."

Mark will be supported by his senior leadership team in embedding this new vision across the business. They include Damian Buxton, CEO and Vikrant Bhatt, Director for England, Wales and Scotland, Mark Russell, Managing Director for Ireland, and Chris Schofield, Managing Director for Northern Ireland.

Mark added: "We're often described as the sleeping giant of the ventilation industry, which is evidenced by many companies increasing their specifications with us once through the door. Ultimately, we can build any type of fan or ventilation system required which people sometimes don't realise. We often see a simple enquiry evolve into us delivering a full solution and that's what this investment into the business is all about.

"We are well known for our industry-leading fans – a critical element of any ventilation system. However, industry professionals well know that there is so much more to ventilation specification and our business is well-equipped with a wide suite of solutions and technical expertise to lead the charge on improving air quality throughout the built environment."

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

Members of the senior management team: Damian Buxton, Vikrant Bhatt, and Mark Russell. Chris Schofield (not pictured) is also Managing Director for Northern Ireland.





# Achieving best standards for healthcare

**Andrew Robinson**, Managing Director of HVAC supplier Exi-tite, explains the role of technical memorandum HTM-03-01 for ventilation in healthcare.

**O**ur healthcare facilities need to provide clean and safe environments for patients and the people who work there so, from the specification and design of equipment through to the installation and subsequent maintenance of systems, achieving the highest standards is crucial.

Health Technical Memorandum (HTM) 03-01 provides comprehensive guidance on these requirements and highlights different solutions for different applications.

### Design and installation

The first part of the memorandum is aimed at new installations and major refurbishments of existing installations. It should be considered as the standard to be achieved. The guidance details legal requirements for

compliance and covers all aspects of equipment selection, ventilation and control strategies, alongside the required levels of installation.

Although it identifies that the default method should, whenever possible, be natural ventilation followed by mixed mode (natural with mechanical ventilation), with mechanical ventilation being the last option, the guidance also explains why different applications need bespoke solutions. For example, areas such as operating theatres, providing acute care with high occupancy levels and intensive use, will often require close control of the conditions, with patients particularly at risk from airborne infection.

Ventilation of non-healthcare facilities on the hospital premises should be designed according to the application and specific

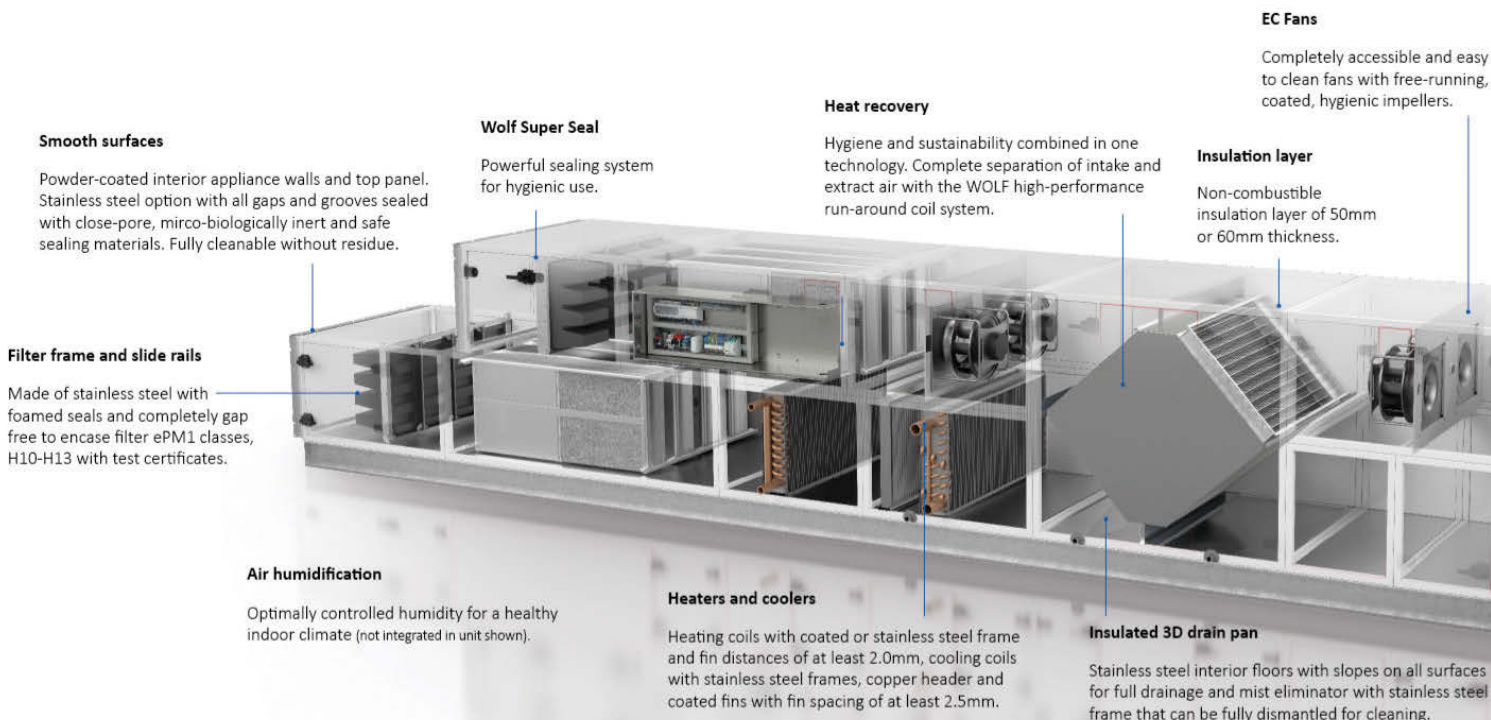
guidance relating to the activity should be followed. Away from the hospital setting, other types of facility such as GP practices, health centres, care homes and hospices require a risk assessment of the nature of the treatment and condition of the patients to determine the extent to which HTM-03-01 should be applied.

The construction of ventilation equipment such as air handling units (AHUs) must meet strict criteria to avoid contamination. Examples of this are the use of smooth stainless steel or powder-coated internal panels and filter frames, low leakage dampers, copper or finless frost coils and access doors with two-stage openings.

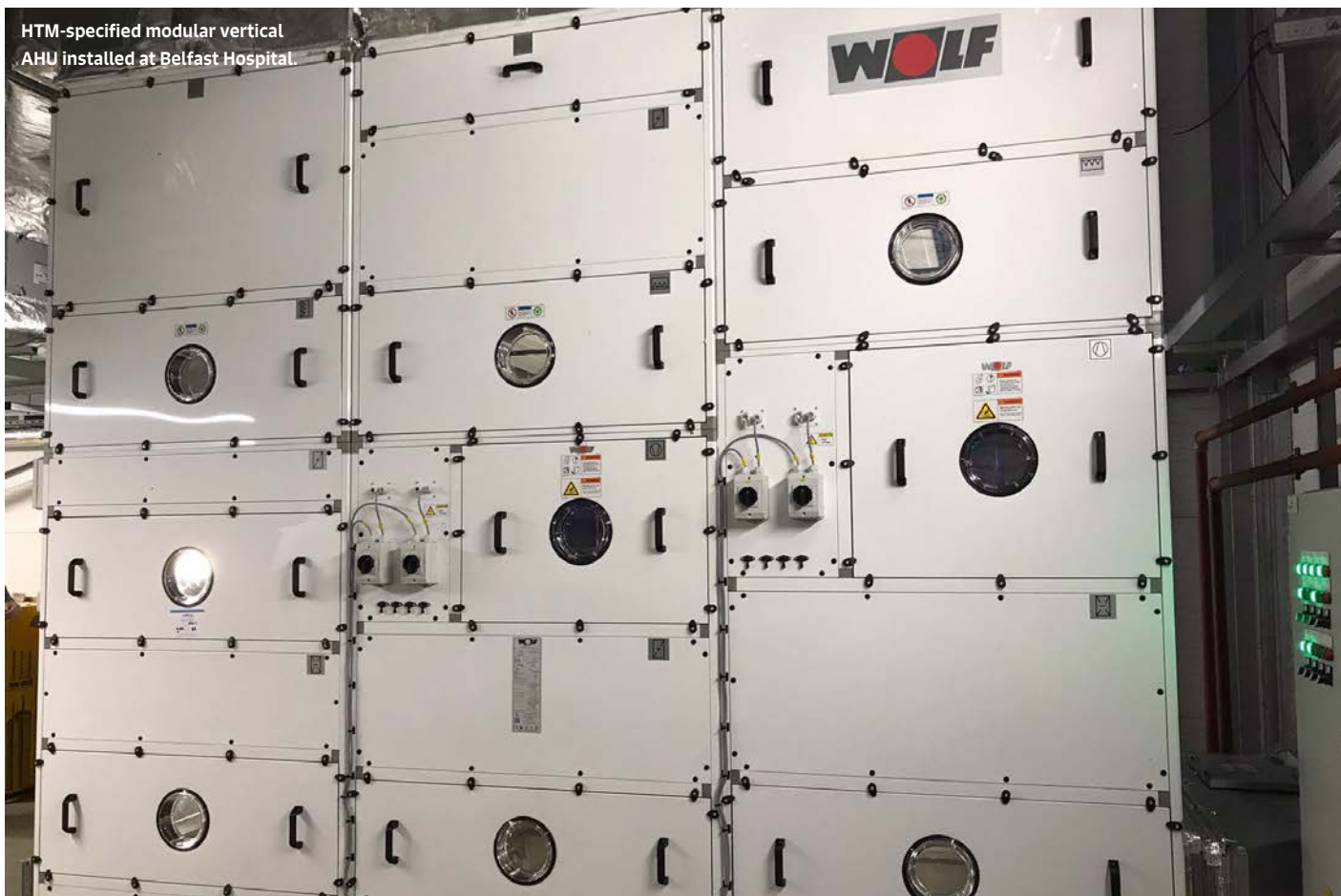
If the correct manufacture of ventilation equipment is essential, so too are well designed systems able to control the temperature, air

pressure and humidity levels inside the facility. If the main requirement is providing filtered fresh air and removing stale and polluted air, with experience it is also possible to deliver energy efficient climate control solutions that can utilise energy recovery to reduce carbon emissions without mixing supply and extract air, thereby maintaining sterile environments.

For a recent installation at Belfast City Hospital, we used two vertical modular AHUs manufactured in line with HTM-03-01 to provide 7200m<sup>3</sup>/h of supply and extract ventilation for two operating theatres. Each system included energy-saving runaround coils, which remove energy from the extracted air and transfer it to the incoming fresh air supply, using a water circuit to ensure sanitisation levels without the risk of contamination from a thermal wheel.







HTM-specified modular vertical AHU installed at Belfast Hospital.

System efficiency is a key focus point of Part A and the guidance is that solutions with the lowest lifecycle environmental cost should be specified. In particular, fans represent a significant opportunity to save energy and reduce carbon emissions as they use approximately 40% of all electricity in ventilation systems. HTM-03-01

recommends using electronically commutated (EC) fans.

In addition to new installations, older hospital buildings may find that their ventilation systems need to be improved in certain areas. This is sometimes as a result of poor initial design but can also be because a particular part of the hospital is now to be used for a different purpose.

Retrofitting equipment that can provide ventilation in an energy-efficient manner in this type of setting can be costly or prove difficult, often due to space constraints. In such situations, Exi-tite uses the CGL solution from German manufacturer Wolf. This energy recovery product is about the size of a small wardrobe and is capable of an airflow of 1.1m<sup>3</sup>/h. The unit's compact dimensions mean it can fit through a standard

room door, easing many installation issues. Ductwork can be installed in various configurations to serve a dedicated space and provide energy recovery and CO<sub>2</sub> regulated ventilation with a range of filtration options in a silent manner.

Choosing a supplier with the expertise to handle all design, support and supply needs in-house means it is possible to maintain close relationships with consultants, installers and end users to ensure problem-free project delivery.

**Operation and maintenance**

Part B of the guidance applies to the maintenance and operation of any specialised ventilation system installed in all types of healthcare premises, irrespective of the age of the installation.

It covers all aspects from statutory requirements to service intervals, with minimum standards laid down for ventilation equipment including AHUs, humidifiers and filters. Strict policies for annual inspection and verification are also in place, along with advice around the routine servicing of equipment such as air conditioning split systems and chilled beams.

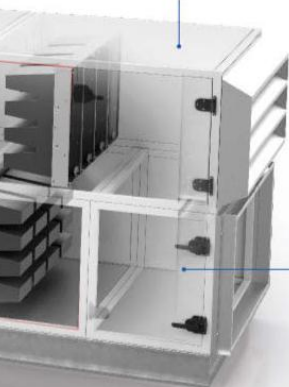
Maintaining a sanitised environment during ongoing servicing and maintenance of a system presents its own challenges. One of the ways we have addressed this in recent healthcare projects is by installing two modular AHUs in a compound with a service corridor equipped with hand wash basins and hosepipe connections.

**Key to compliance**

The need to deliver ventilation for healthcare facilities makes choosing the right partner more important than ever. Every project has its own specific needs and the ability to deliver bespoke solutions with the highest standards comes with experience. Understanding HTM-03-01 is the key to ensuring compliance.

**Easy lifting system**

Larger assembly parts for optimal device hygiene.



**Multiple doors with special seals**

All components can be accessed from both sides for cleaning. Lights and inspection windows with optional blackout function in maintenance and functional segments.



More information is available at [www.exi-tite.com](http://www.exi-tite.com)



Good contractors understand the need to become multi-disciplined, multi-platform and multi-skilled, bringing significant added value to the early engagement process.

# Fabric first approach is the best way forward



**Katherine Morton**, Regional Design Lead at Stepnell, explains how to optimise project outcomes when considering taking a new or refurb route for public sector buildings.

**A**s public sector budgets continue to squeeze more than ever, every penny of public spend needs to be carefully considered, especially on projects that require significant capital investment.

At the same time, councils are also looking to be more sustainable, guided by net zero targets and waste reduction goals.

When it comes to improving public sector provision amid constricting budgets and facility depreciation, a conscious cost-benefit analysis can often reveal a difficult decision between the much-desired choice to build new or refurbishing instead.

Whichever path is chosen following consultation, it's essential to have a clear understanding of what the building is being used for and to what extent it needs to be retained. As with many public sector projects, there are strong limitations within the extent of scope and budget.

Determining the short or long-term outcomes of the project means weighing up the capital expenditures (CapEx) versus operating expenditures (OpEx), in order to understand whether you need to allocate investment towards physical assets.

The replacement and upgrade of heating and ventilation systems provides much improved payback periods in terms of reduced energy bills and ongoing maintenance costs over the life of the products. Understanding the CapEx versus OpEx challenge gives a clearer understanding of the genuine value that can be added to a build.

With refurbishment projects, it is critical to really define that scope

and ascertain what the priorities are. Once you're confident in the extent to which a building can be reused, and the ways in which the building fabric can be updated to make it fit for purpose and compliant, it creates a clear picture of how you can remove waste production during the build.

For instance, if the focus area is to improve meeting space, then using pods or incorporating partitioning booths into an open plan environment are cost-effective ways to create office and meeting room environments, all while utilising existing M&E infrastructure within the floor plate.

Optimising existing internal spaces in this way can free up budget to focus on longer term 'fabric first' priorities – such as improving air permeability through wall and window insulation upgrade. Understanding these drivers early allows us to focus project expenditures, while still being capable of transforming an office dynamic into a refreshed and more collaborative atmosphere.

## A changing picture

While the uptake of Building Information Modelling (BIM) has stalled as public sector budgets become increasingly restrictive, its use is highly beneficial in terms of properly data scanning areas such as floor areas and interface details to differentiate between old and new possibilities.

To optimise BIM implementation into the build process, budget and data intelligence from the client side needs to become more joined up with how the end user needs to use the space. Effective integration of BIM by the client and with the contractor can really make the project budget work hard.

The best contractors have understood the need to become multi-disciplined, multi-platform and multi-skilled, bringing significant added value to the early engagement process and ultimately becoming more of a trusted advisor, rather than a transactional approach for bottom line profit.



By doing this, they can advise on suggestions and offer solutions but, ultimately, they enable the client to make the decision for themselves, through the clear provision of data to facilitate informed decision making.

Taking this approach also helps define the wider 'value creation' we all need to achieve from projects, accounting for the economic, social and wellbeing aspects of a build. It helps inform the debate between refurbishment and new build, meaning the contractor has a bigger role to play through early engagement and respective cost options.

**The environmental challenge**

Public sector organisations have a responsibility to set an example for sustainable decision making. When it comes to local buildings and infrastructure, this must include providing higher fabric efficiency and lower energy costs for communities in order to reduce long term spending and embodied carbon.

A key factor on whether to build new or refurbish is to consider the ways to achieve sustainability and cost saving aims. This can be measured via calculating the environmental savings of embodied carbon through a low carbon refurbishment, which will often far outweigh the upfront cost of a completely new build.

However, if demolition and a new build is chosen, repurposing existing materials can be economically and environmentally cost-effective, mitigating the embodied costs. Reusing roof tiles or steel - the latter of which now has far greater scope - along with recycling building materials into crushed aggregate are just some of the methods that generate value.

Building on waste reduction as a priority, a collective input from different organisations is key. This also rings true in an operational sense. Projects must be scrutinised and value truly weighed up against the overall desired outcome and cost. For instance, purely cosmetic works would not usually justify a whole rebuild or large refurbishment in the current circumstances. This is reflected in the types of funding available to public sector organisations and the skew towards more funding for energy efficient heating and lighting as substantial areas for investment.

Low carbon heating, energy and sustainability are typically the

primary drivers in public sector improvement works. Securing available funding is therefore a great way to facilitate the budget for such projects, particularly in sectors with enormous pressures such as healthcare.

As a contractor, it's our responsibility to help weigh up the right energy approach to match the build. Supportive services for clients, including Stepnell's 'Step Energy' and 'Step to Zero' offerings, have been developed as a response to client requests for well-considered and integrated solutions to current and future challenges in line with the journey to carbon neutrality.

**Smart decisions**

Every project will be different and an analysis of the whole life cost, end-user experience and embodied carbon savings will determine the smartest decision when it comes to a new build or refurb approach. Data is key and using it to forecast what is the best choice will always remain very important. For example, £4m on an average refurbishment might about get you to the point where the shell and layout is fit and efficient for the next 20 years. But after this what is the value you are creating in terms of the overall working environment?

Overall, the best way forward is to carefully consider refurbishment works across the board by taking a granular approach to align the brief and outcome needs. Instead of continuing to put sticking plasters on public sector projects to get budgets through the door, we need to think more widely about how we can take a fabric first approach to create a space that's going to serve well for more than 20 years.



More information is available at [www.stepnell.co.uk](http://www.stepnell.co.uk)



Three good examples of extensive refurb where a fabric first approach has been taken by public sector organisations: The Elizabeth Garrett Anderson Building at the University of Worcester, The University of Leicester's Percy Gee Building and the Vulcan Works, Northampton.







The ability to quickly and simply link panels and modules together in a controlled environment has long appealed to developers and M&E contractors.

# The art of the **possible**



**Steve Richmond**, Head of Marketing and Technical Building Solutions at REHAU UK, discusses the possibilities for offsite construction.

**O**ffsite construction is not new, and the ability to quickly and simply link panels and modules together in a controlled environment has long appealed to developers and M&E contractors when constructing buildings.

However, reports of plumbing leaks and insulation breakdown stemming from inferior components and fittings have shaken the market's faith in Modern Methods of Construction (MMC). If these concerns can be resolved, the principle of building high-quality properties quickly remains sound, especially given growing demand for building work in high-density urban areas.

These city centre projects are often hampered by space restrictions, and while building upwards seems an effective solution, multiple teams working in cramped conditions can hinder the installation of key building services.

Alongside this impaired quality control, the nation's ongoing construction skills shortages provides further concerns, with the UK Trade Skills Index 2023 highlighting that 937,000 new workers will be needed by 2032 to meet construction demand.

**MMC's Appeal**

Taking these issues into account, MMC methods undoubtedly appeal. Yet while approximately 200,000 homes are built annually, this needs to be dramatically scaled up if the sector is to meet the Government's target of 300,000. This also does not account for demand in the

commercial sector, including for new student accommodation and hotel properties.

It is with these concerns in mind that REHAU has launched its latest guide, *Offsite Trends in Building Services*. The polymer solutions manufacturer developed the new report to explore the role MMC can play in alleviating pressures currently affecting construction and provide further insight into what is possible using this building method. The ultimate aim is to raise overall awareness of MMC among M&E contractors about offsite construction, development of new building services solutions, and the impact of new





Pipework being pre-assembled at Byrne Bros for the TABS system installed in the new Tate Modern building.

technologies and innovations on best practice.

For example, integrating an MMC project's building information modelling data with bill of materials documents can streamline processes, improving overall quality control and the availability of key components.

As the work is carried out in a controlled environment, material waste can also be reduced by 90% with less distracting on-site noise and reduced risk of tool loss. In turn, this ensures durable, energy-efficient properties can be built cost-effectively at scale despite skills shortages.

**Trends and Developments**

MMC itself is a fast-moving and broad sector. Multiple installation approaches are possible beyond the offsite sub-assembly approach used in the UK, in which precast elements are made offsite and transported to the site for installation within traditional builds.

For instance, in the European market where offsite construction is long established, innovation continues apace to develop best possible products and practices. This includes the use of volumetric and panel construction approaches, or a hybrid modular method combining the two.

Using the first method, entire three-dimensional elements such as bathrooms can be made in factories to include all plumbing pipes and components such as windows and doors and lifted into place onsite within a superstructure. By contrast, panel construction involves manufacturing wall or roof modules offsite as flat panel units

to suit a specific type of housing, with plumbing pipes joined and installed on-site.

Though these approaches already allow for new and exciting possibilities, emerging methods including timber concrete hybrid construction also demonstrate how MMC can become even more sustainable. Replacing pre-cast concrete panels with this timber composite means less concrete is required and panels can be made lighter, resulting in faster, less carbon-intensive construction.

**Keeping updated on advances**

It is crucial that building services professionals work with third party experts to ensure they are up to date on advances in this area. Awareness of trends such as the increasing popularity of modular shafts may also provide new possibilities for delivering and directing mechanical services into prefabricated units in a simpler, easier way.

As a result, contractors can save time by stacking individual modules with one shaft per floor in a streamlined, optimised and standardised process.

Polymer risers also offer contractors a way to replicate high-quality work at scale and have also been the subject of continuous innovation. Allowing ducts, pipes and conduits to deliver key mechanical services, these vital components have traditionally been made of copper and steel when used in MMC projects. Yet the introduction of new materials such as fiber-reinforced PP-R which is easier to transport, has allowed contractors to opt for larger riser sizes that can be welded and

tested offsite, providing further assurances over performance.

Similarly, the integration of customisable frames into the walls of offsite bathroom builds can offer building services professionals a way to quickly connect various sanitaryware within a smaller space. As a result, time can be saved during the build while also providing easy access for later maintenance by simply removing a wall panel, rather than breaking out the bathroom to find specific pipework.

Opportunities for streamlining construction can also be seen when it comes to construction utility cupboards on MMC projects. A singular area that can be used

for building service isolation points, utility cupboards are highly appealing in MMC projects as they can be replicated at scale during construction.

These spaces also suit as a location for modular plumbing components through which washing machines, air handlers and other household utilities devices can be situated for easier maintenance. For example, REHAU's smart manifold has been designed to be quickly installed and offer a manifold-based plumbing solution which reduces the number of plumbing fittings required by up to three times.

**Seeing what's out there**

Although the construction industry is subject to multiple pressures, the overriding target remains high-quality builds, built quickly. With demand increasing across multiple sectors, M&E contractors must identify efficient and effective methods to turn this objective into a reality.

Collaboration with expert suppliers and fabricators is crucial to ensure best installation practices and avoid quality concerns.



More information is available at [www.rehau.com](http://www.rehau.com)



The ability to quickly and simply link panels and modules together in a controlled environment has long appealed to developers and M&E contractors.



# Upping the game of predictive analytics



**Martin Huber**, co-Founder and CEO of Amrax, looks to the increasing role of AI's predictive analytics in helping to improve long-term building health and performance.

**A**s urbanisation, digitalisation and climate change continue to fuel a new age of sustainable infrastructure, building health and performance is now more in focus than ever.

As the net zero target gains greater sense of urgency, it is becoming increasingly important that our buildings are designed and operated in ways that optimise and minimise environmental impact. This, of course, becomes even more important in the wake of continued energy price instability, especially for energy-intensive and commercial operators who have been forced to accelerate green measures in order to build resilience and safeguard against further energy price hikes.

But it's also about building health. Amid our post-pandemic era of health awareness and better understanding of mental health, there is a much greater emphasis on creating indoor environments and workplaces that cater to the wellbeing of occupants.

The result is a complex challenge for the modern building operator, especially those responsible for overseeing vast industrial and commercial establishments. However, the good news is that there are solutions at hand to help, such as the latest generation of 3D virtualisation technology.

Of course, most building operators will already be well acquainted with the 3D visualisation concept. For years now Building Information Modelling (BIM) models

have had a transformative effect on commercial construction projects, allowing designers to detect errors before construction begins, avoiding costly changes further down the line.

However, while much of the focus surrounding virtualisation via BIM appears to centre on the inception stages of a build, it also offers even greater scope to the overall performance and health of a building.

## **Improved maintenance and diagnostics**

Take, for example, an ageing factory building. When AI predictive analytics are applied to a 3D model of the site it becomes possible to forecast potential structural issues in advance. This proactive approach allows building operators to schedule structural work and maintenance before serious issues occur, minimising downtime and avoiding expensive repairs.

Furthermore, by leveraging predictive analytics, building operators can identify the root cause of any structural issues or strains and take remedial actions promptly. This data-driven approach also vastly reduced the amount of time spent on maintenance matters for resource efficient and improved costs.

## **Energy optimisation**

Beyond maintenance, virtualisation supported with predictive analytics can play a huge role supporting ongoing sustainable strategy. For most building operators, of course, one of the biggest priorities at the moment will be reducing as much energy and emissions as possible without compromising the overall functionality of a building.

By using a 3D virtualisation platform in conjunction with predictive analytics, it becomes possible to gain a holistic and accurate overview of energy consumption patterns based on historical patterns, seasonality

data, occupancy rates, production rates, and other relevant factors.

Through the power of analytics, building operators use these insights to make informed decisions on opportunities to optimise energy consumption. It may be, for example, that there is a new way to adjust HVAC systems based on occupancy patterns or an opportunity to introduce an intelligent lighting system.

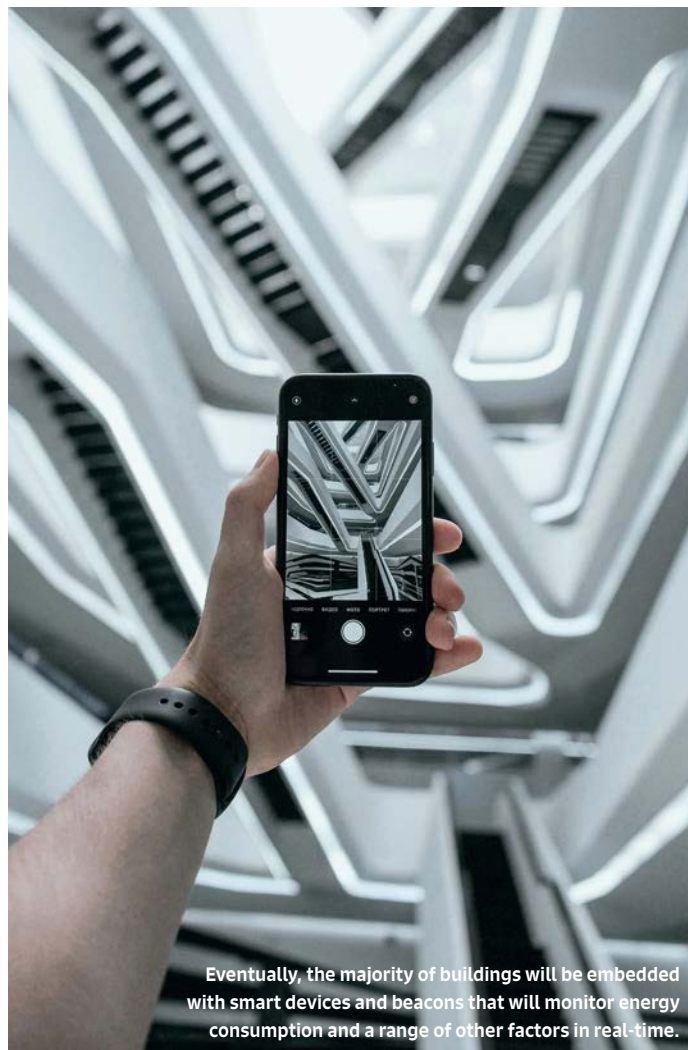
This data-driven approach makes it much easier for building operators to build the business case for any green investments.

Working digitally on a collaborative basis with other partners also reduces churn, time and budget spent correcting mistakes.

For vast commercial premises such as factories or manufacturing plants where even a moment's downtime can incur significant revenue impact, this is essential to ensuring disruption is minimised and projects remain on schedule

## **Building health**

Through the parametric data available from the 3D model, operators can gain a rich and



Eventually, the majority of buildings will be embedded with smart devices and beacons that will monitor energy consumption and a range of other factors in real-time.



accurate view of the key assets which play a role in ensuring a building's health. This information allows architects, engineers, and designers to plan and modify building systems including electricity, HVAC and plumbing. The data storehouse also helps to manage the building utilities and chart out preventive maintenance.

Aligned to this, data into occupancy patterns and behaviour can help operators better understand usage needs and preferences. Couple this with predictive analytics to identify peak demand hours, and there is an opportunity to optimise temperature settings and lighting levels accordingly, thus negating unnecessary energy consumption during quiet periods and ensuring peak comfort levels are achieved.

#### **A continued effort**

In the operational phase of buildings, AI-driven 3D models can play a pivotal role too. These models can be used for space optimisation, energy management, and ensuring compliance with

safety regulations. AI can process data from various sensors within a building to provide real-time insights, allowing for more efficient building management.

Take, for example, a large warehouse facility. AI-driven 3D models can optimise the layout for delivery placement and workflows, using data from foot traffic and inventory patterns. This can lead to increased efficiencies and improved customer experiences.

While the health and wellbeing of their employees and long-term sustainability goals may be the top priority in these efforts for employees, there are financial gains too.

#### **Healthy Gains**

Generally speaking, healthier buildings are more efficient ones, meaning most operators can expect to see significant energy cost savings as a result of building health improvements.

Visualisation tools make the process of creating this type of environment much more straightforward. Designers and

building managers can see how their building is or will be used in practice and experiment with incremental improvements. This could be as simple as moving furniture away from walls to reduce the risk of mould and improve air flow, through to how different lighting layouts and solutions will create a more comfortable aesthetic.

By using 3D modelling, supplemented by building data analysed by AI, each environmental factor can be easily modified to find the optimum solution. This has minimal cost and could see outsized returns to building operators.

#### **Smart buildings**

Eventually, the majority of buildings will be embedded with smart devices and beacons that will monitor energy consumption and a range of other factors in real-time. When combined with AI automation and visualisation platforms, we'll have an incredibly powerful set of tools to create ultra-efficient and highly

responsive 'living buildings' that will use considerably less energy and resources to maintain.

With AI, spatial data and 3D visualisation advancing hand-in-hand, the speed and precision of room and building design and ongoing maintenance are only going to accelerate. In the not-so-distant future, machine learning algorithms will be powerful enough to create design proposals with optimal efficiency.

In short, we are on the cusp of a digital revolution. This will be instrumental as challenges such as urbanisation, sustainability requirements and resource management play a critical role in combating climate change.



More information  
is available at  
[www.amrax.ai](http://www.amrax.ai)

**With AI, spatial data and 3D visualisation advancing hand-in-hand, the speed and precision of room and building design and ongoing maintenance are only going to accelerate.**



By transforming reactive maintenance into proactive management, you can unlock a world of enhanced efficiency, cost savings, and a more sustainable future for your buildings.

# From reactive fixes to proactive solutions: **The hard FM dilemma**



**Derek Parker**, Business Development Director at Artic, discusses how data-led maintenance transforms hard FM.

**F**or facility managers, building owners, and estates managers, navigating the intricate world of Hard FM can feel like walking a tightrope.

Balancing optimal building performance with cost-effectiveness and compliance demands precision and foresight. Traditional 'run-to-failure' maintenance often falls short, leading to unexpected breakdowns, expensive repairs and disrupted operations.

**Challenges in traditional practices**

Before delving deeper into the benefits of data-led maintenance, it's crucial to understand the limitations of traditional maintenance practices.

Reactive maintenance, often the default approach for many facilities, involves waiting for equipment to fail before taking action. While this method may seem cost-effective in the short term, it comes with several drawbacks. Unexpected breakdowns lead to downtime, productivity losses, and emergency repair expenses. Moreover, reactive maintenance does not address underlying issues, resulting in recurring problems and escalating costs over time.

Similarly, preventive maintenance, while more proactive than reactive approaches, relies on fixed schedules and predefined tasks. This 'one-size-fits-all' approach often results in unnecessary maintenance interventions and wasted resources. Additionally, preventative maintenance does not account for real-time conditions or equipment performance, leading to inefficiencies and missed opportunities for optimisation.

**The smart building ally**

But what if there was a better way to predict problems before they arise, optimise system

performance, and unlock significant cost savings? This is where data-led maintenance, a revolutionary approach that transforms Hard FM by using intelligent sensors and sophisticated algorithms to turn valuable data into actionable insights, comes in.

Think of data-led maintenance as your building's very own crystal ball. Sensors embedded in your HVAC, electrical, and mechanical systems constantly gather information, revealing hidden patterns and potential issues before they become disruptive realities.

This proactive approach delivers a number of benefits for Hard FM operations.

Data reveals hidden inefficiencies, allowing for fine-tuning of system operations. Imagine HVAC systems running at peak efficiency, minimising energy waste and creating a comfortable environment for everyone.

It removes the scramble to fix unexpected breakdowns. Data-led maintenance alerts to potential issues well in advance, allowing for preventative repairs and minimising disruptive downtime. Think of it as

your building whispering a heads-up, letting you know it needs a little TLC before things go awry.

Guesswork and outdated schedules become a thing of the past. Data provides a clear picture of a building's health, empowering informed decisions on resource allocation, maintenance schedules, and equipment investments. Imagine having a roadmap for your building, showing you exactly where to invest for maximum efficiency and cost savings.

The ultimate reward is cost savings and ROI. Data-led maintenance delivers substantial cost savings in the long run. Reduced repair costs, lower energy bills, consistent end user productivity and extended equipment lifespan contribute to a significant return on investment. It puts your maintenance budget on a smart diet, optimising spending for maximum output.

**Real-life applications**

Let's explore some real-life examples of how data-led maintenance is revolutionising Hard FM operations:



- **Smart HVAC Systems:** Data-driven sensors embedded within HVAC systems continuously monitor temperature, humidity levels, airflow rates, and equipment performance. By analysing this data in real time, facilities can identify anomalies, optimise energy usage, and pre-emptively address potential failures, ensuring optimal comfort and efficiency.
- **Predictive Asset Management:** Through predictive analytics, organisations can forecast equipment failures and prioritise maintenance activities based on criticality and risk. By leveraging historical data, performance trends, and machine learning algorithms, facilities can extend asset lifespan, plan capital expenditure, minimise downtime, and reduce operational costs.
- **Condition-Based Monitoring:** With condition-based monitoring, sensors collect data on equipment health and performance parameters, such as vibration, temperature, and pressure. By establishing baseline conditions and setting threshold values, facilities can detect deviations from normal operation and trigger maintenance actions before failures occur, enhancing reliability and safety.
- **IoT-Enabled Building Management Systems:** Integrated IoT platforms aggregate data from various building

systems, including lighting, security, HVAC, and occupancy sensors. By centralising data collection and analysis, facilities gain holistic insights into building operations, optimise energy usage, and improve occupant comfort and safety.

**Addressing concerns**

While the benefits of data-led maintenance are undeniable, it's natural for organisations to have concerns about implementation and security. However, these concerns can be readily addressed in the following ways:

- **Phased Implementation:** One approach to alleviate concerns surrounding the initial investment is to implement data-led maintenance in phases. By starting with key systems or areas within your facility and gradually expanding the implementation, you can manage costs more effectively while simultaneously building confidence in the efficacy of the new approach. This phased rollout allows for a controlled transition, minimising disruptions to ongoing operations while maximising the benefits over time.
- **Training Programs:** Another critical aspect of embracing the future of Hard FM is investing in comprehensive training programs for your team. With the right training in data analysis

techniques and maintenance best practices, your staff can acquire the necessary skills and knowledge to effectively leverage the insights provided by data-led maintenance systems. This investment in training not only enhances the capabilities of your workforce but also instils a culture of continuous learning and improvement within your organisation.

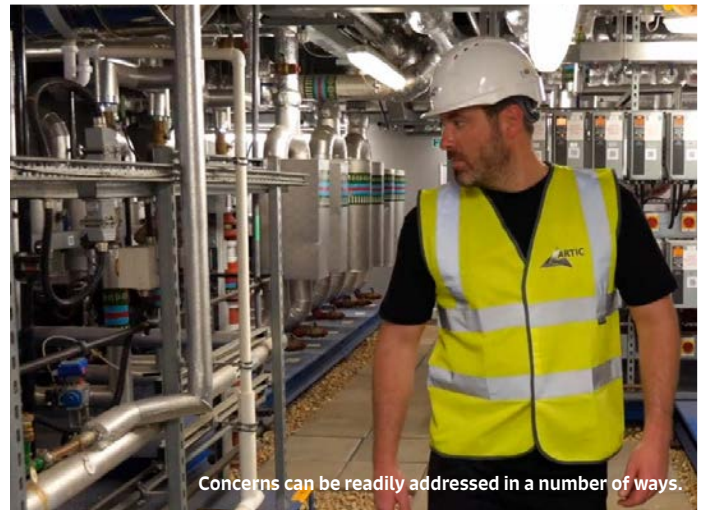
- **Robust Data Security Measures:** Data security is undeniably a top concern for any organisation considering the adoption of data-led maintenance. To address this concern, it's crucial to partner with providers that prioritise robust data security measures. Look for providers that adhere to industry best practices and standards, such as encryption protocols, access controls, and regular security audits.

By choosing providers with strong cybersecurity protocols in place, you can ensure that your building's data remains safe and secure from potential threats or breaches.

The future of Hard FM lies in embracing data-driven solutions. By transforming reactive maintenance into proactive management, you can unlock a world of enhanced efficiency, cost savings, and a more sustainable future for your buildings. So, take the first step and unlock the power of data to transform your Hard FM operations. Your building, and your budget, will thank you for it.



More information is available at [www.articbuildingservices.com](http://www.articbuildingservices.com)



Concerns can be readily addressed in a number of ways.



Data-led maintenance is a revolutionary approach that transforms Hard FM.

## Geze product guide revised

GEZE UK's latest Product Guide and Price List has been completely revised and updated to make it even easier for architects, architectural ironmongers and specifiers to select the most effective product for their needs.

The detailed, illustrated technical guide provides specifiers with essential information about GEZE's extensive range of door closers, window control systems, sliding door fittings, glass door fittings, and smoke and heat extraction systems and now lists all door closers according to type: with guide rail, link arms, integrated or transom mounted. It also includes the latest editions to the product range.

Created to be completely user-friendly, the guide is divided into five easy-to-use sections so that the comprehensive range of products can be found quickly and efficiently, whilst also providing users with a handy reference guide to the applications of all GEZE products.

It includes technical drawings, application descriptions and finishes as well as glass preparation information and technical information on a wide variety of solutions for toughened glass.

The Product Guide is available electronically or as hard copy. To order a copy email [info.uk@geze.com](mailto:info.uk@geze.com).

Sales and Marketing Director of GEZE UK, Andy Howland, said: "The industry is constantly changing, new guidelines and legislation are introduced regularly and GEZE continually innovates to ensure that our products remain at the forefront of technological innovations. With this in mind, we publish our comprehensive Product Guide each year so that specifiers have all the information they could need in an easy to use format."

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



## New Clivet Pack3i CSNX-iY rooftop designed for highly crowded applications

The Clivet R&D team, having previously introduced Full Inverter technology up to 160 kW with the CSRN-iY series, has now designed the new CLIVETPack3i CSNX-iY rooftop units for high crowded applications.

The new line is ideal for particularly crowded locations such as cinemas, restaurants, auditoriums, covering a nominal capacity range from 40 kW to 120 kW with air flow rates from 4,000 to 25,000 m<sup>3</sup>/h and offering the possibility of handling up to 100% outside air.

The iFD 'Intense Field Dielectric' electronic filters ensure high air quality, removing airborne particles with ePM1 90% efficiency, including allergens, fine dust, bacteria and viruses, and containing ventilation costs due to very low pressure drops.

The adoption of the environmentally friendly R32 refrigerant with low GWP, combined with the reduction and optimisation of the refrigerant charge, achieved through careful design of each individual component, reduces the environmental impact by more than 80%.

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



## Cooling extension for Nuaire's boxed ventilation range

Nuaire's Hybrid Cooling System is a cooling extension for its boxed-ventilation range designed to tackle residential overheating and provide a solution that meets Building Regulations.

The Nuaire Hybrid Cooling System is an ancillary cooling module that works with the existing Nuaire MRXBOX MVHR products to provide a hybrid MVHR and cooling system – delivering clean indoor air, while combatting overheating – a modern day issue in many high-rise new builds.

The new system is an energy efficient, space-saving solution that can be effortlessly integrated to newbuilds that face overheating problems; such as floor to ceiling glazed apartments where natural ventilation is impossible due to environmental and noise pollution outside, and dwellings which are without shade to protect them from the sun's heat.

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





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