MITSUBISHI HEAVY INDUSTRIES has made a giant leap forward in air conditioning & heat pump technology, with the introduction of high performance SRK Wall Mounted air conditioning systems, using R410A refrigerant.

The ADVANCED SRK Systems represent the latest in technological achievement in significantly increasing the efficiency and COP (coefficient of performance). A remarkable COP figure of 3.62 has been achieved on the new SRK25ZB INVERTER split system, and up to 3.61 on the standard models.

MITSUBISHI has used its innovative technology of compressor design and the eco-friendly R410A refrigerant, and combined this with their new "jet-flow" low noise air movement fan arrangement. The result is a quiet, high performance cooling and heating system, with advanced electronic controls for maximum comfort, and controllability.

3D Air Sales (Ireland) Ltd,
Unit 8, Greenhills Business Centre,
Greenhills Industrial Estate, Tallaght, Dublin 24.
Tel: 01 - 462 7570 Fax: 01 - 462 7611
email: micclan1@eircom.net www.3dair.co.uk
Opinion

International Symposium For Ireland

Congratulations to CIBSE Chairman Kevin Tracey on convincing the Society of Light & Lighting (SLL) to hold their forthcoming international symposium in Ireland. Since taking office earlier this year Kevin has championed the cause of electrical services engineering, instigating very strong links on new initiatives with DIT Kevin Street, and also the industry at large.

The theme for the SLL symposium is The Future of Lighting in the Workplace. Upwards of 300 delegates from all over the world, including Ireland, are expected to participate. The planned programme for the three-day event is extensive, those presenting papers being the recognised world-leading experts in their respective fields.

The symposium format is intended to promote debate, with delegates free to engage in discussion with fellow delegates and the speakers, who will be coming from as far afield as North America, in addition to European countries, the UK, and Ireland.

There will also be a social programme, including a formal dinner.

Use the enclosed insert to book

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Pressure Equipment Directive

Seamus Kerr of RSL Ireland recently presented a lecture on PED entitled The Pressure Equipment Directive, Views of a Notified Body. The Agricultural and Food Division of the Institute of Engineers of Ireland hosted the evening, in association with Refrigeration Technology Skillnets.

Pressure Equipment Directive

Free movement of goods is a cornerstone of the single market. The new mechanisms in place to achieve this aim are based on prevention of new barriers to trade, mutual recognition and technical harmonisation. The purpose of the PED is to remove technical barriers to trade and to harmonise laws regarding design, manufacture and conformity assessment. The Pressure Equipment Directive (PED 97/23/EC) is a “New Approach” Directive and was adopted by the European Parliament in May 1997 and was fully implemented in Europe in May 2002. In Ireland it was transposed into Irish law through S.I. 400 of 1999.

Purpose of the PED

Prior to the PED, many European Member States had their own pressure equipment regulations governing the design, manufacture, testing, conformity assessment and installation. Of course many member states still have extensive legislation covering pressure equipment but the PED has harmonised the technical requirements for the trade of pressure equipment throughout the EU.

For example, in Ireland it was not unusual for a refrigeration installation to use UL standards, TUV standards, AD-Merkblatter and BS Standards for the installation. The PED has created a means where by contractors, manufacturers and distributors can purchase any relevant CE marked equipment in the knowledge that what they have purchased is in compliance with European Legislation. By implementing new conformity assessment procedures the PED has levelled the playing field and allowed a fair comparison of pressure equipment across the EU.

Scope

The scope of the PED covers most pressure equipment placed on the EU market with a maximum allowable pressure greater than 0.5 bar and includes vessels, piping, safety equipment and pressure accessories. The scope also includes substantial modifications to existing equipment. Pressure equipment can be:
- Pressure Vessels;
- Boilers;
- Pipework;
- Accessories such as valves, regulators and gauges.

Products, which meet the essential requirements of the Directive and fall within the scope, can be CE-marked and placed on the European Union market, the European Union Area and the European Candidate countries that have already transposed the Directive into their national laws. A product falling within the scope of the Directive and bearing a CE-mark cannot be refused access to any member states markets.

Who needs to comply?

The PED creates a legal structure which demands compliance. It affects designers, manufacturers, contractors, distributors and end users. The relevant industries include pharmaceutical, beverage, food, chemical and power generation among many others. The range of products would include pressure vessels, receivers, heat exchangers, piping, boilers and road tankers (not covered by the ADR/RID). Certain equipment is excluded from the PED such as water supply networks, well-control equipment for the extraction industry, and pipelines.

Product Classification

In order to know how the Directive will apply to particular items of pressure equipment, a manufacturer must check which associated risk category their particular pressure equipment falls under. There are four categories defined in the Directive — Category I, II, III and IV — together with “sound engineering practice” (SEP). Considering fluid state, fluid group, fluid volume and the maximum allowable pressure of the equipment and the level among many others. The range of products would include pressure vessels, receivers, heat exchangers, piping, boilers and road tankers (not covered by the ADR/RID). Certain equipment is excluded from the PED such as water supply networks, well-control equipment for the extraction industry, and pipelines.

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Lack of power? No problem!

Sanyo’s new GHP - the problem solver

All the benefits of VRF air conditioning when mains electricity is in short supply!

Many buildings are reaching their power thresholds but upgrading incoming mains is expensive and takes time - delaying air conditioning installations and often breaking the budget.

Now Sanyo has the solution - by using Gas as its main power supply the Sanyo GHP can offer you 56kW of cooling or heating for less than 1½ kW of electrical consumption.

• Outdoor unit range of 8hp, 10hp, 13hp, 16hp and 20hp.
• Indoor/Outdoor ratio up to 200% allowable
• 24 indoor units connectability
• 100% heating capacity at -15°C
• Pipe runs up to 120m actual

The biggest difference is that it is powered by Gas.

Single phase DC inverter fan motors minimise electrical power consumption so GHP can meet all your VRF air conditioning needs without putting a strain on your existing electrical supply. Sanyo GHP means your cooling output is no longer totally dependant on your electrical input.

With Sanyo GHP we give you the power.

For more information email ghp@sanyoaicon.com or visit www.sanyoaicon.com
of hazard identifies the category (see Figure 1, above). It is worth noting that many of the web sites offering PED-related services have category identification programmes that can be used on-line.

Fluids are classified as group I or II. Group I comprises dangerous fluids and flammable and toxic fluids, e.g. Ammonia or Butane R600. Group II comprises all other fluids including steam, non-flammable, non-toxic, e.g. R404A, R410A.

**Technical requirements**

The requirements of the PED can be grouped under the following headings:

- Equipment must be:
  - Safe;
  - Meet Essential Safety Requirements;
  - Satisfy conformity assessment procedures;
  - Carry CE-marking and other information.

“Safe” pressure equipment and assemblies are those which, when properly installed and maintained and used for their intended purpose, will not endanger the health and safety of persons.

**Safety Requirements**

Essential safety requirements of the PED include:

- General safety and minimisation of hazards;
- Design: strength, wear, corrosion, filling and discharge, safety devices and external fire;
- Manufacturing: joining, non-destructive testing, traceability and final inspection, CE marking.

The PED does not only consider the design code but the intended life of the equipment also.

**Conformity Assessment**

To demonstrate that the Essential Safety Requirements are satisfied, equipment and installations will be subject to conformity assessment. In PED as a “New Approach Directive” conformity assessment is subdivided into modules. Manufacturers and installers can choose which assessment module to use. The modules relate to the design phase of products, their production, or both. The product classification dictates conformity assessment module. See table below.

<table>
<thead>
<tr>
<th>Category I</th>
<th>Category II</th>
<th>Category III</th>
<th>Category IV</th>
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<tbody>
<tr>
<td>A</td>
<td>A1</td>
<td>B1 + D</td>
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<tr>
<td>D1</td>
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<td>E1</td>
<td>B + E</td>
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**Module** | **Design** | **Production** |
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<tbody>
<tr>
<td>A</td>
<td>Technical Documentation</td>
<td>Internal production control</td>
</tr>
<tr>
<td>A1</td>
<td>Technical Documentation</td>
<td>Internal production control with monitoring of the final assessment</td>
</tr>
<tr>
<td>B</td>
<td>Type Examination</td>
<td></td>
</tr>
<tr>
<td>B1</td>
<td>Design Examination</td>
<td></td>
</tr>
<tr>
<td>C1</td>
<td>Monitoring of the final assessment</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Technical Documentation</td>
<td>Quality assurance for production, final inspection and test</td>
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<tr>
<td>D1</td>
<td>Quality assurance for production, final inspection and test</td>
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<td>E</td>
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<td>F</td>
<td>Unit Verification</td>
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<td>Quality assurance for design, manufacture, final inspection and test</td>
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<td>H</td>
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<td>Quality assurance for design, manufacture, final inspection and test with design examinations and monitoring of final assessment</td>
</tr>
<tr>
<td>H1</td>
<td></td>
<td>Quality assurance for design, manufacture, final inspection and test</td>
</tr>
</tbody>
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https://arrow.tudublin.ie/bsn/vol42/iss10/1
Equipment in Category I is subject to manufacturer's own internal production control. The modules for Categories II, III & IV will require the involvement of a Notified Body.

A Notified Body is an accredited organisation appointed by the member state for the approval and monitoring of the manufacturers quality assurance system or in direct product inspection. It is the manufacturers responsibility to appoint a Notified Body when none is required by the Directive.

CE Marking
Once the equipment has been assessed and found in compliance with the directive, the manufacturer can affix the CE marking to the pressure equipment and then must draw up a declaration of conformity. The CE marking must not be affixed to “SEP” equipment.

Manufacturers should also note that if the equipment falls under the scope of any other Directive the CE mark must only be applied if the equipment meets the requirements of that Directive also. The CE mark is an attestation by the manufacturer that the equipment meets the requirement of ALL relevant Directives.

Operating Instructions
When the pressure equipment is placed on the market, it must be accompanied, as far as relevant, with instructions for the user ensuring safe operation of the equipment.

More Information
Please note that this article is for guidance only. Please refer to the regulations themselves for a full statement of the requirements.

www.nsai.ie
A good site for guidelines: http://www.dti.gov.uk/strd/strdpubs.html#press
Contact: Seamus Kerr, RSL Ireland.
Tel: 01 - 450 8011;
Web: www.rslireland.com

A recent World Health Organisation report suggest that 160,000 people die annually as a direct consequence of the effects of global warming (see Plumb Lines, page 36)

www.nsai.ie

You and your customers demand the best products, benefits and prices. Toshiba Inverter splits deliver this and much, much more.

The new R410A Digital Inverter offers all the attractions of the heat pump system, ideal for light commercial applications, with the benefits encompassing:

- Condensing units offer 40% increase in energy savings, and are 13% smaller and 38% lighter compared to fixed-speed models
- Cooling capacities up to 14 kW
- A choice of five indoor models in 16 sizes
- 3-year parts and labour warranty
- All units operate on a single-phase power supply

To purchase Standards:
www.standards.ie
For information on Standards within Ireland:

GT Phelan Ltd, Unit 30, Southern Cross Business Park, Bray, Co. Wicklow
Tel: 01-286 4377  Fax: 01-286 4310
email: gtphelan@eircom.net  Web: www.gtphelan.ie

The new Digital Inverter from Toshiba

TOSHIBA
Coanda Effect From Toshiba

The louvre design of the latest Toshiba ceiling cassette launched as one of the indoor units for the new energy-saving Digital Inverter Split System shows just how much attention to detail has gone into the design and manufacture of the new product.

Many people think louvres are louvres, and they certainly come in for a great deal of physical abuse in many working environments. But not all louvres are born equal. The Coanda Effect was discovered in 1930 by the Romanian aerodynamicist Henri-Marie Coanda (1885-1972). He observed that a stream of air tends to follow a nearby curved surface, if the curvature of the surface or the angle the surface makes with the stream is not too sharp. Of course, it’s why aircraft wings work and shower curtains stick to you, however careful you are.

Toshiba engineers have optimised the Coanda effect in the design of their fascinating-looking new louvres to direct the flow of conditioned air through the uppermost layers of room air to avoid draughts, but also to obviate the laminar ceiling-hugging flows that contribute to dust streaking along suspended ceilings. So, the new design reduces draughts and eliminates staining of the ceiling.

The full range offers four sizes — from 5.3kW to 12.3 kW cooling and 5.6kW to 14 kW heating. An R410A installation kit and a twinning kit accessory are also available.

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

O’Sullivan Joins Thermodial

Cork born John O’Sullivan has been appointed Business Development Manager of Dublin-based facilities company Thermodial Ltd. Mr O’Sullivan previously developed his sales skills in Dell and Windsor Motors. His appointment will spearhead a new sales drive for Thermodial Ltd in the greater Dublin area, especially in the office, pharmaceutical and IT sectors.

In operation since 1987, Thermodial Ltd is a specialist in the maintenance of air conditioning, heating and electrical services.

BSS Acquires Pegler & Louden Ireland

The BSS Group has strengthened its market position in the industrial process sector by the acquisition of the Pegler & Louden Ireland business. Pegler & Louden operates in the niche market of supplying specialist valves to the industrial process sector, including pharmaceutical, food and drink, and general chemical industries.

The Pegler & Louden name will be retained and operated as a separate sales division of BSS (Ireland) Ltd selling to process industry customers. It will have its own Sales Director and dedicated specialist sales team and technical support. BSS (Ireland) Ltd will absorb the Pegler & Louden activities into its existing facilities in Dublin and Cork, operating them independently to its existing business.

Mike Ferguson, Managing Director of BSS (Ireland), said: “The acquisition of the Pegler & Louden business increases our operations in Ireland by over 30%. It enables us to have a comprehensive and competitive product offering to the important end user process markets, reinforcing BSS’s position in Ireland.”

Contact: Michael Ferguson, BSS Ireland. Tel: 01 - 416 5100.
Wolf Air Conditioning — From professionals for professionals

Wolf’s KG Standard series is top-end, high-grade technology for buildings of all shapes and sizes. The range spans everything from units with 25 mm double-skinned casing panels for indoor installation to weatherproof units with B1-rated, 35 mm casing panels.

Duplicating the success already achieved by the KG 15-1000 Standard series, Wolf’s KG 40-400 Gigant units are for air-handling applications in the volume-flow range from 1,600 m³/h to 40,000 m³/h.

The Gigant series sets new standards in air handling, complying with all the truly important technical requirements and specifications. The components in this new series are configured to customer requirements while the modular approach means quick and easy installation.

The performance levels and performance data of all functional elements correspond to those of the KG Standard series. The familiar design graphs and tables in the current Wolf KG catalogue can be used as-is for dimensioning systems with KG Gigant elements. The only new tables necessary are those for unit sizes, weights and acoustic levels.

The maintenance-friendly design facilitates straightforward servicing. The drop eliminator and cooling coil withdraw separately while flexibility and easy siting is assured by doors which are left- and right-opening, and can even be lifted right off. The condensate tray has a sloping bottom, so all the water drains away.

The frame is welded and galvanised for maximum strength and durability. Air volume ratings are from 1,600 m³/h to 40,000 m³/h. There is also a weatherproof version for outdoor applications.

The new KG/KGW 40-400 RAL series is based on the successful KG/KGW Gigant range. This comprises modular individual tubes made from inherently-stagle, self-supporting, zinc-plated units. The thermally and acoustically-isolated design features a stable welded frame made from steel angle sections (80mm by 80mm by 2mm zinc-plated). The double-skin casing and inspection doors are made from galvanised sheet steel. Insulation is provided in the form of 50mm mineral fibre, grade A1.

Full details on the entire Wolf range are available from Coolair who are the distributors for Ireland.

Contact: Brendan Kilgallon, Coolair. Tel: 01 - 451 1244; email: info@coolair.ie
Tri-iso Super 9 Insulation

Tri-iso Super 9 is a multi-reflective insulation product manufactured in France as part of the Actis range. BM TRADA has tested it and it has been shown that in several different construction applications Tri-iso Super 9 has been found to have the same insulation level as 200mm of glass fibre, i.e., a U-value of 0.2. Other benefits include:
- No need for vapour control layer;
- Being thin, ideal for everywhere;
- Suitable for both warm and cold roof applications;
- Easy and quick to install;
- CFC and HCFC free;
- Suitable for drylining walls, and under suspended floors.

Tri-iso Super 9 has already been specified and installed on a number of prestigious projects, including those of the OPW and other State and Semi-State schemes.

Additionally, it recently won the Best Interior Building Product category at Plan Expo 2003.

Contact: Sean Gibbons, U-Value Insulation Ltd., Tel: 01 836 5299.

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Win a Sanyo Hi-Fi

Enter our reader competition and you could win a fantastic Hi-Fi player. As this is our Christmas competition we even have two winners, so twice the chance. Simply answer the questions and complete the details, copy and fax back to BSNews on 01 288 6966.

1) Which team recently defeated Ireland in the 1/4 finals of the Rugby World Cup?
   a) England  
   b) Australia  
   c) France

2) Which Irish Rally Driver recently claimed 2nd place in the British Rally Championship?
   a) Eamonn Boland  
   b) Austin Mac Hale  
   c) Andrew Nesbitt

3) What percentage spending increase did finance minister Charlie McCreery announce for 2004?
   a) 5%  
   b) 13%  
   c) 7%

4) Which famous Irish Rugby player recently announced his retirement?
   a) Dennis Hickie  
   b) Mick Galway  
   c) Keith Wood

5) Which of the following is Refrigerants is azeotropic?
   a) R410a  
   b) R407c  
   c) R22

Name: __________
Company: __________
Address: __________________ Parscode: __________
Email: __________
Tel: __________

Fax back to BSNews on 01 288 6966

Rules Competition open to anyone over the age of 16.

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Construction Job Index up 7%

The number of construction jobs advertised in Ireland's daily and Sunday newspapers over the third quarter of this year is up 21% on the third quarter in 2002, according to the Bank of Ireland Business Banking Job Index.

The Index also shows steady month-on-month growth in the construction sector through the quarter, building on continuous month-by-month growth through the previous quarter. The number of jobs advertised in construction has now grown in each of the last six consecutive months.
York Appoint UK & Ireland Manager

York International has appointed Keith Smith to the new position of Managing Director, UK & Ireland, responsible for all sales and service related operations throughout York’s UK and Ireland businesses, and for driving the continued growth of the company in these markets. Keith was in Ireland recently to meet National Sales Manager Frank Doyle and the City West-based York ACR team.

Keith’s new position has been created as part of the ongoing reorganisation of York’s Air Conditioning and Refrigeration Operations into geographical units. He brings with him over 25 years of experience with York, having worked in various equipment sales and service capacities and, most recently, as Regional Service Director for the north central region of North America.

Keith is enthusiastic about his new appointment: “York UK & Ireland is a mix of diverse businesses with highly-talented people, challenged by the ever-changing needs of our customers. I am excited to join such a vibrant team and look forward to working with them to realise York’s full potential in this dynamic market.”

Contact: Frank Doyle, Tel: 01 - 466 0177; Web: www.york.com

A Breath of Fresh Air From Thermo Air

Michael Burns, newly-appointed Sales Manager, Thermo Air

Michael Burns has been appointed Sales Manager of Thermo Air Ireland Ltd, the Carlow-based air handling technology specialist which offers tailored solutions for practically any air-handling problem. Part of the Honing Beheer Holding Group who are based in Holland, it specialises in the production of air heating, air handling, fans and ventilation products.

Michael will be responsible for sales and sales development of all Thermo Air group products in Ireland and will work closely with the current team to ensure that customers receive the best service.

Thermo Air supplies high-quality products adhering to a strict quality control system. Continuous research and development programmes enable the company to focus on long product life and energy savings for customers.

Thermo Air guarantees quick deliveries to any part of the Ireland, or indeed Europe, the basis for this guarantee being a large stock of standard products and its own, flexible, production programme.

Recently completed projects include Fairgreen Shopping Centre, Carlow where three hi-spec air handling units have been installed by Litton Group, Lisburn N.Ireland; and Bolton Street Institute of Technology, a project installed by Drummond Heating, Baldoyle, Dublin.

“Whatever your heating and/or ventilation requirements are”, says Michael Burns, “we can take equipment from stock or build a complete bespoke piece of equipment to suit your specific application. We at Thermo Air pride ourselves on offering our customers the highest levels of service available.”

Contact: Michael Burns, Sales Manager, Thermo Air Ireland. Tel: 05991 31646; email: mike@thermoair.com
Tough, versatile pumps for domestic sewage transfer

In areas with no sewer systems, or areas where gravity systems are unsuitable, pressurised systems are the perfect choice for transfer of effluent and domestic sewage to the public sewer or sewage treatment plant. Grundfos offers the perfect pump for such systems, facilitating the use of smaller pressure pipes for minimal investment costs. The Grundfos grinder pump range (SEG) provides many customer benefits, combining cost-effectiveness with maximum protection of the environment.

Unique user benefits

- Highly efficient and very dependable
- Improved discharge pressure
- New, efficient grinder system
- Integrated SmartTrim system for adjustment of impeller clearance
- Polyurethane-sealed cable plug ensures a completely watertight unit

The Grundfos grinder pumps (SEG) are specifically designed for pumping untreated sewage in small communities or sparsely populated areas.

A newly developed cartridge shaft seal system, together with the polyurethane-sealed cable plug system, prevents liquid from penetrating into the motor. High discharge pressure enables transfer of sewage over longer distances.

The new and efficient grinder system with easily replaceable parts reduces downtime and facilitates quick and easy maintenance.

The unique SmartTrim impeller clearance adjustment system ensures optimum performance at all times.
No More Noisy Fan Coil Units

These acoustic wraps offer considerable noise reductions and can be custom tailored to meet a specific “NC” level.

Unlike a lot of work AcTech does for OEM clients, this product can be successfully retro-fitted to any existing project where noise is an issue.

AcTech Europe also offers the opportunity of product “mock ups” in the acoustic research lab, thereby allowing the client to see first hand the actual performance of the treatment.

For further information on fan coil units, or solving noise problems associated with fan coil units, VenTac has the answer.

Contact: Eamonn King, VenTac.
Tel: 045 – 851500;
email etking@ventac.com

Ideo Bain — The Bathroom Show

Designed for living, the bathroom now occupies a place of its own at the heart of the home. Consequently Idéo Bain — from 4 to 9 February 2004, in Hall 1 of the Porte de Versailles Exhibition Centre in Paris — has taken on the role of standard bearer for bathroom developments and emerging trends.

Building on the success of the first show, Idéo Bain will bring together 250 exhibitors occupying 30,000 sq m over six days. The 50,000 expected visitors, both professionals and members of the general public, will be able to view the latest innovations in the sector.

Staged biennially, Idéo Bain is a central event for bathroom professionals because it is held under the aegis of the industry’s trade association, the Fédération des Industries de la Salle de Bains. Idéo Bain 2004 will display the world of the bathroom in conjunction with Interclima, the HVAC show held from 3 to 6 February 2004.

Contact: www.ideoobain.com
There are fittings ... then there's CONEX

DON'T SETTLE FOR CHEAP ImitATIONS

FOR QUALITY AND RELIABILITY
CHOOSE THE NAME YOU CAN TRUST

QUALITY TRIFLOW SOLDER RING AND COMPRESSION FITTINGS
Grundfos Sewage Grinder Pump

The Grundfos SEG range of sewage grinder pumps comprises tough, versatile pumps for efficient transfer of effluent and domestic sewage via pressurised systems. Compared to traditional grinder solutions, the Grundfos SEG pump has an extremely efficient grinder system which makes it possible to use smaller pressure pipes and minimise investment costs. Benefits include significant cost-efficiency, minimum downtime, quick and easy maintenance, and maximum protection of the environment.

All SEG pumps are designed to reduce energy consumption and to keep downtime at a minimum. Maintaining peak performance throughout the entire lifetime of the system is a key issue. This is ensured through these features:
- Watertight cable connection;
- Short motor shaft;
- Cartridge shaft seal;
- Stainless steel clamp;
- Cast iron flange and feet;
- Specially-designed lifting handle;
- Motor protection;
- Heavy-duty ball bearings;
- New, efficient grinder system;
- SmartTrim impeller adjustment.

Grundfos SEG pumps are suitable for pumping domestic sewage and other liquids with a pH value of 4 to 10 in permanent installations and are suitable for the following applications:
- Pumping of untreated sewage in small communities or sparsely populated areas;
- Pumping of sewage in pressurised systems.

Features and benefits
A newly developed cartridge shaft seal system, together with the epoxy-sealed cable plug system, prevents liquid from penetrating into the motor. High discharge pressure enables transfer of sewage over longer distances.

The improved grinder system with easily replaceable parts reduces downtime and facilitates quick and easy maintenance while the unique SmartTrim impeller adjustment system ensures optimum performance at all times. There are also optional controllers for level control monitoring and protection of the pumps.

Contact: Gordon Barry, Grundfos (Irl).
Tel: 01 - 295 4926;
gbary@grundfos.com

Haughton & Young Swing

Brian Geraghty, Brian Geraghty Associates with Bernard Costelloe, Eurofluid; Colin Murphy, Homann O’Brien; and Paul Young, Haughton & Young

Haughton & Young’s recently-held annual golf outing at St Margaret’s Golf Club in Dublin proved once again that, with the proper organisation and commitment, you can indeed please all of the people all of the time. Even the losers were winners.

Approximately 40 guests participated on the day, made up of architects, contractors, builders and product suppliers. They played in mixed teams of four in perfect conditions, followed by the customary meal and presentation of prizes later in the day. As always, it proved a most enjoyable day for all participants.

Overall winners — Anthony Callinan, Merrion Contracting with Martin Breen, RN Murphy; Ward Frisby, Bennett Construction; and Desy Haughton, Haughton & Young

McCrae Joins Toshiba Carrier

David McCrae, who is widely know and respected throughout the UK and Irish air conditioning industries, has re-established his links with Carrier now that he has been appointed Commercial Director for the Toshiba brand at Toshiba Carrier UK. Throughout his many years in the business, David has built four separate sales forces from scratch and has worked in every part of the supply chain.
Thinking large?
Then think Wolf air conditioning

Wolf air conditioning units RAL, Gigant and Standard
Royal Dublin
Sponsor: Danfoss (Ireland)

<table>
<thead>
<tr>
<th>Overall Winner</th>
<th>John White (14)</th>
<th>39 Points</th>
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<tr>
<td>Class 1 1-13</td>
<td></td>
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<tr>
<td>1st</td>
<td>Graham Fay (5)</td>
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<tr>
<td>2nd</td>
<td>Michael Melligan (12)</td>
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<td>3rd</td>
<td>Brendan Keaveney (7)</td>
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<td>Class 2 14-17</td>
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<td>1st</td>
<td>Bernard Costello (16)</td>
<td>37 Points</td>
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<tr>
<td>2nd</td>
<td>Dave Cranston (14)</td>
<td>31 Points</td>
</tr>
<tr>
<td>3rd</td>
<td>Jim Duggan (16)</td>
<td>31 Points</td>
</tr>
<tr>
<td>Class 3 18+</td>
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</tr>
<tr>
<td>1st</td>
<td>Michael Murphy (21)</td>
<td>36 Points</td>
</tr>
<tr>
<td>2nd</td>
<td>Damien Mooney (20)</td>
<td>35 Points</td>
</tr>
<tr>
<td>3rd</td>
<td>Neil Ryan (19)</td>
<td>34 Points</td>
</tr>
<tr>
<td>Front Nine</td>
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<tr>
<td>1st</td>
<td>Stephen Jones</td>
<td>21 Points</td>
</tr>
<tr>
<td>Back Nine</td>
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<tr>
<td>1st</td>
<td>Brendan Bracken</td>
<td>18 Points</td>
</tr>
<tr>
<td>Visitor</td>
<td>Diarmuid O'Siochain</td>
<td>40 Points</td>
</tr>
</tbody>
</table>

First, Class 3 — John Sampson of sponsors, Danfoss Ireland with Michael Murphy; and BTU Captain, Gerry Tobin

Second, Class 2 — Dave Cranston with John Sampson of sponsors, Danfoss Ireland; and BTU Captain, Gerry Tobin

Third, Class 1 — Brendan Keaveney with John Sampson of sponsors, Danfoss Ireland; and BTU Captain, Gerry Tobin

Michael Melligan with Dan Chambers leaning on his shoulder.
Committed to Customer Care

Product Solutions

System Solutions

Service Solutions
When it comes to air conditioning Trane Ireland has all the answers. Be it product, system or service solutions, Trane Ireland can deliver. This is because Trane Ireland listens. It engages in discussion and consultation with the client and professionals involved in each particular project and then devises the most appropriate solution using its extensive product range, experience, technical know-how, and research facilities.

Trane is a leading global provider of indoor comfort systems and comprehensive facility solutions, with current annual sales approaching €5 billion. The range includes energy efficient air conditioning and ventilating (HVAC) systems; heating; top-quality service and parts support; and sophisticated building controls.

Trane Ireland brings the strength of this international conglomerate to bear on the needs of its Irish customer base. While the brand has been available in Ireland for something like 20 years, it was the establishment of a dedicated, wholly-owned subsidiary a couple of years ago which transformed its market presence.

Now enjoying considerable market penetration across the entire air conditioning spectrum, the management structure at Trane Ireland has been further strengthened with the appointment of Andy Green as Sales Manager. Andy’s appointment coincides with a new development phase at Trane Ireland.

Quality of product, coupled with quality of service delivered by highly-qualified, factory-trained engineers, has already established Trane Ireland as a provider of cost-effective, high-performing, air conditioning solutions. Now the intention is to capitalise on that strength to secure further market penetration while, at the same time, underpinning the quality of service provided to existing clients.

Established trading partnerships will be strengthened and grown; new partnerships will be forged; but, even more important, the ideal of partnership trading will in itself be vigorously pursued.

Trane Ireland ... delivering solutions through consultation and understanding.
Products For Every Application
The Trane product portfolio is comprehensive, incorporating cutting-edge designs and advanced technology. It is a dynamic range, all the time changing to incorporate innovative features and benefits as a consequence of extensive investment in research and development. More often than not systems solutions proposed incorporate an interface of the various market segments served. However, there are clearly-defined, individual product segments, brief details of which are as follows:

**Split Systems**
2 kW to 28 kW

**Chillers**
- Small — 10 kW to 60 kW
- Scroll — 60 kW to 300 kW
- Screw — 300 kW to 1500 kW
- Centrifugal — 1 mW to 3.6 mW

**Air Handling**
- 0.3 cu m/sec to 300 cu m/sec
- Air terminals
- Fan coil units
- VAV

**Controls & BMS**
System integration, control and management is critical to the success of any proposed solution. Trane has invested significantly in this area and now offers comprehensive multiple-choice options. Effectively, Trane controls and BMS systems act as the glue that holds the product, system and service solutions together.

Service & Maintenance
Trane Ireland service personnel are fully-qualified, factory-trained, engineers. Their objective is to help system designers and building owners create and maintain comfortable, cost-effective, energy-efficient, indoor environments.

Trane knowledge, experience and assistance is available from initial consultation through to design, specification, installation, commissioning and after care. It is essential to consider ongoing maintenance at the design stage to ensure that running costs and disruption are kept to a minimum.

**Additional services provided include**
- Maintenance & Repair of any Manufacturers Equipment
- Duct Cleaning
- Plant Surveys
- Chiller Hire
- Energy Audits
- Tube Bundle Replacement
- Training
Stay Within The Law
With the current and impending changes in refrigerant legislation, advice on containment or an engineered conversion can keep a plant operational.

Services include:
— Refrigerant recovery
— Controls upgrades
— Chiller replacement services

Also, building owners are now required to ensure that all steps have been taken to monitor, and where possible prevent, refrigerant leaks. Trane has refrigerant monitoring equipment which, when fitted to a system, can provide an audible or visual alarm in the event of a leak.

Over a Century of Performance Excellence
With a pedigree stretching back nearly 120 years, it is not surprising that Trane Air Conditioning now represents one of the leading global manufacturers of heating, ventilating, air conditioning and building management equipment and systems. The company was established by James Trane in 1885 as a small, family-owned, plumbing operation.

Over the years Trane has undergone many changes, has spearheaded numerous innovations, and expanded and developed by way of generic growth and acquisitions. From day one, people, service, quality and innovation were the hallmarks of the service provided. Today, over 100 years later, nothing has changed in this respect. Serving customers' needs by way of a commitment to product and service excellence is still the primary objective.
<table>
<thead>
<tr>
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<th>DESCRIPTION</th>
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<tr>
<td>Thursday, 2nd October 2003</td>
<td>Annual Student Awards — DIT, Kevin Street</td>
<td>DIT, Kevin Street</td>
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<td>Thursday, 16th October 2003</td>
<td>ESG Lecture: “Duplicate CPC Requirements for High Protective Conductor Current IT Equipment”</td>
<td>DIT, Kevin Street</td>
<td>Tony Sung</td>
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<td>Thursday, 23rd October 2003</td>
<td>Education Lecture: “Continuing Professional Development Support for Engineers”</td>
<td>IEL, Clyde Road</td>
<td>Philip Riseborough</td>
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<td>SLL Lecture: “Industrial Lighting”</td>
<td>DIT, Kevin Street</td>
<td>Ole Hoem</td>
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<td>ESG Lecture: “Local Sustainable Community Energy”</td>
<td>DIT, Kevin Street</td>
<td>Allan Jones</td>
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<td>Friday, 5th December 2003</td>
<td>Celebrity Lunch</td>
<td>The Schoolhouse Restaurant</td>
<td>Herbert Taylor</td>
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<td>Thursday, 29th January 2004</td>
<td>ESG Lecture: “Health and Safety — an Electrical Perspective”</td>
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<td>Richard O’Rourke</td>
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<td>Friday, 20th February 2004</td>
<td>CIBSE Biennial Ball</td>
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<td>Thursday, 26 February 2004</td>
<td>Annual Student Awards — DIT, Bolton Street</td>
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<td>Thursday, 4th March 2004</td>
<td>MSG Lecture: “Environment Friendly Integrated Building Design”</td>
<td>IEL, Clyde Road</td>
<td>Owen Lewis</td>
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<td>Thursday, 1st April 2004</td>
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<td>Friday, 2nd April 2004</td>
<td>SLL International Symposium</td>
<td>DIT, Kevin Street</td>
<td>TBA</td>
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<td>Saturday, 3rd April 2004</td>
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<td>IEL, Clyde Road</td>
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<tr>
<td>Thursday, 8th April 2004</td>
<td>Annual General Meeting</td>
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ESG = Electrical Services Group  
MSG = Mechanical Services Group  
SLL = Society of Light & Lighting
The CIBSE Annual Golf Outing was held in the Hermitage Golf Club on Friday, 12 September last. A total of 35 teams took part in the event on a glorious late summer’s day. The conditions were ideal for playing golf on a course that was in superb condition. 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 contributing to a team’s score.

The outing was a tremendous success and this was helped greatly by the sponsors. The two main sponsors were Control Aer Ltd who provided a 32” Sanyo widescreen TV which was raffled on the day and Mercury Engineering Ltd. Other sponsors were Dornan Engineering, Potterton Myson, Mark Eire, Coppercraft, McGrattan & Kenny, Killarney Plastics, Flogas, Woodside Engineering, GT Phelan, Coolair, Eurogas, Cross Refrigeration and BSS. The overall individual winner was Francis Whelan playing off a handicap of 18 who recorded a great score of 40 points.

The Chairman’s Prize was won by Brian Hunter, Chairman of the Northern Ireland CIBSE Branch, also playing off 18 with a score of 36 points. Another piece of cross border co-operation!!!

The team results were as follows:
First — Glow Heating (90 points);
Second — Whelan Insulations (88 points);
Third — HA O’Neil team 1 (87 points);
Fourth — TEMEC

The presentation of prizes by the Chairman, Kevin Tracey, took place after an excellent dinner.

Stephen Jones of Glow Heating who won the team event with a score of 90pts

Colin Murphy who was responsible for organising the event.
Colin and his colleagues did an excellent job with the entire proceedings running like clockwork
Open-Standard Communications in Building Automation

Today’s modern buildings are equipped with a wide variety of technical equipment and systems that exchange data via internal and external interfaces. Depending upon their degree of automation, buildings are equipped with, for example, measurement and control components governing the operation of their heating, air-conditioning and ventilation equipment. These components are connected to refrigeration units, electric power and water supply systems, personal transport systems (escalators, elevators), fire-extinguishing and smoke extraction systems, fire and burglary alarm systems and video surveillance and access control systems, as well as networks for their IT and telecommunications equipment.

The European building automation standard defines them as equipment that includes all of the "smart" and infrastructural components and devices needed to control, monitor, optimise, operate and manage technical building equipment.

Systems and components for advanced building management and building automation solutions will be a focal point at Light+Building, The International Trade Fair for Architecture and Technology, to be held in Frankfurt am Main from 18 to 22 April 2004. All well-known and world-leading suppliers from the fields of measurement and control technology, building management and building automation will be on hand. They will display the latest in modern systems and components and demonstrates solutions for everything from simple office and administration buildings to large commercial and industrial parks.

In order to reduce the time, effort and expense involved in developing, upgrading, laying out and starting up building automation systems (BAS), numerous supplies of BAS and system components have agreed on standardised protocols and thus paved the way for open-standard systems. That means that manufacturers will employ industry-wide standards in all aspects of their products and services, or at least in designing their interfaces to other systems.

The necessity for introducing open-standard systems may be largely attributed to customers’ needs. Customers strive to network all technical systems of a building into highly-functional overall systems providing interdisciplinary functions. In order to make these systems as user-friendly as possible, they must have unified operating and monitoring functions and employ a common data management procedure. These demands must be met if various facilities equipped with various system generations and systems from various manufacturers are to be networked.

Ultra modern buildings like the GMIT Learning Resource Centre, Galway typify the demanding requirements now being asked of the instruments and controls sector.
world, customers also have the opportunity to avail themselves of a broad range of new and innovative solutions that transcend national boundaries. Last but not least, customers and building operators using open-standard communications will be guarded against new capital investment for a long time to come and save operating costs.

Moreover, in the case of large facilities, open-standard networks provide an ideal basis for technical, commercial and infrastructural building management. Under open-standard communications systems, data transfers are based on common protocols. Individual equipment and systems from various manufacturers may thus be readily assembled into overall systems providing interdisciplinary functions.

Data will be transmitted either via a bus line or via complex networks for all system components. Specialists in the field term such technologies "company/manufacturer-independent" technologies. Open-standard communications systems, such as BACnet, are described by technical specifications that have been prepared by working groups of standards organisations or industry associations. Others, such as LON, EIB or OPC, have been developed by groups of manufacturers or special-interest groups. However, what they all have in common is that they are, or will be, made freely available to the market.

Building automation systems currently find application in all types of public and commercial buildings, including office and administration buildings, shopping centres, department stores, airports, railway stations, computer centres, sports facilities, indoor swimming pools, cultural facilities, schools, universities, military barracks and prisons. Open-standard systems go a long way towards meeting customers' and facility or building operators' demands for flexibility, compatibility, conformity and interoperability. They provide a basis for cutting the costs of constructing and expanding buildings and systems over a facility's entire service life and, in some cases, implementing significant energy optimisations.

Honeywell NXL Series Saves Space

Honeywell's versatile new NXL Series of compact inverters for motor drive control improves energy efficiency and extends equipment life

Honeywell's versatile new NXL Series of compact inverters for motor drive control improves energy efficiency and extends equipment life. It includes ultra-slim models — down to 60mm wide — so the space occupied can be as small as possible for each power range. They enable cabinets to be smaller than is possible with other inverters.

The NXL Series' multi-control application package is easy to use and provides reliable and efficient speed control in a wide variety of applications, such as pumps, fans, compressors, conveyors, winders, mixers, cranes, hoists, elevators and crushers.

NXL Series inverters are ideal for high and low overload applications. The range is optimised for low motor powers — from 0.37kw to 30kW (380-500V) and 0.25-15kW (208-240V). A modular construction allows fast installation and easy service and maintenance in the field.

It features programmable I/O, a pump/fan control interface with autochange, and a PID controller with sleep function. Programming and commissioning is simple using either a detachable seven-segment keypad or PC tool.

The standard 1/O configuration includes two analogue inputs, one analogue output, 3+1 digital inputs, one relay output and RS485 with built-in Modbus.

A wide range of accessories and options is available to suit most application needs. The versatile standard application package can be customised as necessary using Honeywell's NC1131-3 engineering tool. Full specifications can be downloaded from Honeywell online support at www.inettrack.europe.honeywell.com.

Contact: Honeywell Controls.
Tel: 0344 1344 656443;
email: HVACProductsUK@Honeywell.com
Thanks to Siemens Building Technologies programming hot water and central heating systems just got easier:

**Mobile Phone Technology**
Using menu-driven technology similar to that employed in mobile phones Siemens has made programming of domestic hot water and central heating systems far easier.

**Innovative design**
Compact design coupled with innovative features ensures that operation is simple. There are two new controllers — RWB27 for use with central heating systems; RWB29 for dual hot water and central heating.

**Homeowner benefits**
Simple push-buttons on the front of the controller enable it to be programmed in situ, or it can be removed from the backplate for remote programming. Other benefits include:

- **Programming flexibility**
- Up to three on/off settings
- Three hour boost facility
- Holiday programme that overrides other settings
- Large liquid crystal, backlit, display

**These and other Siemens products are available from FläktWoods**

Fläkt Woods (Ireland) Ltd
ABB House, Belgard Road
Tallaght, Dublin 24
Tel  +353 (0) 1 463 4600
Fax  +353 (0) 1 463 4650
www.flaktwoods.com

Siemens Building Technologies
Hawthorne Road,
Staines,
Middlesex
TW18 3AY
Tel  +44 (0) 1784 461616,
Fax  +44 (0) 1784 464646,
Compact MiniMap
From Manotherm

Manotherm has introduced the new GEMS Sensors MiniMap compact pressure transmitter which is specially designed for installation where space is at a premium. From 25mm long, the transmitter features a sputtered thin film sensor to provide consistent high levels of performance and stability for large volume users. As the film sensor is atomically bonded onto metal substrate, the transmitter virtually eliminates drift while, at the same time, providing enhanced sensitivity.

The MiniMap offers a proof pressure of 3xFS and enables sensors to survive the most severe pressure spikes. In fact, the units are subjected to rigorous hardness, leak, pressure, thermal cycling and aging tests to ensure the transmitters will resist both pressure shocks and mechanical vibration.

The MiniMap is supplied in a range from 16 bar to 2200 bar but, with the onboard ASIC, can be set to any intermediate range or engineering unit and has a very long fatigue life — offering more than 100 million cycles. Long term drift is just 0.1% FS/year, while accuracy is 0.25% FS. The unit also has a thermal error margin of around 2% FS, with a compensated temperature range of -20°C to 100°C. A wide choice of electrical outputs, as well as both electrical and pressure connections, means the unit is suitable for most applications without modification.

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

Programming The Heating Just Got Easier

Siemens Building Technologies has adopted menu-driven technology, similar to that employed in mobile phones, to make programming of domestic hot water and central heating systems much easier. Always at the head of new developments, Siemens is the first to see the benefits of this type of programming technology and utilise it for the benefit of its customers.

The two new time controllers are — the RWB27 for use with central heating systems and the RWB29 for dual hot water and central heating. Siemens has ensured that ease of use by the homeowner has been carried though all aspects of the controllers. The liquid crystal display, for example, is larger in size than the average controller and is easier to read with a backlit display.

Programming flexibility has been built-in with up to three on/off settings, a three-hour boost facility and holiday programming that covers daily, weekday/weekend and seven-day schedules. Simple push buttons on the front of the controller enable it to be programmed in-situ or it can be removed from the backplate for remote programming, secure in the knowledge that the battery backup will retain the new programme schedules.

With the introduction of these new controllers, the homeowner can take advantage of familiar menu-driven programming that will enable domestic hot water and central heating schedules to be changed at will. The installation contractor also has the flexibility to programme the system either on or off site.

Contact: David McMenamin or Martin Burke, Fläkt Woods (Ireland). Tel: 01 - 463 4600; email: david.mcmenamin@flaktwoods.com or email: martin.burke@flaktwoods.com

New Siemens Building Technologies RWB29 time controller from Fläkt Woods (Ireland)
The ONLY front fixing 24 hour, 7 day, 5/2 day programmer with 2 or 3 on-offs per day, that fits more backplates than any other.

Find out more in here.

Unique Myson MEP 2c programmer complete with decorating cover and tile support back-plate. Fully compatible with Part L of the Building Regulations. Read all about the patent-pending Myson MEP programmers and a whole range of other fresh ideas – Visit www.myson.ie or call 069 - 62277 for the new Myson Controls catalogue.

YET ANOTHER FRESH IDEA FROM MYSON CONTROLS
Myson Heating Controls
For Domestic Heating and Hot Water Systems

Modern electronic controls should be easy to understand and operate, be straightforward to install, and offer a full range of control for today's highly-efficient heating systems. Consequently, Myson Heating Controls has introduced a new collection of electronic controls to its central heating product range. This is a "first" for Myson, which is manufacturing the new units in its own factory.

The new controls include two electronic programmers, two electronic room thermostats, a room thermostat using a gas bellows, a cylinder/pipe thermostat and a 16-terminal wiring centre. There are also four control packs containing different selections of electronic programmers, thermostats and motorised valves to suit the most common system requirements.

The Myson electronic programmers, coded MEP 1C and MEP 2C, both feature 24-hour control, offering either a seven-day cycle, or a five-day, two-day pattern, switching on and off automatically two or three times a day. Manual override buttons enable the householder to advance through the programme and to extend the "on" period.

MEP 2C is a dual-channel unit providing independent control of heating and hot water to meet Part L of the UK Building Regulations 2002. MEP 1C is a single-channel unit solely for heating control and suitable for use with combination boilers.

Myson Heating Controls has paid great attention to design detail to make the MEP units easy to install and maintain.

A unique front fixing arrangement enables MEP units to be mounted close to worktops and fixed shelves, and a novel design of "tile-support" backplate does not interfere with wall tiling. This means that retiling is not necessary in the event of the programmer having to be replaced.

The programmers will also fit on to the industry's standard backplate and more competitor backplates than any other equivalent programmer.

The MEP programmers use mains power, with an integral back-up battery to preserve the programme settings in the event of a power failure. A removable protective cover is provided to shield the unit from dust and paint splashes in new-build installations, this can be retained for subsequent redecoration.

Myson's MRPT electronic room thermostat is easy to use and offers the householder many control options: seven-day programming, three temperature settings (comfort, economy and frost), four programmes (three preset and one adjustable) with manual override and a vacation delay setting from one hour to 50 days. These can be combined with further optional adjustments set by the installer.

The MRTE is a non-programmable electronic thermostat that displays the ambient temperature very clearly on a liquid-crystal display (LCD), while the MRT1 has a mechanical dial setting with temperature sensing by a gas bellow with an anticipator.

The MCT1 is a dial-set thermostat suitable for use on a hot-water cylinder or a supply pipe.

The new electronic units from Myson Heating Controls will not be a total surprise to new-build developers using Myson's central heating design services. The company has been including the MEP programmers on its layout drawings for the past few months, in accordance with the revised UK Building Regulations and in anticipation of the product launch.

Innovation has been the hallmark of Myson Heating Controls in recent years, exemplified by products such as the TRV 2-way range of radiator valves and the timely introduction of the PPV push-fit range of valves for central heating systems using plastic pipe.

Contact: Vincent Broderick, Potterton Myson (Irl).
Tel: 01 - 459 0870;
email: post@potterton-myson.ie
Honeywell has the future all mapped out

Honeywell leads the world in building control technology, improving the working environment, conserving energy and raising fire and security standards.

In fact, Honeywell building controls can match the needs of any building precisely, from individual controls to a fully integrated management control and protection system.

The market for Honeywell building controls covers every type of location and every kind of customer. And, whatever your requirement, our distributors in Ireland are on hand to provide advice and support. That’s how we build strong working partnerships with all customers.

Honeywell’s reputation for quality and reliability is second to none. And this, coupled with our market leading innovations, ensures that buildings run smoothly and can easily be upgraded or modified with products that will serve you effectively today and well into the next millennium.

Automation and Control Systems.
Honeywell
Honeywell House, Arlington Business Park
Bracknell, Berks RG12 1EB
Telephone: 0044 1344 656000
Fax: 0044 1344 656240

Published by ARROW @TU Dublin, 2003
Duplicate c-p-c Requirements for High Protective

By Dr CMA Sung BSc(Hon) MSc PhD CEng FCIBSE MIEE MInstE MHKIE SenMIEEE
University of Manchester Institute of Science & Technology
Chairman of CIBSE Electrical Services Group
http://www.cibse.org

In an ideal power system, the voltage supplied to the load equipment and the resulting load current would be perfect sine waves. However, these waveforms are often distorted by harmonic distortion that is one of the main characteristics of information technology (IT) equipment. The proliferation of IT equipment in offices and homes has resulted in utility supply companies spending large sums of money to put in remedial measures to maintain the quality and continuity of the supply network.

As a by-product of harmonic distortion, for the majority of IT and energy-saving equipment, the circuit-protective-conductor (c-p-c) is seen to be carrying a small leakage current even when the circuit has no fault. This small leakage but a normal earth current is called a “protective conductor current”. For a large number of IT equipment, the total current in the flexible connection of a Power Distribution Unit (PDU) could well exceed 3.5mA or, in some cases, above 10mA. Both ET101 and BS7671:2001 have stringent requirements in the method of connecting equipment having earth leakage current exceeding 3.5mA or higher.

Earthing & Bonding Requirements

Many engineers, especially after meeting the IT technologists, very often receive the following briefs: “to achieve a low impedance, common ground reference for all interconnected IT equipment to prevent the likelihood of the following:—

— electric shock hazard;
— equipment damage from transients;
— data contamination from noise and neutral-earth voltage;
— EMC compliance.

To be fair to electrical designers and installers, the list is clearly a wider design goal of an integrated IT and protective earthing system that should be designed with great attention. Often the finished design is an installation arrangement as illustrated in Figure 1.

Readers are reminded that this arrangement shown in Figure 1 does not fully comply with ET101 (or BS7671:2001) if the aggregate earth leakage current from the server cabinet exceeds 3.5mA. Why? ... it is because in ET101 and BS7671:2001, both standards stated that should the normal earth leakage current exceed 3.5mA, equipment should either be permanently hardwired (see Figure 2, below) or use an industrial plug and socket to IS/EN 60309 (see Figure 3, opposite page) to connect to the supply.

From BS EN 60479, it is assumed that a threshold of “let go current” is approximately 10mA for some form of electric shock.
Conductor (earth leakage) Current IT Equipment

c-p-c’s could provide the fault current return part to cause operation of the protective device resulting in little electromagnetic force for the faulty circuit.

However, the main purpose of a supplementary bonding conductor is to provide potential equalisation between two adjacent exposed- and/or extraneous-conductive-parts within arm’s reach. Its main function is to eliminate any dangerous touch voltage that might exist between the two parts so that any shock risk can be eliminated.

With a haphazardly-designed IT equipment bonding configuration, the bonding conductor normally does not run alongside the live conductors and the primary c-p-c, with the impedance of bonding conductor, could be a lot less than the primary c-p-c. Under heavy earth fault conditions, the electromagnetic force induced in the live conductors could easily be doubled since the majority of the return fault current will be flowing via the bonding conductive path. Furthermore, the other drawback of a haphazardly-designed IT equipment bonding system is it could create a number of earth loops that may not be easily identified until the IT equipment actually reports a problem.

Conclusion

At present the requirements for protective earthing are well documented in ET101 and BS7671:2001, but the actual implementation of requirements of protective conductor current wiring and functional earthing continues to vary among designers and installers. Often the additional bonding connections could create further problems in the long run and yet a number of BSI and international standards have shown diagrams and illustrations of how additional bonding or earth connections could be provided to the IT equipment. Ultimately, it remains the responsibility of the designer and installer to ensure that the additional bonding or earth connections will satisfy both the protective and functional requirements of their final design.

I recommend that for today’s electrical installation, we should design for it a dedicated earthing and bonding system. It should comprise a main earthing terminal and a low impedance earthing busbar as recommended in the appendix of ET101 to provide the shortest and direct connections to IT and other high protective conductor current equipment within the electrical installation. With such a sufficiently-low impedance earthing busbar being made available, the integrated IT and protective earthing system required by IT or telecommunication systems engineers could also be satisfied, both readily and easily.

In conclusion, it is important to note that this article is information of a general nature only, and is not intended to address the specific circumstances of any particular project or circumstance.
Kevin Kelly, DIT. Email: kevin.kelly@dit.ie

Part-Time Courses in Electrical Services Engineering

As reported last month, the 2/3-year Certificate/Diploma in Electrical Services Engineering (Programme reference DT 244) aims to provide a steady supply of graduate electrical services technicians to consultants, contractors, technical sales, manufacturing and the wider building services sector. This month we concentrate on the part-time equivalent programme (reference K249). We outline how the course evolved and on its progress to date.

The part-time programme was designed in response to demand from people working in the industry. The part-time programme is a five-year programme with attendance normally required on three nights per week. Students on the part-time programme receive exactly the same awards as students on the whole time programme.

- A DIT Certificate in Electrical Services Engineering is awarded on successful completion of year three of the part-time programme;
- A DIT Diploma in Electrical Services Engineering is awarded on successful completion of year five of the part-time programme.

Advanced Entry
In line with government policy on lifelong learning, credit is given for experiential and work-based learning by granting advanced entry to the programme to people with relevant work-based experience and/or prior learning. For example, advanced entry to year 2 of the programme is granted to electricians who have successfully completed the electrical National Craft Certificate (NCC) or equivalent. This effectively means electricians can acquire a DIT certificate after two years of part-time study and a diploma after four years.

The programme is also intended for other people working in the industry. People who have their leaving certificate and entered the industry straight from school. Many of these people may wish to enhance their qualifications and seek to fulfil their potential academically and professionally. Personnel in the HVAC sector may also wish to broaden their education into electrical services. The programme is intended for a wide variety of backgrounds and interests.

Needs of Mature Students
The part-time programme is equivalent to the whole time programme, but learning outcomes are sometimes achieved in different ways. Mature students expect their learning to be relevant to their needs. If it is not, they are likely to vote with their feet and leave the course. Programme delivery is therefore student centred and related to the needs of students and industry. The programme has high retention rates and the students have very high success rates in assessments. Students are highly motivated and there is significant assignment/project work. Assessment is over 50% continual, thus reducing examination pressures and giving reward for hard work during the year.

The course is modular with examinations taking place in mid January and in mid May. Students do not attend classes in the weeks before their examinations but tutorial support is available from lecturers.

Programme Structure
The part-time course is three evenings per week, 28 weeks per year. Places on the course are limited to 40 and applicants may be subject to interview to determine their suitability. The waiting list for September 2004 is already heavily subscribed.

Electrical Services Engineering
Part-time delivery – programme reference K249

Entry to Year 1
Leaving Certificate, with a minimum of 5 passes including Mathematics and English or Irish, (or equivalent); and be in full time employment in the building services industry.

https://arrow.tudublin.ie/bsn/vol42/iss10/1
Electrical Services Engineering

Entry to Year 2
Successful completion of year 1 of the course or successful completion of Phase 4 of the National Craft Certificate (electrical) program or equivalent and approved.

Entry to Year 3
Successful completion of year 2 of the course and successful completion of Phase 6 of the National Craft Certificate (electrical) program or successful completion of years 1 & 2 of the course.

Entry to Year 4
DIT Certificate in Electrical Services Engineering or equivalent and approved.

Entry to Year 5
Successful completion of year 4 of the course or equivalent and approved.

Transfer/advanced entry
Transfer between the whole-time and part-time programmes is possible. A number of students have transferred from the part-time to the whole-time programme successfully. This has allowed them accelerate the time in which they can complete their studies.

It is also possible for mature people with industrial experience to apply for advanced entry straight to the whole-time programme. For example, electricians with the National Craft Certificate and AutoCAD and Computer applications can apply for advanced entry to year 2 of the whole-time programme. This allows completion of the Certificate in one year whole-time. The Diploma can be completed in one further year. A number of people have done this successfully in recent years.

AutoCAD short courses are available in DIT. A European Computer Driving Licence (ECDL) is accepted as a computer applications qualification.

Learning/Teaching Methods
New methods of course delivery — including e-learning — have been successfully introduced. Assignment and project work have been increased, allowing the lecturer to facilitate the students take responsibility for their own learning. They can do this in the areas in which they are interested. This will enhance the students' ability to view learning as a lifelong activity and provide them with the skills to research and find out for themselves. This helps to overcome the problems associated with the short lifespan of modern technical knowledge. It will also increase student motivation and self-esteem.

The course ethos is a student-centred one with deep learning as its goal. Delivery of modules takes account of this. The course is delivered using modern educational methods. There is a careful balance between theoretical and practical laboratory work. Assignments are used to promote self-learning and develop problem-solving skills. The majority of the content of subjects such as AutoCAD, Computer Applications and Industrial Automation are delivered in a laboratory setting, with extensive use of assignment work.

Project work is a major module in the final year of the Certificate and the Diploma. The projects are designed to allow students inter-relate the different course components and construct their learning around their own experience and knowledge while raising their critical awareness. The acquisition of both personal and professional skills, such as managerial and communication skills, are emphasised to ensure graduates will be able to perform to a high standard in modern industry.

Mature students doing part-time courses have different educational needs than whole-time students. The latter must postpone application of their learning until they begin their careers. Mature students enter courses with many questions from their workplace. They have the opportunity of immediate application of course material and can contextualise their learning.

Post-Graduate Opportunities
The course has been designed to fit into the proposed Bologna framework, which is harmonising engineering qualifications throughout Europe. Future developments include designation of this course as an ordinary degree, and the provision of ladders of opportunity to masters degree level. Recognition of the DIT Diploma in Electrical Services Engineering has already been made by universities in the UK. Advanced entry is possible to honours degree and masters degree programmes. Advanced entry to the honours degree programme in building services in DIT Bolton Street is also established.

Future Plans
Future plans of the Department of Electrical Services Engineering include developing even closer links with industry to get our graduates jobs and improve our programmes in line with the needs of industry. We would also like to develop our research capability. Short course development and provision for individual companies is also available. The Department of Electrical Services Engineering has a successful track record designing and running courses in all aspects of electrical services including safety.

Contact: Vincent Kenny, Programme Leader, Department of Electrical Services Engineering, DIT, Kevin Street. email: Vincent.Kenny@dit.ie

Short Course Contact: Richard O Rourke, Assistant Head, Department of Electrical Services Engineering, DIT. email: Richard.ORourke@dit.ie
FRI Inspections

By Jacinta Caulfield, B.Sc. (Hons) Dip. Surv., Senior Property Manager with Irish Estates.

Tel: 01 - 704 1400.
Protecting the long-term value of leased investment properties is the primary aim of Property Managers. In order to do this, regular inspections must be carried out to ensure that the property has been cared for appropriately. Such inspections form part of the overall strategic plan for the property under which specific objectives are set down for the enhancement of the property value.

Acquiring the appropriate information with interim professional reports on all aspects of the condition of a property is the prerequisite to the successful management of building maintenance in relation to premises that are held on an FRI lease.

However, reports must not only be embraced but enthusiastically supported and consistently implemented if the ultimate goal of protecting the value of the asset is to be achieved.

We in Irish Estates schedule 6-monthly inspections on FRI premises within our portfolio covering inspection, monitoring, and reporting on the general condition of the property. Other complex issues, such as general Health & Safety and Fire Regulations are also included in this report. Non-compliance with Fire Regulations and Health & Safety directives can have detrimental implications for both landlords and tenants.

When referring to FRI property, it is appropriate to clarify the general definition of an FRI lease. An FRI Lease is defined as a Full Repairing and Insuring Lease whereby the responsibility of both internal and external repairs and maintenance, and the acquisition and payment of the insurance contribution, is the sole responsibility of the tenant and not the landlord.

Irish Estates notifies tenants in writing three weeks prior to the proposed inspection date and, if acceptable to the tenants, an internal and external conditional inspection of the premises is executed on the specified day.

What the report should cover
The report is generally divided into sections. The initial section of the Property Inspection Report identifies with a photograph of the relevant property, i.e. type, age period, size, and car spaces. Description details of its exact location are also indicated.

A further section addresses all tenancy information, such as head tenant, lease term, start date, current rent, rent review frequency, next review date, authorised sub tenancies and the contact details of the lease holder.

A very important section of the report deals with any unauthorised sub-tenants that may be operating on the premises, which should be reviewed by the surveyor. The acquisition of information in relation to any unauthorised alteration/fit outs that may have been carried out by the tenant without landlord approval is also the responsibility of the surveyor and should be highlighted.

The surveyor will also include a section which addresses and comprehensively examines the environmental systems of the premises, office/retail/industrial, and will report on all these entities including ventilation; sprinklers; smoke detector systems; emergency lighting; suspended ceilings; openable windows; and floor covering.

A section specific to the industry applicable is also included such as the office section where raised floors and suspended ceilings are detailed; Retail relates to frontage and service access; industrial provides particulars on floor layouts, percentage of office content, eaves heights, loading bays, power supply and external cladding.

The main body of the report concentrates on the conditional aspect and covers the interior
and exterior of the premises separately and Health & Safety and Fire Equipment. The latter two items are very much in the mindset of the surveyor but it is the primary responsibility of the tenant to provide a satisfactory level of safety in the workplace.

The surveyor will allocate sufficient time to assess competently the interior and exterior as well as environmental defects of the building, and will also endeavour to identify the less apparent weaknesses to assist the tenant to eradicate potentially more serious and permanent defaults at a later stage.

The resultant subsequent FRI report is forwarded to the client/landlord and the details of required remedial action are highlighted in a letter to the tenant. This letter is structured by priority whereby the Symbols A B and C are utilised to denote the urgency of the remedial action recommended and required, and reflect the following:

**A — Immediate Action**
Required: Possible reason being, health and safety hazard, water penetration, fire risk or serious electrical defaults;

**B — To Be Reviewed at Next Inspection:**
Decoration, general cleaning, minor defects;

**C — Observation:**
No immediate action required but should be monitored at suitable frequencies.

The surveyor may request written confirmation from the tenant that the urgent items have been addressed and may undertake another site visit on completion of same. The landlord receives all correspondence from the surveyor to the tenant for his own perusal. Subsequent inspections are carried out on six-monthly intervals.

Having acquired the detailed remedial recommendations highlighted as a result of the inspection, it is incumbent on the tenant to have structures in place and that they detail same to the surveyor to reflect ongoing maintenance and refurbishment works in accordance with the urgency indicated by the surveyor.

It is a no-win situation if buildings are not maintained in accordance with good standard practices and regulations as this will have direct implications, both monetary and otherwise, for the landlord and the tenant at some future stage.

If the maintenance of the building is properly executed it will result in a more extended trouble-free lifetime of the building, and the concept is more likely to evolve when there is a strong management and strategic planning in place.

I believe that maintenance should be given the priority it deserves and that evaluations should be executed on a regular basis by professional surveyors who have expertise in compiling the extent and scope of maintenance requirements of a property, thereby minimising the weaknesses and limiting the damage that may only become apparent with time.

This is beneficial to both the landlord and tenant if implemented but trusting tenants to operate an efficient maintenance programme is not preferred. The reality is that, without supervision, even the most essential repairs can be neglected simply because it costs money. In all such instances the landlord is obliged to exercise the control.
In last month’s issue from someone who signed off “I wish to remain anonymous for obvious reasons”. Too right! ... were I to send a letter of complaint to anyone without knowing all the facts I too would wish to remain anonymous. So, to “anonymous” ... check all your facts before being so rash.

**Complaints**

**Welcome** — The foregoing should not be taken to mean that comment — even complaints — are not welcome. If you have something to say to us, good or bad, do so. Everybody is entitled to an opinion. However, if you want it to be taken seriously, make yourself known. Any signed letter will be published, provided of course it is not defamatory.

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