


9-2022

## Building Services Engineering September/October 2022

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### Recommended Citation

(2022) "Building Services Engineering September/October 2022," *Building Services Engineering*: Vol. 61: Iss. 5, Article 1.

Available at: <https://arrow.tudublin.ie/bsn/vol61/iss5/1>

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# building services engineering



Help for  
struggling  
SMEs

**Dessie  
Morrow**



Healthy  
Homes  
Ireland

**Kevin  
O'Rourke**



## THE RISE OF H<sub>2</sub>

# Is Hydrogen the future?



'Smart' building  
pivotal to  
sustainability

**Graeme  
Rees**



No one  
way to  
decarbonise

**Mark  
Wilkins**

# TOWARDS A MORE SUSTAINABLE FUTURE

Air Conditioning

Chillers

IT Cooling

Heating

Ventilation

Controls

Automation

Robotics



## HEATING, COOLING, VENTILATING & AUTOMATING YOUR WORLD

**At Mitsubishi Electric we provide products, services, and solutions that contribute simultaneously to achieving sustainability, safety, security, and comfort.**

Our broad range of range of environment-friendly systems and services work across Irish homes, offices, and industries.

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Our Ecodan air source heat pumps are the renewable low-carbon alternative to traditional heating systems.

Our Factory Automation equipment and industrial robots, increase efficiency, reduce downtime, reduce wastage and as a result provide the basis for more sustainable processes into the future. This helps industries of all sorts reduce energy consumption, become more efficient, and crucially more sustainable.

**We are committed to meeting our sustainable development goals leading us to become a net-zero company by 2050.**



# Contents

## EDITORIAL

### Fuel for thought ...

**A**t last ... some common sense prevails. While Germany still intends to phase out all coal-fired power generation by 2038, as of 29 August a second such plant had been re-activated. Why?... not because Germany has reneged on its commitment to combating climate change ... far from it. It's simply that it recognises the severity of the current challenge caused by Russia's invasion of Ukraine, and is taking expedient action to address the immediate and short-term impacts.

Meanwhile, Ireland dithers on whether or not we should approve the LNG project for the Shannon estuary, and has banned the issuing of licences for new oil and natural gas exploration. In principle, these are all very admirable actions but, we are now in a dramatically-changed energy landscape.

To stay functioning as a society, as a community, as businesses, we need some semblance of energy security. Unless we too take an expedient approach in the interim, we'll be in no position to influence the bigger picture in the future.



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Green hydrogen will be one of the mainstays in energy systems of the future, especially in places where energy demand is high or cannot be covered using traditional solutions.

Published by: Pressline Ltd,  
 Carraig Court, George's Avenue, Blackrock, Co Dublin.  
 Tel: 01 - 288 5001/2/3 email: pat@pressline.ie  
 www.buildingservicesengineering.ie  
 Publisher and Editor: Pat Lehane  
 Design and Production Editor: John Gibney  
 Advertisement Director: Joe Warren  
 Design: Pressline Ltd. Printed by: W&G Baird  
 ISSN 2712-0198 Vol. 61 No. 5  
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## BUSINESSES IN DIFFICULTY

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### What options for struggling SMEs?

Many in the building services engineering sector now face an unprecedented threat to their survival from two significant headwinds – interest rate hikes and spiralling inflation. How can business owners respond to these threats ... what options do they have? Dessie Morrow advises.



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## SMART IS BEST

### Controls hold the key

A genuinely smart building – with the technology correctly designed, installed, commissioned and maintained – will deliver greater comfort along with reduced energy consumption, energy costs and carbon emissions.



## NEWS AND PRODUCTS

### Mainline CPD leadership

**Mainline Group** has been awarded the CPD Accredited Employer Standard by Engineers Ireland. A leading engineering solutions provider with offices in Dublin and Cork, Mainline provides a wide range of services.



Jamie O'Rourke, CEO, Mainline Group pictured with Dee Kehoe, CPD Director at Engineers Ireland.

These include the design and build of substations and grid connections, through to airside aviation infrastructure and turnkey grid-connected renewable energy solutions.

Mainline recently implemented a learning and development model based on the 70-20-10 principle, where individuals learn 70% of their knowledge from challenging experiences and assignments, 20% from developmental relationships and 10% from coursework and training.

### New Daikin training centre

**Daikin's new sustainability** and training centre in Citywest, Dublin is now open. It showcases products from across the entire range and will now operate as the main base for all future training programmes.

For details of the upcoming programme email [training@daikin.ie](mailto:training@daikin.ie) <https://arrow.tudublin.ie/bsn/vol61/iss5/1>

### Seán Kelly award

**Seán Kelly MEP** (Ireland South) has been awarded the 2022 Energy Solutions Award. Mr Kelly received the accolade in recognition of his work to support sustainable decarbonisation through policy work in the European Parliament.

Mr Kelly has been involved in a number of key policy areas as part of his role in the Industry, Research and Energy Committee in the EU Parliament, including the Energy Performance of Buildings Directive and the Renewable Energy Directive.

Mr Kelly is lead author of the group overseeing the Energy Performance of Buildings Directive (EPBD). This is a cornerstone of the European Green Deal and the EU's Renovation Wave and, in his role as Shadow Rapporteur, he is working to ensure that European buildings are prepared for a greener and more digital society.

Right: Seán Kelly, MEP with Morten Helveg Petersen, MEP, Chair of the Energy Solutions Steering Committee.



### City Edge strategic framework

**The City Edge** project is a joint initiative between Dublin City Council (DCC) and South Dublin County Council (SDCC) to create a new "liveable, sustainable and climate-resilient" urban quarter at the western edge of Dublin City.



25,000 people, alongside well-established residential communities of 5,000 people. However, it is identified in national and regional policy as a part of Dublin that has the potential to be much more intensely used.

The project area covers 700 hectares within the Naas Road, Ballymount and Park West areas and has the potential for 40,000 new homes and 75,000 jobs that would contribute €13bn (gross value added) a year to the economy.

The City Edge area is already a cornerstone of the Dublin economy with some 1,500 businesses employing

### Edel Donnelly joins KSN

**Edel Donnelly** has joined KSN Team Horizon as a Senior Sustainability Manager. KSN Horizon develops and implements strategic sustainable solutions for the real estate sector, helping clients enhance the value of their assets and manage the transition to a de-carbonised economy.

Contact: Edel Donnelly, KSN Team Horizon.  
T: 01 277 6999; E: [edonnelly@ksnhorizon.com](mailto:edonnelly@ksnhorizon.com)







As a global sustainability and climate change leader, Wilo Ireland is on a mission to invent and manage responsible water solutions that benefit everyone, everywhere.

Wilo's pumps help to provide people around the world with water in an intelligent, efficient and climate-friendly manner. Sustainability is at the top of Wilo's agenda and this is reflected in the opening of its new headquarters and production factory 'Wilopark' which already boasts a fully climate neutral status.

Virtually experience Wilopark and a range of different scenarios to see how pumps, systems and solutions work with 'Wilo-World', a journey through the digital world.

**Find out more: [wilo.com/ie/en/Wilo-World.html](https://wilo.com/ie/en/Wilo-World.html)**

## NEWS AND PRODUCTS



### Lighting and UN sustainable goals

The UN Sustainable Development Goals (SDGs), also known as Global Goals, are a set of 17 integrated and inter-related goals devised to end poverty, protect the planet and create a more sustainable future for all.

*How lighting contributes to the UN Sustainable Development Goals (SDGs)* is a new publication from LightingEurope that focuses on the areas lighting makes a major contribution to achieving the set targets. These include well-established modern lighting technologies as well as the less widely-known benefits of the non-visual aspects of lighting.

There are 17 SDGs and 169 targets in total. This publication identifies the specific SDGs and targets that the lighting industry can make a direct contribution to.

See [www.lightingeurope.org](http://www.lightingeurope.org)

### EU water scarcity seminar

By 2030, water scarcity is expected to impact 45% of Europe's water basins, requiring water efficiency in all sectors. This is key to climate change adaptation and also mitigation, as urban water supply uses almost 4% of world electricity.

If water and energy in buildings are simultaneously addressed, there are great opportunities for combined savings. Implementation of water-saving toilets, taps and showerheads, alone, can produce up to 50% water savings in buildings, with energy and CO2 emissions reduction by end-users and urban water systems.

Water and/or energy labelling may be tools to help consumers make efficient choices, and so, the European Energy Network is hosting an online seminar on 27 September 2022 on the role of product labelling in water and energy choices. The session will host the first presentation of a European citizen open survey on this topic, led by EnR (European Energy Network), followed by discussion on the findings.

<https://arrow.tudublin.ie/bsn/vol61/iss5/1>

### BTU plays Hermitage

The recent BTU outing at Hermitage saw an excellent turnout with Paudie Gillen of TIDL being the main sponsor. Hermitage is set on 120 acres in a sylvan setting and is one of the favourite BTU venues.

The signature 10th hole has a 200-foot drop into Liffey Valley, onto an undulating green, two meters from the river. This hole is recognised as one of the top golf holes in Ireland.

That said, it is also a very challenging course with the greens very difficult to read. David Daly's winning score of 41pts was an exceptional performance.

Results were as follows.

Overall winner: David Daly, 41pts.

**Class 1:** First: Des Haughton;  
Second: Robert Kenny.

**Class 2:** First: John White;  
Second: Steve Jones.

**Class 3:** First: Tom Fitzpatrick;  
Second: Brendan Coghlan.

**Visitor:** Pat McNamara;

**Ladies winner:** Ger Coghlan.



Paudie Gillen, TIDL with Dessie Haughton and Brian Harris, BTU Captain.



Overall winner David Daly.



Ladies winner Ger Coghlan with Brian Harris, BTU Captain and Paudie Gillen, TIDL.



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



### **DIAL BEFORE YOU DIG YOURSELF INTO A HOLE**

Hitting a gas pipeline could mean major disruption to your work, or much worse.  
If you're planning to break ground, always check the location of gas pipelines first.

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**Gas  
Networks  
Ireland**



## NEWS AND PRODUCTS

### Smart Buildings Show



The **Smart Buildings Show 2022** is the UK's only dedicated smart buildings exhibition and conference. It is a free-to-attend event and will take place on 11/13 October 2022 at ExCeL, London.

This year's event will provide the perfect setting for visitors to connect with key people from the sector, while discovering sustainable and cost-effective methods to ensure the longevity of a building's lifecycle.

The show will also host a busy conference programme, providing a vast range of thought-provoking content, while the Residential Developers Theatre will highlight the benefits of smart technology in this fast-growing sector.

See <https://smartbuildingsshow.com/>



### Irish Solar Energy Association

The **annual conference** of the Irish Solar Energy Association (ISEA) will take place on 13 October 2022 at Croke Park in Dublin, the main theme being "Energising the future with Solar".

Attendees will hear from Irish and international industry experts on how a successful solar industry in Ireland will be transformative to job creation, investment and the Ireland's climate action agenda.

Topics will include Accessing a decarbonised network; Solar-enabled ESG; Planning and contracts; Delivering solar in Ireland; Technology and innovation; Supply chain outlook; Rooftop/behind the meter; and Solar's role in energy security.

See [www.solarireland2022.com](http://www.solarireland2022.com)

### Key appointments at Mitsubishi Electric

**Mitsubishi Electric Ireland** has appointed Robin Marks National Sales Manager (Commercial Products) of its Living Environmental Systems Division. A graduate of Northumbria University with a degree in building surveying BSc (Hons), he previously held the position of Area Sales Manager, Northern Ireland, for the company.

Robin has worked across the full spectrum of building services engineering in the UK and Ireland, spending time in both ventilation and renewables before joining Mitsubishi Electric. He has dealt extensively with mechanical and electrical consultants and contractors, and will continue to do so as he supports Mitsubishi Electric's dealer partners in his new role.



Robin Marks

Meanwhile, Stuart Gregg has been appointed Area Sales Manager, Northern Ireland, to fill the vacancy left by Robin's promotion.



Larry Swift (left) with Stuart Gregg.

Stuart has worked in refrigeration and air conditioning all his life, is a fully qualified refrigeration engineer, and has extensive experience in practical, technical and sales roles. This accumulated knowledge base and technical expertise will now be available to Mitsubishi Electric's Northern Ireland partners.

Also new to the Mitsubishi Electric Living Environmental Systems Division team is Larry Swift, who has been appointed Area Sales Manager, Leinster region.

Larry has a Bachelor's Degree in mechanical engineering from TU Dublin and also a Master's Degree in Sustainable Energy from UCC. He previously worked with a leading refrigeration specialist and now brings that experience to bear on his new role.

### IPI appoints Mac Mahon

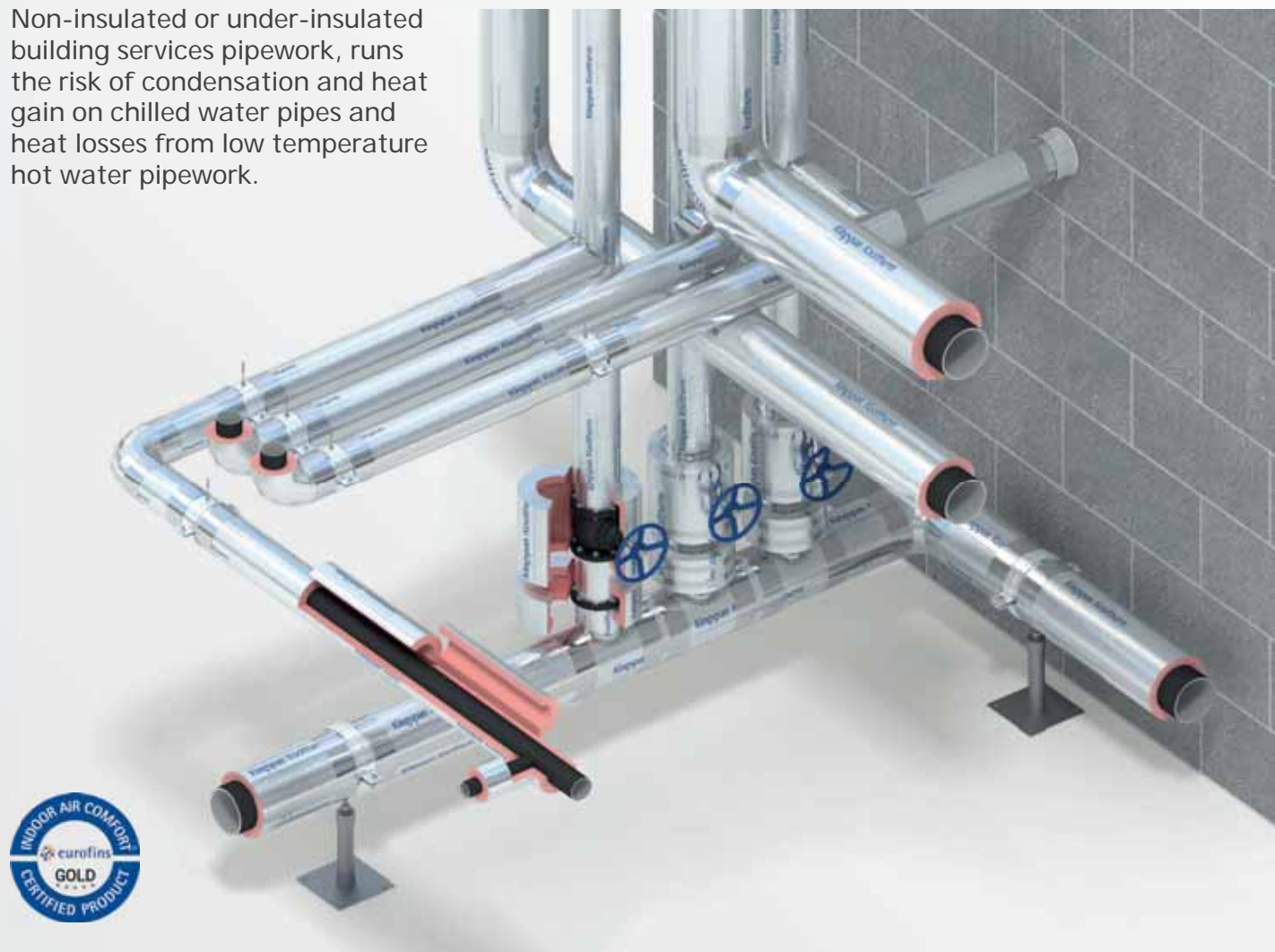
The Irish Planning Institute has appointed **Mary Mac Mahon** as President for the 2022-2023 term. Mary qualified from Queen's University Belfast with a Masters in Town and Country Planning, followed by a Bachelor of Social Science Degree from UCD.

She has a number of postgraduate qualifications, which include marine spatial planning, environmental engineering, environmental and planning law, and environmental assessment. She has served as a board member of the Aquacultural Licences Appeals and An Bord Pleanála.



# What Thickness of Pipe Insulation Are You Specifying?

Non-insulated or under-insulated building services pipework, runs the risk of condensation and heat gain on chilled water pipes and heat losses from low temperature hot water pipework.



To find out more about the effects of not insulating pipework correctly and for an understanding of how to calculate the correct thickness of insulation required for your application, email us at [hvactechnical@kingspaninsulation.co.uk](mailto:hvactechnical@kingspaninsulation.co.uk)

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T: +353 (0) 42 975 4219  
E: [info@kingspaninsulation.ie](mailto:info@kingspaninsulation.ie)  
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## NEWS AND PRODUCTS

### New HR Manager at Condair

**Condair has appointed** Louise Kelly as its new HR Manager. Louise brings a wealth of experience to Condair, having previously worked in HR roles at The Body Shop, Catalina Re and The Hartford.

Tony Fleming, Head of Sales Cluster Northern Europe at Condair, commented: “As an organisation, Condair has always been very focused on supporting and developing its team, and providing a happy and fulfilling place to work. It’s because of this that I am so delighted to welcome Louise on board.

Having worked before with such progressive companies, we feel very lucky to have her join Condair.”

Louise commented: “I’m greatly looking forward to getting to know the people at Condair and continuing to support and develop a working environment that is

collaborative, challenging, motivating and rewarding for all of our employees. With more than half of our employees having been at the company for at least 10 years, it’s evident that Condair greatly values the importance of investing in, and developing people. This talent and experience really shines through in the expertise and services the company provides”.

The Condair Group is the world’s leading specialist in humidity control and evaporative cooling, with energy efficient, hygienic and innovative technologies for commercial, industrial and heritage applications. Condair’s Ireland office offers support on everything from system design through to supply, installation, commissioning, maintenance and spares.

Contact: Damien Power, Area Sales Manager, Ireland. T: 091 507 120; E: ie.sales@condair.com



### Irwin joins Stelrad Ireland

**Stelrad Radiators has** appointed Jack Irwin as Business Development Manager for the 26 counties. He has a masters degree in international management from NUIG, while his spare time is spent playing Gaelic football, swimming, surfing and kayaking.

“These are exciting times to be joining Stelrad. I’m really looking forward to being part of the team here in Ireland,” said Jack. “With the huge range of options now available in the range, we have a radiator for every development and every home, for traditional or renewable heating systems and more.”

Contact: Jack Irwin, Stelrad Business Development Manager. T: 083 204 9953; E: jack.irwin@stelrad.com



### Cork ‘Home Energy UpGrade’

**Cork City Council** opened its Home Energy UpGrade Office (HEUGO) to provide free impartial guidance and resources to homeowners on energy upgrades and grant schemes. Free from financial commitment, homeowners will receive guidance on how to reduce their carbon footprint.

This new initiative follows the EU announcement that Cork has been selected as one of 100 “Mission Cities” to lead the way on climate action and smart cities across Europe. The HEUGO office will contribute to this process

through community engagement.

Anyone interested in retrofitting, decarbonising or improving the energy rating of their home can stop by the HEUGO office for free and independent advice.



### EDC appoints McGinn

**EDC has appointed** Conor McGinn Executive Director of its Dublin office. Conor is a chartered M&E design engineer with over 18 years industry experience in Ireland, the UK and Canada.

Richard O’Farrell, Managing Director, EDC said: “We are focused on quality, growth and progressive engineering, and Conor’s ambitions clearly align with our priorities and core values. His appointment will strengthen the EDC leadership team and depth of expertise, and aid in delivering innovative, sustainable engineering solutions for clients.”

On the international front, EDC has opened a new office in Istanbul, Turkey, expanding its presence in the MENAT region to accommodate client demand and leverage opportunities within these regions.

The expansion into Istanbul aligns with the EDC’s growth strategy which has also included the opening of an office to service the Mid-West of Ireland and the increase in headcount to over 85 employees across its five offices over the past 24 months.

See [www.edcengineers.com](http://www.edcengineers.com)





# DATA CENTRE COOLING

## Multi-Denco®

Multi-DENCO® is a flexible and adaptable product. It can work with room cooling or aisle containment and can humidify, dehumidify and even heat your room. With such a large variety of options, features and designs, it can be moulded to your needs.

- Available with both Upflow and Downflow air directions
- 7 Standard unit sizes with footprints
- Standardised software across all designs
- High quality, global component suppliers used throughout
- DENCONET software to enable multiple units to work together
- BMS interfaces available
- Humidity and re-heating options available



## Adia-Denco®

The adiabatic cooling system (also referred to as evaporative cooling), has been especially developed for Data Centres, is based on the simple principle that evaporating water removes heat from its surroundings.



- No mechanical cooling
- State of the art IEC test facility
- Unrivalled flexibility in configuration and size
- Largest IEC units manufacturing capacity
- EUROVENT certified
- Low pPUE
- Low water consumption (WUE)



## NEWS AND PRODUCTS

### Belimo Roadshow

The “Belimo Truck Roadshow” is currently on tour with the next venue being the Pillo Hotel, Ashbourne, Co Meath, on Tuesday, 27 September 2022.



The cleverly-adapted Belimo truck will be showcasing the company's new, proven and perfectly-matched control devices, all of which deliver extremely-efficient solutions across all applications.

Some new and exciting surprises are also promised. Everyone is very welcome.

Contact: Paul O'Neill, Belimo. T: 086 452 2032;  
E: paul.oneill@belimo.co.uk

### Chillventa 2022

As the world's leading trade fair for refrigeration technology, Chillventa will feature the top experts, key players and industry associations from the international refrigeration, AC, ventilation and heat pump community. Venue is Nuremberg and dates are 11 to 13 October 2022.

Key topics to feature will include energy performance of refrigeration systems; the circular economy; indoor air quality; indirect cooling; IT security and sustainability.

See <https://www.chillventa.de/en>

### Mercury lamp phase-out

The industry is now less than one year away from the restriction of several widely-used, mercury-containing lamps in the EU. The 2019 EU eco-design rules for light sources and separate control gears, and the 12 RoHS Delegated Directives published in February 2022, will impact the placing on the EU market of compact and linear fluorescent lamps (CFLs and LFLs) for general lighting over the next year.

While EU eco-design rules already phased-out CFL-i and T2 and T12 LFL lamps last autumn, the RoHS Directive now also restricts the placement on the EU market of CFL.ni and Long-life LFL lamps as of 25 February 2023, as well as of Long-life CFL, T5 and T8 LFL lamps as of 25 August 2023.

### Hevac golf at Palmerstown

Palmerstown golf course on the prestigious Palmerstown House Estate was once again the venue for the Hevac annual golf outing. Twenty one teams of three participated in the event which, in addition to the golf, included an extensive programme that culminated in an evening meal and entertainment with comedian Barry Murphy who was also the MC for the night.

The course was in excellent condition and the day was made all the more enjoyable with Hevac personnel being extremely attentive. The golfers' bags were filled to overflowing, there was breakfast on arrival, brunch on the 10th, and then the dinner.

That said, the golf was still the main priority and the top three teams were Team B Press Gas, Team Conex 310 and Team B Press Irish.



Winners: Team B Press Gas – Les Field and Darren O'Reilly, both of Medimec, with Bobby Vance, KSN.



Second: Team Conex 310 – Noel Kelly, Brian Murphy and John Walsh, all of Jones Engineering.



Third: Team B Press Irish – Ted Wright and Shane O'Neill, both of Writch with Chris Stason, Virtualic.



## COMMERCIAL AIR TO WATER HEAT PUMPS

### TITAN SKY

Reversible heat pump with natural refrigerant (propane)  
30-200 kW  
Max temp 63°C



# XT



### ZETA REV HP XT

High efficiency air source reversible heat pumps  
heating 40-200 kW  
Max temp 65°C

### GEYSER SKY

Full inverter reversible heat pump with natural refrigerant (propane)  
20-30 kW  
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Little Island, Co Cork. T: 021-441 4010

[www.unithermhs.ie](http://www.unithermhs.ie)  
[commercial@unithermhs.ie](mailto:commercial@unithermhs.ie)



# Route to net zero must include a mix of technologies

The way homes are heated has a significant role to play in ensuring Ireland meets its objective of net zero by 2050. According to the Central Statistics Office (2017 figures), there were over 1.2 million homes in Ireland using gas or oil for heating, so how these are updated will be a big factor in determining the timescale of reaching net zero. Ultimately, it will be Government legislation and budget availability that will decide the course, so here we can examine progress on some of the options.

With its in-house heat pump manufacturing line opening later this year and trials of its first certificated 100% hydrogen boiler already firmly underway at two separate test sites, Vaillant is very much front and centre of the race to help decarbonise home heating.

However, there is no silver bullet when it comes to whole-scale heating system change. Low carbon technologies such as heat pumps offer an immediate solution, but they are not suitable for every home or budget. *Mark Wilkins, Technologies and Training Director at Vaillant*, looks at options, how the heating landscape is shaping up, and where developments in hydrogen fit into the mix.

## Here and now

Compared to other low carbon heating technologies that are still in the initial stages of commercialisation, heat pumps have existed for many years and are a “here and now” proven technology that can help decarbonise homes today. Coupled with good insulation to reduce energy demand, they can provide a low carbon and cost-effective solution across many different applications in both on-grid and off-grid areas.

In its favour, a heat pump has zero emissions at point-of-use and can <https://arrow.tudublin.ie/bsn/vol61/iss5/1>



**Mark Wilkins, Technologies and Training Director at Vaillant.**

provide both heating and hot water needs for the home. Powered by electricity, which is increasingly produced via renewable and low carbon means, and the absence of combustion in heat pumps, means that they help reduce local air pollution.

As with any heating system, a correct heat loss calculation should be carried out, whether a new boiler or

a heat pump is being installed. Heat emitters (radiators) must be sized correctly, flow rates should be calculated, and domestic hot water comfort should be covered, to ensure the new heating system will perform efficiently and will provide the customer with the optimum heating and comfort required.

Heat pumps also require a hot water cylinder, so consideration is needed to identify a suitable space to fit this. However, there are many cylinders available on the market, including slimmer models with smaller footprints, to accommodate a variety of spaces.

## Cost implications

Like all heating systems, the cost can vary depending on the property, the size of heat pump and what system the customer requires.

A heat pump system requires more equipment. For example, if the heat pump is to provide hot water, a cylinder must be fitted, just like in a traditional heating system. When retrofitting a heat pump in replacement of a gas boiler, there may also be additional work to make the property suitable. This may mean some pipework being replaced and potentially larger radiators being fitted. If a property has an existing standard boiler cylinder, then it's likely that the coil inside will be an insufficient size to work with a heat pump as a larger coil is needed to ensure faster re-heat times and for the heat pump to run efficiently.

## Alternative options

When you look at Ireland's current infrastructure alongside the diversity of the communities and housing stock, pinning the future of the environment on a single type of fuel or technology is overly restrictive.

As a manufacturer, we feel that it is always best to take an individual approach to heating, suggesting the right system for the property, be that a boiler eventually running on hydrogen, an electric heat pump, or a combination of the two, and we are developing products accordingly. There is no silver bullet here, and a more complex approach is needed.



Where new-build and off-grid properties may be better served by maximising the potential efficiency increases heat pumps offer, it may be that hydrogen-ready boilers, or hybrid systems, are more appropriate for retrofit and existing gas grid properties.

### Hybrid systems

In hard-to-heat properties, where a heat pump will struggle to provide the full heat load, a hybrid system may be suitable. Hybrid systems work with all types of boilers in both on and off-gas areas. However, where space is limited, a heat pump can be installed with a combi boiler, removing the need for a hot water cylinder. The heat pump would provide up to 80% of the heat load and the boiler provides the hot water and back-up heating for the colder winter days.

Generally, with hybrid systems, there is no requirement to resize the radiators

as the boiler is operating in the coldest part of the year, at a higher flow temperature.

Assuming a hybrid system has been designed with the heat pump sized at 50% of the heat load at  $-3^{\circ}\text{C}$  external temperature, the heat pump will deliver around 80% of the seasonal heating requirement of the property with the boiler providing the extra 20% during the peak winter months. This approach also lessens the demand on the electrical grid, especially during peak times.

If a hydrogen-ready boiler was installed at a later date, it would further ensure that the property was fully future-proofed and, provided hydrogen gas was made available to the property and the electricity supply is from a renewable source, the home could be subsequently upgraded to a zero-carbon solution by converting the boiler or upgrading to a full heat pump system in due course.

### Hydrogen

Hydrogen is one of the fuels that could help decarbonise Ireland's heating systems. Indeed, earlier this year we installed the first of our 100% hydrogen boilers at a test site.

Developed at our headquarters in Remscheid, Germany, the 100% hydrogen boiler marks an important milestone, being the first time Vaillant's wall hung boiler has been installed outside of a laboratory and in the field. Fitted in a residential area, the installation will be used to inform on points such as controlling flammability and fitting requirements, ahead of hydrogen boilers being produced in large volumes.

Using the data and insight collected at the site, our team of experts will also be able to examine practicalities such as gas tightness and purging requirements, through to additional installation and commissioning needs. The results will help advise industry regulations going forward.

We have also recently installed a second appliance at a demonstration site made up of three purpose-built terraced homes. Here, the aim is to provide important proof points on how completely replacing natural gas with 100% hydrogen influences heating and hot water production, as well as proving its safety, and understanding how the gas acts when accumulated in the home. The resulting data will inform the fuel's credibility for a large-scale rollout in the future.

However, the use of hydrogen in heating is still very much in trial phases and we await clarity of when and where it will be available. The expectation is that it will be the mid-2030s before we see it rolled out on a mass scale.

Last word to Emmet Duffy, Managing Director, C&F Quadrant, Vaillant distributors in Ireland. "Here in Ireland, we totally agree with Vaillant's market assessment. There is no one way to decarbonise the way homes are heated, and we expect the route to net zero to incorporate a mix of technologies, including hydrogen and heat pumps, all of which will play their own significant role." ■



*Further innovations from Grant*

## Grant makes further updates to its boiler ranges

Grant has announced a new look for its popular Grant Vortex external model range, and the imminent launch of its new Spira Pell condensing wood pellet boiler. The new Spira Pell boasts ultra-high efficiency condensing technology and the modulating and self-cleaning wood pellet boiler offers a sustainable, low-carbon heat source for property owners.

**The units utilise** indigenous wood pellets to deliver a truly environment-friendly heating solution, particularly for those who are heating larger properties. A high space requirement is required when installing a Grant Spira Pell model to accommodate the larger biomass boiler, hopper and buffer vessel. Therefore, for those heating a smaller, urban property, a Spira Pell condensing wood pellet boiler may not be the logical choice. They should consider

a condensing oil boiler or air to water, air source heat pump.

Designed and manufactured in Birr, Co Offaly, the Spira Pell range is made using high-grade steel and stainless steel, with the same simplicity of operation of any boiler type, and is available in outputs from 5kW to 33kW.

The original Spira was introduced in 2011 and was the world's first condensing wood pellet boiler. The latest Spira Pell model includes some

new and improved features such as a universal hopper, rapid ignition and user-friendly digital display.

Turning to the Grant Vortex, this external model is one of the company's most popular condensing oil boilers. The outdoor boiler is free-standing and has been designed for situations where internal space is at a premium. Since its introduction, the external model has been finished in a galvanised casing. However, the range now sees the current casing updated to a new grey powder-coated finish.

The new goose-grey colour gives the Vortex external model range a distinctive, aesthetically-pleasing, modernised look. The team at Grant believes that this will heighten the popularity of the model and expects those in the industry to notice an uplift in requests for the new range. This change covers the four boiler models within the Vortex external range which, between them, feature outputs from 15kW up to 70kW.

These updates continue to reinforce the manufacturer's position as a leader within Ireland's competitive heating industry. The company's focus on sustainability and modernisation is shown through its continuous design and manufacture of its diverse portfolio of innovative heating solutions.

Visit [www.grant.eu](http://www.grant.eu) for more information. Follow Grant on Facebook and Twitter @GrantIRL or Instagram @Grant\_IRL. ■



Above: The goose-grey finish on the Grant Vortex external model. Right: The new Grant Spira Pell condensing wood pellet boiler.  
<https://arrow.tudublin.ie/bsn/vol61/iss5/1>



YOUR AIR, OUR PASSION

## Treble-strength heat pump options

Hidros heat pumps incorporate both heating and cooling, are available in 2-pipe and 4-pipe options, and come in three types.

### **Air source heat pumps (air to water)**

Specifically designed for use with radiant floor heating system;

### **Ground source heat pumps (water to water)**

Suitable for applications that utilise well-water or ground source probes;

### **Hybrid heat pumps**

Designed for applications where maximum efficiency is required when heating.

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quality,  
flexibility*



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Tel: 01 – 286 8244 Email: sales@eurogas.ie



# AIRSTREAM

Plug & play heat recovery unit



**mark**  
CLIMATE TECHNOLOGY  
FEELS BETTER, WORKS BETTER.

## AIRSTREAM (Air To Air)

The AIRSTREAM is available in two versions for both indoor and outdoor setup. The AIRSTREAM is used in hospitals, offices, schools, workshops and changing rooms.

### FEATURES

- Efficiency Return > 90%
- Air volumes of 600 – 45000 m<sup>3</sup>/h
- 45 mm environmentally friendly foamed sandwich panel
- The exterior plating consists of galvanized plate coated in RAL 9002 (white-grey)
- The interior plating is made of Aluzinc AZ 185 with a C4 corrosion protection
- Cold bridge-free cabinet construction with aluminium profiles
- Seamless connection of the panels on the inside with rubber seal
- Removable doors
- Available in both indoor and outdoor installations
- Plug fans equipped with energy-efficient EC motors
- Low noise level
- Plug & play version
- Supplied assembled
- High external pressure possible
- Different types of construction possible by default, but also specials on demand
- Certification according to Eurovent and RLT Richtlinie-01

### AIRSTREAM COMPACT HEAT RECOVERY UNIT

Mark Eire AIRSTREAM Compact; Our most economical and compact version of Mark Plug & Play AIRSTREAM heat recovery unit features a bypass counter flow heat exchanger and fully integrated controls.

#### FEATURES:

- Compact and standard build
- Counter flow plate heat exchanger

- Bypass for night ventilation and cooling
- EC fans
- Plug & play
- Fully integrated controls, connected to GBS, BACnet or Modbus via the Internet
- Air quantities of 600, 1400, 2000 or 3200 m<sup>3</sup>/h
- Efficiency Return > 90%
- Available in both indoor and outdoor installations



MARK EIRE BV Coolea, Macroom Co. Cork P12 W660 (Ireland)

Tel: +353 (0) 26 45334 sales@markeire.com www.markeire.com

# Ventilation is key

**Good air quality** in buildings needs to meet higher standards. To reduce CO<sub>2</sub> levels, intensive ventilation is required. Nowadays, with modern technologies this is achieved without loss of energy, (energy neutral). Therefore, low running costs are achieved. Systems with good filtration can be more than 90% efficient, according to Mark Eire BV.

If the employees and other attendees are the conclusive cause of dust loads in the room, the CO<sub>2</sub> concentration is a recognised standard for the assessment of air quality. Experience has shown that an increased CO<sub>2</sub> concentration has a negative effect on the attention span. The values shown are used to determine the CO<sub>2</sub> concentration in the room air and to also take suitable measures. The measures taken to improve air quality within the air quality range between 1000 and 2000 ppm must be documented in the risk assessment.

This also applies if the measures fall below 1000 ppm CO<sub>2</sub> in the room air. In order to maintain a good sanitary level in the ventilation system, the minimum combined filtration efficiency of mechanical supply air must comply with filtration class ISO ePM1>50% in accordance with EN ISO 16890-1.

The considerable improvements in airtightness of Irish buildings over recent years has amplified the importance of good quality ventilation. We can no longer rely on poor quality insulation and draughty windows and doors to ensure that our homes are adequately ventilated.

Ventilation is a key component in ensuring proper indoor air quality. It maintains air flow through the home and eliminates contaminants, moisture build-up and odours. Poor quality ventilation can adversely impact the health of the occupants.

For infection control, the World Health Organisation has recommended that Ventilation System run times are extended, and that as much outside air is used as possible. Demand controlled mechanical ventilation can achieve this. Demand signifies that you have ventilation when you need it. This is not possible by simply opening windows, the uncontrolled loss of energy by doing this is unacceptable, one has no filtration and constant unmanageable draughts.

The advantages of good ventilation in public buildings are numerous and include reduced absenteeism, better concentration, less allergies, better temperature control, less dust mites, less bacteria, fresh air, no draughts. For example, in a school classroom Mark Eire BV recommend 1000m<sup>3</sup> fresh air with a filtration system and optional electrical heater or low-pressure hot water if you wish. The system is easy to install under or over ceiling (site specific), with minimal construction changes and minimal disruption during installation.

No job is too big or too small for Mark Eire BV which can supply single room or complete Ventilation Systems,

For further details contact Mark Eire BV.

Tel.: +353(0)2645334 Fax.: +353(0)2645383

Email: sales@markeire.com



## ERV HEAT RECOVERY UNIT

Ceiling heat recovery unit with an efficiency up to 86% (Delivery from stock!) The Mark ERV is the ideal solution for energy efficient ventilation and a comfortable indoor climate. The appliance is equipped with a high efficiency counter flow heat exchanger with a heat recovery efficiency of 75-86%. This means that 75- 86% of the energy expelled is supplied to the fresh intake air. This high efficiency means that in many cases no after heating is required. Possible applications for the ERV include offices, showrooms, apartment complexes and schools.

### Characteristics

- High efficiency for optimal air comfort
- No condensation drain required
- Exchange of heat and moisture
- Energy-saving BLDC motor with 10 speeds
- Innovative HR counter flow exchanger
- Low weight
- Indoor installation
- Automatic bypass, intelligently controlled by outside temperature
- Plug & play control, optional CO<sub>2</sub> and humidity control function, remote control and Modbus/BMS\* control available
- ErP 2018 ready! \* for type 2000 only available at extra cost. Inquire about the possibilities.

### Optional:

- Electric re-heaters
- Disinfection-unit to sterilize the outdoor polluted air The Mark ERV is intended as a decentralized heat recovery unit. For central heat recovery, please refer to the Mark AIRSTREAM.

TABLE 5:

Indoor Air Quality (IDA) can be classified as follows:

Ventilation Amount/person (m <sup>3</sup> /hr)		
IDA 1	High Air quality	>54
IDA 2	Moderate Air quality	36-54
IDA 3	Poor Air quality	22-36
IDA 4	Low Air quality	<22



# Heat pumps – some are greener than others

With many industrial, commercial and retail clients introducing sustainable energy policies, Euro-Fluid Handling systems are supporting these green initiatives by offering the future of heat pump solutions. This comes in the shape of the unique Euroklimat HERA range of air to water heat pumps. These are carbon-neutral products that utilise R290 as a natural refrigerant, meaning no greenhouse gas refrigerants are used.

## R290, the ecological choice

Due to the concern for the effects on the global environment caused by the high global warming potential (GWP) of traditional hydrofluorocarbon (HFC) refrigerants in heat pumps, there is a large interest in Europe and elsewhere for the use of hydrocarbons as refrigerants.

Propane is a hydrocarbon, it is natural, efficient, ecological and safe to the environment, with a Global Warming Potential (GWP) of 0.02 (for context, R410a has a GWP of 2088). It has practically zero environmental impact and R290 propane offers an increase of 5% to 12% higher efficiency when compared with R410a.

## Environmental impact of heat pumps

The ecological choice of R290 propane is the future of heat pumps and will soon be the benchmark for commercial heat pump selection. When a carbon footprint comparison is made between a 50kW heat pump using R410a versus the Euroklimat R290 version, the evidence is clear cut and is illustrated in Figure 1.

A typical 50kW air source heat pump (ASHP) using a 10kg charge of R410A has the carbon impact equivalent of 21 tonnes of CO<sub>2</sub>. The same system with R290 has 15kg of CO<sub>2</sub> equivalent and now, using the new AR6 classification, the carbon impact can be as low as 90 grammes.

## Innovative

The new HERA reversible heat pumps are designed to withstand even the most severe winter conditions since they are designed and tested to work down to -20°C ambient temperature.

Innovative and customised software allows frost cycles to be managed dynamically and efficiently. A special algorithm developed by the Euroklimat technical team simulates an artificial intelligence that allows it better exploit the machine's performance and minimise energy waste during defrost phases. In fact, the HERA range is the winner of the Innodriver European call for innovation.

## Inverter compressor technology

Inverter compressor technology offers new opportunities for heating systems, making for reduced energy consumption and lower running costs. Continuous adaptation to heating or cooling demand provides higher energy savings and accurate temperature control. The full HERA range up to 710kW benefits from inverter technology.

Safety is also a consideration and R290 is a non-toxic flammable refrigerant. An Ex-rated gas detector is installed as standard while ATEX-certified components are used where necessary. A separate compartment for the electrical panel guarantees very high levels of safety.

## Ecodesign ready

Hera heat pumps offer SCOP performance at both low and medium temperature in compliance with Ecodesign and fully conform with (EU) Regulation No 813/2013 and 811/2013.

Euroklimat started designing R290 heat pumps decades ago and now has significant case studies, practical experience and evidence of its successful use. ASHP is still the main focus but water to water (W2W) appliances will also be of significant interest, especially when thinking of heat pump cascade systems and the system efficiency calculations now advised in CIBSE AM17:2022.

Contact: Stephen Costelloe,  
Euro-Fluid Handling Systems.  
T: 01 460 0353; E: stephen@euro-fluid.com;  
www.euro-fluid.com ■

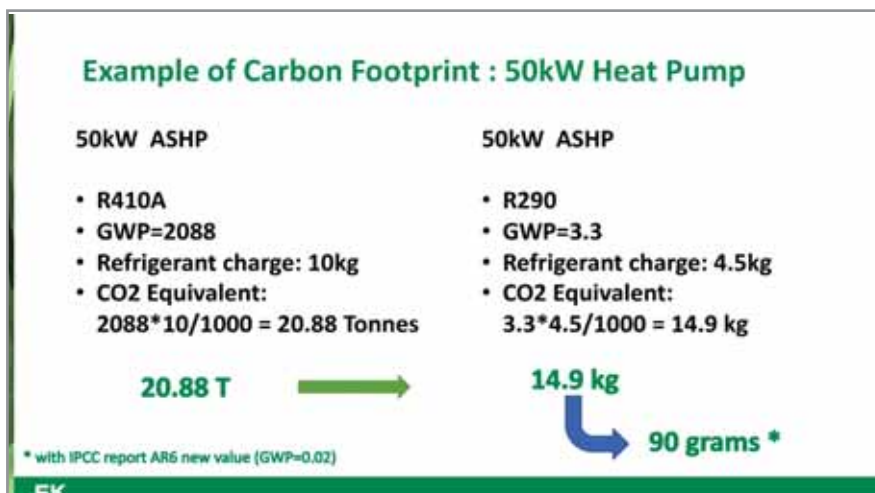


Figure 1 – Carbon footprint comparison between R410A and R290 models  
<https://arrow.tudublin.ie/bsn/vol61/iss5/1>



[grantengineering.ie](http://grantengineering.ie)

# Build warmth with Grant

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Trust Grant on the journey to warmth and comfort by sending house plans to [heatpump@grantengineering.ie](mailto:heatpump@grantengineering.ie)



**Grant Uflex Underfloor Heating**



**Grant AERONA<sup>3</sup> R32 Heat Pumps**



**Grant Afinia Aluminium Radiators**



**Grant Integrated Hot Water Cylinders**





Left: An example showing the ZETA REV HP XT used in the Enniskillen PCC project in Co Donegal.

## Commercial heat pump solutions

# Unitherm partners with Bluebox

Unitherm Heating Systems' Commercial Division, with its internal and external support teams, operates as a specialist heat pump supplier that aims to identify and implement the best heat pump solutions for both new-build and retrofit. It is now a market leader in the sector and partners with some of the world's leading suppliers to bring cutting-edge technology to the marketplace.

**A key example** is the Bluebox range of commercial heat pumps that offer a diverse range of energy efficient heating and DHW solutions to meet the growing demand for renewable and sustainable systems from the commercial sector. Bluebox was <https://arrow.tudublin.ie/bsn/vol61/iss5/1>

established in 1986 as a specialist in cooling but later became a leading manufacturer of commercial heat pumps, which have been patented. Today it is part of Swegon AB, the Swedish multinational group.

With increased legislation on energy efficiency, there is a growing need to find alternatives to high-carbon oil and gas boiler systems. The Bluebox range of heat pumps meets these challenges. Examples from the range include the award-winning Titan Sky propane low GWP heat pump range, from 30kW up to 200 kW with options to cascade units for greater heating demands. Then there is the newly-introduced Geyser Sky range of high-temperature heat pumps with water temperatures up to 78°C. These offer an ideal solution to DHW production and are an easy boiler replacement.

To meet the heating and DHW requirement, design engineers must understand the legislation and compliance

related to heat pumps. Commission Regulation (EC) No 813/2013 established Ecodesign requirements for placing on the market and/or putting into service space heaters and combination heaters with a rated heat output  $\leq 400\text{kW}$ . This regulation classifies heat pumps into low temperature or medium temperature applications.

Low temperature means an application where the heat pump space heater delivers its declared capacity for heating at an indoor heat exchange outlet temperature of 35°C. Medium temperature means an application where the heat pump space heater delivers its declared capacity for heating at an indoor heat exchange outlet temperature of 55°C. Ecodesign requirements define the minimum values for the seasonal space heating efficiency of both medium and low temperature heat pumps.

EN14825 specifies the rated conditions for both low and medium applications. Regulation 813/2013 legislates that all suppliers and dealers of heat pumps with a rated capacity  $\leq 400\text{kW}$  must provide a *fiche* document for their products. The specific technical information required in the product *fiche* includes the rated heat output, along with the seasonal space heating efficiency calculation per European standards EN14825 and EN 14511 for either low temperature or medium temperature applications.

The Unitherm commercial design team is on hand to provide compliance advice and to help select the right heat pump technology, whatever the project, from the low temperature Zeta HP range to the Zeta HP XT range of high temperature heat pumps.

Contact: Unitherm Heating Systems, Commercial Division. [commercial@unithermhs.ie](mailto:commercial@unithermhs.ie) ■



Air-to-Water reversible Heat Pump for outdoor installation

Nominal Heating Capacity: 35 – 710 kW | 50Hz

## R290 - The Ecological Choice for Heat Pumps



**Model:** 35-1-1 ↔ 710-4-4

**Heating capacity:** 35 ↔ 710 KW

**Cooling capacity:** 30 ↔ 625 KW

### The advantages

- R290 – Natural Refrigerant Propane – Green and Efficient
- Green Technology – GWP (0.02) – ODP (0)
- Carbon Neutral Product – No Greenhouse Gas
- Innovative – Operation down to -20°C
- Supporting Sustainable Energy Policies
- Efficient – up to 710 kW Reciprocating Compressor with Inverter – Minimal Energy Consumption
- Intelligent Defrosting System
- Eco-Design Ready – conforming to (EU) Regs No 813/2013 and 811/2013

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Published by ARROW@TU Dublin, 2022



## “Radiators DO work with low temperature systems”

Leading radiator manufacturer Stelrad is seeing its radiators being specified more and more for renewable heating systems as the popularity of heat pumps continues to rise. Radiators are still a popular and sensible choice as homeowners are familiar with how they heat their homes. When properly sized, they are the perfect solution to share heat from heat pump installations.

So as these low temperature systems increase in popularity, Stelrad is keen to set the record straight when it comes to some of the misconceptions currently circulating about radiator sizing and compatibility versus the alternative options.

Stelrad’s Head of Marketing, Chris Harvey, says: “Radiators work in very different ways to alternative heating choices, but they do a similar job, each with benefits, depending on the circumstances. We want to put the facts out there for installers and homeowners to choose for themselves, without being bamboozled into thinking there is only one option.

“All radiators should be sized correctly for the rooms they are installed in and we offer a free radiator sizing and heat loss calculator on our website. You will require larger radiators for a renewable, low temperature system than you would for a traditional boiler-driven heating system because the water flow temperature in the system <https://arrow.tudublin.ie/bsn/vol61/iss5/1>



Below: With three panels and three fins, these K3 radiators have the same radiator footprint but with 50% additional metal surface to provide increased heat levels.

is lower. But that can mean a larger radiator, possibly a vertical radiator or one of our increasingly-popular K3 radiators – with three panels and three fins. These have the same radiator footprint for a room as a current K2 radiator, but with 50% additional metal surface to provide increased heat levels.”

Stelrad has invested in developing its range of radiators to ensure it can offer radiators that provide sufficient heat from renewable heating systems. That it has succeeded is evidenced by the high number of new-build developers that have stuck with radiators as their key form of heat emitter, and there are many case studies to show how effectively this works.

Stelrad has also developed a specialist CPD to provide facts and figures, along with evidence-based information, to help installers and specifiers choose the right products for their installations. “We’re suggesting that installers should rely on hard facts and figures, rather than misleading statements that are currently circulating in the heating sector,” concludes Harvey.

See also “Fit for the Future” at [www.stelrad.com](http://www.stelrad.com) to find out more about radiators partnering with heat pumps. T: 0844 543 6200; E: [marketing@stelrad.com](mailto:marketing@stelrad.com)

Alternatively, see regular updates from Stelrad on Twitter @Stelrad and Facebook @StelradRadiators. ■

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A I R C O N D I T I O N I N G

# HEAT PUMPS

## HWA1-A

Air-Cooled liquid chiller for outdoor installation

### Capacity range

109kW to 345kW



All models available in R290 Spring 2023



## i-HPV5H

Air/water inverter heat pumps with axial fan

### Capacity range

40 kW to 70 kW

Ensuring best energy efficiency



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Unit 1, Furry Park Industrial Estate, Dublin 9. T: 01 842 7037.

South Ring West Business Park, Tramore Road, Cork. T: 021 432 1066.



# Sustainable heating with reduced CO<sub>2</sub>

Established in 1992, Maxa is now one of the world's leading suppliers of environmental comfort solutions with a vast portfolio of air conditioning, chiller and heat pump units to cater for both domestic, commercial and industrial applications. Apart from saturation coverage of its native Italy, Maxa also has a presence in 35 countries throughout the world. This figure is constantly growing year on year.

**In Ireland Maxa** is represented by Hevac where Paul Devereux, Specification Manager, is responsible for the commercial and industrial range of heat pumps and chillers. "Today it is all about making the primary energy source of buildings environmentally friendly while, at the same time, reducing their carbon footprint. In Maxa we have a range of options that deliver 100% to that brief, thanks to continuous investment in R&D that results in a constant stream of innovative products.

"Today's marketplace also demands products and system solutions that are energy efficient, sustainable and contribute to the circular economy. Here again Maxa excels. For instance,

with the Maxa air cooled liquid chiller range featuring reversible heat pump for outdoor installation, the ecological refrigerant R32 is used. Other features include the scroll compressor and axial fan. Meanwhile, the installation of a supplementary exchanger working as a condenser in parallel to the air conditioning battery allows for sanitary hot water production independent from the unit working mode.

"Another example is the i-HP V5H R32 inverter heat pump range. These units reach high SEER and SCOP values thanks to the incorporation of DC inverter scroll compressors, EC fan exchangers and their high efficiency.

They deliver high comfort levels with low energy consumption and can produce hot water up to 60°C, even in the coldest conditions. Test data is available for both low (35°C) and high (55°C)

temperature applications, average climate conditions.

The forthcoming change to R290 in the Spring of 2023 will enable the MAXA air source heat pumps achieve higher temperatures, while also maintaining high efficiencies, as R290 is a natural refrigerant with a low GWP.

Designed for outdoor installation (with indoor ducted version available on request), the structure consists of high-thickness profiles made of hot-dip galvanised steel sheets. They are coated with polyester powder and also with a RAL 7035 bush-hammered finish that is resistant to weathering (classification of corrosivity similar to C3 according to EN ISO 12944-2: 2017). The removable panels allow for easy maintenance inside the refrigeration circuit and the hydraulic circuit. Additional options available include super silencing, onboard inverter pump/buffer tank and full range of BMS connectivity.

"The current Maxa range is ideally suited to the Irish market and we have supplied numerous projects throughout the country, including nursing homes, primary care centres, commercial buildings, leisure facilities and public libraries. Where the brief calls for energy efficient and sustainable heating and cooling, in Maxa we have the perfect solution no matter what the application."

Paul Devereux,  
Specification Manager, Hevac.  
T: 01 419 1919; M: 086 173 8060;  
E: paul.devereux@hevac.ie ■



Maxa air cooled liquid chiller.



The Maxa i-HPV5H air to water inverter heat pump with axial fan.

COOLING 49-1133 kW

HEATING 52-1156 kW

COOLING + HEATING  
50-1495 kW



## HIGH EFFICIENCY 4-PIPE MULTI-FUNCTIONAL SYSTEMS

- ✓ Simultaneous production of cooling, heating and domestic hot water
- ✓ High full and part load efficiency in accordance with EcoDesign 2021
- ✓ Compact systems with integrated hot and cold water pumps
- ✓ Low noise levels for installation in sensitive environments
- ✓ Full control with web based monitoring package



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Tel: 01 – 409 8912 Email: info@coreac.com





## Holistic design from Mitsubishi Electric HVAC solutions must embrace specification approach

Mitsubishi Electric is a renowned market leader in the HVAC sector with a portfolio of quality-driven, pioneering products and systems. It offers clients a full range of air conditioning, heating and ventilation solutions for both domestic and commercial applications, along with all related controls and management systems. An ongoing commitment to investment in R&D also ensures that innovative, technologically-advanced solutions are constantly being brought to the marketplace.

**Examples include the** QAHV, Plasma Quad Connect and HVRF. The QAHV CO<sub>2</sub> commercial heat pump was specifically designed for commercial sanitary hot water applications where gas boilers, CHP or electric heating have traditionally been used. Utilising the natural and stable refrigerant CO<sub>2</sub> (R&44), the environmentally-clean solution enables compliance with strict planning laws and boosts BREEAM points.

Plasma Quad Connect is a powerful bolt-on air purifying device that delivers plasma quad technology to both new

and existing installations of Mitsubishi electric air conditioning units. Simple to install, service and maintain, it offers peace of mind to specifying consultants, contractors and clients alike.

With today's buildings rightly facing tough legislation that traditional HVAC solutions cannot satisfy, Mitsubishi Electric's Hybrid VRF (HVRF) system combines the very best elements of VRF and chiller technology to offer a truly integrated solution. It offers the complete solution for all commercial building types and applications.

### Team specification approach

However, equally important is the manner in which these solutions are presented. Digitalisation is the primary driving force in modern-day building services engineering and this calls for a cohesive approach that includes all the various disciplines involved in a project. Be it domestic or commercial, the same principles apply.

Hence the team specification approach by Mitsubishi Electric when liaising with system designers, installers and clients. It takes a holistic view when helping devise project solutions. This ensures that the inter-dependent relationship between all elements, from design stage right through to final commissioning and hand-over, is fully considered in the context of the building's usage.

In addition to covering all the disciplines involved, collectively the team represents vast experience and technical know-how. This also includes a thorough understanding of all relevant standards and regulatory requirements, in addition to the ideals and objectives embodied within Ireland's Climate Action Plan and the broader pan-European Green Deal and REPowerEU initiatives.

Contact: Mitsubishi Electric.  
T: 01 419 8800;  
E: sales.info@meir.mee.com;  
www.mitsubishielectric.ie ■



The Mitsubishi Electric specification team – Tony Duffy, Technical Services Manager with Shane Toye, Specification and Consultant Sales, Andrew McEvitt, Client Manager and Margaret Rafter, Consultant Sales Engineer.  
<https://arrow.tudublin.ie/bsn/vol61/iss5/1>

Sweeney's Corner project

## Euro Gas – the complete energy centre and HVAC solution provider

Euro Gas was awarded the order for the supply of the mechanical services equipment for the 235-bed student residence on Sweeney's Corner in the Newmarket area of Dublin 8.

**The development spans** four blocks of accommodation with varying numbers of floors above ground. Each of the individual buildings comprises student accommodation on top, with retail units located below on the ground level. The main plantroom is located on the roof and features a total load of 740kW of combined boiler and air to water output.

Main contractor was BAM Construction while the mechanical contractor was Dominic O'Connor Ltd with Ethos Engineering acting as the M&E consultant.

Dominic O'Connor Ltd commented: "Euro Gas products and packaged plantrooms are of an exceptionally high standard. However, what gives us peace of mind is their technical ability to back up all of their products, and the advice they provide on the best way to integrate various technologies, from gas boilers to air to water heat pumps, to ensure the system runs



**Hidros air to water heat pump installed at Sweeney's Corner student accommodation development.**

as efficiently as possible. We look forward to working with them on more projects in the near future."

### Scope of delivery

Euro Gas provided the mechanical services equipment across the entire project, including:

- Pak Plant packaged plantroom;
- Remeha Quinta Ace boilers;
- Cordivari buffer tanks;
- Grundfos pumps and pressurisation units;
- Hidros LHA air to water heat pump;
- Fortes heat interface units;
- Gas Sense gas detection system.

Euro Gas Ltd is the leading company in the HVAC sector throughout all of Ireland. Established in 1985, the aim is to always provide customers with the highest degree of technical services and sales support. This extends not just to the production values of the system, but also to system design, application of products, and the speed with which these enquiries are handled.

Euro Gas Ltd is committed to offering its customers high performance, energy and cost-saving heating, ventilation and air conditioning products to cater for all project types.

Contact: Euro Gas.

T: 01 286 8244; E: sales@eurogas.ie;

www.eurogas.ie ■



**The Pak Plant packaged plantroom at Sweeney's Corner.**  
Published by ARROW@TU Dublin, 2022



# Single and twin impellar centrifugal pumps

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

Centrifugal pumps are very common because their characteristics are perfect for multiple uses covering everything from water supply and irrigation systems through to civil and industrial applications, fire-fighting, heating, air-conditioning, cooling and circulation systems.

In answer to the requirements of all these sectors, the Calpeda N/NM pump range offers quality and performance in a multitude of models, meaning that clients can always find the most suitable solution for their needs. They are the result of significant research involving both mechanical and fluid dynamics' characteristics, as well as on the materials used and the product designs.

Key product ranges within the full portfolio of single and twin impeller centrifugal pumps are the N and N4; NM and NM4; NMS and NMS4.

## MODELS N & N4

Single-stage end-suction centrifugal pumps with bearing bracket. The electropumps N, B-N, N4, B-N4 series comply with the European Regulation No 547/2012 in force, starting from 01.01.2013.

Nominal duty points and main dimensions are in accordance with EN 733.

Back pull-out construction for simple and quick dismantling and reassembly.



**N, N4:** Version with pump casing and lantern bracket in cast iron.

**B-N, B-N4:** Version with pump casing and lantern bracket in bronze (the pumps are supplied fully painted).





# water passion ...

## Applications

- ✓ Clean liquids, without abrasives, which are non-aggressive for the pump materials (contents of solids up to 0.2%)
- ✓ Water supply
- ✓ Heating, air conditioning, cooling and circulation
- ✓ Civil and industrial applications
- ✓ Fire-fighting applications
- ✓ Irrigation
- ✓ Agriculture
- ✓ Low noise requirement
- ✓ Commercial buildings
- ✓ Sewage/slurry disposal
- ✓ Food and beverage
- ✓ Chemical/pharmaceutical

**think outside the box!**

### Contact

#### **Calpeda Pumps (Ireland) Ltd.**

Unit 5, Old Quarry Campus,  
Blanchardstown, D15 Y4EK

Tel: 00-353-1-8612200

Fax: 00-353-1-8612203

Email: [info@calpedaireland.com](mailto:info@calpedaireland.com)

Published by ARROW@TU Dublin, 2022

## MODELS NM4 & NMS4

Close-coupled centrifugal pumps featuring electric motor (up to 15kW) with extended shaft directly connected to the pump. New bracket construction for standard motors (stub-shaft construction) from 18.5kW to 75kW with integrated thrust bearing.

Pump casing with axial suction and radial delivery on top. Main dimensions and performance according to EN 733 with additional sizes for completion.



## MODELS NM & NMS

Close-coupled centrifugal pumps featuring electric motor (up to 30kW) with extended shaft directly connected to the pump. New bracket construction for standard motors (stub-shaft construction) from 37kW to 75 kW with integrated thrust bearing.

Pump casing with axial suction and radial delivery on top. Main dimensions and performance according to EN 733.

**NM:** Version with pump casing and lantern bracket in cast iron.

**B-NM:** Version with pump casing and lantern bracket/casing cover in bronze (the pumps are supplied fully painted).



Taking a holistic view of our housing stock

# Healthy Homes Ireland forum launches new initiative

Healthy Homes Ireland (HHI), supported by Velux and the Irish Green Building Council (IGBC), recently held its first forum meeting and heard from experts on the subject of healthy homes. This new venture is aimed at positively influencing public policy and building industry practice by bringing together stakeholders to consider how to address health problems caused by existing low-quality homes, and to ensure there is no conflict between health and energy efficiency in new-build homes.

**A variety of** factors are involved in making homes, both new-build and retrofitted, environmentally sustainable and healthy to live in. Indeed, it was pointed out at the forum that a home which does not foster healthy living conditions cannot be considered to be truly <https://arrow.tudublin.ie/bsn/vol61/iss5/1>



sustainable. The older building stock presents a particular challenge, and as the government's retrofit programme is rolled out in the coming years, this is a key factor that will have to be considered.

This first HHI forum started the process of gaining new insights that will advance the provision of greener and healthier Irish homes. By bringing together those with an interest in, and responsibility for, delivering such homes, HHI aims to develop evidence-based policy solutions that can be presented to government. It also aims to improve understanding among policymakers and the broad construction sector about what is a healthy home and how to achieve it.

Healthy Homes Ireland is led by a steering group of 13 industry practitioners and academics. At the forum, members of the steering group were joined by over 40 experts in construction,

engineering, architecture, public health and the environment. All participated in a workshop that was designed to gather feedback on the definition of a healthy home and to consult on a research project the forum has commissioned CBRE to undertake.

Speaking after the forum's first meeting, Kevin O'Rourke, the Chairperson, Healthy Homes Ireland, said: "There are three key facets to the Healthy Homes Ireland initiative. Firstly, it is engaging an active cross-section of experts (forming a steering group) and other key stakeholders across the housing sector.

"Secondly, CBRE will deliver a research assignment for completion by early 2023. The first phase of the research aims to map the arena, to investigate at a macro level the extent to which current public policy and regulation, building industry practices and other factors help or hinder the achievement of healthy homes, and to identify if and where gaps exist. This will draw on a range of existing research sources and policy documentation, including aspects such as Building Regulations Technical Guidance Documents, the Climate Action Plan, Housing for All, the National Skills Strategy and the National Development Plan. This is expected to deliver new insights.

"Thirdly, the assignment will conclude by drawing together the research evidence into a report that will present a set of policy recommendations to government, prioritising those likely to have the most impact and those that are easiest to implement.

"The main purpose of the first HHI forum has been to consult on the full range of what is meant by a healthy home and to help set the

priorities for the research. This is the first step in this nine-month project.

“The event provided insights on how improving energy efficiency of homes and making them healthier must go hand-in-hand. While decarbonising homes is critical to reach Ireland’s climate targets, health risks from poor indoor air quality, insufficient light, under-heating or overheating, damp and noise pollution must be tackled.

“In the drive for greener homes, whether new-build or retrofit, this is about taking a more holistic view, avoiding unintended consequences and minimising risks, and seeking to future-proof our housing stock.”

Head of Sustainability at CBRE Ireland Rachael McGinley, who is leading the research team, said: “The HHI research being undertaken by CBRE Ireland will help inform future policy and practice that delivers greener and healthier homes for the people of Ireland. We will publish a final report in March 2023 that will be the basis of a series of policy recommendations to the government.”

Included in its review of current policies, codes and other professional guidance, the research team will draw on a pool of knowledge and experiences from key stakeholders, many of whom participate in the Irish Green Building Council (IGBC). Both Velux and the IGBC are active in a number of relevant international research, developmental and educational projects in the EU arena, contributing to the enhancement of the built environment.

Velux, which is sponsoring the work, has published an annual European healthy homes barometer since 2015. This

Published by ARROW@TU Dublin, 2022

research-based report takes the pulse of Europe’s building stock and, since 2015, has highlighted the importance of improving buildings to address health and climate concerns across populations in different countries.

### **What is meant by a healthy home?**

An early task of the HHI steering committee and forum was to define the meaning of “healthy home” and to test it with the stakeholders. The following two-tier definition has emerged:

“A healthy home is a user-friendly home, sustainably designed, constructed and maintained to support the complete physical, mental and social well-being of its occupants. It is well ventilated, has good indoor environmental quality, is free from harmful pollutants, is bright, and facilitates comfortable temperatures. It has good sanitation and provides protection from excessive noise. A healthy home is one which is well connected to the local community, green space and sustainable transport options.”

### **Issues discussed**

In terms of environmental conditions, some perhaps familiar concerns regarding poor air quality, cold, dampness and poor daylighting were discussed. A relatively new concern highlighted was the risk of solar overheating and measures to guard against that risk. Extending beyond the dwelling itself, the importance of neighbourhood, being well



Kevin O'Rourke, Chairperson, Healthy Homes Ireland.



connected to community, and having access to sustainable transport options in influencing people's wellbeing also received attention.

New-build and retrofit are both important in delivering quality housing, though inherently, the options with energy efficient retrofitting are more constrained.

Of interest in this regard is a concept put forward at the forum by Nick Baker of the UK Architectural Association who has extensive experience in this field. Nick queried the traditional rigid approach to prescribing indoor environmental conditions in design codes. He recommends that a bandwidth of indoor temperature conditions should be considered, tolerating a degree of drift for a small number of hours per year. That is, being content with conditions which are "good enough" rather than so-called "optimal".

The vital role of the household itself in ultimately achieving healthy conditions in the home (e.g., opening windows, understanding heating control) is an important concern. Their day-to-day operation will determine whether the asset of a well-designed and well-built home provided by the industry actually delivers good-quality living conditions. This highlights the importance of educating house owners in these matters, including the provision of high-quality, practical householder manuals.

In terms of HHI delivering practical outcomes, the holistic nature of this topic means that the full range of factors need to be captured in the research, policies and the guidance. But such a wide and complex range could be a recipe for paralysis, and therefore it is a concern to ensure that Healthy Homes Ireland puts forward initiatives that are prioritised according to impact and according to ease of implementation.

<https://arrow.tudublin.ie/bsn/vol61/iss5/1>



## The HHI research being undertaken by CBRE Ireland will help inform future policy and practice that delivers greener and healthier homes for the people of Ireland.

It is therefore intended to present those findings in a way that will lead to practical implementation on the part of those responsible for the planning, design, construction and servicing of our housing stock. There will also be a follow through with matching guidance to householders on the issues.

### Influencing public policy

Public policy in this context is mainly expressed through various parts of the Building Regulations relating to health, safety and welfare – for example, covering energy efficiency, ventilation, sound, drainage and wastewater, resistance to moisture, radon protection – and the technical guidance and detailed support documents and other references that accompany those regulations. Therefore, it makes sense for the findings of the HHI research to feed into such pre-existing documents in such a way as to make health and wellbeing integral and explicit provisions within these documents.

Moreover, such policies apply to both new-build and retrofit work. Readers of *Building Services Engineering* will be aware of the updates to the Building Regulations Part L in relation to "Nearly Zero Energy Buildings" (NZEB) that came into force in 2021, strengthening the energy performance obligations covering both new-build and especially retrofit. It is worth

noting that the NZEB provision within the EU Energy Performance of Buildings Directive (EPBD) requires that the energy performance requirements are met without compromising the health and comfort of the occupants, by maintaining acceptable levels of temperature, humidity, air quality and movement, lighting levels and quality, and noise.

The HHI work may also help to enhance what useful guidance (e.g. the NSAI Code of Practice SR 54) is already in place with the national retrofit programme being administered by SEAI and with which contractors must comply. It might also offer new guidance on issues that might not have been covered in existing codes. However, the specifics will depend on what research evidence emerges from identifying best practice solutions in Ireland and internationally.

The solution options with energy efficient retrofitting can be restricted, and some degree of technical compromise may be unavoidable, for example in relation to respecting aesthetics with period houses. However, it also needs to be recognised that energy efficient retrofitting can equally provide an opportunity to get other things right as part of a more extensive renovation – for example protecting against dampness, providing healthy ventilation, and providing good standards of daylight.

### An important final note

We understand that the purpose of good planning and design, and of good quality construction, is to provide an environment that enables good health and wellbeing to flourish. However, we recognise that this does not depend solely on the industry, and that an educational dimension in guiding healthy user behaviours and practices within households is also required. ■

Now available in stand-alone device

# Panasonic's NEW Air-e: nanoe™X

Panasonic Heating & Cooling Solutions has announced details of Air-e, its first stand-alone, ceiling-mounted nanoe™X generator, which will be available from October onwards. Air-e has low power consumption and is ideal for a wide variety of applications where indoor air quality is a priority. These include hotels, schools, care homes, hospitals, offices, restaurants and homes.

**Improving indoor air** quality is a top priority for Panasonic, and the new Air-e nanoe™X generator has been designed to satisfy the many and varied HVAC project needs on the market. A major advantage is that this new, stand-alone device brings nanoe™X benefits to spaces that have recent HVAC systems but do not have nanoe™X technology built-in.

The maintenance and service-free technology produces hydroxyl radicals (also known as OH radicals) up to 4.8 trillion per second. Abundant in nature, hydroxyl radicals have the capacity to inhibit certain pollutants, viruses and bacteria, and to clean and deodorise.

Studies have shown that the nanoe™X generator can inhibit the novel coronavirus (SARS-CoV-2) and the influenza virus H1N1 subtype by up to 99.9%. nanoe™X technology can bring these incredible benefits indoors so that hard surfaces, soft furnishings and the indoor environment

can be a cleaner. This results in a more pleasant place to be, 24 hours a day, seven days a week.

Air-e comes in a compact, modern and easy to install design, weighing just 1.1 kg. It is super quiet at just 27 dB(A) for discreet operation. It is also suitable for retrofit projects as it can be installed without complicated piping work. One device is sufficient for spaces of around 20 sqm, offering powerful benefits. Multiple devices can be installed in a room to ensure the Air-e devices cover the entire area.

## Benefits

- ✓ nanoe™X purification
- ✓ Inhibits viruses and bacteria, including SARS-CoV-2
- ✓ Super-quiet operation
- ✓ Low power consumption
- ✓ Easy installation
- ✓ Contemporary design
- ✓ Compact size
- ✓ Deodorisation
- ✓ Hydrates skin and hair

Contact: Panasonic Ireland.  
Orlaith Gillen. T: 087 195 2573;  
E: orlaith.gillen@eu.panasonic.com;  
Clive Boyd. T: 087 690 9127;  
E: clive.boyd@eu.panasonic.com  
Paul McGettigan, T: 087 769 1898  
E: paul.mcgettigan@eu.panasonic.com ■





# Wilo Group goes platinum

Ecovadis, the world-wide independent rating provider, has awarded Wilo Group the platinum medal for sustainability. Following silver awards in 2019 and 2020 and gold in 2021, this is the first time Wilo has received the rating agency's highest award, showcasing just how much work Wilo is putting into its sustainability goals. Only 1% of the 90,000 companies assessed worldwide by Ecovadis achieve the platinum rating.

**Oliver Hermes, President** and CEO of the Wilo Group, comments: "Sustainability has always been an integral part of our DNA and this platinum rating acknowledges our strategy and is a source of great pride. I am confident that by working together we can slow down climate change and achieve our global climate protection goals. With our efforts, we hope to encourage others to pursue sustainability and climate protection beyond company and national borders."

The Ecovadis rating is one of the most internationally-renowned sustainability ratings. Using a score-card, the rating measures various indicators such as sustainable objectives, implemented activities,

certifications and recording measures. Depending on the industry, company size or geographical location, the rating considers 21 criteria along the entire value chain ... from purchasing to production and human resources management.

The platinum certification is just one of the prestigious awards that Wilo Group has received in recent years, including the German Sustainability Award in 2021 in the "Climate" transformation field. Wilo is also one of the "50 Sustainability and Climate Leaders" worldwide.

Derek Elton, Managing Director of Wilo Ireland, comments: "Receiving the platinum medal from Ecovadis highlights just how much Wilo prioritises sustainability measures across the entire company globally. Selected as



## Gains to date

- 90% increase in recycling rate
- 100% use of reusable packaging
- Climate-neutral production
- 50 million t CO<sub>2</sub> reduction
- 250 t reduction in raw materials

one of the "50 Sustainability and Climate Leaders" worldwide, Wilo has developed an explicit sustainability strategy. This involved the identification of key issues and specific goals have been formulated within target action areas under the main headings of water, energy and emissions, materials and waste, employees and society.

"Wilo Group is truly setting the benchmark when it comes to environmental protection and this award is an additional incentive for us to further pursue our strategy here in Ireland, as well as globally." ■

Left: Derek Elton,  
Managing Director  
Wilo Ireland.



Multi-DENCO® and Adia-DENCO® are Eurovent certified and ErP compliant.



## FläktGroup – partner of choice for DC cooling

**Multi-DENCO® from FläktGroup** is a flexible and adaptable product that can work with either room cooling or aisle containment and can humidify, dehumidify and even heat a room. With such a large number of options, features and designs, it can be moulded to suit most needs.

The Multi-DENCO® range has essentially re-invented the CRAC, raising the bar regarding efficiency levels that can be achieved in data centre cooling. FläktGroup even offers on-board energy and airflow monitoring in order to prove it. Details of the various options available are as follows:

**A version** – This uses variable speed compressors in the indoor unit, and EC fans in both indoor and outdoor units;

**C version** – This has high-performance chilled water coils, together with a large variety of control and valve options, including PICV;

**D version** – This incorporates any two of the above cooling systems within a single indoor unit to provide the ultimate in terms of autonomy;

**F version** – This is the flagship of the range, using indirect free cooling to

achieve an extremely low annualised pPUE of only 1.1. This incorporates an extremely energy-efficient free cooling feature to complement all the benefits of the A-version design;

**X version** – This can be used where internal noise may be a concern, as the compressors are located in the outdoor unit.

Meanwhile, Adia-DENCO® is FläktGroup's adiabatic cooling system and it was specially developed for data centres. It is based on the simple principle that evaporating water removes heat from its surroundings. Low water consumption, flexibility, a full air handling unit range, high quality and reliability make it the number one choice for the sector.

As a result of its performance profile, the new Adia-DENCO® cooling system satisfies the new environmental recommendations for computer centres, which advise maximum supply-air temperatures of 27°C. The very low number of annual hours with outside temperatures above 29°C (in moderate climates) reduces the annual energy requirements for compression refrigeration to an absolute minimum.

### Project examples

#### ■ **Kao Park, Harlow, UK**

FläktGroup has supplied 19 Adia-DENCO® units together with the RO plant. No mechanical cooling required to deliver the required temperature set-point supplied to the data halls;

#### ■ **Data Centre No:1 Campus, Norway**

This facility needed an energy efficient adiabatic cooling solution with low ambient conditions, water savings and was specially designed for high snow loads and very low ambient conditions;

#### ■ **Telecoms Datacentre, Dublin, Ireland**

FläktGroup supplied a free-cooling solution to a live comms room in Dublin. This will provide efficient cooling and, in turn, reduce the carbon footprint.

#### ■ **UMCG Data Centre, Netherlands**

This project needed an energy efficient solution for the data centre of one of the largest hospitals in the Netherlands and Adia-DENCO® units provided the perfect solution.

As a result of this extensive reduction of the compression refrigeration needed, operators of computer centres can save up to 70% of required energy, and correspondingly reduce their operating costs. The extremely low annual operating costs also enable its amortisation after a short period and this applies in all moderate to cold climate regions of the world. Benefits include:

- No mechanical cooling;
- State-of-the-art IEC test facility;
- Unrivalled flexibility in configuration and size;
- Largest IEC units manufacturing capacity;
- EUROVENT certified;
- Low pPUE;
- Low water consumption (WUE).

Contact: Gavin Power, Sales Director, FläktGroup.

T: 01 463 4600; M: 086 826 3058;

E: gavin.power@flaktgroup.com ■



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# Smart choices make for smart buildings

Graeme Rees, President of the Building Controls Industry Association (BCIA), believes the Covid-induced lockdowns, plus this summer's extraordinary heatwave, have underlined the increasing value of smart buildings in terms of occupants' comfort and environmental sustainability.



Apparently, we in Ireland (and the UK) have something of a reputation for talking about the weather. During the seasons which most often produce our most "extreme" weather – summer and winter – the same discussions surface about whether we should travel to work, how our transport systems will fare in the hot/cold temperatures, and advice on how to stay safe.

We grumble for 10 months about the lack of regular sunshine and then react with alarm at the first sign of a heatwave. Of course the warm weather is a lot easier to enjoy when you are not at work and, if you are lucky enough to be by the sea or have a swimming pool nearby, or have an air-conditioned home to cool off in, then even better.

## A need for greater focus

However, as the sun begins to set (excuse the pun) on one of the hottest summers ever recorded in Ireland, it highlights the need for even greater focus on the suitability of our commercial buildings.

When temperatures hit record highs in mid-July, commuters were advised not to travel, warnings were issued about the state of road surfaces affecting drivers, and businesses asked <https://arrow.tudublin.ie/bsn/vol61/iss5/1>

some employees to work from home, where possible, to make conditions more bearable in their workspaces.

However, none of these measures seemed as drastic as they once might have, as lockdown proved that employers and employees could carry on functioning effectively while working from home. The adoption of online meeting platforms such as Zoom and Teams meant important discussions could still take place without the need to meet up in person. Indeed, online meetings are becoming more common as we are perhaps waking up to the fact that driving to a meeting is neither environment-friendly nor financially justifiable in many cases.

But whether a space is sparsely or densely occupied, we have buildings throughout the country, old and new, that could be managed better, and the long-term benefits of investing in smart buildings is becoming clearer every day.

## Building performance

The BCIA has previously highlighted how the lockdown periods in the last couple of years have cast a spotlight on the issue of building performance and efficiency. With many commercial buildings suddenly

left unoccupied, we were provided with a real insight into just how unprepared many businesses were in terms of managing their premises efficiently.

## Corporate ESG

In the age of corporate environmental, social governance (ESG), it was also a wake-up call for many organisations as they realised just how far behind they were in their environmental credentials and commitments to sustainability.

ESG criteria are a set of standards for a company's behaviour used by socially-conscious investors to screen potential investments. Environmental criteria consider how a company safeguards the environment, including for example corporate policies addressing climate change. Social criteria examine how it manages relationships with employees, suppliers, customers and the communities where it operates. Governance standards ensure a company uses accurate and transparent accounting methods, pursues integrity and diversity in selecting its leadership, and is accountable to shareholders.

From an environmental perspective, in a true smart building, if the technology is correctly designed, installed, commissioned and maintained, it can help reduce energy consumption and costs and, in doing so, reduce carbon emissions. Companies can also produce evidence-based measurements and data to illustrate their case to corporate shareholders.

From the social angle it is perfectly reasonable that we expect better conditions in the buildings we occupy. We have the technology available to us and, while the average modern family saloon car is given all the mod-cons to increase our comfort when driving, we arguably spend more time at work, so should we not be comfortable there, too?

As technology continues to evolve,





there is an increasing focus on the wellness of individuals in the workplace, as well as the drive for smarter buildings which help boost productivity.

### **Clean, comfortable and safe**

With flexible working becoming more common, it is important that businesses make their places of work appealing to work in for staff when they are not working remotely. Workspaces that are clean, comfortable and safe are an obvious requirement for any business that wants to attract the best staff. Employees who feel comfortable in their workplace are generally more motivated and more productive than those who feel that their work environment falls short of expected standards.

The latest advancements developed in technology allow for smart building control systems and sensors to be installed that enable users to optimise their working environment. In conjunction with a Building Energy Management System (BEMS), heating, ventilation and air-conditioning can all be set to individuals' personal

preferences. By putting in place the technology that enables occupants to manage their environment easily, building managers will also reap the benefits in energy savings.

### **User-friendly experience**

Not only is the technology going into buildings improving, but the ways in which both a facilities manager and its occupants can connect with their buildings are becoming simpler through the development of

“

**Sustainability is a pivotal factor when creating and managing smart buildings, with energy conservation and CO2 reduction very much the long-term objectives of building controls.**

smart building software and apps. A smart building app can bring together all the smart features of a building such as occupancy monitoring, temperature monitoring and energy monitoring. It can also make the information available instantly on a smartphone or tablet.

For the occupants, functions such as lighting and temperature adjustment, digital access systems and room-booking functions create a more user-friendly experience.

Sustainability is a pivotal factor when creating and managing smart buildings, with energy conservation and CO2 reduction very much the long-term objectives of building controls.

The unprecedented situations we have faced in the past year or two have certainly galvanised the issue, but the ability to manage, adapt and interact with our buildings is important at any time, not just during a pandemic or an excessive heatwave.

The technology is there – let's take advantage of it. ■





## Smart Actuator

### 3-in-1: Valve actuator and controller with IoT and cloud integration

The IoT-capable Smart Actuator from SAUTER enables autonomous or semi-autonomous control of heating, ventilation and air-conditioning. It's easy to install and commission using a smartphone app via Bluetooth and it has communication interfaces for every use case.

Compared to a conventional installation with central controllers and valve actuators, the Smart Actuator reduces the size and reduces the cost of the cabinet panels while simultaneously lowering the fire load through less wiring.

Operators of facilities such as schools or medium-sized office buildings can control and monitor their HVAC plant using their smartphone via the SAUTER Cloud.



VIEW BROCHURE

**sirus**

A member of the SAUTER Group

[sirusinternational.com](https://www.sirusinternational.com)

The Smart Actuator has on board two universal I/O to connect additional sensors or actuators & RS485 for system integration (BACnet MS/TP or Modbus).

For comprehensive control tasks the optional I/O box can be added to the Smart Actuator.

Up to 12 Universal Inputs / Outputs & 6 Digital Outputs, full boiler house or AHU control all in one unit, with remote connectivity built in.

Connector system and pre-assembled cables enable quick, error-free installation.

Tested applications from the cloud for use in HVAC and room automation.

Access to stored data and operating settings with the smartphone app.

Cloud-based monitoring enables predictive maintenance.

A large application library in the cloud and clearly defined interfaces (BACnet, Modbus, MQTT) enable a digital building.



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# 'Bring wasteful building systems into the 21st century with tighter controls'

Better monitoring of building systems offers increased oversight along with the opportunity to optimise performance and boost efficiency in the face of spiralling operating costs, writes Kevin Devine, Sales Director, Xylem Water Solutions Ireland.

The latest digital solutions empower building owners to upgrade existing systems by retrofitting new high-tech instruments to save time and money on energy and maintenance bills. The timing is apt. Not only are energy prices at a record high, but the SEAI renovation grant scheme of up to €30,000 is boosting the refurb market even further. A 2021 survey showed that some 1.5m homeowners spent a total of more than €11 billion the previous year on home improvements.

Capable of monitoring and controlling everything from temperature to water pressure, automated systems help enhance each building system to function more efficiently. As they can be retrofitted to existing systems as full or partial replacements, as well as implemented in new systems, fully-optimised systems are for the first time within reach for aging building stock, as well as in new buildings.

## Take back control

The latest digital solutions comprise three levels – intelligent equipment, smart networks and advanced analytics.

- *Intelligent equipment*, such as variable speed controllers, alters pump speed to suit demand, and responds to changes in the environment to significantly reduce energy usage. More accurate monitoring of critical technology enables reactive optimisation by allowing issues to be more rapidly identified;
- *Smart networks* and services collect data from connected locations. This makes the

remote monitoring of operations possible and helps to proactively manage assets by highlighting incipient issues. This delivers substantial improvements in resilience and lower maintenance costs;

- *Advanced data analytics* provide optimal control and convert the collected data into targeted information that allows system optimisation. The intelligence provided means maintenance needs can be anticipated and addressed well in advance of costly failures.

## Get connected

In addition to these developments, connecting smart systems to cloud-based digital services provides a comprehensive overview of asset health that can be monitored from anywhere. The latest tools offer real-time status reporting and this in-depth insight helps cut maintenance costs by up to 27%.

By adjusting performance to suit operating conditions in real time, the most up-to-date integrated wastewater pumps can reduce energy demand by up to 70%. Xylem's unique Flygt Concertor reduced energy consumption by 53% at Heathrow Airport. It also eliminated the need for maintenance call-outs to the pumping station.

## Greater efficiency

There is huge scope to benefit from the developments in digital solutions as they offer total reliability and help tackle current soaring energy costs and reduce maintenance needs. By harnessing the data available, buildings can be made to work smarter and perform more efficiently by way of ongoing automatic adjustments.

For more information on water technology solutions across the lifecycle of use, please visit Xylem Water Solutions at <https://www.xylem.com/en-ie/> ■

## References

1. <https://www.irishtimes.com/business/construction/irish-homeowners-spent-11bn-on-renovations-in-past-year-research-shows-1.4625641>
2. <https://www.xylem.com/siteassets/support/case-studies/case-studies-pdf/xylems-flygt-experior-halves-energy-use-at-heathrow-pumping-station-1872.pdf>





Integrated thermal energy management and billing made easier than ever.



## Belimo Energy Valve™ and Thermal Energy Meter

Belimo, the leading manufacturer of damper actuators, control valves and sensors for heating, ventilation, and air conditioning technology, brings the worlds of “energy control” and “certified energy measurement and billing” together. The new range of Belimo Energy Valves™ and Thermal Energy Meters integrates energy metering, energy control, and IoT-enabled billing in one device.

Belimo brings together what belongs together.

→ Find out more  
[www.belimo.co.uk](http://www.belimo.co.uk)



## Energy management and billing made easier

The new range of Belimo Energy Valves™ and Thermal Energy Meters™ integrates energy metering, energy control and IoT-enabled billing in one device to allow for transparent thermal energy management.

**The new MID-approved Thermal Energy Meters™** assure high accuracy and reliability, allowing for easy and efficient billing. But measuring reliably is only the beginning. The Belimo Energy Valve™ instantly controls the thermal flow and optimises the energy supply. With this important combination, Belimo has stepped in to a new era of integrated thermal energy management.

The new range offers seamless and direct integration to the BMS or to IoT-based monitoring platforms, with IoT-based monitoring, performance tools and billing data. It not only delivers performance features but also saves time and money.

The Belimo Energy Valve™ offers certified energy metering (MID) and pressure-independent flow, energy efficiency, power control and Delta T management in one device. It also monitors and instantly optimises energy consumption for optimal system performance.

The Belimo Thermal Energy Meter™ is certified according to EN 1434/MID and is equipped for remote, IoT-based billing. Belimo's patented automated <https://arrow.tudublin.ie/bsn/vol61/iss5/1>

glycol monitoring and compensation ensures that measurements remain accurate, even if the glycol concentrations change. Apps and web tools support the design process and offer fast and simple commissioning.

Seamless and direct integration to the BMS and equipped for IoT-based energy monitoring and billing, integration of energy-data has never been easier. One device provides all the information needed to improve the energy performance of systems.

### Certified energy metering

Belimo's certified Thermal Energy Meters™ meet the requirements of EN1434 and have type approval in accordance with the European Measuring Instruments Directive 2014/32/EU (MID). The certified devices bear the accompanying MID conformity marking.

### European Measuring Instruments Directive

Depending on the desired application, Thermal Energy Meters™ that meet the requirements of EN 1434 and

have type approval according to the European Measuring Instruments Directive 2014/32/EU (MID) or devices with automatic glycol compensation are available. If the application requires a calibrated heat measurement, which can be used to settle the costs directly, the MID-approved Thermal Energy Meters™ are used.

### Features and benefits

- Accurate measurement based on ultrasonic transit time technology;
- Ready for IoT-based billing;
- Simple setup and configuration with the Belimo Assistant App;
- Analogue/digital signal conversion of passive and active sensors or switches;
- Analogue output (DC0 ...10V) is available and it can output the flow rate or temperature of the fluid;
- Multi-application device;
- Simplified energy billing;
- Simple commissioning;
- Seamless integration in the building management system via bus communication;
- Device can be powered and data can be transferred directly via an Ethernet cable (PoE);
- Multi-application device.

Contact: Paul O'Neill, Belimo.

T: 086 452 2032;

E: paul.oneill@belimo.co.uk;

[www.belimo.co.uk](http://www.belimo.co.uk) ■

Data centre demand and renewable generation

# A TALE OF TWO DATASETS



The Energy Statistics Team at SEAI collects data from many sources. It runs 650 direct surveys of energy suppliers every year and draws on dozens of datasets from public bodies like the Central Statistics Office (CSO) and Environmental Protection Agency (EPA). Comparing and blending data from different public bodies offers insights and learnings that would not be apparent from any one agency's standalone analysis.

**Recently, the CSO** released new data on electricity demand from Irish data centres that showed growth in both the absolute value and percentage-share of electricity use in that sector. This article is taken from a recent "Stat Chat" on the SEAI website where Dr Paul Beagon and Dr Lee Carroll took a

closer look at the datasets, highlighting data centre demand and renewable energy generation in Ireland. Lee is the Programme Manager for the SEAI Energy Statistics Team while Paul is also a member of the team.

The CSO analysis is based on a bottom-up summation of metered

electricity use and can be rightly regarded as setting a new "gold standard" for evaluating data centre demand.

Similarly, SEAI sets the standard for reporting on Ireland's renewable energy portfolio. For the specific case of renewable electricity, SEAI tracks both the electricity exported to the national grid from windfarms, solar farms, hydro-electric plants, and the combustion of renewable biomass, as well as "behind the meter" generation and consumption from rooftop solar panels, onsite wind turbines, etc.

The availability of these two high-quality datasets – data centre demand and renewable generation – is very timely. Forecasts in the median demand scenario by EirGrid suggest 23% of all Irish electricity demand in 2030 may be due to data centres, and this has sparked (no pun intended!) very significant public and policy discussions. For example, the Commission for Regulation of Utilities (CRU) recently published new rules around data centre connections to the Irish grid.

The forecasted increases in data centre demand take place during a period when Ireland is working to achieve an 80% renewable electricity target, a 51% reduction in its carbon emissions, and an overall energy demand reduction through efficiency measures. This all increases the scrutiny on the sustainability of large energy users.



Dr Paul Beagon.

Published by ARROW@TU Dublin, 2022



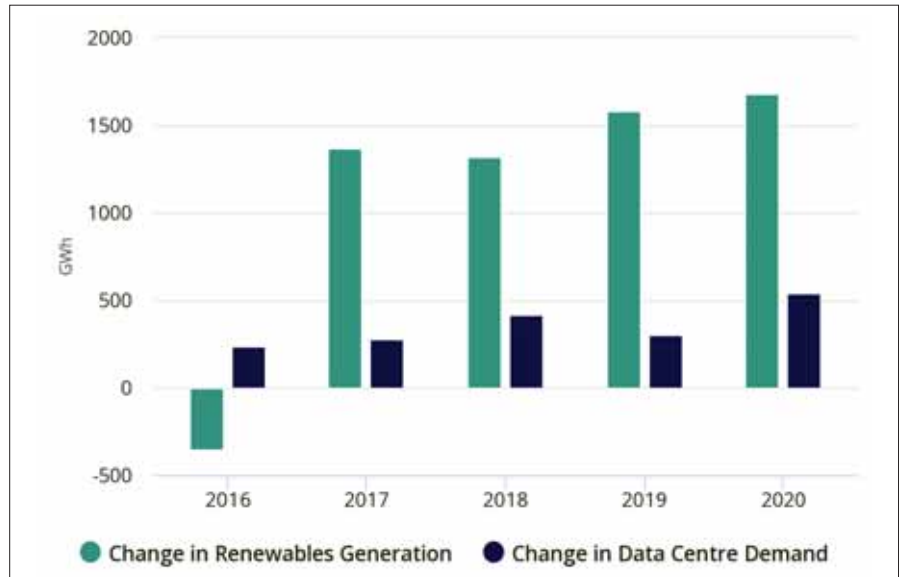
Dr Lee Carroll.



Stepping back from these 2030 future forecasts and looking at the measured data available to date from both the CSO and SEAI, we can see that Ireland has added renewable electricity generation at approximately three times the pace that data centre demand has increased. From 2015 to 2020, Ireland added an average of 1121 GWh of renewable electricity generation, mostly from wind generation. In the same period, the average increase in data centre demand was 357 GWh (Table 1).

Note that the negative value for additional renewable generation observed in 2016 was due to reduced wind and rainfall compared to the previous year. The total renewable generation in 2015 and 2016 was 7862 GWh and 7513 GWh, respectively. As highlighted in that year’s *Energy in Ireland* report, 400 MW of additional wind capacity was added in the last three months of 2016. Consequently, the full benefit of that investment and increase in renewable generation was not captured until the next calendar year.

This type of “absolute value” comparison is the best approach when looking at numbers from two distinct datasets. This



**Figure 1: Yearly changes in electrical energy quantities from renewable generation and for data centre demand. Both changes in electrical energy quantities appear side-by-side per year, displaying the changes from the previous year during period 2016 to 2020.**

approach is robust and helps preserve the maximum context from the values in both datasets.

By way of contrast, we’ve observed several online articles and discussions that have focussed instead on “relative value” comparisons. This type of analysis can quite easily lead to mistaken conclusions because it removes key context from the data.

For example, the relative value increases in 2020 for data centre demand (+541G Wh/2478 GWh) and renewable electricity generation (+1680 GWh/1789 GWh) are +22%

and +14% for 2020, respectively. This can easily, but incorrectly, be taken to show that that data centre demand (+22%) outpaced added renewable generation (+14%). However, the opposite is true – renewable electricity generation had grown at approximately three times the pace of data centre demand over the previous five years. See Figure 1.

The mistake being made here is that the relative value increases from two different datasets cannot (or at least, should not) be directly compared. The normalisation that takes place in the relative value analysis acts to remove a key context – that the absolute value of renewable generation was close to four and half times larger than data centre demand in 2020 (i.e. 13469 GWh/3019 GWh = 4.46).

Essentially, a poorly-expressed relative value analysis can suggest a false equivalence between similar percentage-changes in both large values (e.g. renewable electricity generation) and smaller values (e.g. data centre demand).

Year	Change in Renewable Generation (GWh)	Change in Datacentre Demand (GWh)	Total Renewable Generation (GWh)	Total Database Demand (GWh)
2015	–	–	7862	1236
2016	-349	241	7513	1477
2017	1369	278	8882	1755
2018	1322	417	10204	2172
2019	1585	306	11789	2478
2020	1680	541	13469	3019

**Table 1: Yearly changes and yearly totals of electrical energy quantities from renewable generation and for data centre demand. During the period 2015 – 2020, renewable generation grew at multiples of data centre demand, except between 2015 and 2016.**

### Care must be taken when comparing different datasets

This “Stat Chat” log is not aimed specifically at dismissing or undermining the energy analysis being carried out by third parties. The enabling of informed debate with public data is a key mission of both SEAI and the CSO. We genuinely welcome our data being used to facilitate evidence-based discussions.

This blog post is just a timely example of how care must be taken when comparing different datasets to ensure that the full context of the data comes through. If in doubt, then please feel free to contact the Energy Statistics Team at SEAI ... we’ll be happy to help.

Also, as that famous saying goes: “past performance is no guarantee of future results”. Just because Ireland had a track record of adding renewable electricity generation at approximately three times the rate of increased data centre demand from 2015 to 2020, there is no assurance that this trend can, or will, continue. Ireland has set very ambitious 2030 targets for renewable electricity and reduced carbon emissions – every sector needs to contribute to achieving its relevant emissions ceilings to set Ireland on a pathway to turn the tide on climate change. ■

#### The two datasets

- SEAI’s *Energy Balance*, which details the supply, transformation and demand of Ireland’s energy, including renewable electricity;
- CSO’s *Data Centre Electricity Use Tables*, which is based on metered electricity use, excluding any local auto generation of electricity.

• SEAI retains copyright on the “Stat Chat” blog: A Tale of Two Datasets – See link: [A Tale of Two Datasets | SEAI Blog | SEAI](#)

#### Relevant links

- EirGrid’s All Island Capacity Statement, including forecasts out to 2030 in page 9;
- CRU’s Direction to the System Operators related to Data Centre Grid Connection Processing, from November 2021;
- Government press release on Sectoral Emissions Ceilings, from July 2022.



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## FRM

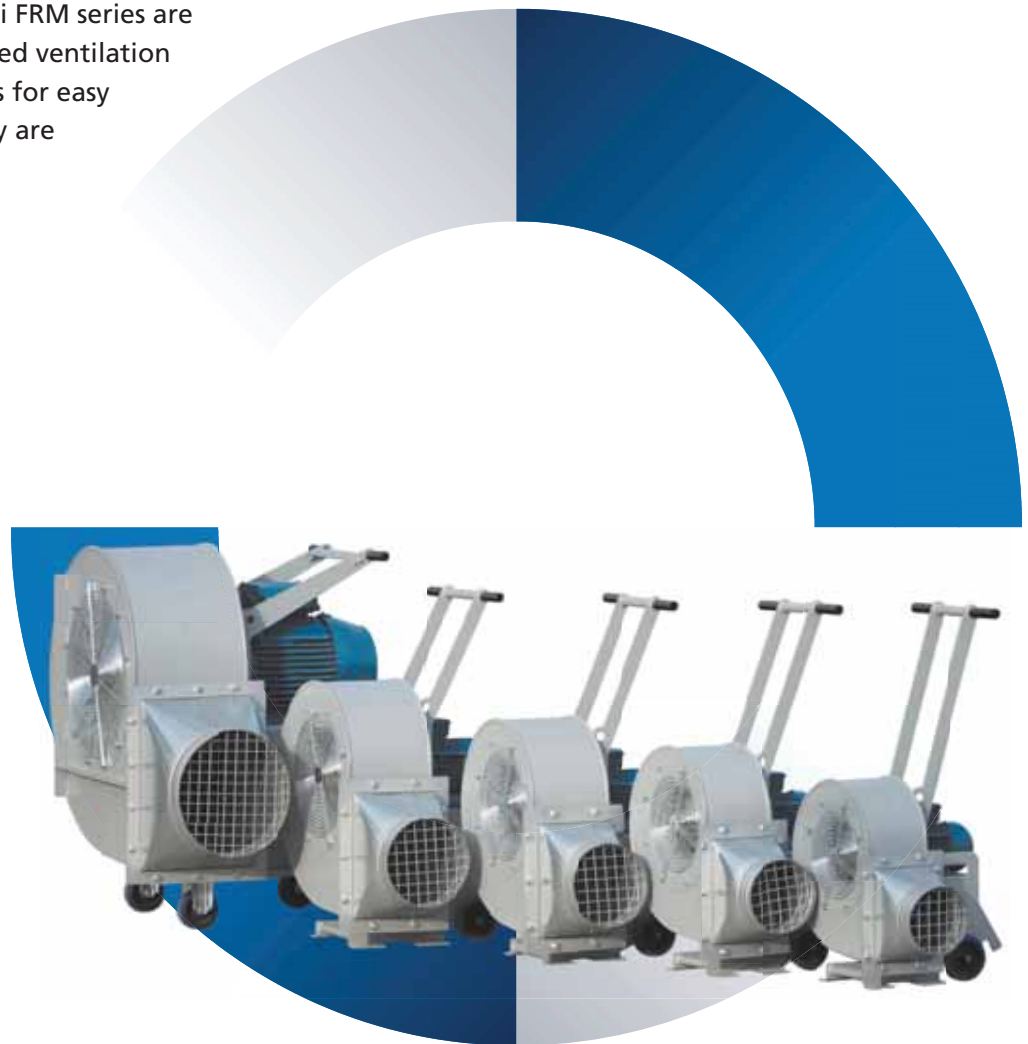
### *Mobile fans*



Mobile fans from the Ferrari FRM series are designed for close or localised ventilation and are mounted on wheels for easy transport and location. They are ideal for the ventilation of enclosed spaces, or any application requiring temporary ventilation for the removal of gases, dusts, etc.

They are equally suitable for tank washing applications where fume removal or purge ventilation is required.

Manufactured in carbon steel and protected against corrosion, they are fitted with protection grilles, both at the inlet and outlet. Fans can also be supplied with or without a starting panel, as required.



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The impeller, made from die-cast aluminum alloy, has adjustable blades that are dynamically balanced, while the painting procedure is carried out by electrophoretic immersion and subsequent kiln baking. The electrical connection box is included and mounted on the casing. Working temperature from -20°C up to 150°C.

An anti-corrosion version in INOX AISI 304-316L is available on request. The motor is IP55 Class F protection and is suitable for working up to 90°C ambient temperature.



**Direct drive fans for  
high temperatures**



*Setting the course for the future*

# Green hydrogen to feature at H2 Expo in Germany

**H<sub>2</sub> EXPO & CONFERENCE**

27–30 SEPTEMBER 2022 | HAMBURG  
h2expo.com



Green hydrogen will be one of the mainstays in the climate-neutral energy system of the future, especially in places where demand for energy is high or cannot be covered using traditional battery solutions for reasons of cost, weight or space. In order to guarantee the usability of this energy medium at any time and in the required quantity, investments and rapid development of the infrastructure for transporting and storing hydrogen are now necessary.

<https://arrow.tudublin.ie/bsn/vol61/iss5/1>

**Who are the** key players and companies tackling this challenge? Where are new hydrogen and fuel cell technologies materialising? At the H2 Expo & Conference in Hamburg (being held from 27-30 September as part of WindEnergy Hamburg), the focus will be on innovative solutions and application-ready developments for a successful energy transition.

A year ago the talk was of expanding the “green hydrogen” energy sector gradually, with supply and demand being controlled continuously and in parallel. However, the dramatic increase in gas prices has meant that green hydrogen produced from wind and solar energy is already cheaper than

grey hydrogen produced from natural gas in some parts of Europe, Africa and the Middle East.

### Electrolysis capacities expanded

As part of the Green Deal, the EU expects electrolysis capacities to expand from the current 1,000MW to 40,000MW by 2030. Electrolytic processes are currently being used to generate green hydrogen, which can be supplied with large volumes of wind power, so that water can be broken down into hydrogen and oxygen.

As the smallest element of the periodic table, molecular hydrogen H<sub>2</sub> is a colourless and odourless gas. It is highly-reactive and does not release any climate-impacting emissions when it is converted into electricity. But because of its volatility, special conditions have to be observed for its transport and storage.

### Generation, storage and delivery

Because the density of hydrogen under atmospheric pressure conditions is very low (around 90 g/m<sup>3</sup>), the gas must be compressed or liquefied to prepare it for storage and transport. Various procedures exist to do this. At a temperature of -253°C, one can store hydrogen in liquid form in insulated cryogenic tanks. The element can also be stored in gaseous form under high pressure in special pressure tanks or in underground caverns.

In addition, there are other options for storage involving absorption, where hydrogen is accumulated on carrier media. In solid form it can be stored in the form of carbon or metal hydrates. Suitable liquid carrier media are referred to as LOHC (liquid organic hydrogen carriers).

The state of aggregation and the carrier medium for the stored hydrogen determine how it is transported.

Specially-manufactured trucks and rail wagons are suitable for overland transport, while gas tankers can bring large quantities of liquid hydrogen from producer countries across the oceans to coastal regions of importing countries.

Static pipeline infrastructure, on the other hand, is used to transport

gaseous hydrogen to consumers who are connected to the gas grid. Building such gas networks involves investment costs, but existing gas lines can also be upgraded in such a way that the volatile hydrogen cannot escape. Such conversion is cheaper and utilises the excellent gas infrastructure that exists in many places, which in the future will no longer be needed for transporting fossil fuels.



**The dramatic increase in gas prices has meant that green hydrogen produced from wind and solar energy is cheaper than grey hydrogen produced from natural gas in some parts of Europe, Africa and the Middle East.**

### Momentum gaining

Earlier this year the Hamburg Port Authority (HPA) and the H<sub>2</sub> specialist Air Products signed a declaration of intent to build up a hydrogen value chain within the Port of Hamburg. The goal is for the Port of Hamburg to become climate-neutral.

The hydrogen project HH-WIN (Hamburg Hydrogen Industry Network) also underlines the ambitious objective of the Hamburg metropolitan region with regard to climate neutrality. By 2030, a secure supply infrastructure for the hydrogen requirements of Hamburg's industrial activities will be established in a national and European network. Embedded in the industry network of the EEHH (Erneuerbare Energien Hamburg Clusteragentur GmbH), Gasnetze Hamburg is the project sponsor for this ground-breaking project.

Yet another north-west European hydrogen mega-project is NorthH<sub>2</sub>. The key players in this project are Eneco Equinor, Gasunie, RWE, Shell and the port of Groningen Seaports. Together,

the goal of the project partners is to establish a system of offshore wind farms, electrolyzers for the production of green hydrogen, H<sub>2</sub> gas stores and H<sub>2</sub> gas pipelines.

With a target electrolytic capacity of 4GW by 2030 and more than 10GW by 2040, a powerful nucleus for green hydrogen is to be created in the north of the Netherlands. This will develop into a driving force for the hydrogen economy and the connected industrial clusters in north-west Europe.

### Energy security

This concerns energy security at all levels of society. A rapid expansion of renewable energy sources is now required to eliminate any dependency on imported fossil fuels as quickly as possible.

Consortia such as WindStrom Erneuerbare Energien GmbH, which plan, build and operate wind farms in Germany and other European countries, are significantly involved in this undertaking.

In addition to the extensive expansion of power grids, the development of a hydrogen infrastructure also requires functional collaboration both on an economic and a political level. This is how internationally interwoven trading networks are created. On the one hand, technology is transferred to the states that can produce an abundance of renewable energy. These in turn export the green hydrogen required by industrialised nations as energy suppliers for energy provision, industrial production and mobility.

The options resulting for decarbonising global economic cycles are truly significant. The project manager of WindEnergy Hamburg, Andreas Arnheim, said: "The supply and utilisation of energy is in a state of upheaval, and new demands and business development opportunities are emerging almost every day along the entire hydrogen value chain. We are very much looking forward to bringing together highly-innovative companies, industry experts and consumers during the H<sub>2</sub> Expo & Conference and setting the course for the future together." ■

# Making installation key to sustainability

While sustainability, the circular economy, energy usage and carbon reduction are very much to the fore at project design stage, this is not always so when it comes to the installation phase. However, XL Mech, established just two years ago (and during the global pandemic) as a specialist HVAC installer, has made these issues – and the drive towards net zero buildings – a key objective. “Our aim,” says Chris Crowley, Managing Director, “is to ensure that the letter, as well as the spirit, of the design intent is translated into a high-performing building. “We are a young, dynamic and progressive operation yet, collectively, our current team of 20 employees represents years of experience within the construction industry.

“This will grow exponentially as we take on new personnel in the coming months and years, and develop them through our own structured training programme.

“We specialise in office fitout and have structured the business around delivering these projects within the condensed programs expected by the clients, while never comprising quality or the end product. We believe by retrofitting new equipment into older buildings, we create an efficient and sustainable solution for our clients. To achieve that we have brought together a carefully-selected team of engineering and craft specialists that work as a cohesive unit across all disciplines. “This includes project managers, BIM and CAD specialists, project



**Chris Crowley, Managing Director.**

engineers, plumbers, air conditioning and ventilation engineers, and controls experts. All have the appropriate qualifications, be it engineering graduates, F Gas registration or RGI approved. “No matter what the HVAC project scale or application, XL Mech is the perfect project management, installation and fit-out partner.”



**Some of the XL Mech engineering team at a Dublin fitout.**



## Communication is key

Communication, both within the XL Mech team and with regard to client engagement, is very important. While we have very disciplined site operation procedures in place, their importance is shared at all levels throughout the process. Apart from promoting a greater understanding, it also allows for appropriate flexibility in the event of unforeseen matters arising.



Contracts Manager Sean McManus.



Project managers Anthony Lee and Robert Kane.

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- Heat pump and heat recovery systems
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- HVAC Maintenance



William Nagle who oversees the onsite engineering team.



Project engineers Jason Gore and Animesh Sahoo.



Cube House, Unit 1 Northwest Business Park,  
Blanchardstown, Dublin 15. D15 NYH4.

T: 01 – 611 150. email: info@xlmech.ie

[www.xlmech.ie](http://www.xlmech.ie)

# PJ Duffy retains trophy in testosterone-fuelled CIBSE 5-a-side

Maybe it was a legacy of the Covid lockdown, or perhaps the frustrations of many long working hours, but whatever it was resulted in a testosterone-fuelled CIBSE YEN 5-a-side competition at the Sports Ireland Campus recently.

With 11 teams and almost 100 players involved, it was a very exciting occasion. All credit to CIBSE YEN Chair Ryan Loney for organising the event and his calm management on the night, while also getting in a few games himself for Callaghan Red.

Thanks also to Unitherm Heating Systems who were sponsors of the event. Chris McClelland and Declan Kissane were on hand for the trophy presentation, though we noted how Declan (unfortunately?) arrived too late to play on the Unitherm team. Still, Chris and his colleagues did extremely well to reach the semi-final stage.

The final itself was a very tight affair with Alpha Mechanical pushing reigning champions PJ Duffy & Sons all the way. It finished 1 - 1 in normal time with PJ Duffy retaining the trophy, 3-2, on penalties.

Food was presented in the gallery area above the pitch using biodegradable packaging. In addition, all participants were encouraged to bring their own, multi-use water bottles as no single-use water bottles were provided. The food itself was fresh and organic, though there were some grumbings about the lack of the ubiquitous sausage rolls and chicken wings! ■







Back row: Ryan Loney, CIBSE YEN Chair with Chris McClelland, Unitherm; Josh Doyle, Daire Vince, PJ Duffy; Declan Kissane, Unitherm; Adam Bennett, Declan Glynn, PJ Duffy. Front Row: Michael Gibson, Wayne Kivlehan and Glen Curedale, PJ Duffy.



Beaten finalists Alpha Mechanical who pushed reigning champions PJ Duffy & Sons all the way to a penalty shoot-out after the final finished 1-1 in normal time.



Team Callaghan Red



Team Daikin



Team EICL



Team Ethos Engineering



Team JV Tierney



Team OCSC



Team Versatile



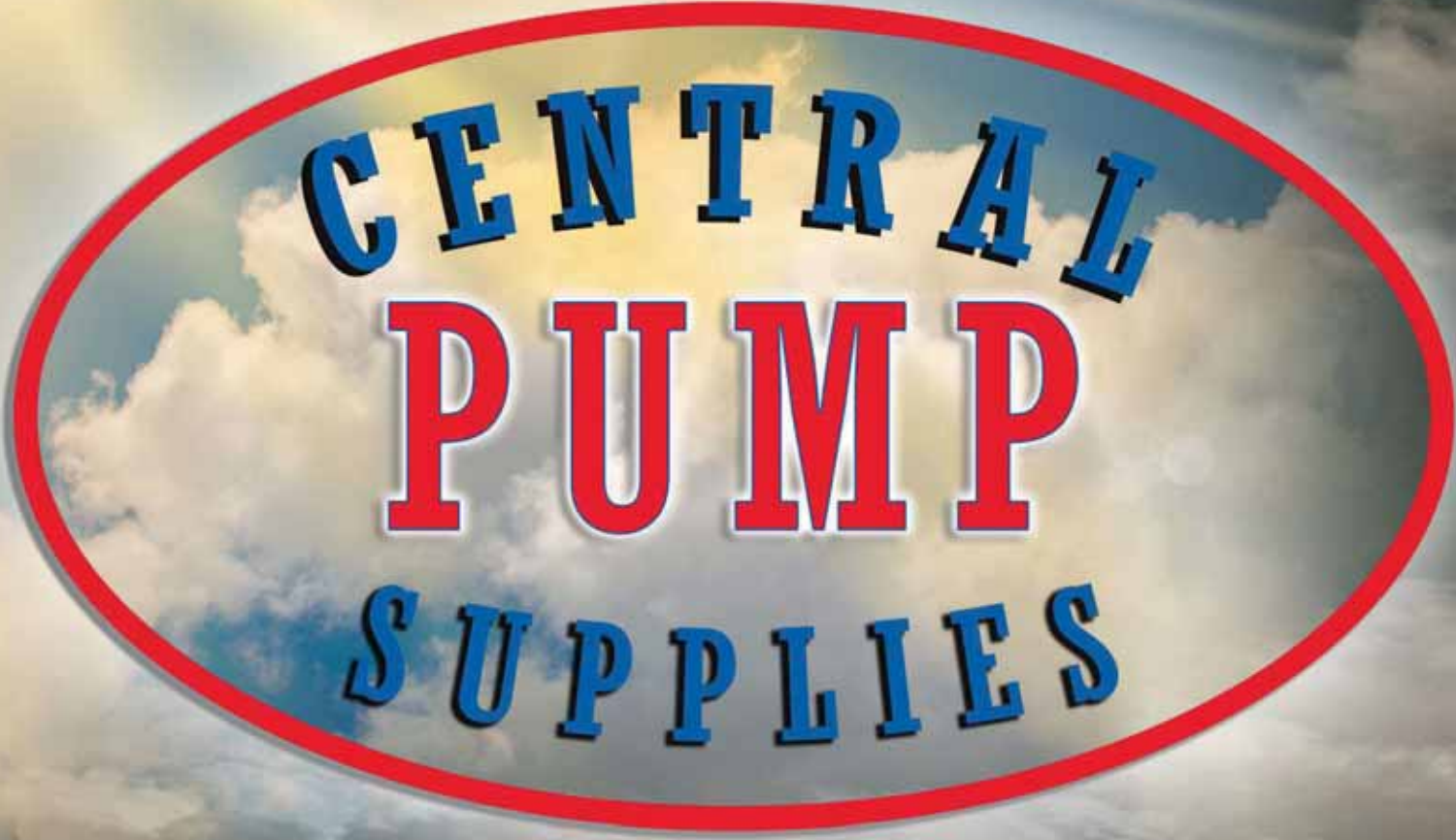
Team Unitherm



Team XL Mech



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The logo for Central Pump Supplies is contained within a red oval border. The text 'CENTRAL' is written in blue, block letters with a white outline, arched across the top. Below it, the word 'PUMP' is written in large, red, block letters with a white outline. At the bottom, 'SUPPLIES' is written in blue, block letters with a white outline, also arched. The background of the oval is a cloudy sky.

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Big turn-out at Luttrellstown

# CIBSE outing magnet for entire industry

**W**ith a capacity 24 teams participating in this year's CIBSE Ireland annual golf outing, it is confirmation that CIBSE events – be they technical, CPD-oriented or social – are deemed priority occasions by the industry at large. Once again held at the golf course at Luttrellstown Castle resort, the day was thoroughly enjoyed by all, with C&F Quadrant emerging as overall winners. Headline sponsor was Versatile Group.

**Winners: C&F Quadrant – Back row: James Porter and Michael Curran, CIBSE Ireland with Andrew Treacy, Versatile. Front Row: Stephen Moriarty, Dayle Donohoe, John Delaney, Ken Pringle (all C&F Quadrant).**



**Darryl Litton, winner of the longest drive.**

After an anxious start, the weather dramatically improved, making for near-perfect playing conditions on the pristine course. Being a shotgun start, everyone was back in the clubhouse within five hours and sitting down to the meal and presentation of prizes by 6.30pm

Such was the success of the event that the course is already booked for next year with teams already committing to participate. ■



**Winner of Nearest the Pin, 15th Hole, Michael O'Herlihy.**



**Third: Unitherm Team – Ian McCormack with Christopher McClelland, Declan Kissane and Mark McDonagh.**



**Second: Jones Engineering 1 – Peter Ennis with Alan Lynch, Fergus Weldrick and Darryl Litton.**

# Simultaneous heating, cooling and hot water by EnergyPower

On complex buildings where there is a need for simultaneous heating and cooling, along with a constant flow of hot water, EnergyPower from Clint is the perfect solution. The Energy Power range of air cooled 4-pipe multifunctional systems uses either fixed-speed scroll compressors on R410A, R452B, or R454B refrigerants or inverter screw compressors on R134a or R513A refrigerants. They are the perfect integrated answer for hotels, hospitals, commercial buildings, etc.

**With EnergyPower, the** maximum energy efficiency can be obtained when compared to traditional "chiller + boiler" solutions where air conditioning is provided by a liquid chiller, and the heating and domestic hot water is supplied by a boiler.

When the requirement is for both cool and warm water at the same time, EnergyPower's heat recovery system recovers and exploits the thermal energy produced by each exchanger to activate the other, with a consequent gain in energy consumption.

Another advantage of the single unit is a noticeable gain in occupied space on service areas, and simplification of system configuration which means reduced on-site operations for installation and maintenance.

Usually units are sized so they can meet the exceptional peak demands in cooling or heating and this means that for most units' working lifespans they don't operate at maximum potential power but at partial load. However, to deliver the highest efficiency on normal daily use, EnergyPower features technical solutions to ensure excellent Total Efficiency Ratio (TER) energy



coefficients. On the dedicated air cooled models with inverter control on mono-screw compressor with satellite, the speed of compressor is modulated according to the real requested load, thus reducing starting currents and energy consumption at part load.

On the dedicated multi-scroll air cooled models the multi-compressor design allows power partialisation based on the requested load. This reduces the power input both at start-up and during part load functioning. Part load efficiency can be further improved by the

inverter control on axial fans and circulating pump which is available as an added accessory. EnergyPower units can also be equipped with a web monitoring system for remote management.

EnergyPower's technology is based on the combined activity of three heat exchangers – one finned coil type to exchange energy with external ambient and two shell and tube exchangers. When simultaneous production of hot and cold water is requested they work in combination, one as condenser, one as evaporator, excluding the finned coil. Maximum efficiency is ensured since thermal energy is recovered and not disposed to the ambient.

When only cooling or only heating is requested, the finned coil is used

to exchange energy with external ambient. This shift between the different exchangers is made possible by solenoid valves, controlled by a microprocessor, that divert the refrigerant flow to the heat exchanger suitable for the requested operation mode.

Contact: Steve Wood,  
Core Air Conditioning.  
Tel: 01 – 409 8912; 086 - 380 3882;  
email: [steve@coreac.com](mailto:steve@coreac.com);  
[www.coreac.com](http://www.coreac.com) ■





# AIC CoilMaster

## Twin condensing boiler with high-performance DHW output

The AIC CoilMaster from C&F Quadrant incorporates a unique coil firetube heat exchanger which condenses in both heating and DHW mode to deliver performances of up to 104% in DHW production and 108% in heating mode. It can be used as a combination boiler providing heating and DHW from a single unit. It is the perfect choice where space is at a premium and is also ideal as a replacement for older units, with an accessible top flue spigot.

### FEATURES

- Available in six outputs: 35kW, 45kW, 60kW, 80kW, 100kW and 120kW;
- Certified for use with 20% hydrogen blend;
- Wide modulation ratio 10:1;
- DHW upto 3,270 ltr/hr @ 40°C;
- Useful efficiency in DHW mode 104%;
- High efficiency in heating mode 108%;
- Full stainless steel construction;
- Side connections for ease of installation and maintenance;
- Low pressure drop;
- Anti-legionella function;
- Compact dimensions;
- Can be installed in cascade using integrated controller;
- Top flue outlet;
- Rigid frame;
- 5-year boiler warranty;
- 10-year warranty on heat exchanger.



### Twin condensing

When condensing in heating mode, the return from the heating circuit enters the lower part of the primary, activating the condense mode. Then the internal pump speeds up the circulation of the primary water around the heat exchanger flue tubes, increasing the counter current exchange and consequently the thermal efficiency of the boiler.

When condensing in DHW mode the cold feed enters the lower part of the DHW stainless steel coil and, thanks to the low temperature of the bottom of the primary circuit, the boiler is in constant condensation of the flue gases which ensures a continuous delivery of high-temperature DHW at the top outlet.

Once up to temperature, the CoilMaster simultaneously produces heating and DHW in condensing mode.

## Unique coil firetube

The coil firetube heat exchanger within the Coilmaster is constructed from the highest-grade stainless steel, including the welded internal circuit pipework and a welded condense dish.

The firetube design has a unique geometry of tubes that increases the heat transfer by creating a turbulent flow of the gases. These high-quality stainless steel components maximise the boiler's efficiency and reliability, which in turn adds to the longevity of the boiler.



## Exceptional output

CoilMaster offers exceptional output from a compact unit and can satisfy high heating and DHW requirements without the need to install additional storage. It delivers the advantages of condensing technology in both heating and DHW modes, providing high volumes of efficient instantaneous DHW. It also minimises the risk of fouling, thanks to the indirect heat exchanger, while the risk of legionella is eliminated.

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In the face of current challenges ...

# What options for struggling SMEs?

**SMEs now face** an unprecedented threat to their survival from two significant headwinds:

- Interest rate hikes (after 14 years of record low rates);
- Spiralling inflation.

Spiralling inflation in Ireland (9.1% to July 2022 according to the CSO CPI<sup>1</sup>) has resulted in swift action from the European Central Bank which is forecasting two further interest rate jumps in 2022, coming at a time that many can least afford it. This will have the effect of reducing free cashflow within businesses and, whatever buffer that may have been in place to deal with Revenue and other trade debts, will instead face renewed pressure to address bank debt repayments (and increased interest payments thereon).

For many, balancing income and outgoings on their own has been a challenge. We know from our experience of assisting construction companies in difficulty that many of them would routinely have aged creditors that they had been carrying from even prior to the pandemic. Many would also have warehoused tax liabilities when that was available to them.

The cessation of tax warehousing for current taxes from a position of struggling on a day-to-day basis means that for many businesses, the historical debt pile is only increasing. That is even before considering the inflationary pressures not seen since the 1980s, skills shortages, wage



Dessie Morrow is a director within the Corporate Advisory Department in Baker Tilly. With expertise in restructuring, examinership and advisory, he provides tailored solutions for businesses in difficulty across a broad spectrum of industries, including construction and building services engineering. He was one of the first Process Advisors to be appointed in Ireland under the new Companies (Rescue Process for Small and Micro Companies) Act 2021 (the "SCARP Act") and was a contributor to the Chartered Accountants Ireland publication: *A Practical Guide to Examinership*.

inflationary pressures, the soon-to-be-addressed pay-down of warehoused Revenue debt, and the interest rate hikes. With many construction-focussed businesses having seen first-hand the effect of bad debts on the sector as part of the global financial crash, any such issues right now would place a lot of businesses in real difficulty.

## Options for struggling SMEs

It is clear that many businesses in the construction sector are facing various challenges on a number of fronts. So, how can a business owner respond to these threats? Firstly, the agility and flexibility many business owners developed during the pandemic will continue to be essential in the day-to-day running of their business as costs continue to spiral. Ensuring cost efficiencies, and



that value for money is received, has never been more critical to ensure that businesses have proper and effective cost control measures in place, and that essential cost-cutting measures implemented during the pandemic are not rolled back. In addition, early engagement with your professional advisors is always recommended to ensure you are fully aware of the options available to you.

Secondly, for business owners who cannot see a way out, there are many options. My advice is to look into the recently-enacted SCARP Act.

SCARP is the most significant change to the Irish restructuring landscape since the enactment of the examinership legislation in 1990. SCARP allows company directors enter into a formal restructuring process, inject fresh funds into a business and to reach a compromise with its creditors, similar to Examinership, but with little or no involvement from the Courts. Since its implementation in December 2021, there have been 10 SCARPs, of which our firm, Baker Tilly, has been the process advisor for four of them and the accountant in a further case. We have successfully implemented “rescue plans” with creditors, including the Revenue Commissioners who have an opt-out mechanism in the SCARP Act, supporting single-digit nominal dividends, with the balance of warehoused arrears and trade creditors being written off in full.

This is an unprecedented and very welcome show of support from all creditors, but particularly from Revenue, towards fundamentally sound, viable businesses who can continue to sustain employment, thereby saving jobs. This is a far superior outcome than the alternative of liquidation as it preserves the goodwill attaching to the business.

The SCARP Act is intended to be conducted in a quicker timeframe to examinership (70 days vs 100/150

SCARP	Examinership
Initiated by Director Resolution	Court petition to appoint an Examiner
SME or micro company only	No restrictions apply
49 days to formulate a rescue plan	Up to 100 days (150 days due to COVID)
Certain State creditors can choose to “opt out”	State creditors are bound by the process – no “opt out”
Rescue plan must be approved by 60% of creditors in number and majority in value	Simple majority in one class of creditor and majority in number
Less likely for directors to lose control	Investors are sought in Examinership, some risk of losing control, potential regime change
If creditors accept the scheme, no court approval is required, as long as no creditor objects	Court approval is still required even if creditors support the scheme proposed by the Examiner
Lower costs due to less professional advisors involved and quicker time-frame	Likely to be more costly

Table 1.

days) and in a more cost-effective manner, with many business owners familiar with the examinership process in Ireland. SCARP is intended to mirror certain aspects of the examinership process but over a much shorter duration and in a less expensive manner. It is also less likely that business owners would lose control of their company.

To qualify for SCARP, a company must be insolvent, or likely to become insolvent, and must be a small or micro company that satisfies two or more of the following three requirements:

- Annual turnover of less than €12m;
- A balance sheet total of less than €6m;
- No more than 50 employees.

The key differences between examinership and SCARP are summarised in Table 1.

This legislation is a welcome toolkit for professionals and makes restructuring the affairs of viable businesses much more accessible and affordable for small and micro companies.

Baker Tilly has a number of qualified and registered insolvency practitioners with extensive insolvency experience in construction and related industries, particularly in debt restructuring and Examinership cases. It can provide a free consultation and assist by:

- Offering business advice, including a range of solutions to turn around businesses in distress;
- Reviewing business viability and determining whether the company has a prospect of survival;
- Acting as a Process Advisor, overseeing the SCARP and assisting companies in negotiating with creditors, potential financiers and developing a rescue plan;
- Assisting companies with applying for Court protection and in obtaining Court approval of any “class cram down of debts” in the formats proposed. ■

References

1. Source: <https://www.cso.ie/en/statistics/prices/consumerpriceindex/>



# Understanding BS 5422

These days, most building services specifications require systems to be insulated to BS 5422. This standard provides the recommended minimum thickness of insulation needed for elements such as pipe and ductwork on different systems. However, the required thickness of insulation will vary depending on the thermal performance of the product being fitted, and the operating parameters for the system. This means it is important to check you are applying the standard correctly, writes *John O’Gorman, National Sales and Specification Manager, Kingspan Technical Insulation Ireland.*

**BS 5422 provides a** range of tables with minimum insulation thicknesses for different systems and scenarios. To find the correct table, you’ll need to know certain information

about the system, such as its operating temperature and pipe diameters.

Once you have the correct table, the other piece of information you’ll need is the thermal conductivity or lambda ( $\lambda$ ) of the insulation material. The lower the lambda of an insulation material, the more effective it is at preventing heat loss. This means it may be possible to fit a slimmer thickness of insulation without compromising on thermal performance.

**Conductivity varies**

The thermal conductivity of insulation materials can vary a lot. For example, while mineral fibre lagging typically only achieves values of 0.033 W/mK or worse, Kingspan Kooltherm Pipe Insulation reaches aged thermal conductivities as low as 0.025 W/mK. As we’ll see, this can have a big impact on the thickness of insulation required.

All pipe insulation products should be supplied with clear information about their thermal conductivities. These will vary depending on the mean temperature of the insulation. To find the correct value for your application, add the operating temperature of the system to the ambient temperature and then divide this value by two.

In this example, we’ll look at a section of Table 15 (see below) which covers pipe insulation for non domestic heating services to control heat loss – low emissivity outer surfaces. In the left-column (in red), several standard pipework diameters are listed, while along the top (in green) are the expected operating temperatures separated into groups.

As these each cover a range of operating temperatures, a single standardised temperature is used within the calculation (listed in the row below). Once you’ve matched these up you can then select the appropriate lambda value from the fourth row (in blue). As you can see, the higher the lambda, the greater the thickness of insulation.

As the table only covers thermal conductivities in 0.005 WmK increments, the thermal conductivity for your chosen product may not be listed. Where this is the case, you can choose to round up to the nearest value. Alternatively, Kingspan offers pre-calculated tables within Kooltherm Pipe Insulation literature to ensure you can stay below the max heat loss value (shown in yellow) with the slimmest insulation thickness.

Contact: Kingspan Insulation.  
T: 042 975 4219;  
E: hvactechnical@kingspaninsulation.co.uk  
www.kingspantechanicalinsulation.ie ■

Indicative thickness of insulation for non-domestic heating services to control heat loss – low emissivity outer surfaces																
Outside diameter of steel pipe on which insulation thickness has been based (mm)	Low emissivity surface finish ( $\epsilon = 0.05$ )															
	Low temperature heating services ( $\leq 95^\circ\text{C}$ )								Medium temperature heating services ( $96^\circ\text{C} - 120^\circ\text{C}$ )							
	t = 75								t = 100							
	$\lambda = 0.25$	$\lambda = 0.30$	$\lambda = 0.35$	$\lambda = 0.40$	$\lambda = 0.45$	$\lambda = 0.50$	$\lambda = 0.55$	Max Heat Loss (W/m)	$\lambda = 0.25$	$\lambda = 0.30$	$\lambda = 0.35$	$\lambda = 0.40$	$\lambda = 0.45$	$\lambda = 0.50$	$\lambda = 0.55$	Max Heat Loss (W/m)
	Thickness of insulation (mm)								Thickness of insulation (mm)							
17.2	12	17	22	30	39	51	66	8.9	11	15	20	26	34	44	56	13.34
21.3	14	20	26	35	46	59	75	9.28	14	18	25	32	42	54	69	13.56
26.9	16	22	29	38	49	62	78	10.06	17	24	31	41	53	67	85	13.83
33.7	18	24	31	40	51	64	79	11.07	21	28	37	48	62	78	98	14.39
42.4	20	26	33	42	52	65	79	12.3	24	32	41	52	66	83	103	15.66
48.3	21	27	35	44	55	67	82	12.94	25	33	42	53	67	83	102	16.67
60.3	23	29	37	46	56	68	82	14.45	27	36	46	57	71	87	106	18.25
76.1	24	31	39	48	58	70	83	16.35	30	39	49	60	74	89	107	20.42
88.9	25	32	40	49	59	70	82	17.91	31	40	51	62	76	91	108	22.09
114.3	27	34	42	51	61	71	83	20.77	34	43	54	65	79	93	110	25.31
139.7	28	35	43	52	61	71	82	23.71	36	46	57	68	82	96	112	28.23
168.3	29	37	44	53	62	72	82	26.89	38	48	59	70	83	98	113	31.61
219.1	30	38	45	54	62	72	82	32.54	40	50	61	72	85	98	113	37.66
273	31	38	46	54	62	71	80	38.83	42	52	63	74	87	100	114	43.72

A section of Table 15 from BS5422.  
<https://arrow.tudublin.ie/bsn/vol61/iss5/1>

# Another side of ...

## Peter McMahon, Managing Director, EICL and ClearEnergy

Peter McMahon used to race motorbikes many moons ago but today contents himself with “motorbike track days”, mostly in the sunnier climate of Spain.

**H**e is still actively involved in the sport, mainly through sponsorship of various racers, with Thomas O’Grady from Lusk who is currently leading in the Dunlop Masters Superbike Championship on the EICL/ClearEnergy Yamaha R1.

Peter has previously sponsored

Caoith Lawless, John Walsh, Andy Farrell, Paul Barron, Alan Bonner, and international racers Peter Heijims and Michael Hofman, both of whom came to Ireland for individual road races at Cookstown and Skerries. He used to focus mainly on road races but, after losing some friends



**Thomas O’Grady, sponsored by Peter’s EICL/ClearEnergy, pictured at Cartagena with Peter prior to the race season in March this year.**

to the sport, he concentrates on closed circuit racing these days.

His own record while riding included his only win at the Jeremy McWilliams Superbike academy (in Almeria, Spain) in 2010, while he also came third in an endurance race at the same event. Jeremy (a very famous ex-MotoGP racer from NI) has since become a good friend and they played golf in Spain recently at which Peter says “I’m also not so good at.”

Peter has had many accidents during his motorcycling days and now sports the scars to prove it. Oddly enough though, the worst accident he has ever had was while skiing last January. He was very lucky to survive, having broken ribs and his collar bone, along with suffering a severe bang to the head. This caused concussion and some memory loss, but thankfully, he has since fully recovered. “Obviously, the idea of using a mobile app to see how quickly you can go down a black slope is not so clever,” he quips. ■



**Left: Peter in action in a race at Mondello.**



# SACRÉ BLEU!

## French heat pump costs blow a hole in 'nonsense' UK government policy

While this story very specifically relates to the UK and French heat pump markets, the Energy & Utilities Alliance in the UK (EUA) has, nonetheless, raised some interesting questions. Indeed, there are some parallels that are worth noting in the context of Ireland's national strategy re heat pumps, and perhaps also for heat pump suppliers.

**Evidence of heat pump costs for French consumers blows a hole in UK government policy, according to Mike Foster, Chief Executive, Energy and Utilities Alliance (EUA).** He says this new evidence renders UK heat decarbonisation plans "useless" and calls for a Government re-set.

Current UK government policy believes heat pump costs will fall by 25-50% by 2025 and reach parity with a gas boiler by 2030. As it stands, the average heat pump costs around £10,000 to install compared to a combi-boiler replacement of £1500.

The *Heat and Building Strategy*, published in October 2021, suggests that increasing volumes of UK heat pump installations will bring costs down. Some of the wilder claims suggest heat pumps could be reduced to £1000 a unit.

### Flawed argument

However, evidence uncovered by the EUA suggests this argument is flawed. It indicates that heat pump installations in France average £11,000, similar to the UK figure, but last year 537,000 heat pumps were sold in France, compared to <https://arrow.tudublin.ie/bsn/vol61/iss5/1>



Mike Foster, CEO, EUA.



**Heat pumps are a globally traded product, why would they be cheaper in the UK than France? It's complete nonsense to suggest they would. Once you debunk this myth, the whole UK heat and buildings strategy falls apart.**

50,000 units in the UK. This suggests that higher volumes do not reduce costs and presents a challenge to current UK policy.

### Cost reduction myth

Commenting on the findings, Mike Foster said: "The French have truly blown a hole in UK government policy. Their experience shows that higher volumes of heat pump sales does not massively reduce their cost. The forecasted reductions claimed by BEIS are simply numbers plucked from thin air. Just across the channel we have real word experience – 537,000 heat pumps fitted last year, at a similar cost to that experienced in the UK, with our 50,000 sales.

"Heat pumps are a globally traded product, why would they be cheaper in the UK than France? It's complete nonsense to suggest they would. Once you debunk this myth, the whole UK heat and buildings strategy falls apart. It now needs an urgent re-set.

"Boris Johnson set a target of 600,000 heat pumps by 2028 with cost reductions of 25-50% by 2025 and parity with a gas boiler by 2030. In doing so, he has thrown public money at subsidies, he has scrapped VAT on heat pumps, and threatened to fine boiler manufacturers if they fail to meet his targets. But his own advisory body has warned that heat pump running costs are higher than a gas boiler and now these mythical costs reductions are shown to be just that, a myth.

### Re-set needed

"It's time for the new PM, whoever that is, to press the re-set button. It's time to admit the previous policy was just hot air, and to urgently get our gas networks converted to hydrogen, keeping UK homes affordably warm without damaging the climate." ■



# Tantek 4D to open US office

Tantek 4D, the digital engineering company headquartered in Sligo and founded by Conor Tansey and Paul Tansey, is to create 30 new jobs and open an office in the US. Founded in 2018, it has built a notable reputation in the local and international markets as one of the most innovative enterprises within the architectural, engineering, construction and operations industry (AECO).

**The new roles** will be created over the next 18 months in areas such as digital automation, digital project management, artificial intelligence, machine learning and geospatial surveying.

In recent years, Tantek 4D has been at the forefront of developments in 4D building information modelling (BIM) technology, pioneering innovative new

software in this rapidly-advancing space within construction.

Tantek 4D, which already has offices in Sligo, Dublin and London, is expanding its operations to the US, signalling the company's aspirations to further deliver its cutting-edge services to international markets.

The expansion also coincides with a growing headcount requirement in its Irish offices to fulfil the urgent demand for their services nationwide. The job vacancies at both their Dublin and Sligo offices will increase their existing workforce from 14 to 44 when filled.

Tantek 4D's co-founder and CEO Conor Tansey said: "We are really ramping up operations in Ireland, hiring more staff and also expanding into international markets. The addition of a UK office gives us an opportunity to access a larger talent pool and drive our operations to the next level.

"It's testament to the hard work our team have put in over the last number of years and we feel that, as a company, we are strategically positioned to develop real innovation to revamp

**Above: Conor Tansey, CEO Tantek 4D with Damien English, TD, Minister of State for Business, Employment and Retail and Paul Tansey, CTO, Tantek 4D.**

internal workflows and push digital technologies that will revolutionise and disrupt the AECO industry."

Co-founder and CTO Paul Tansey said: "The core values at the heart of the company seek to challenge existing norms and offer digitally-innovative ways to consider existing workflows and processes. As industry disruptors and innovators, new technological developments will continue to shape and inform Tantek 4D's strategy and expansion, including collaboration with companies that share a complementary vision."

Tantek 4D has recently partnered with Bentley Systems in a new collaboration covering the UK and Ireland. Bentley is an American-based software development company specialising in services for the design, construction and operation of infrastructure. The new partnership will help clients accelerate project delivery and to digitally enhance construction planning and operations. ■



**If you think the lighting industry is subject to a lot of regulation now, to paraphrase a classic rock song ... "you ain't seen nothing yet".**

**In March of** this year, the European Commission adopted a proposal for a comprehensive new legislative package called the Sustainable Products Initiative (SPI). Part of the Commission's flagship Green Deal, the SPI essentially aims to ensure that only the most sustainable products are sold in Europe.

To do this, the proposals included in the SPI look to empower consumers to save energy, repair products and make smart environmental choices when shopping for new products.

Of particular interest to the lighting industry is the SPI's proposal for an Ecodesign for Sustainable Products Regulation (ESPR). This would repeal and replace the current Ecodesign Directive that the industry is by now very much familiar with. Like the Ecodesign Directive, details as to what is and is not sustainable will be decided at the product level.

The ESPR will, without a doubt, require even more from the lighting industry. In addition to the energy efficiency requirements of the current regulation, the ESPR will include specific requirements relating to life-cycle, durability, use of recycled content, repairability and raw material usage.

All these new sustainability requirements will be evaluated and introduced in product-specific rules that will include lighting. Thanks to the industry's wealth of experience with the Ecodesign Directive, and LightingEurope's leadership, the industry is well-positioned to shape the next generation of lighting requirements.

## EU's sustainability initiatives to impact lighting sector



**Gearóid McKenna,  
Chairman, Lighting  
Association Ireland.**

### A crowded landscape

However, the ESPR is just the tip of the iceberg. There is a whole slew of sustainability initiatives on the horizon, each of which will have a direct impact on the lighting industry. Take for example the initiatives designed to empower consumers by preventing so-called “greenwashing”. Under these proposals, companies will not only be required to substantiate any claims relating to a product’s sustainability, but they will have to do so using the methods set out in the Substantiating Green Claims initiative. Any claim that does not follow such methods will be deemed misleading and be subject to sanctions.

Other key initiatives include:

- *Right to Repair* – a series of measures that aim to foster a circular economy by ensuring that products can be repaired and not simply replaced;
- *Construction Products Regulation* – establishes harmonised rules on sustainability for construction products;
- *EU Green Taxonomy* – provide companies, investors and policy-makers with definitions for which economic activities can be considered environmentally sustainable and should be prioritised for financial investment and public contracts;
- *EU Green Public Procurement (GPP)* – introduces green requirements in public tenders;
- *Corporate Governance Sustainability Reporting* – establishes requirements for how companies report on their Environmental – Social – Governance (ESG) performance.

On top of these new initiatives, the EU is also expected to review and update such regulations as the Waste Framework Directive (WFD); Waste Electrical and Electronic Equipment (WEEE) Directive; Restriction of Hazardous Substances (RoHS) Directive; and Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Regulation.

### What the lighting industry can expect

What does all this mean for the lighting industry? To start with, companies will need to rethink how they design their products. In addition to being energy efficient and complying with the recently-introduced quality parameters and labelling requirements, products will also need to be designed so that they are repairable and offer increased durability. Both of these will require that necessary spare parts are available for several years. While the latter could open new revenue streams for OEMs, they must also be prepared to compete against other companies producing and selling these spare parts.

Recruiting and holding on to qualified staff experienced in sustainable product design and manufacturing will become more challenging. The EU regulatory drive on sustainability is directly impacting all sectors, from textile to electronics or cement. Companies in these areas are quickly trying to build up capacity internally to stay ahead of the regulatory trends and the market.

Sales may decrease, not only because products are more durable but also because their cost is very likely to increase.

Customers will ultimately have to cover the cost of the additional investment needed to redesign products and processes, and regulators acknowledge this fact.

The amount of information that companies will be obliged to collect and make available will increase exponentially. LightingEurope expects that today’s Energy Label will evolve into a Sustainability Label that could also include a repairability score and a lifecycle assessment. Furthermore, as previously mentioned, companies must ensure that any and all sustainability claims can be fully substantiated with evidence.

Last, but not least, expect to see Digital Product Passports (DPP) used to report information for each single product, including every substance found in a product. Considering that many electronic products contain up to 4,000 different substances, DPP reporting requirements could end up being extremely cumbersome.

### LightingEurope can help

Not only is the regulatory landscape extremely complex, it is also moving fast. While the review of ecodesign rules for light sources is set to begin in 2025, the taxonomy reporting obligations have already started this year. More so, all the obligations already mentioned are expected to apply by 2026 and 2027, less than four and five years from today.

LightingEurope is an established credible voice in the EU sustainability debate, regularly talking with regulators, NGOs and other trade associations to explain the specificities of lighting and voice members’ recommendations. Ireland has a direct input into this process via Lighting Association Ireland (LAI) which has a number of delegates serving on various LightingEurope technical committees, as well as having Gay Byrne, a founding member of LAI, on the LightingEurope Executive Board.

See [www.lightingassociation.ie](http://www.lightingassociation.ie) ■

“ *In addition to being energy efficient and complying with the recently-introduced quality parameters and labelling requirements, products will also need to be designed so that they are repairable and offer increased durability.* ”



*Learning about lighting made easy*

## Signify 'on-demand' CIBSE-accredited CPDs

Signify has announced five new CIBSE-accredited CPD courses designed to equip lighting consultants, designers, facilities managers and installers with the knowledge to help them deliver solutions that meet sustainability goals and provide protection from Covid-19.

**Ranging from topics** like the correct use of UV-C technology as an added layer for disinfection, to driving better connectivity through lighting, the new CPDs are the first ever on-demand Chartered Institution of Building Services Engineers (CIBSE) accredited CPDs. These courses are an addition to an existing

portfolio of 700 already on the Signify Lighting Academy programme that delivers training to thousands of subscribers. A certificate is generated at the end of the course confirming the CPD hours.

John Aston of the CIBSE CPD panel said: "These on-demand digital CPDs are a great initiative by Signify to enable installers, specifiers and the whole community to learn about the latest technologies and innovations. They are also something that aligns closely with our agenda at CIBSE. I encourage others to also introduce more digital CPDs on an ongoing basis."

The on-demand CPDs are as follows:  
*UV-C for Disinfection – General Awareness Training* – This training focuses on UV-C lighting for disinfection, how it works, research conducted to date, the benefits, safety considerations and applications;

*Airborne transmission – why UV air disinfection is essential?* – This is a webinar from Harvard Professor, Edward Nardell, about UV-C technology from a medical perspective and how UV-C technology is readily available, safe for room occupants and cost-effective;

*Trulifi by Signify* – While wireless connectivity is a must have, conventional wireless connectivity solutions use the crowded radio spectrum to communicate. Responding to the growing need for better connectivity, Trulifi by Signify offers an introduction to LiFi, and how co-working equipped with Trulifi isn't just the preserve of the jet-set and digital nomads;

*Biophilic Design* – For installers interested in biophilic design and natural light indoors, this CPD addresses how enhancing our connection with nature is more than simply adding plants. It covers the core principles and 14 patterns of biophilic design;

*Connected Lighting* – This CPD focuses on how connected lighting can be crucial to designing an energy-efficient system, along with its benefits and applications. It also explains how the IoT systems from Signify go beyond the base requirements in Part L to create truly efficient lighting.

"We are proud to work closely with CIBSE to provide the first ever on-demand digital CPDs", said Dermot Deely, Managing Director, Signify Ireland. "Our aim is to create the complete programme of CPDs covering the entire spectrum of lighting. We see it as an important part of our role to increase knowledge and raise technical standards for the lighting industry.

"These CPDs meet a pressing need for up-to-date guidance on the latest technology and legislation, and affirm our commitment to developing long-term partnerships with our customers."

The Signify Lighting Academy offers a comprehensive range of educational resources to advance lighting knowledge. The educational lighting materials are provided by world-class lighting experts and professionals that come with assessment tests and certificate hand-outs that are certified by CIBSE. ■



Dermot Deely, Managing Director, Signify Ireland.  
<https://arrow.tudublin.ie/bsn/vol61/iss5/1>

## Contemporary LED luminaires

# Endura – ideal lighting for outdoor spaces

LEDVANCE has introduced a new range of stylish, robust outdoor luminaires called Endura with a multitude of design and mounting options. It offers exciting illuminations for outdoor projects and garden installations, and is ideal for creating a relaxing night-time atmosphere or security-conscious space.

**The range includes** a selection of contemporary LED lanterns based on high-quality aluminium, with high energy efficiency. One option, the *Endura Style Lantern Modern*, provides a wall-mounted luminaire and bollard lantern available in two heights. IP44 class protection makes these luminaires fully protected from splashes.

The range also offers mobile wall and bollard luminaires for spot lighting solutions. The *Endura Style Midi Spot* is a flexible outdoor wall LED spotlight with adjustable luminaire heads, allowing for single or dual-lamp spotlights. They can be rotated 340°

on their own axis. Frosted or clear glass hemispheres, with 180 degree swivel, provide further options.

Stainless steel luminaires include the elegant *Endura Style Mini Cylinder*, a fixture for indirect pathway lighting. These are also available as elegant wall and bollard luminaires.

The range also features an exciting choice of decorative luminaires such as the *Endura Wall*, with a luminance of up to 2,000 lux; the *Endura Style Wall Square* and *Wall Round* which are characterised by minimalist design and high light intensity; and the *Endura Wall Loop* with brushed

aluminium casing and unusual light ring. This is a round luminaire with a sensor that can also be programmed.

For outdoor designs with limited space, the *Endura Style Ball* offers an impressive light intensity of 1,030 lumens. Its simple and low-key design blends with any architecture and, with a daylight and motion sensor, it only radiates its full power when needed.

Additional products in the range include *Surface* that radiates uniform white light when needed; *UpDown* that casts light in two directions; *Ellipse* with an exceptional shape and chic design; *Ring* and *Square* offering a trendy white or dark grey modern look; and *Wall Wide* sensor luminaires with DIP switch to select both the threshold and holding time of the light, for a flexible welcoming wall illumination.

LEDVANCE lighting solutions come in environment-friendly cardboard packaging with all relevant product information immediately visible on the outside of the box.

Contact: Stevie Young, LEDVANCE Ireland. T: 086 600 1291; E: s.young@ledvance.com ■





# THE OBTUSE ANGLE



PAT LEHANE



## Happy ever after ...

Congratulations to Jim Weldon, Director, Tech Refrigeration and his partner, Sinead Murphy, who celebrated their nuptials recently.

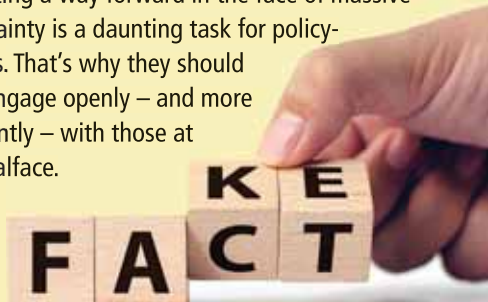
Here's wishing you both a very long, happy and healthy life together.

## Evidence-based info

With yet more incentives announced by Government to tackle the current spate of new challenges facing the country, it's important that we know of the success, or otherwise, of incentives already in place to drive the net zero objective. Evidence-based data – giving total numbers that have availed of home energy upgrade grants to date – would be highly informative.

Such an honest appraisal of progress to date will clarify what works well and, at the same time, help identify and address what does not.

Plotting a way forward in the face of massive uncertainty is a daunting task for policy-makers. That's why they should now engage openly – and more frequently – with those at the coalface.



## James covets that trophy

Commiserations to James Porter. Despite all the hard work he did at the recent CIBSE Ireland golf outing – managing the registration and then checking the cards at the end – this is the closest the poor man got to getting his hands on the trophy.

That happy smile on his face? ... I wonder what was in the trophy, despite the decoy pint of water beside it?



## Another happy ever after story

Congratulations also to Conor and Sarah Boylan on their recent marriage.

This was an all-industry occasion as Conor is Technical Specification Manager with Lindab, while Sarah (née Callaghan) is Senior Building Services Engineer, Kerrigan Mechanical. She is also Secretary of CIBSE Ireland.

Again, best wishes to you both.



## Varming AECI award

Varming Consulting Engineers won the Mechanical & Electrical (small) category at the recent ACEI Design Excellence Awards for the Donegal Garda Station refurbishment and extension project. Limited site space was overcome by the use of air source heat pump technology to allow the building to achieve its high specification energy ratings of nZEB and BER A3.

Left: At the presentation were Trevor James, Rhatigan Architects with Declan Holmes, OPW and Sean Neary, Director, Varming Consulting Engineers.

## Too many cooks ...

Seán Kelly, MEP for Ireland South and EPP Rapporteur for the EU's revision of the EPBD, has called for a dedicated Energy Minister and the creation of "a higher sense of urgency" to fortify the country's energy security. Sean does great work but, in this instance, I suggest "too many cooks" *et al.*

He is spot on in referencing use of the Inishkea gas field and the need to inject more pragmatism into our energy policy, at least in the short- to medium- term. The sense of urgency is palpable, it's how we manage it is the issue.



# Building Solutions

Today, most of our buildings have a significant negative impact on our environment and climate change. Let's change this together by building sustainable buildings with reduced energy, CO<sub>2</sub> and water footprints.



Wastewater & stormwater



Water supply & pressure boosting



HVAC - Heating, ventilation, air conditioning



Fire protection



# Panasonic

# NEXT LEVEL AIR QUALITY

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