



2019/2020

magazine

The voice of the HVACR industry

The 2050 target:

Getting on course for net zero

Good NABERS:

Should we follow Australia's lead on energy efficiency in buildings?

Perfect partners:

Why stoves and chimneys should not be viewed in isolation

Cold case:

Tackling the issue of illegally imported refrigerants



The Chairman and the Chief Executive address the industry's big talking points

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Letter from the Chairman

Dear FETA members

Welcome to the 2019/2020 issue of the FETA Magazine. Over the following pages you will see a round up of our biggest news stories from 2019, a look ahead to 2020 plus detailed contributions from our various associations; all of whom are playing an active part in effecting positive change in our built environment.

Taking on the role of Chairman during such a turbulent period for our industry and the wider world brings many challenges, and while we aim to avoid getting too embroiled in the politics we remain committed to keeping abreast of all developments relevant to our members and involving ourselves in the debate accordingly.

Brexit is arguably still the biggest talking point and will have many consequences for our industry. The issue of regulations and standards is very important because, whilst the standards bodies themselves are unaffected by Brexit, the outcomes of Brexit may have an effect and it remains vital for the UK to be well represented. In that regard I must salute the work carried out by the BSI to retain its influential relationship with European standards bodies.

The ongoing enquiry into the Grenfell Tower tragedy, and the resulting Hackitt review, have led to the involvement of FETA with the outcomes of the report and consequent update of the Building Regulations. ADCAS and the SCA in particular have been key contributors in liaising with the relevant bodies to raise fire safety standards.

Since forming its A2L refrigerants working group, FETA has been actively involved in developing guidance on this new family of low flammability refrigerants, and more recently has developed – in collaboration with the IoR – guidance on risk assessments required for compliance with UK law. On the subject of refrigeration, June 2019 saw the inaugural World Refrigeration Day, an international initiative aimed at raising the profile of the vital contribution that refrigeration makes globally in our everyday lives. FETA has also continued its work with the Environment Agency in addressing the issue of illegally imported refrigerants.

With the net zero carbon emissions 2050 target now very much on our agenda the HPA continues to lobby tirelessly to highlight the way heat pump technology can reduce carbon emissions from buildings. An appearance before the Science and Technology select committee in February 2019, amongst other promotional activities, has ensured that the government is beginning to take notice of the vital role heat pumps will play in the future. The challenge now is to scale up the activity – particularly on training – to ensure that the heat pump industry is ready to grasp this opportunity.

The training and development of future industry talent is something FETA takes very seriously and this was exemplified in 2019 when Joe Cairns was announced as our second recipient of an Arkwright Scholarship Award. I look forward to seeing his career progress and I hope his achievements can inspire more young people to pursue a career in this ever more relevant and thoroughly rewarding industry.

Finally, it gives me great pride to be involved with so many industrious organisations and individuals taking a collective responsibility in shaping the world for future generations. Let's continue the good work together in 2020.

Mark Woods, Chairman of FETA



Russell Beattie, FETA Chief Executive, provides an update on some of the important work carried out by FETA in 2019 and outlines the aims for 2020.

FETA NEWS

In order to gain a better understanding of, and cooperation with, all building industry sectors, FETA continues to pursue an active involvement in scientific, public and policy debates and aims to influence policies, legislation, regulations and standards in the best interests of all. There are countless themes I could draw on but will concentrate on a few fundamental developments.

Climate Change Issues

Climate change was thrust into the spotlight more than ever before, with Greta Thunberg in particular leading the way in trying to persuade our world leaders to sit up and take notice of the environmental threat posed to future generations. While the actions of protest groups like “Extinction Rebellion” will certainly have divided opinion, there is no doubting our industry’s relevance in contributing to these matters, with around 40 per cent of global energy consumption attributed to buildings.

For us one of the most significant government announcements in 2019 was of course the declaration to make the UK the first major nation to commit to reaching a net zero carbon emissions target by 2050. This is of course a very big statement and many may balk at the costs and barriers to such ambition. However, we should feel proud that we have played a part in promoting energy efficiency and renewables in particular.

The HPA has been extremely active this year in lobbying for greater clarity on government policy concerning low carbon heating options, and the HPA’s ‘Roadmap and Vision for the Future’ document will, I’m sure, strike the right note with the right people. Whilst justifiably pleased with the traction the HPA has achieved there is no doubt the challenge now is to scale up to meet the increased demand for heat pumps and the related requirement for workforce training.

Building Regulations and cultural change within construction

Post-Grenfell there has been a welcome effort to raise standards and improve competency in the construction sector. We are very supportive of the recommendations delivered in the ‘Raising the Bar’ report by the Competence Steering Group as part of the overall ‘Building a Safer Future’ campaign. There are significant challenges associated with making the radical changes it proposes and this will, if followed through properly, have a considerable effect on the way trade associations operate. The Smoke Control Association has already taken this to heart and embarked on its own drive to establish and enforce competency levels for its members, with a certification scheme which is mandatory for SCA members involved in installation, service and maintenance of smoke control systems.

The review of Building Regulations is, at long last, underway and our members are looking at the various elements with a view to making detailed submissions to the consultations early in 2020. We have maintained a good liaison with the key government officials in MHCLG and are encouraged to note the willingness to place the review in the wider context of both the climate change agenda and the Hackitt review regarding the broad compliance and enforcement issues which have previously been sadly neglected. As many others have already observed, this is a once in a generation opportunity and we must continue our efforts to constructively engage.

Fair payment and mental health

For years there has been confusion and stigma connected to mental health concerns in all walks of life. With various awareness campaigns and public figures speaking openly about their own issues, it is now recognised as a serious concern in the construction industry.

According to a report by the World Health Organisation, one in four people in the world will be affected by mental or neurological disorders at some point in their lives.

In September 2019, FETA was one of many organisations involved in the support of a major new payment and mental health survey launched by 27 bodies in the UK construction industry, to understand how poor payment practices are impacting mental health and business wellbeing. Despite frustrations over the delay of the second reading of the Aldous Bill, we hope the results of this survey keep the ramifications of late payment in focus as a matter of urgency.



FETA NEWS



Changes to FETA leadership positions

The Federation of Environmental Trade Associations (FETA) announced two changes in its senior officer roles in 2019, with Nick Howlett stepping down as FETA Chairman, and being replaced by Mark Woods.

Mark (pictured) is also President of the British Refrigeration Association and owner/operator of RefMech Limited. Nick remains as HEVAC President.

The BRA also elected Mark Hughes as Vice President. Mark is Vice Chairman of the BRA Equipment and Components section, and, like many FETA members, represents the BRA on a BSI standards committee.



HPA welcomes report highlighting threat of net zero emissions target shortfall



The Heat Pump Association (HPA) has welcomed a report from the Science and Technology Committee, which warns that the UK is in danger of missing its net zero emissions targets.

The report, entitled, "Clean Growth: Technologies for meeting the UK's emissions reduction targets", outlines 10 key policy areas that need to be addressed if the UK is to deliver on its net zero ambitions.

The list refers to the lack of consultation on improving energy efficiency in relation to building regulations, despite the government claiming it would do so after the zero-carbon homes policy was axed in 2015. Also highlighted is the Renewable Heat Incentive, due to close to new applications in 2021 but as yet with no replacement scheme announced.

The report goes on to list 10 recommendations to remedy the shortfalls, including the call for a clearer strategy for decarbonising heat, such as large scale trials of different heating technologies like heat pumps.

Graham Wright, Chairman of the HPA, commented: "We keep hearing from all quarters that action needs to be taken now if we are to meet our net zero emissions targets. However, this is just not happening. If the government gave some clear direction in these areas, then industry and the market in general will respond. We hope this report spurs the government into action on these issues as a matter of urgency."

Record numbers at 2019 BCIA Awards

The 2019 Building Controls Industry Association (BCIA) Awards saw not only a record number of entries but also a record number of guests.

Comedian Holly Walsh hosted the awards which were announced at an exclusive ceremony and gala dinner on 9th May at the Hilton Birmingham Metropole.

The award for Outstanding Contribution of the Year was presented to Wendy Belfield of InTandem Systems (pictured below left). Wendy has demonstrated her ongoing commitment and dedication in making the BEMS Controls Engineer Trailblazer Apprenticeship Standard come to fruition, which will play a pivotal role in tackling the skills gap. This will significantly impact the future careers of many people who have yet to enter the building controls industry.

Jon Belfield, President of the BCIA, said: "The BCIA Awards were once again a wonderful occasion and it was a joy to celebrate the crème de la crème of the building controls industry. I would like to offer my congratulations to all of the winners and thank all of the sponsors and media partners for their continued support."

Congratulations to all of the winners from the 2019 BCIA awards, listed below:

- Independent Building Controls & BEMS Installer of the Year: Eton Associates**
- Engineer of the Year: Ian Dalby of System Five**
- The Young Engineer of the Year: Luke Williamson of Eton Associates**
- Energy Management Award: Optimised Buildings**
- Best Service and Maintenance Provider: Demand Logic**
- Technical Innovation of the Year – Products Award: IAconnects**
- Technical Innovation of the Year – Projects Award: Econowise Drives & Controls**
- Contribution to Training Award: One Sightsolutions**

The 2020 BCIA Awards will take place on Thursday 30th April at the Hilton Birmingham Metropole, with broadcaster Huw Edwards confirmed as host.



ADCAS welcomes introduction of new pre-qualification system

ADCAS has announced its full support for a newly introduced pre-qualification (PQ) system – a joint venture by Build UK and the Civil Engineering Contractors Association (CECA) designed to tackle the current pre-qualification inefficiencies costing the construction industry millions every year.

The first phase of the much needed scheme sees the publication of a Common Assessment Standard (CAS) which will be used to pre-qualify companies. The CAS will feature key questions based around existing PQs, including BSI's PAS91, and will cover topics relating to finance, health and safety, the environment, quality and more.

ADCAS has long argued that the existing PQ system is too fragmented and needlessly complex and the association is hopeful that this new system will go a long way in reducing wasted man-hours and costs.

Malcolm Moss, President of ADCAS, commented: "The ADCAS membership welcomes this timely reform of the pre-qualification system and is optimistic that it will make a real difference in reducing unnecessary and time consuming administration work, allowing companies to channel valuable resources into delivering first class infrastructure projects.

"As this new approach is based on ideals that the industry agrees on, this system looks to be in line for widespread adoption and, with the introduction of CAS, companies will undoubtedly benefit from no longer needing to be certified by multiple assessment bodies."

Achilles, CHAS and Constructionline have been appointed as the first recognised assessment bodies.

BCIA appoints Terry Sharp as Vice President

In January 2019 Terry Sharp was announced as Vice-President of the BCIA. Terry (pictured) has worked in the controls industry for over 35 years and is an Associate at NDA Consulting, the specialist BMS and energy consultancy practice.

Previous experience includes UK and European leadership roles for Johnson Controls, Sales and Marketing Director for Sontay and Product Marketing Manager for Satchwell Control Systems. Terry re-joined the BCIA Management Committee in 2017 and his depth of experience and expertise has already helped the BCIA bridge the gap between manufacturers and installers. He brings a rounded perspective to the challenges that are faced in today's BMS industry.

Terry said: "It is a great honour to accept this role and I am looking forward to steering the work of the association to help influence the uptake of control technologies and shape this fascinating and rewarding sector for the future generations of engineers."

HVAC & Refrigeration Live

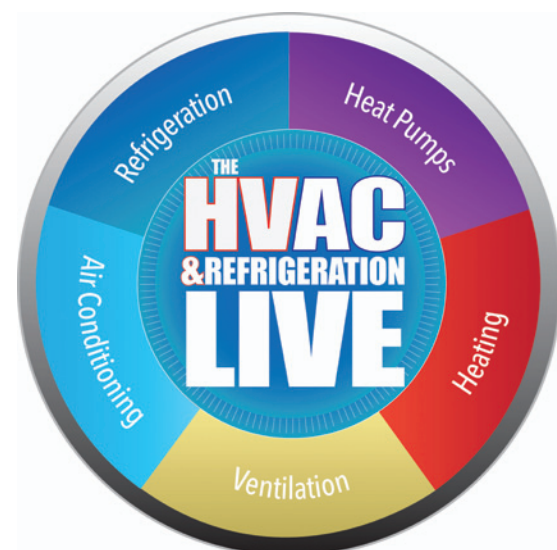


HVAC & Refrigeration Live 2020 will take place on 20th – 22nd April 2020, at ExCeL, London. This will align the show closer to Climate Action Week events held at ExCeL London during 2020.

London Climate Action Week is a government and partners initiative for London, to make cities cleaner and healthier places to work, live and visit.

Climate is one of the big themes being discussed as part of the Industry Insight Series hosted in the Conference theatre at the April show, which will link nicely to the RACHP Industry Conference running alongside other planned major climate events.

The organisers will be working with some of the most influential dynamic industry brands, providing information on innovation, future products and new approaches to evolve in this new era. The 2020 vision will bring together increased attendance, platforms to demonstrate new products, debate and maintenance solutions. www.hvacrlive.com



Don't cut corners on fire safety, says SCA



The Smoke Control Association (SCA) has warned companies to stop cutting corners when it comes to fire safety in commercial buildings or risk breaching the Fire Safety Order 2005 and facing prosecution and hefty fines. The Fire Safety Order 2005 applies to any person who has some level of control in premises and requires them to take reasonable steps to reduce the risk from fire and make sure people can safely escape if there is a fire in a building.

Recently, property developers Ashgate Property Developments Ltd, who failed to meet fire safety legislation at a block of Sheffield city centre student flats, were sentenced at Sheffield Magistrates Court. The firm faced a hefty £36,000 fine and was also ordered to pay the prosecution costs totalling £12,719. The company failed to adhere to the Fire Safety Order 2005 and during inspection several serious fire safety concerns were found, including dust covers left on smoke detectors. There was also poor fire separation between flats and the corridor escape route at the time that tenants moved into the property which put students' lives at risk.

This case underlines the importance of meeting fire safety regulations and outlines the consequences for those who choose to take unnecessary risks. Property developers and landlords have a duty of care under fire safety regulations to provide a safe environment for occupants of the building and a failure to do so can lead to serious consequences such as substantial fines and imprisonment.

To find out more about the Fire Safety Order 2005, please visit: <http://www.legislation.gov.uk/uksi/2005/1541/article/5/made>

FETA issues new DSEAR risk assessment guidance

FETA has issued new Guidance on Risk Assessments for compliance with the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR).

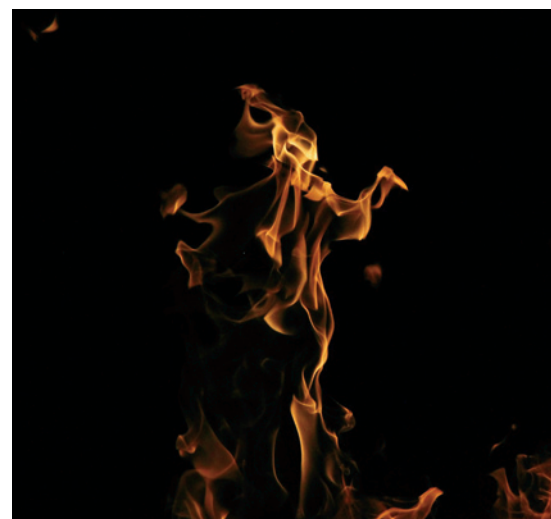
Following a joint meeting between FETA, the Institute of Refrigeration (IoR) and the Health and Safety Executive (HSE) it was agreed that FETA would lead the project to pull together appropriate guidance, and this document is the first fruit of that work. The publication has been reviewed by the HSE prior to issue. The intention is to follow up this guide with more specific, application based risk assessment guidance, covering a range of typical refrigeration, air conditioning and heat pump installations to help the industry in complying with this regulation.

The new document is available to download from the "Publications" section of the FETA website (www.feta.co.uk/publications/feta-publications).

ADCAS northern meeting hailed as unqualified success

An ADCAS meeting in June 2019, held at the offices of Doby Verrolec in Stanley near Durham, was well received by members of the group.

Attracting an impressive number of attendees, the meeting was hosted by ADCAS President Malcolm Moss and was the first ADCAS meeting of its kind to take place outside of London for many years. Its success may mean that future meetings are planned for different locations around the country, giving members who struggle to make it down to London a chance to attend. Following the meeting and factory tour, the majority of those in attendance enjoyed a successful networking evening event in Newcastle.





Joe Cairns receives his Arkwright Scholarship Award from John Thompson, Arkwright Liaison Officer.

FETA announces second recipient of Arkwright Scholarship Award

Joe Cairns became the second recipient of FETA's Arkwright Scholarship Award. The Arkwright Scholarships Trust is an independent charity that identifies, inspires and nurtures future leaders in engineering and technical design, acting as a beacon to the most talented STEM (Science, Technology, Engineering and Maths) students in UK schools.

Joe applied through his affiliated school, Droitwich Spa High School, following a recommendation from his teacher. He was one of 393 candidates recommended for a scholarship by his interviewers and using his engineering interests he was matched to the FETA criteria as a potential sponsorship opportunity. FETA was given a choice of three potential scholars and Joe was chosen as its next Arkwright scholar. FETA has been a sponsor of Arkwright Engineering Scholarships since 2016 and recognises the key role they play in encouraging students to pursue a STEM related career. Joe said: "I am very happy to receive this award and I am also extremely grateful that an organisation like FETA has shown this belief in me. It really makes all the hard work worthwhile and has given me a massive confidence boost for the next stage in my career."



One small change, one big difference

The Building Controls Industry Association (BCIA) is encouraging people in the building controls sector to make one small change to their everyday lives to improve energy efficiency in buildings and create a more sustainable future.

Energy Live News statistics have revealed that the UK electricity system loses £9.5 billion per year on wasted energy, mainly through heat. When all the small changes are combined, the building controls industry can erode the wasted energy that these alarming statistics clearly define.

Changing one small thing enables you to change another small thing until, little by little, everything you have wanted to change changes. By simply implementing small changes in your everyday lives you can lead the way in improving energy efficiency in today's sophisticated commercial buildings and share best practice so our 'small changes' make the big change that we wish to see.

Jon Belfield, President of the BCIA, said: "I would like to challenge everyone in the building controls industry to share their own method(s) of saving energy in a building or your workplace be they large or small. It is the combined difference that we make together that will make the overall change we wish to see. Post it on Twitter, LinkedIn or your website with the hashtag #OneSmallChange and let's see what we can learn from each other while collectively improving today's commercial buildings."

Heat Pump Association launches vision report

In November 2019 the Heat Pump Association (HPA) launched its vision report; 'Delivering Net Zero: A Roadmap for the Role of Heat Pumps'. The report outlines the heat pump industry's commitment and readiness to step up to the challenge of delivering the necessary decarbonisation of heat through the scaling up of heat pump deployment.

The industry's efforts to establish wide-scale deployment of heat pumps in the UK will be delivered through three key pillars:

- Putting the consumer at the heart of change
- Upskilling the installer base to create a cohort of highly skilled low carbon heat installers
- Working with government to ensure a supportive policy mix

The decarbonisation of heat is a key priority following the government's announcement that the UK will become the first major nation to commit to reaching a net zero carbon emissions target by 2050. The report demonstrates the



vast carbon savings that heat pumps can achieve immediately, that will be vital to avoiding the worst consequences of the climate crisis. The question of how we are going to decarbonise the heating of buildings in the future is of huge interest to designers, occupiers and installers. The roadmap presented in the report offers a large part of the answer to this.

Graham Wright, Chairman of the HPA, said: "The heating industry has been one of the biggest contributors to carbon emissions and we now find ourselves at a pivotal moment as we look to decarbonise our heating supply. The HPA believes that there is a huge opportunity for the country to embrace heat pump technology at this time, and we want to re-emphasise the fact that heat pumps provide strong carbon savings now that will only increase further in the future.

"However, the successful widespread adoption of heat pumps relies on the industry stepping up to help shape strong government policy, education and consumer acceptance. This report will act as a 'roadmap' in how we can achieve these goals and help the UK achieve the net zero carbon emissions target."

FETA NEWS

Book your place at FETA Annual Lunch

The popular and well attended FETA Annual Lunch will take place at The Brewery, London, on 23rd April 2020.

The 2019 Lunch was once again very well attended with over 600 people from industry enjoying the surroundings of The Brewery, and a delicious meal. Nick Howlett's keynote speech reviewed the important work done by FETA during the year, and also the challenges to be faced in the future. After the lunch, guests were treated to an entertaining speech from BBC radio presenter Justin Webb.

Bookings for the 2020 lunch can be made by contacting the event organiser, Touchwave Media, on 07792 720 597.

SCA launches CIBSE accredited CPD course

The Smoke Control Association (SCA) has introduced a new CIBSE accredited continuing professional development (CPD) presentation for consultants, engineers, designers and contractors interested in the certification and testing of smoke control products.

Securing accreditation is a rigorous process and in gaining approval the SCA has proved to CIBSE that the technical content contained within the course is of a high standard and offers valuable CPD to delegates. All 21,000 CIBSE members are required to undertake CPD in order to maintain professional competence and the SCA is hoping the new course will further strengthen ties with CIBSE and other engineering institution members.

The course updates attendees on the action the SCA has taken, post Grenfell and the Dame Judith Hackett review, in introducing a UKAS applied Independent Installer Certification Scheme for SCA members and building installers who purchase and install smoke control products. The comprehensive guidance on the latest certification and testing requirements provides delegates with the knowledge and understanding they need to maintain best industry practice.

The presentation also covers the key products and system types used in smoke control and the relevant standards relating to their use in high rise buildings, as well as the code of practice for planning, design, installation, commissioning and maintenance.

ADCAS calls on members to join new working groups

As part of a new strategy, the ADCAS Executive has formed three working groups which will be made up of representatives from member companies.

The working groups will ideally be made up of four to five representatives but a minimum of three. The working groups will meet as regularly as the projects they are working on require but it is envisaged that the meetings in most cases will be held by teleconference call to minimise the impact on the working group members.

Within the ADCAS membership there is a high level of expertise and tapping into that resource will no doubt benefit the association and the wider industry. ADCAS now has volunteers who have offered to chair the groups so should you be willing to get involved there will be no pressure to do more than participate and give the association the benefit of your expertise.

The three working groups are:
Marketing Working Group
Training and Professional Development Working Group
Technical Support Working Group

If you or someone within your company would be willing to get involved, please contact Mike Duggan of FETA: miked@feta.co.uk


THE VOICE OF THE DUCTWORK INDUSTRY



Different Down Under



Andrew Gaskell, Chairman of the CBCA, suggests we follow Australia's lead when it comes to integrating HVAC systems into the design stage of buildings to improve energy efficiency.

On 25th July 2019 the UK experienced its hottest day on record, peaking at 38.1°C in Cambridge. Just a day before, CIBSE held a seminar in London, titled "Avoiding overheating", during which CIBSE Head of Research Anastasia Mylona and Technical Manager Julie Godefroy discussed revisions to Approved Documents F and L, as well as the causes and risks of overheating buildings.

Although many people may have enjoyed the hot weather, dehydration, breathing difficulties, heat exhaustion and heatstroke are just some of the dangers that can put people's lives at risk during periods of extremely high temperatures.

Poorly installed, maintained and controlled HVAC equipment, as well as inadequate natural ventilation, can drastically increase the chances of a building overheating, which can result in serious health concerns for the building's occupants. The importance of ensuring a healthy indoor environment while remaining compliant with modern energy efficiency demands is an ongoing challenge for building managers.

Commercial buildings typically undergo many changes over the course of their lives. Tenants will come and go and every new occupant will have their own ideas on setup and working environment. The building owner or operator will need an HVAC system that can offer long term flexibility on top of long term energy savings. However, the way we approach building design in the UK makes it difficult to achieve optimum energy efficiency during a building's lifetime – as our Building Regulations focus primarily on the design and technology that improves predicted building performance for purely compliance assessment, instead of achieving directly measureable improvements in performance in-use.

Aussie rules?

We enjoy a great sporting rivalry with Australia, as demonstrated by the thrilling 2019 Ashes series. The series was tied, but away from sport, when it comes to energy efficiency in buildings, our Aussie friends are some way ahead of us. Their 'NABERS' (National Australian Built Environment Rating System), introduced and implemented over the turn of the 21st century, is a performance based rating system for buildings. A NABERS rating for a building is based on a methodical assessment of the actual environmental impact of operating it and has allowed buildings and workplaces in Australia to achieve impressive environmental savings, that we should be examining and learning from. In particular, Australia's method of incorporating the simulation of HVAC systems and controls at the design stage of a building is something that would really help our drive towards lower heating emissions.

It is always worth reminding ourselves that around 40 per cent of global energy consumption is attributed to buildings, with cooling and heating alone contributing a significant portion of that. We can change that by adopting greater scrutiny of the HVAC system, which we currently lack a basic rating system for in the UK, where we have, for too long, designed our buildings to comply with regulations. This results in the performance gap between original design intent and the reality of how the building performs. In contrast, under the NABERS system, both landlords and tenants as well as other invested parties can use a base building rating to factor in-use energy performance into their decision making.

For commercial premises in the UK, landlords will generally provide a central HVAC service to their building, but the occupiers' own HVAC

systems are then more likely to be outsourced to the tenants themselves, who will also have control of their own building management system. With each tenant having their own HVAC system and facilities management team it is very difficult for the landlord to maintain any real control over their building's efficiency as they are required to keep the central heating system operating constantly.

In Australia, while tenants manage the fitout of their own HVAC systems, the landlord maintains oversight over the design and is able to refuse approval of the system if it is likely to negatively affect their building's base rating.

Beams of efficiency

The diversity and flexibility of chilled beams make them an ideal HVAC solution for a more integrated approach to building design and function. Picking the cheapest system without taking running costs into account could end up proving extremely costly in the long term.

A key attribute of chilled beam technology is an inherent efficiency that can help building operators to slash energy bills, delivering significant savings over an extended time period.

Occupant comfort and energy efficiency do not have to be mutually exclusive, the choice of HVAC system should therefore play a more prominent role in the design stage of a whole building, instead of being considered separately. Modern commercial buildings require a modern approach to cooling, heating and ventilation, and multiservice chilled beams (MSCBs) are capable of providing a full range of services to meet specific user requirements. Also, chilled beams can work well alongside other energy efficient technologies such as heat pumps to offer a practical long term heating and cooling solution.



Projects to be proud of

Terry Sharp, Vice President of the BCIA, highlights the exciting variety of experiences a career in the building controls industry can bring.

According to BSRIA, the global BEMS market is expected to reach \$6.8 billion by the year 2020. This is of course a fantastic figure but we face an ongoing battle to maintain the supply of talented engineers to cope with the demand, which will continue to spiral. Failure to win this battle will place huge pressure on building projects and resources and will ultimately result in lower quality buildings, also hindering our collective sustainability targets. In my role as BCIA Vice-President I am often asked what we can do to increase the talent pool in the building controls industry. I believe the raw talent is out there, we just need to attract it – and there is no better advert for our industry than the landscape we see around us today.

Take a look at some of the most impressive examples of architecture we have seen spring up in the last 10-20 years. London's Shard, Beijing's 'Bird's Nest' stadium, the Absolute World skyscrapers in Toronto and The Blue Planet aquarium in Copenhagen to name a few are all modern aesthetical masterpieces. While the architect may well get the plaudits, it is important to remind ourselves that these are more than just empty shells and there is a great deal of complex engineering underneath the exterior that we can take pride in. Modern legislation and environmental targets have of course made good building management a necessity, meaning that we and our engineers of the future are part of a difficult, but also an exciting and rewarding challenge to make our buildings energy efficient, sustainable and aesthetically pleasing.

It is fair to consider that designing something like a BEMS for a new building is an easier task. In order to meet modern standards, such as the Minimum Energy Efficiency Standard (MEES), designers and potential managers of new buildings will already have these targets to work towards and will play a key part in the design process. However, it is not always as straightforward for older buildings, limited by legacy infrastructure unsuitable for modern building control systems. While there are some exceptions in certain cases, such as listed buildings

being exempt from having an Energy Performance Certificate, they shouldn't necessarily be used as a reason to not try and improve the way a building operates for the benefit of its users and visitors. Updating an old building, therefore, while still retaining its historic authenticity, is a challenge to be excited about – and this is something we should highlight more to the next generation of engineers.

Moving with the times

For all his wild, imaginative genius even Gaudi could not have foreseen how advanced the world would be now when he first conceived his idea for the Sagrada Família in Barcelona, way back in 1895. Still under construction and with an expected completion date of 2026, the famous church attracts 3.5 million visitors a year, making it possibly the most popular construction site in the world. But with so many visitors it needs to move with the times so that the visitor experience is as enjoyable and stress free as possible. In order to make this happen the church's building management team has embraced a variety of tools and innovations, such as Big Data, IoT smart sensors and Building Information Modelling (BIM), to ensure ongoing construction and visitor satisfaction can continue in harmony. For anybody working on the Sagrada Família, whether they're an architect, builder, electrician or IT installer, it must be hugely satisfying to be involved in the completion of a spectacular construction project that began well over a century ago.

Whether it's new builds or retrofit projects the controls industry has a huge number of exciting projects to offer and we should use examples to appeal to the engineers of the future as much as we can.

The controls industry has brought me great opportunities to travel and work in the most diverse buildings, including palaces, museums, factories and stadiums. So instead of focusing on the plant room, let's start to place more emphasis on the fascinating process and spaces we control. The next generation of engineers will be the key drivers in evolving technologies to create a more environmentally friendly building landscape for tomorrow.

Who wouldn't want to be a part of that?



Out of site, firmly in mind

Malcolm Moss, President of ADCAS, discusses the growing trend in utilising off-site pre-assembled ductwork on construction projects.

There's no doubting that technology has unequivocally changed the way we work, helping us do more for less, improving efficiency across the board and consigning many traditionally labour intensive jobs to the scrapheap. But do we now expect too much, too soon? Has the technological age become the age of impatience and have we all, to some degree, helped to unwittingly breed a culture that demands instant results with little thought and scant regard for the methods used along the way?

New methods

Whatever your view, advances in technology are certainly changing the face of the construction industry both from the client and manufacturer perspective. Clients are consistently exploring new methods to reduce on-site labour, meet or exceed expectations surrounding quality and put the squeeze on project delivery times. At the same time, manufacturers are looking to technology to refine manufacturing procedures, reduce waste and keep tighter control over costs. This has given rise to a different way of doing things – off-site pre-assembly.

Off-site pre-assembly, sometimes referred to as pre-fabricated or in-house fabrication, makes use of Computer Aided Design (CAD), 3D modelling, Building Information Modelling (BIM) and other advanced design methods to help plan, develop and fabricate building elements such as ductwork. All elements can be assembled in a controlled factory environment at floor level and the number of final connections needed to be made at height is significantly reduced. These elements are then delivered to site when needed, minimising the amount of on-site construction.

Off-site benefits

This modern alternative to the more traditional method of carrying out all of the

build on-site has many significant advantages and although it may not be the answer on every project, there are plenty of reasons to suggest it will only grow in popularity, particularly when it comes to ductwork. The potential to shorten the construction schedule and the flexibility to react to design changes – in the early stages at least – means that off-site is an attractive proposition on time sensitive projects such as schools, hospitals and hotels, as well as on projects with repetitive floorplans or layouts.

Because the majority of components are constructed in-house, delays caused by bad weather and potential issues surrounding site access are instantly eliminated. This factory environment also allows for stricter controls on quality and greater efficiency in construction – there is little danger that the workforce will be missing a tool or will let product leave the premises without carrying out quality checks.

There is also an argument to be made that off-site construction leads to safer working conditions as it results in fewer workers on site at the same time and reduces the number of complicated fixings carried out at height.

Although off-site modules can be cumbersome and the physical lifting into place on site needs to be well planned to avoid disruption, another potential benefit is that the on-site manager will not need to allocate space for prolonged periods of time and may end up with extra site space prior to the delivery of the module.

Added to all this, costs become easier to predict as software used during the design process calculates the exact cost of the project, taking into account material costs and the reduced labour budget. Condensed site labour and reductions in material waste due to the exacting nature of design software and factory based construction can result in significant monetary savings and allow for further investment in materials.

Early adoption

For the off-site approach to run smoothly without any hiccups along the way, advanced planning and collaboration between manufacturers, consultants and contractors must be in evidence from the very early stages of the project.

The whole project team should meet with the client and carefully consider the elements that will be constructed off-site and the timescales for bringing everything together. It may appear that a significant amount of time and effort is being used up in and around the design stage but once the plans have been drawn up using advanced design tools, the chances of encountering disruptions and time-sapping delays are minimised.

Right here, right now

Off-site production may not be a brand new concept, but the construction industry is now beginning to sit up and take notice as both clients and manufacturers become aware of its cost saving and efficiency potential.

Today's 'right here, right now' society is helping to push client expectations into the stratosphere but new approaches such as off-site construction can deliver higher levels of certainty and shorten project times to the benefit of all parties. By taking hours off-site and into a controlled factory environment there is almost guaranteed to be an uptick in quality. This, coupled with the additional control over costs and certainty around delivery to site, should be more than enough to convince project teams to consider an off-site approach to ductwork from the very outset.

Targeting 2050

Graham Wright, Chairman of the Heat Pump Association, explains why the heat pump industry is ready to make its mark as part of a carbon neutral future.

It won't have escaped your attention in 2019 that the reality of the climate crisis and the consequences of inaction have been placed very firmly under the spotlight and decisive and dramatic action is needed now if we are to avoid the most disastrous impacts of climate change.

Amongst the challenges facing climate policy in the UK, heat decarbonisation is a key priority. The scale of change must be recognised with urgency so we can drive down carbon emissions from this sector in the years to come.

In 2018, heat pump sales in the UK were around 27,000 units. In order to decarbonise the heat supply, it is thought that this number will need to rise to over one million annual installations by the mid-2030s. In the HPA's recently launched vision report, 'Delivering Net Zero: A Roadmap for the Role of Heat Pumps', we stated that the industry's efforts to establish wide-scale deployment of heat pumps in the UK would be delivered through three key pillars:

- Putting the consumer at the heart of change
- Upskilling the installer base to create a cohort of highly skilled low carbon heat installers
- Working with government to ensure a supportive policy mix

The government have already made it clear that they wish to increase the deployment of heat pumps and these signals start with looking at homes off the gas grid and new builds. The Clean Growth Strategy (CGS) outlined the government's commitment to phasing out fossil fuels off the gas grid in the 2020s. These homes, often heated through the use of oil, offer the opportunity for substantial emissions savings. In addition, the Future Homes Standard will ensure that by 2025 all new homes will be fitted with low carbon heating methods.

Boiler scrappage schemes have proved successful in the past. For example, in 2010 the Department of Energy and Climate Change (DECC) offered a £400 voucher for the upgrade from an old boiler to a new boiler, with uptake being significant. This success was due to several contributing factors, including a high profile prime ministerial launch that gained significant public interest and was then passed on through word-of-mouth. Consumer satisfaction was also extremely high, largely due to the ease of application and approval through the online portal that was used.

Success factors

These success factors should certainly be replicated with the responsibility falling to the consumers themselves, installers and manufacturers to find the suitable replacements; in the 2010 scheme, demand and enquiries far exceeded expectations, showing the strong interest that an upfront grant can generate.

Financial support should be a minimum and help the government to gather evidence on levels of uptake and how the scheme should be administered. It is not only oil boilers that will need to be replaced in order to meet net zero, and although further targeted incentivisation may not be needed down the line, government should be ready to extend this scheme to other areas that offer potential to reduce emissions significantly.

In new builds from the mid-2020s, heat pumps can be designed as part of an integrated system and can perform better and be sized for lower peak heat demand, with commensurately lower capital costs.

Improving the installer base

One of the key barriers in stimulating the deployment of heat pumps is the development of a larger and well trained installer base. Most heating system installers would need to upskill to be able to install low carbon heating methods. This is a potential complication to the uptake of heat pumps as consumers typically rely on the knowledge and advice installers are able to provide. Without this upskilling of the installer base and improvement in the knowledge of the low carbon heating systems available, the deployment of low carbon heat systems could be hampered.

The heat pump industry is ready to meet this challenge by providing in-depth training in order to upskill the current workforce and bring through the next generation of low carbon heating installers. This will ensure that the quality of heat pump installations is high, the knowledge of the benefits that the technology can bring is commonplace, and there are sufficient installer numbers to scale up deployment to the levels required to meet net zero by 2050.



Better together

Dennis Milligan, President of the BFCMA, explains the importance of the stove and chimney working together.



The stove and the chimney/flue should not be viewed in isolation, but should be considered as a unified working system. The stove and the chimney/flue have to work together for the appliance to perform correctly and safely transmit the products of combustion to the atmosphere. The stove is the engine that drives the process and the velocity and temperature of the gases entering the flue can be important elements in how well the chimney/flue can do its job.

According to Defra, only stoves that meet the new stringent Ecodesign air quality emission limits can be sold in the UK from 2022. Ecodesign Ready stoves can reduce particulate emissions (PM) by 90 per cent compared to an open fire and 80 per cent compared to a typical stove manufactured 10 years ago.

The stove manufacturers have employed a number of design features to reduce emissions. One of the ways in which they have achieved this level of reduction is to retain the products of combustion in the fire chamber longer before releasing them into the flue. This can reduce the velocity of the flue gases as they enter the flue. The higher efficiency of the stoves also means that the temperature of the flue gases are lower. These changes further emphasise the need for good chimney or flue design.

Keep it straight

A straight chimney/flue is always the best solution but where this is not possible, due to the construction of the dwelling, the number of bends should be kept to a minimum and not exceed more than four. The angle of the bends should be no greater than 45° from the vertical, with the exception that 90° factory made steel bends or tees may be treated as being equal to two 45° bends. Chimney or flue height is also important. In accordance with

Document J the minimum chimney height recommended for the minimum performance of a wood burning or multi fuel appliance is 4.5m from the top of the appliance to the top of the chimney. It should be stressed that this is the minimum height and some Ecodesign stoves may require more height. It is always advisable to check with the stove manufacturer's recommendations.

Another important factor in good chimney/flue design is consistent insulation along the complete length of the flue. Clay/ceramic, concrete and pumice liners require insulation to be prepared and added on site. Stainless steel and ceramic system chimneys are supplied with effective insulation.

Double wall pumice chimney systems have an air gap between the walls of the inner and outer blocks. The air gap combined with the natural insulating properties of pumice provide effective insulation along the length of the chimney. Maintaining the flue gas temperature will prevent the flue gases becoming liquid and enable them to escape freely escape to the atmosphere.

Good news

Rather than wait until 2022, the Stove Industry Alliance (SIA) has marketed stoves that will comply with the Ecodesign regulations, branded as Ecodesign Ready. This has given flue manufacturers and installers real-life experience of installing the new stoves. The good news is the real-life experience of installing the stoves has mirrored the lab testing and modelling.

The stove should always be installed by a competent person, such as a HETAS installer. The installer should carry out a draw test when the stove has been installed to make sure it is working correctly.

“Ecodesign Ready stoves can reduce particulate emissions by 90 per cent compared to an open fire.”

Wet wood should never be burnt in a stove. Apart from burning poorly, wet wood can cause the build-up of deposits in the flue and increase the amount of PM emissions. The Defra Clean Air Strategy stresses the need to burn dry wood, like Ready to Burn, and regular maintenance. Burning dry wood and regularly sweeping the chimney/flue will reduce the build-up of soot and help keep the flue gases flowing freely.

In addition to the guidance provided by Document J the BFCMA has produced a useful guide, entitled; 'General Guidance on the selection and installation of flues and chimneys for wood burning and multi fuel appliances in residential properties'. The guide can be freely downloaded from the BFCMA website. The guide provides the latest guidance on designing and installing a flue as well as advice on the use of five alternative stove installation options allowed in BS EN15287+A1:2010, Design, installation and commissioning of chimneys, but not listed in Document J. (The current UK Annex to BS EN15287+A1: 2010 was published after the latest version of Document J). The alternative stove installation options can prove most useful in the design and installation of flues for new stoves. Where the guide refers to the installation of a Defra exempt appliance, this can also be read as applying to an Ecodesign stove.

Legal advice

As illegally imported refrigerants continue to blight the industry and undermine legislation, Martyn Cooper, Commercial Manager of FETA, looks at the issues surrounding their use and offers advice on what to look out for.



There has been a good deal of coverage in the trade press and on the Internet recently regarding the issue of illegally imported refrigerants. What started out as a few cylinders being sold on eBay has now been revealed to be an illegal trade of much larger proportions; possibly up to 20 per cent of the F gas quota volume. It is a well understood fact that the F gas quota process has resulted in sharp increases in the price of refrigerants, which has inevitably attracted the attention of those looking to capitalise on the situation. But is that the only issue? Is it just about making money, or are there other issues that we should be concerned about?

Let's look at a different example. Would you take any sort of risk when you buy medicines? Would you buy them on the black market just to save some money? From suppliers you do not know or from unverified websites? In packages without any clear indication of the source and manufacturer? The answer is clearly going to be "no" because the risk to your health would be far too high.

With the EU F gas Regulation and HFC phase down, the pressure on HFCs, particularly when they have a high global warming potential (GWP), has increased considerably. Refrigerants have become precious goods. They are essential for the safe and reliable operation of the cooling industry – just as medicine can be essential for life. Therefore, you cannot afford to take any risk.

The key issues

Firstly, illegal trade undermines the F gas Regulation's aim to phase down HFCs. Risks such as refrigerant leakage into the atmosphere increase even further with the use of inadequate cylinders, or illegal disposable cylinders which are not allowed to be produced or used in the EU.

Anyone purchasing F gases must hold a valid Company F gas certificate. Sellers cannot sell to anyone who does not have this

certification, and must legally record the number of the certificate, the issuing body, and its validity. Most sellers will hold their regular customers' details in their systems but will also have the ability to check one-off purchasers' details online via one of the F gas certification bodies, such as Refcom.

It may be tempting to purchase via an Internet platform, given the low pricing, but how can that seller verify that the purchaser holds valid certification? Simply put, they can't, which renders the transaction non-compliant with the F gas regulation. Buyers should always ask for evidence that the product is covered by F gas quota. This will be simple and straightforward for any reputable supplier. So, our recommendation would be to ALWAYS purchase your refrigerant from a reputable distributor.

Deep impact

Over the last 18 months, FETA has worked with the Environment Agency (EA) to get offers of refrigerant removed from eBay, with some success. However, it is not just the lack of F gas compliance that may be an issue.

Much of the product offered on the Internet is quite clearly in disposable (non-refillable) cylinders. These packages have been banned in Europe since 2007, so once again purchasing refrigerant in such packages is against the law.

The other major issue is that of product quality. When buying from a reputable supplier, it will be clear that they in turn purchase their refrigerant from reputable repackers and gas manufacturers. This will assure you that the refrigerant in the cylinder is exactly what it says on the outside. Product purchased elsewhere tends not to have the same assurance, and it has been widely reported that all sorts of mixtures have been found in cylinders purporting to contain pure refrigerant. Whilst some of these products may be benign, they can affect system performance. In some cases, what is stated

as being a non-flammable refrigerant has been found to contain significant quantities of flammable products, which presents a significant health and safety risk.

The risks of buying illegal refrigerant are high and range from hefty fines to risks to health and safety for installers and users. More specifically, and in addition to the fundamental issue of being non compliant with the EU F gas regulation, risks are related to:

Financial impact: High fines, or even criminal prosecution. In the UK, the EA has the power to apply civil penalties (i.e. they do not need to go through the courts) of up to £200,000 for breaching the F gas regulation.

Operational impact: Badly performing equipment could result if refrigerants do not comply with specifications (impurities, contamination with oil and other substances, etc.) leading to loss of capacity, reduced energy efficiency, higher operational cost and equipment failures. This may also lead to invalidating warranties and potential insurance consequences.

Business impact: Deterioration of relationship with customers or even loss of customers due to problems with the equipment and risk of closing businesses.

Health and safety impact: Refrigerants fall under 'dangerous substances' and need to be handled with care, even more so with the increased use of flammable and high pressure gases. Refrigerants that do not comply with the gas producers' specifications or with the content indicated on the cylinders can pose a serious risk for the health and safety of installers and users.

Setting new standards

David Mowatt, Chairman of the SCA, highlights the need to raise standards and levels of competency in relation to the design, installation and maintenance of smoke control systems in high rise buildings.

In the event of a major fire, smoke inhalation is often more of a threat to life than direct exposure to the fire itself, obscuring escape routes, causing panic and confusion and overcoming occupants before they are directly exposed to the fire itself. Unless smoke is controlled and properly ventilated, vital escape routes can become inaccessible – both for occupants trying to escape and for firefighters entering the building. A robust smoke control system which has been properly designed, installed and maintained can ultimately save lives when incorporated into a wider fire engineering strategy.

When considering a smoke control system in any high rise building it is important to recognise that no matter the system type, it should be part of an overall fire engineering strategy and should not be designed in isolation. The designer of the smoke control system should ensure that the proposed solution complements the fire safety strategy and provides the necessary levels of protection, in the same way that the architect and fire engineer should ensure that the building layout provided to the designer is entirely accurate and up to date.

Designers should also consider requirements contained with the Building Regulations, the Construction (Design and Management) Regulations, the Workplace (Health, Safety and Welfare) Regulations, the Regulatory Reform (Fire Safety) Order and any other relevant legislation.

Regulatory reform

Following the tragic Grenfell Tower fire, a number of organisations were brought together to form a steering group capable of taking forward the key recommendations laid out in Dame Judith Hackitt's Independent Review of the Building Regulations and Fire Safety.

Work has subsequently begun to improve competences for those working on the design, construction and operation of higher risk buildings and this encompasses installer competence, product testing and certification.

The process of identifying and developing specific competency frameworks and accreditation pathways has been taken on by 12 working groups – Engineers, Installers, Fire Engineers, Fire Risk Assessors, Fire Safety Enforcement Officers, Building Control/Standards Inspectors, Building Designers/Architects, Building Safety Managers, Site Supervisors, Project Managers, Procurement and Products.

Optimum performance

As is the case with other specialist sectors within the built environment, the smoke control industry has, until now, remained unregulated, making it difficult to assess the overall competence of suppliers and contractors. However, it is critical that smoke control systems are installed and maintained by a competent person with the necessary expert knowledge in order to ensure optimum

performance should a fire break out in the building.

As part of a sustained campaign to raise standards, all SCA members who install smoke control systems are now required to apply for and receive SDI 19 Certification scheme accreditation, guaranteeing that they are suitably skilled and experienced in fire strategy verification, system design, installation and commissioning in accordance with the following standards and industry guideline documents:

- Approved Document B
- Approved Document B NI (Northern Ireland)
- Technical Handbook (Scotland)
- BS9999
- BS9991
- BS7346 Parts 4, 5, 7 and 8
- BS8519
- BS8524
- EN12101 Part 6
- Technical Reports 12101-4 & 5
- SCA Guidance Documents

Certified contractors will have clearly demonstrated that their trained staff consistently adhere to industry best practice and fully appreciate the importance of correct installation, inspection and maintenance, ultimately providing peace of mind for the consultant and building operator.

Maintenance programme

A comprehensive maintenance programme is every bit as important as appropriate design and installation but can often be overlooked or simply forgotten about.

BS EN12101 and BS9999 document maintenance requirements for both natural and powered smoke control systems, advising that life critical equipment should be included in a building services maintenance schedule. These standards also stipulate the frequency of tests and offer advice on what should be checked on a weekly, monthly or yearly basis. If a smoke control system fails, the consequences can be truly catastrophic. Therefore, the building operator has a duty of care to ensure that when they are looking to put a maintenance plan in place, they check that maintenance contractors are suitably qualified and fully understand the system they are working with.

No excuses

It is hoped that a more robust regulatory framework is now just around the corner, a framework that includes clearer standards and guidance for everyone involved in the design, construction and operation of high rise buildings. There can be no excuses when it comes to fire safety and raising standards and improving competencies will ultimately save lives.

The FETA network

FETA is a federation of trade associations representing ADCAS, BCIA, BFCMA, BRA, HEVAC and HPA but it also has close ties with many other associated groups and industry bodies.

ACRIB	UK Air Conditioning and Refrigeration Industry Board
AMCA	Air Movement and Control Association International
AREA	Air Conditioning and Refrigeration European Association
AHRI	Air Conditioning, Heating and Refrigeration Institute (US)
BEIS	(Department for) Business, Energy & Industrial Strategy
BESA	Building Engineering Services Association
BSRIA	Building Services Research and Information Association
CBI	Confederation of British Industry
CT	Carbon Trust
EHPA	European Heat Pump Association
EPEE	European Partnership for Energy and the Environment
EST	Energy Savings Trust
EVIA	European Ventilation Industry Association
IoR	Institute of Refrigeration
MHCLG	Ministry for Housing, Communities and Local Government
SEA	Specialist Engineering Alliance (FETA, ACE, BEAMA, BSRIA, CIBSE, ECS, HVCA)
SOJACES	HEVAC/BSRIA/CIBSE/ECA/HVCA
TA Forum	Trade Association Forum

2020 Diary dates

30 January	Rushlight Show, Westminster, London
1-5 February	ASHRAE, Orlando, USA
11 February	CIBSE Building Performance Awards, Grosvenor House Hotel, London
27 February	IoR Annual Dinner, Leonardo Royal Hotel, London
3-4 March	Energy Now Expo, East of England Arena, Peterborough
3-5 March	Futurebuild, ExCeL, London
20-22 April	HVAC & Refrigeration Live, ExCeL, London
23 April	FETA Annual Lunch, The Brewery, London
30 April	H&V News Awards, Grosvenor House Hotel, London
30 April	BCIA Awards, Hilton Birmingham Metropole, Birmingham
6-8 October	UK Construction Week, NEC, Birmingham
13-15 October	Chilventa, Nuremberg, Germany

Meet the board

The FETA board comprises senior officers of all six Associations.

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RefMech Ltd

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