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bs news

building services news

Understanding LEDs
new series

Gas Installer Register

Face to Face
Margaret Dolan, CIBSE

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opinion

Gas Installer Registration — Consultation Process Stirs It Up!

As predicted last month (*Opinion* column, *bs news* September 2007), the CER's proposals for the regulation of gas installers has created quite a stir within the industry.

Various representative bodies have voiced their concerns at the proposals contained in the CER's recently-published consultation papers with one indicating that it would take the matter to a "higher forum" unless certain issues were resolved to its satisfaction.

Among the issues being questioned are:—

- The suggestion that there are 5000 installers engaged in, or wishing to engage in, the gas industry. An external audit has been called for to determine the true number;
- The membership profile of CER's Consultation Forum is claimed to represent a serious conflict of interest;
- It is suggested that the CER looks to the European Energy Commission for advice on possible safer models of governance than those currently being proposed;
- The distinction between company registration and individual registration is said to be unclear under the present proposals;
- There is a call for the inclusion of regulations and tracking mechanisms in respect of gas equipment and gas equipment suppliers;
- Questions have also been asked about the funding for the registration process and the costs which installers will have to bear.

The aforementioned issues are but a cross-section of the many questions being asked at present. Not that this is a bad thing. In some ways it shows that the process is working and that, after all, this is what producing a consultation paper is all about.

The imperative now is for all concerned to openly engage with one another with a view to resolving the contentious issues without having to resort to a "higher forum".

grundfos MQ for water supply & pressure boosting

The new Grundfos MQ is a compact, self-priming, multi-stage pump and pressure boosting unit designed for domestic water supply and waterworks applications where a reliable and easy-to-install pump is advantageous.

Being self-priming, it can pump water from a level below the pump. Provided it is filled with water, it can lift water from a depth of eight meters in less than five minutes. This facilitates installation and start-up of the pump and provides more reliable water supply in applications where there is a risk of dry running and leakages in suction hose or pipes.

MQ features a user-friendly control panel with on/off button and indicator lights for indication of the operational state of the pump. If exposed to dry running or excessive temperature, the pump will stop automatically, thus preventing a motor burnout. There is also an automatic reset function which can be deactivated.

Thanks to its hydraulic design and internal cooling, the pump is extremely low-noise, which makes it suitable for indoor as well as outdoor use.

Contact: Sales Office, Grundfos. Tel: 01 - 408 9800; email: info-ie@grundfos.com



cool down with zafiro water chiller

York ACR, a Johnson Controls company, has introduced a new Eurovent A-Class water-cooled scroll chiller called Zafiro. Specifically designed for optimum efficiency, easy installation and reduced energy costs, Zafiro is suitable for many applications, from air conditioning to process cooling through to heat pump and heat recovery.



Available in 14 different models — ranging from 188kW to 580kW — Zafiro can produce chilled water from +15°C down to -12°C while working with condenser water temperatures ranging from +18°C to +50°C.

In addition to using an ozone-friendly refrigerant, it performs with minimum sound and vibration, with recorded operating sound values as low as 64dB(A), equivalent to normal conversation levels.

Zafiro incorporates the latest scroll compression technology, which helps generate high part-load efficiencies. The unit's compressors run constantly at full load and therefore do not suffer reduced efficiency levels at part load. As a result, it boasts European Seasonal Energy Efficiency Ratio (ESEER) values as high as 7.24.

A single-point electrical power connection and easily accessed victaulic water connections make installation straightforward, and its compact design saves on space. Accurate control is maintained by way of Zafiro's new IPU microprocessor controller that manages the chilled water temperature while reducing the power input to the compressors. The controller can be linked with BACnet™ protocol, allowing the Zafiro to be integrated into a building management system.

Options and accessories include electrical, control, condenser, and sound reduction, a variety of language options, relief-valve kits, liquid flow detection devices and vibration isolators.

Contact: Andrew McEvitt, York ACR (Dublin). Tel: 01 - 466 0177; email: andrew.mcevitt@jci.com; Brenda O'Sullivan, York ACR (Cork). Tel: 021 - 434 6580; email: brenda.o'sullivan@jci.com



A world without restrictions. The GHP VRF system.

The SANYO 3 Way ECO G Gas Heat Pump uses natural gas or LPG as the main source of power providing 56.0kW of cooling, 67.0kW of heating and no restrictions on power supply.

As well as being the only GHP VRF system to simultaneously provide heating and cooling, it also helps to reduce greenhouse gas emissions by an average of 5 tonnes per operational year. It's no wonder the SANYO 3 Way ECO G Gas Heat Pump is the natural choice.

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trade news + product information



BER hits home

As every builder and architect is aware, all home plans approved after January 2007 have to conform to the new building regulations designed to improve energy efficiency. The first homes that this scheme affects are now being constructed and it has caused quite a few changes.

Builders, aware that they must hit a minimum BER, are making sure that there are no mistakes by specifying much higher quality products with superior energy performance than before. Unusually, these

improvements are not translating into higher house prices as builders have been unable to pass on the extra costs to customers.

While there has undoubtedly been a financial impact, the scheme gives freedom of design to builders and architects to achieve the required level. Some builders have been increasing the width of the cavity wall while others are inserting thinner, but higher-performing, insulation to achieve the necessary rating.

This experimentation requires a degree of sophistication sometimes only available to large developers who have the resources to undertake such exercises. The smaller builder is therefore facing some difficult choices.

Help is at hand at the SelfBuild, Extend and Renovate Show in Millstreet, Co Cork, on 2/4 November, where there will be expert advice available from companies like Kingspan who have specifically-trained staff to deal with the issue of BER. There will also be window and door companies among the 180 exhibitors displaying thermally-efficient products that can help builders reach their goal.

For more information visit www.selfbuild.ie

'choose copper — the healthy option'

According to Conor Lennon of IMI, it is not just the integrity and proven track record that makes copper so suitable for today's marketplace, but also its health and safety properties.

"Iron is an essential element in the structure of the oxygen carrying chemical in the blood haemoglobin and copper is an essential element in the manufacture of haemoglobin", says Conor. He also says copper is required for many enzymes without which our bodies could not function.



Conor cites recent research which has shown that many bacteria which would normally settle and grow on plumbing materials are dramatically reduced when they try to settle on copper. He says copper consistently suppresses bacterial growth when tested with a range of naturally-occurring waters and at a variety of temperatures. The bacterium legionella pneumophila is said to be particularly vulnerable to copper.

According to Conor, copper tube and copper alloy fittings present an impermeable barrier to all organic materials as they are solid metal components. This means that organic compounds such as insecticides, pesticides, herbicides, solvents, etc — which may come into contact with the plumbing system during remedial building work or decoration — cannot taint it or affect its integrity.

Contact: Conor Lennon, Irish Metal Industries. Tel: 01 - 295 2344;
email: conor.lennon@irishmetalindustries.com



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trade news + product information



Michael Kearney, Burlington Engineering, receiving the Eamon McGrattan Memorial Cup from John Doherty, MEBSCA President. He also won the President's Prize.

mebsca golf outing at newlands

The 25th annual Mechanical Engineering and Building Services Contractors Association (MEBSCA) golf outing took place in Newlands Golf Club recently. It was very well attended and, despite the rain in the late afternoon, an enjoyable day was had by all, followed by dinner and the presentation of prizes in the clubhouse.

The winners on the day were as follows:—

President's Prize and the Eamon McGrattan Memorial Cup was won by last year's winner, Michael Kearney of Burlington Engineering. He plays off 11 and had a score of 35pts.

Ger Hutchison of Erba Engineering took the Vice President's Prize in second place with a score of 33pts playing off six.



Ger Hutchison of Erba Engineering receives the Vice President's prize from John Doherty, MEBSCA President.

heat merchants opens renewable energy centres

Heat Merchants has opened Renewable Energy Centres in six of its branches around the country — Kilkenny, Athlone, Tralee, Sligo, Galway and Fonthill in Liffey Valley, Dublin — and plans to have Centres in the majority of its 50 branches by year end.

The Centres are intended as a "one-stop" shop for all renewable and sustainable building products, including air source pumps, ground source pumps, solar panels, vacuum tubes and biomass boilers. Staff will also be able to advise customers regarding heat recovery ventilation (HRV) and underfloor heating.

All the products stocked are registered with Sustainable Energy Ireland and are eligible for grant assistance. Heat Merchants is also offering a no-obligation free design service including site visits, where necessary, for all renewable energy applications.

A significant proportion of the investment is going towards the training of 500 staff and the setting up of a network of certified installers. The installers have attended a three-day FETAC-approved training course, paid for by the company, to ensure proper training in all aspects of renewable energy installation.

In addition, each Centre will feature an animated computer programme called Isolearn, designed to take its trade customers through installations step by step.

Contact: Macartan McCague, Heat Merchants. Tel: 01 - 630 4306.



firebird just a 'mouse-click' away

Firebird, one of Ireland's leading manufacturer's of oil and solid fuel boilers, has just updated its website. At www.firebird.ie you will now find full information on all Firebird products, including product brochures, service manuals, parts lists and training presentations.

Brendan Twomey, Firebird's Marketing Manager, commented: "In designing the new website we have placed strong emphasis on the feedback received from our customers and installers. All technical information is available in real time via the website and complete service manuals and parts lists can be downloaded in a matter of minutes".

Contact: Brian O'Sullivan, Firebird. Tel: 021 - 45 253; email: brian.osullivan@firebird.ie

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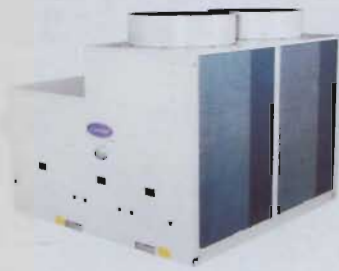
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- From Sweden NIBE offer ground-source, Air-to-Water and exhaust air heat pumps. NIBE are Europe's largest producer of heat pumps.

trade news + product information



ACMSL new distributor for core AC packaged rooftops

The new range of Carrier 50AZ/UZ packaged rooftops from Core Air Conditioning is designed to operate using HFC-407C which is chlorine-free and not harmful to the ozone layer. This refrigerant is fully researched and has been used by Carrier for several years in liquid chillers.

These new cooling only/heat pumps and gas-fired units are ideal for air conditioning supermarkets, warehouses, pubs, restaurants, clubs and small office buildings. Installation flexibility is a key advantage.

There is also a fixed chassis roof curb for both vertical and horizontal discharge, and a tilting chassis with longitudinal or traverse slope control from two to 10. These ensure a perfect seal between the air conditioner and the roof with ducts prefabricated before the installation of the unit.

An Economiser can also be fitted to control the air quality in the building by supplying the required amount of outside fresh air. This also makes for significant energy savings as fresh air is used during intermediate seasons and morning warm-up periods (similar to the free-cooling principle).

Contact: Ray McCormack, ACMSL.. Tel: 086 - 262 0097; email: acmsl@gmail.com

ultimate corrosion protection for e-klips

E-Klips electrical and mechanical fixings from Thomas & Betts are now protected with a new coating that gives advanced corrosion protection. The unique Z600+ coating gives the E-Klips fasteners a corrosion-resistance of more than 600 hours, in indoor and outdoor, humid and mildly-corrosive environments.

Z600+ is an environmentally-friendly coating that meets the requirement for a low-solvent content material. To comply with the Restriction of Hazardous Substances (RoHS) Directive, which is now in effect, the Z600+ process is completely chromium free. Z600+ protected products can also be recycled without any health hazard or environmental damage.

E-Klips provide a quick, easy and reliable method of fixing services to steelwork without the need for bracket making, drilling holes or the use of nuts and bolts. In most cases, the only tools needed are a hammer, screwdriver and pair of pliers.

Contact: Unistrut Ireland. Tel: 01- 460 7060; email: jwhelan@tyco-bspd.com



enlighten colourscene 36 flood

ColourScene 35 from Enlighten is an architectural LED flood light designed for floodlighting, wall washing, highlighting, effect and moodlighting. It will transform any area where an intense amount of light with uniform wash is required.

ColourScene 36 incorporates a full secondary lens array and is suitable for both interior and exterior projects. It has an IP rating of IP65 and clear resin to encapsulate and seal the unit.

Applications include floodlighting, colour washing, light pipes, retail, architectural, landscape, night clubs, restaurants and bars.

Contact: Gabriel Byrne, Enlighten. Tel: 01 - 460 1052; email: sales@enlighten.ie



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trade news + product information

new sanyo line-up complements existing range

With 2008 approaching Sanyo is about to introduce two new additions to its portfolio of commercial split outdoor units to replace the existing range of systems already on offer. These new ranges are known as the Elite Pac-i outdoor and the Classic Pac-i.

The Elite Pac-i outdoor 3, 4, 5,6HP will offer increased COP ratings of up to 4.01, two fans for all outdoors, reduced noise levels and a 70mt maximum piping for the 5,6HP models.

The Classic Pac-i will have one fan for all outdoors units for the ranges of 4, 5 and 6HP units. These more compact outdoors will benefit from 50mt pipe runs and reduced noise levels. They will further benefit from being a more competitively-priced option to the high COP Elite PAC-i units.

The current PAC-i outdoor will be phased out over the course of 2008 with Elite PAC-i being available in January 2008, closely followed by the release of the Classic Pac-i in April 2008.

In addition, Sanyo also has plans to release a new improved line-up of indoor units for the very popular ECOi VRF and GHP system. These will include:—

SPW-XM Mini Cassette — To fit directly into a 600mmx600mm ceiling tile without overlapping the ceiling grid; reduced noise levels from 25dBA; a maximum height of 281mm.

SPW-K Wall Mounted — reduced noise levels from 28dBA; 17% size reduction.

SPW-US Slim Ducted — reduced noise levels from 26dBA; increased static pressures of up to 40 PA; low power DC fan motor and Sirocco fan.

Contact: Dave Colbert, Sanyo Air Conditioners. Tel: 01 - 403 9900; email: davecolbert@sanyoaircon.com



Gerry Burke, Managing Director, Global Property Finance, Bank of Ireland with Roger Dunwoody, Chairman of the trustees of the Construction Industry Federation and member of the Opus Awards Panel of Assessors, and Garret Buckley, Joint Managing Director, Expo-Events.

opus architecture & construction awards

Entries for this year's Opus Architecture & Construction Awards are now being assessed with the process well on schedule for the presentation dinner which will take place at the Four Seasons Hotel in Dublin on Tuesday, 6 November next.

This year sees the introduction of two new award categories — Art in Architecture the Lifetime Achievement Award — and entry levels for the reflect a strong interest in both.

With financing being a critical part of the construction process, Bank of Ireland Corporate Banking is the primary sponsor of the awards, while both the Royal Institute of Architects in Ireland (RIAI) and the Construction Industry Federation (CIF) also endorse the event.

TAC acquires the grant group

TAC, a world leader in building automation, security systems and energy solutions, has acquired the Grant Group which is based in Northern Ireland and has a subsidiary called Satchwell Grant in the Republic.

The business has a staff of over 60 employees operating out of offices in Belfast, Dublin and Cork. TAC's existing direct sales operation in Belfast will be merged with the Grant Group and the combined business will trade as TAC Satchwell Ireland.

Philip Clarke, who has been with TAC since 1999, has been appointed Divisional Director and he will report to TAC UK Managing Director, Derek Duffill. Niall Grant will continue to act in a consultancy capacity.

Contact: Lynn Wolfe, TAC UK. Tel: 0044 1530 562600; email: lynn.wolfe@uk.tac.com; www.tac.com/uk

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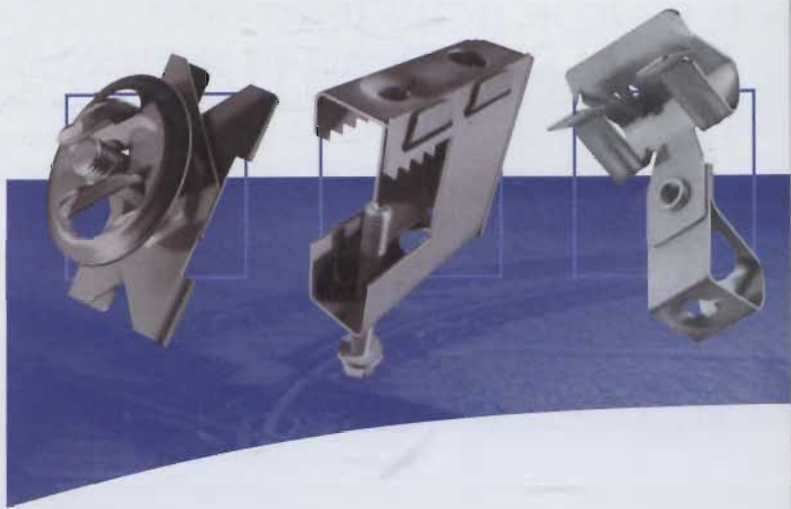
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The range provides a fixing for almost every application including cables, trunking, cable tray, conduit, pipework, ducting, light fittings and suspended ceilings.

The majority of clips are zinc coated to give a high level of protection against corrosion and red rust according to ASTM-B695-90 or equivalent. The corrosion resistance is measured by a salt spray test conforming to ASTM-B-117-90, DIN 50021 or equivalent.

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trade news + product information



multi-cal benchtop calibrator

Model MC6 multi-cal benchtop calibrator performs a wide variety of simple and complex pressure-based measurement, test and calibration operations. Modular sensor design allows the user to select pressure measurement range for application flexibility.

The calibrator can accommodate up to two interchangeable pressure modules (sold separately) in any combination of range or accuracy while the unit simultaneously displays two separate measurements on the two-line, alphanumeric display.

Readings can be displayed in a choice of 12 programmed engineering units or any single user-defined unit. Calibrators feature min/max recall; hi/lo alarm; percentage of full-scale pressure readings; mA/voltage measurement; leak rate and pressure decay measurement; switch testing capabilities, including trip point and dead band; and velocity/volume flow ratings.

Contact: Bob Gilbert, Noel Walsh or Robert Gilbert, Manotherm. Tel: 01 - 452 2355;
email: info@manotherm.ie

irish worldskills for shizuoka in japan

Almost half the team for this year's WorldSkills competition is made up of apprentices from the construction industry, with four of them from building services. They include:—

Plumbing — Declan McGee, Falcarragh, employed by Tony Boyce, Dunfanaghy, Co Donegal;

Electrical Installations — Daniel Ryall, Freshford, employed by Excel Electrical, Kilkenny;

Welding — Gerard Healy, Castlecomer, employed by MCM Engineering, Castlecomer, Co Kilkenny;

Sheetmetal Work — Kenneth Clooney, Kilmore Quay, employed by Kent Stainless, Ardavan, Co Wexford.

The full team is made up of 26 apprentices, students and technicians from 25 disciplines selected from the Department of Education and Science National Skills Competition winners from 2006 and 2007.

Gypsum Industries is the main sponsor while other agencies providing support include FÁS, Fáilte Ireland, Irish Vocational Education Association and the Institutes of Technology.



LG's fresh take on air conditioning

LG's Eco V heat recovery ventilator was designed to save energy in air conditioned buildings while dramatically improving indoor air quality. It features an enthalpy heat exchanger which is said to be three times more efficient than a temperature-only one, and a washable particle collection filter that can trap particles smaller than tobacco smoke.

In addition, the use of external static pressure control and phased control of the motor allows much-reduced commissioning time and greater flexibility in ductwork installation.

The unit is entirely automatic and switches the ventilation mode according to the operating status of the air conditioner.

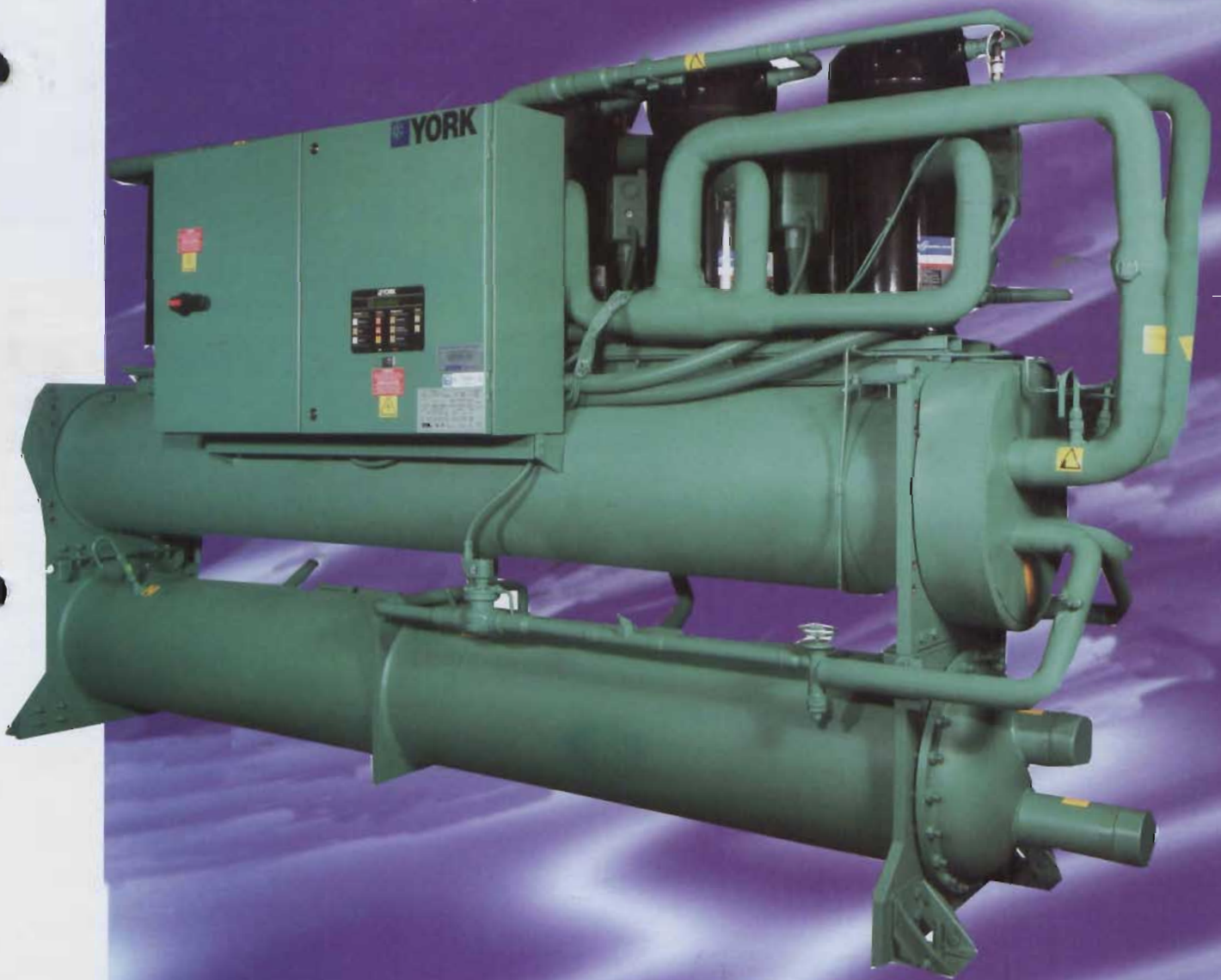
Installing the LG Eco V is easy — it simply interlocks with any existing LG multi-split air conditioning system. There are four unit sizes to choose from, with nominal capacities ranging from 500 CMH to 2000 CMH.

Contact: Austin McDermott, Core Air Conditioning. Tel: 01 - 409 8912.
email: info@coereac.com

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trade news + product information

hitachi makes vicar street no 1!

In a recent *Irish Independent* survey of concert venues in Dublin, Vicar St was singled out as one of the best, the citation mentioning the effectiveness of the air conditioning as a particular feature which set it apart from other venues.

The air conditioning in question is a Hitachi Set-Free VRF installation installed by Tech Refrigeration who also put 12 indoor units in the main hall of Vicar St and six Utopia splits in the Green Room and dressing rooms.

Hitachi has always had strong brand identity in Ireland but, since the recent establishment of a dedicated Dublin-based office, market penetration has increased significantly. "We are very pleased with the reaction to date", says Fergus Daly, Sales Manager, Ireland "and look forward to developing the business further in conjunction with our appointed nationwide dealer network over the coming months".



Fergus Daly, Sales Manager, Ireland for Hitachi

Contact: Fergus Daly, Sales Manager, Ireland, Hitachi. Tel: 01 - 216 4406;
email: fergus.daly@hitachi-eu.com

mark eire keeps the heat on

Mark Eire's core range of heating appliances has recently been supplemented by the addition of new models and revised and strengthened versions of established best-selling lines. They include:—

- The GSE direct-fired suspended air heater with axial fan range, from 20kW to 95kW;
- The low-profile Shopheater direct-fired air heater with atmospheric burners, closed enclosure and electronic ignition (capacity 14.2kW). Standard unit is equipped with horizontal and vertical louvres;
- The GS+ / G+ with centrifugal fan which offers high-efficiency air heating up to 150kW. These gas-fired condensating modulating suspended air heaters incorporate axial/centrifugal fans and offer capacities from 40kW to 150kW (efficiency > 106%). Applications: garages, workshops, cinemas, warehouses and shops. Also available as a module for air handling units;
- GCE direct-fired suspended air heater with centrifugal fan, with capacities from 20kW to 95kW. Also available as a module for rooftop units.

Contact: Mike O'Donoghue or Mairead Twomey, Mark Eire. Tel: 026 - 45334;
email: sales@markeire.com

emergency staff kept cool & alert by toshiba

Emergency call centre staff at the refurbished 999 office at Dublin's IFSC are being kept comfortable thanks to the installation of a Toshiba triple system comprising one 10kW outdoor unit serving three 5.6kW 4-way cassette indoor units.

The system, installed by specialist contractor Kelvin Engineering, was chosen in order to ensure correct distribution of cooled or heated air throughout the "L" shaped office. In conjunction with this, a heat recovery ventilation fan was also installed to provide pre-heated fresh air, saving on running costs and ensuring a comfortable environment for everyone in the room.

The heat exchange fan recovers up to 75% of heat from the outgoing stale air and pre-heats the incoming fresh air. The system operates in reverse in summer (pre cooling fresh incoming air).

Contact: Derek Phelan, GT Phelan. Tel: 01 - 286 4377; email: derek@gtphelan.ie



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Another Side Of ...



Finbar Murphy

This month's *Another Side Of* is somewhat different to the norm. Instead of the usual focus on the subject's sporting interests, we feature Finbar Murphy's unique persona which combines a philosophical, chilled-out approach to life with sharp entrepreneurial flair.

Finbar is a senior engineer with Arup Consulting. In 2005 he came to the realisation that a career is for life and so — prompted by his wife Tuija — decided to take a career break for a year. Tuija had just finished a degree and she too was keen to do something else before settling in to a job and embarking on a long career path.

They first considered the idea of a world tour but figured the 12-month time-frame they had allocated to the project was too short to do it properly. So, given that they both had a fascination with Eastern Europe, that seemed like a good place to start.

They travelled extensively for about four months before finding themselves in a small provincial town in Romania. They immediately felt at home in the place. Finbar says it was like Ireland in the 1960s — poor in monetary terms but rich in culture and community spirit.

While out walking one day and admiring the beautiful unspoilt architectural heritage of the town Finbar came across a "for sale" sign on a building. Prompted more by curiosity than anything else he made some enquiries. Within the space of six weeks he had the keys, despite the fact that all the formal paperwork was far from completed. "These easy-going people place a huge value on integrity", says Finbar, "once we shook hands on the deal it was sealed".

The house was originally built in 1730 and, as the whole town is a heritage site, it not surprisingly retained virtually all of its original features. That said, it was in need of repair and restoration.

The bureaucracy associated with

planning applications is as bad as Ireland, according to Finbar, save that the system accommodates and supports applications which demonstrate compliance with the letter and spirit of the law. This was relatively easy given the vast local resource of authentic, original materials and a pool of highly-skilled craftsmen. Given the relative poverty of the region it was also very cost-effective.

Finbar oversaw the entire project, acting as developer, architectural adviser, services consultant, project manager and transport coordinator. Most of the craftsmen he employed lived outside the town and he would collect them every morning, drop them to the job, drop them home in the evening, and take them to the local pub every Friday for drinks. While most of the work was underway Finbar and Tuija lived on the site as well!

Today the house is divided into three units — the ground floor houses a pottery shop while the upstairs units accommodate an American family and a group of builders respectively.

But Finbar had caught the developer bug. Prompted by the builder who saw the first project coming to an end, he identified a derelict shell of a building which offered potential. Finbar bought it and had it converted within the space of four months. Virtually all the materials were sourced and manufactured locally, even the doors being hand-made. This building is also let.

Now Finbar and Tuija are back in Dublin, living in an apartment. They still visit the town but not as often as they would like. While they have two properties to show for their career break, it is obvious that what they value most out of the experience is the friends they made, and the pleasure and joy they got (and still do) out of sharing in the community spirit of the town.

PS: Just for the record, Finbar's sporting "other side" is paragliding.

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Suddenly, LEDs are everywhere!

During the past two years LEDs have become the light source of choice for display and decorative lighting and they are becoming increasingly popular as a solution on general architectural lighting projects. With such a rapid penetration of the lighting market, *bs news* has decided to review the LED phenomenon as it applies to the building services market. This month *Paul Falvey, Senior Electrical Engineer with Axis Engineering*, begins a new series on the subject.

History and Development

LEDs (Light Emitting Diodes) came into being during the solid state electronic revolution of the 1960s when it was discovered that a diode could be manufactured to emit light at a particular wavelength. The lumen output was very low and the choice of colours was very limited. However, the inherent low energy consumption, long life and durable qualities of a diode made the devices very suitable for use as indicator lamps on switchgear and monitoring panels. Their use was limited to this application up to the end of the last century.

The big breakthrough came at the turn of the century when "high

brightness" LEDs were developed with a significant increase in light output and a much wider choice of colours, including a reasonable quality "white light". The enhanced performance of LEDs provided the opportunity to use the technology in general lighting applications.

Constantly improving manufacturing techniques and significant investment in research and development resulted in the lumen output increasing fourfold during 2003 and 2004 and the commercial applications of LED luminaires increased exponentially during the same period, particularly in municipal and decorative lighting.

With large multi-national manufacturers pumping hundreds of millions of dollars into research on LED technology, and their use as a light source increasing on a daily basis, it is a good bet that LED will play a major role in the future of artificial illumination. LED products in laboratory development have exceeded the lumens per watt produced by fluorescent lamps and the future looks very bright if readers will pardon the pun.

Advantages and Disadvantages

LEDs offer many clear advantages over conventional light sources.

These include:—

- Very long life: up to 100,000 hours compared to 20,000 hours for a standard fluorescent lamp;
- They are robust (but deteriorate rapidly at high ambient temperatures);
- They have no UV emissions and very little infrared content;
- They have a range of colours;
- Light output is very directional;
- They offer design flexibility to luminaire manufacturers.

The disadvantages of LEDs are the current high cost, poor colour rendering and control, lack of choice and product standardisation. However, increasing volume of production and ongoing research will probably dilute these disadvantages in the relatively near future.

There are a number of technical issues relating to LEDs that need to be better understood by designers and specifiers that are not necessarily clearly portrayed in the industry publications. These include the real efficiency of LEDs, the calculation and measurement of lux levels, colour, and the actual installed cost of LED luminaires compared to other available light sources. These issues will be examined in greater detail in next month's article.

Suddenly, LEDs are everywhere!



october 2007
page 21

Published by ARROW@TU Dublin, 2007

Jobs Corner Jobs Corner

CESEnergy

Senior Sales Executive

CESEnergy — which specialises in engineering energy solutions through CHP, Tri-generation and district heating — is looking to appoint an experienced and proven senior sales executive to sell to the commercial, industrial, hospitality and government sectors within Ireland.

This position will report directly to the General Manager and will require the applicant to work autonomously with support from a small sales support team. Core skills required include sales and business account management, and an ability to research and identify new prospects while servicing existing clients.



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Please make reference to bs news when applying to this advert.

bs news Jobs Corner is now the medium of choice for those seeking to appoint personnel to key positions within building services. To place an advertisement in this section contact Joe Warren, Advertisement Director, at Tel: 01 - 288 5001; Mobile: 086 - 253 7115; email: joe@pressline.ie

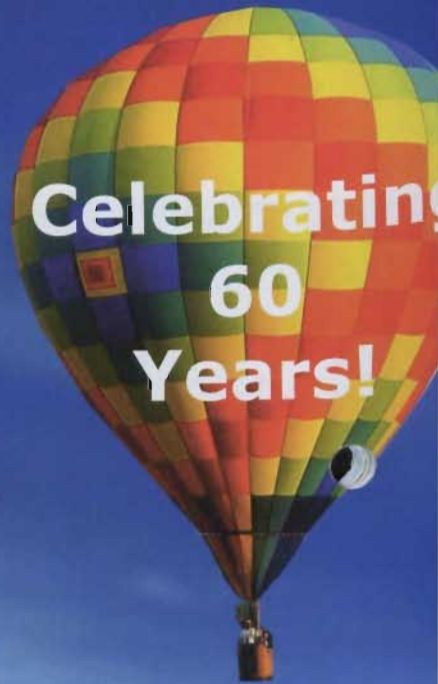
Creating the Perfect Environment

This year marks a major milestone for Thermo Air. In celebrating its 60th anniversary operating in Europe, it confirms that what began as a modest forge in 1947 has since grown to become one of the world's most highly-regarded air movement specialists.

Thermo Air Ireland — which is located in Carlow in a 70,000 sq ft purpose-designed production facility — has played a key role in that success story. Established in 1980, it has made a significant contribution to the development of new products and manufactured hundreds of thousands of units to serve Thermo Air's world-wide customer base, in addition of course to meeting the needs of the home market.

Right from the outset Thermo Air has designed and produced innovative equipment that creates the perfect indoor climate. Fuelled by vast investment in research and design, the portfolio is continuously improving to incorporate the latest in cutting-edge technology. The result is high-quality products which deliver optimum performance efficiencies along with increased energy savings.

No matter what the application — or whether the requirement is heating, cooling, ventilation or climate control — Thermo Air has a solution which will create the perfect environment.



Nothing Without the People

No matter how complex and cutting-edge the technology behind the product portfolio, it is the quality of the people working in Thermo Air which underpins the entire operation. All are highly-qualified and experienced in their respective areas of responsibility.

Moreover — and despite the very professional and structured management and production procedures — there is a comradery which makes for a very relaxed and flexible atmosphere. There are no rigid demarcation lines and so, in this era of just-in-time delivery schedules and bespoke product requirements, Thermo Air can deliver to the tightest timescales.

Design Advice & Technical Support

Thermo Air is not just about product excellence ... equally important is the design advice and technical support provided. More and more applications require creative bespoke solutions. To this end Thermo Air works closely with system designers and installers to devise the most appropriate solution for each particular application. It has a wealth of engineering excellence and experience at its disposal, not just in Thermo Air Ireland but also in sister plants throughout the world which it can easily access.

Product Type & Applications

Thermo Air produces air handling and air movement equipment for every conceivable application, be it industrial, commercial, domestic, offshore or hire industries. Core product areas within the portfolio are:—

- Air Heating;
- Heat Recovery;
- Ventilation Technology;
- Mobile Air Treatment Units;
- Heating & Cooling Coils;
- Air Handling;
- Fans;
- Automotive;
- Components.

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Register of Gas Installers — How to Join

Bord Gáis Networks is currently operating a voluntary registration scheme as required under its Natural Gas License from the Commission for Energy Regulation (CER). Details of this scheme, and the requirements for registration, can be found on the Bord Gáis Networks web site at www.bordgais.ie/networks.

At the end of 2006 the Energy (Miscellaneous Provisions) Act 2006 was signed into law. The Act contains a provision which will make it illegal to do gas works without being registered. To implement this new regulatory regime the CER is empowered to establish a Gas Safety Supervisory Body which will be responsible for the registration of natural gas installers and service agents

On the 10 August last the CER published a consultation paper entitled "The Regulation of the Gas Installer Industry with Respect to Safety – Proposed Vision". This document is available on the CER web site www.cer.ie in the safety section. It provides both a detailed overview of current industry arrangements and a comprehensive vision of the proposed new regulatory

regime. The CER intends to publish its decision paper having considered all the comments submitted during the public consultation process and the information gleaned from information meetings held in Dublin, Cork, Athlone and Kilkenny earlier this month.

In order to avoid confusion and to give guidance to installers and service agents working towards achieving the necessary qualification and training, the CER has proposed the new regulatory model will be operational from 1 January 2009.

The Installer Representative Panel has been playing a critical role in representing the views of the installer industry, both during the public consultation process and previously with numerous meetings with the CER. The Installer Representatives are as follows:

Midlands/Limerick

Chris Ahearne.
Tel: 087 - 253 5188;
email:
chrishaearne@eircom.net

Cork/South

Pat Kelleher.
Tel: 087 - 259 8933;
email:
info@patkelleherandson.ie



North East

Pat O'Shaughnessy.
Tel: 086 - 810 2017;
email: cgpltd@ericom.net

Dublin

James Brereton.
Tel: 086 - 256 9754;
email:
elainebrereton@eircom.net

Sean Giffney.
Tel: 086 - 258 2357;
email:
gasjunction@eircom.net

Jimmy Egan.
Tel: 086 - 233 0200;
email: Jimmy@hsg.ie

If you have any issue you wish to discuss with the Installer Representative Panel you can email irp@hsg.ie or contact one of the installer representatives directly.

Contact details for the Register of Gas Installers are as follows:—

Sarah-Jayne Ryan, Installer Liaison Officer.
Register of Gas Installers,
Bord Gáis Networks, 3C
Century Business Park,
Finglas, Dublin 11.
Tel: 01 - 602 1115;
Fax: 01 - 602 6506;
email: register@bge.ie;
www.bordgais.ie/networks

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captain's day at roganstown



Overall winner Damien Mooney receiving his prize from BTU Captain Jim Bollard

The Captain's Day was held in the middle of July at Roganstown and it must have been the only 5-hour stretch in the month that it did not rain! It was humid and cloudy with the dry course playing very difficult. That said, the greens were brilliant, if somewhat treacherous, and the consensus of opinion among those who played is that it is definitely worth another visit.

Damien Mooney was the overall winner on the day with a score of 37pts. Last year's Captain, Michael Morrissey, had a very credible 38pts but, as he had not played the required two outings necessary to be in contention for the Captain's Prize, he was relegated to second place.

Full list of winners is as follows.—

Captain's Prize

- Winner — Damien Mooney (37 pts);
- Second — Michael Morrissey (38 pts).

Past Captain's Prize

- Winner — Michael Wyse (29 pts).

Class 1 (1-13)

- Winner — Derek Whelan (37 pts);
- Second — Sean Smith (35 pts);
- Third — Michael Matthews (36 pts).

Class 2 (14-17)

- Winner — David Harris (35 pts);
- Second — George Carlton (34 pts);
- Third — Des Haughton (31 pts).

Class 3 (18 +)

- Winner — Des Bindley (29 pts);
- Second — Padraic Gillen (27.5 pts);
- Third — Noel McKeon (28 pts).

Visitors

- Winner — Pat Holmes (29 pts).

Front 9

- Winner — Eamon Vickers (16 pts).

Back 9

- Winner — Sheamus Kiernan (20 pts).



First Class 3 — Des Bindley receiving his prize from Jim Bollard. Also in attendance is Terry Maher of sponsors Dublin Providers



Michael Wyse, winner of the Past Captain's Prize, pictured with Jim Bollard and Terry Maher



First Class 2 — Dave Harris receiving his prize from Terry Maher. Also in attendance is Captain Jim Bollard

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Refrigeration Skillnet News

Certificate in Refrigeration & Air Conditioning — CG6127-02

This intensive programme has been designed to prepare participants for a City & Guilds Level 2 Certificate in Refrigeration and Air Conditioning (C&G6127-02). As part of the programme, participants will also be prepared for C&G2078 Safe Handling of Refrigerants and for Brazer Approval certification. Participants who successfully complete the Level 2 Certificate will be eligible to progress to the Level 3 Certificate (C&G6127-03). The programme is a mixture of classroom-based tutorials and practical sessions with some assignments. It will be delivered over a period of 15 months and will be divided into six, two-week, blocks.

The core programme leading to the award of C&G6127-02 is made up two units — Mechanical Engineering Services Core Studies and Small Commercial Refrigeration and Air Conditioning Systems (Level 2). Participants on the programme

must be working in a technical role within the RAC sector. They should have proven technical ability, a positive attitude to learning and a strong work ethic. This is an intensive programme and it will require a considerable commitment from the participants.

Refrigeration Skillnet intends to offer the Level 3 Certificate Programme in 2009, subject to the availability of further funding support. It will be open to successful participants of the full programme to apply for associate membership, and in due course full membership of the Institute of Refrigeration Ireland.

Course Dates

- Block 1: 10 October 2007 — 21st October 2007;
- Block 2: 5 November 2007 — 16th November 2007
- Block 3: 3 March 2008 — 14th March 2008
- Block 4: 9 June 2008 — 20th June 2008
- Block 5: 8 September 2008 — 19 September 2008

- Block 6: 1 December 2008 — 12 December 2008

Venue

The course will be delivered in Docklands Innovation Park, 130 East Wall Road, Dublin 3.

Course Fees

Network Members: €5,000;
Non-members: €10,000.

City & Guilds registration and accreditation, brazer approval certification and course materials are all included in the course fees. Also included is regular feedback to the employer on progress of the course participants. However, catering and accommodation are not included.

Course Enrolment

Completed course enrolment forms should be returned immediately, together with an initial deposit of €2,000, in the form of a cheque or bank draft made payable to Refrigeration Skillnet. The balance of the course fees will be payable in January 2008.

IOSH Certification Managing Safety

This five-day course is designed to ensure that safety requirements are appreciated by people employed as managers and supervisors and to enable them to review their own departmental systems for safety, introducing new controls, or implementing changes. Rather than introducing Health & Safety as a new ball to juggle, the main focus of the programme is to enable managers and supervisors to interpret for themselves the health and safety risks faced by their employees.

The course will give them an overview of the legal requirements relevant to them and to some of the common hazards faced by the RAC

sector. Throughout the programme risk assessment is presented as a key issue.

The programme comprises seven core modules and one sector-specific module requiring a total of five days. The programme will be delivered over three consecutive days the first week and two consecutive days the following week.

Structure

- Module 1 — Safety Management;
- Module 2 — Reactive Monitoring;
- Module 3 — Risk Assessment and Risk Control;
- Module 4 — Active Monitoring;
- Module 5 — Review and Audit;
- Module 6 — Health & Safety Legislation;
- Module 7 — Hazards – General;

Module 8 — Hazards – RAC Sector.

- Dates Week 1** — Monday to Wednesday, 15 to 17 October, 2007;
- Dates Week 2** — Thursday and Friday, 25 and 26 October 2007.

Venue

The course will take place in Dublin. The exact venue is to be confirmed.

Course Fees

Network Members: €350;
Non-members: €1,000
Training, assessments, IOSH registration and accreditation, training materials, lunches and refreshments are all included in the price.

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CIBSE News

CIBSE Annual Golf Outing

Twenty three teams participated in the recent CIBSE annual golf outing at Hermitage Golf Club. Once again the weather was fantastic with the course up to its usual high standards. All credit to the Hermitage staff, and especially to starter on the day Paddy Davey, who ensured that the teams left the first tee box at the allotted times.

The outing took the form of a Stableford competition with the Chairman's Prize being presented to the CIBSE member with the best individual score and the PJ Doyle Trophy being presented to the overall individual winner. The main event was a team event with the best two scores on each hole and all four scores on the 18th hole contributing to a team's score.

The entire day was a great success and was made all the more so by the generous sponsorship provided by Mercury Engineering, Coolair, Flogas, Killarney Plastics, Sanyo, McGrattan & Kenny, Dornan Engineering, Hevac, BSS, Temec, Sirius and RMI.

Prizes stretched down to the seventh-placed team, along with front and back nines, longest drive and nearest the pin.

Golf balls galore for all, electric golf caddy, lob wedges, vouchers, digital cameras, etc, were all generously donated and gratefully received.

The overall individual winner of the PJ Doyle Trophy was Ronnie Webb, playing off a handicap of 21, who recorded a terrific score of 43 points.

The Chairman's Prize was won by Derek Waters, playing off a handicap of 24, with a good score of 36 points.

Ms Margaret Dolan, Chairman CIBSE Republic of Ireland Region, presented the prizes after the customary dinner.

The team results were as follows:—

- Winner** — Control Aer (94 pts);
- Second** — Advanced Technical Products (93 pts);
- Third** — Ashbrook Engineering (92 pts);
- Fourth** — Crystal Aer (88 pts);
- Fifth** — Winthrop Engineering (87 pts: won on the back 9);
- Sixth** — Mercury Engineering (87 pts);
- Seventh** — Haughton & Young (86 pts: won on the back 9).

Front 9

Winner — Coppercraft (44 pts: won on the last 6).

Back 9

Winner — Hevac (47 pts).

Nearest the Pin

Winner — Peter O'Dowd (1.54m).

Longest Drive

Winner — Richard Gladney.



Chairman's Prize — Derek Waters with Margaret Dolan, CIBSE Chairman



Winners — Team Control Aer: Richard Gladney (also Longest Drive) with Margaret Dolan



PJ Doyle Trophy — Ronnie Webb with Margaret Dolan



Team Crystal Air — Dornnick Ward with Margaret Dolan

MLCP Press Fittings Product Development

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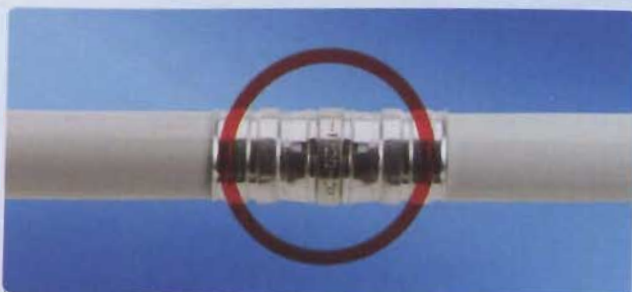
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energy efficient design — an overview

Energy efficient design (EED) in the context of an industrial or commercial development is focused on minimising a facility's energy consumption, running costs and emissions through effective building design, appropriate fuel selection, and the optimisation of building services and facility processes. A well-designed facility can also enhance the working environment and contribute to increased productivity.

With energy costs rising well ahead of baseline inflation and most clients being conscious of their green credentials, the need to incorporate EED into a new facility design should seem obvious. In the real world of delivering projects with tight budgets and schedules, however, EED is often viewed as something that adds time, capital cost and complexity to a project. This can be true but, if some simple design processes are followed early in a project cycle, the impact is negligible and the returns can be significant.

A truly effective EED needs the client to be on board at the

start, terms of reference for the evaluation of options need to be established, and the design team made aware of what they are.

Effectiveness of EED

There is currently great effort being spent throughout Ireland and other countries to reduce energy consumption and costs. Many managers and engineers realise that more could have been cost effectively achieved at the design stage than now with the facility completed and in operation. Until recently EED

has not often been a priority in design.

Even within the design process, the earlier EED is considered the more cost-effective it will be. For example, the selection of the site with consideration of the potential building orientation and available resources such as mains gas, onsite water or even wind can affect the potential energy savings long before the design engineers are made aware of the project. **Figure 1** indicates an estimate of the value EED can bring to project

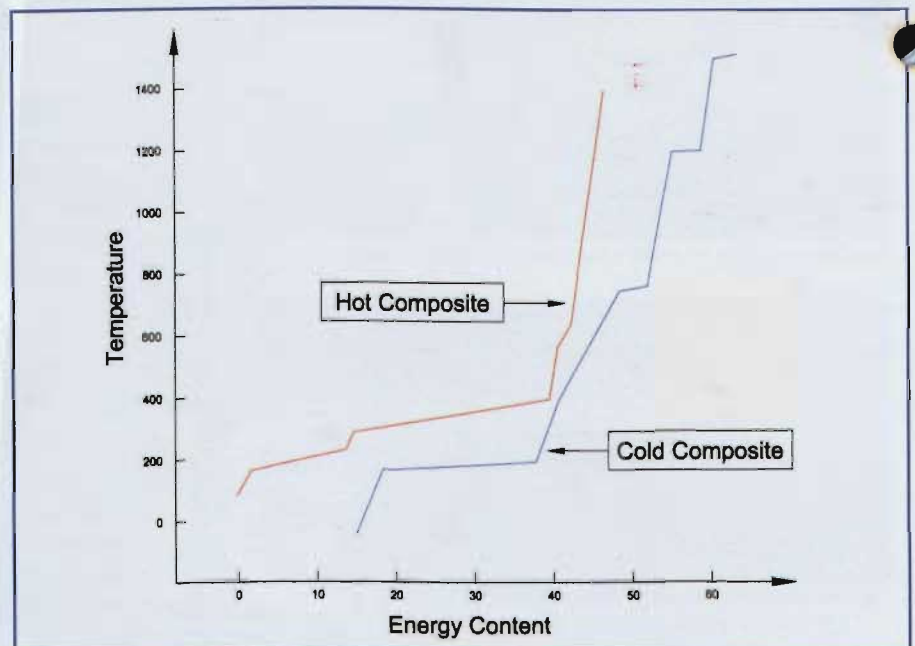
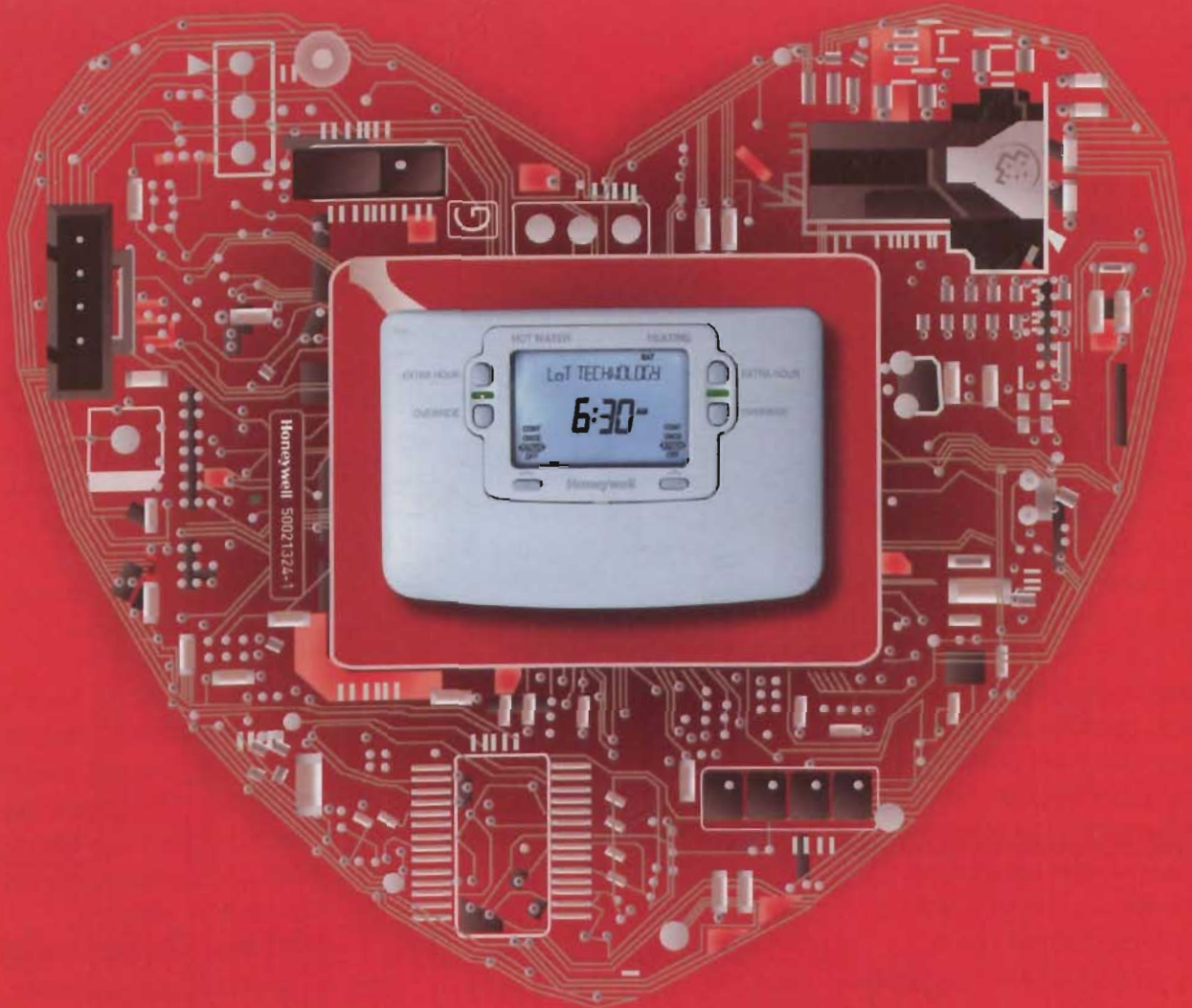


Figure 1 — EED Effectiveness graph

Setting the Pace



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energy efficient design — an overview

depending on its time of implementation.

Overview of EED

No one engineering discipline has the overall ownership of EED — a well-designed facility has all disciplines working together to maximise results. For example, there would seem little point in an engineer designing an energy-efficient HVAC system for a building where the architect hasn't first tried to limit the heating and cooling loads through good building design. The appointment of somebody with a good overall knowledge to co-ordinate EED design activities across the various disciplines can be of great benefit. The following is a non-comprehensive checklist for each discipline in the delivery of a quality EED.

Architectural

Architects are key to EED as they are in a position at the very early stage of a project to influence so much that affects what the other design disciplines can achieve later on. They must consider the following in their design:—

- Orientation and shape of buildings with regards to passive solar control and minimising unwanted solar gain; maximising natural light; natural ventilation in selected areas;

- Building fabric and glazing performance;
- Infiltration and loss;
- Thermal mass to control and utilise solar gain;
- Brie Soleil and other shading options to reduce solar gain;
- Light shelves, glazing, shaped ceilings and other solutions to enhance the penetration of natural light into a building;
- Location of plant and equipment in regards to heat recovery and service delivery.

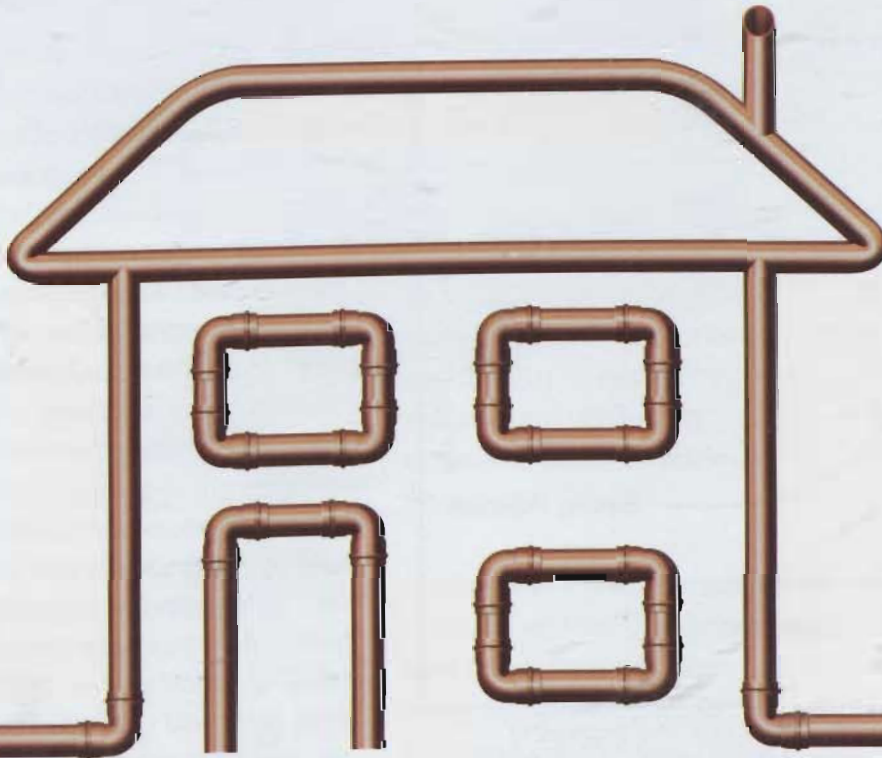
There are a number of software tools available that allow architects and engineers to simulate the impact their ideas and decisions have on the energy consumption of a building.

HVAC / Mechanical Services

HVAC and building services are usually the largest energy consumers. There are many opportunities here for good EED practice. The following is a typical list of considerations for the HVAC/building services engineer.

- Boiler control effectiveness, temperature set points, economisers, oxygen trimming, lagging, overall system efficiency in selection criteria;
- Challenge temperature and pressure user requirements for water and steam;

- Hybrid air/cooling tower and ammonia chiller options, overall system efficiency in selection criteria, maximise the use of free cooling when the external environment is suitable;
- Refrigeration condenser and evaporator temperatures, overall system efficiency in selection criteria;
- Chilled beams or natural ventilation for offices;
- Overall efficiency of ventilation options, heat and humidity recovery. Reduce duct pressures and specific fan power. Challenge user requirements for air change rates and humidity bands. Use energy efficient humidifier systems, including an analysis of the energy source. Variable air volume systems, occupancy use controls;
- Variable Speed Drives (VSDs) with control loops on variable load applications;
- Challenge user requirements for Compressed Air (CA) systems. Can it be done without CA? If not can the pressure be reduced? (CA has an energy conversion efficiency from electricity of approximately 10%);
- Maximise heat recovery opportunities by considering the proximity of equipment from which heat can practicably be recovered

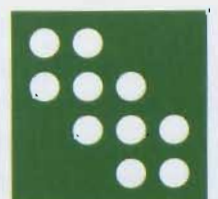


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**Irish Metal
Industries**

energy efficient design — an overview

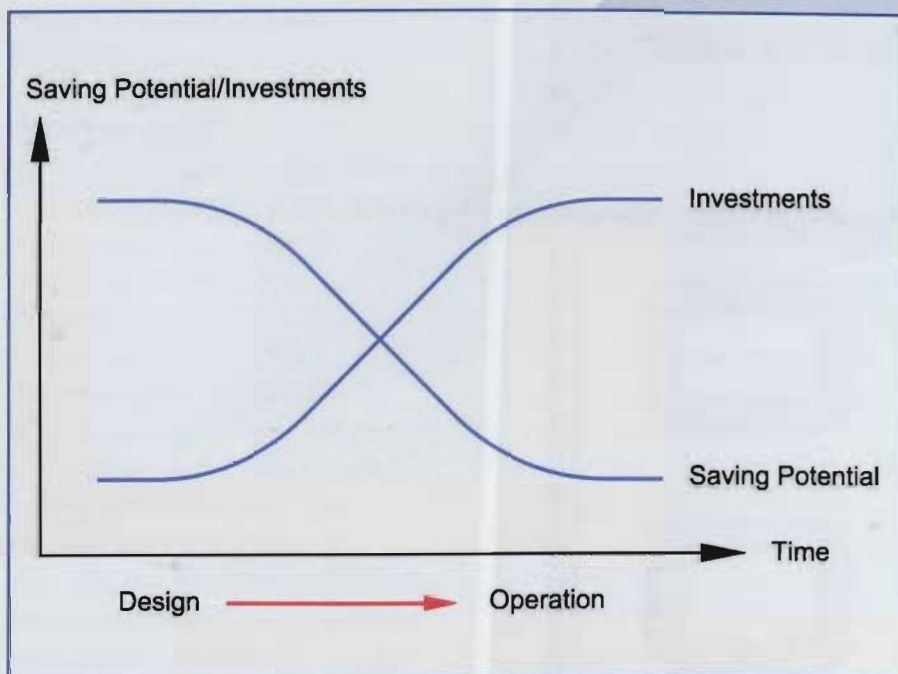


Figure 2 — hot/cold composite graph (Source: SEI). This shows the relationship between heating and cooling requirements – and the potential for recovery

- (ventilation, chillers, compressors etc.) and used (ventilation, pre-heat applications, process etc);
- Size electric motors for pumps and fans appropriately so that they run efficiently near full load;
- Opportunities to may exist to use on site water for cooling and heating applications

Process Systems

Process EED design can often contribute significantly to energy reduction. Although qualified processes can be difficult (but not impossible) to challenge, there are often many other opportunities to make an impact. The following is a typical

list of considerations for a process engineer.

- Reduce compressed air to a minimum; get rid of it completely if possible. Reduce pressure to a minimum;
- Avoid electrical heaters; use fuel (wood/gas/oil) based heat instead if practicable;
- Minimise temperature and pressure requirements;
- Minimise de-ionised water consumption;
- Maximise use of hot/cold recovery (**Figure 2**). Use hot and cold composites to identify at an early stage the potential (HVAC/mechanical services should also do this).

Lighting

Artificial lighting should be minimised in the first instance and then effectively designed to be functional and efficient. Getting the balance right is an art form in itself as lighting can have a huge affect of the comfort level and productivity in the workplace. The lighting designer should consider the following:—

- Maximise the use of natural lighting. This requires close co-ordination with the architect and HVAC engineers to balance against unwanted solar gain and glare. There are good software tools to help with simulation in this area;
- Use Lighting controls such as occupancy, photocells, timers etc to optimise the use of natural lighting and minimise the use of artificial lighting;
- Select energy-efficient and fit for purpose luminaires and lamps.

Electrical

Electricity is usually the most expensive and polluting source of energy available so its use should be minimised. The electrical engineer should work with the other disciplines to design out as much electrical load as practicable and then

energy efficient design — an overview

deliver the remaining as efficiently as possible. The electrical engineer should be considering the following:—

- Size motors appropriate to the load, energy-efficient Eff 1 motors, VSDs for variable load applications;
- Low-loss transformers;
- Overall efficiency of Uninterruptible Power Supply (UPS) systems in the selection criteria. Also consider the high-efficiency static by-pass operation mode where appropriate.

Renewables

With the exception of some biomass applications, renewable energy systems rarely meet economic-only evaluation criteria but they do complement ● and can be a good visual expression of a client's commitment to sustainable design.

Energy Management Systems

A well-designed Energy Management System (EMS) will assist a facility to minimise its energy costs. Designers should break out the sub-system energy inputs and outputs. Consider what the operations people will need to relate consumption to weather and production and to quickly identify anomalies in energy use.

Commissioning, training, operation and maintenance

Good design always considers the commissioning, maintenance and operation of a system. Designers should input into the commissioning, operation and maintenance procedures to ensure that the system is set up, tested, operated and maintained as intended.

Facility staff should be trained to a level that they understand how the system has been designed to be operated and they can get the best out of it.

Statutory Requirements

There are minimum requirements in Ireland that all designs must meet in the area of EED. They are covered by the following:—

- Part L Building Regulations 2005: "Conservation of Fuel and Energy" – Sets out the minimum standards for buildings;
- Statutory Instrument SI No. 666(2006) – Outlines the requirements for the Energy Performance in Buildings Directive (EPBD) for new buildings and the Alternative Energy Systems (AES) requirements for buildings over 1000m².

Further Information

Sustainable Energy Ireland (SEI) has a wealth of information on its website and in other published literature. It currently offers financial assistance to projects to implement EED under certain circumstances, as well as offering grant assistance for some feasibility studies and technologies;

IS 393 Energy Management Systems – is an Irish standard for the rating of a facility's energy management regime;

ASHRAE's "Green Guide for the Design, Construction and Operation of Sustainable Buildings" and the UK Carbon Trust.

Michael Hoyne, Senior Project Engineer, at PM Group has over 15 years experience in the engineering, construction and design aspects of major electronics; pharmaceutical; power generation and distribution; industrial; and commercial projects in Ireland, the UK, Middle East, Asia and Australia. Michael's area of specialisms include engineering design; cost estimating; detailed design; tender and documentation; project and construction management; commissioning; and handover.

better business

Pension Season & Tax Return Season Begins!



Brian Culleton, Foresthill Financial Planning.

Prepare for your tax return – make savings that will benefit your nearest and dearest – and at the same time reduce your tax liability.

One of the primary objectives of financial planning is to help build long-term wealth for the benefit of our families and loved ones. This should be done as tax-efficiently as possible, as early as possible, and in the most appropriate risk profile possible. The objective is to prepare for the rainy-day and to build a nest-egg away from our business, profession or employment.

One of the most most tax-efficient methods of accumulating wealth for your future is through pension investment and we

are lucky in Ireland in that we probably have the best pensions landscape in Europe for individual self-employed and business owners.

Many self-employed individuals detest this time of the year. Not only do they have to prepare and make their tax return under a pressurised deadline, they also have to make a quick investment decision for the pension contribution they may make to reduce this tax liability. By being prepared you can reduce the stress at this time of the year. Here are a few suggestions:—

- (1) Prepare in advance — Have your investment decision prepared and your research done so that when your accountant/adviser clarifies your final tax liability, and thereby what your possible pension payment should be, you are ready to go;
- (2) Consider a Self-Invested Personal Pension (SIPP) arrangement — This is essentially a self-administered scheme for the self-employed. The attraction for many is that they can make their pension contribution at this time of the year, by way of a cash deposit into their scheme

account, and delay the investment decision until a later date when (hopefully) they are not under time pressure to decide and they have their research done.

Many of our clients find this a much more agreeable arrangement. SSIPs also allow the individuals concerned to be much more involved in the management of their pension assets.

- (3) Resolve next year to have the majority of your pension contribution paid on a monthly basis during the year. This will allow you to make sound and un-pressurised investment decisions and help with your cash management during the year. You can make a smaller lump sum to pension at this time of the year when you are sure of the tax liability. There is also some evidence that investors do slightly better by investing on a regular monthly basis rather than doing it all in one lump once a year.

Increased funding allowance

For the self-employed and employees the funding limits have actually increased for individuals

better business

Pension Season & Tax Return Season Begins!

Age	Maximum tax deductible limits as % of earnings
Under 30	15%
30 to 39	20%
40 to 49	25%
50 to 54	30%
55 to 60**	35%
60 and over**	40%

** An Earnings Cap applies to pension contributions for tax relief purposes. The Earnings Cap (which changes each year) is €254,000 for 2006. Revenue limits and terms and conditions apply.

Table A

over age 55. See Table A (above).

Possible Tax Shelter at 2.5% Rate

Individuals get a tax write-off on their contributions to approved pensions – either at corporation tax rates (ie 12.5%) or at the marginal income tax rate (up to 42%). As a tax shelter from a company the pension vehicle is one of the best. If you can manage to draw your income from your Approved Retirement Fund in retirement at the standard tax rate of 20%, it can mean that you will have extracted cash assets from your company at an effective tax rate of 2.5%.

You Own The Asset

At retirement you can withdraw 25% of your total fund tax-free. The balance you can transfer to the ARF

fund (subject to a minimum of €65k being moved to a safety fund – An Approved Minimum Retirement Fund AMRF), which you will own and control.

Once the ARF is set up, any withdrawal is subject to income tax at your marginal rate. If no withdrawals are taken then an annual tax will apply to an "imputed" withdrawal of approximately 3% of the ARF. This is to encourage holders to draw annual income. You can choose how much you withdraw, and when. The point is you choose!

Possible Access to Pension Assets From age 50

For the owner-director (>5% shareholder) and employees, access to your pension assets has improved dramatically in

recent years. Subject to certain requirements, you can access your pension funds from age 50 onwards.

Borrow to Invest in Pension Assets

Individuals can purchase property direct, partake in a geared investment, or invest in funds that incorporate borrowings within the fund. Subject to revenue guidelines and lending criteria, you are allowed to borrow to purchase investment property in your pensions fund. This borrowing can be up to about 70% of the property value, which is generous.

Act Now

The October 31st Preliminary Tax Deadline for the self-employed fast approaches. Also, many limited companies are approaching their financial year-ends when they must finalise their tax liability and pay the tax over to the revenue. This is typically the time of year that these individuals and corporates have the opportunity to avail of tax-efficient investment opportunities.

Contact: Brian Culliton,
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Tel: 01 - 469 3716;
email: brian@foresthill.ie



Mr Kevin O'Connell,
School of Control Systems
and Electrical Engineering,
DIT Kevin Street.

email: kevin.oconnell@dit.ie



Earthing Does Not Provide Absolute Protection

As was discussed in the last month's article, earthing systems are designed to control the flow of earth fault currents, ensure automatic disconnection of supply and limit the value of touch voltage/time duration to which a person or livestock may be exposed. The earth fault current is used to operate protective devices such as Residual Current Devices (RCD's) or Overcurrent Devices such as a fuse or MCB, thereby automatically disconnecting the supply from the faulty circuit.

According to the ETCI Rules, the maximum tripping time allowed for fixed appliance circuits is five seconds and 0.4 seconds for portable equipment circuits. Quite clearly, a person touching the earthed frame of an appliance is likely to receive an electric shock for the limited periods stated above. Although the protection afforded by earthing systems is considered good, it does not provide absolute protection.

Figure 1 depicts what happens when a rod earth electrode is

subjected to continuous loading. A current of 23A flows through the earth electrode to earth and the metal earth electrode reaches a 230V potential to earth.

One consequence of this is that anything/everything connected to the earth terminal — such as the frame of a portable appliance or the pipework of a bath or shower — would equally attain a 230V potential to earth. This could happen relatively easily in a home or office under certain fault conditions, thus giving rise to an electric shock risk.

Earth Electrode Failure

Another consequence is that the region around the earth electrode would heat up and the moisture in the soil would be driven out over time. The resistance of the earth electrode would then increase very significantly and eventually the electrode would not continue to make effective electrical connection with earth, ie, it would fail.

Electrodes completely buried underground significantly reduce the risk of receiving an electrical shock in the immediate vicinity of the earth electrode under conditions described above. This is particularly important for agricultural locations because livestock are especially vulnerable to electric shock.

The TNC System combined earth and neutral conductor depicted in **Figure 2** is a variation of the direct earthing system. The neutral conductor now has a combined function: — to act as a return path for normal

load currents;
— to act as a return path for earth fault currents.

Earth fault currents may now return through the neutral conductor as well as the earth electrodes. As a result of this, the magnitude of the earth fault current will be sufficiently large (>100A) that the MCB or circuit fuse will trip/blow quickly, thus automatically disconnecting the faulty circuit.

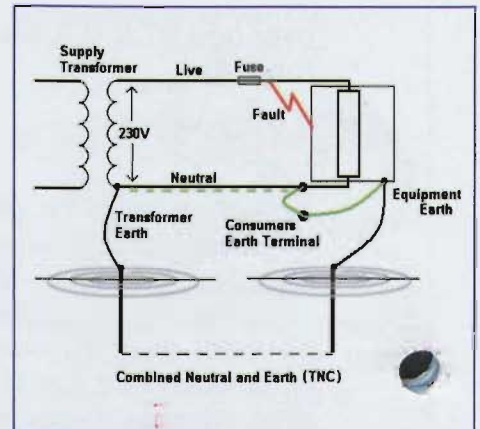


Figure 2 — The TNC System combined earth and neutral conductor

Remember, the earth electrodes on their own will only carry approximately 20A under typical soil conditions and assuming the transformer earth is close to zero ohms. So, at first glance the TNC system — which is the most commonly used in Ireland — is clearly ahead of direct earthing. However, it does have an Achilles Heel!

Should the neutral conductor accidentally break as a result of a cable fault, a truck striking an overhead line, storm damage or

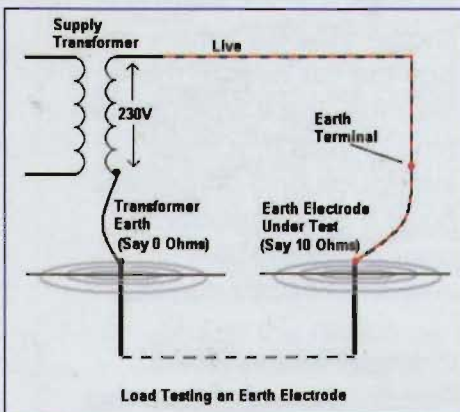


Figure 1 — An earth electrode under load conditions

Earthing Does Not Provide Absolute Protection

simply due to a faulty connection, the situation as depicted in **Figure 3** could arise. The current will feed from the neutral to the consumer's earth terminal and back to the equipment earth causing the frame of the equipment to attain close to 230V potential above earth. All other earthed equipment such as baths, showers etc will also reach this dangerous potential. This weakness is inherent in the TNC system which is the system most in use in Ireland.

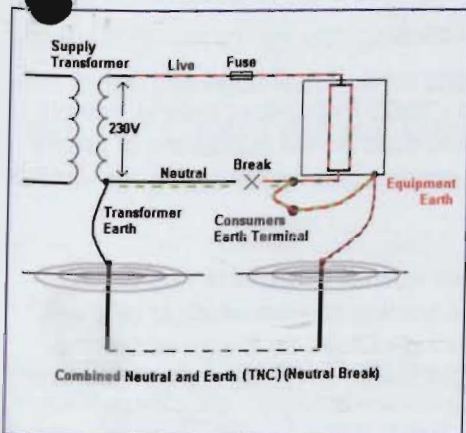


Figure 3 — The TNC System should the neutral conductor break

The most worrying part is that the above dangerous situation will remain indefinitely because the existing earthing system is not designed to sense this situation and automatically turn off.

Before one becomes unduly alarmed, be assured that every effort is made by the ESB and electrical contractors to ensure that the neutral conductor is as secure as possible. This is achieved by having the neutral conductor the top-most on overhead lines, by using single concentric cables for overhead service cables, and double-clamping neutral connections.

The bottom line is that even by taking the best earthing precautions, danger still exists.

october 2007

Published by ARROW@TU Dublin, 2007

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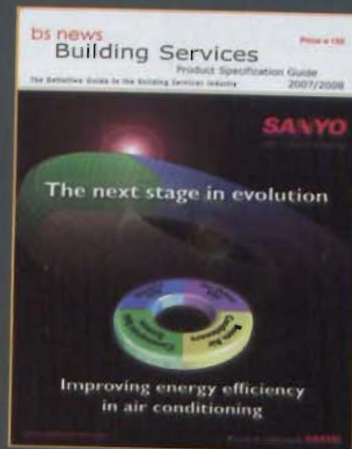
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face to face

MARGARET DOLAN



Throughout the last (we won't say how many!) years, Margaret Dolan has had the distinction of many "firsts" in building services. Apart from a very successful career path with some of the leading building services consultancies in the country, she has also contributed enormously to the development of the Republic of Ireland Branch of the Chartered Institution of Building Services Engineers (CIBSE). This has included various stints as a committee member, an officer, Branch Secretary and now Chairman.

Having served with such distinction in many roles, it is appropriate that Margaret is the first lady Chairman of the CIBSE Republic of Ireland Branch. She is also ideally positioned to continue to build on the successes of recent years as she played an active role in developing and implementing the various programmes of her predecessors.

That said, Margaret obviously has her own agenda and this is very much reflected in the CIBSE programme for the coming season which *bs news* will publish next month. A recurring theme throughout will be the all-embracing issue of sustainability and, in particular, the matter of regulatory compliance and enforcement, or rather the lack of it.

"To some extent design is being taken away from us", says Margaret. "As part of our responsibilities as consulting engineers under Part M of the Building Regulations, we have to write comprehensive energy reports on each project and present them to the client at an early stage in the design process. However, far too often the proposals and suggestions in our reports are rejected by the client, principally on the basis of cost. What's the point in making it an obligatory part of the design process if the solutions put forward can then be totally ignored?"

"Sometimes even the simplest effort at sustainability is rejected. People talk of car exhaust emissions as impacting on the environment but even the humble car space, or rather the cost of it, can be equally damaging. I know of rainwater collection systems being rejected because the developer would lose say three or four car spaces".

It is against this background that Margaret has undertaken to produce a Sustainability Guide specifically for Ireland. CIBSE headquarters in Balham has already produced such a guide for the UK but, with each country having its own particular codes and regulations, it is the engineers on the ground who better understand the specific requirements of each country. In addition to being familiar with local codes and regulations, engineers based in Ireland also understand the local climatic conditions which need to be considered. Work on the compilation of this guide is scheduled to begin shortly.

face to face

MARGARET DOLAN

“While most transition, fifth and sixth year students are aware of — and are concerned about — global warming”, says Margaret, “I doubt if they understand that it is building services engineers who are best placed to influence how man can effect climatic change.”



Margaret Dolan

Another avenue Margaret would like to explore is the whole debate *vis a vis* global warming. There are any number of books by authoritative and so-called authoritative experts on the subject, some of whom say it is a reality and others who maintain that it is not. Margaret has plans to get a sub-committee together to review leading publications expounding both viewpoints so that they in turn can formulate an opinion and publish the findings of their studies.

On the broader front Margaret is keen to develop and reinforce CIBSE's standing within the overall construction process framework. Immediate past Chairman Brian Geraghty helped sow the seeds for this initiative by forging closer links with the Royal Institute of the Architects of Ireland (RIAI). Now Margaret wants to develop and expand this initiative by forging similar links with other professional bodies such as the Construction Industry Federation (CIF) and the Irish Property & Facilities Managers Association (IPFMA).

She wants to do likewise with relevant Government Departments and state and semi-state bodies such as Sustainable Energy Ireland (SEI) and appropriate Ministers and Ministers of State and their advisors. Now that the Green Party is part of the Government many of the issues which come directly under the jurisdiction of

consulting engineers are top of the agenda. Sustainability, CO₂ emissions, energy-usage reductions and so on are all the remit of consulting engineers but, to date at least, CIBSE has not been a party to the decision-making process affecting these areas. Margaret is devising a plan to address that situation.

She is also keen to raise the profile of consulting engineers with young school leavers. “While most transition, fifth and sixth year students are aware of — and are concerned about — global warming”, says Margaret, “I doubt if they understand that it is building services engineers who are best placed to influence how man can effect climatic change. Unfortunately, most of them don't understand the relevance or role of consulting engineers and this is something we need to address as a matter of urgency. If we explain the link we can harness the genuine concern of young people and, in doing so, attract more of them into the profession.”

As the foregoing indicates, Margaret has set herself some ambitious targets. However, she is confident of realising most, if not all — not because of her self-belief — but more so because of the confidence she has in the current CIBSE Committee. So there you have it folks ... it is now over to you!

Plumb Lines

heard it on the grapevine ...



THANK YOU COLIN!



Nonetheless, Colin Murphy of Arup Consulting has stage-managed the CIBSE annual golf outing for the last seven years. He has always done an excellent job and this year's event at Hermitage (see page 30) was highly-successful, not just from a golfing point of view but also as a building services industry occasion.

Unfortunately, it was also Colin's swansong. After seven years in the hot seat he has decided to step down and leave next year to someone else. May I — on behalf of CIBSE and the industry at large — extend a big thank you to Colin and wish him more time to pursue his own golf game in the coming months.

While not a golfer myself (shame, I hear you say!), I am aware just how much work goes in to organising a golf event. Moreover, it's one thing doing it for your own company but, when doing so for a large representative organisation, the task can be enormous.

TOOMEY JOINS HITACHI!

Graham Toomey has joined Hitachi Europe's new Dublin office as Technical/Applications Engineer. Graham is a highly-qualified engineer with broad-ranging experience in the air conditioning and refrigeration sector.

His primary role will be to provide comprehensive technical and applications support, including design advice and costings, using Hitachi's Hi-ToolKit

bespoke software package. He will also be responsible for training programmes to be attended by engineers from the company's nationwide dealer network.



tubes, causing them to bob up and down, and a hydraulic system harnesses the movement to generate electricity. While it sounds simple this is an ambitious, hi-tech, venture which has yet to prove itself. Plans for 30 machines to be installed at the site by next year have been shelved but the long-term objective is to have several hundred machines floating off the coast producing enough electricity to light up 350,000 homes.

Portugal's first commercial wavefarm (right)

CALPEDA IRELAND GOES TO WAR

Stephen McDowell of Calpeda Ireland recently hosted a very energetic day out for a group of young consultants at the Skirmish paintballing centre in Co Wicklow. Most of the participants had never been paintballing before but, by the end of the day, all were experts, if a little breathless and sore.



Despite the protective clothing and stringent safety measures, many were still sporting bruises to various part of their anatomies days later. There were also plenty of aching muscles which was hardly surprising given the 20-acre scale of the heavily-wooded site.

Having divided into two teams the group carried out various tasks and exercised with the Blue team "kicking ass" according to Stephen. There were also reports of people not quite sticking to the rules and of a Forrest Gump impersonation which had everyone in stitches.



'SEA SNAKES' ENERGY BOOST

Portugal will shortly open the world's first commercial wavefarm when it deploys three Pelamis wave energy machines off its northern coast near Agucadoura.

Named after the Latin for sea snakes, the three units comprise a series of red tubes, each about the size of a small commuter train, which are linked together and pointed in the direction of the waves. The waves travel down the

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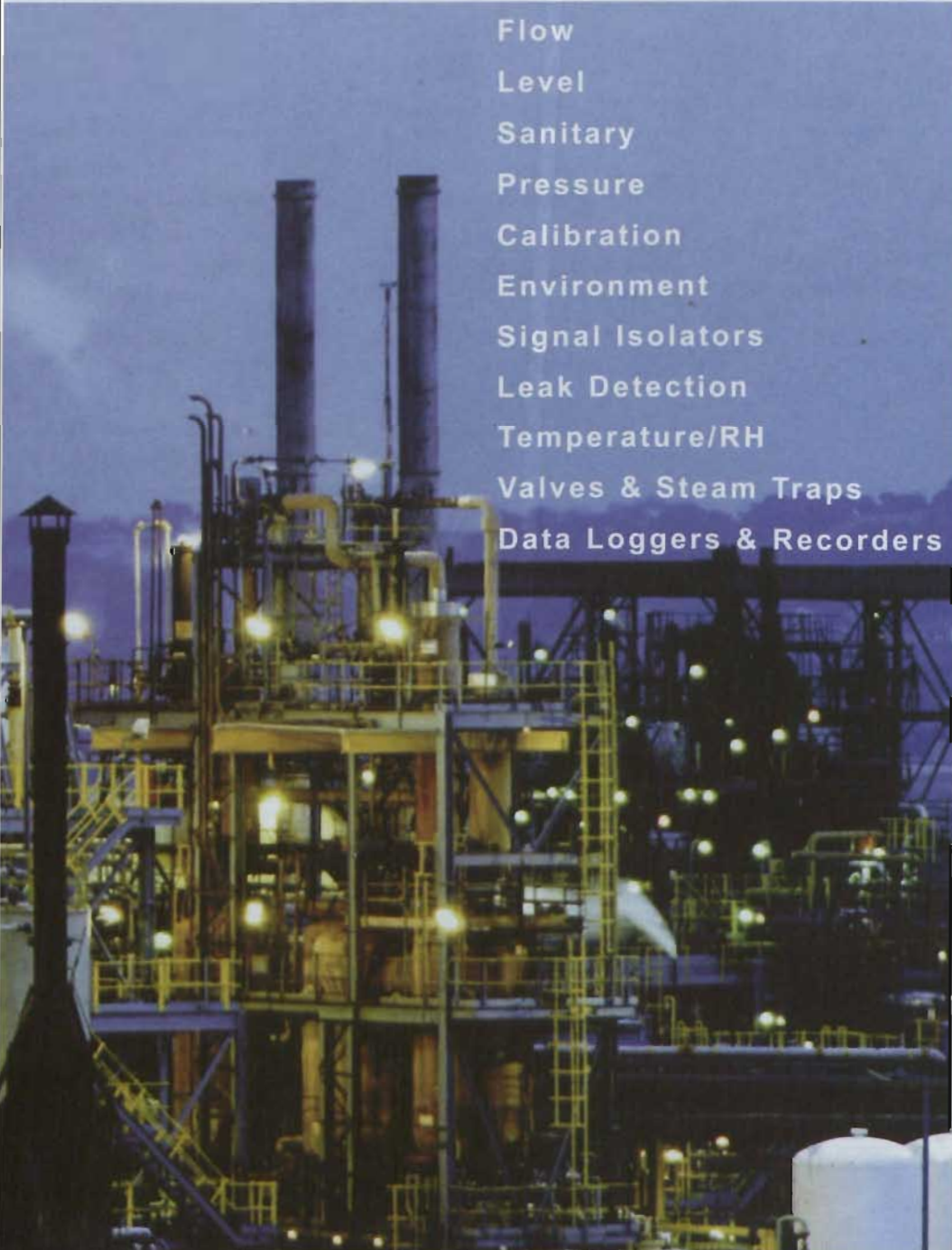
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