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BS News March/April

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March/April 2020

building services

engineering

Delicate balance of pumping water



**Engineering
student
intake up 6%**

Caroline
Spillane



**Noel Lawler
CIBSE
Award**

Daniel
Ring



**Brexit Impacts
F-Gas
Contractors**

Eamonn
Merriman



**Automate the
boring stuff
with AutoM8**

Paul
Flanagan

City Multi

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& Heat Pump Systems



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offers the ultimate flexibility
in heating and cooling



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Contents

EDITORIAL

Stay safe ... Stay Healthy

As you read this everyone at *Building Services Engineering* hopes that you are safe and healthy, and that if you have succumbed to the Covid-19 virus as some of us have, that you are comfortable and on the mend. That is obviously the foremost priority.

However, the health, productivity and profitability of business is also important and it too has been severely impacted. There are challenges ahead but, unlike the last downturn, this is a totally different scenario. The entire system – from Government to representative bodies, employers and employees – is working in unison to mitigate the impact on all.

Once over this major pandemic – and that day will come, hopefully sooner rather than later – everyone will be primed to pick up where we left off. Remember, it is but a few weeks back that Ireland was declared to be statistically in full employment. That strength, and new-found sense of unity, will see us speedily regain that position.

In the meantime we hope you enjoy the contents of this issue.



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EU 'Green Deal' and the pump sector

Latest pump designs incorporate both "green" and "digital" features, the key twin tenets of the EU's Industrial Strategy.

Project Profile

Five-star solution for five-star hotel

Brian Scully Services and Mitsubishi Electric recently combined forces to provide sophisticated air conditioning and heating solutions at The Europe Hotel & Resort in Killarney.

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Pumps



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NEWS AND PRODUCTS

Panasonic inverter unit at the Heat Merchants Training Centre in Athlone where DkIT is providing the heat pump training courses.



Gaeltec EI awarded CPD accreditation

Gaeltec Utilities has been awarded the Engineers Ireland CPD Accredited Employer Standard in recognition of its continuing professional development strategy. Established in 2003, Gaeltec Utilities is a leading firm in the global energy and telecommunications sector and employs over 300 staff at its Kilkenny-based headquarters.

CPD has played a crucial role in the successful growth and expansion of the organisation with its employees delivering major engineering projects across Ireland and mainland Europe.

Most notably, the specialist firm recently delivered the first ever privately-built 220kV substation and grid connection on the island of Ireland for a tech giant and was also involved in the construction of the largest offshore wind farm development in the world for Ørsted (formerly Dong Energy), off the east coast of England.

Heat Merchants heat pump installer training

Dundalk Institute of Technology (DkIT) School of Engineering is delivering a Level 6 heat pump installer course at the Heat Merchants training centre in Athlone. DkIT is the only third-level institution providing this training in Ireland and has designed this course in response to installer and customer demand for a recognised qualification which is to a high standard. The convenient central location in Athlone and condensed delivery timeline will facilitate installers' busy work schedules.

This course is aimed primarily at potential installers of packaged heat pump systems for the domestic and small commercial sector. It delivers the fundamental principles for the understanding, specification and installation processes of heat pump systems for the heating and cooling of buildings. On completion installers will be eligible to register with SEAI as a heat pump installer. All participants will have to meet the course entry criteria (qualified plumber or similar Level 6 or higher award).

The course (schedule currently postponed) will commence on 24 April and will be delivered over two weekends (Friday and Saturday – full days) and two evenings, from 6pm to 9pm. Course fees are €565 per candidate and this fee can be redeemed in full against the purchase

from Heat Merchants of a minimum of two air to water heat pumps before the end of December 2020. Places are limited to 16 candidates.

For details contact: Denise Boland, Heat Merchants. Tel: 090 – 644 2306; email: denise.boland@heatmerchants.ie

CIBSE Ireland Annual Golf outing

CIBSE Ireland is returning to the magnificent Luttrellstown Castle Resort for the 2020 CIBSE Ireland Golf Annual Golf Outing this year with Wilo Ireland, a long-standing supporter of the Institution, the main headline sponsor. Date is 28 August 2020.

The outing will help raise much-needed funds for the CIBSE Ireland 2020/2021 programme of events, in addition to providing an excellent business and social networking forum.

Help support the invaluable work of CIBSE Ireland by entering a team and/or sponsoring a hole, or one of the "Silver" sponsor opportunities of Nearest the Pin and Longest Drive.

The event is a 4-person Team Scramble shotgun start at 1pm for all teams. Registration from 12noon on the day. Book now to avoid missing out on this ideal social and business networking opportunity. See www.cibseireland.org



CIBSE Ireland Committee members Pat Lehane, Stephen Weir and Mona Holtkoetter (Chairperson) with Michael O'Herlihy and Derek Elton, Wilo Ireland, who is the main sponsor on the day.

Steve! Look at you
there... big happy head,
blindly diggin away
with not a notion
I'm here!!



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NEWS AND PRODUCTS

Docklands high-rise, Cork

JCD Group has received planning permission for its proposed large-scale residential scheme in Cork's docklands on the Carey's Tool Hire site.

The project will deliver 201 apartments to rent and will include amenities such as a 25th floor residents' lounge and dining area; residents' gym; public café; co-working space; games room; basement car spaces; bicycle parking; and refuse and recycling facilities.

Provision will also be made for electric car charging points as well as GoCar facilities.

Main project architects Henry J Lyons believe that the design and slenderness of the tower will make for a key landmark for Cork City as it enters a new phase of urban renewal, with the docklands becoming a new employment and residential hub that complements the historic central business district.

Photo shows projected image for the new large-scale residential scheme in Cork's docklands on the Carey's Tool Hire site.



HVACR Live 20 postponed

HVACR Live, which was due to take place from 20 to 22 April 2020 at ExCeL, London, has been postponed following advice from the authorities and given the global mix of the intending exhibitors.

The show is to be re-scheduled for Spring 2021 and the new dates will be announced shortly.

Enquires to Karena Cooper KCooper@datateam.co.uk

Saint-Gobain 'Build Better Roadshow'

Saint-Gobain's nationwide "Build Better Roadshow" had commenced with the first event in Sligo having taken place prior to the impact of Covid-19. Dates and venues for the remainder of the programme (pending confirmation) are the Crowne Plaza, North Dublin (7 May); Crowne Plaza, Belfast (17 June); Silversprings Hotel, Cork (17 September), and South Dublin (date and location TBC). Obviously, dates for all events are subject to change. Final speaker and seminar details for all events available at <https://www.saint-gobain.ie/events>



The 2020 Build Better Roadshow trade event is a one-stop-shop for architects, engineers, designers and contractors where a wide range of building fabric solutions will be presented. Each event will offer a series of industry-specific seminars throughout the day that will focus on the topics of fire safety, acoustics and energy efficiency in respect to achieving compliance and meeting the demands of current construction standards.

Speaking on the success of last year's event, Kieran Holohan, Marketing Director, Saint-Gobain said: "The industry is under exceptional pressure to upskill and Saint-Gobain is dedicated to leading the progression of best practice within the sector."

Left: Jason Horrex, Training Manager at Saint-Gobain's Technical Academy Ireland.

NEWS AND PRODUCTS

OHMG complete BIM training

The Belfast Met-led BIMcert programme is now being rolled out with Newry-based O'Hare & McGovern (OHMG) being one of the first companies to benefit. Just recently, 27 OHMG staff successfully achieved an OCN Level 3 in digital skills and BIM accredited qualification.



The training is designed to be flexible, non-linear and tailored to meet individual needs. The "beyond blended" methodology enables wider participation in the process ... there is no classroom and no delivery model.

It provides recognition for byte-sized pieces of learning and BIMcert is particularly innovative on how it is informed and industry-relevant. The byte-sized modules last 30-45 minutes with every module bringing micro accreditations which build to a full qualification.

New President of BCIA

The Building Controls Association (BCIA) has appointed Terry Sharp as its new President. Terry has worked in the controls industry for over 35 years and is an Associate at NDA Consulting, the specialist BEMS and energy consultancy practice. His previous experience includes UK and European leadership roles at Johnson Controls, Sontay and Satchwell Control Systems. After re-joining the BCIA Management Committee in 2017 he was appointed Vice-President of the BCIA in January 2019.

Sharp told *Business Services Engineering*: "My predecessor Jon Belfield carried out exceptional work in raising the profile of the BCIA, championed some worthy causes and initialised some great campaigns that will be of immense benefit to our industry. I look forward to continuing from where Jon left off, using my knowledge and experience to help form closer relationships between manufacturers and installers and ensure the Building Management Systems (BMS) industry plays a prominent part in 21st century building design and management."



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- f* Innovative high-efficiency pump for maximum overall efficiency levels
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- f* Highly efficient EC motor of energy efficiency class IE5 in accordance with IEC 60034-30-2
- f* Integrated electronic control “High-Efficiency Drive”
- f* Simple operation thanks to tried-and-tested Green Button Technology and a clearly arranged display
- f* User-friendly “X-Seal” cartridge mechanical seal and spacer coupling (from 5.5 kW) for fast and easy maintenance

The Wilo logo, consisting of the word "wilo" in a lowercase, white, sans-serif font, positioned in the bottom right corner of the page against a background of a city skyline at night.

BOB GILBERT

AN APPRECIATION

Founded by Bob and Amy Gilbert in 1958, Manotherm Ltd is a name that is synonymous with instruments and controls, catering as it does for all industry sectors, from process and research industries through to building services. Despite the phenomenal innovations in the sector over the last 62 years, Manotherm has not only kept abreast of these developments, but has been to the forefront in pioneering their introduction.

While there has always been a strong team at Manotherm, it is recognised across the entire industry that Bob was at its core. He was “Mr Instruments & Controls” in Ireland and his recent passing leaves a void that cannot be filled.

Apart from his in-depth knowledge and vast reservoir of experience, he was equally renowned as a very honourable man who, despite his strength as a tough negotiator, was also very fair. Indeed, there were many instances over the years where customers and individuals within the industry fell on hard times and he very quietly and discretely helped them out.

However, his somewhat serious and reserved business persona belied his sense of fun and adventure, his lust for life and new experiences, especially when it came to food. He had a unique personality and it was that, as much as his knowledge of the industry, that helped him accumulate an enviable portfolio of world-leading brands.

Bob was a devoted family man, he and his wife Amy being inseparable. Right from the outset they worked in the business together and today, 62 years later, Amy is still working in the business. That “family” ethos was extended to all employees with Bob spending a great deal of time mentoring individual staff members, no matter what their role.

He also encouraged them to go on training workshops and educationals with the various brands represented, so many got to enjoy travel to all corners of the globe, some at a very tender age. On such trips they were also encouraged to sample the culture, sights and culinary delights of whatever destination they found themselves in. He was a very generous host to them on such occasions, whether he was actually present or not.

His unique approach instilled a sense of commitment and loyalty not just within Manotherm, but also with the company’s extensive portfolio of international supply partners and with its customers throughout Ireland. He did this primarily by example, leading, guiding and cajoling rather than by dictating.

That said, he was not a soft touch, expecting everyone to reciprocate and embrace the structures and discipline he regarded as necessary to satisfy customers’ needs. He could be a hard task master and, at times, was known to raise his voice and take someone to task. However, once done it was over, the slate was wiped clean, and a fresh start assured.

He could be equally blunt with customers and suppliers. He would quiz customers who were unsure of what they wanted, not to embarrass or put them in a spot but to ensure he gave them the right solution. It was not uncommon for others in the office to hear him say: “you don’t seem to know much” to a customer. Yet, by the time the conversation concluded, the customer’s problem would be solved, he would have learned something new, and would be joking and laughing with Bob.

He loved problem-solving and the



The original Manotherm team – Bob with Brian Harris, Frank Gallagher and Noel Walsh.

challenge of finding a solution to a complex problem. This was helped by his incredible memory for detail. At a time when nothing was computerised and every single control item had a long and detailed reference number, he could recall these on a whim, and know where to locate them.

Bob was also driven by the deal, closing the sale. He was a born salesman and was as excited by the prospect of doing so 60 years after he first set out travelling the roads of Ireland back in the late 1950s. Indeed, he was in the office doing just that, overseeing quotes and helping with enquiries, just days before his passing.

Incredibly though, once he closed the door on the office each day that was it ... he forgot about business, left it behind him until the next morning. He indulged his passion for travel and seeking out new experiences, especially sampling local cultures, local cuisine and wines. However, he was perhaps most partial to oysters – both cooked and uncooked – and French wine.

Sport was another passion and again his interests were broad. Rugby and soccer were on his radar at different times, as indeed was rallying. He did the Circuit of Ireland back in the days when it was an amateur sport, while he also attended a number of World Cup games in 1966 in London, culminating in the final, where he reportedly cheered every goal, no matter which team scored, not wanting to favour either. He was also very proud to have had an audience with President de Valera in Áras an Uachtaráin.

The stories are endless and no doubt his family and many friends, both in and out of the industry, will enjoy their retelling in the coming months and years. In many respects he was typical of his generation yet somehow very different and unique.

Bob was extremely proud to mark the 60th anniversary of the company in 2018 and now wife Amy, son Robert, daughter Vivian and the entire team at Manotherm, are determined to honour his legacy by driving forward into the future for at least another 60 years.

Ar dheis Dé go raibh a anam.

PL



Aquarea Smart Cloud now pairs with IFTTT

Panasonic's Aquarea Smart Cloud CZ-TAW1 is now compatible with IFTTT, the advanced technology which stands for the simple process of "If This, Then That". Offering a new intuitive user interface, IFTTT is a helpful addition to an already-progressive control system.

The web-based service can be used to create chains of simple conditional statements which are called applets. These are often pre-installed for ease of use. Each applet comprises two important parts – a *trigger* (the "this" part) and an action (the "that" part) that allow the user to have a chain of conditions that are activated through just one command.

The Aquarea Smart Cloud CZ-TAW1 is an operated service which enables remote access to the new Aquarea

data and functions. With the help of IFTTT, users now have even quicker access to their entire smart home at the touch of a button, or through voice control, including Panasonic's Aquarea Smart Cloud CZ-TAW1. IFTTT brings popular services together, including over 600 apps, to create new experiences for a forever-growing connected world.

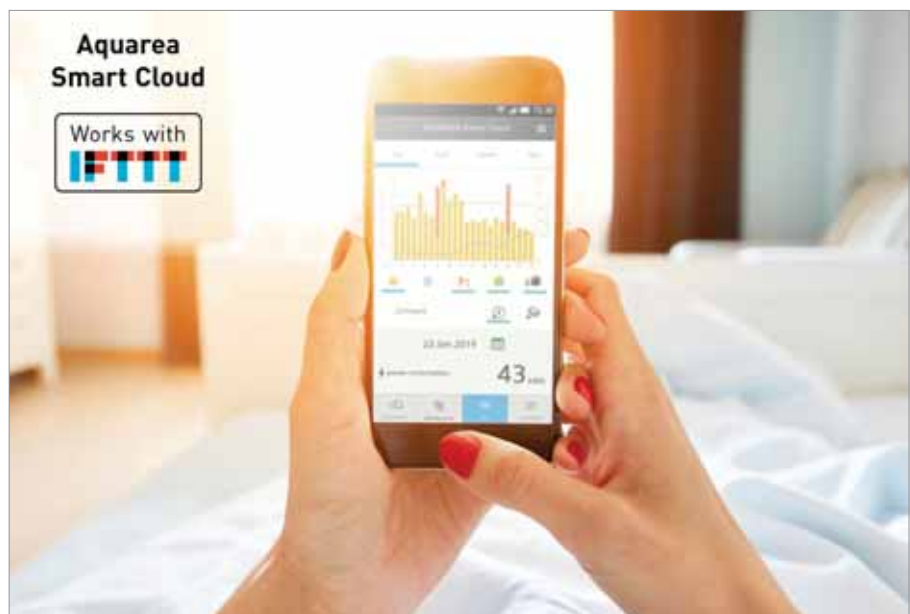
IFTTT works in harmony with the Aquarea system to enable simple instructions like turning on and off, to more complicated instructions

such as sending emails or error notifications. Other elements of the smart home can also be incorporated so a particular pre-programmed mode can be instructed that changes temperature and turns on lights in response to climate changes outside.

Highly beneficial for the end-user, this innovative technology offers the ultimate convenience for users by automatically triggering a sequence of actions through the simple press of a button – a big step towards the future of smart homes. This can be done remotely, through a smartphone, tablet, etc, which means the processes can be completed before the user even walks through the door. IFTTT is a simple way to do repetitive tasks automatically, saving an enormous amount of time for users.

IFTTT can be as simple as it is useful. It is the perfect addition for the typical everyday user of Aquarea Smart Cloud as it is straightforward and does not require much technological knowledge in order to use effectively.

Contact: Vincent Mahony, Panasonic Ireland. Tel: 087 – 969 4221; email: vincent.mahony@eu.panasonic.com www.aircon.panasonic.eu ■



With the help of IFTTT, users now have even quicker access to their entire smart home at the touch of a button, or through voice control, including Panasonic's Aquarea Smart Cloud CZ-TAW1.



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CIBSE IRELAND ANNUAL DINNER EXTRAVAGANZA



This year's CIBSE Ireland Annual Dinner – to be held in the Clayton Hotel, Galway, on Friday, 27 November 2020 – promises to be a major industry occasion.

Guests will be royally entertained throughout the night, beginning with music and networking opportunities at the pre-dinner reception sponsored by Euro Gas, and then with two major comedy acts over the course of the dinner.

The first act is comedian and impersonator Aidan Tierney. His repertoire is endless and his comedy sketches hilarious. In particular, his impression of Micheál Ó'Muircheartaigh is a work of genius, while his Tomás Mulcahy is a hoot, as are his versions of Nicky English, Brian Cody and Michael Duignan. See <https://twitter.com/i/status/https://arrow.tudublin.ie/bsn/vol59/iss2/1>

1161689868893872130 for what to expect from Aidan.

However, you can expect the unexpected when our headline act – the one and only Joe Brolly – joins Aidan on stage. For those of you who live on another plant, Joe is an Irish barrister, Gaelic football analyst and former Derry footballer. He recently joined eir Sport following many years with RTÉ and, among the many issues (controversies?) for which he is famous (notorious?) is the introduction of the Black Card. Get a taste of what to expect at <https://youtu.be/G7EYe42Lln4>

Both Aidan and Joe will appear on stage together for a light-hearted chat ... though their interpretation of "chat" and "light-hearted" is unlikely to

bear any resemblance to the dictionary definitions of those words.

CIBSE Ireland looks forward to welcoming you to the European Capital of Culture for 2020 for what promises to be an exceptional evening.

The event is all but booked out but latecomers can check out <https://www.cibseireland.org/event/cibse-annual-dinner-galway/> ... you just might get lucky. ■

Barrister and GAA pundit Joe Brolly will headline the CIBSE Annual Dinner in Galway.



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Core Air Conditioning Ireland Ltd is the sole distributor for Carrier and Vertiv commercial, industrial and computer room air conditioning products in Ireland. It also supplies the full range of Lu-Ve Contardo and Jacir Air Treatment equipment and can now offer a full package of air conditioning and process-related products. Core combines this product portfolio with excellent technical support and a highly-qualified service team that, in addition to commissioning and trouble-shooting, also delivers customised maintenance packages. These ensure the optimum performance of installed systems, prolong equipment lifespan, and prevent the consequences of system failure or total shut down. Core's service agreements are highly-flexible and are designed for each individual installation. After a thorough site survey, the right combination of options can be selected for each particular facility. In addition to service, repair and planned maintenance, diagnostic and proactive recommendations for improvement are also provided, along with emergency response. Core's team of service and maintenance engineers have wide-ranging experience across all HVAC equipment, covering all brands, and so offer all-embracing comprehensive solutions. The key elements of the service selection process, and the actual service packages that result, are detailed here.

JOIN THE 'CORE AC CIRCLE OF SERVICE'

› Planned Maintenance

Core's planned maintenance service is the ultimate in long-range preventive maintenance. It includes the necessary multi-year preventive maintenance items that are performed at intervals greater than one year (those items that are in addition to the annual recurring items such as every three, five or 10 years). Major disassembly to repair, or replace, internal parts and rotating assemblies as a result of normal wear can be included.

› F-Gas Inspection

Under the European Fluorinated Gases Regulations (EU517/2014), Core Air Conditioning can carry out inspections on all equipment, irrespective of brand, to ensure regulatory compliance. All engineers are F-Gas approved and qualified to carry out leak checks and issue the proper paperwork confirming obligations have been met under EU 517/2014.

› Repair Service

Repair Service may consist of a service order to repair or replace a component. It can include equipment overhaul, rebuilding, non-destructive testing or analysis of fluids and tubes. Various repair services can be stand-alone or combined with any of Core's other services.

› Full Preventive Maintenance

This includes all the inspection maintenance services, plus pre-scheduled recurring annual tasks which may require disassembly for preventive maintenance, as part of Core's major maintenance service. Minor repairs, motor testing and leak testing are also carried out.

Core Air Conditioning Ireland Ltd
Unit A6,
Centrepoint Business Park,
Oak Road, Clondalkin,
Dublin 12, Tel: 409 8912
Fax: 409 8916



www.coreac.com



John Murphy, Core Service Manager with Jenny Courtney, Core Service Coordinator.

› Monitoring Service

With chillers, a problem is not always present when an engineer is on site. Core offers a unique service on Carrier equipment called PC Data Collection Tool (PCDCT). With PCDCT, the Carrier chiller is monitored for 24-hours or more, and all parameters are recorded at 2-second intervals. Technicians at Core and Carrier then study this and recommend any changes to improve the operating efficiency of the system. It can also indicate problems that may arise before they lead to catastrophic failure. The customer is then left with a blueprint of the operation of the machine.

› Inspection Maintenance

Inspection, logging and adjustments of equipment are part of Core's basic minor maintenance service. This service may require minimal disassembly such as oil and filter changes and includes a report, complete with service recommendations. On Carrier and Vertiv equipment this also includes any software upgrades recommended by the manufacturers.

› Predictive Maintenance

This non-destructive testing service covers oil analysis, water system analysis, alignment checks and calibrations that may be combined with the minor or major maintenance. This can help prevent chiller failure and help eliminate equipment downtime. Because oil analysis can identify the wear-and-tear of a chiller, if conducted on a scheduled basis it ensures the chiller delivers reliable performance for years.

› Invaluable Database Record

Core maintains a complete database of all tests, and results, performed on a system and equipment. This provides invaluable information to help

Service

- › 24/7/365 emergency cover
- › Factory-trained engineers
- › Spare parts
- › Nationwide coverage
- › All equipment and brands

Survey and Analysis

- › Equipment evaluation
- › Detailed reports
- › Customised service contracts

Non-destructive Testing

- › Oil and water analysis
- › Motor insulation testing
- › Thermographic testing
- › Ethylene and propylene glycol

optimise ongoing performance, and also helps identify possible future problems. It is a key component of predictive maintenance.

› Emergency Service

Because Carrier and Vertiv units – and other leading brands of equipment – serve critical systems where downtime is an expense as well as an inconvenience, Core offers a 24-hour emergency service on all of its maintenance contracts. Average response time from call receipt is two hours for the Dublin and Cork areas and under four hours nationwide. Core engineers carry stocks of the most commonly-used parts but also have 24-hour access to express parts delivery for less common items. Repairs are completed day or night, to return equipment to normal operating condition as quickly as possible.

› Motor Insulation Testing

Motor failures are usually caused by motor winding breakdown, so Core engineers conduct regular motor insulation testing. This identifies insulation deterioration before failure occurs and so allows for planned, and budgeted repair. Meg-ohm testing is used to identify weak spots in motor windings or the presence of potentially-damaging moisture. It also avoids labour-intensive disassembly.

PROJECT PROFILE

Five-star solution for five-star Europe Hotel and Resort project

The Europe Hotel & Resort is set on the shores of Lough Léin, over-looking 26,000 acres of national parkland and just five minutes from Killarney town centre. It is a five-star facility with 187 bedrooms and suites, mostly with private balconies, five dining outlets and two bars. There is also the 4,600 sq m ESPA that includes a 20m indoor pool, outdoor vitality pool, salt water pool, sauna, steam room, lifestyle showers and relaxation areas. Epitomising luxury, it is an opulent haven for business and social functions, as well as relaxation and holidays.

The focus on wellbeing is primary and the commitment of the management in pursuit of this objective is evidenced by the multi-million-euro redevelopment and refurbishment program currently underway at the resort. This is especially apparent in the sophisticated air conditioning and heating solutions devised by Brian Scully Services in partnership with Mitsubishi Electric. <https://arrow.tudublin.ie/bsn/vol59/iss2/1>



The Europe Hotel & Resort in Killarney offers luxury accommodation with elegant bedrooms and opulent suites in a classic style. Critically, and despite being highly-advanced, flexible and ultra-efficient, the heating and cooling delivery is all but invisible.

The challenge was to design a multiple of integrated systems for the individual bedrooms and suites that could deal with the physical constraints and power limitations common in an established hotel building. The systems – or more importantly their mechanical installation, application and control – had to meet the five-star experience the hotel management wanted to deliver, and what their guests expected.

Regulatory Compliance

It was taken as read that the final solution would not only comply with

all regulatory legislation and standards, but that it would far exceed these and be future-proofed. In addition, all units and controls had to be discreet, unobtrusive and even hidden from view, a daunting challenge given the physical constraints of the building's structure and layout. Maintenance had to be easily accessible and equally discreet with the control and system management accessible through POS (if required) and available to a mobile reactive in-house maintenance team.

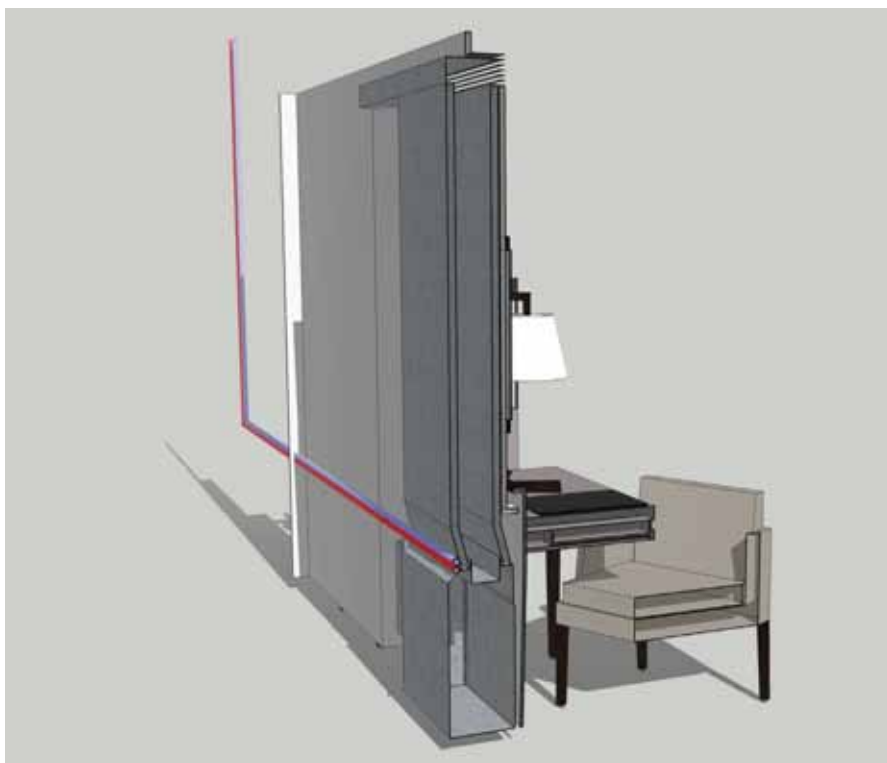
"It was a daunting challenge," says Kevin Scully, Managing Director of

Brian Scully Services. "However, we were confident from the outset that our experience and technical know-how, coupled with that of Mitsubishi Electric and their innovative product portfolio, would result in a unique customised solution that would satisfy the project's demanding criteria."

Andrew Keegan, National Specifications Manager, Mitsubishi Electric, concurs. "We have a long-established trading partnership with Brian Scully Services and while this was a very unique and indeed challenging proposition, we were confident that we could use our combined strengths to rise to it. That is not to imply that it was a straight-forward process as it was far from it."

"This was new territory for both of us," agrees Scully. "It was anything but a standard project. The established nature of the building, its structure and the fact that various sections had been added over the years meant the provision of modern services and control systems had to overcome physical impediments, let alone the technical challenge posed."

"This is where the strength of our partnership came into play," says Keegan. "While we analysed the nature of the project thoroughly



Cross section of how the desk conceals the a/c unit within the furniture.

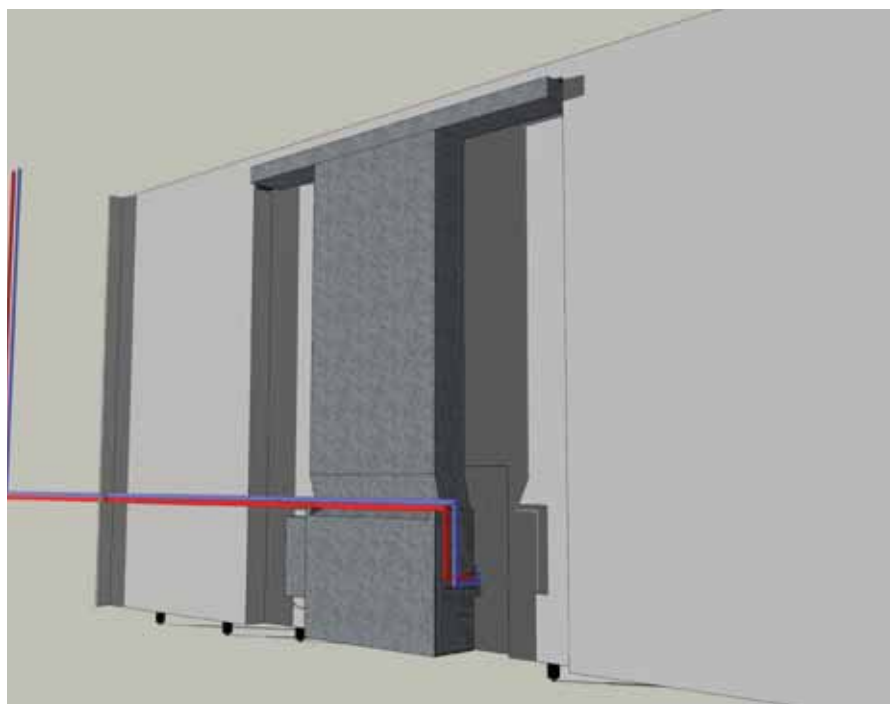
beforehand and devised a solution accordingly, the reality is that we met unpredictable and unforeseen mechanical and control challenges at almost every turn. We had to revise the plan on many occasions and come up with new ideas and even new concepts and software that had not been tried before and had to be tested before application. That said, in doing so we've now learned a great deal

more about system solutions, technology integration and how – with the right and trusted partner – you can achieve the unimaginable."

First application

The Europe Hotel & Resort project was the first application of the Mitsubishi Electric Next-Generation 50Kw (21Hp) heat recovery (R2) outdoor unit utilising R-32 refrigerant. In addition, Mitsubishi Electric's Next Generation City Multi outdoor units were used in conjunction with water-based HVRF technology in the bedroom areas. As HVRF is a two-pipe system (both the water and refrigerant circuits), the system uses water between the HBC distribution box and indoor units to provide the transfer of heating and or cooling in the occupied space.

The removal of refrigerant from this occupied space eliminates the costly addition of refrigerant gas detection. As all Mitsubishi Electric indoor units utilise DC distribution fan motors with no requirement for valves at the indoor unit, dBA is below the specified requirement. However, the floor-standing PFFY indoor units can supply the air required for the high-level distribution, and the units were



Supply air, including the a/c services, is routed behind the furniture.

configured during commissioning to operate incorporating an increased static pressure setting to suit.

Refrigerant R-32, a low Global Warming Potential refrigerant (680 GWP), provided a 42% reduction on the equivalent R-410 VRF system. In fact, Mitsubishi Electric is the first manufacturer to enable application of the R32 refrigerant applied to heat recovery multi-systems without the requirement of gas detection in a hotel application. At the Europe Hotel & Resort project the Hybrid VRF heat recovery system matched a number of the hotel's local requirements around the mechanical installation involving peak demand, continuous operation in defrost, night set-back and room fabric protection. HVRF, a two-pipe refrigerant and water system, saw savings in the installation area as space and access were at a premium.

A main feature of HVRF is the constant availability of simultaneous, independently-controlled heating in one bedroom area and the ability to provide cooling, fan or off operations

in a connected lounge area. In the suites with two separate areas the occupants have complete control of the occupied area. This provides significant efficiency values and energy savings with both heating and cooling heat recovery available simultaneously.

The 50Kw range system was applied to match the Europe hotel's strict design criteria. This included ambient noise in the indoor and outdoor units, and the limited room footprint matching infrastructure requirement traditionally found in an established building.

Design flexibility was provided with the ability to program the outdoor units during commissioning to match local environment requirements around noise and power input. Continuous operation around defrost cycle was incorporated at the design stage. A minimum room supply air temperature and fan speed was also applied during the design stage. In addition, the PFFY floor-mounted indoor units are configured to modify their operation in the case of an apartment porch door or window

being opened. The hotel guest has free access to control of temperature and fan operation through VDM. In the event the room is unoccupied, the individual units have provision for high and low temperature fabric protection.

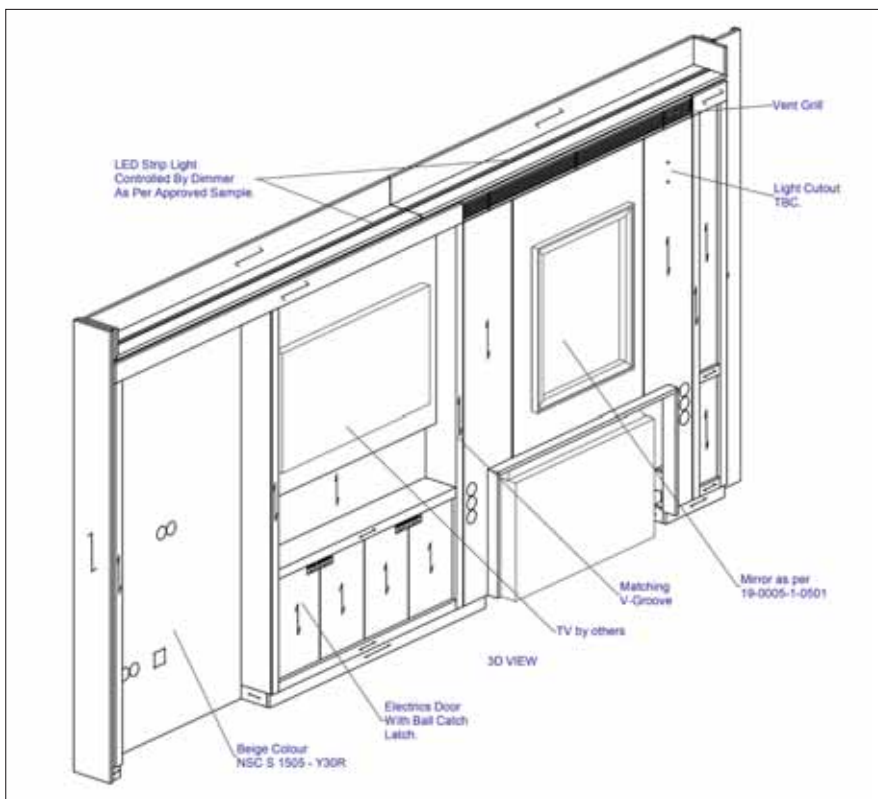
The VDA individual room control is cloned using HTML through the AE200 central control without the use of a JAVA or associated platform interface. This allows anytime/anywhere access through the interactive TV and local control. In this case, room temperature is managed using discreet remote wall temperature sensors located in the bedroom areas.

Hotel maintenance staff have an additional level of access in tandem with the VDA through the AE-200 central controller and Mitsubishi Electric Local Area Network System (LANS) integrated to building LAN and WiFi for service maintenance. Power management software is being applied during the current expansion phase and applied retrospectively to previous phases to allow automated optimised operation and data recording, and energy management. Again this is facilitated through the hotel internal LAN without the requirement for remote server or licensing subscriptions.

Aesthetics equally important

But so much for the technical aspects of the solution. The aesthetics were equally innovative, and indeed inventive, with room sensors all but invisible and the floor-mounted ac units located under the mirror in each room. Air is delivered from the unit to a high-level grille by routing the supply air behind the mirror to the vent grille.

In addition, the ac unit is disguised by a desk with a removable back-panel for ease of access and maintenance. Overall, this is an exemplary project showcasing not just the capabilities of the kit, but also the technical know-how and design excellence of the Brian Scully Services and Mitsubishi Electric partnership. ■



The a/c floor-mounted unit is located under the mirror. Air is delivered from the unit to a high-level grille by routing the supply air behind the mirror to the vent grille. The a/c unit is disguised by a desk with a back panel.



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Skillnet Ireland and CIF join forces to tackle skills shortages

Skillnet Ireland and the Construction Industry Federation (CIF) have established a new Construction Professionals Skillnet (CPSkillnet) to urgently address skills shortages in the industry. The objective is to upskill construction workers and business owners in the industry across a range of operational, financial, managerial and technological competencies.

Speaking at the official introduction of the programme recently Liz Carroll, Network Manager, CPSkillnet said: “The current skills shortage is a major challenge for the sector and the objective with CPSkillnet over the next 12 months is to develop a cohesive programme that addresses the problem. This proactive initiative is also designed to be responsive, the idea being to develop training modules that cater for industry-specific needs. To that end we want to hear directly from individual companies with suggestions as to what they would like included in the programme.

“Our intention is to deliver much-needed training via tailored – and subsidised – courses that, in addition to upskilling across all aspects of a business, also provide networking and business development opportunities.”

Tom Parlon, Director General, CIF said: “Construction companies are now operating in a high-pressure environment with contradictory forces. On one hand we are in a cyclical industry that is currently under huge pressure to deliver up to 45,000 houses per year, €115 billion in infrastructure projects, and to retrofit

The current skills shortage is a major challenge for the sector and the objective with CPSkillnet over the next 12 months is to develop a cohesive programme that addresses the problem.

500,000 homes. “On the other hand we are under pressure to be more productive and deliver all of this activity more efficiently. It’s essential, therefore, that our companies invest in upskilling and training their employees and management so we can deliver on these incredible societal challenges.”

Dave Flynn, Executive Director at Skillnet Ireland, said: “We are delighted to partner with the CIF to support professionals in the construction sector through our new Construction Professionals Skillnet. There are over 45,000 SMEs and micro-enterprise operating in the construction industry and uptake by even a fraction of those will result in an uplift in productivity and competitiveness. This will have a huge impact on housing, retrofit and infrastructure delivery, and provide multiple benefits for individuals, communities and the Irish economy overall. ”

To learn more about CPSkillnet – or to suggest courses or topics to be included in the programme – contact Liz Carroll, Network Manager, Construction Professionals Skillnet. Tel: 087 – 932 3749; cpskillnet@cif.ie ■



Dave Flynn, Executive Director at Skillnet Ireland with Tom Parlon, Director General, CIF, Pat Lucey, CIF President and Liz Carroll, Network Manager, CPSkillnet.

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BIM – Automate the boring stuff with AutoM8



The rate of development within building services over the past decade has been staggering, with recently-developed technologies allowing projects to be delivered in unprecedented timeframes. However, fast-track projects can put a squeeze on resources within an engineering firm. All too often the fine detail checks, like checking for adequate containment size, are pushed aside. This can lead to reduced quality and cost variations that very often only become visible at a later project stage.

In order to meet tight project deadlines, while also allowing adequate time for necessary document reviews and checks, it is paramount to leverage modern technology to work efficiently. Automation is key to meeting this challenge and AutoM8 developer <https://arrow.tudublin.ie/bsn/vol59/iss2/1>



AutoM8 developer Paul Flanagan.

Paul Flanagan has been working to develop tools to leverage data which users may already have within a BIM model. AutoCT, the first add-in available in the AutoM8 suite, is designed to route circuits along containment runs. It can automatically check electrical cable tray and ladder sizes to ensure there are no under-sized, oversized or unused routes.

Traditionally, carrying out checks for containment size is a time-consuming, manual task. To do the calculation circuit routes need to be identified and assigned to each run of containment. Then the cable characteristics, including size, type, number of cores, supports and installation methods, all need to be accounted for. While a single calculation by itself is simple, large projects having thousands of cables and multiple containment routes can easily become very complex.

As a project progresses through detailed design stage, multiple recalculations can be required if the cable configuration or routes change. Very often the minor circuit routes are never accounted for due to the quantity of calculations required.

Automation in BIM

The transition from computer-aided design to information modelling has not been an easy one for most engineering firms. The concepts that BIM presents to engineers and



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Flexible pipe length

One of the key features sees maximum piping length between indoor unit and outdoor unit now at 160m, while the maximum height difference has been increased to 70m. This gives greater flexibility of installation.

Peak cut control

The peak cut function can easily be set to control the capacity and provide improved energy savings in the long run. Five steps of capacity control are available with 100%, 80%, 60%, 40% and 0% settings.

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The enhanced KXZ multi-port compressor includes two additional discharge ports which optimise the pressure control within the compressor.

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The KXZ has four operation modes – First Unit Operation, Last Unit Operation, Majority Operation and Master Operation.

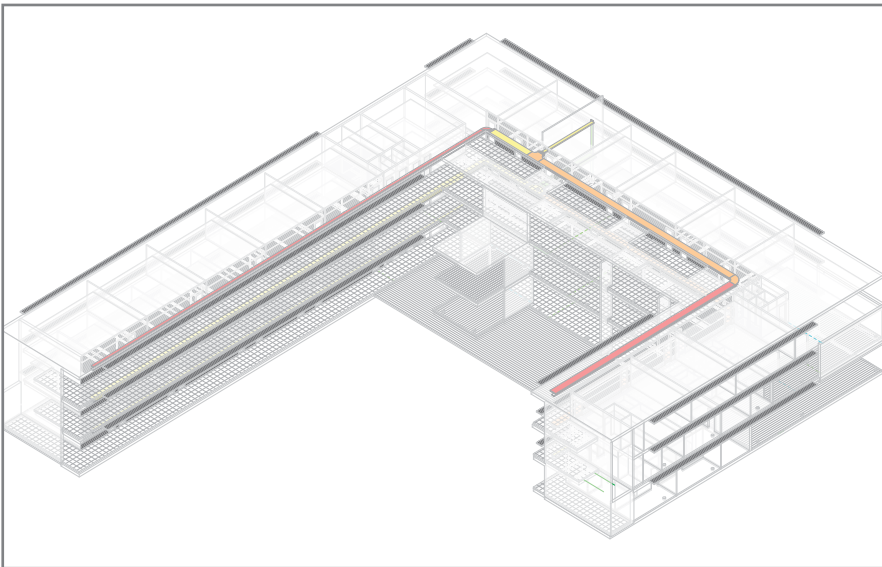
Emergency stop function

The new KXZ has control for emergency stop by external input, i.e. an alarm unit can be connected to the PCB.

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C3D isometric results from AutoCT containment sizing calculation.

designers can be abstract and convoluted when compared to the “what you see is what you get” nature of CAD.

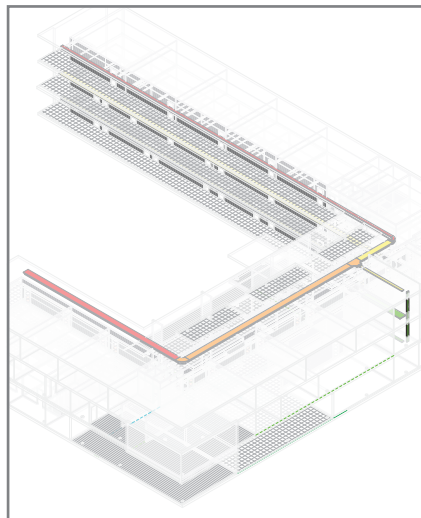
While software packages like Autodesk’s AutoCAD and Revit can both be used as drafting tools, at their core they are very different programs.

The Revit software package allows users to have many different windows into the data hosted in a model. For example, when viewing a 2D or 3D view of an electrical panel it clearly has a size, depth, height and width.

Schedules in Revit allow another window to the data – allowing a live link between the spatial data we can see in a view to be tabulated into equipment schedules or distribution board schedules.

Extending this further, scripting tools like Dynamo can expose even more of the underlying data – the electrical connection details, numeric X Y Z position in relation to the rest of the model, along with a host of other data not seen in 3D is all accessible. This can allow users to create templates to carry out repetitive actions on the model data.

However, if we want to carry out custom calculations in the Revit model like containment sizing, using scripting tools like Dynamo can have limitations as operations are carried out using



Rotated view of model calculation results. Risers and disconnected containment networks are easily calculated.

“nodes”. Complex operations require numerous nodes which greatly reduce efficiency. Additionally, interacting with the Dynamo user interface is a daunting task for most users.



AutoCT, the first add-in available in the AutoM8 suite, can automatically check electrical cable tray and ladder sizes to ensure there are no undersized, oversized or unused routes.

AutoCT solution

AutoCT has been designed as a custom add-in to overcome these limitations. It automates the routing of circuits and sizing of containment within a Revit BIM model. The focus of the software is to carry out the sizing calculations efficiently while presenting a logical, easy-to-use interface.

AutoCT contains a “shortest path” routing algorithm. It gives a numeric score to each piece of containment as it passes from the origin electrical panel towards its end goal. This scoring system, along with the spatial data available in the model, makes light work of the multiple calculations required for larger models.

To allow the user to easily interpret the results, the percentage fill is displayed in a colour-coded 3D isometric view. This allows users to easily identify congested or unused containment and take action to resize.

AutoCT allows users to work more efficiently within the BIM model. The time savings realised can then be dedicated to greater value-added tasks. For medium and large-sized projects the time required for containment calculation checks can typically be reduced from weeks to a matter of hours. The larger the model the greater the savings while using AutoCT.

Challenge

The transition for engineers from computer-aided drawing to information modelling has been quite a challenge. However, the benefits are being realised with the emergence of software and add-ins that leverage this information easily. Tools such as AutoCT allow BIM to become more than just a “drafting tool”.

Some of the upcoming features for AutoCT will also allow for cable bending radius checks on containment as well as weight loading calculations for all the containment in the model.

See <https://autom8bim.com> for more information. ■

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PUMPS

EU 'Green Deal' and the pump sector

Striving to be the first carbon neutral continent by 2050 is undoubtedly the greatest challenge and opportunity of our times.



In order to become the first carbon neutral continent by 2050, the European Commission has developed its Green Deal – an enormously-ambitious package of measures designed to enable people and businesses to transition into a green and sustainable future. Measures accompanied with an initial roadmap of key policies range from substantially cutting emissions, to investing in cutting-edge research and innovation, to preserving Europe’s natural environment.

Supported by investments in green technologies, digitalisation, sustainable solutions and new businesses, the Green Deal can be viewed as a new growth strategy for Europe. However, the involvement and commitment of the public, commerce, industry and all stakeholders is fundamental to its success.

Role of circular economy

Achieving a climate-neutral and circular economy requires the full mobilisation of industry. It takes 25 years – a generation – to transform an industrial sector and all the associated value chains. To be ready by 2050, decisions and actions need to be taken quickly, and certainly within the next five years.

In March 2020, the Commission will adopt an EU Industrial Strategy to address the twin challenge of the “green” and “digital” transformation. Industry must leverage the potential of digitalisation, which is a key enabler for reaching the Green Deal objectives. Together with the Industrial Strategy, a new “Circular Economy Action Plan” is intended to help modernise Europe’s economic outlook and draw benefit from the many opportunities presented, both domestically and globally.

A key aim of the new policy framework will be to stimulate the development of lead markets for climate neutral and circular products. Additionally, the “Circular Economy

Action Plan” will include a “sustainable products” policy to support the circular design of all products based on common methodology and principles. It will prioritise reducing and reusing materials before recycling them. It will foster new business models and set minimum requirements to prevent environmentally-harmful products from being placed on the EU market and extended producer responsibility will be strengthened.

This action plan will also include measures to encourage businesses to offer, and to allow consumers to choose, reusable, durable and repairable products. It will analyse the need for a “right to repair” and curb the built-in obsolescence of electronic devices. Consumer policy will help to empower buyers to make informed choices and play an active role in the ecological transition. New business models based on renting and sharing goods and services will also play a role, provided they are truly sustainable and affordable.

No one could argue against these key aspirations, or indeed any of the other measures contained within the Green Deal, but the adoption of “common methodology” or “horizontal standards” across all product groups could prove challenging. This will almost certainly be so for the machinery industry, which includes pumps and pumping systems, as well as fans, compressors, lathes, drills and a whole host of other tooling machines. The suggestion that

industrial plant and machinery (such as those already mentioned) can be grouped together with consumer products and devices, and then be subjected to the same “standards” or “circular design parameters” is ludicrous. Quite simply, it will not work!

However, manufacturing industry has faced similar difficulties and challenges in relation to other European Directives, such as WEEE, Eco-Design and Drinking Water, but through dialogue and discussion, common sense has, in most cases, prevailed. So, once again industry, through its representative trade associations, must engage with the legislative authorities, present their arguments, and reach the required compromise.

Europump, which represents the European pump industry, will put itself centre-stage in any such discussions, with the full support of both its Standards and Technical Commissions. In doing so, it will help to ensure that the positive and well-intentioned aspirations contained within the Green Deal’s “Circular Economy Action Plan” are not improperly implemented simply because product differences have not been correctly recognised at the outset.

For further information on the work undertaken by Europump on behalf of its members, and the wider pump-using arena, visit www.europumo.org

Alternatively, contact Pierre Lucas, Secretary General on +32 2 206 68 69 or by email at pierre.lucas@orgalim.eu ■

About Europump

Europump, the European Association of Pump Manufacturers, was established in 1960. It represents 17 national associations in 14 EU member states, along with Turkey, Russia and Switzerland. Europump members represent more than 450 companies with a collective production worth of more than €10 billion and employing 100,000 people across Europe.



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Pump, valve and compressor sectors team up

The European Pump Association (Europump) is partnering with the European Valve Association (CEIR) and the European Compressed Air Association (Pneurop) to stage their respective annual general meetings this year in Brussels. Running from 22 to 24 June at the Hotel NH Collection Brussels Grand Sablon, the three organisations will also deliver a joint conference.

Industry's contribution to the European Commission's political objectives was highlighted during the inaugural speech its President, Ursula von der Leyen, made to the European Parliament in July 2019, which included developing an "industrial strategy" as part of the planned European Green Deal (see page 26)

For a very long time, European technology industries, and in particular the pumps, valves, and compressors sectors, have considered the enhancement of their global competitiveness within the framework of societal and environmental challenges, notably by contributing to the preparation of energy efficiency and circular economy regulations.

Ursula von der Leyen, President of the European Commission.

In parallel, digitalisation has provided increased opportunities as well as new challenges, including regulatory debates on the sharing of industrial data, artificial intelligence and cybersecurity. These developments, amidst fierce international competition where public authorities and the private sector are increasingly working closer together to design and deploy strategies that promote national value chains, require an overarching Europe-wide positioning.

In support of the new EU legislative cycle, Europump, CEIR and Pneurop have agreed to gather in Brussels and organise a joint conference to address all these aspects. The conference will be held on 23 June, just over six months after the start of the new Commission mandate, to discuss its new initiatives.

It will consist of an institutional and policy common session and three technical parallel sessions addressing topics of relevance for the three associations and the industry sectors they represent. These sessions will be devoted to the "Circular economy and Eco-design", "Industry's Digitalisation and Innovation" and "The restriction of use of materials and substances of concern".

The event is open to all members of the three organisations, as well as those of their respective national associations. It will provide a unique opportunity for these three key sectors to come together and develop their common goals, and discuss them with EU officials.

For further information on the joint conference – as well as the individual annual meetings being hosted by each of the three organisations – see www.2020jointconference.be ■



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Mainsboost iTank solves poor mains water performance

Stuart Turner offers a wide range of solutions specifically designed to stabilise water pressure and dramatically improve flow rates to all direct mains appliances, delivering improved performance from unvented water cylinders, combination boilers and high-performance shower heads, allowing multiple outlets to run simultaneously.

In many properties the traditional hot water cylinder and conventional central heating boiler have been replaced by a combi-boiler or pressurised hot water system. These system types are connected directly to the incoming mains water supply and are referred to as an “unvented system”.

However, while these heating and hot water systems tend to be more efficient and offer advantages over traditional boiler and vented cylinder systems, there is one potential drawback – they are reliant on the incoming mains water pressure and flow to operate effectively.

In some instances, the ability of the mains supply to deliver the flow of water required at pressure can be lacking and this results in a disappointing performance.

The system’s performance is dependent on the incoming mains pressure to the property, which may be low or intermittent. Unvented systems typically require a minimum 1.5 bar working pressure and 20 litres per minute flow to operate effectively.

The new Mainsboost iTank range from Stuart Turner offers a compact and economical solution to the problem of

low or intermittent mains water pressure, and is exclusively designed for domestic applications within the Republic of Ireland.

This new range of integrated, high-performance, cold-water mains boosters features a water storage tank, high-performance Stuart Turner submersible pump, and a highly-reliable Fluidmaster Pro 75B inlet valve. They will deliver high water pressure and high flow rates to multiple outlets simultaneously and, as these units utilise submersible pump technology, they are extremely quiet in operation. This means they can be sited anywhere without additional noise within the home becoming an issue.

The Mainsboost iTank range consists of four units which are available in a variety of tank sizes and suitable for installation in a wide range of locations. Each unit is designed for a specific purpose, for example: a low-profile option for restricted access through to a roof space or a perfectly-angled model to maximise the use of space under a staircase.

Stuart Turner always has a solution. Mainsboost iTank water boosting systems are ideal for properties with poor pressure and flow rates, including old or shared mains water supplies, multiple bathrooms or high demand outlets.

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Contact: Quintin Byrne, National Sales Manager, Stuart Turner, Republic of Ireland. Tel: 087 – 710 3018; email: quintin.byrne@stuart-turner.co.uk ■

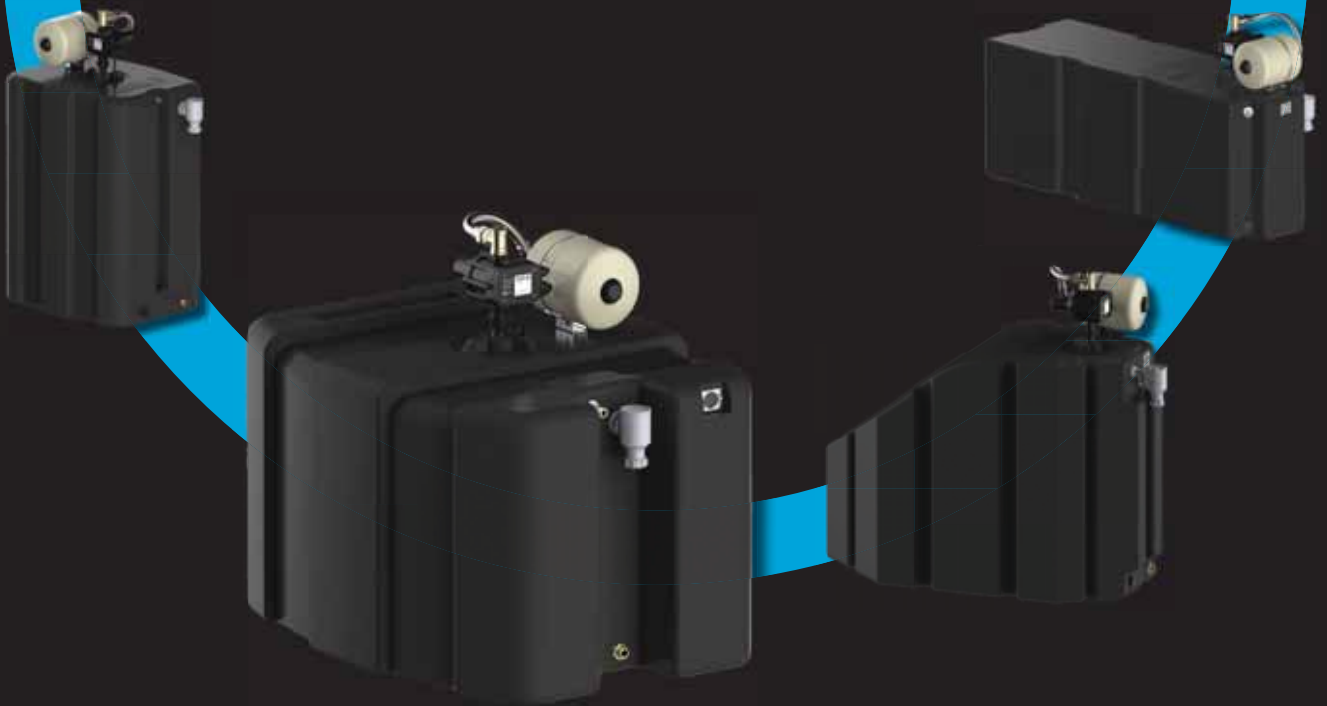


Cutaway section of the new Mainsboost iTank from Stuart Turner.

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'Indoor air not coronavirus-ready'

Public building occupants are being exposed to increased risk from viruses, such as the coronavirus, because the regulations on indoor air quality (IAQ) are falling short of current scientific knowledge, writes *Oliver Zimmermann, CEO of Condair Group*.



Maintaining IAQ at above 40%RH has been scientifically shown to reduce viral cross infection, including coronavirus and influenza. However, out-of-date regulations on the topic result in buildings such as hospitals, offices, schools and other public buildings experiencing dangerously-low humidity levels every winter.

Studies, such as *Casanova et al 2010*¹ have specifically examined humidity's role in coronavirus transmission. This study showed that coronavirus was deactivated fastest when exposed to a mid-range humidity (50%RH), rather than dry (20%RH) or damp (80%RH) air. There are many other studies, dating from the 1940s to now, that indicate that an indoor humidity of 40-60%RH has a positive impact on cross infection and peoples' susceptibility to viruses. Alongside *Casanova et al 2010*, summaries of 25 other such studies are listed on condairgroup.com

The building services sector accepts this indoor humidity level as being best practise, with many professional organisations endorsing a mid-range humidity for health in their recommendations. However, there are no official regulations that set an acceptable range of indoor humidity for public places. Therefore, building designers, who are driven to reduce energy consumption and costs, do not commonly include humidity control in their plans.

The seasonality of viruses, such as coronaviruses and influenza, are further evidence of humidity's role in their transmission. Indoor air is much drier in the winter months and this corresponds to the rise of infections. Strategies to contain the spread of the virus frequently cite the assumption that infections will probably drop as warmer weather returns, and indoor humidity levels naturally return to a midrange 40-60%RH.

It doesn't need to be this way! A healthy indoor humidity can be maintained during winter if buildings incorporate humidification as part of the ventilation system. This would significantly reduce seasonal flu transmission and save thousands of lives globally every year.

Advice on mitigating the risk from coronavirus largely focuses on hand hygiene and avoiding unwell people. However, viral cross infection occurs via the air as well as from physical contact. As the general public are largely helpless to manage this important aspect of infection

control, government advice ignores this topic.

The responsibility to manage IAQ ultimately falls on building owners and operators to safeguard occupant health. This is particularly true with regard to healthcare facilities where people are most vulnerable and at risk to airborne infections, such as coronavirus and influenza. The general public are being failed in this respect with no health authority in the world specifying a minimum humidity level in waiting rooms or wards.

Given the overwhelming scientific evidence for indoor humidity of 40/60%RH being an effective infection control mechanism, and the current viral pandemic, regulatory bodies must listen to the science and set acceptable indoor humidity levels for health. ■

Reference

1. Effects of Air Temperature and Relative Humidity on Coronavirus Survival on Surfaces. Lisa M. Casanova, Soyoung Jeon, William A. Rutala, David J. Weber, Mark D. Sobsey. *Applied and Environmental Microbiology* Apr 2010, 76 (9) 2712-2717; DOI: 10.1128/AEM.02291-09.



Building designers, who are driven to reduce energy consumption and costs, do not commonly include humidity control in their plans.

Grundfos 'Home Boost'

provides perfect cold-water pressure

Grundfos is excited to announce the launch of the eagerly-awaited "Home Boost". Designed for domestic properties, the "Home Boost" is a robust, self-contained cold-water booster set, specifically intended for situations where the existing mains water supply is insufficient to meet demand requirements.

For homes where the mains water pressure is at a trickle, or toilets are taking a long time to fill, the "Home Boost" will solve these problems and more.

"We are always looking for ways to innovate and to improve the lives of our customers. The 'Home Boost' combines these values into a single compact unit. We're excited to offer this solution to the market," says Liam McDermott, General Manager, Grundfos Ireland.

The "Home Boost" unit is self-contained and compact, making it ideal for domestic

installations where space is at a premium. It is available in a 340-litre tank capacity, in vertical or horizontal orientation, and comes fitted with a Grundfos SBA submersible pump and factory-fitted by-law 30 kit which reduces installation time for the installer.

Integrated pump – SBA 3-35 M

The Grundfos SBA 3-35 M is an all-in-one submersible booster designed for pumping clean water for domestic use. It is silent when submerged and therefore a noiseless alternative to surface-mounted pumps. It is built from

Below: The Grundfos SBA 3-35 M all-in-one submersible booster that is factory-fitted within the Grundfos "Home Boost" water booster set.

high-quality composite and stainless-steel materials that are resistant to corrosion.

Additionally, the SBA 3-35 M features built-in thermal protection, so the pump will automatically stop if overheated and return to operation once it reaches normal temperature.

The SBA is built on the proven SB platform and comes with an integrated control unit, eliminating the need for an external pump controller in the house.



Integrated controller

The integrated controller comes complete with motor and dry-run protection, and provides a silent alternative to surface-mounted pumps. The "Home Boost" ensures high efficiency, sustained performance, a long working life and quiet operation.

Installation is simple and requires a connection to the mains cold water supply, discharge pipe, overflow pipe and electrical connections.

For more details on the Grundfos "Home Boost" kit contact: Sales Department, Grundfos (Ireland). Tel: 01 – 408 9800; salesireland@grundfos.com; www.grundfos.ie ■



The Grundfos "Home Boost" is a robust, self-contained cold-water booster set.

Published by ARROW@TU Dublin, 2020

Novair CTA customised air handling units

CTA is the wide range of customised air handling units from Novair. It covers airflows from 0.3 m³/s to 40 m³/s (1,000 m³/h to 143,000 m³/h) and is highly configurable in every aspect, from layout and components through to performance. All CTA units and internal components are compliant with ErP EcoDesign 2018 LOT6, UNI EN 1886, UNI EN 13779, EN 779 /EN ISO 16890 and are also certified by Eurovent. Units can also be equipped with ATEX-certified components (for potentially-explosive atmospheres) on request.

Casing construction of the CTA range, which uses the “thermal break” profile, achieves classes T2 for thermal transmittance, TB2 for thermal bridging, L1(M) for airtightness, F9 for filter bypass leakage, and D1 for casing strength.

Panels are of a double-skin, sandwich construction and come in thicknesses of 46mm, 50mm, and 63mm with polyurethane insulation. There is also a wide range of panel materials and treatments to choose from.

Units are supplied complete with galvanised steel base frames in a range of sizes. These can be specified with a zinc magnesium coating if corrosion-resistance is required. CTA AHUs can be designed in either side-by-side or stacked configurations. The Novair CTA AHU family consists of five product lines as follows:

- CTA: 36 models, 0.3m³/s to 31m³/s (1,000 to 112,000 m³/h);
- CTA Flat: 23 models with reduced height, 0.5m³/s to 40m³/s (1,800 to 143,000 m³/h);
- CTA Squared: 24 models with reduced width, 0.3m³/s to 26m³/s (1,100 to 92,000 m³/h);
- CTA Vertical: Ten models in a vertical configuration, 0.4m³/s to 8m³/s (1,500 to 28,400 m³/h);
- CTA Modular: Five models with modular construction, 1m³/s to 8m³/s (4,500 to 28,000 m³/h).

This diverse range of AHUs ensures that there is a CTA for every design requirement. Novair CTA AHUs have been successfully installed in a range of

applications, from industrial and retail, to hospital and pharmaceutical. All CTA AHUs used in hospital installations are fully compliant with HTM 03-01.

Units can be specified with a wide array of EcoDesign 2018 LOT6-compliant internal components and heat recovery can be achieved through the use of a thermal wheel, plate exchanger or closed-circuit recovery coils. Thermal wheels can be either condensation type, enthalpy type, or absorption type wheels, and come with purge sectors as standard.

Counter-flow plate heat exchangers can be specified in several configurations, and closed-circuit recovery coils can be selected with a range of materials and treatments. High efficiency Ziehl Abegg EC plug fans with IE4 motors and built-in inverters are also available and air flow measurement devices can be included as an option. Panel and bag filters can be either side or front withdrawal, and units can be specified with HEPA filters if required.

Novair has over 20 years experience in the design and manufacture of AHUs and is part of the GI Industrial Holding Group of companies which also includes Clint. It has several product development and manufacturing facilities in Italy and Hungary, and has a presence in numerous countries throughout the world.

Contact: Séan Gorry or Carol Malone, Core Air Conditioning Ireland.

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email: sean@coreac.com;

carol@coreac.com;

www.coreac.com ■



Novair CTA air handling units ensure the highest performance with the lowest running costs.

Aquarius tank system

... 'the original of the species'

When Graham Fay of Calpeda Pumps Ireland conceived the notion of the Calpeda Aquarius tank system almost a decade ago, it was so innovative that the marketplace had difficulty understanding the concept. However, that scenario has now dramatically changed. There are over 8,000 Aquarius units already installed on projects throughout the country with sales of new units now averaging 100 plus per week.

As the originator of the concept, Aquarius is still the first-preference choice of specifiers, installers and developers. While its innovative design and engineering excellence are critical in specifiers' decision-making, the fact that it is an Irish-conceived invention that is manufactured and tested in Ireland is an added benefit. It also carries the Guaranteed Irish label. "At Calpeda Pumps Ireland we have spent over 20 years designing and delivering customised pump solutions to meet the requirements of a wide range of projects and applications," says Fay "Our ability to create engineering-led solutions comes from a unique mix of innovative pumps that are complemented by a team of in-house specialists offering design advice and technical support. These strengths are further reinforced as we are part of the Italian pump giant Calpeda SPA and have full access to their R&D, technical and back-up supports.

"Having identified a need for a self-contained, integrated pump and water storage solution, we harnessed these collective strengths and invented the Aquarius concept. It is designed specifically for the Irish marketplace, is manufactured in our own production facility in Dublin 15, and is fully accredited to, and badged with, the Guaranteed Irish symbol. It is something we are very proud of at Calpeda Pumps Ireland, and especially so since other leading market players are now using Aquarius as the industry benchmark to be emulated."

Aquarius is designed to meet the demand for a self-contained, integrated pump and water storage solution and is

suitable for applications such as houses, apartments, retail, commercial, hospitality, nursing homes, sports clubs and gyms. Reflecting this versatility, there are multiple tank size options in capacities ranging from 100lt to 2000lt, and various pump sizes with pressures up to 12 bar and flow of 183 litres/minute. Tanks can be interconnected for larger storage capacities.

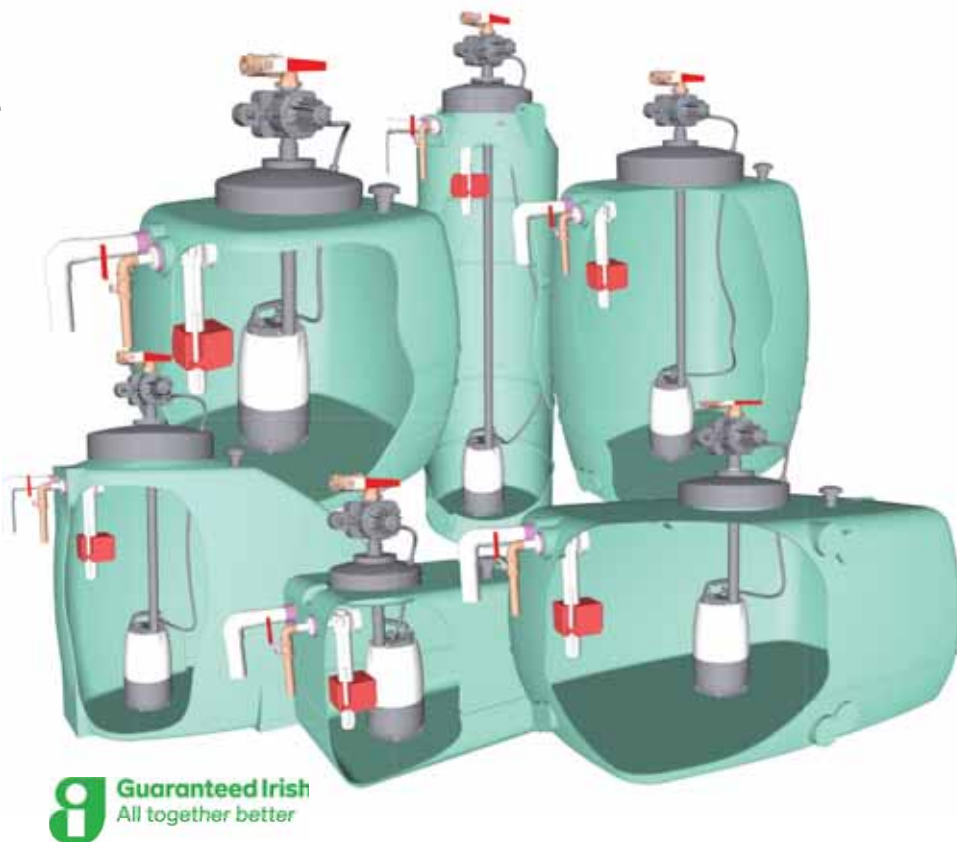
This range of tank sizes and tank shapes means that Calpeda Aquarius is suitable for a wide array of applications in a variety of house types and locations. The range is manufactured in Dublin so project-specific solutions can also be created, and with a quick turnaround.

The installer has also been considered, with initial installation and future servicing kept simple. Everything relating to the pump is incorporated into the self-contained special screw-on/off lid. Servicing the pump is also straightforward and, should the need arise to replace it, the lids are interchangeable, so the installer simply needs to extract the old pump and drop in the new unit.

Every tank is manufactured from non-toxic, high-density polyethylene and certified for use with drinking water. All the materials used are non-corrodible and are UV, mould, algae and lichen resistant, while every tank is fully pressure tested and certified prior to dispatch. All carry the "Guaranteed Irish" symbol and come with a 2-year warranty.

All Calpeda Aquarius tanks come complete with secure access lid, screened vent, and dry-run protection built in as standard. The pumps use jacketed motor technology in order to prevent heat transfer to the stored liquid, while pressure control options are possible via the patented Calpeda IDROMAT® and EASYMAT® variable speed controls.

Contact: Calpeda Pumps Ireland.
Tel: 01 – 861 2200;
email: info@calpedaireland.com;
www.ie.calpeda.com ■



Local authority action plans reveal major commitment

The recent *Profile of Local Government Climate Actions in Ireland* report outlines for the first time the range of actions local authorities have undertaken nationally to tackle climate change and to promote climate action within their communities.

The research, carried out by the Local Government Management Agency (LGMA) on behalf of the County and City Management Association (CCMA), has discovered that half of all local

authorities will achieve energy savings beyond their projected 2030 targets. Between them they have invested more than €120 million in energy efficiency projects, which consequently prevented

more than 60,000 tonnes of CO₂ from being produced.

Outside of energy efficiency, the local government sector has also been proactive in areas including sustainable transport development, flood risk management, water conservation, waste management, nature-based solutions and public engagement.

The actions outlined in *A Profile of Local Government Climate Actions in Ireland* were undertaken in the period 2011-2018, ahead of the sector being named as a key driver of change under the National Climate Action Plan and each council signing up to a Climate Action Charter last year.

The Heads of Climate Action (Amendment) Bill requires all local authorities to prepare individual climate action plans outlining the mitigation and adaptation measures the authority intends to adopt. The report shows councils are poised to meet that obligation.

Paddy Mahon, Chair of the CCMA Environment Committee, said: "Local authorities have been taking measures to reduce emissions and to position the sector to lead in the response to the climate crisis. We have extensive expertise and we plan to build on that now by training all 28,000 members of staff in climate action. This will involve technical training as well as training in leadership, community engagement and behavioural change. That is a measure of the very wide view we're taking and the scale of ambition we have."

Dr Bernie O'Donoghue Hynes, LGMA Head of Research pointed out that the report provides a snapshot in time that allows for local authorities to learn from each other and to recognise where additional action might be taken. "The research shows that local authorities have been taking a proactive approach to climate and environmental sustainability for some time, prioritising the needs of their areas and basing their response on prevailing risks in their jurisdictions. The research shows what has been done and serves as an important reference for local authorities to examine what can be done." ■



Paddy Mahon, CCMA Environment Chairman with Dr Bernie O'Donoghue Hynes, Head of Research, Local Government Management Agency and Ciarán Hayes, CCMA Climate Chairman.

Pump Technology of the Future

The building services market demands innovative energy-saving products. This is especially true for those working in building HVAC, who also seek solutions optimised for simplicity and convenience in commissioning and maintenance. According to the Sustainable Energy Authority of Ireland (SEAI), in 2017 roughly a third of Ireland's final energy use was used for heating. Looking wider, the European Commission reports that buildings are responsible for approximately 40% of EU energy consumption and 36% of the CO₂ emissions. Buildings are therefore the single largest energy consumer in Europe.

With pumps, motors and other equipment operating 24 hours a day,

seven days a week, water and wastewater facilities can be among the largest consumers of energy in a community, making next-generation highly-efficient solutions crucial. In response to this global demand that buildings must consume less energy and water, leading global water technology company Xylem is constantly innovating its range of energy-efficient pumps, boosters, circulators, controls, and other products and systems for building HVAC, to offer improved efficiency and reduced energy consumption.

To boost the energy performance of buildings, the EU has established a legislative framework that includes the Energy Performance of Buildings Directive 2010/31/EU (EPBD) and the Energy Efficiency Directive 2012/27/EU. The building sector is crucial for achieving energy and environmental goals. The 2013 EU ErP Directive required new products to meet certain efficiency guidelines to reduce energy consumption. These guidelines were further tightened from 2015.

Previously, the only choices available were either inexpensive, inefficient standard circulators or modern high-efficiency pumps which were expensive but energy efficient.

Since 2015, most pumps have been changed offering substantial savings. Domestic heating circulators have seen a dramatic technology leap during recent years and Xylem is pushing the boundaries even further with the launch of its new pump, the Ecocirc domestic circulator, offering energy efficiency of EEI.18 and better than the regulations requirement of EEI.23.

The Ecocirc domestic range falls in with the European EEI/ERP regulations of 0.23 Watts. This makes it energy efficient, saves the homeowner money off the yearly energy bill and reduces carbon emissions. Compared to old, standard circulators pre the 2015 EEI introduction, high-efficiency Ecocirc pumps save up to 90% electricity costs.

Ecocirc takes energy savings, simplicity and control to a new level. Key features and benefits are as follows:

Efficiency: ECM motor (EEI \leq 0.18), optimised hydraulics and low power consumption;

Reliability: Robust design with safety alerts, insulation shell and automatic shut-off to avoid pump burnout;

Simplicity: Compact and easy to install in confined spaces with "one turn dial" to facilitate quick and easy setup;

Economy: Cost savings with "Night Mode" and eAdapt functions (ecocirc+) allowing for a faster payback on investment compared to standard circulators.

Contact: Kevin Devine, General Sales Manager, Xylem Water Solutions Ireland.

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email: kevin.devine@xylem.com ■



The new Ecocirc domestic circulator delivers energy efficiency of EEI.18 and better than the regulations requirement of EEI.23.

Designing for optimum performance ...not just for compliance

Noel Lawler Green Energy Solutions did Ireland proud at the CIBSE Building Performance Awards in London recently by taking the top accolade in the *Building Performance Consultancy (up to 50 employees)* category.

These awards recognise the people, products and projects that demonstrate engineering excellence in the built environment. Critically, they are the only industry awards that focus on actual measured performance outcomes, and not just design intent or performance specifications.

The *Building Performance Consultancy* award recognises the firm that has demonstrated an outstanding contribution to the delivery of buildings that have high levels of measured building performance and user satisfaction throughout their operating life. Noel Lawler Green Energy Solutions' submission was praised by the judges for the clarity of its answers and for the inclusion of bespoke solutions with quantifiable outcomes on a variety of projects. These included Energy Performance Contracts with Dublin City Council; Energy modelling and value engineering support, Center Parcs, Longford; and repurposing of the original brewhouse at the Abbey Quarter Development, Kilkenny.

The judges also commended the company's investment in staff training and its inclusion of biophilic elements at its head office in Kilkenny.

Noel Lawler Green Energy Solutions is the dedicated "green" offshoot company of Noel Lawler Consulting Engineers, the long-established multi-disciplinary building services engineering consultancy with offices in Ireland and <https://arrow.tudublin.ie/bsn/vol59/iss2/1>



Daniel Ring, Managing Director with Jonathan Culleton, Director and Denis Phelan, Associate, Noel Lawler Green Energy Solutions pictured on stage in London having received the *CIBSE Building Performance Consultancy (up to 50 employees)* Award.

the UK. Services provided include building services design, project management, and sustainability and low carbon consultancy. Through collaboration with other multi-disciplinary building engineering providers, Noel Lawler Green Energy Solutions is also a major international player, especially in the Middle East.

Noel Lawler Green Energy Solutions' objective is simply to make its clients' businesses better, not just by way of engineering excellence but by ensuring that its design engineers are totally aligned with clients' project objectives. It immerses itself in the culture and philosophy of clients' businesses, and also in the nature of the business sector concerned. Its completed project portfolio of bears testimony to its strength in this regard, encompassing as it does

everything from education, commercial, industrial, residential, healthcare, retail, leisure and public buildings. The company is also ISO 9001:2008 Quality Assurance Standard certified.

Noel Lawler Green Energy Solutions' relationship with clients is not merely as a service provider but as a trusted partner. Repeat business is commonplace and the company's growth pattern has been in tandem with, and indeed complementary to, many of these clients. This is due in no small measure to its expertise in sustainability and an ability to deliver healthier buildings with superior energy performance. This not only reduces client running costs but, more importantly, it helps increase staff performance and increases the yield and asset value of buildings.

The buildings of the future are set to



Staff at Noel Lawler Consulting Engineers pictured outside the Kilkenny head office.

be considerably different from the present and past, and Noel Lawler Green Energy Solutions believes that the building services and the sustainability engineer has a pivotal role to play in influencing this development. Designing buildings to optimise passively their environmental performance and carbon footprint is a major challenge, one that requires a mix of experience and futuristic thinking. Noel Lawler Consulting Engineers has experience in abundance and so encourages its established engineers to actively mentor its younger graduate intake. It also has a very structured training and upskilling programme that all staff members must participate in.

Every company engineer has the ability to create individual designs that are unique and tailored to suit clients' specific requirements, with particular strengths in renewable technology and sustainability. In addition, all projects have the advantage of director-level involvement, right from design stage through to completion.

Embracing new technology, new concepts and fresh ideas is part of the Noel Lawler Consulting Engineers culture, building information modelling (BIM) being a prime example that allows for quicker and more efficient design and installation of services. Additionally, the strong emphasis on health and wellbeing will ensure engineers and their systems deliver improved monitoring and better air quality. With the arrival of the "Internet of Things" there will be significant additional requirement for data transfer capability within buildings. Traditional Wi-Fi is unlikely to be able to support this and it is probable that light waves will be used as a data transfer medium. This technology is set to form a crucial part of future building infrastructure. In addition to improved indoor air-quality, it will also assist with space planning, security, wayfinding and environmental control. Noel Lawler Consulting Engineers is tracking these and other developments, and will utilise all the latest trends and innovations to deliver optimum-performing projects that are future-proofed.



Center Parcs, Longford



LIDL Stores, Ireland and the UK



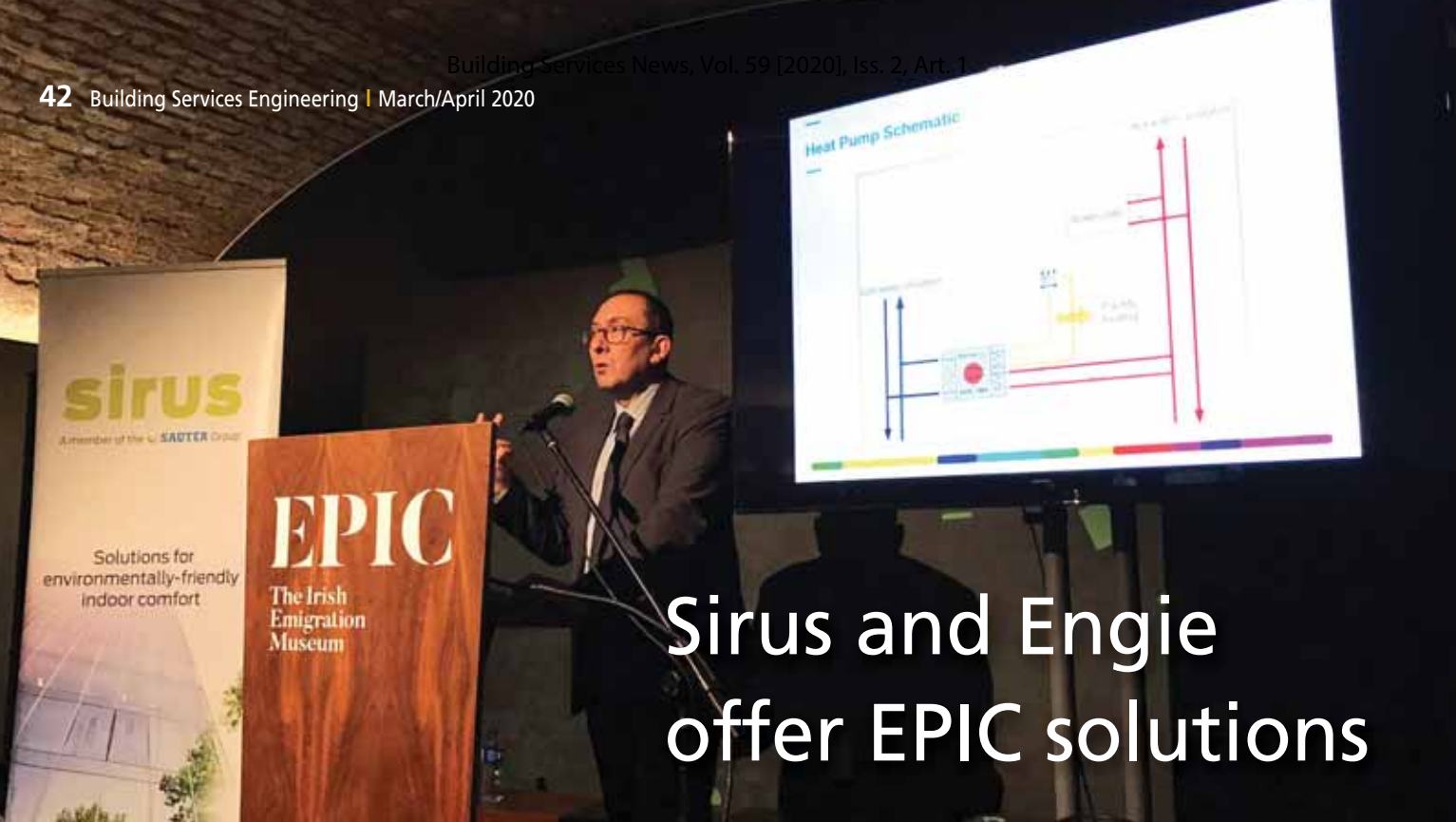
KASCT Research Facility, Saudi Arabia



Brewhouse Abbey, Kilkenny



Waterford Primary Care Centre



Sirus and Engie offer EPIC solutions

EPIC, the Irish Emigration Museum located in Dublin's Docklands, was the wonderful and very appropriate setting for the recent Sirus educational seminar, presented in partnership with Engie Refrigeration, on recovering and recycling heat from buildings.

Sirus Group is one of Ireland's leading building services solutions providers with offices in Cork and Dublin. Its team of 100 people represents BMS, QBMS, mechanical, refrigeration, controls, electrical and thermodynamic skillsets, and delivers services throughout all of Ireland and across Europe.

On arrival at EPIC invited guests were greeted by Martin Keogh, Business Development Manager and Niamh Lynam, Marketing Manager, Sirus. They then entered the museum where breakfast was served in one of the many vaults.

Shortly after Felipe Ruiz (pictured), <https://arrow.tudublin.ie/bsn/vol59/iss2/1>

International Sales Manager, Engie Refrigeration, gave the main address. In his presentation he noted that every building could be a "heat source", either as a collateral effect of the building activity (occupants, heat rejection from devices, fresh air exchange), or as a primary effect of the building thermal systems (refrigeration circuits within the building's HVAC system).

"In order to recover or recycle heat from a building," said Ruiz, "you first need to understand the heat cycles within the building. Recovering heat from a building can be profitable from an economical point of view, and also from a sustainability point of view, by reducing total energy consumption, reducing carbon emissions, gaining CO2 credits and improving return on investment (ROI). Eventually, heat recycling could become compulsory if new regulations are imposed (i.e. compliance with nZEB standards).

"Furthermore, recovering or recycling the heat from buildings will support EU 2020 targets which are: 20% greenhouse gas emissions reduction; 20% increase in

renewable energy sources use; and 20% increase in energy efficiency.

"The heat pump is a clear and present solution to support heat recovery from buildings. The European Heat Pump Association (EHPA) defined three pillars for the heat pump contribution as – *Sustainability*: mostly on reducing CO2 emissions and total energy consumption; *Security of energy supply*: diversifying the energy sources while stabilising the supply grid; and finally *Competitiveness*: improving energy efficiency, thus making the energy more affordable.

"Efficient cooling can also be a direct contributor to reducing total energy consumption and sustainable building operation," concluded Ruiz.

The session finished with some Q&A and another presentation before being wrapped up. Readers can request access to the presentations, and some extra information on Turbocor chillers, CO2 and heat pumps, by contacting Sirus at Tel: 01 – 460 2600 or email: info@sirus.ie ■



BDR Thermea's 'circular' initiative pioneers green hydrogen generation

BDR Thermea Group, a leading manufacturer of smart thermal comfort solutions, is putting energy transition into action with a circular initiative that uses self-generated green hydrogen to test its market-leading pure hydrogen boiler prototypes.

Bassano del Grappa in Italy is the location of BDR Thermea's largest production facility and the headquarters of Baxi SpA, its Italian subsidiary. Since 2018, Baxi has generated its own electricity at Bassano del Grappa from 6,000 sq m of solar panels on the roof of its factory. This electricity already powers the production of around 4,000 boilers each day, thus preventing the release of more than 400 tons of CO₂ per year into the atmosphere.

Baxi has now installed electrolysis equipment that transforms electricity from its photovoltaic panels into hydrogen. That hydrogen will be used to test and drive further development of 100% hydrogen and hydrogen/

natural gas mix prototypes in the Bassano R&D centre.

"Enabling the world's energy transition is the driving force of BDR Thermea Group. Bassano's green hydrogen self-generation is another real-life example of this," says Peter Snel, Chief Technology Officer at BDR Thermea Group. "We've created a complete sustainable energy chain – generating solar electricity, using it to transform water into hydrogen via electrolysis, then using that hydrogen to power our new innovations in our hydrogen test boilers."

Interest in hydrogen for domestic heating appliances is growing fast across the EU, where 40% of primary energy consumption is used for

Above: Some of the 6,000 sq m of solar panels on the roof of the Bassano del Grappa factory.

thermal comfort and domestic hot water. Hydrogen can be stored for longer periods to bridge seasonal fluctuations as abundant wind and solar energy is not always immediately available at times of greatest need, such as during the winter.

BDR Thermea Group is at the forefront of developments in hydrogen boiler technology. Since June 2019 it has been piloting the first real-life application of its high-efficiency, 100%-hydrogen boiler in Rozenburg, the Netherlands. Last November, it became the first company in Europe to receive certification for the use of hydrogen admixture in domestic boilers in the Netherlands. BDR Thermea Group is also participating in the UK Hy4Heat programme and actively exploring hydrogen pilot projects across Europe.

"At BDR Thermea we're helping to decarbonise heating and enable the global transition towards sustainable energy carriers. That's why we invest significantly in solutions such as hydrogen boilers and heat pumps," says Bertrand Schmitt, CEO of BDR Thermea Group. ■

Development of heat pump standard now underway

Under Action 66 of the climate action plan, the National Standards Authority of Ireland (NSAI) is developing a national standard for the design and installation of heat pumps in new and existing dwellings.

Initially the plan was to focus on new-build but, following discussions between The Department of Communications, Climate Action and Environment (DCCAE), Department of Housing, Planning and Local Government (DHPLG), Sustainable Energy Authority of Ireland (SEAI) and NSAI, the scope of the standard was broadened to also include existing dwellings.

There is an increasing reliance on heat pumps in new homes in Ireland. Based on the Building Energy Rating (BER) database and Central Statistics Office (CSO) analysis, the percentage of new homes using heat pump technology as the main heating

The National Development Plan also sets out supports for changing oil-fired boilers to heat pumps in at least 170,000 homes.

source is continually rising, with the figures for 2019 showing that a heat pump has been installed in 48% of new units.

The National Development Plan also sets out supports for changing oil-fired boilers to heat pumps in at least 170,000 homes and it is envisaged that the use of heat pumps in existing homes will also increase.

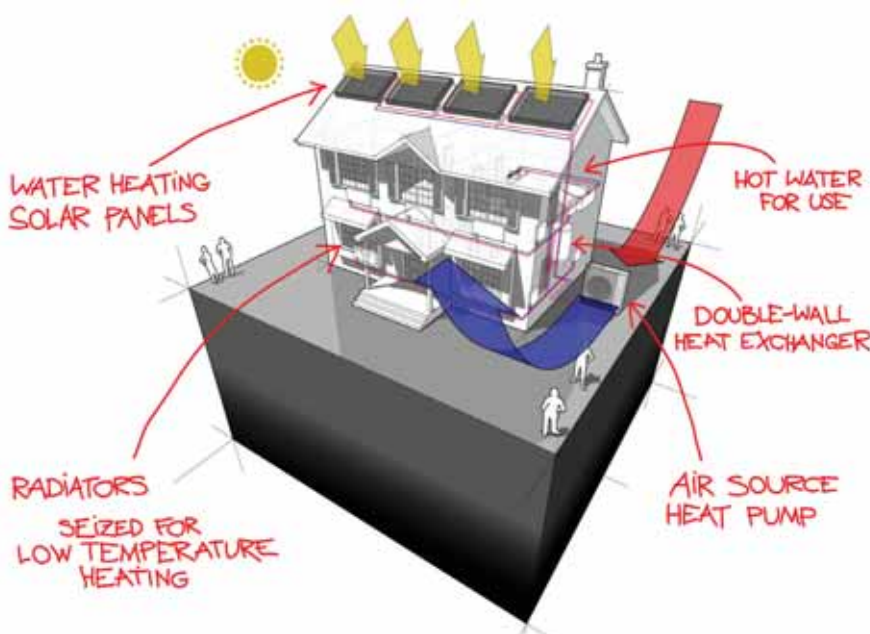
Technical Support

It is against this background that the new standard is being developed with all stakeholders supporting and participating in the process. SEAI has committed to providing technical support to the project with Paul Martin, Programme Manager, Technical Standards Development at SEAI acting as Chair of the development committee. An external representative from Ricardo has also been appointed as Technical Expert/Secretary to support the development of the standard.

The standard will provide for the design, installation and commissioning of residential heat pumps in new and existing dwellings. The target audience is professionals and installers involved in the design, specification, installation and commissioning of heat pumps. It will build on the requirements in existing European standards and draw on guidance already available in the SEAI Domestic Technical Standards and Specifications, and the UK Microgeneration Certification Scheme.

The standard will cover all heat pump types and provide practical information and guidance for gas, water and air source heat pumps; exhaust air heat pump; double-duct heat pumps; gas absorption heat pumps; hybrid heat pumps; hot water only heat pumps, etc.

The standard is currently being developed and the intention is to present it for public consultation in the middle of 2020. ■





More radiators ... and now a Loyalty Club

Leading radiator manufacturer Stelrad Radiators continues to respond to the demands of installers across Ireland with the introduction of new models, extended ranges, a dedicated Irish-based team, and even the availability of coloured radiators from stock. As an added bonus, it has now introduced the Stelrad Loyalty Club.

Installers can join the Stelrad Loyalty Club at <https://www.stelrad.ie/support-information/loyalty/> by calling + Tel: 0044 844 543 6200, or contact their local merchant for information. Once joined, installers will be sent regular emails with their points total and advising them of new products

and promotions before they are announced to the market at large. Points can be claimed for purchasing qualifying premium panel and designer radiators.

Stelrad Head of Marketing Chris Harvey explains: "It's a simple concept – installers buy our premium products, register as members of the Stelrad Loyalty Club, upload their invoices for the products they have bought and, in return, they get 10 points for every €100 they spend. They can redeem their points for rewards in the rewards catalogue, choosing from branded clothing and tools, or they can save the points and exchange them for product if they prefer.

"We really hope installers will welcome this attempt to give them something back. The rewards include things like fleece jackets, tee shirts and trousers, hand towels, etc ... all things that are helpful in day-to-day jobs".

Stelrad is seeing increased take-up of its popular range of vertical radiators

across Ireland and seeing a gradual increase in the orders for coloured radiators as well. This reflects the trend for radiators to be viewed as part of the décor rather than simply as heating appliances. The trend that started with a "special" radiator in the bathroom – usually a ladder towel rail – has now moved through the home with special radiators in the kitchen, in hallways and on landings, as well as in the master bedroom and the main living room. It's the opportunity to mix and match, that is seeing greater take-up of the decorative and designer radiator options.

Full details of the Stelrad Radiator range can be found at www.stelrad.ie. You can call for brochures and information on +44844 543 6200 or email marketing@stelrad.com. Alternatively, you can also see regular updates from Stelrad on Twitter @Stelrad and Facebook @StelradRadiators. ■

London Tube warms homes, leisure centres and a school

Waste heat from the London Underground network is now capable of providing heating and hot water to more than 1,350 homes, a school and two leisure centres in Islington, North London, thanks to a pioneering energy centre that has just opened.



The Bunhill 2 Energy Centre – the first of its kind in the world – provides a blueprint for decarbonising heat in potential future schemes in London and around the world. It reduces heating bills and carbon emissions while improving air quality and making cities more self-sufficient in energy.

The new energy centre uses state-of-the-art technology on the site of a disused

Underground station that commuters have not seen for almost 100 years. The remains of the station, once known as City Road, have been transformed to house a huge underground fan which extracts warm air from the Northern Line tunnels below. The warm air is used to heat water that is then pumped to buildings in the neighbourhood through a new 1.5km network of underground pipes.

The energy centre and new pipework adds a further 550 homes and a primary school to the existing Bunhill Heat and Power District Heating Network, launched in Islington in 2012. The network already provided cheaper, greener heat every day of the year to two local leisure centres and more than 800 homes, but the new energy centre gives the system the potential to supply up to 2,200 homes.

The centre's combined heat and power technology means it also generates cheaper, greener electricity that is fed into the London Underground network and an adjacent tower block, powering its communal lighting and lifts.

During the winter months, a fan in the ventilation shaft extracts warm air from the Tube which travels over a series of water-filled pipes, heating the water inside by a few degrees. The water temperature is then increased to about 80°C using heat pumps, making it suitable for domestic and commercial central heating systems. The fan also has the potential to operate in reverse to supply cooler air to the Tube tunnels during the summer months.

The Bunhill 2 Energy Centre on the edge of City Road, Islington.



The hot water is pumped around a network of insulated underground pipes, and the heat is again transferred to communal heating system loops on housing estates using heat exchangers.

The heating bills for council tenants connected to the network will be cut by 10% compared to other communal heating systems, which themselves cost around half as much as stand-alone systems heating individual homes. The nearby Moreland Primary School is the first school to be connected to the network, which already serves the pool and facilities at Ironmonger Row Baths and Finsbury Leisure Centre.

The district heating network is greener too because it reuses heat that would otherwise be wasted, with those who are connected helping to reduce CO2 emissions by around 500 tonnes each year.



An interior shot of the Bunhill 2 Energy Centre on the edge of City Road, Islington.

A new public artwork by celebrated Scottish artist Toby Paterson also graces the energy centre. Sited at ground level and wrapped around the building, the series of cast aluminium reliefs draws a link between the centre and the community it serves, and was commissioned by Islington Council.

See www.islington.gov.uk/bunhill ■

Published by ARROW@TU Dublin, 2020



The heat pump in the new energy centre.

How the technology works

To help control the temperature on the Tube network for customers and staff, there are a series of ventilation shafts that carry hot air from the Tube tunnels up to ground level. One of these ventilation shafts is located at the corner of Moreland Street and Central Street. Warm air created by trains and machinery in the Underground network goes up the ventilation shaft and is pushed by a fan through a heat pump, which captures heat from the warm exhausted air, via a closed loop water circuit in the ventilation shaft. This is used to heat a gas, which is then put through a compressor, converting it into a very hot liquid and making the pipes that hold it very hot as well.

These hot pipes are used to heat the water that runs in the pipes of the Bunhill Heat Network so that they can heat the buildings connected to the network. The pipe network is very well insulated to minimise the amount of heat lost on the way to the buildings.

Taking advantage of the properties of a refrigerant gas, the hot liquid in the heat pump passes through the water in the pipes and in doing so turns back into gas. The heat pump is then ready to be warmed up again by more warm air from the Tube. In addition, the fan in the ventilation shaft has the potential to be reversed in the summer to provide cooling to the Tube network, helping to make journeys more comfortable.



BREXIT implications for ODS and F-Gas contractors



As a consequence of Brexit there are many significant implications for individuals and companies in Ireland who are certified by UK bodies to operate with Ozone Depleting Substances (ODS) and Fluorinated Greenhouse Gases (F-Gas). Here *Eamonn Merriman, ODS & F-Gas Team, Environmental Protection Agency*, gives an update on the situation in terms of the actual withdrawal, the transition period and what happens at the end of that period.

The UK withdrew from the European Union on 31 January 2020 on the basis of a Withdrawal Agreement that includes a transition period which will run until 11pm on Thursday, 31 December 2020.

During this transition period there will be no new restrictions on the movement of ODS or F-gases between Ireland and the UK (including Northern Ireland). UK-certified technician F-Gas handling certificates and company F-Gas certificates will continue to be recognised in the EU (including Ireland) until the end of the transition period. EU-certified technicians and companies will likewise continue to be recognised in the UK.

After the transition period, ODS and F-Gas certificates and training attestations awarded by a certification body in the UK will no longer be recognised within the remaining EU member states.

If you are affected by these changes and want to remain certified to operate in Ireland after the end of the transition period you can take action as described below. If you do not make a valid application before the end of the transition period, or if you are issued your UK certificate after the end of the transition period, then you will be unable to avail of the process outlined here. You will then need to be certified by a certification body within the EU-27 such as the Irish company certification body (F-Gas Registration Ltd) or the Irish training/attestation body for individuals (QQI). In the case of individuals this may require the undertaking of further training.

You are reminded that under Regulation 13(1)(a) of the European Union (Fluorinated Greenhouse Gas) Regulations 2016, SI No: 658 of 2016: "it is an offence for a person, operator or undertaking, that does not hold the required F-Gas certification to engage in an act without the required certification or attestation."

Next step for individuals holding UK training attestation/certification under Regulations 12B and 12J of the European Union (Fluorinated Greenhouse Gas) Regulations 2016 as amended – If you hold a certificate or training attestation which was

issued by a certification body in the United Kingdom, such as City & Guilds, prior to the end of the UK withdrawal transition period, you may apply to the Environmental Protection Agency for a training certificate or attestation in respect of the same activity. This process does not involve re-training, there is no fee and you retain your UK qualification.

Apply online at <http://www.epa.ie/air/aireinforcement/ozone/training/brexitodsfgas/>

Next step for companies holding UK certification – Companies certified by a UK certification body such as Refcom and Quidos, and who wish to continue to operate within the EU-27 after 11pm on 31 December 2020, should obtain certification from an EU-27 certification body. The designated company certification body in Ireland is F-Gas Registration Ltd and company certificate applications can be submitted at <http://www.fgasregistration.ie>

Additional information on the BREXIT implications for ODS and F-Gas contractors can be found at <https://www.dccae.gov.ie/en-ie/environment/topics/air-quality/fluorinated-greenhouse-gas/Pages/default.aspx> ■



» The KXZR 3-pipe system offers the highest levels of design flexibility, improved efficiency and enhanced operational function.

KXZR 3-pipe system from Mitsubishi Heavy Industries

The Mitsubishi Heavy Industries KXZ VRF series delivers high performance in cooling and heating for all commercial applications, and incorporates the highest level of design flexibility, improved efficiency and enhanced operational functions.

Features of the new series include the following:

- Improved energy efficiency and in mixed mode;

- Expanded line-up from 8HP to 60HP;
- Additional Hi-COP combination 16HP to 36 HP for increased energy efficiencies;
- Improved EERs and COPs compared to the previous model;
- Improved heating capacity in low ambient temperature;
- Improved cooling capacity in low ambient temperature;



- Improved and newly-designed branch control boxes.

There is now a choice of different indoor units available, with connection capacities ranging from 50% to 200%, depending on the outdoor unit model. This ensures maximum feasibility and installation flexibility.

Similar to its 2-pipe sister model KXZ, the 3-pipe KXZR's improved EERs and COPs are due to a new multi-discharge compressor that optimises the pressure control during operation. There is also a new concentrated winding motor. These have led to increased seasonal energy efficiencies, especially in partial load conditions.

The newly-introduced "Continuous Heating Capacity Control (CHCC)" or the 3-pipe units increases the heating period of the outdoor unit and reduces the mandatory defrost operation to a minimum. This new control ensures, and dramatically increases, comfort for the user during defrost operation.

The new software on the outdoor unit PCB will now also automatically select the most energy-efficient modus during "mixed mode" (both heating and cooling demand at the same time), with maximum COPs of 9.0. The outdoor units feature a divided heat exchanger which dramatically improves cooling capacity in low ambient temperatures. This increases the operation without anti-frost operation down to -5°C. Finally, the newly-designed branch control PFD-boxes now boast much lower noise levels, thanks to new insulation and external covers, with levels for the operation switch down to around 10db(A).

Contact: MHI Distributors – Diamond Air Conditioning.

Tel: 01 – 636 3131;

www.diamondair.ie;

DWG. Tel: 01 – 463 7311;

www.dwgeire.ie

Mitsubishi Heavy Industries' 3-pipe KXZ VRF series.

OPINION

Are building certifications 'greenwashing' the energy-efficiency industry?

With so many industry buzzwords and certifications, it's increasingly hard to distinguish between what are, and are not, relevant environmental credentials. We are all aware of the buzzwords. There are green and healthy buildings, zero-carbon buildings and the Living Building Challenge, which are backed up by certifications such as LEED, BREEM, GRESB, ISO50001 and WELL. While these green strategies have their origin in well-meaning environmental causes, a certain "greenwashing" has muddied the waters, writes *Gavin Doyle, Operations Manager, Acutrace, (gavin@acutrace.com)*



The term greenwashing was coined in the 1980s in response to companies making bold claims about their environmental credentials. Over 30 years later, the phrase is back, but this time greenwashing has become a lot more convincing due to the amount of green policies which a company can pretend to adopt. Also, people are more ready to spend a premium on green products in order to support mainstream concerns for the environment.

Now, this false message of selling a green product or service has predominantly migrated into commercial buildings. These "attributes" range from the material ingredients and toxicity to identifying material extraction, damage to local eco-structures and the environment, and the actual performance of the building itself regarding energy and water consumption. With 600 rating tools available, it's not only daunting to quantify what these mean, it's also more possible than ever to be misled by ambiguity in the industry.

Certainly, some companies are investing in energy monitoring solutions as a "tick-box" exercise to achieve an energy efficiency standard, primarily at the construction stage of a building. Most certifications will have a minimum requirement of monitoring main energy and water meters, and additional points can be achieved from metering at sub-distribution boards and branch circuits. Yet, certain

developers found an easy way out by installing energy meters which are connected directly to terminals with no data being collected. However, the "box is ticked".

Why invest in building certification?

There are many social and economic impacts of going green. Such buildings create a more productive workplace for occupants and therefore help with the mitigation of climate change. Green buildings also see benefits for corporate reputation while the building itself has lower volatility in the market, thus allowing for higher rent.

How to identify greenwash

Potential tenants of a green building should look at the building holistically. For example, does the property manager have direct employees responsible for reducing energy consumption? Do they hire a third-party consultant to advise them? If the answer is yes to either question, then that is a good sign. Landlords are not greenwashing if they have invested in the development and implementation of energy management procedures.

Furthermore, if an organisation believes energy management is the responsibility of everyone in their building – and is guided and supported by the facility, property or energy manager – then that is another good sign. Also, companies that have bought into being green will assess their energy performance through energy monitoring software and share energy consumption data with all employees. From the data collected they will create and implement an energy plan to achieve their energy goals.

Adopting a green strategy

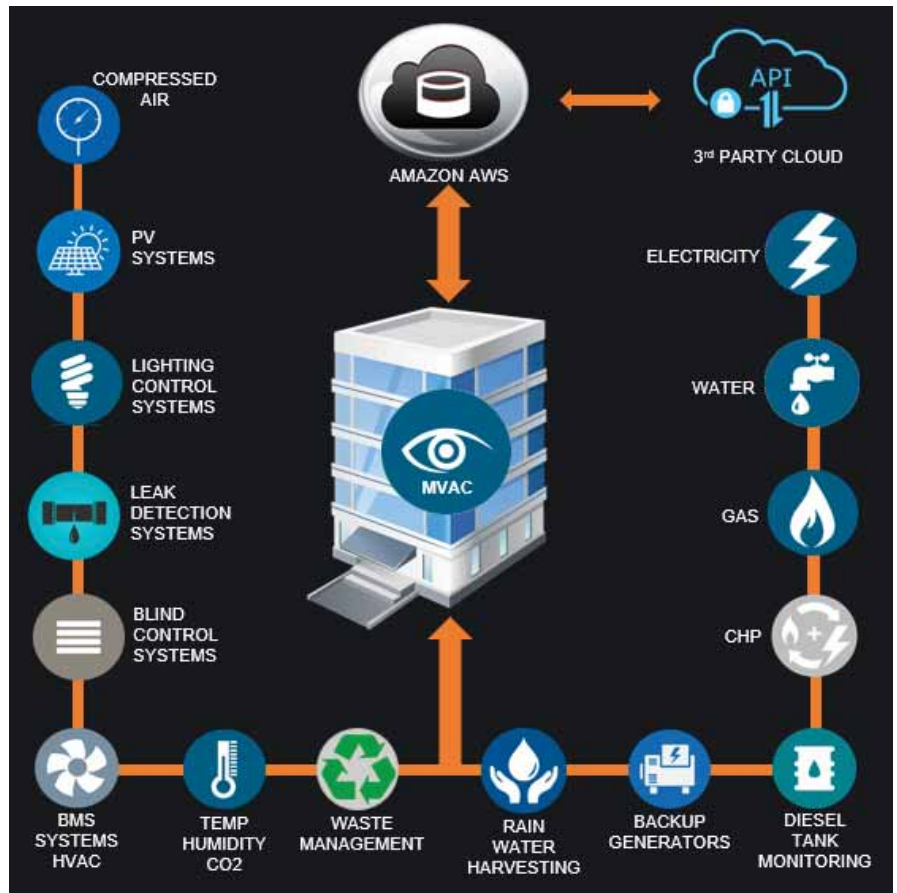
For any organisation adopting a green strategy, the logical step is investing in energy monitoring software that will measure all utilities from main meters

to sub-distribution boards. Such software provides property managers with the data needed to reduce energy costs and comply with their reporting requirements.

Energy measurement software helps to deliver the following benefits:

- Identify significant energy users that represent the highest percentage of total energy use;
- Establish and monitor KPIs and benchmarks;
- Report-generation for building standards;
- Email alerts when consumption targets are breached or when electrical system issues occur;
- "Hours run" clock that will show usage of individual units/circuits ... once the device is serviced the "hours run" clock can be reset;
- Ability to calculate, track and report on CO2 based on actual energy used/saved.

Along with the above benefits, the main challenge is the behavioural change of a building's occupants. With this in mind, Acutrace has developed a method to allow all occupants view data relevant to them, or their department, through public boards



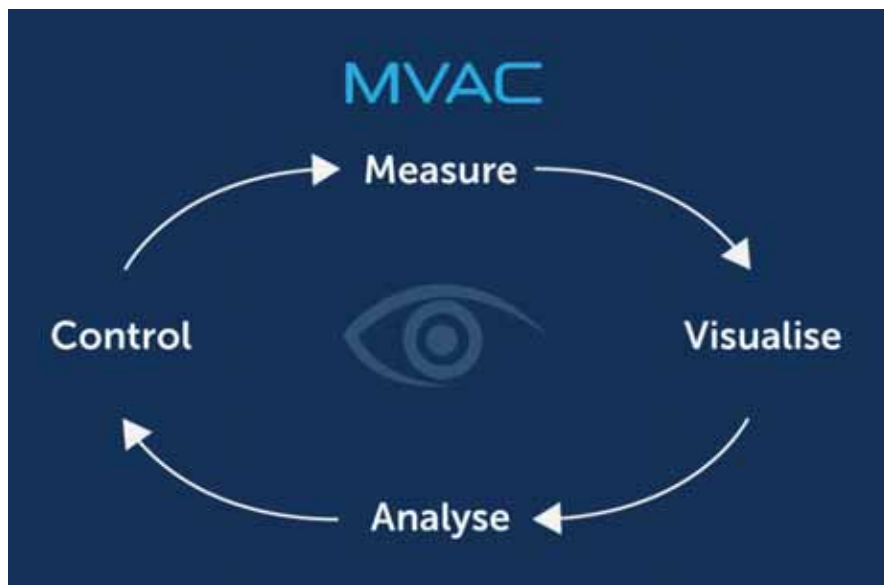
How Acutrace delivers the MVAC principle.

located at the hotspots throughout their building.

Public boards are beneficial in the following way:

- They create a "Prius" effect which is a current green building phenomenon;

- Employees will be provided with real-time data and statistics which results in behavioural change;
- This small feature will yield big results as employees' habits will be more energy friendly.



The core tenets of the Acutrace specially-developed software are measure, visualise, analyse and control (MVAC).

About Acutrace

Acutrace is a software and systems integration company providing energy measurement data to the owners and occupiers of commercial and industrial buildings. It developed the Acutrace software platform to measure all utilities and many other functional and environmental conditions in a building such as rainwater harvesting, temperature and humidity. It also interfaces directly with existing building management systems and is currently used by clients for building standards like LEED, ISO50001 and GRESB. ■

FLOATING SOLAR 'next frontier'

Most solar energy installations are either ground-mounted or on the rooftops of commercial buildings or private residences. Floating solar, the term used to refer to floating PV structures installed on water bodies, such as lakes, reservoirs, mining or irrigation ponds, is expected to become the "next frontier" of the solar energy industry.

Floating solar systems are similar to land-based ones except the solar panels are installed on pontoon-type floats, with an anchoring and mooring system holding the platform in place. Besides the advantage of using existing electricity transmission infrastructure at hydropower sites, there is no need for major site preparation. In addition, floating solar farms bring higher energy yields due to the cooling effects of water and the decreased presence of dust which can lessen solar panel performance.

Hybrid hydro-PV system

Since the first floating PV system was built in 2007 in Japan, the floating solar market has been well established in many countries, with China the largest player. However, the development of hybrid systems that combine hydropower and floating solar is still at an early stage.

Hydropower and solar can be co-located, with either floating or ground-mounted solar panels around a hydropower reservoir. Using existing hydropower infrastructure, reduces the installation costs of the solar farm. Depending on daily demand, it is possible to reduce hydropower output during the daytime and bring it back up in the evening, with solar covering a portion of peak requirement in the afternoon. ■

Since the first floating PV system was built in 2007 in Japan, the floating solar market has become well established in many countries, particularly in Asia. This example, due to become fully operational in 2021, is on the Tengeh Reservoir in Singapore. Image: SERIS



Floating solar systems are similar to land-based ones except the solar panels are installed on pontoon-type floats, with an anchoring and mooring system.

SCA smoke control design guide published

The Smoke Control Association (SCA) has published an updated version of its comprehensive *Guidance on Smoke Control to Common Escape Routes in Apartment Buildings* document.

Previously revised in 2012 and 2015, the guide was first published in 2010 and was quickly adopted as the default reference document for designers, installers and authorities involved in the provision of life safety systems in high rise buildings. Included in the newly-revised document are a host of original recommendations, updated product standards and a new section on fire and rescue service Intervention.

Preventing the spread of smoke through buildings can ultimately save lives and the primary objective of the smoke ventilation system is to protect the staircase and the common circulation areas.

The updated guidance document provides vital in-depth information on requirements relating to the design, installation and testing of smoke control systems, as well as highlighting relevant legislation, standards and codes of practice.

Recognising that the new guide takes firefighting considerations into account when discussing industry best practice, The National Fire Chiefs Council (NFCC) in the UK has welcomed its introduction and the SCA anticipates that the revised document will make a significant contribution in helping to improve overall understanding of smoke control systems.

David Mowatt, Chairman of the SCA, comments: "Due to the ever-increasing complexity of building design and further design developments in our industry, it was decided that the SCA document needed to be updated to ensure it remained current. The SCA is committed to promoting the highest industry standards and the guide is a reflection of this work."

The revised document can be viewed at www.smokecontrol.org.uk/resources





Touch-free Sensor Tap technology saves up to 70% water.

Webinars

Versatile Group has developed CPD presentation “webinars” on sensor tap technology and others – inquire at info@versatile.ie

Touch-free sensor tap technology saves up to 70% water

In the current climate, Versatile Group’s recently-launched CONTI+ touch-free sensor tap technology is highly sought after across the Irish healthcare sector and other hygienically-sensitive areas. Equally in demand are the contactless soap and hand sanitiser dispensers from the same line.



High spout design ideal for healthcare.

<https://arrow.tudublin.ie/bsn/vol59/iss2/1>

In addition to being hygienic solutions in healthcare settings and public washrooms, the sensor taps (and showers) are also a sustainable choice, embodying resource-efficient technology to ensure water and energy savings. Key sustainability benefits of the touch-free sensor tap line include:

Water saving – Intelligent sensors detect user proximity and automatically and reliably control the flow of water from the tap. This results in up to 70% water savings and economical flow rates as low as 1.9 l/min, thanks to the optional aerators. Water run-on times can also be shortened for even greater water savings;

Energy efficiency – Battery and solar or turbine green power options provide energy efficiency, with an extended life of up to four years with commercial alkaline batteries. Solar and turbine options extend battery life by up to eight years. This is the ideal solution for use in semi-public settings and facilities with heavy footfall.

Another key advantage of the line is the easy maintenance and convenient water management system. Facilities managers benefit from the one-tool requirement with above-deck access to all parts (in certain models), while the innovative CNX water management system allows for remote management including hygienic flush, thermal disinfection and tap management, among other functionality.

For information on the complete touch-free sensor technology line, contact: Versatile Group. 046 - 902 9444; email info@versatile.ie; www.versatile.ie ■

Engineering student intake up 6%

According to statistics reported by the Central Applications Office (CAO), engineering Level 8 first preferences have increased by 6% from 3,558 in 2019 to 3,759 in 2020 (marking an 18% increase since 2018). Overall, engineering, manufacturing and construction-related Level 8 first preferences have increased by 5% from 5,771 to 6,082.

Engineers Ireland (EI), which represents over 25,000 engineers, said that it welcomed the growing awareness of, and interest in, engineering as a career choice by young people as the sector continues to face challenges sourcing the skills needed in Ireland to meet demand.

According to recently-published data from Engineers Ireland's *Engineering 2020 Barometer Report*, 91% of engineering leaders surveyed listed skills shortages as a barrier to growing their workforce. The report also highlighted that industry demand for engineers will continue in 2020. Over 5,000 new engineering jobs are expected to be created nationally in areas relating to the green economy, construction, digital manufacturing and artificial intelligence this year.

Commenting on the CAO results, Caroline Spillane, Director General of Engineers Ireland, said: "We are encouraged by the increase in the numbers of students opting to pursue engineering at third-level. Ireland needs

Our future engineers in particular will play a leading role in sustainable development and delivering climate action solutions.

Caroline Spillane, Director General of Engineers Ireland.

a steady supply of engineers, with the necessary skillset, to boost local economies, create new jobs, facilitate sustainable development and meet Government ambitions, such as those outlined in the Climate Action Plan. Our future engineers in particular will play a leading role in sustainable development and delivering climate action solutions."

Ms Spillane added: "We wish all students every success with their studies and we hope that those who have opted for an engineering course as their CAO first choice preference will be successful, and have an opportunity to go on to develop the technical and professional skills which are so valued by employers and are now so badly needed in industry."

Engineers Ireland also encourages students who have not fully decided on their career path to actively consider a career in engineering. Ms Spillane concluded: "We encourage students who have not yet fully decided on their career path to actively consider a career in engineering. Whether you have studied maths at higher or ordinary level, if you enjoy problem solving, innovation and creativity, you can pursue the limitless opportunities afforded by a career in engineering. Additionally, we would urge students to consider engineering and related apprenticeships."

Students who have applied to CAO have the opportunity to change their course selection and pursue a career in engineering by using the "Change of Mind" facility which opens on 5 May and is available until 1 July.

Students are also encouraged to check the Engineers Ireland database of accredited programmes, which cover Levels 6, 7, 8 and 9, to ensure their chosen engineering course meets the highest international standards. Students can view Engineers Ireland's list of accredited programmes by visiting: <https://www.engineersireland.ie/Professionals/Membership/Become-a-member/Accredited-third-level-courses/Find-accredited-programme/> ■



THE OBTUSE ANGLE

Building Services News, Vol. 59 [2020], Iss. 2, Art. 1



PAT LEHANE

Stephen & Bernie wearing pearls



Congratulations to Bernie and Stephen Costelloe who are celebrating the pearl anniversary (30 years) of the founding of Euro Fluid Handling Systems.

When Bernie first embarked on the entrepreneurial route back in 1990 Stephen was but a child. Now he stands shoulder to shoulder with Bernie – and sometimes toe to toe! – in running the business.

Seriously guys, congratulations and here's to the next 30 years of successful trading.

CIBSE website survey

CIBSE is looking to redevelop its website (www.cibse.org) and, as part of this, CIBSE Ireland members are being asked for feedback on how they use the current website, and to provide suggestions as to how it could be improved.



So, I'm calling on all CIBSE Ireland members to respond and help give everyone who uses the CIBSE website a better experience in the future.

Simply log on to the CIBSE website to complete. It will only take five minutes.

<https://arrow.tudublin.ie/bsn/vol59/iss2/1>

Xylem play the Etihad Stadium

In one of the last events to be "played" at the Etihad Stadium, Manchester, before the Premiership was put on hold, Xylem brought together industry leaders and some of the biggest names in water sustainability for an innovative event designed to tackle water-based environmental challenges.

The event included a party of approximately 30 from Ireland, led by Kevin Devine, General Manager Sales, Xylem Water Solutions Ireland, and Joe Warren from *Building Services Engineering*.

Speakers and delegates discussed issues ranging from storm water, flooding and regulatory compliance to non-revenue water concerns, water temperature and pressure problems.

It proved an excellent forum with all benefitting from the interactive, workshop nature of the event and the open sharing of opinions and views.

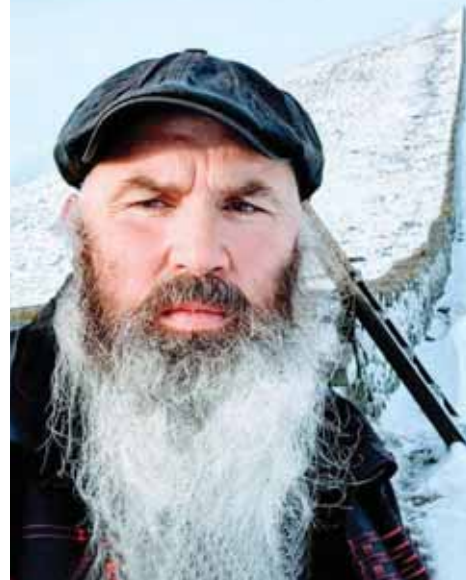


Anyone for virtual golf?

With the BTU and RACGS seasons due to kick off in April, I'm sure all you golfers out there are bitterly disappointed at the moment. While we announced the dates and venues for the outings in the last issue of *Building Services Engineering*, it's important that you keep in touch with the respective secretaries of both societies for updates. Time to invest in a virtual golf simulator?



Guess who and win bottle of bubbly



The steely look in the eyes, the flowing beard and snow-capped background all point to an intrepid adventurer braving the treacherous elements in some far-flung mountain range. However, the truth is that the gentleman in question is one of our own, a long-established mechanical contractor, simply out for a day's hill-walking earlier this year somewhere in Ireland.

Who is he? Send your answer please to pat@pressline.ie by close of business on Wednesday, 15 April next. All correct answers will go in the hat with a bottle of champagne for the first name out.

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60
60th Anniversary
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