


3-2021

### BS News March/April

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# building services

engineering

## THE ULTIMATE PUMP

Systems approach at the *heart* of the matter



Circular  
Economy  
and Lighting

Bob  
Bohannon



Commercial  
Heat Pump  
Forum

Michael  
Curran



Women in  
Engineering  
Group

Georgina  
Molloy



NZEB  
Ventilation  
Accreditation

Dara  
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ELECTRIC**  
*Changes for the Better*

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YEARS IN IRELAND  
1981 - 2021




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## EDITORIAL

### Commercial heat pumps

**W**hile many – though certainly not all – of the problematic issues surrounding domestic heat pump applications have been resolved, project reviews concerning heat pump replacements for large gas/oil boiler installations suggest a knowledge and understanding deficit across a number of disciplines.

In retrofitting a building, merely adding a new renewable technology within an existing boiler house is not the answer. The designer/engineer will need to take a deep look under the bonnet to ascertain what can be done to reduce the thermal load.

Michael Curran, Chair, CIBSE Ireland says recent conversations and discussions around heat pumps for non-domestic buildings have raised more questions than provided answers. He says a review of the situation is urgently needed before costly mistakes are made and trust is lost in the technology. (See page 34 of this issue).



# 18

### System approach at heart of the matter

The heart is the ultimate pump in nature, and the artificial pump featured on the cover clearly show why today's pump technology should not only include the actual pump, but also the associated electric motor and control system, which collectively comprise the entire pumping unit ... just like the heart in nature.

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### Lawler Walks the Walk!

Lawler Consulting has won the Building Performance Consultancy of the Year award for a second year running at the CIBSE Building Performance Awards. The CIBSE judges also commended the multidisciplinary practice for "walking the talk" when it came to demonstrating high levels of occupant satisfaction in their own buildings.

Pictured is Daniel Ring, Managing Director, Lawler Consulting.



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## NEWS AND PRODUCTS

### MBCA appoints Flynn President

**Mick Flynn** has been appointed President of the Master Builders & Contractors Association (MBCA). He is one of the



founding directors of Flynn, a leading construction and fit-out company based in Dublin, that also has operations in the UK and Europe.

The MBCA is the representative association for firms involved in main and general building contracting, and it represents members' interests to Government Departments, public and private sector clients, and the construction professionals.

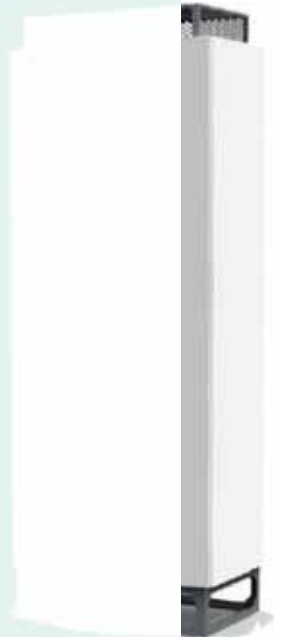
### Airfix air filtration

The new **Airfix** air filtration, purification and sanitisation system from Euro Gas not only reduces the spread of SARS-COV-2 (Covid-19), but the HEPA-13 filtration system filters more than 99% of *all* viruses and bacteria from any indoor space.

Despite the air throughput of 1600 m<sup>3</sup>/h, the device has very low noise emissions due to its internal insulation and the oversized fan section. The HEPA-13 filter process is delivered through three filter levels:

- A G4 pre-filter is positioned on the air suction side, at the bottom of the device, to trap dirt and dust. This double containment mesh G4 filter is washable;
- The F7 filter, which has a low pressure drop and a large filter area, is positioned in front of the HEPA 13 filter as a clean room air pre-filter;
- The HEPA-13 filter with a filtration of  $\geq 99.95\%$  is positioned directly in front of the fan section. An optional HEPA-14 filter, with a filter fineness of  $\geq 99.995\%$ , is also available.

Contact: Euro Gas. Tel: 01 – 286 8244; email: sales@eurogas.ie; www.eurogas.ie



### Alan Hogan appointed Sanbra Fyffe MD

**Alan Hogan** has been appointed Managing Director of Sanbra Fyffe to oversee the company's operations and provide strategic guidance to ensure continued growth and development. Alan is no stranger to the plumbing and heating industry with a career spanning 27 years in the sector, most recently as Managing Director of Heat Merchants Group..

Announcing the appointment, Martin Murphy, Director of Sanbra Fyffe, said: "We are delighted to welcome Alan to the Sanbra Group and in particular to Sanbra Fyffe. He brings a wealth of industry experience and knowledge and we look forward to working with him."

Home to the iconic Instantor® brand, Sanbra is a manufacturer and Ireland's largest wholesale distributor of superior plumbing products and heating supplies to builders merchants. Established in 1934, Sanbra Fyffe has over 85 years' experience in the industry and is renowned for quality products and service.

Commenting on his appointment, Alan said: "I am honoured and excited to join the dedicated and passionate team at Sanbra Fyffe. I am very fortunate to become the Managing Director of such a respected business that prides itself on a long history of 'Quality Without Compromise' and excellent customer service. I look forward to leading Sanbra Fyffe in its next chapter of success and growth."

Contact: Alan Hogan, Managing Director, Sanbra Fyffe. Tel: 087 - 270 5762; Email: alan.hogan@instantor.ie www.instantor.ie



### ISEA virtual conference

**The Irish Solar Energy Association (ISEA)** virtual conference will take place on 14 October 2021. This year is significant for solar in Ireland as the Government continues to deliver the Renewable Electricity Support System (RESS). The signal to market is strong that RESS 2 will continue to support those organisations that have invested time and energy in developing projects over recent years.

Delegates will hear from industry experts on how a successful solar industry in Ireland will be transformative in both job creation and investment. Solar Ireland 2021 will be a virtual roadmap to where the opportunities, challenges and successes lie in Ireland.



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## NEWS AND PRODUCTS

### HHIC gives commitment to hydrogen future

**Given the high** number of gas boiler installations in Ireland, developments in the UK re hydrogen are worth noting. Just recently the Heating and Hotwater Industry Council (HHIC) in the UK reached agreement in principle with UK boiler manufacturers that it will support any future UK Government legislation which mandates all new models of domestic boilers to be "hydrogen-ready" from 2025. This commitment is several years ahead of similar action being proposed within the EU.

Stewart Clements, Director, HHIC said: "HHIC has already developed a specification with industry detailing what a 'hydrogen-ready' boiler is. In short, it means boilers already in homes will need under an hour of adjustment to allow a future switch from natural gas to hydrogen.

"Hydrogen-ready boilers are the least disruptive means of decarbonising homes as they offer the opportunity for people to continue to heat, cook and use hot water in the same way they do today."

### Midea VRF with zonal leak detection

**Midea has introduced** a 3-pipe heat recovery VRF with zonal leak detection that is available from 8HP to 54HP. The exclusive V6R range detects real-time refrigerant leakage to guarantee the system's safe and reliable operation. The system will only isolate the MS zone that detects a refrigerant leak and non-affected zones will continue to operate safely.

The new versatile VRF range can meet the needs of small, medium or large applications with 64 indoor unit and heat exchanger combinations available, and with nominal capacities as low as 1.4kW and up to 200% connection ratio (to outdoor capacity).

The V6R is easy to install – each outdoor unit is lightweight with long piping lengths of up to 1000m, improved height difference of 110m between outdoor and indoor levels, and up to 30m height difference between indoor units. Combined with the intelligent MS Box, the V6R can meet any design brief or site restrictions.

**Right: Paul McGettigan, Midea Business Development Manager for Ireland.**



### New Condair evaporative humidifier

**Condair MC is** a new in-duct evaporative humidifier and cooler that can supply up to 360kg/h of humidity and around 245kW of adiabatic cooling to an air handling unit (AHU) from less than 0.15kW of electrical energy.

The Condair MC consists of an evaporative module and hydraulic unit which sits inside the AHU, and a control panel located outside. The evaporative module is a wall of corrugated glass fibre media cassettes, with stainless steel frames, through which the air flows. The hydraulic unit pumps water to the top of the evaporative module to wet the glass fibre media and humidify the air flowing through them.



The new Condair MC incorporates many innovative hygiene, installation and operational features, making it an ideal solution for evaporative cooling or adiabatic humidification.

Damien Power, Condair's Area Sales Manager for Ireland, commented: "With every kilogram of humidity provided by an evaporative humidifier, around 0.68kW of adiabatic cooling is also achieved. This sustainable cooling technology presents great potential to reduce the carbon footprint of our built environment. We also see more and more air handling unit manufacturers and M&E consultants incorporating direct and indirect evaporative cooling strategies into their AHU designs."

As with any adiabatic humidifier, hygiene control is paramount and the Condair MC has automated flush and drain cycles to ensure the water in the system is fresh and hygienic. Any sustained period of

non-operation will initiate a drain of the system to ensure water cannot stagnate. An optional submerged UV sterilisation system is available to kill micro-organisms in the water and further enhance hygienic operation.

Contact: Damien Power, Condair Technical Area Sales Manager, Ireland. Tel: 091 – 507 120; email: [ie.sales@condair.com](mailto:ie.sales@condair.com); [www.condair.ie](http://www.condair.ie)

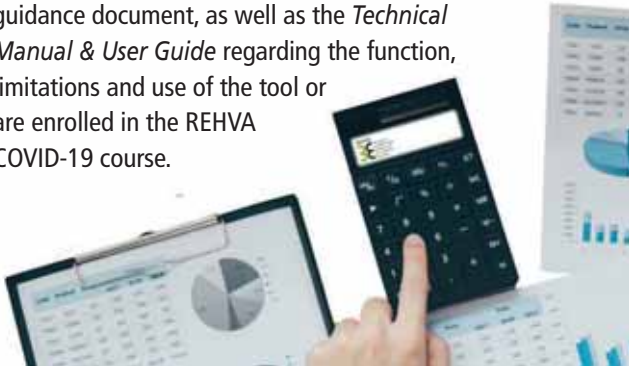


## NEWS AND PRODUCTS

### REHVA recirculation calculator

The new REVHA Covid-19 multi-room and recirculation calculator for HVAC systems' operational strategy assessment for reducing infection risk in buildings was developed by Professor Livio Mazzarella and the REHVA Covid-19 Task Force.

The tool is available for download for experts who have read and understood the related Covid-19 guidance document, as well as the *Technical Manual & User Guide* regarding the function, limitations and use of the tool or are enrolled in the REHVA COVID-19 course.



### SLL Lighting Guide

**Directed towards facilities** managers, the new SLL *Lighting Guide (LG) 20: lighting and facilities management*, considers the following key points:

- Lamp replacement, procurement and upgrading lighting installations;
- Energy consumption and the maintainability of existing lighting installations;
- Quality of light delivered, light levels, uniformity and glare;
- The right amount of light, colour temperature, maintenance factors and useful life of LED light sources;
- Timing, lighting controls, absence and presence detection, daylight linking, dimming and regulation.

LG20 was written by Sophie Parry FSLL, Vice-chair of the SLL Technical and Publications Committee, in conjunction with the CIBSE Facilities Management (FM) Group.

### Lindab appointment

Lindab (Irl) Ltd recently announced the appointment of Conor Boylan as Technical Specifications Manager.

The main focus of his role will be to aid customers, building services consulting engineers, architects, local authorities, developers and specifiers with the preparation of accurate and appropriate specification solutions for the Lindab range of system solutions and products.

Conor has been employed by Lindab (Irl) Ltd since 2018 in a technical sales position.

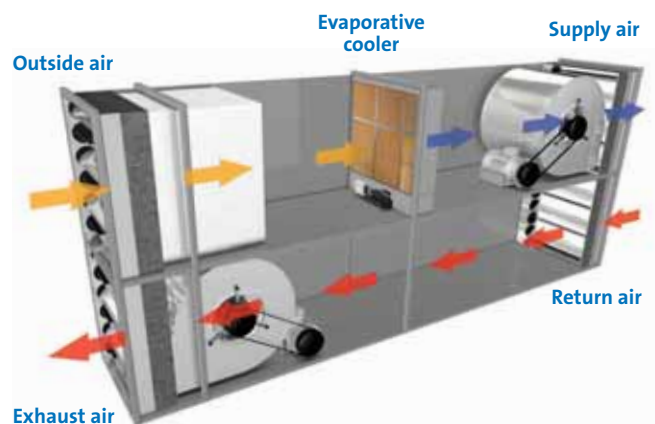


### CONDAIR MC

#### New evaporative humidifier and cooler for air handling units



Whilst operating on <0.15kW of electricity, the new Condair MC can provide up to 360kg/h of humidity and approximately 245kW/h of adiabatic cooling to an air handling unit.



#### Discover more about the Condair MC

[www.condair.ie/MC](http://www.condair.ie/MC)  
T: +353 (0)91 507 120

Humidity Control and  
Evaporative Cooling





## NEWS AND PRODUCTS

Centre Parcs,  
Longford.



### Stelrad heats Centre Parcs Ireland

**When Center Parcs** decided to open a park in Ireland – at Center Parcs, Longford Forest near Ballymahon, Co Longford – they wanted the best quality products incorporated in their famous cabins. Being open all year round (apart from when Covid-19 interrupted) they needed good-quality heating systems to ensure occupier comfort in the cooler months of the year, and that there were facilities for drying clothes after rambles through the forest setting.

When it came to selecting the radiators they chose Vita Deco radiators from Stelrad with a total of 85 being installed by Walsh Mechanical in the bedrooms and lounge/dining areas.

“We are pleased that our radiators were selected for this prestigious project in Ireland,” says Head of Marketing for Stelrad, Chris Harvey. “Our Vita series has taken off in a big way across Ireland with installers selecting them for new and replacement heating system projects. Given

the choice of models it is easy for specifiers and installers to choose the radiator that is right for every application.”

See [www.stelrad.ie](http://www.stelrad.ie) for more details, including information on the company’s “Fit for the future” campaign. You can also see regular updates on Twitter @Stelrad and Facebook @StelradRadiators.

### simPRO expands in Ireland

**Field service management** software firm simPRO has expanded its reach in Ireland by appointing Neil Batt (below) as its Dublin-based Business Development Manager. Joining simPRO in December, Neil hit the ground running working hard to help local businesses prepare for upcoming industry growth and future success.

“While there is apprehension in the marketplace currently, it is also the perfect time to invest in software to help your business when the industry bounces back,” said Neil. “There will be a positive change in the industry ... we’re already seeing movement in infrastructure investment and that will only improve over time.”

simPRO’s end-to-end field service management software is suitable for service, maintenance and project contractors.

The cloud-based solution connects the office to the field, streamlines workflows and brings all essential business data into one single location. simPRO’s expansion in Ireland ensures local businesses can implement a cloud-based solution as well

as benefit from local knowledge and expertise.

Contact: Neil Batt, Business Development Manager, simPRO. Tel: 0800 622 6376; Mobile: 087 – 466 3293; email: [neil.batt@simpro.ie](mailto:neil.batt@simpro.ie); [www.simpro.ie](http://www.simpro.ie)



### Coughlan joins Panasonic

**Frank Coughlan, who** has 30 years experience in the commercial refrigeration and ac market, has been appointed CO2 Business Development Manager for Panasonic Ireland. In addition to managing the CO2 market in the 26 counties and Northern Ireland, Frank will also support the commercial ac market in the Munster region.

The CO2 market is in the early stages of growth in Ireland and Frank believes this is the right time to establish Panasonic’s place in this growing market segment.

Contact: Frank Coughlan, Panasonic Ireland.

Tel: 087 – 349 2856; email: [frank.coughlan@eu.panasonic.com](mailto:frank.coughlan@eu.panasonic.com)



### DCT Group continues expansion

**Irish owned DCT Group** has created additional employment opportunities as it continues its expansion in Ireland and across the globe. It is currently engaged in several of Ireland’s major infrastructure projects including the Dublin Airport upgrade, National Children’s Hospital and multiple blue chip data centre projects.

In addition to moving to new, purpose-designed headquarters in Glasnevin, Dublin 9 late last year, DCT has also opened an office in the Croatian capital of Zagreb and its first international office in Oberá, Argentina.

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



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## NEWS AND PRODUCTS

### New Hardware Association Ireland President

**Hardware Association Ireland** has appointed Wavin's Irish Country Director Michael O'Donohoe as its new President. O'Donohoe joined Wavin in 2008 and was part of the senior management team that steered the pipe manufacturer through the last recession, bringing it back to strong growth.



He was appointed Country Director at Wavin in 2014 and now manages the company's operations in Ireland.

According to O'Donohoe, his immediate priority for Hardware Association Ireland is to help firms through the current uncertainties.

As we went to press he told *Building Services Engineering*: "My priority is to ensure that Hardware Association Ireland continues to provide the supports and training for businesses seeking to navigate the key issues of Covid-19 and Brexit. It is important we continue to grow our membership and engage with

Government on issues that matter to the hardware and building materials sector."

Among O'Donohoe's longer-term goals is a drive to improve quality standards in the building materials and construction sector. "Building control authorities are badly under-resourced, and we have a great chance now to get the sector into a better space for the future," he said.

Hardware Association Ireland is the representative body for Irish hardware and DIY retailers, builders' merchants, distributors and manufacturers. It represents over 400 members nationwide and 26,000 staff in the sector.

### Xylem appoints Fallon

**David Fallon** has joined the commercial sales team at Xylem Water Solutions Ireland.

David has many years experience within the building services industry, with an extensive portfolio of clients and contacts.

His primary remit is to cover the Dublin and Leinster region with a strategic focus on the residential and commercial building services market.

Contact: David Fallon, Xylem Water Solutions Ireland:  
Tel: 085 – 8874173; email: David.Fallon@xylem.com



### CIBSE ongoing training



**Designing Water Efficient Hot and Cold** is one of the latest sessions added to the CIBSE training programme. This training will provide consultants with knowledge on the different sources of water and types of water, on water regulations and byelaws, and water-related building regulations and standards.

This course would benefit engineers who have little experience of designing domestic hot and cold water services, and equally those already engaged in this subject who feel they need an update.

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

### Pinergy Lifestyle

**Pinergy**, the smart energy supplier, has announced details of its new range of "Pinergy Lifestyle" plans. The programme, which is being rolled out by ESB Networks, is committed to having 2.25 million meters installed in Irish households by 2024. To date, 240,000 households have had smart meters installed and these homes are currently having their smart meter services switched on.



A first for Ireland, the new Lifestyle plans include a "Work from Home" plan, a "Family Time" plan and a "Drive Time" plan for those looking to charge their electric vehicles (EVs) overnight. Pinergy is planning to roll out even more plans over 2021 to meet the ever-changing needs of Irish society.

### Industry golf on hold

**Both of the industry's golf societies** – the RACGS and the BTU – have understandably suspended their respective programmes for the foreseeable future. They will keep members informed with regular updates but, at the moment, it is unlikely that any outings will take place prior to September of this year.



# Think Heat Pumps. Think Grant.



\*13kW & 17kW Heat Pump

## AERONA<sup>3</sup>

INVERTER DRIVEN TECHNOLOGY



[www.grant.eu](http://www.grant.eu)

# Randridge Group acquires Don O'Malley & Partners

Randridge Group, the leading supplier of electrical, instrumentation and automation services, has acquired Don O'Malley & Partners, the long-established design, engineering and consultancy business based in Limerick. While a major development that will undoubtedly enhance and reinforce the services provided by both companies, Don O'Malley & Partners will continue to operate as a stand-alone operation.

**Over the past** number of years Randridge has transitioned to become a market-leading supplier of complex and innovative engineering solutions to the energy, petrochemical and heavy industries across Europe, Africa and the Caspian regions. Renowned for delivering excellent quality in construction, this acquisition will allow it to expand its overall offering to include quality engineering services.

Don O'Malley & Partners was established in 1967 and since then has earned an outstanding reputation for delivering professional engineering services and high-quality design across all industry sectors. Today it is one of Ireland's leading consulting engineering practises dealing primarily in mechanical and electrical design services.

"The acquisition by Randridge enhances still further the proposition we can offer to our existing and prospective clients," says Liam Kavanagh, General Manager, Don O'Malley & Partners. "It also brings us one step closer to achieving our objectives of delivering complete turnkey solutions to meet our clients' needs."

"It is clear that the environment and carbon emissions will be key drivers in the coming years", commented Charlie Quinn, CEO, Randridge Group. "This acquisition creates an opportunity for us to explore projects in renewables (wind/solar), battery and energy storage, and CCS (carbon capture and storage). It will also accelerate our growth trajectory in these areas.

"We welcome the staff of Don O'Malley to the Randridge team and look forward to integrating our business models. This will achieve greater success by offering an enhanced service to clients over the coming months and years. The joint effort and enhanced offering will also allow us to scale up, grow both businesses, and look at bigger, more challenging, projects. This will result in stable and secure long-term employment for all our personnel."

**Right: Liam Kavanagh, General Manager, Don O'Malley & Partners.**

In conclusion Liam Kavanagh, now General Manager of Don O'Malley & Partners said: "This is indeed a wonderful opportunity for both companies to embrace one another's expertise, and to open exciting new horizons and opportunities across a broad spectrum of engineering design and construction. With combined knowledge, expertise and enthusiasm, we can bring added value to a range of clients by providing design-and-build engineering solutions under the one umbrella. Together, we can offer our clients innovative and sustainable design solutions that will have a positive effect on the environment by reducing carbon emissions. We look forward to working together as a team and meeting new challenges in the built environment."

Contact: Liam Kavanagh, General Manager, Don O'Malley & Partners. Tel: 061 – 318677; 087 – 287 0856; email: lkavanagh@domalley.com; www.domalley.com ■







# SAF HEAT RECOVERY SYSTEM

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# The case for the future of sustainability starts with you!

"Throughout our industry sustainability is at the forefront of design. We strive to achieve these targets with innovative technologies, intermeshed often with older design methodology. To truly achieve the goals we place upon the project and specification, we need to begin with our own mindset and values. Achieving sustainability is not an industry issue, it is a societal issue," says *Darren Yourell, Head of Operations, Davies.*

**"Sustainability stems first** from our employees. In most companies people can often behave in ways that their organisation supports yet contradict their own personal values. Integration of this nature requires reconciling the gap between corporate and personal values. Future sustainability is a responsibility we all engage in, and this is our shared motivation at Davies.

"The Davies team is committed to choosing the right product for the right

solution. From the outset of a project we ensure that the product(s) chosen are appropriate and will achieve the best results, while also integrating seamlessly with the whole system. This holistic approach is ingrained within the Davies culture, and constantly reinforced and strengthened through our continuous training programme on products, new technologies and software design tools.

"We work with our key suppliers on commercial boilers from 40kW to 20MW, pumps, valves, heat pumps and a host of other products. These include gas detection, calorifiers, MVHR, HIUs, radiators, underfloor heating, RAC, sanitaryware and drainage.

"Our design team also looks outside of our own parameters to ensure the optimum system solution is achieved. This allows transparency of design and expectations from specification designer right through to the contractor and client. It negates ambiguity and instils trust, credibility and reliance.

"The ethos of pride in our products and

sustainability is evident. We offer a full back-up service throughout all our branches, with Barry Jay, Industrial Manager, and Sean McManus, Technical Sales Engineer, ensuring comprehensive service right down to the smallest detail. It is important for Davies that we enable our employees to strive for this higher purpose, and to channel and express their own values.

"Innovation has always been the key to Davies success. Established in 1933, it has seen its fair share of change throughout the years. Our goal is to be in a position to look back in the year of our 100th anniversary in 2033 and know that we made a positive difference for future sustainability."

Contact: Davies. Tel: 01 – 851 1700; email: [sales@davies.ie](mailto:sales@davies.ie) ■



Sean McManus, Technical Sales Engineer, Davies.



Barry Jay, Industrial Manager, Davies.



Darren Yourell, Head of Operations, Davies.

# **Lindab**® **THOR DUCT**®

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✓ Pressurisation

✓ Passive scenarios
- ✓ Kitchen Extraction

✓ Compartmentation



	 <b>Lindab</b> ®  <b>THOR DUCT</b> ® Smoke Extract	 <b>Lindab</b> ®  <b>THOR DUCT</b> ® Kitchen Extract	 <b>Lindab</b> ®  <b>THOR DUCT</b> ® Fire Ductwork
	Lindab Thor Duct® Smoke Extract ductwork is a key component of a fire strategy, by safely funnelling smoke out of a building.	Lindab Thor Duct® Kitchen Extract is comprehensively tested to satisfy all code requirements.	Lindab Thor Duct® Fire Ductwork helps maintain pressurisation systems and ensures compartmentation.
Standard	EN 12101-7	EN 15871	EN 15871
Classification	EN 13501-4	EN 13501-3	EN 13501-3
Applications	<div>✓ Single and multi-compartment</div> <div>✓ Vertical and horizontal, at 1500pa</div> <div>✓ Smoke extract</div>	<div>✓ Single and multi-compartment</div> <div>✓ Vertical and horizontal</div> <div>✓ Kitchen extract</div>	<div>✓ Single and multi-compartment</div> <div>✓ Vertical and horizontal</div> <div>✓ Passive and pressurisation</div>
Type	Class S	Class S	Class S



Lindab Thor Duct® products and insulation have been tested as a system in accordance with test standards which includes access doors, silencers and bracketry. All tests were conducted in EOTA approved laboratories, and each licensed manufacturing location has a factory production control (FPC) in place to ensure exacting standards of manufacture.

\*90 minutes is standard with Lindab Thor Duct®

## Engineers Ireland

# Women in Engineering group established

**E**ngineers Ireland (EI) recently marked the formation of a new Women in Engineering Group with a virtual panel discussion attended by over 130 delegates that was held on EI's International Women's Day. Prior to that the group had held its first meeting in January with over 30 engineers from junior to senior level in attendance.

The group is open to engineers of all gender identities and backgrounds, and aims to support women,

pre- and post-graduation, including those returning from a career break, who have chosen to pursue a career in engineering.

Chair of the Women in Engineering Group, Georgina Molly commented: "The enthusiasm we saw in the first meeting in January really highlighted how necessary a group like this is. Providing quality networking and mentoring opportunities for women in the industry will help ensure a steady pipeline of female engineers,

and hopefully lead to an increase in women in senior positions.

Susan McGarry, Managing Director, Ecocem Ireland chaired the discussion at the event and was joined by a panel of diversity and inclusion experts, including Sarah Claxton, Organisational Development Manager, ESB, and Chair of the Diversity and Inclusion Committee in Engineers Ireland, and PJ Rudden, former President of Engineers Ireland and Chairman of Construction Sector Innovation and Digital Adoption at the Department of Public Expenditure and Reform.

Maurice Buckley, President of Engineers Ireland and Caroline Spillane, Director General of Engineers Ireland joined the panellists for the online webinar entitled "Choose to Challenge – Breaking Down Barriers".

Mr Buckley welcomed the creation of the Women in Engineering Group and highlighted the importance of promoting female engineers at leadership level across the industry. Presently, 32% of the Council members within Engineers Ireland are women. Addressing the theme of International Women's Day, he challenged Engineers Ireland sectors to address the issue of diversity and inclusion within their committees.

Much of the lively discussion focused on the gender pay gap and how the lack of women in senior management roles perpetuates this gap. It was followed by a very animated and constructive Q&A session.

The next Women in Engineering event will take place on International Women in Engineering Day on 23 June 2021, with additional events to follow throughout the year.

For further information on Engineers Ireland's Women in Engineering Group visit: <https://www.linkedin.com/groups/12495676/> or [www.engineersireland.ie](http://www.engineersireland.ie) ■



Left: Georgina Molloy, Chair, Women In Engineering Group.





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# Grant launches eLearning Academy for heating trade

Leading heating technology manufacturer Grant has launched its new eLearning Academy. The online based learning platform has been developed for plumbers, installers, BER assessors, specifiers, engineers, electricians, and builders throughout Ireland so that they can complete Grant product courses and develop their industry knowledge from the comfort of their own homes.

**For many years** Grant has been welcoming tradespeople from across the country to its state-of-the-art training academy based at the manufacturer's headquarters in Birr, Co Offaly. The launch of Grant's new eLearning platform is just another step forward by Grant in providing on-demand training and resources to those interested in continuous learning.

Commenting on the launch of the Grant eLearning Academy, Keith Scully, Grant Technical Sales and eLearning Academy trainer said: "Grant eLearning Academy operates on its own dedicated platform, with each course and resource carefully developed to the highest standard. It is a key priority of ours to provide our

dedicated network of installers, engineers and specifiers with all the necessary training they need to help advance their skills and knowledge on our innovative product range."

The Grant eLearning Academy features both on-demand and instructor-led courses which vary in both content and form, allowing plumbers and heating engineers to tailor their training to best suit their requirements. On-demand courses will allow students to work through the content at their own pace, whereas the instructor-led courses feature real-time tuition provided by one of Grant's dedicated technical trainers. In addition, the eLearning Academy also includes various news articles and guides to help heating



professionals further their learning beyond the virtual classroom.

Grant's eLearning Academy courses explore different product installations, health and safety advice and CPD. One course that has proved popular within Grant's on-site Training Academy and is continuing to receive much interest online is the Aerona<sup>3</sup> R32 air source heat pump Installer course. As more tradespeople are beginning to recognise the importance of recommending and installing renewable heating technologies within building projects, the demand for heat pump training has increased.

Grant's A+++ Aerona<sup>3</sup> R32 air to water air source heat pump is the manufacturer's most sustainable main heat source and is heating more and more homes throughout Ireland each year. The Aerona<sup>3</sup> is available in four outputs of 6kW, 10kW, 13kW and 17kW and has quickly become a popular choice among those working in the trade, due to its cleaner, more environmentally friendly performance, and its ability to lower a property's overall carbon footprint, which will ultimately help to achieve NZEB building standards.

By registering to Grant's eLearning Academy, those in the heating trade will have access to both beginner and advanced Aerona<sup>3</sup> training, as well as all other Grant training courses and resources.

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

**Think Heating. Think Grant** ■



Grant Aerona<sup>3</sup> R32 10kW air to water air source heat pump.



# mèta

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E-mail: [info@calpedaireland.com](mailto:info@calpedaireland.com)



COVER STORY

## THE ULTIMATE PUMP: Systems approach at the *heart* of the matter

# 'Extended Product Approach (EPA) should also cover water pumps'

Europump, the European association of pump manufacturers, has called for the "extended" product approach (EPA) – which already applies to heating pumps – to be applied to water pumps.

Below: Frank Ennenbach, Chairman, Europump, Standards Commission.

**This would mean,** in energy use assessment terms as required by the Eco-Design Directive, that not only should the actual pump be included, but also the associated electric motor and control system, which collectively comprise the entire pumping unit.

Europump members represent more than 450 pump companies with a collective production value of more than €10b and an employee base of some 100,000 people across Europe. This influential body plays a significant role in helping to create the product and application standards that shape the manufacture, supply and installation of pumps and

their related systems. Its technical, standards, SME and marketing commissions engage in a wide range of matters and interface with a host of other trade organisation and institutions around the world.

One such area of activity relates to the European Union's ongoing revision of the Eco-Design Directive and its implementing measures, which are intended to facilitate a notable reduction in the energy used by a broad range of products and equipment, be they for domestic, commercial or industrial applications. Under the Directive, and by way of precedence, the EPA principle has already been readily accepted in the case of heating pumps. Europump says this should now also apply to water pumps.

### **Total life cycle cost counts**

This proposal would have a huge impact on energy efficiency. After China and the USA, the continent of Europe has the third largest electricity consumption in the

“

The Eco-Design Directive aims to improve the environmental impact of energy-intensive products through optimal design. Europump has determined that water pumps can reduce electricity consumption by 35 TWh from 137 TWh a year.

world – around 3,300 terawatt hours (TWh) per year. More than 300 TWh of this is accounted for by electric pumps. That is the equivalent to the generated output of 30 large coal-fired power plants.

The Eco-Design Directive aims to improve the environmental impact of energy-intensive products through optimal design. Europump has determined that water pumps can reduce electricity consumption by 35 TWh from 137 TWh a year. This would make it possible to shut down four coal-fired power stations. However, these enormous energy savings can only be achieved if the “narrow” product approach is abandoned in favour of an “extended” product approach, with the aggregated savings being considered over the entire life cycle of the product and its related system.

Representations are ongoing, with the pump industry determined to encourage the legislators to move away from the existing product approach that was adopted in 2009 for water pumps.

### The right decision

Frank Ennenbach, Chairman of the Standards Commission at Europump says: “We see a real danger that we will not save the 35 TWh that we could. We will then miss the opportunity to make a major contribution to sustainability and climate protection. We have everything we need. We just need the legislators to make the right decision.”

In the meantime, Europump supports the demand of pump manufacturers for a move away from the “narrow” to the “extended” product approach when assessing the energy efficiency for water pumps. ■





# Plug & Play Mèta self-priming booster set

The Mèta self-priming booster set from Calpeda Ireland is a Plug & Play solution incorporating built-in frequency converter, an integrated pressure transducer, an integrated check valve and a built-in pressure vessel. The VSD controls the speed of the pump and allows it to keep a constant pressure.



**“Essentially, Mèta is based on the principle that the one pump is suitable for multiple and varied domestic applications,”** says Graham Fay, Managing Director, Calpeda Pumps Ireland. **“This makes it the perfect choice for installers who get everything they need in one unit, while it is also ideal for merchant stockists who don’t have to carry additional accessories and add-ons to complement to core pump.**

**“While primarily aimed at the domestic sector, Mèta’s programmable controls and features mean that it is also suitable for commercial installations. In addition, it is very competitively priced and offers excellent value for stockists, installers and indeed the end-user. This is a very exciting addition to our portfolio and strengthens still further our fast-expanding business with our merchant stockists partners.”**

Mèta is equipped with versatile programmable software and, thanks to the digital pressure sensor, it has the facility to set the operating <https://arrow.tudublin.ie/bsn/vol60/iss2/1>

pressure precisely. The IE4 high-efficiency asynchronous single-phase motor makes for excellent energy efficiencies, typically delivering 400W less energy consumption when compared to a standard pump solution.

## Key protection/safety benefits

- Dry-run protection;
- Detects the presence of air in the pump casing;



The Mèta control panel display highlights motor operating frequency, delivery pressure, supply current input, supply electrical input and supply voltage.

## Mèta Variable speed pressure boosting system with integrated control.

- Overload control and overheating motor control;
- Pump blockage alert;
- Power supply control;
- Starts per hour control;
- Detects small leakages in the system;
- For domestic use primarily, but also suitable for commercial applications.

## Principal features

- Integrated frequency converter and non-return valve;
- Build-in pressure vessel;
- Maximum flow 8.4 M3/hr;
- Maximum pressure 5 Bar;
- Adjustable pressure setpoint;
- Built-in motor protection.

Contact: Graham Fay,  
Calpeda Pumps.

T: 01 – 861 2200;

M: 086 – 819 3059;

e: [graham@calpedaireland.com](mailto:graham@calpedaireland.com);

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





**This is exactly what the ecocirc XL plus will provide.**

Published by ARROW@TU Dublin, 2021

# Grundfos improves homeowner comfort with launch of latest booster pump

Many homeowners have learned to live with poor comfort in the form of low or fluctuating water pressure because they don't think the problem can be solved, or because they expect it will require many days of expensive plumbing work. But the introduction of the SCALA1 to the range of Grundfos SCALA booster pumps is changing that game.

**The Grundfos SCALA1** is a fully-integrated "plug and pump", all-in-one, self-priming, easily installed compact pump for domestic and light-commercial applications, for pressure boosting to one- and two-family homes and apartments, and also for garden irrigation.

"If your customers experience noise from their booster systems in the home or garden, it is often due to poor pump technology or poor pump control. These issues are easily solved with a Grundfos SCALA1 pump, which with its unique

water-cooled motor features, decreases the pump noise level by 6 dB (A), thus reducing the sound level of the pump by half, as well as reducing vibration in the pressure boosting system," explains Ray Broughan, Sales Engineer at Grundfos.

SCALA1 incorporates advanced protection features to give the installer and homeowner peace of mind. Dry running protection automatically stops the pump in case of water shortage. Cycling

protection prevents the pump starting frequently in case of minor leakages in installation; and maximum run-time protection can stop the pump after a desired period of continuous operation, preventing potential flood damage in case of pipe breakages.

Also, the pump has built-in motor protection that will stop it if exposed to excessive temperatures due to high ambient temperatures, in case of seizure or overload, thus preventing a motor burnout.

## Digital with Bluetooth

A welcome addition, the SCALA1 includes Bluetooth connectivity. This allows for faster set up, monitoring, troubleshooting and control of the SCALA1 from a smartphone via the Grundfos GO Remote app. The app also makes for easy setup using the SCALA1 as a twin-booster system, operating as duty/standby as well as duty/assist.

SCALA1 requires no maintenance, but it is recommended to keep the pump clean, check the non-return valves and keep the ventilation holes free of dust.

To learn more about the SCALA range of products go to [www.grundfos.ie](http://www.grundfos.ie) ■





## ENERGY EFFICIENCY

# How the right pumps and circulators can futureproof any system



Lowara ecocirc X.

Commercial and residential buildings are responsible for around 40% of total energy consumption (along with 36% of CO<sub>2</sub> emissions) across Europe<sup>1</sup>. As much as 40% of that energy consumed in buildings is used for HVAC, meaning that efficient and sustainable systems offer a means to rapidly reduce environmental impact as Ireland moves towards net-zero carbon emissions by 2050, writes Kevin Devine, General Manager Sales – Ireland, Xylem Water Solutions.

**One of the** offenders can be oversized heating systems that use up to 50% more energy than necessary. Smart solutions for tackling inefficient HVAC operation include high-efficiency circulators and pumps for heating, cooling and hot water applications which bring numerous benefits, including greatly reducing energy consumption.

## Getting the most from your pump

It is vital to assess whether pumps are operating at their best efficiency point (BEP), and whether a different type of pump would perform more effectively for the application. Straying from the BEP means premature wear, additional maintenance requirements, reduced overall efficiency and, as a result, increased downtime.

Effective monitoring is vital for understanding the health of assets and optimising the efficiency of equipment. Smart inventory management and efficient scheduled maintenance will reduce energy consumption.

For example, programmable logic controller (PLC) controls will allow pump HVAC pipework – efficient and sustainable systems reduce environmental impact.

performance to be controlled and optimised. Better still, incorporating a pump with integrated intelligence into the system can further revolutionise process water management, for example, eliminating downtime while also reducing greenhouse gas emissions and energy costs.

## Smart tech for smart buildings

Digital water solutions can bring about major cost-savings through reduced resource use and less time spent on monitoring and maintenance. Harnessing the power of technology can ensure the whole pumping system performs at the highest efficiency level, delivering the performance needed at low costs for energy and maintenance, and with the bare minimum of unplanned downtime.

Variable frequency drives (VFDs) allow pumps to respond smoothly and efficiently to fluctuations in demand. For example, while connecting building automation systems they offer the potential for energy optimisation through digital control, monitoring and protection of the system.

## Right circulator can cut energy costs

The Lowara ecocirc XL and XLplus wet rotor circulators provide state-of-the-art technology in hydraulics, motors and

intelligent controls. Suitable for both cooling and heating, including geothermal and solar systems, the different operation modes can be used for all real-life situations, including automatic proportional pressure control, constant pressure control and differential temperature control.

The automatic night setback function ensures the circulator will only increase its performance levels when there is a demand, cutting energy consumption and utility costs.

For use with a building management system, the range is available with either Modbus RTU or BACnet – and the hardware is installed right into the circulator. This means an additional PC is not needed, allowing for quick and easy installation with no advanced programming necessary.

Intelligent devices like the ecocirc can build resilience into any 21st-century system as we look to a smarter future.

For more information on smart, scalable, modular heating and cooling technology, visit [www.xylem.com/en-uk](http://www.xylem.com/en-uk) ■

## Reference

1. [https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/energy-performance-buildings-directive\\_en](https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/energy-performance-buildings-directive_en)





# Wilopark: Systemically relevant, sustainable and digital



Over 1,500 international guests from the world of business and politics, as well as Wilo employees, took part in the recent digital event to celebrate the opening of Wilopark, Wilo's new headquarters in Dortmund.

**A**mong the guests who sent video messages for the occasion were German Chancellor Dr Angela Merkel. After a brief welcome address, Oliver Hermes, President & CEO of the Wilo Group, explained why the opening of the Wilopark represents such an important milestone in the history of the company: "With an investment volume of around €300m, the redesign of Wilo's headquarters not only represents the largest project in our company's history, but also one of the largest industrial construction projects ever undertaken in Germany."

<https://arrow.tudublin.ie/bsn/vol60/iss2/1>

The ultra-modern digital "Smart Factory", the "PioneerCube" office building, a customer service centre and product development facilities extend

across an area of almost 200,000 sq m. Chancellor Merkel expressed her congratulations and also took the opportunity to highlight Wilo Group's



Oliver Hermes, President & CEO Wilo Group, talked to more than 1,500 high-ranking, international guests from business and politics, as well as Wilo employees, during the official opening of the Wilopark.



impressive track record in economic and environmental terms with its innovative pumps and pump systems, for which the group has been recognised with the National German Sustainability Award 2021.

NRW Minister-President Armin Laschet, Professor Andreas Pinkwart, State Minister for Economic Affairs and Energy of North Rhine-Westphalia, and Karl-Josef Laumann, State Minister for Labour, Health and Social Affairs of North Rhine-Westphalia, also passed on their personal congratulations.

### Climate-neutral production

With the construction of its new headquarters, the Wilo Group has implemented a future-oriented operator concept and digitally networked building services. This means a reduction in energy consumption by almost 40%. At the same time, CO<sub>2</sub> emissions are set to fall by 3,500 tonnes per year. This equates to the same amount of CO<sub>2</sub> that 280,000 trees can absorb.

“

An investment volume of around €300m represents one of the largest industrial construction projects ever undertaken in Germany.

“For us as a climate protection company, implementing a comprehensive sustainability concept was massively important from the outset. We are proud of the fact that climate-neutral production is already taking place at the Wilopark. We want this to be standard practice at all of the main Wilo production sites by 2025,” emphasised Georg Weber, Member of the Executive Board & CTO of the Wilo Group.

Wilo has developed an explicit sustainability strategy on the basis of its corporate strategy “Ambition 2025”.

Published by ARROW@TU Dublin, 2021



The Wilopark represents the new digital headquarters of the technology specialist.

The group's goal is to supply more people with clean water while, at the same time, reducing its carbon footprint. “The Wilopark is one of our many contributions towards helping the tried and tested transformation region that is the Ruhr, as well as North Rhine-Westphalia and indeed Germany as a whole, on the journey to a green and at the same time digital future,” reiterated Oliver Hermes.

Also tuning in live from around the world were top customers and partners of the Wilo Group. For example, congratulatory words were sent in to Wilo top management all the way from Kazakhstan by Deputy

Prime Minister, Roman Sklyar, and from China by former Ambassador of the People's Republic of China to Germany, Shi Mingde.

### Digital “Smart Factory” tour

Before the event was brought to a close, guests were given another glimpse into the centrepiece of the new Wilopark, the digital production site. Despite “social distancing,” guests were able to virtually experience the site and see at close range that all the process steps are networked and transparent in this state-of-the-art facility, and that the individual process components and machines are equipped to handle Industry 4.0. ■



Wilo staff from around the world also followed the opening ceremony.

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We are your most efficient and helpful partner in mastering your indoor air quality challenges. Systemair offers a wide range of energy-efficient AHU's, HRV Units, Fan Coils, VAV Boxes and Diffusers. We help our customers in combining these products into total solutions meeting their demands.

Systemair develops, produces and delivers air distribution products, diffusers and air flow control units for commercial buildings. These components not only comply with the interior design requirements, but also make their own contribution to a pleasant indoor climate. This is guaranteed by our development lab, which is one of the most modern in Europe. There we measure air volumes, throw, coanda effect, sound level and temperature sequences so we can provide our customers with accurate data. We can further support our products with 3D selection software, quick selection tables and the knowledge of our in-house Building Service Engineers.

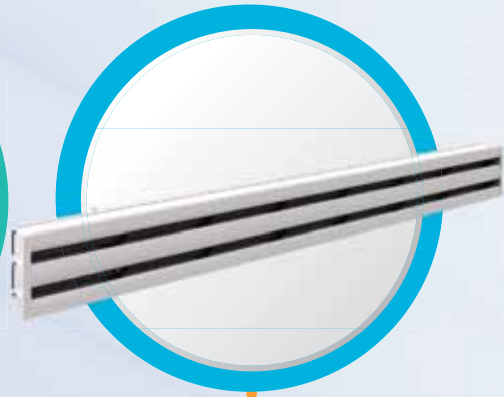


Air  
Handling Units

Circular Swirl & Swirl Perf



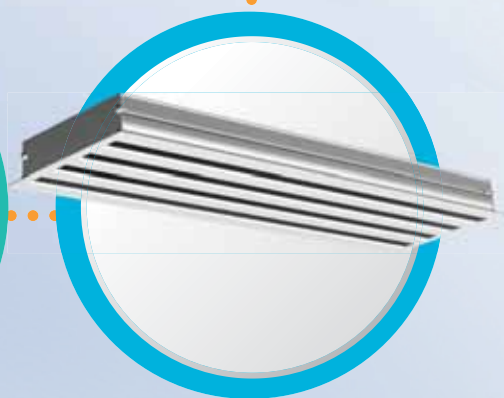
Linear Slot Diffusers



Variable Air Volume Units



Floor Swirl Diffuser



High Induction Linear Slots

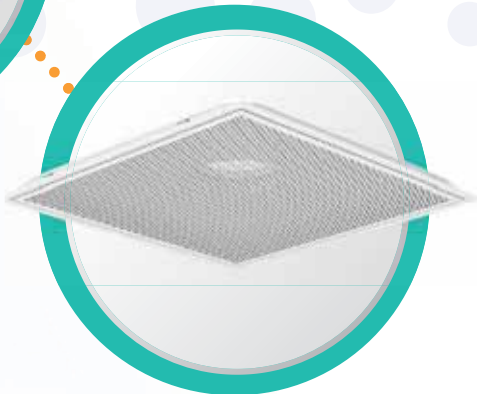




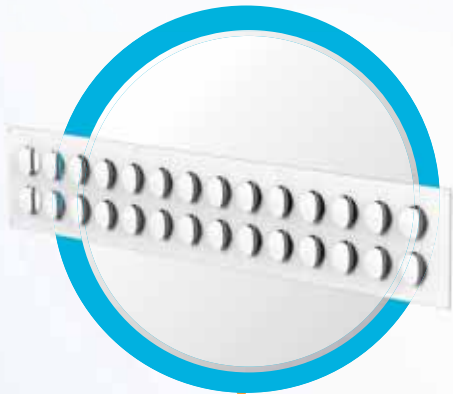
Ceiling Mounted  
Heater Recovery Units



Thermally Adjustable  
Diffusers



Perforated Return  
Grilles



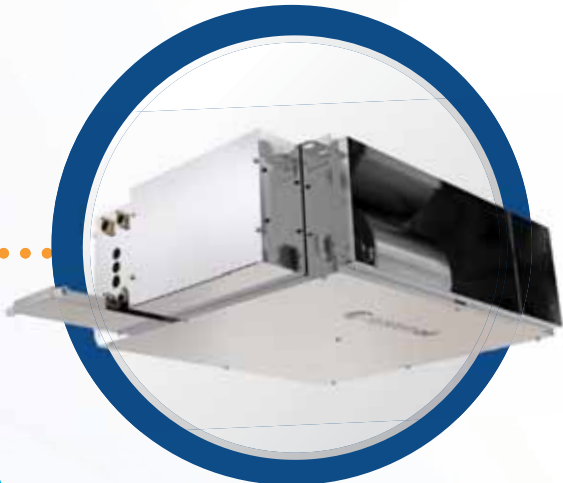
1200x300  
Integrated  
Diffusers



Multi Nozzle Diffusers



Exposed Diffusers



4 Pipe EC Fan Coil  
Units

## WWETB NZEB VENTILATION TRAINING COURSE

# NZEB ventilation accreditation is key to competency

The ventilation industry in Ireland is changing for the better. With the introduction of *Technical Guidance Document F Ventilation – 2019*, the quality of ventilation design, installation and commissioning is improving. In 2019, Michael O'Brien (WWETB) chaired an advisory panel which included representatives from the Department of Housing, Planning and Local Government, the National Standards Authority of Ireland (NSAI), the Sustainable Energy Authority of Ireland (SEAI), the Irish Ventilation Industry Association (IVIA) and MosArt Architects. Dara McGowan, MosArt, developed the national skills specifications to address the training needs which were then signed off by the National Advisory Group.



Michael O'Brien, WWETB.



Dara McGowan, MosArt.

**In this article** Michael and Dara answer the top 10 questions asked about the WWETB NZEB ventilation training course and the new ventilation regulations.

### The training

**Q:** *Where did the idea to set up a ventilation training course come from?*

**MOB:** Based on a meeting myself and colleagues had with representatives from the ventilation industry at the SEAI Conference the need for this training became evident.

**DWG:** When Part F 2019 was published, it was stated that "ventilation systems should be designed by competent designers and systems should be installed, balanced and commissioned by competent installers" At the time there was no course available in Ireland to prove competency.

**Q:** *What sort of content is covered on the NZEB Ventilation course?*

**DWG:** We start by introducing attendees to Part L – Conservation of Fuel and Energy 2019 and Part F – Ventilation 2019. We present the most important requirements in these two documents in an easy-to-interpret fashion.

We then focus on ventilation-specific content. There are many ways to ventilate a dwelling, but we currently focus on the three main ventilation strategies outlined in Part F 2019, namely (1) natural ventilation, (2) continuous mechanical extract ventilation (CMEV) and (3) mechanical ventilation with heat recovery (MVHR). We look at these strategies in great detail and teach best practise methods for designing, installing and

commissioning them. Of course, learning how to calculate minimum ventilation requirements is an important part of this section too.

**MOB:** It is the practical training that makes this course so special, with around 40% of the learner's time spent working through hands-on practice and application. This is consistently mentioned as a highlight for our learners in our feedback forms. Practical training is completed on purpose-designed training rigs which allow attendees to experience real-world installation and commissioning scenarios. Learners get hands-on experience with multiple ventilation strategies, installation options and measuring equipment.

At the end of the course, you have to complete a theory exam and a practical assessment, both of which must be successfully passed before you receive competency certification.

**Q:** *Does successful completion of this course mean I can carry out independent validation?*

**DWG:** No, upon successful completion of this course you will be deemed competent to design and install ventilation systems.

**MOB:** If you wish to become an independent validator you must first complete a Ventilation Proficiency Test, which is also run by WWETB. This test is designed to ensure candidates have their anemometer configured correctly and know how to use it properly. Once you have successfully completed this assessment, you can contact Gary O'Sullivan (Certification & Inspection Officer Sustainability & the Built Environment of the NSAI), who will schedule a validation test with you.



# UV-C

## DISINFECTION UNIT



*FläktGroup has been supplying UV-C systems for over 15 years. Our offer has been updated to combat the current requirements. The design is tried and tested to eliminate over 90% of any viruses in the airstream. UV-C light, in the correct concentration, attacks the virus DNA, renders it harmless and disinfects the airstream.*



*90% effectiveness in disinfection*

*Available as unit mounted for CAIRplus & eQ Modular AHUs*

*No ozone is generated.*

*Long service life - 2 year 24/7*

*Available duct mounted for retro-fitting to existing installation*





Attendees commissioning an MVHR system in the WWETB NZEB Training Centre in Enniscorthy, Co Wexford.

**Q:** *Is successful completion of the NZEB ventilation course the only way to prove competency in ventilation design and installation?*

**DWG:** While not mandatory to take the NZEB ventilation course to prove competency, as far as we are aware there are currently no other approved courses available in Ireland. In developing this course, we worked very closely with Emmanuel Bourdin (Built Environment Advisory Unit of the Department of Housing, Planning and Local Government) and Gary O'Sullivan (NSAI) to ensure that successful course candidates have the competencies required to work in the ventilation industry. The NZEB ventilation digital credential awarded to all those that pass the assessments can officially be used as proof of competency.

**Q:** *How much does it cost and what certification will I receive upon successful completion?*

**MOB:** You may qualify for funding under the Skills to Advance initiative (STA). STA is a SOLAS initiative in partnership with WWETB and supported by Government. You must have an Irish PPS Number to qualify for funding. Upon successful completion of the course assessment, you will receive the following award: Nearly Zero Energy Building (NZEB) Ventilation

(City and Guilds Assured), which can be used as proof of competency in ventilation system design, installation, commissioning and balancing.

If you are not eligible for funding, the NZEB ventilation course costs €300.

All WWETB NZEB courses are certified.

### New ventilation regulations

**Q:** *Can I distribute the overall ventilation air in a different way to that outlined in Part F – 2019?*

**DWG:** Technically, Part F is a guidance document so you can use different calculation methodologies but, it is your responsibility as a designer to prove compliance with Part F, or equivalent. This can be a difficult process, so you are safer sticking to what is outlined in Part F.

**Q:** *Can natural ventilation be used in an NZEB building?*

**DWG:** Yes, natural ventilation can be used where the air permeability of the dwelling is between 3 m<sup>3</sup>/hr.m<sup>2</sup> and 5 m<sup>3</sup>/hr.m<sup>2</sup>. You should be aware that there are calculation methodologies outlined for this "system" too. It's worth noting that most new-build projects are using some form of continuous mechanical ventilation, so natural ventilation seems to be on its way out.

**Q:** *What exactly is the independent validator checking?*

**DMG:** The independent validator will

measure supply and extract rates to ensure they are within a tolerance of the designed ventilation rate. It is not the independent validator's responsibility to confirm that the system is compliant with Part F, nor is it his/her responsibility to check installation details, although they can take note of poor installation in their report. The validators are checking that the actual flow rates are within the following tolerance of the designed flow rate:

+/- 10% where the designed flow rate is above 10 l/s or +/- 1 l/s where the designed flowrate is below 10 l/s

**Q:** *How many independent validators are currently registered; how much will it cost and who pays for it?*

**DMG:** There are 18 independent validators at the time of writing. These validators are spread across 10 counties. The cost of independent validation is market driven. It will likely be similar to the cost of an air permeability (blower door) test. As to who pays the validator, this will vary depending on the contract in place for the project but ultimately the cost will fall on the homeowner. In my opinion this cost is well worth it, however, given the importance of ensuring good indoor air quality.

**Q:** *If a system is not presented in Part F, does that mean it cannot be used in an NZEB dwelling?*

**DMG:** Not necessarily. For systems that are not presented in Part F it is the responsibility of the manufacturer to provide proof that its system can ensure indoor air quality as good, or better, than systems outlined in Part F. This is usually done via Agrément certification.

For more information visit: <http://nzeb.wwetbtraining.ie/>. To register for the NZEB ventilation course, contact WWETB directly at [nzeb@wwetb.ie](mailto:nzeb@wwetb.ie). ■

The AIC heating portfolio – exclusively available from C&F Quadrant – covers a wide range of outputs and is the perfect solution for a variety of commercial applications. At the heart of every boiler is the unique “fire-tube” stainless steel heat exchanger which delivers maximum heat extraction with minimum size. Brief details of the range are highlighted here.

## NESTA PLUS

The extended range of NESTA PLUS boilers is designed for commercial and industrial applications. Based on the tried and tested “fire-tube” design heat exchanger, the range of floor-standing condensing boilers is now available in models with outputs from 280kW up to 840 kW. They can also be installed in cascade.



## NESTA



The NESTA range of floor-standing condensing boilers offers high-efficiency and enhanced performance with intelligent control system. Built with a stainless steel heat exchanger of proven “fire-tube” design, AIC boilers are suitable for demanding commercial applications. Models from 129kW up to 250kW.

## COILMASTER

Designed to optimise efficiency and performance, with an additional domestic hot water circuit for immediate response to hot water demands. All six models are equipped with stainless steel heat exchangers and stainless steel inlet and outlet water manifolds. Models from 35kW up to 120kW.



## NESTA CHROME

Offering flexible heating solutions for larger output requirements, NESTA CHROME boilers can be installed in cascade of up to four boilers using the internal controls. Cascade installation also ensures the delivery of efficient modulation and minimal loss of output during servicing. Models from 60kW up to 150kW.



## SILOX

The twin wall concept represented in SILOX cylinders is a combination of two tanks, one inside the other. The production of domestic hot water occurs when the heat from the outer primary cylinder is transferred to the inner DHW cylinder, utilising the full surface area for superior heat transfer and reheat time. Sizes from 140lt up to 1000lt.



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# Hydronic Engineering

***"IMI have solutions to achieve maximum performance in all types of projects from the worlds tallest buildings to schools and everything in between"***

## Case Studies:



### **Marina Bay Sands**

IMI Hydronic Engineering successfully delivers cooling system for landmark development in Singapore.



### **Federation Tower Skyscraper Complex**

IMI Hydronic Engineering ensures an ideal climate inside the highest building in Europe.

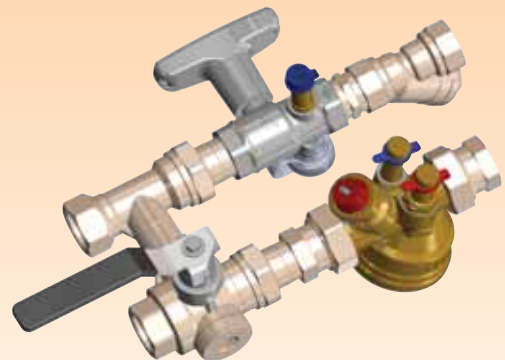
For further case studies visit:  
[www.imi-hydronic.com](http://www.imi-hydronic.com)

IMI Hydronic Engineering is over 120 years old and is the industry-leading provider of a range of products and services that enable you to take control, increase efficiency and drive down initial and ongoing costs with innovative and reliable HVAC solutions.

We are producing balancing valves for over 60 years since we launched the world first manual balancing valve in 1957.

Our global reach and phenomenal track record – we have provided solutions to more than 100,000 projects worldwide – means that when you choose an IMI Hydronic Engineering product you can rest assured that you have made the right decision. We never stand still and are constantly striving to develop innovative technologies that are simple to install, easy to maintain and help minimize cost.

**IMI TA – is the market's leading Balance, Control and Actuation technology provider – delivering optimum control for the perfect indoor environment**



## COMMERCIAL HEAT PUMP APPLICATIONS

# Avoid technology being discredited with deep look under the bonnet

In this opinion piece *Michael Curran, Chair, CIBSE Ireland*, calls on all stakeholders – from regulators and legislators through to system designers, engineers, installers and manufacturers – to engage in round table discussions to ensure that the roll-out of heat pumps in commercial applications and public sector buildings is as successful as that of domestic heat pumps.

**The Climate Action Plan 2019** sets an ambitious target of installing 600,000 heat pumps in domestic and non-domestic properties by 2030. It also has ambitions for the electrification of heating systems by way of decarbonisation of the electrical grid by 70% through wind and other renewable technologies.

A lot of work and research has led to the uptake of domestic heat pumps in Ireland and the increasing figures show that additional funding models have helped. Initial trouble-shooting and technical capabilities have been resolved and more reliable systems are now available.

While the domestic market is stabilised, the non-domestic heat pump market is not as well served. Project reviews and queries in relation to the provision of heat pumps as replacements for large gas/oil fired boiler houses are leaving designers nervous. Research and pathway projects are looking at heat pump technology to serve the non-domestic market, and to meet the demands of thermal comfort in larger buildings. Air-to-water heat pumps are currently the favoured technology in some new and retrofit projects, although questions raised can be considered for all heat pump technologies.

The Government has set targets to reduce primary energy use and carbon emissions in public sector buildings. The plan is to achieve this by a reduction in fossil fuel use and the use of the latest renewable technologies, i.e. heat pumps, PV and wind turbines. The vast array of buildings managed by the public sector – from hospitals, prisons, universities, defence force premises, swimming pools and schools – will need to achieve a B rating by 2030. The buildings will generally be required to have extensive and expensive retrofits via a mixture of fabric, lighting, heating and power upgrades to reach the new rating.

In retrofitting a building, adding a new renewable technology within an existing boiler house is not the answer. The designer/engineer will need to take a deep look under the bonnet to ascertain what can be done to reduce the thermal load. It will be necessary to look at the existing wall fabric, windows, doors, roofs and air tightness of the building to figure out the extent of the project works.

Typically, heating for radiator circuits can be designed for lower temperature systems and may require the existing pipework and radiators to be changed to suit the new design conditions. However, hot water and constant heating circuits for air handling units require higher temperature circuits and this will require an alternative design solution. Large uneconomical buffer tanks will only provide for some of the design, but what makes up the temperature difference to feed these circuits?

Recent conversations and discussions around heat pumps for non-domestic buildings have raised more questions on their suitability and performance. A review of the situation is urgently



Michael Curran,  
Chair, CIBSE Ireland



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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.

**[www.hevac.ie](http://www.hevac.ie)**





While the domestic market is stabilised, the non-domestic heat pump market is not as well served.

needed before costly mistakes are made and trust is lost in the technology.

A few key questions and actions are required. These relate to several of the points outlined in Table 1 – Challenge facing commercial heat pump applications.

- The production of an easy-to-understand guideline for the installation of reliable and energy efficient heat pump systems in Ireland for several building scenarios is required. Understanding of technology, COP and SPF controls and operations is an essential element;
- Design solutions for hot water production and higher temperature circuits are required if large building users are to meet the decarbonisation figures set out by Government;
- Industry and designer training and certification for design, installation and commissioning is a must;
- Funding models must be reviewed ... the capital cost of new technology can be multiples of fossil fuel equivalents;
- End-users need to be made fully aware of the technology, and to understand the benefits;
- The effectiveness of the design and installation to be reviewed over a period of say two years, with monitoring/reporting looking at performance and the comfort of users.

CIBSE Ireland will host several round table meetings with interested parties from the four groups highlighted in Table 1. Stakeholders can contact CIBSE Ireland at [cibseirelandchair@gmail.com](mailto:cibseirelandchair@gmail.com) and register their interest in being part of this discussion forum. ■

Regulations and Standards	Designers/Engineers	Manufacturers and Installers	Clients/Users
Climate Action Plan 2019 design	Design standards and principles of design. Training for designers and certification	New technology/ research into new products.v. existing	Capital cost of installations technologies
Non-Domestic Energy Assessment Procedure (NEAP) SEAI.	Technical guidance and standards	European and Irish standards	Maintenance of new heat pumps
Part L Building Regulations	Coefficient of Performance (COP) and Seasonal Performance Factor (SPF) for heat pumps	Knowledge base of installers	Availability of expertise and parts
EN 14825 – Space Heating	MICC capacity and increase requirements	Training of installers	Life-cycle costs
EN 16147 – for DHW units testing	Cost of systems – life-cycle costs	Supply chain of products	Thermal comfort
EN 12831 – Design Heat Load	Heat load calculations – heating demand	Learnings from domestic heat pump market	Reliability
EN 14511-3 – Heat Pump Test Methods	Fabric review and design upgrades	Seasonal efficiencies	Commissioning of systems
NSAI – TC31 - SC6-HPs	Buffer vessel and system design	Noise limits of heat pumps	Increased electrical and running costs
NSAI – SR50-4:2021 Part 4	Controls design and integration	Legionella control	
Refrigerant Global Warming Potential (GWP)	Radiator selection and design	Hot water and high temperature circuits	
Legionnaires Standards	Types of heat pump technologies	Certification of installers and commissioning	
CIBSE Guides, ASHRAE Guides	High temperature circuit – air handling unit	Low temperature v. high temperature	
	Space requirements for external heat pumps	Frost build-up – effects of defrosting	
	Planning requirements for new equipment		
	Over and under sizing of heat pumps		

Table 1 – Challenge facing commercial heat pump applications.

COOLING 49-1133 kW

HEATING 52-1156 kW

COOLING + HEATING  
50-1495 kW



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- ✓ High full and part load efficiency in accordance with EcoDesign 2021
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## **Sustainability & efficiency**

### **Natural refrigerant carbon dioxide (CO<sub>2</sub>)**

Environmentally-friendly alternative to traditional refrigerants

### **Effective cogeneration of refrigeration and heat**

Effective refrigeration with simultaneous heat production at a high temperature level

### **Effective heat recovery**

Use of industrial waste heat sources and wastewater

### **Low pollutant emission**

Reduction of CO<sub>2</sub> pollutant emissions through oil and gas savings

### **Highly cost-effective**

Machines have a short payback period

## **Technology & practice**

### **Robust industry design**

Premium quality “made in Germany” through ISO certified production

### **State-of-the-art control technology**

Full control and even remote monitoring

### **Compact design**

Individual modifications of machines on site

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## **therm-eco<sub>2</sub> high-temperature heat pumps**

work exclusively with environmentally-friendly refrigerant CO<sub>2</sub> (R-744) and provide hot water temperatures of up to 110°C using various heat sources, while simultaneously providing cooling



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# 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) ■



**Bring complete visibility to your project work**

## Keeping projects on track with simPRO

**You've won a bid** to start a new installation project. You have the resources you need, and you also understand your deadlines and the desired outcome. How do you make sure the project is delivered on time and on budget? Even if you have everything you need to make a project succeed, if there aren't processes for proper project management, the chances of something going wrong can drastically increase.

What does accurate project management look like for building services trades? Breaking down complex projects into manageable sections to ensure they are delivered on time, and on budget, is key for any field service business.

**Understanding your workflow** – This will give you the knowledge of which tasks are dependent on others and how to allocate your labour resources. Production control on your project will show where the

workflow is tracking down to a per point level and how the cost-to-billing ratio is looking.

**Tracking your projects** – In the planning stages, you will need to create key performance indicators (KPIs) and specific objectives that are attainable, trackable and in line with your ultimate goal for the project.

**Clear Communication** – Communicating clearly with your staff and clients during every stage will help avoid mistakes, manage progress, and handle change orders or other shifts in the project.

How can software help streamline project management for your business? There are four key project management features which field service businesses should look for in an operations management solution:

**1. Automated tasks and notifications** – With software for project management, you can increase the efficiency of your

processes to get projects moving faster by assigning tasks to team members within the system.

**2. Reporting tools** – Reporting can help verify where you are in your project timeline and help you stay on track of job costs.

**3. Estimating features** – With software features for estimating, you can create accurate estimates to help keep your project on budget.

**4. Invoicing capability** – When your project management tool is linked to invoicing features, you can send out the invoice faster and with more clarity.

These are just a few of the features that help make project management successful. Other features include project planning dashboards, tools for inventory tracking, automated billing, and other solutions that connect the different parts of your project workflow.

Discover project management solutions in simPRO. With simPRO, managing projects is efficient, streamlined and simple:

- Connect features for project management to other parts of your workflow;
- Receive project updates from the field through the mobile app – simPRO Mobile;
- Use Gantt charts for a visual timeline of project status;
- Track project success with helpful project management reports such as Cost to Complete reports, Work in Progress reports, and others;
- Use invoicing and payments features powered by Square to easily receive payment for your projects.

In addition to providing features for simplified project management, simPRO provides solutions for all areas of the field service workflow.

Contact: Neil Batt, simPRO.

Tel: 0800 622 6376;

Mobile: 087 – 466 3293;

email: [neil.batt@simpro.ie](mailto:neil.batt@simpro.ie);

[www.simpro.ie](http://www.simpro.ie) ■



## MITSUBISHI ELECTRIC CONFERENCE

# Driving innovative solutions to realise CLIMATE CHANGE OBJECTIVES

Market overview analysis and trend indicators have always been a significant part of the Mitsubishi Electric annual conference. Participants invariably gain insights that are beneficial not just to their dealings with Mitsubishi Electric, but to their businesses as a whole. Despite the challenge of hosting its recent conference on a virtual platform, the reality is that it was one of the most successful to date. All the different segments dovetailed seamlessly with the product presentations short and succinct. This was especially significant this year as the company celebrates its 40th anniversary, and the Mitsubishi Electric Group worldwide its 100th.

**The dominant theme** throughout was the big-picture overview and this was perhaps most clearly articulated by Martin Fahey, Head of Sustainability, Mitsubishi Electric UK & Ireland, and Richard Sherlock, National Sales Manager, Mitsubishi Electric Ireland. What follows are extracts from both their presentations.

### **The scale of the challenge** **Martin Fahey**

While Covid is undoubtedly a major challenge and one not to be downplayed, Figure A clearly illustrates that we also face two other major challenges ... a potential business downturn and climate change. The world is currently on a knife-edge and we can use the situation to stimulate us into action or simply allow the consequences of inaction to unfold.

We all know the ultimate destination. By 2050 Ireland, as well as many other nations, needs to end its contribution to <https://arrow.tudublin.ie/bsn/vol60/iss2/1>

global warming by drastically reducing our emissions. This is a huge task and will involve change in every part of society, our working and private lives, as well as how companies operate. Ireland is playing its full part in achieving the European Green Deal, placing the goal of



Martin Fahey, Head of Sustainability, Mitsubishi Electric UK & Ireland.

net zero emissions into law as of October 2020, with a specific plan to deliver within this framework. Figure B shows the Irish position in 2019 and where the emissions are being generated.

While 2050 may seem a long way off, Mitsubishi Electric has used the occasion of its 100th birthday to look forward, so we can "back cast" and plan for the actions we need to take. Knowing the end goal is a powerful motivator.

When talking about sustainability, it's natural to think in terms of the energy we use, the products we consume, the food we eat, etc. However, in its widest sense sustainability, as detailed in the UN sustainability goals, is a far wider agenda, taking in such diverse elements as life below water and ending inequalities. These are now widely used in our planning and I mention them as these have a goal date of 2030, only nine years away. Deadlines such as this have a habit of racing up fast on us.

Innovation will be the key driver in rising to the challenges I have highlighted, as well as making the most of the many opportunities that they present. At Mitsubishi Electric we're confident that, working closely with our industry partners, we will show leadership in rising to these challenges, and realising solutions that deliver.



Richard Sherlock, National Sales Manager, Mitsubishi Electric Ireland.

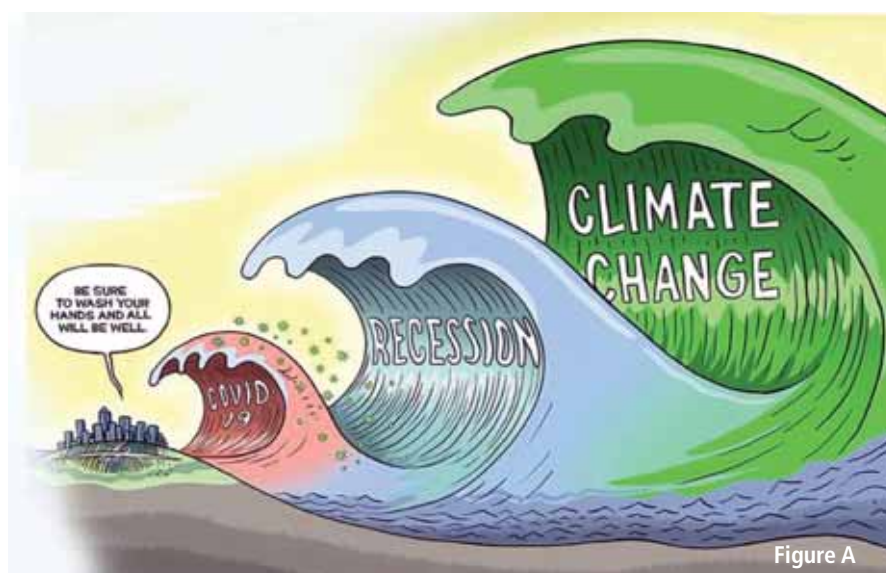


Figure A

## Ensuring a pivotal role in energy reduction targets

**Richard Sherlock**

It is clear that there are many drivers towards the electrification of heat and transport in all policy areas, and these have led to many exciting opportunities in the market. The 2030 climate action plan outlines a clear focus on the large-scale deployment of heat pump technology to deliver energy and carbon savings in the new-build and retrofit markets of residential housing.

It is evident that the national energy saving plans will need to be addressed. This must be partially at end-user and industry level, as it cannot be made solely through efficiencies in generation network alone such as wind turbines.

As market leader in both the air conditioning and heat pump sectors in Ireland, it is incumbent on Mitsubishi Electric to provide leadership and solutions that are readily available and easily applied. Solutions such as our SUZ range of R32 domestic heat pumps, the newly-introduced S Mext and our award-winning Hybrid City Multi range demonstrate our commitment to deliver to this brief.

In order to provide products such as these it is necessary that they are trialled in the field. We are heavily involved in research in Ireland and at a European level through various programs, including the Horizon 2020 project.

In earlier years we were involved in Superhomes 2.0, an initiative which helped shape the policy direction in the

2030 Climate Action Plan and one which demonstrated the effectiveness of Ecodan in retrofitting Irish building stock.

Next-generation heat pumps will need to interact with the electricity grid and we are working closely with ESB in monitoring trials of domestic heat pumps to be ready for this introduction. These trials are ongoing for the past two years and data is being simulated to demonstrate the impact of heat pumps on a smart network, and the potential savings that can be made, not least in the smoothing of the demand curve for electricity throughout the seasons/days.

Data from the BER database currently shows that over 70% of new housing is adopting heat pump technology. This leaves the retrofit sector – which we have been leading for the past few years – as a massive opportunity. Over 60% of our existing buildings were constructed prior to 1990, and Ireland's plans include deep retrofits of 500,000 homes to at least a B2 energy rating by 2030. We are less than two years away from banning oil boilers in new housing, to be followed by the ban on gas boilers in 2025. Indeed, one might question why we are continuing to retrofit these devices in the existing housing stock today.

In addition, there are plans for a Microgeneration Support Scheme which is currently out to public consultation. This will provide incentives for technologies such as PV and battery storage, perhaps accelerating the move towards the electric economy.

Looking to the future, we will continue to invest and support the markets in which we operate, not just for ourselves and our immediate trading partners, but also for the betterment of the overall industry. By investing in further research we will test and prove innovative technologies, and help influence Government policy in matters relating to the living environment. Ultimately, our objective is to assure all stakeholders that our products and services, offered through reputable installers, distributors and integrators, have a pivotal role to play in achieving the national energy reduction targets.

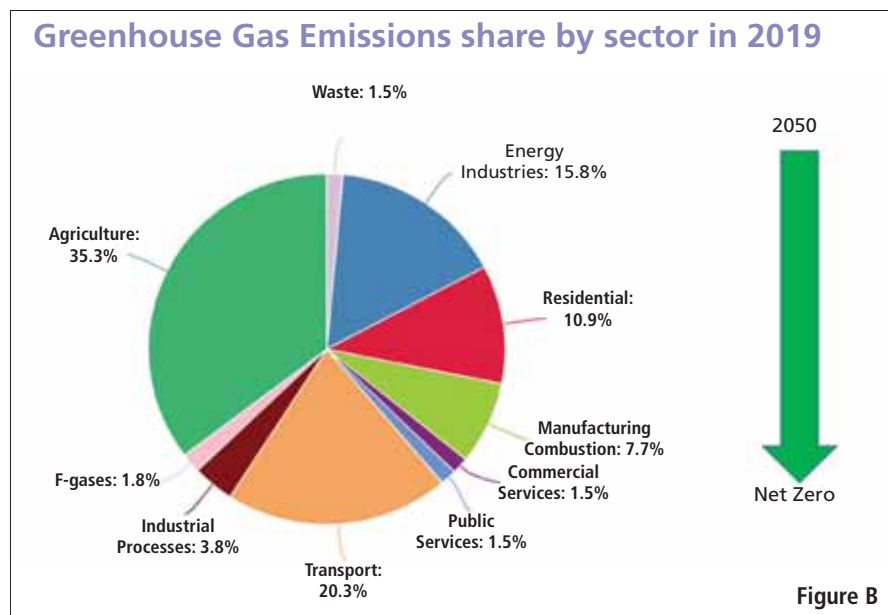


Figure B

## Lindab AC Manufacturing

# CHANGING OF THE GUARD

### Expansion and development continues unabated

**As it enters 22 years in business, Lindab AC Manufacturing continues to be the number one supplier of quality ventilation products to the building services industry in Ireland and abroad. Established in 1999 by Shay Connolly, it commenced trading out of a modest 750 sq m unit in Broombridge Road, Dublin 11.**

**However, rapid expansion** followed with the company moving to a purpose-built 2,800 sq m unit in Stadium Business Park, Dublin 11 in 2005, with an additional 1,500 sq m added soon after. This building is now home to the Lindab Trade Counter which helps serve customers on the north side of Dublin city.

The Lindab Group acquired AC Manufacturing in 2017 through its Irish subsidiary and, since then, the company has grown from strength to strength. This was achieved through the loyalty and hard work of the 40 employees, many of whom have been with the company from the beginning.

The acquisition of AC Manufacturing has been such a success that Lindab Group has completed similar acquisitions in the UK, Norway and Sweden.

Lindab AC is currently in the latter stages of acquiring a third facility to accommodate a new laser-cutting machine that it is due to take delivery of shortly. Incidentally, this investment is the largest single outgoing ever undertaken by the company to date.

Over the years expansion and development has continued unabated. In mid-2019, Lindab AC

Manufacturing's building became home to the Lindab Training Academy, a purpose-built facility of 400 sq m which is used to train staff, specifiers and installers through CPDs, seminars and workshops.

Acquisitions were also part of this development process. In June 2020 Lindab acquired Thor Duct, the market-leading EN rated fire duct solutions company in Ireland. This has already proved an excellent acquisition and complements perfectly Lindab Group's strategy to grow its business across the entire ventilation sector.

**Shay Connolly is now Chairman of Lindab AC Manufacturing, demonstrating his long-term commitment to the business. As part of his new role Shay will assist in the identification of prospective merger and acquisition opportunities.**



[www.acmanufacturing.ie](https://arrow.tudublin.ie/bsn/vol60/iss2/1)





Joe Molloy



Keith Burke



Tomasz Sciubisz



David Lawlor

## Copper-fastening THE FUTURE

**Looking to the future,** Lindab AC Manufacturing recently copper-fastened the company's position going forward with the appointment of new Associate Directors. The task of the new management team is to maintain and reinforce the company's leading position within the marketplace, and to identify and develop new opportunities.

### ■ **Joe Molloy, General Manager**

Joe joined AC Manufacturing in October 1999 and was instrumental in the growth of the company over the last 21 years. He worked his way up from sheet-metal worker to production foreman, to factory manager and now General Manager.

### ■ **Keith Burke, Production Director**

Keith joined AC Manufacturing in 2005 as production foreman and has worked his way from the factory floor to the position of Production Director.

### ■ **Tomasz Sciubisz, Technical Director**

Tomasz has worked for AC Manufacturing for 14 years and heads a team of three junior engineers in the estimating and engineering department. This department ensures the smooth transition from drawings to the production floor.

### ■ **David Lawlor, Sales Director**

David joined Lindab (Irl) Ltd in 2018, having spent 14 years working for a large multi-national in the technical insulation industry. He now oversees all sheet-metal sales for both Lindab (Irl) Ltd and Lindab AC Manufacturing.



The acquisition of AC Manufacturing has been such a success that Lindab Group has completed similar acquisitions in the UK, Norway and Sweden.



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[drawings@acmanufacturing.ie](mailto:drawings@acmanufacturing.ie)  
[www.acmanufacturing.ie](http://www.acmanufacturing.ie)

Published by ARROW@TU Dublin, 2021



# UV-C disinfection for eQ air handling units

FläktGroup is the European market leader for smart and energy efficient indoor air and critical air solutions for all applications. It offers customers innovative technologies designed to meet the pressing market challenges of the day, so hence the recent introduction of UV-C disinfection for FläktGroup's eQ range of air handling units.

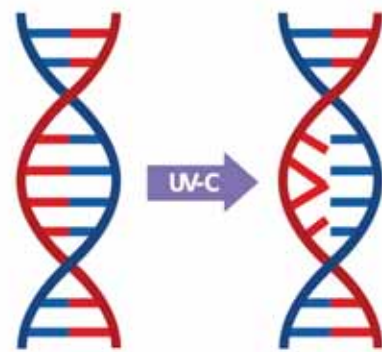
**Providing safe, healthy** indoor air is more important than it has ever been – in certain applications even life-critical. By equipping a building's ventilation system with cleverly-engineered solutions, FläktGroup can help to greatly reduce the risks related to transmission of airborne particles, including a number of harmful viruses and bacteria.

FläktGroup has been supplying UV-C systems for over 15 years and has now developed an updated range to meet the current requirements. The design is tried and tested to eliminate up to

99.9% of any viruses in the airstream. UV-C light, in the correct concentration, attacks the virus DNA, renders it harmless, and disinfects the airstream.

## Wide range of applications

Improving the indoor air quality is a key aim for all types of buildings, both for health and comfort reasons. UV-C radiation is the range of electromagnetic radiation between 280 and 200 nm. It attacks the nucleic acids (e.g. DNA) of the viruses



Depending on the organism and the conditions, an effective elimination of up to 99.99% is achieved.

and bacteria, making them harmless. FläktGroup UV-C lamps operate with a wavelength of 253.7 nm and so deliver optimal efficiency in eradicating microorganisms. Another plus is that they do not generate ozone.

FläktGroup calculates the correct dosing of radiation to eliminate microorganisms such as viruses, bacteria, yeasts and mould. The standard design of FläktGroup's UV-C lamps is based on the following air conditions – maximum air speed of 1.8 m/s; 20 °C air temperature; approx. 8g/kg humidity. If these values are adhered to, and depending on the organism and the conditions, an effective elimination of up to 99.9% is achieved.

## UV-C disinfection

The key benefits of the UV-C disinfection include:

- Up to 99.9% effectiveness in disinfection of airborne viruses and bacteria;
- Available as unit mounted for eQ modular AHU;
- Carefully-selected UV-C light made of special quartz glass only emitting UV-C light at 254 nanometer, a wavelength specially used for disinfection of airstreams and surfaces and where no ozone is generated;
- Long service life – up to two years of continuous 24/7 use;
- Also available duct mounted for retro-fitting to existing installation.

Contact: Gavin Power,  
Sales Director, FläktGroup Ireland.  
Tel: 01 – 463 4600;  
email: [gavin.power@flaktgroup.com](mailto:gavin.power@flaktgroup.com)  
[www.flaktgroup.com/ie/](http://www.flaktgroup.com/ie/) ■



FläktGroup has recently introduced UV-C disinfection for eQ air handling units.





Left: Vincent Mahony, National Account Manager, Panasonic Ireland with Jim Weldon, Director, Tech RAC on the roof of Nolan's supermarket with the CO2 units in the background. Below: One of the NX cassettes fitted with the latest nanoe™ X technology installed in the new off licence section.



## Supermarket installs first Panasonic CO2 condensing units in Ireland

Nolan's Supermarket in Clontarf, Dublin, recently completed a major modernisation project which transformed this popular outlet into a brand new, exciting shopping experience. A particular focus of the project was to create a state-of-the-art refrigeration system operating on the "zero ozone depletion" natural refrigerant CO2 which has the additional major benefit of a GWP of only 1. As part of the scheme Tech RAC installed Panasonic CO2 cold chain units and a number of NX cassettes fitted with the latest nanoe™ X technology.

**Nolan's Supermarket celebrated** its 60th year in business with this extension and full refurbishment which completely overhauled the existing store. The owners were looking for a reliable, efficient and

environmentally friendly solution for its refrigeration requirements. Improving the interior environment and enhancing protection is ensured by the addition of Panasonic cassette air conditioning units incorporating nanoe™ X technology, which can inhibit the novel coronavirus (SARS-CoV-2).

Alongside the cold rooms, cabinets and display units, several satellite fridges were also installed which run off five Panasonic CO2 condensing units (three x 4HP units, one x 10HP unit and one x 2HP unit).

"We were initially drawn to Panasonic's CO2 cold chain units because environmentally CO2 is a very attractive natural and alternative refrigerant choice," commented Jim Weldon, Director of Tech RAC. "The Panasonic units also have several unique thermo-physical properties and for this application, the Panasonic CO2 cold chain units deliver high performance, are reliable, and are ultimately very efficient. Installing Panasonic AC with nanoe™ X technology has the added benefit of improving protection against certain viruses and bacteria for staff and customers alike within the store environment. This was a great bonus."

"We're very excited that our CO2 cold chain units, plus the NX cassette units with nanoe™ X technology, were chosen by Tech RAC for this prestigious project", said Frank Coughlan, Panasonic Ireland. "nanoe™ X technology helps inhibit the effects of

certain viruses and bacteria, including the novel coronavirus (SARS-CoV-2), both in the air and on surfaces, 24/7. The CO2 cold chain units have a notable track record for reliability and efficiency with a clever 2-stage compression rotary compressor. For this project to be the first of its kind in Ireland is an impressive achievement!"

Panasonic CO2 cold chain units are suitable for both refrigerated and freezer showcases, as well as walk-in freezers and cold rooms. The technology was specifically developed for small to medium capacity applications within the retail and food service sectors. The range available in Ireland features units for medium temperature (4kW to 16kW) and low temperature (2kW to 8kW) condensing units.

The NX inverter cassette unit is a modern flat-panel design to blend into any space. It provides a powerful turbo fan and incorporates an intelligent econavi sensor to ensure high energy efficiency and exceptional comfort. It has a circulation function to evenly distribute the air and minimise temperature gaps throughout the store. Featuring integrated nanoe™ X, these cassettes have been developed to satisfy today's customer needs such as high energy saving, comfort and healthier air.

Contact: Frank Coughlan, Panasonic Ireland. Tel: 087 – 349 2856; email: frank.coughlan@eu.panasonic.com ■





# Vision CO2 Monitor more important than ever

Given the impact of the current pandemic, ventilation is one of the most important factors in helping to reduce the relative risk of the airborne transmission of Covid-19. Consequently, CO2 monitors have become more important than ever and have been recommended by a number of regulatory and professional bodies, including CIBSE.

**Most buildings are** naturally ventilated and rely on opening windows for fresh air, or use air recirculation systems that may be switched off or operating below design parameters.

There is 400ppm CO2 in air and we breathe out approximately 40,000ppm with each breath. Therefore, CO2 is the most reliable proxy for poor

ventilation available in occupied spaces. Elevated CO2 levels not only provide an indication that airborne contaminants may be present, but they also result in reduced cognitive functions and productivity, and can have long-term adverse effects on health and general wellbeing.

So, without a CO2 monitor there

is no way of knowing if spaces such as offices and school classrooms are adequately ventilated. Hence the importance of the new Vision CO2 monitor from C&F Quadrant. Out of the Flamefast stable of market-leading monitors, it removes any uncertainty and provides an immediate indication that further ventilation is needed.

The Vision CO2 monitor is a high-quality temperature and relative humidity monitoring device that is USB powered and provides a cost-effective “plug-and-play” solution to help determine if further ventilation is required. It features a clear digital readout with a simple-to-understand traffic light backlit display.

Dimensions are height: 84mm; width: 84mm; and depth: 36mm. Included is a Vision CO2 monitor and 2m USB cable. Optional extras include a wall-mounting bracket and USB mains adaptor plug (white).

Contact: C&F Quadrant.

Tel: 01 – 630 5757;

email: [sales@cfquadrant.ie](mailto:sales@cfquadrant.ie);

[www.cfquadrant.ie](http://www.cfquadrant.ie) ■



The unit features traffic light warning settings where a green light indicates less than 800ppm, an amber light indicates between 800-999ppm and a red light indicates greater than 1,000ppm.

# MHI Thermal Systems' technology confirms potential to remove and inactivate the Corona virus

Mitsubishi Heavy Industries Thermal Systems Ltd (MHI Thermal Systems), owner of Mitsubishi Heavy Industries Air-Conditioning Europe Ltd, has confirmed its latest proprietary air purification technology has the ability to remove and inactivate the novel Corona virus (SARS-CoV-2). Along with an enzyme-urea formulation processor that exposes cells to UV-C LED (ultraviolet-C light-emitting diode) radiation to remove and inactivate airborne viruses, it has a unique air filter trapping innovation.

**Tests also confirm** efficacy in removing and inactivating traces of the Corona virus through commissioned research from the Satoshi Omura Memorial Institute of Kitasato University, led by Professor Kazauhiko Katayama. Before launching to its worldwide markets, MHI Thermal Systems will continue the commissioned research to validate the effectiveness of its latest developments further.

MHI Thermal Systems' enzyme-urea formulation has properties that fight bacteria, viruses and allergens with validated efficacy against viruses such as influenza and polio. Joint research and tests with Kitasato University, using tens of thousands of SARS-CoV-2 particles, confirmed that almost all cells completely inactivate with the virus inactivation agent (urea and enzyme) contained in the MHI dust-collecting air filter. The tests

further indicate that viral particles reduce almost entirely with an average inactivation rate of 60 minutes.

The UV-C LED has already proven to be effective against microbial

contamination. To verify claims, scientists spread liquid holding tens of thousands of SARS-CoV-2 particles on a resin plate under a UV-C LED light. These experiments were performed in an airtight device for increased accuracy and control of the testing surface. The results confirm a high efficacy of inactivation and the ability to inactivate a significant percentage of the virus.

Having now confirmed the efficiency of its technology against the novel Corona virus, MHI Thermal Systems will continue its collaboration with Professor Katayama's research group. The partnership will work to increase the effectiveness and evidence towards MHI Thermal Systems' products removing and inactivating airborne viruses.

In the years ahead, MHI Thermal Systems will continue to make social contributions through the ongoing development of technologies to fight bacteria and viruses, both during the current Covid pandemic and in the coming post-Covid era.

For more information visit [www.mhi.com/index.html](http://www.mhi.com/index.html) ■



# AIRPUR 360° high-performance air purifier

Covid-19 has once again heightened the importance of indoor air quality and reinforced the emergence of WELL Certification as an all-embracing design concept for indoor environments.

**S&P has always** been to the forefront with the introduction of innovative products to cater for this market segment and its new AIRPUR 360° column-type portable residential air purifier is tailor-made for the current circumstances.

For rooms of up to 50sq m and with a flow rate of 450 m<sup>3</sup>/h, its cylindrical design enables the air to be drawn in all 'round, at lower level, and then vertically discharged into the room after high-efficiency filtration. The unit incorporates a high-performance, very quiet DC brushless motor and delivers a level of filter efficiency of 99.99%. There is also a UV light that eradicates viruses, bacteria and dust mites.

Using a high-density HEPA antimicrobial filter, AIRPUR 360° filters all fine particles (diameter 2.5 µm) such as pollen and fibres (PM2.5). It also filters volatile organic compounds and, using an active carbon filter with a honeycomb structure, the most volatile harmful substances, along with odours (fumes), are also filtered.

The stand-alone air purification equipment 360° drum-type filter features three-stage filtration, while the large particle pre-filtering (filter Class F7 / EN 779) traps and filters large particles, such as dust and other suspended particles (PM10).

## There are four operating modes

- The UV function;
- Auto-disconnection at the filter access opening;
- Anti-tip auto-disconnection;
- Lock mode for child protection.

## Other features

- Digital touch-screen control panel;
- PM numerical indicator of room air quality (µg/m<sup>3</sup>);
- Numerical indicator of relative humidity and room temperature;
- Filter change warning light;
- Fine particle filtering (Class H13 HEPA filter/EN 1822).

Contact: Soler & Palau Ireland. Tel: 01 – 412 4020;

email: [sales.ie@solerpalau.com](mailto:sales.ie@solerpalau.com) ■

<https://arrow.tudublin.ie/bsn/vol60/iss2/1>



Air Quality color legend

0-50µm	50-100µm	100-150µm	>150µm
Perfect	Good	Normal	Low



The air quality colour legend on the top panel of the Airpur unit gives real-time information.



# TECHNOLOGY BREAKTHROUGH

## MICROWAVE BOILER TO REDUCE CO<sub>2</sub> EMISSIONS

**Heat Wayv**, a UK energy technology company, has revealed details of a new microwave boiler that could significantly reduce CO<sub>2</sub> emissions, as well as offering a safer and more reliable heating system requiring less maintenance. It is also said to eliminate carbon monoxide and to have a similar overall size, cost and throughput to current gas boilers, making it a plumbing-compatible replacement for existing installations.

Heat Wayv microwave boilers are already in engineering design with reference products completed for small and large home applications. The company is working with leading semiconductor companies for some of its componentry and a world-leading contract manufacturer that should enable the new microwave boilers to be manufactured and available for installation before 2025, the phase-out date for new gas boiler installations in the UK. Initial target markets for microwave boilers will be new-build homes and housing associations.

Paul Atherton, co-founder of Heat Wayv, told *Building Services Engineering*: "The beauty of our microwave boiler platform is that it is completely compatible with existing home radiators, easy to install and maintain, and has zero emissions. As the world moves to renewable energy, we need to have appliances that are zero-emissions in the home, but also connected so that the devices can work intelligently with the grid."

Developed over four years by the Heat Wayv engineering team, microwave boilers use an integrated electronics approach to create a highly-efficient microwave heating system. This is claimed to deliver an energy efficiency of over 96%, meaning that consumers' costs for heating water in the home will be the same, or less, than with current gas boilers.

Using technology similar to that found in kitchen microwave ovens, the microwave boiler uses a specific frequency to transfer energy to individual water molecules and so heat up the volume of water. The boiler design uses a combination of sequential pulse-width modulation and specialist materials to provide what is effectively continuous heating but at reduced power settings. This means that the water can be heated more efficiently with lower energy required.

The designs created by Heat Wayv uses multi-blade assembly to heat the water through a proprietary system where flow rates are determined by sensors and AI-based controllers. This ensures

that a consistent water temperature is reached in the most efficient way possible. Where energy is inevitably lost to the surroundings, a turbo charge approach recycles this energy back into heating the water.

The microwave boilers are designed and shielded in a far superior way to regular microwave ovens so that they do not, and can never, interfere with household electronic equipment such as Wi-Fi routers, etc. ■



## CIBSE BUILDING PERFORMANCE AWARDS

# LAWLER CONSULTING

## Walks the Talk

Lawler Consulting has won the Building Performance Consultancy of the Year award for a second year running at the CIBSE Building Performance Awards 2021 which were recently held on a virtual platform. The award recognises companies that meet and exceed client expectations, and share their knowledge and best practice for building performance in the industry.

**A** strong focus must be placed on measured building performance, and Lawler Consulting has adapted its service offering to reflect this, using its 40-year design experience to offer turnkey energy and sustainability projects. It now uses new energy performance business models to finance energy investment from energy savings, while also maintaining savings through a strategic long-term site partnership approach.

The judges commended the Kilkenny-based practice on its outstanding contribution to the delivery of buildings with high levels of measured energy

<https://arrow.tudublin.ie/bsn/vol60/iss2/1>



Owen Keegan CEO, Dublin City Council with Jim Gannon, Commissioner at the Commission for Regulation of Utilities (CRU), Gerry Wardell, former CEO of Codema and Daniel Ring, Managing Director, Lawler Consulting.

performance for work done and achievements to date on a number of projects, including the following:

- Dublin City Council, Energy Performance Contract 1 (2016-2024): Three leisure centres contributing to annual energy savings of 41%;
- Dublin City Council, Energy Performance Contract 2 (2019-2028): Seven leisure centres contributing to annual energy savings of 35%;
- Office of Public Works (continuous): Lighting upgrades to government

offices contributing an electricity reduction of more than 50%;

- Meubles (2019): Lighting upgrade at furniture store contributing to 61% savings on electricity costs.

While designing energy-efficient buildings is what Lawler Consulting does best, the focus on improving energy performance throughout the building lifecycle by encouraging an "energy in use" approach allows a wider understanding beyond design and commissioning, and will be key to meeting ambitious decarbonising targets.



Often, the initial contact with a business is around the strategic mapping of its approach to achieving net-zero carbon, and one area in which Lawler Consulting is seeing a greater interest is the technological aspect (such as renewables, EV charging and energy storage).

Daniel Ring, Managing Director, said: "It is a great endorsement for our attempts to really try and improve building performance and provide measurable evidence of this, too.

"It gives us great confidence in pursuing 'non-traditional' solutions across technology, organisational boundaries, and service offerings which sometimes in the initial stages creates complexity. We, therefore, commend our clients who have taken the time to listen to new approaches and embark on uncharted territories with us."

The extensive range of sustainability services now offered is indicative of the commitment to a zero-carbon future by reducing carbon emissions and protecting the environment.

Green building certifications such as BREEAM, LEED and EDGE are all services offered in-house by the firm as businesses now look at new ways to reduce their carbon emissions while increasing their building asset values and yields.

As per the Excellence in Design for Greater Efficiencies (EDGE), commercial buildings yield up to 8% higher tenant incomes, while green homes have sales prices of 4-10% higher, selling as much as four times faster. As such, Lawler Consulting has seen a greater appetite here.

The CIBSE judges awarded the multidisciplinary practice for "walking the talk" when it came to demonstrating high levels of occupant satisfaction in their own buildings with the implementation of WELL, Fitwel and



Decathlon's flagship Dublin store achieved a BREEAM "very good" rating.

RESET standards throughout their office environments. This is part of an ongoing effort to improve the comfort and wellbeing of its own staff.

With the current COVID-19 pandemic, this is extremely relevant as more and more businesses look to improve the health and wellbeing of their building occupants.

It is not just important to design a low-carbon and energy-efficient building. It is also important to consider the environmental and health factors of a building such as the fresh supply of air and daylight.

This award is seen as a significant confidence builder for businesses that are looking to access proven approaches that deliver competitive advantage, reduce carbon emissions, create climate purpose and stimulate the green economy.

There is no "Planet B" and the need to be carbon neutral is high on everyone's agenda. For building services firms like Lawler Consulting, looking at ways to reduce embodied carbon and achieve net-zero is how they will play their part in meeting climate targets. ■



Meubles furniture store in Kilkenny where the lighting upgrade saved 61% on annual electricity costs.



# Why regular maintenance matters

Neglecting regular maintenance and servicing, even when funds are tight, is a false economy, says *Baxi Potterton Myson's Technical Manager, Damian Delaney*. A robust maintenance programme is essential to protect a building's heating system, ensure its smooth running and avoid unnecessarily high heating costs.

**In the last 12 months**, the role of HVAC services in ensuring that buildings are functional, efficient and safe has come firmly under the spotlight. Air quality and ventilation systems have

understandably been under increased scrutiny to mitigate the risk of COVID transmission in buildings. However, a reliable and efficient heating and hot water service is also vital to keep buildings functional, comfortable and safe.

In the current economic climate, businesses and organisations might be tempted to disregard regular maintenance. But if heating equipment is inadequately maintained, it may well be working inefficiently and adding an unnecessary financial burden to already tight budgets. To put it into perspective, a boiler or water heater that isn't properly maintained can cause heating costs to increase by as much as 30%, in our experience.

## Regular service

Ensuring that a full check is carried out at regular intervals will enable any potential problems to be identified and early preventative action taken. This can avoid the need for more expensive repairs or, worst-case scenario, an emergency replacement that could require the closure of the building and/or potentially costly extended downtime.

Take boilers, which are at the heart of the heating system in many commercial buildings. To continue to operate reliably and effectively throughout their life, they need looking after with a regular service that will optimise their efficiency and comfort levels within the building.

A typical service will include cleaning of both the heat exchanger and condensate trap, flue-gas analysis, checks on gas pressures and interfacing connections like the flue, controls functionality and water treatment. The service should be carried out as per manufacturer instructions and

using only genuine parts to optimise asset performance and longevity, while ensuring full compliance with an existing warranty.

## Service kits

To save on time and costs, look for manufacturer service kits that are carefully designed to contain all the genuine parts required to complete a full service on the very first visit. This saves valuable time and costs for heating engineers while minimising disruption and downtime for end users.

Baxi Heating offers a range of service kits for use with Potterton Commercial boilers and Andrews Water Heaters products. Each handily-packaged kit contains only officially tested and approved genuine parts.

Using only genuine parts meets all the required safety and quality standards and ensures full compliance with an existing manufacturer warranty. Genuine parts are also guaranteed to fit better and more easily, boosting the time savings. There are big benefits for the customer too, as using genuine parts will optimise the performance of the equipment and its lifespan.

## Water quality

Water quality should also be tested at regular intervals. Heating and hot water systems perform better, more safely and more reliably with good quality water circulating in them. Routine monitoring will highlight any issues early on, helping to save money in the long run. Without the appropriate treatment, scale build-up, settled sludge and microbiological contamination in a closed-circuit system can lead to inefficiencies, poor performance and potential equipment failure after even a relatively short period of time.

BSRIA, ICOM and leading heating manufacturers all recommend implementing into the maintenance regime routine flushing, chemical cleaning and the use of appropriate inhibitors to minimise the corrosion of



**Damian Delaney,**  
Technical Manager, Baxi Potterton.



system materials, prevent the formation of mineral scale and prevent growth of microbiological organisms.

When reactivating buildings that have been closed for a short period of time, it is critical to implement a full water treatment and legionella prevention programme that will include pasteurisation, microbiological sampling and chlorination of domestic hot water systems where required.

### Controls

Control settings for both the boiler and the building management system (BMS) should be checked on a regular basis, with settings adjusted to reflect both building occupancy and usage to optimise energy efficiency.

### Planned replacement

Even well-maintained boilers will eventually come to the end of their serviceable life. Assess the condition of existing equipment – if it's failing, will repair ultimately be uneconomical or unreliable for the business or organisation? If a more permanent solution is required, encourage building operators to plan ahead to ensure that they can budget for the best possible solution.

Forward planning provides time to research new heating technologies and techniques. For example, selecting high-efficiency boilers with a wide modulation ratio and enhanced control functions, like the Potterton Sirius three high efficiency boiler series, means they will be able to

adapt to fluctuating demand more accurately, further boosting efficiency.

The option to use turnkey heating solutions for multiple boiler replacement should also be considered. A key advantage of using a preassembled Sirius three WH rig system at the present time is that they reduce the number of workers and skills required on site, making it easier to meet COVID safety guidance.

Finally, consider ease of maintenance, servicing and repair as well as installation when choosing new equipment to ensure high performance across the lifetime of the products. Checking that manufacturer spare parts are readily available will also make it simpler to keep the heating system operating as intended in the future.

### Agile response

Now, more than ever, it makes perfect financial and environmental sense for businesses to actively avoid unnecessarily high bills and needless energy waste. If heating is the natural starting point, then implementing a robust maintenance programme, including carrying out regular servicing, is the next logical step.

Contact: Baxi Potterton Myson.

Tel: 01 – 459 0870;

email: [sales@potterton-myson.ie](mailto:sales@potterton-myson.ie) ■



Baxi Service Kit package.



## The smart water solution for Dáil Éireann

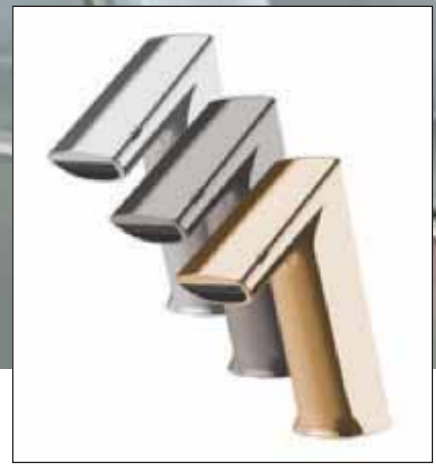
If you are looking to save water and energy, meet the most stringent standards of hygiene while also providing a user-friendly yet vandal-proof solution, CONTI+ Ultra by Versatile is the number one choice.

**Suitable for every** environment, from commercial and public settings to sanitary facilities in the health sector, CONTI+ by Versatile is patented, resilient, applies smart sensor technology to reduce spray, and can run on a solar powered battery that can last for up to seven years. It offers a broad range of size, colour and energy supply options, all of which are available ex-stock. Most recently, these taps were specified throughout OPW sites, including Dáil Éireann, to mitigate the spread of

<https://arrow.tudublin.ie/bsn/vol60/iss2/1>

viruses and bacteria while saving water and energy. Features include:

- It is a touchless, electronically-controlled water and energy saving sensor tap;
- Sturdy metal housing;
- Various finishes available;
- Infrared sensors with automatic setting features and self-commissioning;
- Small external hydraulic unit for direct mounting on the angle-stop valve or wall-mounted (optional) with reliable solenoid valve ROBUST (minimal level of water pressure surge) integrated waterproof battery box (in battery operated models only);
- Built-in filters with spare filters stored within the tap;
- Integrated water-resistant battery box or cable connection for power supply;
- Temporary-off (cleaning) and continuous water flow time (filling of basin) adjustable with touch;
- Continuous-on and hygienic flush time with touch prevents stagnant



water in the fitting and in the building;

- Follow-up time, sensor-sensitivity;
- 12, 24 or 48-hour hygienic flush;
- Compatible with service monitor: control of stored operational data, settings and control functions, allows for better flexibility and control of water-management.

Versatile has a specialised Water Management Division headed by Michael Kelly. His contact details are Tel: 087 – 935 4204; email: [mkelly@versatile.ie](mailto:mkelly@versatile.ie); [www.versatile.ie](http://www.versatile.ie) ■



## INTELLIGENT LIGHTING ... MAXIMUM FLEXIBILITY



# LEDVANCE lights up Siemens offices

A new lighting solution from Ledvance has been installed at Siemens Campus Erlangen, providing ordinance-compliant, flexible and intelligent lighting in office spaces used for a variety of purposes. The luminaires were successfully adapted to the existing architectural conditions and integrated into the existing ceiling concept for a simple, unobtrusive installation.

**The Linear IndiviLED** direct/indirect luminaire chosen for this project can be controlled via DALI and is also equipped with sensors for presence of employees and daylight detection. With its flat design and homogeneous light, the 500 lux light required by the workplace ordinance is achieved across the board, and the customer's need for flexible use of space is met.

"When selecting luminaires for Siemens Campus Erlangen, the existing suspended ceiling surfaces presented us with a particular challenge," explains Oliver Wehner, Project Sales and Verticals DACH,

Ledvance. "The new luminaires had to be mounted between the panels on the ceiling in order to integrate them into the lighting design. Furthermore, Siemens wanted luminaires with daylight sensors, presence detectors and a bright, uniform illumination, to accommodate flexible arrangement of the furniture in the room."

The advantages of choosing these luminaires include a high level of lighting comfort with direct/indirect beam characteristics, good glare control ( $UGR \leq 19$ ) and low maintenance requirements at low operating costs. A further advantage of this solution is the

Some of the Linear IndiviLED direct/indirect luminaire panels installed at Siemens Campus Erlangen.

direct integration of presence and daylight detection sensors into the luminaires. Independent of the building management system, the sensors automatically detect whether the room is in use or not and switch the light on or off accordingly.

Although the brightness is kept constantly at 500 lux, in the case of strong daylight from outside, the system dims the luminaires as required, saving energy and ensuring uniform lighting comfort. Compared to conventional T5 technology, this combination can save up to 63% of electricity along with maintenance costs.

"The Siemens project has proven that we are able to provide high-quality solutions to meet the needs and requirements of our customers up to, and including, the planning of the lighting management," adds Stevie Young, Sales & Projects Manager, Ledvance Ireland.

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Ledvance Ireland.

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## From peroration to plug and play

# How many presidents does it take to change a light bulb?

As a in boy in the 1970s, I can remember walking onto my local high street by night. On the way the streets were somewhat dimly lit and when you got there, only the occasional shop window was illuminated and the sum total of the exterior lighting scheme for Bligh's Hotel was a solitary lantern hanging over the main door. So, maybe not the most energy efficient of technology, but there wasn't that much used and what there was lasted a long time, writes Bob Bohannon, President, *The Society of Light & Lighting*\*.



Bob Bohannon, President, The Society of Light & Lighting.

**J**ump forward 30 years and I was running the British arm of a German exterior lighting company. On average our fittings lasted 15 to 20 years in use and on the rare occasion somebody had a problem, we maintained a stock of spares and would do all we could to repair things ... often for free as part of our commitment to the product. In the office, if a fluorescent tube failed, we would reach up and put a new one in with little thought, cleaning, repairing and re-lamping – all forms of life extension; keeping things in use was natural then.

Move forward another 15 years to around 2015 and now the lighting industry was driven by a laser focus on luminaire energy efficiency. While officially predicated on a need for carbon reduction, the true driver was the return on investment possible by replacing legacy luminaires with ultra-efficient LED versions. As with any business case, the lower the capital cost the quicker the return on investment and this, coupled with an offshoring



of manufacturing, created the low-cost LED luminaire.

Compared to my dimly-lit high street of the 1970s we now see an explosion of coffee shops, retail outlets and restaurants, all with many, many more luminaires than before – albeit very much more energy efficient ones.

But here's the rub, the old joke about how many (fill in your

bloke is a bit of a luddite, stuck in that pre-LED world where everything looked better through (2700k tungsten) tinted spectacles. LEDs are more energy-efficient and they are also part of our green jobs revolution that drives economic growth. All that is true, but it is not the whole story ... we might have a problem: "The only person who thinks we can have infinite growth in a finite world is either a lunatic, or an economist."

– David Attenborough.

was zero." – Nigel Harvey, *Recolight*.

So, what happened to all these luminaires, not forgetting that the WEEE Directive came into force in 2003, so any equipment 18 years old or younger all proudly bore the crossed out wheelie bin mark? The harsh reality is that much was sent to landfill. What did go to a grandly-named *Approved Authorised Waste Treatment Centre* saw any value in your old luminaire literally shredded to recover the metals, which themselves would need energy inputs to melt them down for re-use. Green? No.

Our old method of resource usage under the typical economic model has been referred to as *Take* (resources from the environment), *Make* (products in factories), *Waste* (dispose of products into the natural environment). Dr Mark Carney, the renowned Canadian former head of the Bank of England asked in his recent BBC Reith Lecture: "Why do financial markets rate Amazon as one of the world's most valuable companies, but the value of the Amazon appears in no ledger until it is stripped of its foliage and converted into farmland?"

Many readers will know of the circular economy, but I must stress it is not just about more recycling. True circular economy is about keeping products at their highest value for as long as possible, in our case keeping a light fitting as a light fitting by a process of good product design, product quality, serviceable and upgradeable components. Luminaires should be able to be re-purposed, re-used or re-manufactured and this requires

stereotype) does it take to change a light bulb doesn't work anymore. The LED and the driver is often integral to the fitting, so if one were to fail you have to replace the whole thing – you simply can't repair it, life extend it, even if you wanted to. We've become used to this throw-away economy, only pausing to grumble that our washing machine/TV/whatever doesn't last as long anymore, while we order a shiny new one.

By now you are most probably thinking that this Bob Bohannon

Now many would reasonably think that we recycled all those replaced conventionally-lamped fittings, or those generation-one LEDs that didn't last quite as long as was hoped for because the manufacturers were still on the learning curve. However, here again I present you with another inconvenient truth: "In 2019, 42,000 tonnes of lighting equipment was placed on the UK market. Only 2,700 was recovered through WEEE schemes. The amount officially recorded as re-used



## A key aspect is the adoption of the circular economy

not just product design changes but an ecosystem of supporting services – more green jobs, but this time locally-based green jobs.

### From linear to circular

I can report that, slowly, things are changing. The Irish Government published its *Waste Action Plan for a Circular Economy* in September 2020. The UK Government's industrial strategy has confirmed ambitions to double resource productivity and to eliminate avoidable waste by 2050.

Policy documents are an important part of the road map to sustainable building services, but as David Attenborough will be the first to remind us, the environment will not wait. We need practical action right now and this will most likely take the form of legislation, supplier innovation, specifier or client-led demand, dissemination of practical knowledge, and the adoption of assessment methods.

The European Union's *Single Lighting Directive* has started the move to action requiring the removal (replaceability) of light sources and separate control gears (LED drivers). A handful of manufacturers, from large multi-nationals to national players down to smaller operations, should be applauded (and maybe rewarded with our custom?) for their hugely positive moves towards circular economy capable fittings, supporting ecosystems to keep them in use and use of a disparate array of accreditation.

Which brings us back to the title of this article "How many Presidents does it take to change a lightbulb?". Well, back in May

2020 I was honoured to become the President of the Society of Light & Lighting. My Presidential Address, delivered online rather than to the usual AGM due to the UK's first COVID lockdown, was on the theme of "Build, Back, Better". A key aspect was the adoption of the circular economy.

But we didn't just leave it as a President's peroration, mere motivational words. We started listening, consulting, learning and engaging and what is soon to come out of that whole process is a suite of three tools, the objective of which is to give information to all, enable supply push by creating a nuts and bolts tool for manufacturers, and to stimulate demand-pull by giving specifiers and clients the questions they need to ask.

The first tool in the suite is the forthcoming *CIBSE SLL Technical Memorandum on the adoption of Circular Economy in the Lighting Industry*. This describes the background to the circular economy in general, including the drivers behind its adoption. But most importantly, it gives guidance on how the circular economy affects each sector of the industry, what opportunities it may bring them and what to do next.

We are also near the completion of the *SLL's Circular Economy Assessment Method for Manufacturing (CEAM-Make)* which allows manufacturers (or specifiers if they so wish) to assess the performance of their luminaire and its supporting ecosystem in terms of its circular economy performance. The resulting score is out of 4, and the objective is

to move as many products and manufacturers from zero to hero (4) as quickly as possible by giving them the detailed issues they need to consider. The assessment method is comprehensive, covering product design, manufacturing, materials and supporting ecosystem.

The CEAM-Make may be a little too in-depth for a busy specifier to use every time they need to choose between luminaires, or in the transition period where manufacturers have not yet fully completed their CEAM-Make assessments. Therefore, the third part of the suite of tools is the *SLL's CEAM-Design*. Being a specifier support tool, it essentially prompts the most important questions to ask a manufacturer.

All the tools in the suite have been created in full consultation with people knowledgeable in the field, from manufacturers to product designers, lighting designers and end users. The tools will be updated, but the hope is that they deliver the practical know-how, understanding and level playing field for claims that make an already-green industry truly sustainable in terms of its product's in-use energy performance. ■

**\*Bob Bohannon MSc, FSLL, MIET** is an award-winning lighting designer, sustainability expert and educator. He is the current President of the Society of Light & Lighting and has 30 years' experience designing and delivering lighting schemes ranging up to the scale of London's Royal Albert Hall, St Pancras Station and the Iron Bridge at Telford.

A strong believer in both environmental and corporate social responsibility, he is committed to reduce the environmental impact of his activities for the sake of generations to follow and is currently leading the team writing the *SLL's Circular Economy Fact File & Assessment Method*.

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# MHT InspeXtor

## – revolutionary PoE building services management

MHT Lighting – the American software development and lighting services company – has opened a dedicated Dublin office to spearhead its introduction to the Irish and European markets. It is a pure PoE (Power over Ethernet) provider of lighting management solutions, interfaced with technical building systems (TBS).

**InspeXtor, the MHT** software platform, provides total “smart building readiness” of energy, environmental and social management for all buildings. This is essential in today’s marketplace given advancements in LED lumen/w performance and tunability, lighting point density throughout buildings, sensor capability of transferring critical building data parameters (for example temperature, humidity, occupancy, daylighting harvesting and asset tracking), along with advanced AI capability.

Lighting/sensor PoE across Cat 5e/6, exactly as per IP voice, security camera and employee scanning networks, becomes the backbone of the building infrastructure and provides immeasurable analytics to energy managers, facility managers, space managers, real estate and owners. The PoE switch provides DC power and data communications throughout the lighting/sensor network, allowing fine tuning of energy use, vacant space usage, use of available daylight, and local temperature and humidity linked to IEQ (indoor air quality).

Client-specific policies and optimum efficiency settings are set in the InspeXtor and, through interfacing with the building management system (BMS), the readiness of the building is now

visible for renewable sources such as solar PV, EV battery storage, and future smart grid connectivity. InspeXtor’s user-friendly dashboard provides ongoing monitoring and reporting on the journey to self-generating and becoming a prosumer to the smart grid. The PoE system is luminaire agnostic, LED drivers are not required and, with minor customisation, all luminaire manufacturers can deliver PoE-enabled systems to their clients.

At the electrical/mechanical/data infrastructure level, PoE comparative costs of materials and labour are put at 30-40% lower than traditional infrastructure, apart from the value of the analytics from optimising the overall operation of the services throughout the building.

“The integration of building services, along with software systems to facilitate and manage this process, is essential to future-proof buildings”, says David Tennyson, Managing Director

Europe, MHT Lighting Dublin. “It is also an essential requirement if we are to achieve the objectives of the EU’s Renovation Wave and Green Deal initiatives.

“Our InspeXtor software platform does exactly that. The automation that comes from integrating all of the building’s systems makes management of the facility far more effective and efficient. Some of the systems that can be incorporated include temperature, lighting, heating/cooling, blinds, keycards, etc.

“In addition, advanced reporting gives managers insight into space utilisation and peak occupancy over the course of a day, week, month or year. This is really future-proofing the building in terms of energy efficiency and sustainability”.

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David Tennyson,  
Managing Director  
Europe, MHT  
Lighting Dublin.



# NO RENOVATION WITHOUT LIGHTING UPGRADE

Eighteen national lighting associations representing 1000 companies, 80% of which are SMEs, have issued a joint letter urging that renovation, including lighting installations, be put at the heart of every European country's recovery and resilience plan. It calls on national Governments to prioritise investments and policy stimuli that will accelerate renovation and the upgrade of lighting installations.

**Renovation has been** identified as a key driver for the recovery of Europe's economy post Covid-19 – 15 million workers are directly employed in the EU construction sector, and it creates 28% of Europe's industrial output<sup>1</sup>. The renovation value chain is wide and diverse, and investment in this action will create and maintain jobs and manufacturing in a number of different sectors such as construction, electrotechnical manufacturing, materials.

Europe's lighting industry has the innovative technologies and products ready to install. LED lighting systems are more energy efficient and can lead to a reduction of CO<sub>2</sub> emissions. Better lighting plays a major part in making a building more energy efficient. For instance, LED-based lighting systems could additionally save the EU up to 48-56 TWh of electricity annually by 2050<sup>2</sup>.

An emphasis on lighting will also deliver significant benefits to building occupants' visual comfort, wellbeing and productivity. Renovating schools, hospitals, public buildings and wider infrastructure will improve the

quality of students, teachers, patients and office workers' lives, and will help reach Europe's climate targets.

The joint statement emphatically states that there cannot, and should not, be any renovation of buildings in Europe without upgrading the lighting installations.

To grasp the full benefits of better lighting, the group recommends:

- *A focus on non-residential buildings (public and commercial buildings):* This is already set out in the Energy Performance of Buildings Directive. These buildings should lead by example;
- *The use of LED lighting, in combination with controls and*

*sensors:* A full renovation of luminaires should include LEDs, combined with controls and sensors, with a minimum Smart Readiness Indicator (SRI)<sup>3</sup> level. The simple replacement of a lamp should be avoided. Replacing luminaires or introducing a whole new lighting design should be encouraged. This will lead to greater energy savings and a better indoor environment for the occupants of buildings;

- *Harmonised application:* A uniform and harmonised application of the Smart Readiness Indicator across the EU is needed to maximise its energy savings potential and to capture all the benefits it can bring to the wellbeing and performance of building occupants. Renovations should lead to a certain minimum SRI score.
- *Mandatory requirements:* Mandatory minimum requirements on indoor environment quality is essential. Instructions for lighting can be found in the *European Norm 12464-1*;
- *Safe indoor spaces:* The design of safe indoor spaces must include the installation of UV-C disinfection technologies, as a means not only to address the current Covid-19 pandemic, but also more generally and in the longer term to help ensure healthy indoor environments;

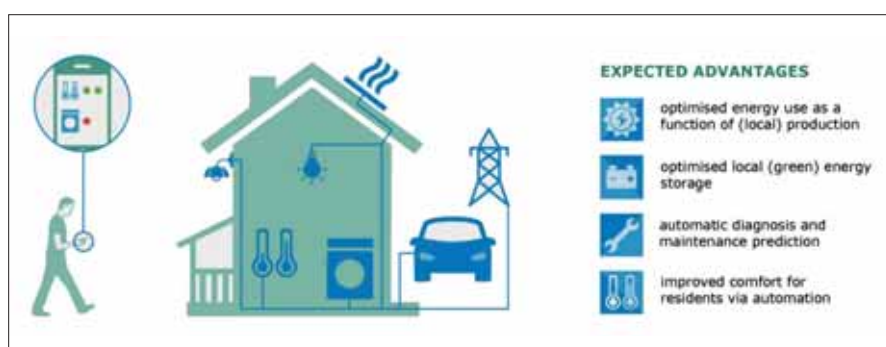


Figure 1 – Expected advantages of smart technologies in buildings.





Figure 2 – Three key functionalities of smart readiness in buildings.

- **Emergency lighting:** A mandatory emergency lighting risk assessment to be carried out for compliance with the *European Norm 1838* and national regulations.

In conclusion, the group statement calls for renovation projects to be made a priority investment at national, regional and local level. It says each euro invested in renovation must deliver benefits in terms of energy efficiency, smartness and indoor environmental quality. The access to public financing must be subject to the fulfilment of certain conditions. An obligation to include lighting renovation to obtain full subsidy should be introduced, with the following conditions applying:

- Lighting should comply with the *European Norm 12464-1*;
- Use of controls and sensors, with minimum SRI level (based on the second SRI technical support study<sup>4</sup>);
- For lighting service 1a (occupancy control for indoor lighting), a minimum functionality of Level 2 (automatic detection) should be required. This is because Level 2 functionality is simple to implement and is based on established technologies that provide better additional levels of energy saving

and user satisfaction as compared to Level 1;

- For lighting service 2 (control artificial lighting power based on daylight levels), a minimum functionality of Level 3 (automatic dimming) should be required, as Level 3 functionality is simple to implement and is based on established technologies that provide good additional levels of energy saving and user satisfaction as compared to Level 2;
- UV-C disinfection technologies should comply with existing standards and guidelines. For further details see the *Global Lighting Association's UV-C Safety Guidelines*. ■

#### References

1. <https://www.efbwww.eu/activities/construction>
2. Energy savings for optimised lighting systems (both indoors and outdoors) with controls. VITO et al. (commissioned by the European Commission), Preparatory study on lighting systems "ENER Lot 37" (Brussels, 15 December 2016), p. 331.
3. The European Commission has developed the 'smart readiness indicator' to assess a building's ability to adapt to advanced technologies in terms of its performance capacity and energy flexibility.
4. Milestones and Documents – Smart Readiness Indicator for Buildings.

“LED lighting systems are more energy efficient and can lead to a reduction of CO2 emissions, while better lighting plays a major part in making a building more energy efficient.”

Lighting Association Ireland (LAI) is an independent, non-profit organisation established to represent the collective views of member companies and professionals engaged in all aspects of the lighting industry in Ireland. It is the established voice of the sector and is regularly consulted by Government Departments, standards bodies and regulatory organisations.

It also has strong relationships with all the other professional and contracting bodies engaged in building services and construction in general.

See **www.laoi.ie**



**LIGHTING  
ASSOCIATION  
IRELAND**

# THE OBTUSE ANGLE



PAT LEHANE



## Henning cheer for Mona and James

### Congratulations to Mona

Holtkoetter and James Duff on the recent arrival of baby son Henning, who weighed in at a very healthy 3.75Kg. Rumours that he is already working on a blueprint for an innovative combined lighting/wellbeing solution could not be confirmed. Enquiries were met with a total news blackout!

## Mother of invention

If necessity is the mother of invention, then recent developments in the UK bear witness to that. With the ban on the installation of new gas boilers becoming effective from 2025, UK manufacturers are working feverishly to come up with alternatives.

For instance, many are well advanced with the development of "hydrogen-ready" domestic boilers, while a company called Heat Wayv has announced details of a new microwave boiler.

Whatever the long-term solution, these innovations are ideal in the short-term as they are designed to be direct plumbing-ready replacements. They won't deliver the perfect solution in one go, but sometimes reality dictates that a stepped approach yields best results. Maybe something we should look at here in Ireland.



## Power-eating data

A recent authoritative report stated that, at the end of 2020, Ireland had 66 operational data centres, 11 under construction, 29 with planning approval and five with planning applications pending.

The expected €6.7 billion spend on the construction of data centres between 2021 and 2025 is mind-boggling but fantastic news for the sector, especially building services engineering.

The industry undoubtedly has the capacity, design expertise, product supply chain and knowledge base to deliver the centres. However, does Ireland Inc have the capacity to power them, and with renewable energy sources?



## Virtual Energy

While we've all missed the learning outcomes – and indeed the social interaction – of the SEAI Energy Show, the Authority is currently preparing a virtual online show scheduled to run towards the end of April.

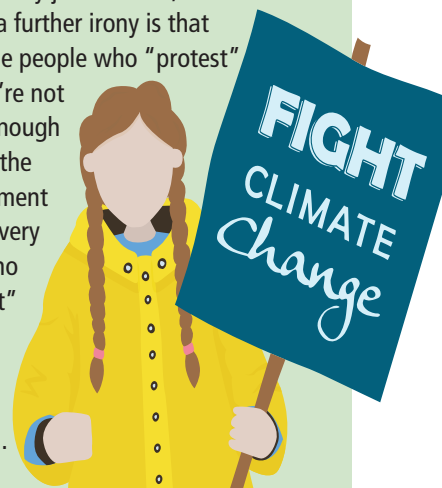
It promises to be a dynamic event with the emphasis on short, sharp, snappy presentations, rather than long, single-focus sessions. Details should be announced shortly.

## NIMBYism to cost

The Economic and Social Research Institute estimates that electricity prices in Ireland could rise by 263% if there is low public acceptance of more renewable types of energy like wind farms. If there is "moderate acceptance", prices are calculated to rise by 14%, according to its recent report.

The report details how an expansion of renewable generation capacity requires "considerable land area" and "power system upgrades". However, public acceptance has faced "strong opposition" across many jurisdictions, it notes.

I bet a further irony is that the same people who "protest" that we're not doing enough to save the environment are the very ones who "protest" against wind farm location.



## Money does grow on trees ... for some!

Everyone in their right mind understands that Covid is a very serious issue but, equally so, anyone with an ounce of sense must be enraged at the continued failure of the Government to deal with the crises. When initially allowed to do so, construction in Ireland proved itself an international exemplar of operating safety, despite Covid-19. The reward? – an extended period of lockdown. Meanwhile, the HSE continues to lurch from failure to failure. The penalty? – its Chief Executive gets a salary increase to a staggering €420,103 for 2020.

The message is loud and clear – failure will be rewarded and success punished.






# INTRODUCING GRUNDFOS SCALA1

et al.: BS News March/April

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## PRESSURE BOOSTING, CONTROL AND WATER SUPPLY MADE EASY

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### QUICK INSTALLATION AND COMMISSIONING

Save time installing SCALA1 – simply connect the pipes, prime the pump and plug it in. For fast and easy commissioning, configure the pump quickly and intuitively directly from the pump control panel.

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### BLUETOOTH COMMUNICATION BUILT-IN

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