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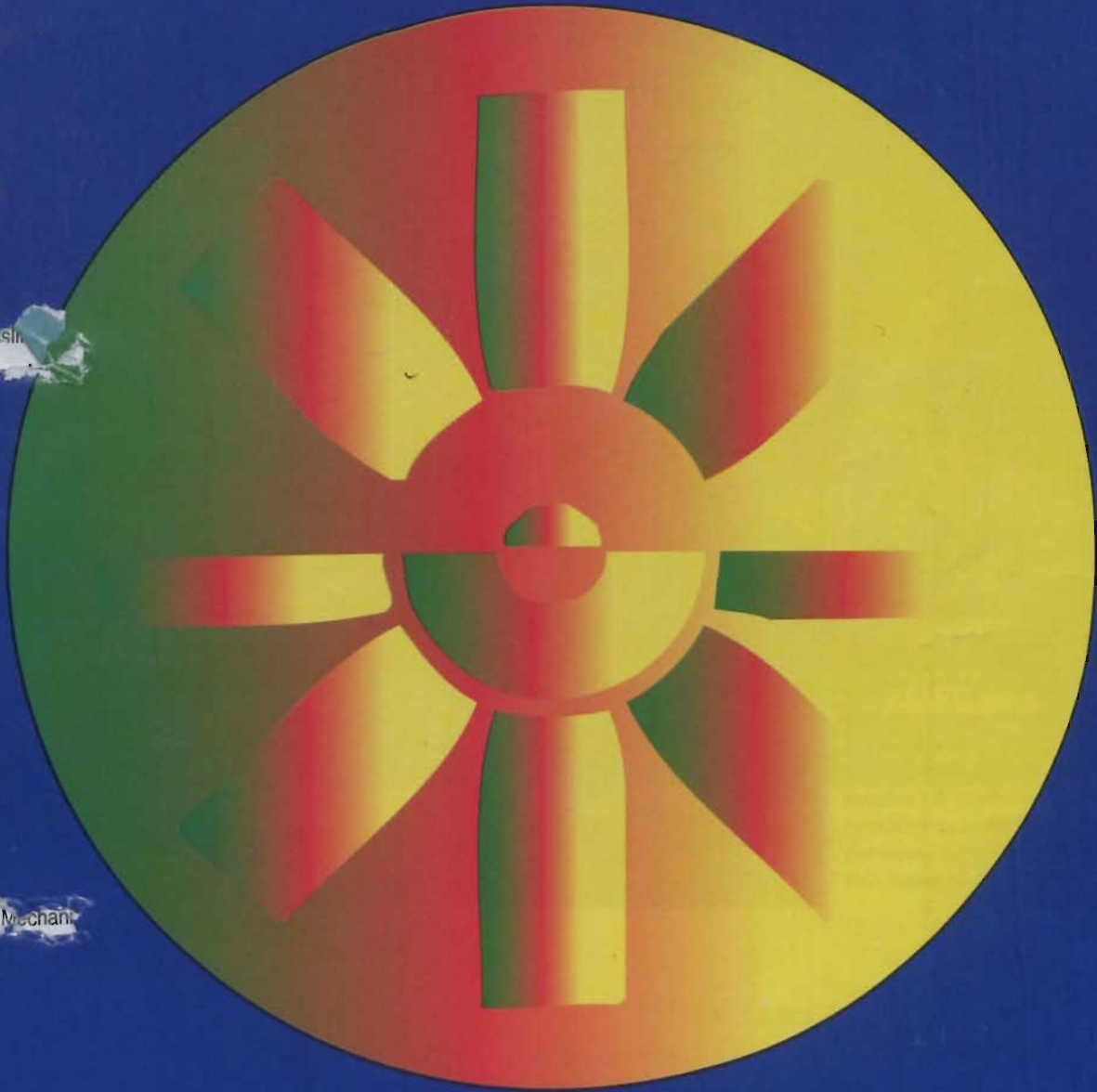
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BSN News

MECHANICAL & ELECTRICAL BUILDING SERVICES



Ventilation & Air Conditioning Association of Ireland

OPEN MEETING

◆ **Air Movement — 32-page special**

◆ **Air Conditioning 2000 & Tech Refrigeration Profile**

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MHi

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BSNews*

MECHANICAL & ELECTRICAL
BUILDING SERVICES

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Readership Data

Irish Building Services News (formerly Irish H&V News) is Ireland's only Building Services magazine providing coverage of heating, ventilating, air conditioning, refrigeration, sanitaryware, plumbing, maintenance and environmental industries. It is the only publication catering exclusively for these industries and its circulation includes members of the following:- Chartered Institution of Building Services Engineers (CIBSE);

The Mechanical Engineering & Building Services Contractors' Association (MEBSCA); The Association of Consulting Engineers of Ireland (ACEI); The Mechanical Engineering Contractors' Association; The Institute of Domestic Heating Engineers (IDHE); The Registered Heating Contractors Association; The Maintenance, Energy & Environmental Technology Association (MEETA) which incorporates energy managers and maintenance managers; The Energy Conservation & District Heating Association; The Institute of Plumbing; The Irish Home Builders Association (IHBA); Builders Merchants/Trade Supply Outlets; Irish Property & Facilities Managers Association.

In addition, Irish Building Services News circulates to independent building services contractors and key executives in industry. Government, Semi-State and local authority bodies. Essentially, our circulation is virtually saturation coverage of all those with an interest and/or involvement in the industry.

AC & Ventilation Association Open Meeting

Following nearly two years of behind-the-scenes activity, the Ventilation & Air Conditioning Association is now ready to move forward and take a more pro-active role in the affairs of the industry. To date, quite a number of interested parties have indicated their intention to join. Many have filled in membership forms, and some have even gone to far as to pay membership fees!

As indicated in a previous issue of *BSNews* (October 1999), the time has now come for an open general meeting of the Association at which people can air their views and opinions and at which names can be put forward for the Committee and Principal Officers. Details of the meeting are as follows:—

Date: Thursday, 24 February

Venue: Morans Red Cow Hotel

Time: 5pm sharp

Please call Edel Burke or Pat Lehane at Tel: 01 - 288 5001 if you are going to attend. You may also fax to 01 - 288 6966 (on a single sheet) brief details of items you would like to see on the agenda.



RECI Directory 2000

LEFT: Sean Ascough, Chairman, CIBSE receiving the first copy off the press of the Register of Electrical Contractors of Ireland (RECI) Yearbook and Members Directory for the year 2000 from David McGloughlin, General Manager, RECI. This is an invaluable document for specifying consultants. Your personal copy comes to you with this issue of *BSNews*.

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Johnson Controls and Thermo Systems Strategic Partnership

Johnson Controls and Thermo Systems have entered a strategic partnership in Ireland to promote and support Johnson Controls' range of building management systems. Thermo Systems Ltd is based in Dublin and is now the appointed agent for new building management system projects throughout the country, adding the controls portfolio to their existing agencies with AAF air handling products and McQuay chillers.



Patrick Bateman, Managing Director, Johnson Controls pictured signing the strategic partnership agreement with Aidan Lynch, Managing Director, Thermo Systems

Aidan Lynch, Managing Director of Thermo Systems said: "Johnson Controls Systems offer an excellent range of competitive quality solutions to the end user with a true global support. We are pleased to provide the network for this equipment in Ireland".

Johnson Control systems partnership with Thermo Systems Ltd will create another valuable link into the building environment market. Thermo Systems Service operation in Ireland will provide the commissioning and service back-up for the complete product range.

Patrick Bateman, Managing Director of Johnson Controls said: "We are delighted with the new partnership. Together we have a full understanding of building environments and the application of the latest technology to optimise the benefits of building management systems. Johnson Controls can continue its solid growth programme and deliver quality BMS solutions".

Contact: Aidan Lynch, Thermo Systems.
Tel: 01 - 493 1701; Fax: 01 - 493 1746;
Email: aidan.lynch@thermosystems.ie

Toshiba – No Change in Ireland!

Toshiba Carrier UK has confirmed the retention of G T Phelan Ltd as the sole distributor of Toshiba air conditioning products in Ireland, despite recently-announced changes in the UK channels to market.

Managing Director Gerry Phelan is quick to highlight the advantages the alliance between Toshiba and Carrier, announced last April, is already bringing to its customers. The formation of a proactive Toshiba export department, headed up by Christian Blanc, has allowed Toshiba to take advantage of the well-established Carrier European distribution network, dramatically increasing sales and production volumes.

The Toshiba plant in Plymouth has started to benefit from parent Group, United Technologies' supplier management programme and the implementation of

advanced manufacturing and product delivery systems. Toshiba is becoming more efficient day by day, at taking cost out of the product at every stage of the supply chain.

"In manufacturing, according to a spokesperson, "TCUK is learning that it makes sense to outsource what others do better, and has recently started outsourcing four discrete manufacturing processes. This allows the team in Plymouth more financial resources and more time to focus on the core business of anticipating what the market will need, and developing innovative and progressive products and systems to meet those future needs. This will give the contractor and end-user access to products that are way ahead in terms of performance and reduced environmental impact ... a whole raft of new products are now at the prototype stage and will be introduced in Ireland by G T Phelan very soon".



Pictured at the announcement of build-online.com's \$2m investment from Delta Partners and Banc Boston is Mary O'Rourke TD, Minister for Public Enterprise, Mark Suster, CEO build-online.com, and Brian Moran.

Ventac Seeks Stockists

Ventac Ltd, distributor of ventilation equipment and ancillaries, is looking to appoint stockists in the North-West, West, South-West and South of the country.

Interested parties should contact Ciaran King at
Tel: 01 - 667 1077; Fax: 01 - 667 1055; email: info@ventac.ie
Website: www.ventac.ie

Differential Pressure Transmitters

Versatility is at the heart of the new Dwyer Series 666 rangeable differential pressure transmitter from Manotherm. A handy tool for a multitude of precision HVAC and energy management applications, this transmitter features up to six built-in, field-selectable ranges and offers full-scale accuracy of $\pm 1\%$, including non-linearity, hysteresis and non-repeatability. The unit is available in four models, covering a variety of low pressure ranges down to 0 to 0.1 and 0 to ± 0.05 inches wc. Inside the instrument's trim case, easily-accessed dip switches make calibration simple and quick. The ABS-plastic housing provides environmental protection in accordance with NEMA 4 (IP65). The unit will withstand pressure surges up to 10 psig (0.7 kg/cm²). Output signal for the transmitter is 2-wire, 4 to 20 mA. Loop resistance is 0-500 ohms. Electrical connection is a screw terminal strip with PG-9 cable strain relief. All models in the series are in stock and ready for shipment.

Contact: Bob Gilbert/Brian Harris, Manotherm Ltd. Tel: 01 - 452 2355; Fax: 01 - 451 6919. email: manotherm@eircom.com

Photo shows Dwyer Series 666 rangeable differential

pressure transmitter from Manotherm.

Cylon Secures Landmark Export Project in Republic of China

The visually-stunning Cheng Ming Mansion in Beijing will be among the first in a series of commercial projects in the Republic of China to have Cylon "Unitron" building management systems.

When it is completed in 2000, the Unitron building management system will monitor and control the building's primary air systems and associated chillers serving 20 floors of high-quality tenanted offices.

The Cylon system is being installed by Golden Cylang Machine and Electrical Systems Engineering (Beijing) Company. Cylang was selected for the project because it offered a flexible, cost-effective solution.

However, a feature of the Unitron system which has facilitated Cylon's export drive in the Far East is that all Unitron user interfaces - from keypads to supervisors - are freely programmable for any language.

Contact: Cylon Controls.
Tel: 01 - 836 6626.



Cheng Ming Mansion, Beijing, Republic of China which will incorporate Cylon Unitron building management systems

Refrigeration Industry Supports Training Initiative

The recent initiative to develop a network of refrigeration engineering companies to jointly address training needs for the sector received strong support from industry. Twenty-seven companies attended the information seminar and inaugural network meeting in The Plaza Hotel in Tallaght, Dublin 24 just before Christmas.

The network seeks to address the joint training needs of enterprises engaged in the design, manufacture, distribution, installation and maintenance of refrigeration technology for

Irish industry.

The network promoter - DIT Applied Technology Services - outlined the aims of the network and the plan of action for the months ahead. It then invited the industry representatives present to engage in frank and open discussions regarding the training needs for the sector. Discussions focused on the perceived deficiencies in current training provision, the training priorities for the year ahead, and the barriers to meeting those needs.

The network promoters will use the results of these

discussions to devise a training-needs-analysis questionnaire which will be sent to individual companies looking for detailed information on a strictly confidential basis. Having collated and analysed the results of these questionnaires, the promoters will design a training programme for the network for the year ahead.

Both the development of the network and the implementation of the training programme are funded by Skillnets Ltd, a company established under the aegis of the Department of Enterprise and Employment, to support business-led network training.

Contact: Enda Hogan, DIT Applied Technology Services. Tel: 01 - 878 3773; email: enda.hogan@dit.ie Website: www.dit.ie/ats

New Wilo Sewage Systems

Wilo pumps recently announced the addition of the new Drainlift-S to their existing range of packaged sewage lifting units. The revolutionary Drainlift-S is a fully self-contained system and comprises a single pump mounted in a polypropylene collection

ideal for refurbishment or extension projects where space is either restricted, or at a premium. To facilitate installation, the unit has large free areas on the front and on both sides to accept inlet connections. An adjustable hole-cutting drill bit is supplied as part of



The Drainlift-FH from Wilo Engineering.

chamber, complete with integrated level controls. It can be connected directly to a WC pan or sited remotely if required, and it is designed to cater for waste water and sewage discharge from a single bathroom installation.

One amazing feature of this unit is its compact dimensions at only 300mm wide, it is possible to install the Drainlift-S behind a stud partition or within a false cavity, concealing it from view. This feature makes the Drainlift-S unit

the fixing kit included with each unit, dispensing the need for any specialist tools and aiding easy installation. Dampening mats are also supplied to minimise any vibration transmission.

The 45-litre capacity collection chamber has an internal sloped bottom, which prevents dirt depositing and ensures safe operation. The pump fitted is from the proven design of Wilo's modern stainless steel and composite submersible pump range,



The Drainlift-S from Wilo Engineering.

which have efficiency enhanced free flow impellers. The Drainlift-S is available for either single or three-phase electrical supply.

Also new from Wilo is the Opti-Box range of floor-mounted domestic sewage units. The Opti-Box KH is a stylish WC waste disposal unit, which connects directly to the outlet of a WC pan. Fully self-contained, its macerating system ensures efficient disposal via a 32mm diameter discharge outlet. The KH can also accept a waste water connection from a wash hand basin and a shower or bidet.

The Opti-Box TMP is a similar style unit, but specifically for grey water disposal. It is suitable for handling non-aggressive drainage or waste water from showers, hand basins, washing machines and dishwashers. Both these units offer an economic solution for domestic installations where drainage and sewage disposal is required from remote locations, and so are ideal for those extra additional bathrooms.

The new Drainlift-S and Opti-Box units complement Wilo's existing successful FH and D-FH range of commercial

sewage systems, which offer a ready-to-connect packaged solution for sewage disposal in office buildings, hotels, shops, or any commercial installation.

Contact: Wilo Engineering.
Tel: 061 - 410963;
Fax: 061 - 414728;
email: sales@wilo.ie

Largest Facilities Management Contract

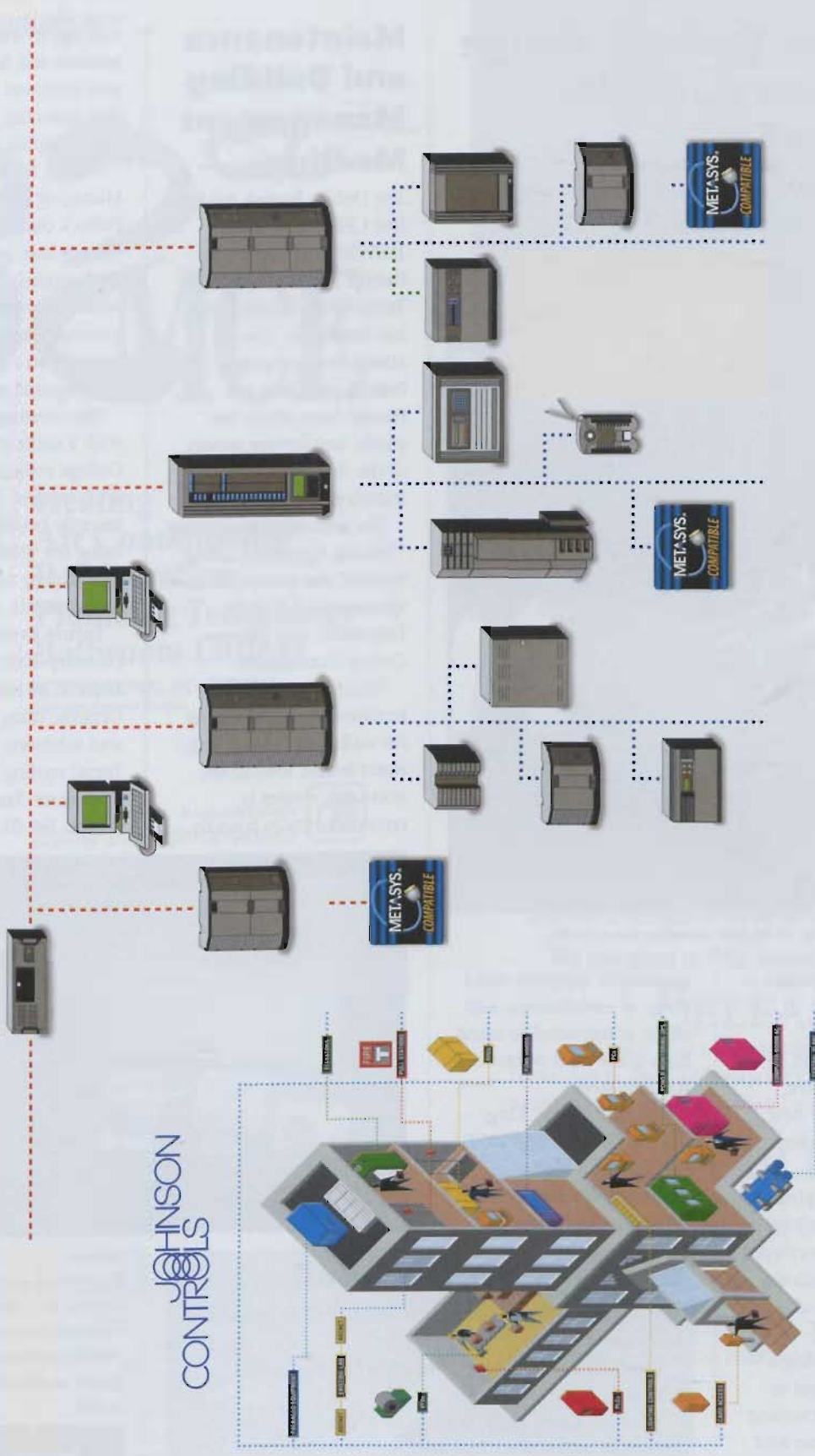
Irish company Tramtrax has been awarded the largest single commercial office facilities management contract for Citibank's new Dublin Headquarters at North Wall Quay.

Tramtrax will employ 30 full-time staff on-site in the provision of facilities management, including electrical/mechanical technicians, general operatives, telephonists and receptionists, post room personnel and service desk staff.

Citibank's new six-storey headquarters at North Wall Quay, Dublin is constructed on a 12-acre site extension of the International Financial Services Centre (IFSC). The contract with Tramtrax includes the management of relocating Citibank's current 1,500 employees into their new premises between now and April 2000; from four separate locations throughout the city.

Thermo Systems

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Whitechurch Road, Rathfarnham, Dublin 14, Ireland. Phone: + 353 1 493 1701. Fax: + 353 1 493 1746. E-mail: info@thermosystems.ie

TRADE NEWS

Waterloo Ozonair Range of Kitchen Canopies from Ventac

Waterloo Air Management, a division of Hunter International plc, is the UK's largest independent ventilation company with

from small extract canopies fitted against the wall to completely-integrated ceiling systems.

Each model has been



Waterloo Ozone range of kitchen canopies from Ventac.

over 95 years experience in the industry.

Its entire range is distributed in Ireland by Ventac Ltd, who have just introduced the new Ozone range of kitchen canopies.

These high-performance ventilation systems have been specifically developed for professional kitchens with the objective of improving working conditions by offering a high level of comfort as well as meeting increasing demands for hygiene and safety.

The Waterloo Ozone range offers a wide choice

specifically designed suit a range of installations, and all are constructed to using high-grade matt or brushed stainless steel.

Contact: Ciaron King, Ventac. Tel: 01 - 667 1077; Fax: 01 - 667 1055; email: info@ventac.ie Website: www.ventac.ie

IDHE Millennium Ball

The IDHE will hold its gala millennium ball at Moran's Red Cow Hotel on 25 February next.

It will be a formal occasion and tickets are £60 per person.

Contact: Karen Kelly. Tel: 01 - 874 1151; Phil Morley. Tel: 086 - 257 9435.

☐ Phil Morley may also be contacted re the IDHE golf outing which will be held at City West on 11 May 2000.

Maintenance and Building Management Meeting

The Dublin Branch held its first CPD event of the 1999/2000 season at the Dublin Institute of Technology, Bolton Street last December. The attendance comprised branch members and friends from across the public and private sectors of the maintenance industry.

The presentation entitled "Tefcote: Hygiene Coating System" was presented and sponsored by Pollock Decorators and Interior Design Consultants.

Tefcote is a glass-fibre reinforced surface coating for walls and ceiling. This water-borne, low-odour, non-tanitic system is environmentally friendly

and safe in use, kills bacteria and fungal growth, and improves hygiene, thus reducing housekeeping costs.

During his talk, Managing Director Ben Pollock outlined the various uses and applications of the material which incorporated a practical demonstration by his staff on a number of pre-prepared surfaces.

The evening concluded with a short tour of the College restaurant and kitchen areas which had recently been refurbished using the Tefcote system, followed by some light refreshments.

Future Events - 24 February 2000: Building Defects; **30 March 2000:** Ceramic tiling problems and solutions; **April 2000:** Tegral roofing products.

Contact: Fred Hosford, IMBM. Tel: 01 - 402 4016.



Above: Ben Pollock presenting his address to Institute of Maintenance and Building Management members and guests at the recent CPD event.

More Trade News on page 46

32nd Mostra Convegno Expocomfort

21st-25th March 2000
Milan Fairgrounds

32^a MCE



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BELFAST

KINGS HALL CONFERENCE CENTRE
10TH APRIL 2000 (MONDAY EVENING 6PM - 9.30PM)
11TH APRIL 2000 (TUESDAY LUNCH 11AM - 3.30PM)

DUBLIN

THE RED COW HOTEL
12TH APRIL 2000 (WEDNESDAY EVENING 6PM - 9.30PM)
13TH APRIL 2000 (THURSDAY LUNCH 11AM - 3.30PM)

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Please send me..... tickets for PHEX Dublin Belfast

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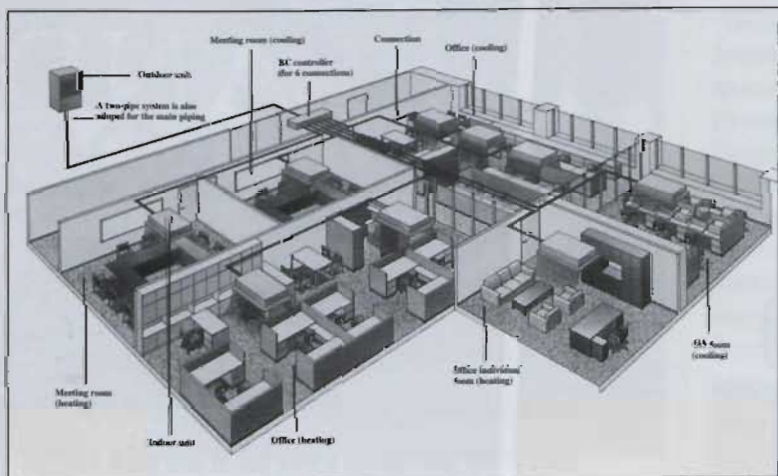
AGENTS FOR



MITSUBISHI ELECTRIC

Air Conditioning Systems

MITSUBISHI ELECTRIC EUROPE

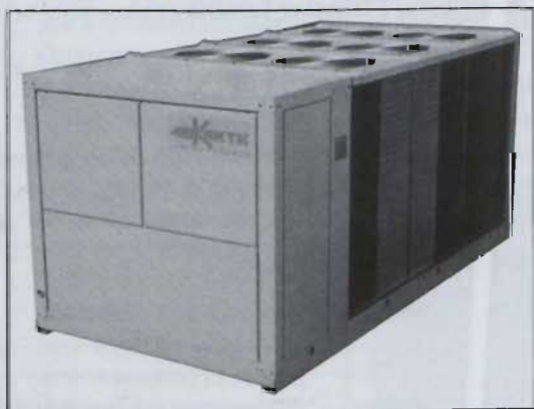


CITY MULTI

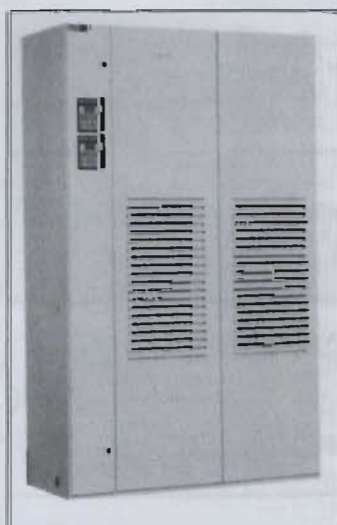
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R2 & Y Series



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clima
system

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Tel: 01 - 456 4233; Fax: 01 - 456 4236



McQuay Ultra Low Noise Screw Chiller

McQuay, the leader in screw chiller design, has introduced another industry first - the McQuay ultra low noise air cooled screw chiller with single-screw, liquid refrigerant injection compressors and fuzzy logic control theory - which is now available from Thermo Systems.

The chillers can attain 58dBA at one metre and maintain a very high coefficient of performance.

McQuay International's chiller design experience, coupled with the outstanding features of the ALS chiller, provide customer benefits unmatched in the industry.

Full factory testing of each unit with water hookups insures a trouble-free start-up. Extensive quality control checks during testing ensures that each safety and operating control is properly adjusted and operates correctly.

Factory-installed options minimises field expenses and start-up labour.

The rugged design of the single-screw compressor allows it to tolerate liquid slugging. The ALS screw chiller will start and operate under conditions that would destroy a reciprocating compressor.

The simplified design due to the elimination of many moving parts such as pistons, valves, connecting rods and oil pumps found on reciprocating compressors results in the enhanced reliability of the single-screw compressor.

Due to symmetrical compression processes taking place on both sides of the main screw rotor, balanced forces result in the elimination of the large thrust loads inherent in twin-screw compressors. Very low load operation enhances the bearing and

compressor durability and reliability.

The liquid refrigerant injection design increases compressor reliability as no large and expensive oil separators are required. Recurring problems associated with oil injection systems are a thing of the past.

Integral to the basic design of the single-screw compressor, the main screw rotor shaft and gaterotor shafts cross at right angles in the compressor. The result is ample space to locate heavy-duty bearings and increase compressor reliability since no limitations are placed on bearing design as found in twin-screw compressors.

Recent technological advancements has made available a composite material that prevents premature wear on the gaterotor. The composite material is made from a multi-layer carbon impregnated material designed for strength and durability.

Field serviceability has not been sacrificed to meet design objectives for performance on the ALS screw chiller. Inspection covers allow for an excellent visual inspection of the main screw and gaterotors.

Contact: Aidan Lynch, Thermo Systems.
Tel: 01 - 493 170;
Fax: 01 - 493 1746; email: aidan.lynch@thermosystems.ie

Tempar - Guaranteeing Client Satisfaction ...

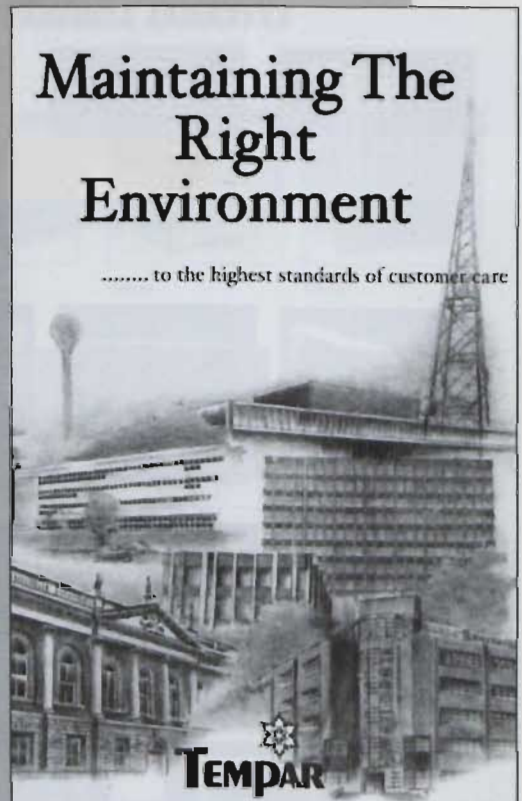
As a distributor/installer handling such market-leading brands as Mitsubishi Electric, Robur and Montair, Tempar offers the complete package, from the selection and supply of the equipment, to the full range of after-sales service requirements. This includes site survey, commissioning, planned maintenance, installations, and emergency call-outs.

Contact: Damien Parlour, Tempar Ltd.
Tel: 01 - 460 4066;
Fax: 01 - 460 4077;
eMail: tempar@eircom.net

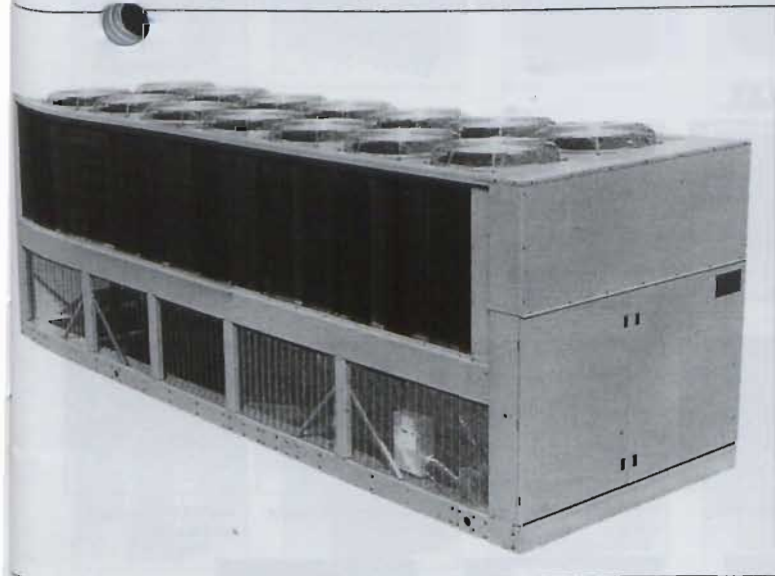
Photo shows cover of the new Tempar company profile brochure which comes to you as a free insert in this issue of BSNews.

Maintaining The Right Environment

..... to the highest standards of customer care



TEMPAR



McQuay ultra-low-noise ALS103.2 - 525.6 air cooled single screw water chiller from Thermo Systems.

ACOUSTICS



Silcircular attenuator



Silduct attenuator

VAV



WIL



WVV

DAMPERS



A5 Access Doors



BPD Back pressure damper



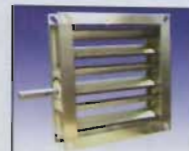
PRD Pressure regulating damper



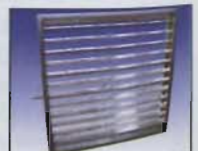
WDDF Flanged volume control damper



WDDC Spigotted volume control damper



WDDX Low leakage volume control damper



WLD Large format volume control damper



DCP Damper control panel



WSD Stainless steel smoke damper



WLDX Stainless steel large format control damper



WF Stainless steel fire damper



WGD Galvanised steel smoke damper

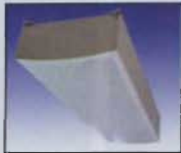
CHILLED CEILING SYSTEMS



SBM



SBM-EA



SBM-EC



SBM-ECV



SBM-EP



SBM-ER



VBM

EXTERNAL LOUVRES



SL Sand louvre



WG Large format external louvre



YG Small format external louvre

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Email us on info@ventac.ie

Ventac Air Management Engineers Tel: 01 - 667 1077;

Fax: 01 - 667 1055; Email: sales@ventac.ie

GRILLES



1RV 2RV Duct grilles



2H Double deflection grille



3HF 45° blade extract grille



3HG 0° blade extract grille



DSRX Acoustic transfer grille



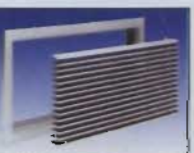
GC5 Eggrate extract grille



HDFG Heavy duty floor grille



NSA Air transfer grille



RGC-515 Removable core grille



Series A1 Airline linear grilles



Series M Lever operated grilles



SG Home Office security grilles



WFFVG Intumescent transfer grille



Aircell S Polymer single deflection grille



Aircell G Polymer fixed blade extract grille



Aircell A & T 45° blade extract grille



Aircell E Polymer eggrate extract grille



Aircell E600 Polymer tile replacement eggrate grille

DIFFUSERS



ACD Adjustable curved vane diffuser



BVD Linear diffuser



CPD Perforated face diffuser



CS Linear slot diffuser



DE Recessed frame multicore diffuser



DF Flanged frame multicore diffuser



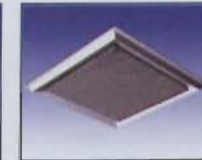
DFA Adjustable core multicore diffuser



DSL Fixed blade linear diffuser



FCD Fan coil diffuser



KRCP Kitchen/Restaurant perforated face diffuser



LD13 Barrel star diffuser



LFM LFF Laminar flow diffusers



MC Small format circular diffuser



OD11 Swirl diffuser



RPVA RPVB Polymer supply & exhaust valves



RWHP Hi-flo jet diffuser



RWI Perforated face circular diffuser



RWK Plain face circular diffuser



STKCS Linear diffuser



V Series supply & exhaust valves



WDJ Drum jet diffuser



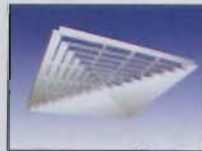
WPD Perforated face diffuser



WR Large format circular diffuser



WTF Swirl diffuser



Aircell 2000 Series polymer ceiling diffusers



Aircell M Polymer multicore diffuser



Aircell WFO Polymer floor diffuser

FILTERS



Filter frames



Grease filter housing



Odorex A15



Odorex CF1 CF2



Odovent



Ozocup



Ozodry



Ozodust



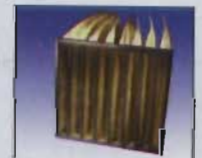
Ozofine-Mini



Ozofine-Standard



Ozofine-Vee



Ozoflo



Ozoflo-NC



Ozokleen



Ozupac



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Ozopleut



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Tel: 01 - 667 1077; Fax: 01 - 6671055;

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Liebert/Hiross Environmental Control

Liebert Hiross has been an industry leader for over 30 years, renowned worldwide for the best in advanced computer protection equipment, including air conditioning, UPS, and security and environmental control systems. Today it is one of the largest suppliers of equipment for telecommunications and computer installations, clean rooms, high security and other critical electrical installations

All Liebert Hiross systems are built to make the most efficient use of energy and finite resources, and to ensure the highest level of performance and reliability

Distributed in Ireland by Core Air Conditioning, the extensive range is the perfect complement to the broader Core portfolio, and one which has assured an ever-increasing market share for the Sandyford-based company

Always to the forefront by way of innovative products, Liebert Hiross has recently unveiled a host of new introductions right across the entire range. Brief details of each are:-

Challenger Plus - This was developed specifically for medium to large-sized critical areas such as data processing centres, telecommunications operations and industrial applications. Available in a wide range of standard configurations, it ensures maximum energy efficiency and total, effective, environmental control.

Features include:— High coefficient performance; Low energy consumption; Low operating costs; Modular construction; Groups of modules may be

grouped; single-inlet, radial "plug" fans with backward-curved blades; Low internal air-side pressure drop; Sandwich double-skin panel construction, incorporating Class O insulation; High sensible heat ratio; High efficiency filtration, up to G8/(EU8); All materials in units are fully recyclable.

MiniConsole close control air conditioning systems ensure effective 'round the clock protection for electronic systems and critical applications in confined areas. It provides a versatile solution to the various cooling, heating and humidity control applications demanded by sensitive electronic installations, yet only requires minimal floorspace.

Mini Tower's control system can be set to provide both latent cooling, which removes moisture, and sensible cooling, which removes heat. It has an extremely small footprint and can be set to generate only minimal levels of sound, for situations where low noise and accurate environmental control are vital.

Available in air, water/glycol and chilled water versions, these units can devote up to 30% of their energy to reducing humidity as a by-product of cooling.

MiniMate EX (4kW to 14kW) — MiniMate EX has been specially designed for telecommunications installations such as base stations and shelters as well as mobile and containerised switching stations where space is at a premium and reliability absolutely essential.

ClimCool EX (5kW to 15kW) — Designed for

installations such as cellular base stations and small digital exchanges, SlimCool EX is available either as a self-contained unit, with both cooling and integral heat rejection located within a single housing, or with a remote compressor/condenser option.

Fresh air free cooling is incorporated as standard for maximum energy savings while the units are supplied factory pre-tested and require only the very minimum site preparation.

InteleCool EX (4kW to 14kW) — This is a range of wall-mounted environmental control systems which provide reliable cooling for sensitive telecommunications equipment where space is

limited. A unique low-voltage emergency cooling option ensures that the unit will continue to function even if mains power is lost.

InteleCool EX also has excellent "green" credentials, with energy-saving fresh air free cooling, and uses refrigerants with either low or zero ozone-depletion potential.

System 4 — The Liebert Hiross System 4 offers unsurpassed performance and reliability and is ideal for a wide range of critical applications. Built to the exacting requirements of ISO 9000 quality assurance systems, System 4 is available in air-cooled, water-cooled and glycol-



Liebert Hiross Challenger Plus (20kW to 70kW) for effective environmental control for medium to large-sized critical areas. Details from Core Air Conditioning.

**AIR COOLED
LIQUID CHILLERS
AND
HEAT PUMPS**

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ONE SCREW-
DRIVER -
READY**

**AIR
CONDITIONING
MADE SIMPLE**



cooled systems. Various versions available include:

- System 4 Compressorised Systems for close control air conditioning for critical applications (20kW to 100kW);
- System 4 Glycol for energy-efficient, precision, environmental control systems (20kW to 100kW);
- System 4 Sensible Cooler System high-efficiency, close control, chilled water units (20kW to 100kW);
- System 4 Four Step, the ultimate choice for reliable critical space cooling (30kW to 100kW);
- System 4 Chilled Water which maximises efficiency using a central chiller (20kW to 95kW). Available in both upflow and downflow configurations.

Microprocessor Controllers — These are common to all Liebert Hiross units right across the entire range and are available in two versions, Microface and Hiromatic. The entry-level Microface is ideal for less critical systems, particularly if detailed system historical monitoring is not required. It can be operated as a single unit controller with its display module on the front panel or remotely, as a Microface network with up to 16 units connected using Hirobus.

For more sophisticated operations the advanced Hiromatic graphic module has a high level of interface to the basic Microface controller. It can be used to control a single unit, or be networked using Hirobus.

Networks can also be linked through a BEMS gateway to communicate with external field buses. When networked, the units may operate as a system, sharing parameters.

Contact: Austin McDermot, Core Air Conditioning.
Tel: 01 - 294 3110;
Fax: 294 3115;
eMail: coreac@iol.ie.

R&D Bears Fruit for Stulz Modular-Line now available from Walkair

A two and a half year research and development project by Stulz has seen the development of Modular-Line, a modular close control air conditioning product which is now available from Walkair. The new line offers improvements over the company's old range. Total front access has been achieved on all units which now have removable, full-height hinged doors, plus a unique swinging access system.

Additional items include "slide-out" electric panels and front withdrawal filter frames. These design changes have made servicing easier without compromising performance.

The system has been

improved with almost all heat and noise producing components situated outside of the airflow with the air handling system itself redesigned to produce a more laminar airflow. The end result is increased cooling efficiency, improved air-flow figures, lower fan power consumption, and overall noise levels cut by around 1-dB (A) across the standard range.

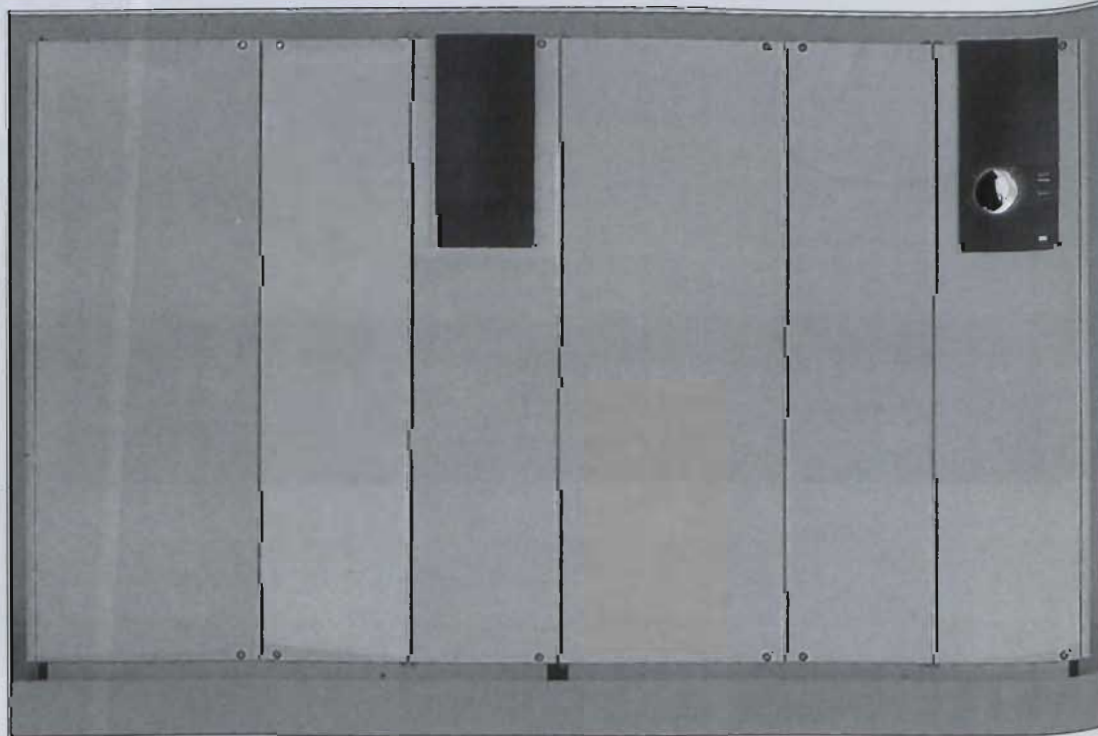
The Modular-Line concept allows what would be a large multi-functional unit to be split into individual modules which can be transported, off-loaded and positioned without special equipment, even where access is restricted. Units can be sited separately, an

advantage in awkwardly-shaped rooms with pillars or recesses.

Individual modules can be isolated for service or maintenance without shutting down the rest of the system, or supplied with separate power feeds or from a centrally distributed supply.

All sheet metal components are made from galvanised steel protected with an epoxy powder coat finish. Extensive use of aluminium, stainless steel and plastics technology is said further to enhance the long life of the units.

Contact: Vincent Mahony, Walkair. Tel: 01 - 4456 8070; Fax: 01 - 456 8090; email: walkair@walkair.ie



Stulz Modular-Line from Walkair – The new line offers improvements over the company's old range. Total front access has been achieved on all units which now have removable, full-height hinged doors, plus a unique swinging access system.

Pioneering Mitsubishi Electric WR2 System

Mitsubishi Electric has announced the development of a pioneering new air conditioning system that offers tremendous improvements in performance with multiple heat recovery possible from "outdoor" condensing units sited inside the building.

The City Multi WR2 system is the world's first water cooled VRF (Variable Refrigerant Flow) heat recovery system. As with all City Multi heat recovery systems it uses only two-pipes instead of the three required by other systems. Combined with a cooling tower and separate heat source, the condensing unit can now be built into the floor or wall of a building because the systems don't require airflow over the condensing units. This also gives the WR2 system the added advantage of substantially reducing the amount of refrigerant needed.

The WR2 series benefits from Mitsubishi Electric's air heat source heat recovery system, the R2 series, which has already been well received in the European market. The WR2 offers greater benefits by adopting newly-designed water condensers and chassis.

The units, which are just introduced, offer an easy replacement for the old style, water-based air conditioning systems and provide a tremendous advantage for cost-conscious high-rise buildings due to simple installation and the ability to utilise existing water pipes.

Providing a stable capacity even in very low ambient temperatures, the system also remains safe from external corrosion and offers such remarkable performance by recovering discharged heat from both the refrigerant and water circuits.

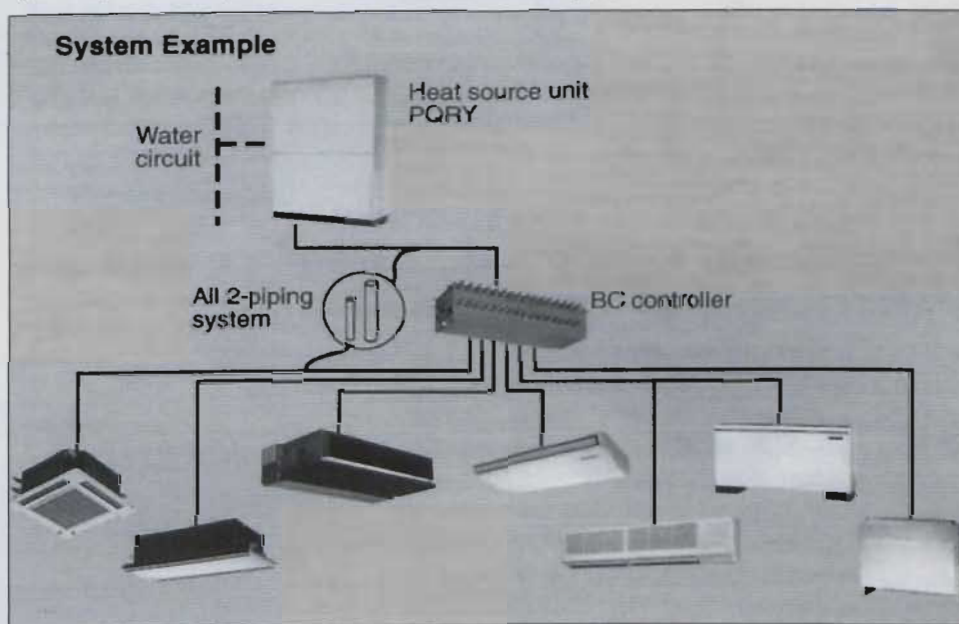
Mitsubishi Electric's advanced BC Controller technology is used with the WR2 series to securely distribute both liquid and gas refrigerant to any of

provides an incredibly efficient operation when required to perform simultaneous heating and cooling operation. This has tremendous potential for hotel operators or other businesses where usage of the air conditioning fluctuates from room to room throughout the day.

Two heat source units are available since the system was officially launched in Europe. The PQRV-P20OYMF-B and the PQRV-P25OYMF-B offer 23.3 and 29.1kW of cooling respectively. Each unit can run up to 16 indoor units over long pipe

to achieve a very high COP using R407C refrigerant even as outside temperatures fluctuate, due to the newly-designed water condensers.

The system also achieves a very low rush current during all parts of the operation including start-up. The City Multi WR2 system has been designed to tackle the increased heat generation of today's office equipment, and the upgraded thermal insulation of buildings by recovering more and more energy that is simply lost with other systems, or requires more plant, piping and



The R2 refrigerant circuit developed by Mitsubishi Electric has proven a success in establishing the all 2-piping system

the current range of 55 City Multi R2 indoor units. The company is also pioneering the use of R407C for the system as a clear demonstration of Mitsubishi Electric's commitment to environmental issues.

The unique configuration of the WR2 system, which allows the condenser units to efficiently recover heat from both the refrigerant and water networks, also

runs, with the PQRV-P20OYMF-B providing 26kW of heat and the PQRV-P25OYMF-B a huge 32.6kW.

In addition to all the usual advantages that Mitsubishi Electric two-pipe VRF offers such as wide system adaptability, excellent individual operation and controllability, easy installation and space savings, the WR2 manages

machinery to rescue.

This epoch-making energy conservation move from Mitsubishi electric will provide a system that can respond to, and match, the air conditioning needs of business in Europe at the start of the year 2000.

Contact: Paul Sexton/Mike Sheehan, Mitsubishi Electric. Tel: 01 - 450 5007; Fax: 01 - 460 2069; email: paul.sexton@meuk.mee.co

reconair

ENGINEERING

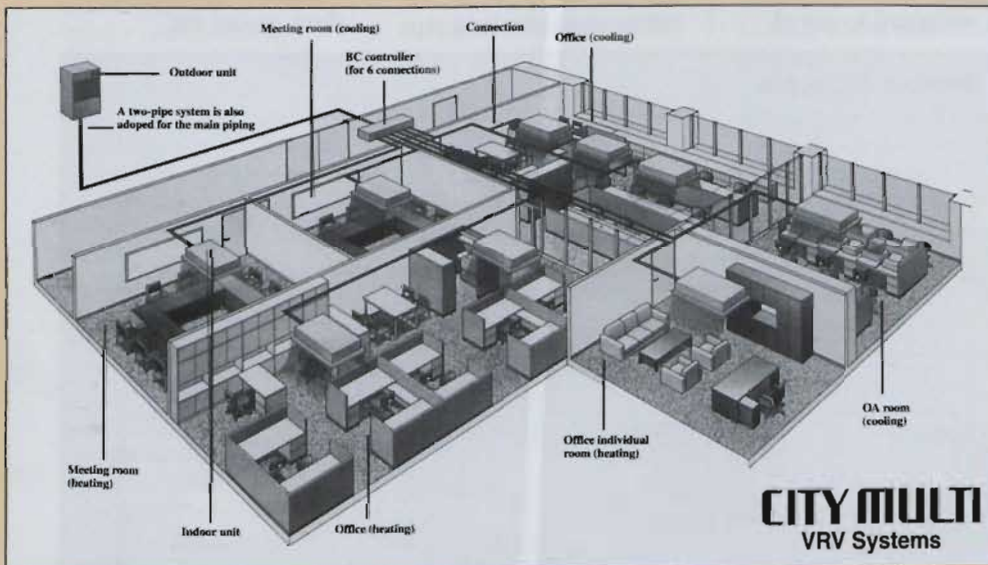
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Core Introduces Aquasnap Air-to- Water Heat Pump

Following the huge success of the Aquasnap chiller which was originally available in cooling only, Carrier distributor Core Air Conditioning has now introduced the Aquasnap air-to-water reverse-cycle heat pump version.

The Aquasnap heat pump is a durable heating and cooling unit that can operate from -10C to 45C. The secret? ... an innovative refrigerant circuit with a patented receiver/heat exchanger and the auto-adaptive Pro Dialog Plus control.

All year 'round energy savings are guaranteed. The Aquasnap automatically adjusts the leaving water temperature, both in

heating and cooling mode, based on the outside temperature. It also offers automatic change-over from, heating to cooling. Moreover, when the building is not occupied, the heat pump control is on the second set point.

When the outside temperature falls below 6C, the capacity of a typical heat pump is affected by the formation of ice on the coil and by defrost cycles. However, the Aquasnap takes different parameters into account such as compressor suction temperature, outside air temperature, etc.

The result is that Aquasnap's defrost cycle is started at the optimum

time, and its duration is reduced by 50%. This leads to a 6% increase in heating capacity and ensures safe operation.

The patented Carrier receiver/heat exchanger allows Aquasnap to operate with an ideal refrigerant charge, both in heating and cooling mode. This system compensates for the differences in refrigerant quantity in the coil and in the plate heat exchanger, which has always been a source of instability and malfunction in reversible systems.

It also ensures that liquid refrigerant never migrates into the compressor, no matter what the outside conditions are.

In addition to the accumulator function, the receiver/heat exchanger subcools the liquid refrigerant before it enters the coil. It also superheats the refrigerant gas at the outlet. With these two parameters controlled, the evaporator and condenser surface is maximised, thereby noticeably increasing the heating capacity.

The compressors are controlled by an auto-adaptive algorithm, based on real-time and historical information (return water temperature, speed of change, dead band, number of start-ups, etc). The system is intelligent and constantly adapts to protect the compressors against excessive cycling. As the compressor is protected in this way, system water volume can be reduced considerably, and in most cases a buffer tank is unnecessary.

Aquasnap was designed specifically to operate on HFC-407C and offers the same performance as R22,

meaning less pollution and more cost savings.

The Aquasnap refrigerant circuit is a model of simplicity. No non-return valves, no solenoid valves, and only one expansion device. It is also leak-proof for life, electronic pressure sensors replacing pressostats with capillary tubes. All refrigeration components are fully welded.

The small footprint of Aquasnap is another added bonus. All units in the range have a very low profile, a typical example being the 30RA 040 to 160 units which are only 1325mm in height. All the necessary hydronic components are fully integrated so no extra roof space is required. With the heavy buffer tank also eliminated, Aquasnap can be installed on the roof of almost any building.

The complete Aquasnap range is equipped with quiet and vibration-free scroll compressors. Durability, reliability and optimum performance are assured, with up to 12 start-ups per hour due to the motor being cooled by gas suction. No maintenance is required.

The standard Aquasnap unit offers remote control facilities for easy integration into any building management systems — on/off control, heating/cooling mode selection, power demand limit, and alarm reporting.

The optional CNN Clock Board offers further control possibilities.

Contact: Austin McDermot, Core Air Conditioning.
Tel: 01 - 294 3110;
Fax: 294 3115;
eMail: coreac@iol.ie.



Aquasnap's fan coil terminals offer multi-choice comfort solutions. Details from Core Air Conditioning.

Mitsubishi Heavy Industries Advanced KX-2 KXR Air Conditioning and Heat Pump

Mitsubishi Heavy Industries is one of the world's largest manufacturers of air conditioning equipment, including VRF multi-systems. The KX2 and KXR variable capacity systems, with inverter scroll compressors, are designed for both new and existing commercial buildings, from 50 sq m to 10,000 sq m.

The new KX2 outdoor units include many enhancements to the specification with improved heating performance at low ambient conditions, more flexibility in application, and a new range of "user friendly" controls.

KX-2 Two-Pipe Systems - KX2 2-Pipe systems are applied to open plan areas, retail stores, or cellular offices, which would require heating or cooling during the same operational periods, eg offices which are all located on the same side of the building.

KXR Three-Pipe Systems - KXR 3-Pipe systems provide the client with a fully flexible comfort control system, where there is a mixed requirement for some areas to be cooled and others to be heated, eg areas on the north and south sides of a glass-fronted office building, or a retail store, where concentrations of customers or lighting levels would dictate a combination of simultaneous cooling and heating.

Energy Saving - There is

the added benefit of substantial energy cost savings in many buildings, as the heat energy absorbed by the cooling units is transferred through the refrigeration circuit, to provide heating in other areas of the building. Unoccupied areas can be switched off, saving further energy. With the variable speed compressor, the system can wind down, and significantly reduce running costs.

Alternative Refrigerants R407C - Mitsubishi Heavy Industries has developed a range of scroll compressors designed to handle the new ozone-benign refrigerants. The new design of the KX-2 ensures maximum efficiency, whilst maintaining the excellent standards of high reliability. The performance of the new KX-2 has been increased, in particular at low ambient temperatures, a very important factor for the varying conditions of

the UK climate.

Lower Sound Levels - A newly-developed 570mm dia sickle-bladed fan reduces the outdoor unit sound level to 59dB. The increased air volume and heat exchanger design allows heating operation at ambient temperatures down to -15°C.

Reduced Height - The new KX-2 is reduced in height by 250mm to 1450mm, which allows installation in confined spaces. The requirement for routine service access from the front only, allowing a number of units to be installed side by side. Pipe connections can be made through the front, back, right or bottom.

New Indoor Unit Control - The KX-2 advanced control system introduces many new benefits which simplify commissioning/addressing, and allows the controls to be "customised" to suit the configuration of the equipment and the

requirements of the client. The indoor fan can be automatically stopped once the heating is satisfied, and the temperature can be measured by the thermistor in the remote controller if appropriate.

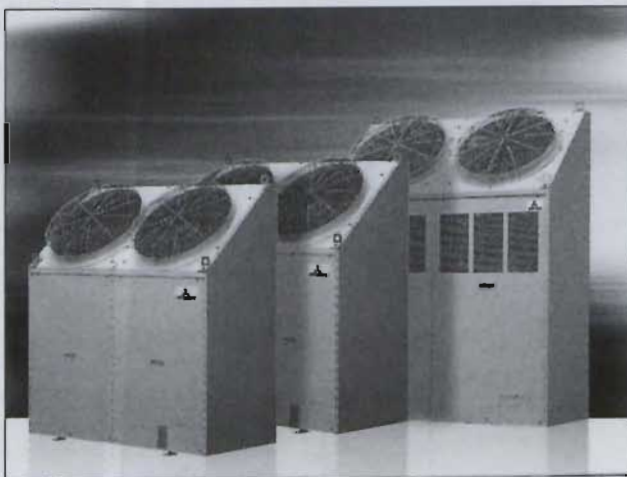
Cassette - New Slim Profile Units - The construction of the cassette, and the design of its fan and heat exchanger now allows the smallest model to be installed in a ceiling void of only 260mm. The facility for fresh air inlet has been retained, as well as branch duct connection to an adjacent area.

Indoor Units - Indoor units for the KX-2 and KXR Series include FDT CW to 8.2kW; FDTW cassette; 2-way, seven models (2.9kW to 16kW); FDR ducted cassette, eight models (2.2kW to 16kW); FDM ducted horizontal, seven models (3.6kW to 16kW); FDE ceiling suspended, six models (3.6kW to 16kW); FDK wall mounted, six models (2.2kW to 8.2kW); FDFL floor standing, three models (2.9kW to 8kW); FDFU floor concealed, four models (2.9kW to 8kW).

The Mitsubishi Heavy Industries FC space collars allow the installation of cassette units within a ceiling void of restricted height.

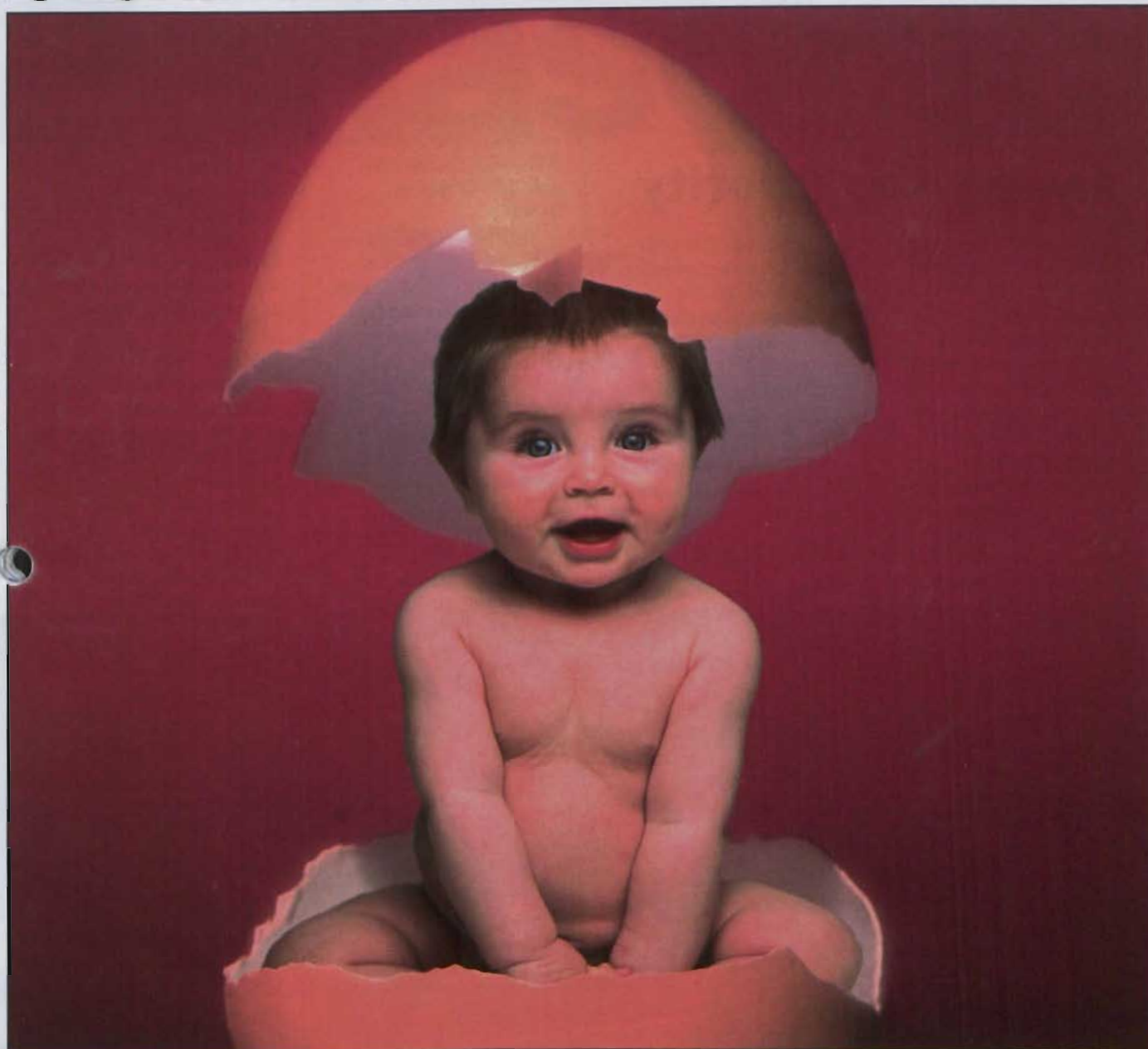
The collars are precision-mounted in glass fibre reinforced plastic and colour-textured to match the light grey cassette fascia panel. The ceiling resting on top of the finished edge of the collar, leaving a neat finish to the installation.

Contact: Michael Clancy, 3D Air Sales (Ireland).
Tel: 01 - 450 9433;
Fax: 01 - 450 9777.



Mitsubishi Heavy Industries new KX-2 and KXR air conditioning and heat pump variable refrigerant inverter multi systems from 3D Air Sales (Ireland).

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Montair - Energy Saving Key Priority

The Series GTP heat pump chiller from Tempair Ltd is specifically designed for application in 4-pipe air conditioning systems where substantial energy savings and optimum performance are the key priority. The design concept is aimed at meeting all-year-round heating and cooling requirements on an energy recuperation basis.

There are 12 models in the range, offering capacities from 70kW to 540kW. These can also be supplied with ancillary equipment such as pump packages, expansion vessels, etc, built in. They are also available in low-noise versions.

Various modes of operation available are as follows: —

□ Cooling cycle for the production of chilled water only;

□ Cooling cycle with variable heat recuperation up to 100% for the simultaneous production of chilled water and warm water;

□ Heating cycle for the production of warm water only;

□ Heating cycle with variable heat recuperation up to 100% for the simultaneous production of warm water and chilled water;

□ Defrost cycle by hot gas injection;

Other products from Montair are:—

Model RE Chillers — Packaged water chillers with air-cooled condensers and axial fans (4kW to 60kW);

Model RO Chillers — Packaged water chillers with air-cooled condensers and axial fans (10kW to 699kW);

Model RO-X Chillers —

Packaged water chillers with air cooled condensers, with twin circuits and axial fans (73kW to 563kW);

Model RO-V Chillers — Packaged water chillers with air-cooled condensers, axial fans and screw type compressors (115kW to 802kW);

Model RO/PC Air to Water Heat Pumps — Packaged heat pumps with air-cooled condensers and axial fans (10kW to 562kW);

Model CWC Chillers — Packaged water chillers with air-cooled condensers and centrifugal fans (9kW to 293kW);

Model CWC/PC Air to Water heat Pumps — Packaged heat pumps with air-cooled condensers and centrifugal fans (7kW to 293kW);

Model RH Chillers — Packaged water chillers with water-cooled condensers (11kW to 782kW);

Model FC Free Cooling System — 70% and 100%

free cooling systems which can be applied to RO, RO-X, RO-V and CW model chillers;

Model RO/MTE Condensing Units — Packaged condensing units with air-cooled condenser and axial fans (11kW to 314kW);

Model CW/MTE Condensing Units — Packaged condensing units with air-cooled condenser and centrifugal fans (5kW to 315kW);

Model RH-L Evaporative Units — Packaged evaporative units complete with all microprocessor controls, etc (10kW to 562kW);

Model SW Close Control air conditioners with chilled water coil — Upflow and downflow versions (7.5kW to 90.5kW);

Model AD Close Control Air Conditioners with remote air-cooled condenser — Upflow and downflow versions (6.5kW to 75kW);

Model HD Close Control Air Conditioners with Built In Water Cooled Condenser — Upflow and down versions (6.5kW to 80kW);

Model ED Packaged Air Conditioner — Packaged air conditioner with built-in air-cooled condenser and centrifugal fans (6kW to 91kW);

KLINIK Series Close Control Air Conditioners — For special applications such as surgical rooms, pharmaceutical laboratories, clean rooms and medical applications (7kW to 25kW).

All Montair chillers are available R22, R134A, R407C and R404A refrigerants.

Contact: Damien Parlour, Tempair. Tel: 01 - 460 4066; Fax: 460 4077; eMail: tempair@eircom.net



Montair Model GTP heat pump chiller with 100% heat recuperation. Can provide chilled and warm water, up to 50C, simultaneously. Details from Tempair.

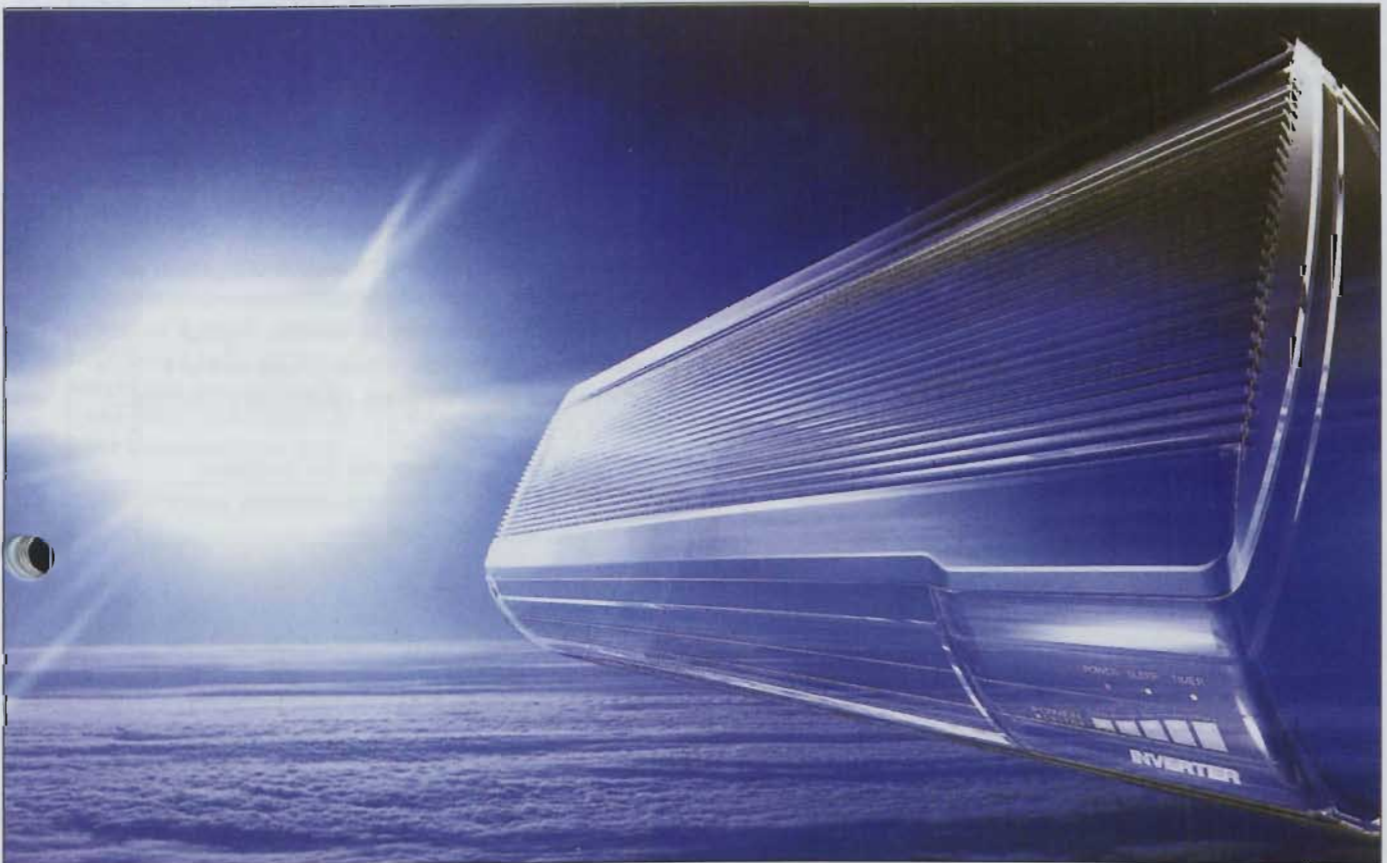
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Published by ARROW@TU Dublin, 2000 **Tel: 01 - 456 8070; Fax: 01 - 456 8098; email: sales@walkair.ie**

Walkair and the Panasonic Hush

The Panasonic UMX VRF system joins the existing UM4 inverterless compressor as part of the Urban Multi range now available from Walkair.

Vincent Mahony of Walkair claims that a single UMX outdoor unit can provide heating and cooling for up to 12 indoor units. The UMX uses a variable speed inverter scroll compressor and a fixed speed scroll compressor.

As the power demand builds from zero, the inverter steadily increases output until demand reaches the full capacity of the variable speed compressor. At that point, it closes down and the single speed unit kicks in.

As demand continues to grow, the variable speed unit comes on again, adding its power to the single speed unit. A non-stop control ensures the compressor continues operating as the power changes over.

According to Walkair, noise is cut to a quarter of the previous level by a new fan design. The UMS's

"fuzzy" control regularly analyses room temperature and compressor performance, and uses this data to fine-tune the refrigerant flow to each indoor unit.

Another new addition to Panasonic's HideAway type packaged/split air conditioners is the E95 Series which features new, low-noise outdoor units and shallower indoor units.

All E95 Series outdoor units are quieter by 5-8dB, the unique curved shape of the winglet fan suppressing the generation of vortices, thereby reducing air flow noise.

In addition, the adoption of double orifice rings reduces air passage resistance. Strengthening of the noise insulation materials in the compressor, and the sealing-in of mechanical noise, allows vibration noise to be greatly enclosed and suppressed. The heat exchanger has an L-shaped design to allow air to flow more smoothly, and noise is automatically reduced further during nighttime operation with lower

outdoor air temperatures.

Of space-saving design - allowing the outdoor units to be installed side by side continuously - E95 Series can be serviced, after installation, by removing the front covers. If renewing the system, existing refrigerant pipes can be utilised so that only the indoor and outdoor units need to be replaced.

E95 HideAway air conditioners are available in cooling only (2.5 to

6hp/6.50 to 14.50kW) and cooling/heat pump types (2.5 to 6hp/6.50 to 15.70kW heating). They will cool even when the outdoor temperature is as low as minus 5°C, and offer an automatic change-over function (heat pump models) in accordance with operating load.

Contact: Vincent Mahony, Walkair.
Tel: 01 - 456 8070;
Fax: 01 - 456 8098;
email: walkair@walkair.ie

Lennox's Ecologic - All quiet on the Chiller Front!

Building owners and equipment specifiers demanding ultra-quiet chillers need look no further than the recently-launched Ecologic range from Lennox Industries, the quietest-rated chillers in the Eurovent directory.

Of all comparable products in the directory - a specifier's only independent confirmation that performance criteria claimed by equipment manufacturers is correct - Ecologic chillers between 40-240kW were the quietest by up to 6dBA. During production, every Ecologic chiller is subjected to a functional test under Eurovent conditions to confirm specified design criteria.

Advanced fan technology and the intelligent application of sound attenuation materials were used from the earliest design stage by Lennox to build low-noise performance into the Ecologic range.

Across the Ecologic range, favourable noise performance is assured by acoustically-designed air intake fan openings, and the use of new-generation, low-speed axial fans with modern sickle-shaped fan blades.

Scroll compressors are installed in heavy-duty, sound-absorbing enclosures with acoustic insulation panels. The mounting of compressors on rubber vibration dampers further deadens sound. In addition, a relatively low air velocity over a large condenser surface minimises air noise.

The design of the Ecologic range also takes into account requirements for high-efficiency and environmental responsibility. These include the use of the ozone-benign refrigerant R407C as standard, the optimal use of electrical power, and a 30% energy saving through the addition of an Enertronic Control System.

Contact: Vincent Mahony, Walkair. Tel: 01 - 456 8070;
Fax: 01 - 456 8090; email: walkair@walkair.ie



Panasonic's new addition to the HideAway type packaged/split air conditioner range from Walkair.

AIR MOVEMENT - AIR
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VENTILATION

Dwyer Adds Electronic Balometer to its HVAC line

Complementing its extensive line of instruments for HVAC and other air flow applications, Manotherm now offers the Model APM 151 Electronic Balometer. This industry-standard instrument is ideal for measuring supply and exhaust air flow in HVAC, total air quality (TAQ), clean-room and industrial hygiene applications.

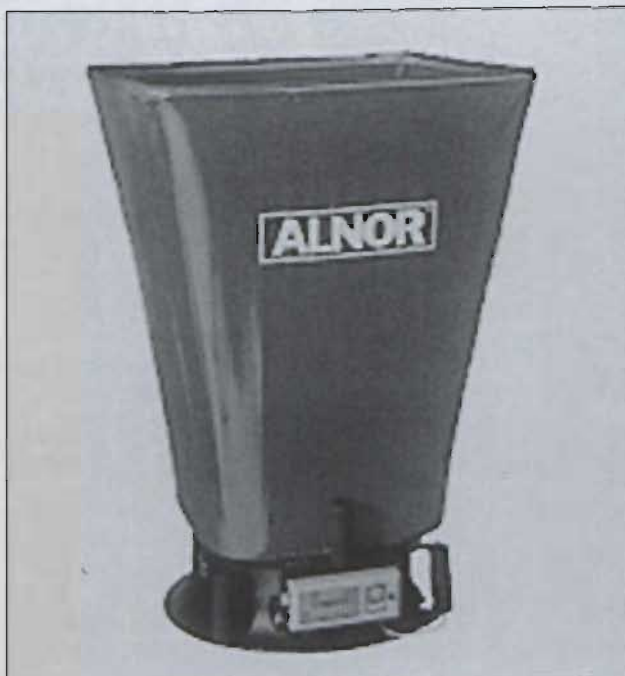
Using thermal anemometry, this balometer does away with time-consuming calculations by displaying air flow readings in user-selectable cfm, m3/h or l/s, as well as °F and °C, on its large 4-digit LCD. Light-weight and easy-to-handle - one person can operate it - the instrument can store

up to 100 readings in memory. Data may be downloaded using APM 151C computer interface cable.

The APM 151, which includes a 2' x 2' hood that fits over most grilles and diffusers, along with base, handles, soft carrying case, three AA batteries and an NIST calibration data sheet, is in stock and ready to supply.

Dwyer produces a broad range of measuring and control instruments for pressure, temperature, level and flow applications.

Contact: Bob Gilbert/
Brian Harris, Manotherm.
Tel: 01 - 452 2355;
Fax: 01 - 451 6919;
email:
manotherm@eircom.net



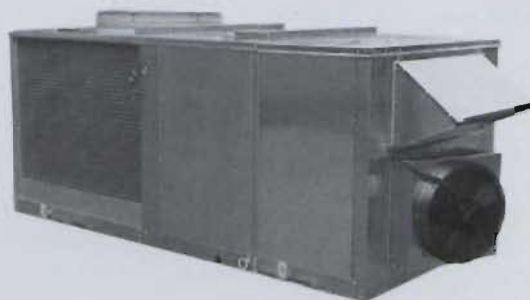
Dwyer electronic balometer from Manotherm.

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Sanyo Super ECO Multi Series from Redbro

Sanyo's new Super ECO Multi Series represents a combination of economy and ecology. The unique power control circuit and newly-designed structural parts contribute to a major reduction in initial running costs.

The newly-developed power control refrigerant operates without an inverter control by using a super power control compressor and an external save valve to control capacity. This results in reduced harmonic wave emissions.

Additionally, the Super ECO Multi Series system uses R407C refrigerant which does not damage the ozone layer.

The Super ECO Multi

meets the air conditioning requirements for commercial and residential use. It is possible to connect indoor units with a capacity of up to 130% of the outdoor unit capacity. Assuming that the minimum capacity of an indoor unit is 2.8kW, it is possible to connect 10 or 13 units respectively to the 22.4 kW unit, or the 28.0kW unit.

The upper and lower cylinders are connected by three bypass pathways, and capacity control is performed by the power control valves to achieve 4-step control (25-50-75-100%).

The two-compressor structure features a super power control compressor

(PC comp) and standard constant speed compressor (AC Comp). The combination of these compressors and an external save valve makes it possible to realise compressor capacity control of 16 steps. In addition, an electronic refrigerant control valve on the indoor unit realises even more precise control of refrigerant flow volume for better capacity control in accordance with load.

By using electronic control valves for linear control, the capacity of the indoor unit can be controlled from 25 to 100% (during cooling) to provide a more stable room temperature at a constant air flow rate.

Even when power failure occurs, preset programmed operation can be reactivated once power is resumed.

Details of past record of warnings are stored and can be verified on the

liquid crystal display. This makes it easier to diagnose malfunctions, greatly reducing service labour.

Even more, these indoor units can be connected with a standard single outdoor unit (heat pump type) in case of design changes for air conditioning, allowing more flexible designs than before.

Cooling can be performed throughout the year for computer rooms, banquet halls, etc. Wider operation range covers outdoor temperatures of as low as -5°C for cooling and -15°C for heating.

The indoor and outdoor units each have communications terminals that allow connection of as many as 94 units (Indoor unit: Max 64+ Outdoor unit: Max 30) to a single communications line (non-polar twin-line main bus). The main bus is twin-core and non-polar for easier wiring while the indoor unit settings are automated for easy installation.

The Sanyo Super ECO multi system range is extensive, catering for virtually every requirement. It includes:-

Indoor Units

Semi-concealed type (4-way and 2-way and 1-way discharge);

One way air discharge semi-concealed slim type; ceiling mounted type; wall-mounted type; concealed duct type; concealed duct; high-static pressure type; floor-standing type; and concealed floor standing type;

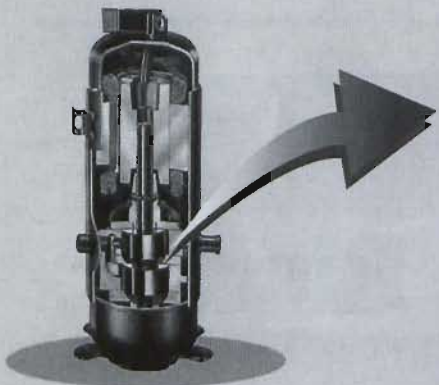
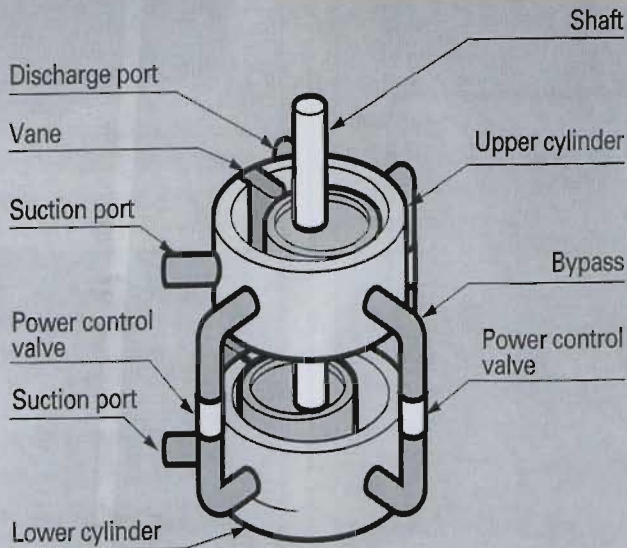
Outdoor Units

Heat pump type and cooling type available. Capacities - ranging from 10kW to 84kW.

Contact: Barry Hennessy, Redbro. Tel: 01 - 294 0321; Fax: 01 - 294 0325; email: sanyoac@indigo.ie

Super Power Control Compressor

The upper and lower cylinders are connected by 3 bypass pathways, and capacity control is performed by the power control valves to achieve 4-step control (25-50-75-100%).



Advanced and innovative technology are a very strong feature of Sanyo's Super ECO multi air conditioners from Redbro.

TECH

REFRIGERATION

TEMPERATURE – ENVIRONMENTAL CONTROL & HANDLING

AIR CONDITIONING 2000

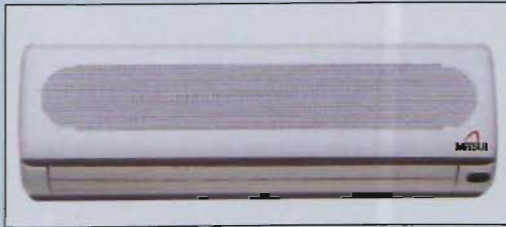
Sales, Installation & Maintenance

REFRIGERATION AND AIR CONDITIONING FOR THE NEW MILLENNIUM



Air Conditioning 2000, as the name implies, is involved with air conditioning in all of its forms, from split systems to roof-top chillers, as well as air cleaners, air curtains and dehumidifiers. The company supplies to both wholesale and retail markets and is the sole distributor in Ireland for the Mitsui range of products. A division of the Reefer Tech Group, it was established to cater for the ever-increasing demand for air conditioning in today's marketplace. An ISO 9002 accredited firm, it assumed sole distribution for Mitsui air conditioning equipment in Ireland last year and has already sold units to the volume of more than £1 million.

Air Conditioning 2000 is based in the Dublin Port area, a central location which allows for excellent access to the main business, shopping and catering areas of Dublin, which represents the major air conditioning market.



NATIONWIDE SERVICE COVER

Nationwide, Air Conditioning 2000 provides service cover through 14 appointed service centres which are strategically located throughout Ireland.

Service cover is available on a 24-hour basis, 7 days a week. The Greater Dublin area is catered for by the mobile fleet of 20 fully-equipped service vans.

The company's central location in Dublin Port allows immediate access to Dublin City Centre, as well as convenient access to both North and South Dublin.

The G.P.S. Satellite System is used to track and monitor all vans in the service fleet. Engineers are also equipped with mobile phones and pagers, thereby enhancing response time for breakdowns and helping to minimise customer downtime.



Air Conditioning 2000, Bond Drive Extension, Dublin Port, Dublin 3.



Tech Refrigeration is the division that deals with all aspects of commercial refrigeration, from ice makers and bottle coolers, right through the range of display cabinets up to drive-thru freezer rooms. Distribution and installation agreements are in place with high-profile manufacturers such as Hussmann, Koxka, DGD, Foster, Studio 54 and Scotsman.

The company also offers a full range of after-sales options including maintenance contracts, breakdown cover, overhauls and refrigeration upgrades. The fact that it is ISO 9002 accredited, and has the Irish Quality Mark, is testimony to the quality of service and products provided.

At present, it provides maintenance contracts for air conditioning and refrigeration to a large cross-section of industries in both the retail and catering sectors. These include such prestigious, high-profile names as McDonald's restaurants (for the whole of Ireland); Iceland Frozen Foods; The Gresham Hotel; The Stakis Hilton Hotel; and The Clarence Hotel.

NATIONAL DISTRIBUTION CENTRE

Located at North Wall, just outside the Dublin Port area, the company's warehouse and national distribution centre holds extensive stocks of all refrigeration and air-conditioning products, as well as a full inventory of spare parts.

From here, a delivery service is offered to customers and engineers alike within the Greater Dublin area, while the location is so central that collections are easy and convenient. Trained stores personnel monitor and control stock to enable extremely high pick rates.

The Cork Region is served by a separate depot which is ideally located beside the new Lee Tunnel on the perimeter of Cork City, thereby providing instant access to all areas of Cork City and the Munster region.



Mitsui - The Best Technology in Air Conditioning



Mitsui has an extensive range including wall-mounted units, floor/ceiling units, ceiling cassettes, duct-type, column and window-type air conditioners, not to mention portable air conditioners which are also available with heat pumps. Mitsui also markets air cleaners, air curtains and air dehumidifiers, giving the customer real choice from the complete air handling package.

The customer base includes leading institutions and organisations such as Bank of Ireland; Jury's Hotel Group; Musgraves Cash & Carry; Mobil Oil; and St James' Hospital.

Tel: 01 - 836 6794; Fax: 01 - 855 5408; email: tech@reefertech.ie



IN PARTNERSHIP WITH TECH REFRIGERATION

Apex Controls Ltd was formed in 1998 by Gerry Smith and Eamon Norton with a brief to deal with all aspects of industrial and commercial refrigeration, and air conditioning. Since then the company has experienced considerable growth with turnover now in the region of £1 million and a customer base spread throughout Connaught, Ulster and the Midlands.

“The supermarket sector is the hub of the business” says Gerry Smith. “Because we secured major contracts at an early stage in the North West, it gave us a platform to build on and allowed us to expand rapidly into other sectors. We are very proud of the fact that we have such high-profile customers as Supervalu/Centra, Spar and Mace & Londis on our books. Recent installations for these groups include Centra Ballybofey; Spar Knappagh Road, Sligo; Londis, Mountcharles, Co Donegal; and Mace, Ballyconnell, Co Cavan.



Mitsui heat pump systems (outdoor units) at Abbots Diagnostics, Sligo

“Recently, Tech Refrigeration and ourselves secured the Hussmann/Koxka agency for Ireland and we see this as a major stepping stone in the refrigeration display cabinet sector.

“To further strengthen the quality of the support service we offer this sector we have a new storage depot located just outside Sligo where we stock cabinets for the supermarket and catering industries.

“Ninety per cent of our customers are on a service maintenance contract basis. We guarantee a 24-hour, seven-day, back-up service which is unequalled in the areas we cover. Our engineers are highly-skilled and motivated and there is a major emphasis placed on the training of our apprentices as we realise that they are the future of our company.

“Each service vehicle is fully equipped to deal with any breakdown, resulting in less downtime for sales, while it also reduces the incidence of stock loss. Our service office has the latest technology in monitoring systems and we are able to monitor temperatures and refrigeration plant for our customers via a PC and a modem.

“This 24-hour surveillance allows us to check refrigeration plant and rectify certain problems in the store factory without ever leaving the office.



Dairy wall, Spar, Sligo

“We have also built up a strong trading relationship with a number of American multi-nationals in the region, most of whom are involved in the pharmaceutical industry. Among those with whom we currently have contracts are Abbots, Fort Dodge Laboratories, Hospicare and Adam Spence. Here we are involved in the installation and maintenance of such items as high and low-temperature cold rooms, cleaning rooms, water chillers, air driers, Mitsui heat pump systems and ultra-low freezers (-80C).

“Another side of the business which has increased dramatically is the heat pump and air conditioning sector. Here we have sold and installed over 150 units in the last 12 months alone. We have been particularly successful with Mitsui units and recent installations include Abbots Diagnostics, Sligo; MV Technology, Dublin; and Fort Dodge Laboratories, Sligo.

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email: tech@reefertechnology.ie

Waterloo Slimline Fan Coil Units and Northstar AHU's from Ventac

The Beta fan unit from Waterloo Air Management is suitable for horizontal ceiling void applications where there is a height restriction. Designed for ultra quiet operation against external static pressures of up to 50 Pa, Waterloo's Climatair range of fan coil units lead the market in standards of quality, performance and customer service. They incorporate a comprehensive list of standard features to simplify installation and to satisfy the most stringent specification.

All units are manufactured from heavy-gauge galvanised sheet steel, incorporating multi-spigotted outlet plenums. All edges are de-burred and formed inwards to prevent exposure of bare metal. Coils are mounted within condensate trays, extended under the control valves and connections, with fall to drain to overcome a maximum of 50pA inlet

pressure. Available with top or bottom access.

Fans are double-inlet, double-width (DIDW), direct-drive centrifugal type with high-efficiency, low-noise, forward-curved aluminium or galvanised steel impellers. Fan scrolls are galvanised steel with demountable inlet rings to facilitate impeller removal. All fan assemblies are statically and dynamically balanced to BS 5265 - Part 1, 1979 to G 2.5.

All fan assemblies are fitted with a high-output permanent split-capacitor continuously rated motor, with Standard Thermal Overload Protection to BS 2048, 1961 part 1 and BS5000 1973 part 2. Motors are totally enclosed to IP44 and insulated to BS 2757 (Class B). Bearings are sealed for life, maintenance free ball type, with a minimum life expectancy of 50,000 hours under normal operating conditions.

Coils are manufactured

from solid drawn copper tubes, mechanically expanded onto aluminium fins with headers suitable for 2- or 4-pipe systems, and tested up to 15 bar. All coils are fitted with manual air vents and drains.

Standard filters are of the circa-frame pad type, fully washable and with a performance classification of up to EU 4 to Eurovent 4/5 BS 6540 and are Class O fire resistance rated. Various other types and grades of filter are available on request.

Units are insulated throughout with up to 15mm open cell, Class O acoustic and thermal insulation.

All units can be fitted with any type of fan coil control currently manufactured. Temperature sensors can be room or unit mounted to operate 2- or 4-part valves. Control systems can be analogue or digital and stand-alone or part of a building management system.

Also from Ventac is the Waterloo Northstar range of air handling units. These units have been developed to enable Waterloo's designers rapidly to correlate clients' specification requirements and select standardised products to meet the required applications.

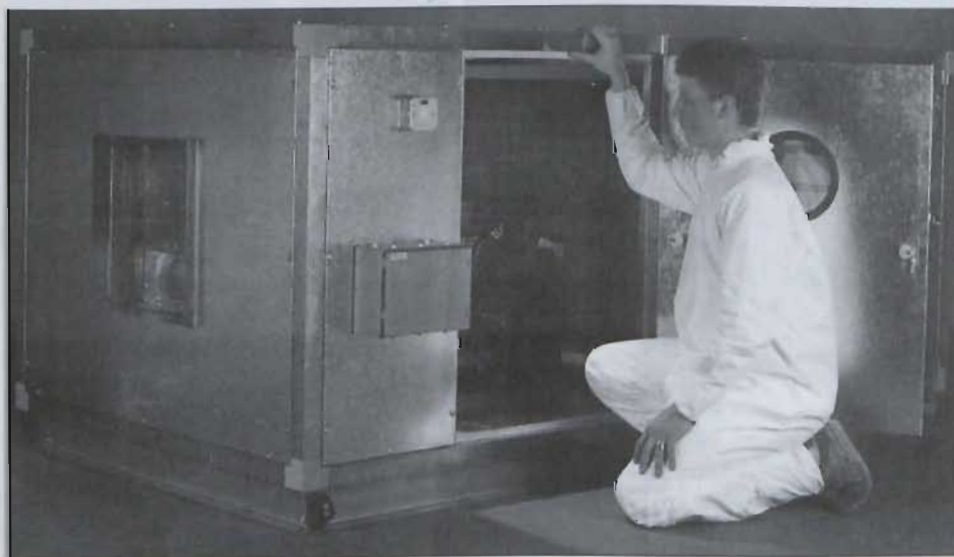
An historical analysis of specified requirements led Waterloo Air Management to recognise that the use of non-standard components and arrangements were often creating unnecessary extra costs. Modular units can give enormous benefits in terms of greater reliability, guaranteed performance, shorter lead times, faster installation and lower costs, estimated to be between 15 and 30 per cent.

Technical advances in the design of Northstar air handling units means they can meet what was previously thought to be "specialised" performance criteria.

Northstar units mean that all components are tried and tested to fit and work together. Specifiers can be confident that a Northstar unit will perform within the listed parameters and, because Northstar is a modular system, units can still be constructed to suit the specific requirements of a particular application.

The wide range of modular options available means that specifiers need not be restricted for choice in size and air volumes as Northstar units are manufactured in more than 200 height and width combinations

Contact: Ciaran King, Ventac. Tel: 01 - 667 1077; Fax: 01 - 667 1055; email: info@ventac.ie Website: www.ventac.ie



Waterloo Northstar range of air handling units is available from Ventac.

Robur AC at Royal Shakespeare Theatre, London

Cooling requirement
297kW

"Forsooth! ... are these conventional water chillers that I see before me, powered by electricity, their innards filled with unnatural fluids such as CFCs, HCFCs and HFCs, which curse the very air we breathe?"

"Not on thy nelly good sir, for these are the Robur gas-fired, high-efficiency water

up walls and o'er gables ... No, 'tis the quiet simplicity of physics and chemistry in Robur technology that says, nay whispers, efficiency, reliability, modularity and flexibility, with breath that taints not nature's bounty ..."

"Well, that's all right then, I just thought they looked a bit like the other ones".

Exit roof right!



chillers that have their innards filled with only natural fluids such as ammonia and water, thus posing absolutely no threat to the environment. Not for them the way of vapour compression with noisy old pots that rattle and prattle, their bits and pieces that end up in creases, and performance that wanes due to wear and tear pains; No penalty plan for exceeding demand, nor fixing of cables

Robur ... not one jot like the others ... simply air conditioning As You Like It!

Module AYC 60 (17.5kW cooling only) and Module AYF 60 (17.5kW cooling and 28.4kW heating). Combine them as you will to meet your requirements ... measure for measure.

Contact: Damien Parlour,
Tempar. Tel: 01 - 460 4066;
Fax: 460 4077;
eMail: tempair@eircom.net



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Denco Toscana and Computaire Series 3

Denco is a world-class manufacturer and market leader in close control air conditioning equipment, which is specifically designed for precise control of air temperature and quality in applications such as telecommunications suites, data centres, clean rooms, laboratories, etc.

Denco places great emphasis on achieving the highest standards of project management and incorporates stringent quality controls throughout its operations.

It has a substantial air conditioning manufacturing base in Hereford, England, supported by strategically-located regional offices and a highly trained and dedicated network of distributors, Reconair

Engineering being responsible for Ireland.

The Denco Toscana range of air conditioning units is designed to provide the ultimate in precise control of temperature, humidity and filtration in small to medium-sized areas. The concept is based on the reliability, efficiency, flexibility and serviceability that is the hallmark of all Denco equipment.

Built to international close control air conditioning standards, the units are available in nine cooling capacities ranging from 3kW to 20kW. A footprint from just 300mm x 600mm ensures minimal presence and front access allows for maximum utilisation of remaining floor space.



Denco Computaire Series 3 from Reconair.

Energy efficient cooling, available on a year round 24-hour basis, is achieved through exploiting new technologies such as energy saving scroll compressors.

Available in both upflow and downflow configuration, air-cooled, water cooled and chilled water versions, Toscana units incorporate Denco's Millennium, the high-tech 16-bit microprocessor based controller.

Applications include computer rooms, telecommunications and switching stations, laboratories, printing and graphics areas, dealer rooms and clean rooms, control and instrumentation rooms, and high-tech office suites.

Computaire Series 3 (Upflow and downflow) – These units provide the ultimate in flexibility and control to meet the most demanding of today's specifications. Cooling capacities range from 14 to 100kW. There are three energy saving versions of the Computaire. Ambicool is designed to exploit low average ambient temperatures to provide partial or full 'freecooling'.

Combicool is a dual cooling system which uses low cost chilled water when available from the general building system, backed up to DX refrigerant cooling, with automatic changeover for periods when such chilled water systems are inactive. A twin-speed compressor option is also available, offering exceptional part load performance and efficiency.

Contact: Mark Cooney/Brian Cooney, Reconair Engineering.
Tel: 01 - 842 5200;
Fax: 01 - 842 5880;
email: hvac@reconair.ie

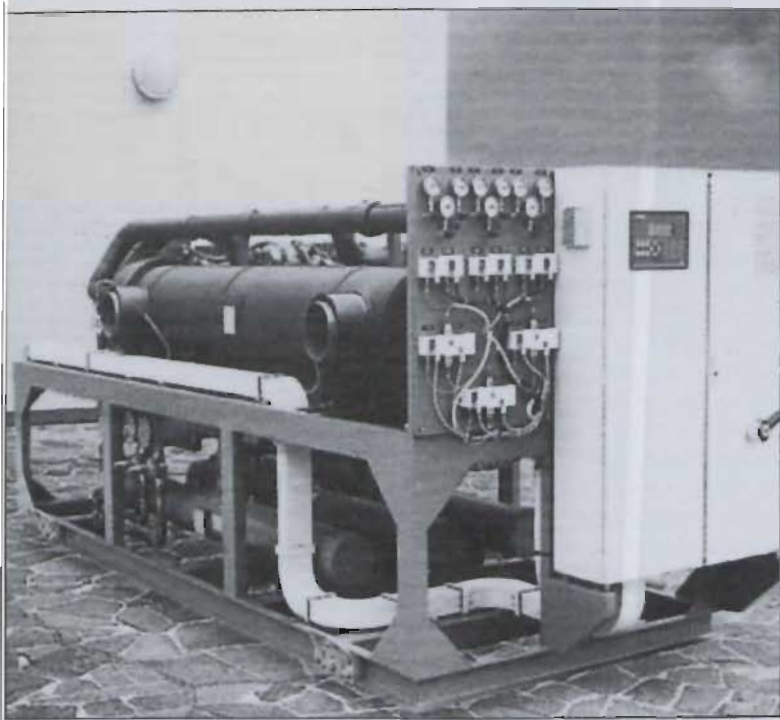
Geoclima Appoints Reconair

Geoclima produces thermodynamic machines for use in air conditioning and refrigerant plants and has now teamed up with Reconair to make the range available in Ireland. The production of industrial machines requires design capabilities and technological solutions that are always ahead, along with particular care in providing total quality solutions.

Geoclima has always chosen to merge these characteristics to supply products that are suitable to the demands of the European market. The range is characterised by the product types listed below for which it is possible to use alternative hermetic or semihermetic compressors, depending on the refrigerant capacity. Some variations are also available on request with semihermetic screw-type compressors.

- Air cooled chillers for outdoor and indoor installation;
- Water cooled chillers for internal installation;
- Air cooled free cooling chillers for outdoor or indoor installation;
- Condensate chillers for inside installation;
- Heat pumps;
- Monobloc an dsplit conditioners.

All machines are available with type R22 or alternatively "ozone safe" types R407C or R134A. Moreover, there is also a range of chillers for outdoor installations with ammonia R717



The comprehensive Geoclima range is now available from Reconair Engineering.

refrigerating liquid.

The use of microprocessor control and adjustment devices that can be interfaced with external computerised management systems incorporating technological innovation means additional advantages for end-users.

Geoclima operates by adopting the German regulations as production standards and introducing the variations required by the country where the machines will be used. The final testing of the product represents one of the operations to which most care and attention is dedicated. The operation of each machine is fully tested and accurately checked for efficiency and the performance of all safety devices.

Contact: Mark Cooney, Reconair Engineering.
Tel: 842 5200;
Fax: 842 5880.
email: hvac@reconair.ie

Mark – 'Comfort is Our Business'

Mark has 50 years experience in airheating, ventilation and aircontrol in utility and industrial buildings. The Mark name stands for reliable products, motivated experts and excellent service.

Mark Tanner MDA unit heaters are a typical example. Mark Tanner unit heaters are widely used in various types of buildings, from factories to showrooms, from sport-halls to restaurants, from garages to shops.

The Mark Tanner MDA unit heater provides the complete solution for heating and ventilation for a vast range of buildings. The unit heaters are

supplied with a high-quality axial ventilator, which gives a low noise level. Unit heaters are supplied in either 400 Volt 4 Phase or 230 Volt 1 Phase.

Units are supplied with either junction box or main-switched fitted, and also a wide variety of electrical accessories including, room thermostats, step transformers, control panels.

The heat exchanger for the Mark Tanner MDA unit heater is manufactured from copper tubes expanded from aluminium fins. The coil is leak-tested to 15-bar. For corrosive environments Mark can supply various solutions on request. Units for steam and thermal oil are available on request.

The Mark Tanner MDA water unit heater is a robust unit manufactured from Aluzinc. The unit can be wall or ceiling mounted with mounting brackets supplied for both.

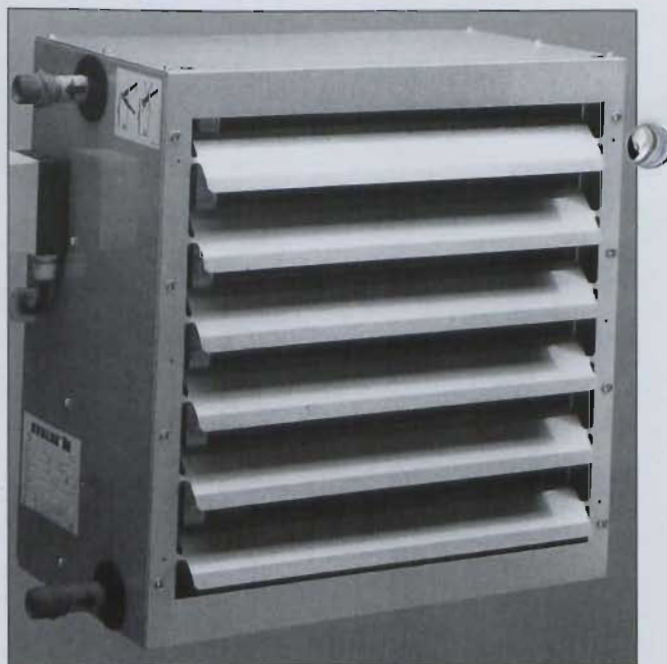
Mounting can also be done with threaded bar M 8.

The Mark Tanner MDA unit heaters can be supplied in the following RAL colours:- white; yellow; red; green; grey; brown; blue; beige; and orange.

Constant high quality is assured right across the range, Mark having the quality management system ISO9000 and CE approval for all products. Every single unit is thoroughly tested before despatch, the test engineer formally signing each off.

Thereafter, a team of experienced and highly-qualified field service engineers ensure that the equipment is installed according to regulations, with after-sales service provided by a nationwide network of engineering personnel.

Contact: Maurice Byrne, Mark Eire, BV, Dublin.
Tel: 01 - 668 0510;
Mairead Twomey, Mark Eire, BV, Macroom, Co Cork. Tel: 026 - 45334.



Mark Tanner units provide the complete solution for ventilation and heating for a complete range of buildings.



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**P.S. All our products include a 12 month on site warranty
and are supported by our dedicated Customer Care Department.**

Mitsui - Leading Technology Air Conditioning

Air Conditioning 2000, a division of the Reefer Tech Group, was established to cater for the ever-increasing demand for air conditioning in today's marketplace. Every aspect of air conditioning is covered - wholesaling, installation, repair, service or contract maintenance. An ISO 9002 accredited firm, it assumed sole distribution for Mitsui air conditioning equipment in

Mitsui has an extensive range including wall-mounted units, floor/ceiling units, ceiling cassettes, duct-type, column and window-type air conditioners, not to mention portable air conditioners which are also available with heat pumps. Mitsui also markets air cleaners, air curtains and air dehumidifiers, giving the customer real choice from the complete air handling package.

Air Conditioning 2000 is based in the Dublin Port area, a central location which allows for excellent access to the main business, shopping and catering areas of Dublin which represents the major air conditioning market.

With impending EU legislation, staff welfare issues, competition and the well-publicised fact that average

temperatures are higher now than at any time since records were first kept, Air Conditioning 2000 and Mitsui provide the perfect team for all air conditioning requirements.

Contact: Air Conditioning 2000.
Tel: 01 - 836 6794;
Fax: 01 - 855 5408;
email: tech@reefertech.ie

Mitsui air conditioning equipment has already captured significant market share in Ireland, Air Conditioning 2000 having sold over £1 million worth of units over the last 12 months

Ireland last year and has already sold units to the volume of more than £1 million.

Toshiba Super Multi from GT Phelan

Toshiba Super Multi is one of today's most advanced forms of air conditioning, creating the ultimate controllable environment in the modern workplace. It is effective over a wide range of applications, enabling heating and cooling requirements to be met all year round.

A single outdoor unit serves up to eight indoor units, and where two identical indoor units serve a common area with a single heating/cooling load, they can be twinned, thus enabling one outdoor unit to distribute the same system capacity through up to sixteen indoor units.

Main benefits include:-

- Flexible system design suits any building, whether refurbishment or new build;

- Flexibility in installation: can be carried out zone by zone, minimising disruption and allowing capital expenditure to be scheduled;

- Power and control cables do not require separating, and each system requires a power supply to the outdoor unit only;

- Simple refrigeration circuit reduces installation time and costs;
- Simplified pipework to multi controller makes installation and servicing easier;

- No need for a plant room, outdoor units can be banked together on a roof, minimising the overall footprint;

- Separations of up to 100 metres may be achieved for each indoor unit;

- BMS compatible, and can be integrated into a Lanworks network based building management system;

- System check facility confirms correct installation of pipework and wiring, with system fault diagnosis from outdoor unit, multi controllers and indoor units;

- All units covered by a 3-year warranty.

In advance of the phase-out of chlorinated refrigerants, Toshiba has introduced the 4-Series Super Multi system, re-engineered to operate with R407C while maintaining maximum energy efficiency. The 4-Series Super Multi uses indoor units from the standard RAV heat pump range, giving maximum flexibility in design.

To maximise design flexibility, the Super Multi range consists of a 2-pipe and 3-pipe system.

The 2-pipe system is a cost-effective solution when all areas of a building served by one system require simultaneous heating or cooling.

Utilising a 3-pipe system, indoor units can operate independently to meet both heating and cooling requirements simultaneously, even within adjacent offices.

Both systems incorporate an energy-efficient heat pump cycle, and the 3-pipe system's heat recovery capability allows heat absorbed from a room being cooled to be transferred to another requiring heating.

How to keep even the most
temperamental
customers comfortable



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IRISH AGENT

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Dublin 10.

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email: INFO@GMT.iol.ie



The Toshiba 3-pipe Super Multi system can simultaneously heat and cool different parts of the same building to suit the requirements of its occupants. Details from GT Phelan

The outdoor unit uses inverter control to match compressor speed and power consumption to load demand, in a range of operation between 4% and 100%. Matching output to demand minimises running costs. Each indoor unit senses and responds to

minute temperature changes, automatically maintaining the pre-selected temperatures to within $\pm 5^{\circ}\text{C}$.

Contact: Gerry Phelan, GT Phelan Ltd.
Tel: 01 - 286 437;
Fax: 01 - 286 4310; eMail: gtphele@eircom.net



MASTERAIR

Masterair is one of Ireland's longest established and leading air conditioning equipment suppliers. A special feature on the company will appear in next month's issue of *BSNews*.

Contact

Michael Lynch, Masterair.
Tel: 01 - 460 2188; Fax: 01 - 460 2193;
email: masterair@tinet.ie

Harmon – 'The Specifiers Choice'

Harmon Air Conditioning is among the leading providers of air conditioning and related services to the Irish building services sector.

Quality of service, quality of product, and quality of performance underpin the Harmon trading philosophy, tailor-made solutions being devised to satisfy each particular situation.

The company's ISO 9002 accreditation confirms this standing.

Mechanical consultants, contractors, architects and developers all acknowledge the confidence with which they can appoint Harmon Air Conditioning.

This is particularly so with unusual and difficult projects where flexibility and a willingness to work with the client to devise tailor-made solutions is the only way forward.

Engineering personnel are highly-qualified, experienced, and fully-trained. A continuous assessment and training/development programme ensures that they remain so.

As for the product portfolio, Harmon Air Conditioning aligns itself with market-leading, quality-driven, suppliers. These include Mitsubishi Electric, Clima Systems, Four Seasons, Essekkappa, and Klimatechnik.

Complementing the product portfolio is a comprehensive installation, after-sales service and maintenance facility.

Brief details of each of the principals product portfolios are as follows:-

Klimatechnik Chillers –
The Klimatechnik portfolio comprises air cooled water chillers with axial fans, designed to produce chilled water and for outdoor installation. The supporting frame consists of strong, electrically-welded sections, painted with a coat of epoxy primer and two coats of finish paint (RAL 7001). Cladding panels are of pre-painted (RAL 7038) galvanised steel.

Optional accessories include chilled water pump and storage water vessel; total or partial heat recovery condensers; desuperheaters; liquid receivers; low ambient control to -8°C ambient; variable fan speed low ambient control to -18°C ; main isolator with door lock; self-regulating evaporator heater; control transformer for auxiliary circuit; additional compressor steps; part-winding start for twin-compressor; hotgas by-pass; refrigerant and oil pressure gauges; copper/copper condenser coil; and condensing coil protection grilles.

Four Seasons Essekkappa –
This range is divided into four primary groupings:-

□ JWA – Chillers, heat pumps and motocondensing units with axial fans and scroll compressors (5kW to 35kW);

□ JWR – Chillers, heat pumps and motocondensing units with centrifugal fans and scroll compressors (5kW to 34kW);

Service/Sales Engineer

*World Class Organisation, world class benefits,
a world of opportunities*

Being the world's number one organisation in your chosen market carries with it a certain amount of responsibility. Expectations from customers, suppliers and other partners run much higher and such expectations are reflected in the quality of the people we employ. This is where you come in.

Probably from a refrigeration/HVAC background, and educated to HND/HNC level you will have strong technical skills both mechanical and electrical. This should be supplemented by around three years field experience including servicing, installation and commissioning of equipment and troubleshooting. But we are looking for someone a little special.

So allied to your technical abilities, you will need solid commercial nous. This means being a customer-focused, initiative-taker, who has a longer-term view of business growth and who will see this as an opportunity to build something of enduring quality and value. This is not a role for someone who wants to stay on the treadmill, the opportunities are just too great.

For our part we can offer an excellent salary and benefits package including bonus, company car and private medical insurance. More importantly, however, we will offer full training and support, the sort of back up you would expect from a major multi-national and the opportunity to make a significant contribution within a world leading organisation.

If this sounds like the next step in your career, and you are ready for the challenge, then send your Curriculum Vitae together with details of salary etc, to the address below quoting the reference number PCL/1536 or email it to: confidentialreply@hotmail.com

All replies will be treated in the strictest confidence, all applicants will receive a reply within seven days and interviews will be held in Dublin during late February. We look forward to hearing from you.

REPLIES TO

**PO Box 222, c/o Pressline Ltd, Carraig Court,
George's Avenue, Blackrock, Co Dublin**



MITSUBISHI **HEAVY INDUSTRIES, LTD.**

AIR CONDITIONING SYSTEMS

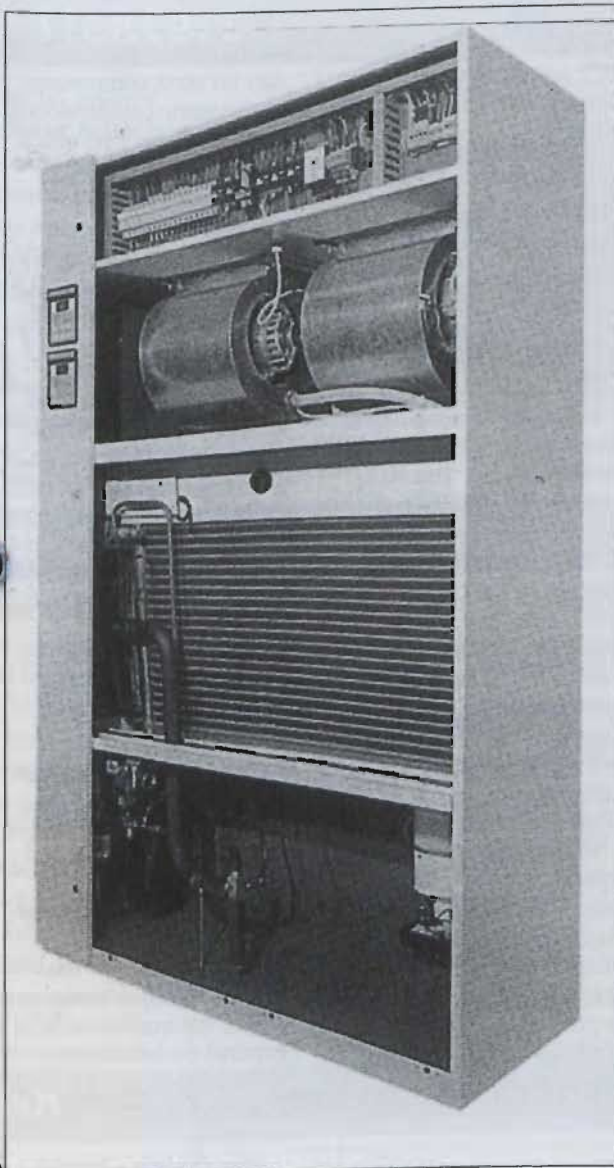
MHI has provided innovative and reliable air conditioning systems to millions of customers throughout the world for over 30 years. To find out about the full extent of the Mitsubishi Heavy Industries range contact:-
3D Air Sales (Ireland) Ltd, Unit 21, Western Industrial Estate, Naas Road, Dublin 12.

Tel: 01 - 450 9433; Fax: 01 - 450 9799.

LEINSTER AGENT:

Airconditioning Technology Ltd. Tel: 01 - 637 5221; 086 - 2311330; Fax: 01 - 868 6578; email: aircond@iol.ie





Clima MC air conditioning units offer full frontal access for all standard maintenance and repair work

□ JWH - Chillers, heat pumps, motoevaporating and motocondensing units with scroll compressors (5.4kW to 36.3kW);
 □ TAC - Air handling units incorporating direct expansion unit, heat pump unit and chilled water unit (5.8kW to 22.5kW);
 Mitsubishi Electric - For details of the Mitsubishi Electric range see page 15.
 Clima MC - The Clima MC air conditioning unit belongs to the Technical Wall Series and its vertical

design guarantees a reduced footprint and minimum floor space occupancy.

Because there is no requirement for lateral service areas, the units can be placed side by side.

The MC air conditioning units can be either upflow or downflow.

Contact: John Harmon, Harmon Air Conditioning Services. Tel: 01 - 456 4233; Fax: 01 - 456 4236; email: harmon@iol.ie

Design Air Launch Flexible Space

Air conditioning specialists Design Air Ltd has been appointed exclusive distributors of the AET Flexible Space System in Southern Ireland. The Flexible Space System is a modular under-floor air conditioning system using the raised access floor void as supply and return air plenums.

The system offers almost infinite flexibility; unique local control for occupants; extremely high levels of comfort and efficiency; elimination of wasteful space in the ceiling void; and much-shortened construction programmes.

The flexible space system has been well proven in 15 countries, with in excess of one million square metres now in operation.

An essential component of the Flexible Space System is the Nesite raised access floor system. The Nesite floor has been developed to the highest standards to achieve air seal integrity. The Nesite floor comes in several ranges from galvanised to marble to wood.

Design Air Ltd offers full engineering and design assistance with the Flexible Space System. Full details on the Flexible Space System will appear next month in *BSNews*.

Contact: Donal Keane, Design Air Ltd.
 Tel: 01 - 460 5555; Fax: 01 - 460 5556;
 email: designair@indigo.ie
 Website: www.Flexiblespace.com

Control Aer £1 Million Investment

Control Aer is to invest £1.1 million in new production equipment and facilities, at its new premises at Kylemore Park Road, Dublin 10.

The investment represents a significant step forward for this young company who, since its arrival on the market, has made for a shake-up of the ventilation supply business. Having seen its business develop on the basis of quality products, short lead times and strong relationships with professional staff, Control Aer's investment will increase the company's portfolio of products and provide enhanced production facilities to meet continually-growing sales.

Company facilities will increase to 20,000 sq ft while a trade counter will be opened at the new premises, with a launch date of the 6 March 2000. Control Aer currently employs 24 people and plans to increase this by a further six.

Contact: David Kelly, Control Aer. Tel: 01 - 626 0177; Fax: 01 - 626 0434; Email: sales@coner.iol.ie
 Website: www.controlaer.com

Danfoss Soft Start and Soft Stop

More and more people are turning to CI-tronic™ soft starters when they need smooth reliable motor control.

An inherent and most often unwanted feature of the asynchronous motor (squirrel cage motor) is that during direct-on line starting it draws a high inrush current and subsequently generates a severe torque surge.

The high motor inrush current, typically 6-8 times the nominal current, causes the line voltage (mains) to flicker, which in turn can lead to disturbance on other electrical apparatus, especially computerised equipment. Power utility companies around the world are aware of the problem, and to an increasing degree require that users reduce the inrush current. The effect of the torque surge generated is not to be

underestimated either. Down time due to damaged gears, broken belts and chains etc is often the tangible result of high starting torque surges. Electronic soft starts, such as the CI-tronic™ types, have proved to be a cost-effective way to eliminate starting torque surge and significantly reduce inrush currents.

CI-tronic™ soft starters

When a motor is soft-started electronically, the motor voltage gradually increases in accordance with the ramp time settings. (See illustration).

The advantage of this starting procedure is that the magnetic field in the motor is built up slowly, thus reducing inrush currents and totally eliminating the starting surge.

Technically advanced, but simple to install and use, CI-tronic™ soft starters cover power ranges up to

11kW (15hp). With a few simple adjustments, the MCI soft starters can accommodate most applications.

Ramp-up and ramp-down times, along with the initial torque, are accurately but easily adjusted. For applications demanding a high break-away torque, a special "kick start" feature can be achieved.

Sometimes a ramp-down function is not enough - a brake is needed. The MCI 25B was developed for these types of applications. Apart from the normal soft starting functions, the MCI 25B is equipped with an adjustable DC injection brake and a unique slow speed function. The powerful brake is equipped with automatic stop detection that will safely bring the motor to stop.

High inrush current is an inherent problem with most compressors. A star/delta solution is often unsatisfactory because of the high torque requirements. The MCI controller is ideal for this application, as the

adjustable initial torque setting allows a smooth start on most compressors. On hermetic compressors it is essential that they reach full speed within a very short time. This is also possible; measurements show that soft-starting a compressor with only a 0.6 second ramp-up time still reduces the inrush current by approximately 50%.

A number of customers are gaining full advantage of the MCI soft starter on pumping systems. Not only is the inrush current reduced to a minimum, but the soft start, and even more importantly the soft stop, eliminates the problems of cavitation and damaging pressure peaks (water hammer) in the pipes.

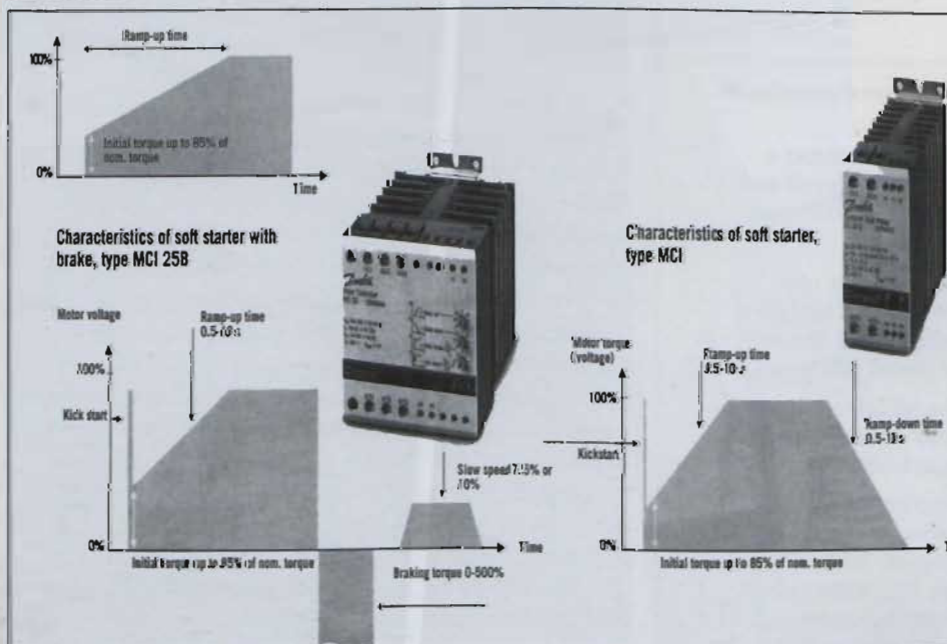
Fans are another popular application for MCI soft starters. The smooth start eliminates belt squeal and prevents premature wear. On a typical cooling tower this reduces maintenance costs tremendously, the fact that these soft starters reduce the number of belts required on belt-driven machines has proven to be a significant cost advantage.

More Products - More Information

The MCI range of soft starters provides cost-effective solutions for a wide range of applications, as do the other products in the CI-tronic™ portfolio: motor contactors and reversing contactors, analogue power controllers and electronic contactors.

Contact: Edward Keating/Brendan Kenny, Danfoss (Ireland) Ltd.
Tel: 01 - 626 8111;
Fax: 01 - 626 9334;
Marketing e-mail: sampson@indigo.ie

Left: The CI-tronic™ soft starter from Danfoss (Ireland).



Air Heaters

The Mark GS gas-fired suspended air heater is an all-round product. Its wide industrial usage makes it one of the top products within the Mark range, its excellent price/performance ratio makes the Mark Gas air heater above all a European product. It is exported to more than fifteen countries. Available in suspended balanced flue room sealed or conventional flue type 18 to 98kW.



Ecofan

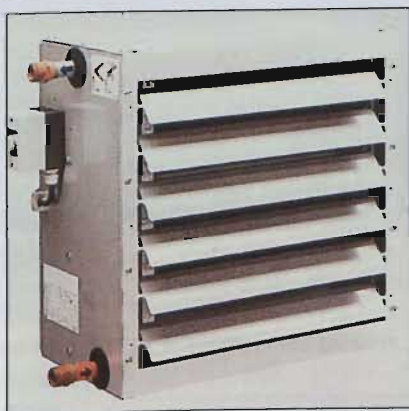
Winter units which on the one hand ensure a temperature gradient which is as low as possible and on the other hand

are promptly able to extract, (summer/winter unit) should working conditions make this necessary



Tanner

The Mark Tanner is an indirect water, steam or thermal oil fueled air heater. Its design and the use of first class components makes it a popular product with a big future. Many accessories complete the Tanner range such as fresh air or recirculation components as optional. Low pressure hot water unit air heaters from 8 to 126 kW.



Calflo

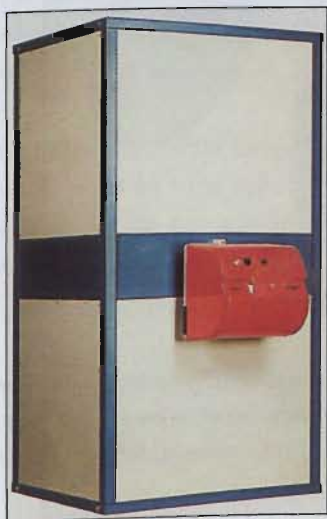
The Mark Calflo make up air heater is a solution in all situations in which large quantities of (polluted) air are extracted,

which is the case in spraying rooms, welding halls, machine factories and the plastics industry. The fully modulating burner makes an optimum balance of required heat and ventilation possible.



Föhn

The Mark Föhn has been a unique product for years. Its fully dismantlable construction means that the Mark Föhn can be installed in situations in which ready-assembled products cannot be installed. Combined with its superior performance, this makes the Föhn widely applicable. Thus the Föhn is often installed in commercial and industrial halls, government buildings and churches. Oil or gas-fired high output cabinet air heaters 50-400 kW.



Infra

As a black tube radiator, the Mark Infra 13-38 can be installed for space as well as local heating. It emits energy in the form of radiant heat which has the advantage of ensuring a pleasant, comfortable surrounding temperature. Suspended radiant tube heaters 13-38kW output. Conventional or balanced flue models.



Mark Eire bv, Coolea, Macroom, Co Cork. Tel: 026 - 45334; Fax: 026 - 45383.
Dublin: Tel: 01 - 668 0510; Fax: 01 - 668 0510.
Mark bv, Beneden, Verlaat 87-89, 9645 BM, Veendam, Netherlands.
Tel: +31 (0) 598 619600; Fax: +31 (0) 598 624584



Continued Growth within the Rink Group

Rink Air Conditioning is pleased to announce the appointment of Steve Edwards as Group Quality and Marketing Manager to the Rink Group. Steve will be based in Dublin, working with both the Dublin and UK offices.

Through continued investment in research and development in air conditioning technology, the Rink Group has now launched its new Rink Rooftop product range.

The Rink Rooftop packaged air conditioning system, distributed in Ireland and the UK, is available in both heat pump and cooling. It is a microprocessor-controlled unit provided with programmable set temperatures, mode switching, auto changeover from heating to cooling, room temperature readout,

and set temperature readout. The microprocessor has the facility to control the temperature on the Fahrenheit temperature scale or the Celsius temperature scale, and has a run and fault indicator.

Hitachi

Rink Air Conditioning in conjunction with Hitachi is pleased to preview the new SET-FREE FSG/FS3 series, which has been developed to meet not only the technological demands of the next millennium, but also the ecological demands of today's environment.

The Leading Edge Ecological Design (LEED) makes use of the non-ozone depleting refrigerant R407C, and it is the FSG series that will be the



Steve Edwards, Group Quality & Marketing Manager, Rink Group.

Hitachi standard, with the FS3 (using R22 refrigerant) also available. In addition to these environmental advantages, Hitachi's commitment to research and development has enabled the creation of a

wide range of technological advantages including:-

- New Stream Line Fan for quiet operation (58dBA for 10 FSG/FS3);
- New type scroll compressor;
- H-Link wiring system;
- Self-diagnostic system;
- Uni-piping system;
- Allowable maximum lift extended;
- High-performance heat exchanger.

Blue Box

The technological skills of the Blue Box Group are built on the dedication to achieving goals that pervades all levels of the organisation. The commitment to research and development shared by all Blue Box Group member-companies underlines a manufacturing complex that has become a point of reference among international customers in the civil and industrial air conditioning and refrigeration market, with product currently distributed in more than 30 countries throughout the world.

The extensive product range offered by the Blue box/Air blue Group include:

- Close Control computer room units;
- Fan coil units;
- Air Cooled/Water Cooled Chillers 30kW to 1100kW.

Further information on the Rink Group product range is available.

Contact:

Tel: 01 - 456 9469;

Fax: 01 - 450 4314;

email: rink@rinkac.com

Website:

www.rinkairconditioning.com

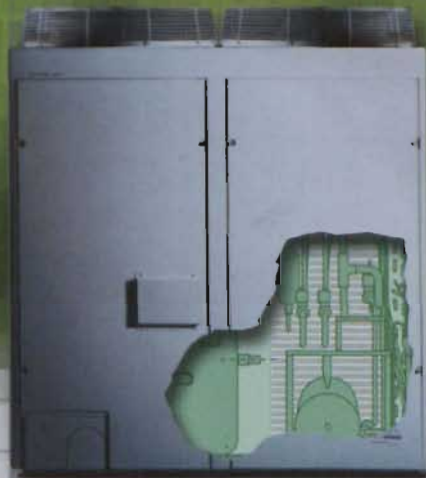


The new Set-Free FSG.FS3 series is now available from Rink Air Conditioning

Thinking outside the box...

...by thinking inside the box

By specifying a system with R407C you're taking a positive step towards preserving our environment. But are you prepared to accept a drop in energy efficiency, or increased running costs?



No drop in capacity

When you specify Toshiba's 4 Series systems you're using the result of a multi-million pound re-design, especially created to work safely and efficiently with R407C.

The new 4 Series includes the Super Multi and a complete range of indoor units designed to run at the same capacity, and with the same energy efficiency, as our equivalent R22 systems - unlike those systems that simply use an R407C drop-in.

The 4 Series has the same purchase and running costs as our R22 systems and, because the output level is maintained, there are no design implications to be considered.

With our expertise and new Toshiba Artificial Intelligence controls, you can see we really are thinking outside and inside the box.

Don't take a drop in capacity: find out how you can specify R407C with confidence by sending for your copy of the R407C Handbook from Toshiba.

Call GT Phelan Ltd on (+353 1) 286 4377

Unit C30,
Southern Cross Business Park,
Bray, Co. Wicklow
www.gtphelan.ie



TOSHIBA

THE PRINCIPAL NAME IN AIR CONDITIONING

Phex Exhibition Returns

The PHEX domestic plumbing and heating exhibition returns to Belfast and Dublin in April 2000. The format will remain the same as the proven successful series of exhibitions organised by B & M Publications in the UK and Ireland over the past few years.

A broad cross-section of exhibitors means the visitor will be able to view

busy installer with the maximum opportunity to visit the exhibition without disrupting work schedules. In addition, the organisers are providing free refreshments for all visitors and a chance to win prizes at the roulette table.

The show will start in The Kings Hall Conference Centre in Belfast on 10 and 11 April 2000, and will then move to Dublin where, because of growing demand, it has moved to the larger Red Cow Complex for the 12 and 13 April 2000. The shows will be open between 6pm and 9.30pm on the first day at each venue, and from 11am to 3.30pm on the second day.

Both exhibitions will provide the opportunity for visitors to discuss business, and also to enjoy themselves at the popular roulette evening which has proved a great success previously.

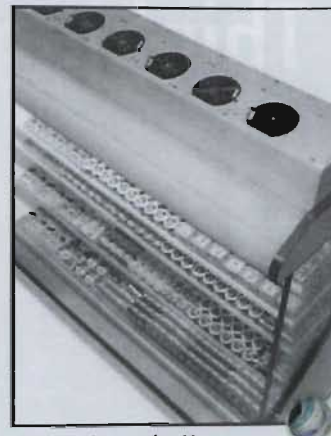
Contact: PHEX Hotline - Tel: 0044 181 680 4200.

Hussmann Revolutionary Retail Refrigeration

The new Hussmann LP2000 refrigeration system is a horizontally-configured scroll compressor pack, based on proven Protocol technology. The system is low profile and compact, demonstrating minimum vibration and noise, designed to drive either chilled or frozen display cases.

LP2000 units may be located on, or adjacent to, display cases, without compromise to the optimum use of available sales floor area. Systems mounted on the top of display cases are inherently discreet, but retailers may further conceal the units from shoppers, using point of sale display material.

The system is available in two versions, the LP2000AC, air-cooled model, and LP2000FC, fluid cooled model. To meet specific requirements,



Picture shows the Hussmann LP2000 mounted on the top of a display case

air-cooled and fluid cooled units may be combined within a store or indeed operated alongside other refrigeration systems.

By using the LP2000 in conjunction with a vacuum drainage system, which evacuates condensate from display cases via surface mounted or overhead pipework, retailers are provided with even greater flexibility.

Retailer Benefits

- No need for a dedicated plant room;
- Dramatically-reduced pipework;
- Underground ducting eliminated;
- Installation time reduced;
- Ease of service and maintenance;
- Environmentally-friendly;
- Minimal gas loss in the event of leakage.

Contact:

Tech Refrigeration.
Tel: 01 - 836 6794;
Fax: 01 - 855 5408;
email: tech@reefertechnology.ie

Hickey New RIAI President

Arthur Hickey, (pictured), partner in the architectural practice, Campbell Conroy Hickey Partnership, has been elected President of the Royal Institute of the Architects of Ireland (RIAI). Mr Hickey took up office for a two-year period from 1 January 2000.

Arthur Hickey says that, as RIAI President, he will be prioritising the whole area of environmental policy, particularly focusing on the issues of planning, housing and conservation. Mr Hickey also said that the issue of strengthening consumer protection, through the introduction of effective legislation for the registration of building professionals, will also be of considerable importance during his two-year term.



the latest offerings in boilers, controls, fires, pipes and fittings, radiators, sanitaryware, showers and tools. PHEX is supported by the majority of leading manufacturers in the industry and their distributors, both in the North and South of Ireland.

With time at a premium during the working week, the local nature of the shows and the convenient opening times provide the

et al.: BS News BSNews

brings you ...



New Business Introductions



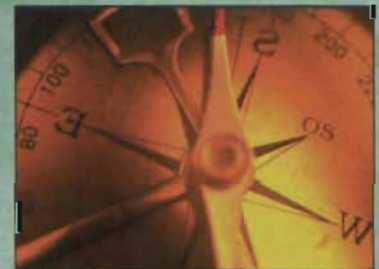
An Eye to the Future



Balanced Comment



Food for Thought



Trend Directions



Global Technology Updates



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Editorial
pat@pressline.ie
Tel: 01 - 288 5003

Copper – The Environment and Health ...



Conor Lennon, General Manager, IMI.

Copper is one of a relatively small group of metallic elements which are essential to human health

Environmental considerations are now a high priority for specifiers. Today, more than ever, they face mounting pressure to select products which minimise their impact on the environment, writes *Conor Lennon, General Manager, IMI.*

Copper systems offer specifiers the best opportunity to use a recycled product ... a very high proportion of copper systems are manufactured from recycled material. Offcuts of material from installation work and copper systems removed from old or refurbished buildings are also returned, remelted and refined, thus helping to conserve the planet's natural resources.

As the issue of drinking water quality continues to cause concern, consumers will increasingly look for systems that provide in-built safeguards.

Copper is one of a relatively small group of metallic elements which are essential to human health. Our daily diet must provide specific trace amounts of copper in order to keep us

healthy. Copper is already available in a range of foods and normal balanced diets.

Copper is well-known as an inhibitor to bacterial growth which affects the quality of drinking water. Biological studies have shown that germs such as E-coli where they exist in the water supply, do not multiply in water in copper tubes. More than 99% of the bacterial population introduced into a copper system will disappear in five hours or less.

The beneficial biostatic properties of copper plumbing systems result from minute traces of the metal that dissolve in water, which not only restricts bacterial growth, but also keeps us healthy.

Between 1982 and 1984, the UK Public Health Authority Service carried out a survey in England and Wales to establish the prevalence of legionellae within the domestic water services of large buildings such as hospitals and hotels. The results indicated that the bacterium was less prevalent in copper systems.

Further research at the Centre for Applied Microbiology and Research, confirmed that copper suppressed the growth of legionellae, while materials such as polybutylene, polyethylene, polupropylene, UPVC and cPVC did not. ■

Noise Control Products by Sound Seal – Acoustical Curtain Systems

Sound Seal acoustical curtain systems offer an effective, economic method of noise reduction in a wide variety of industrial, architectural, community and OEM noise control applications. Acoustical curtain systems can be configured to create total enclosures, partial enclosures, hoods or shrouds, barrier walls and divider partitions.

A wide variety of Sound Seal acoustical curtain panels and curtain support framing options are available from Noise Control Research Laboratories (NCRL), a subsidiary of Ventac Ltd.

In addition to very effective, high-performance acoustical curtain panels, a successful functional acoustical enclosure often requires a wide array of features and options. These include roof-top panels, valances, corner treatments, new windows, ventilation baffles, exhaust fans and a variety of curtain support frame options.

Manufactured from heavy gauge galvanised steel components, the curtain

support framework systems provide an effective, economic means of supporting any of the Sound Seal curtain systems.

The curtain support framework system can be mounted to a ceiling, wall, beams or floor in a wide array of configurations to meet all specifications.

All curtain support framework components are also available in double track configuration to offer "slide-by" access to virtually any point in an acoustical curtain application.

Features

- STC up to 32
- NRC up to .85
- Custom engineered systems for any application
- Quick access to machinery and equipment for operation and maintenance
- View windows for visibility
- Roof panels and ventilation systems available when required
- Easily installed, relocated or modified
- Durable constructions for long service life in severe industrial conditions

NCRL Ltd (Noise Control Research Laboratories Ltd) is a solely-owned subsidiary of Ventac & Co Ltd located at 11 Fitzwilliam Quay, Dublin 2. The laboratory is the only one of its kind in the country. NCRL will also sell acoustic products such as anti-vibration mounts, springs, isolation pads, attenuators, enclosures and sound seal.

Ventac has been appointed the European distributors of the Sound Seal product range and is currently setting up agents in England, Holland, Spain and the Czech Republic.

Contact: Ciaron King, Ventac. Tel: 01 - 667 1077;

Fax: 01 - 667 1055; email: info@ventac.ie Website: www.ventac.ie

- Fire safe and low smoke emissions per ASTM E-84, Class 1

Curtain system models are offered in various styles for optimum solution of application's requirements

Economical alternative to rigid acoustical panel systems



Noise control products by Sound Seal from NCRL, a wholly-owned subsidiary of Ventac

Applications

- Plastic granulators, grinders, pelletisers
- Vibratory feeders and vibratory bowls
- Pumps and motors
- Compressors
- Presses, swaggers, screw machines
- Generators
- Fans, turbines, blowers
- Hydraulic units
- Numerous industrial applications. ■

CIBSE NEWS

CIBSE Celebrity Lunch

The speaker at this year's CIBSE Celebrity Lunch just before Christmas was Michael O'Doherty. Until his retirement, Michael was Senior Partner with Delap & Waller, with whom he spent most of his career, after some interesting times in Africa and Nigeria. Indeed, he regaled the audience with tales from afar, and closer to home, in his usual ebullient fashion, making for an excellent start to the seasonal festivities. This photo report captures the mood of the occasion.



Finn McCool of McCool Controls looking like the proverbial cat that got the cream.



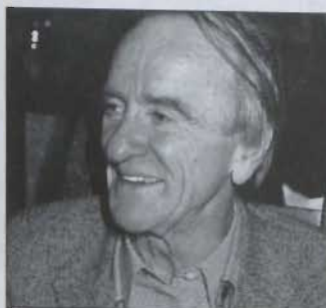
Sean Ascough, CIBSE Chairman, presenting Michael O'Doherty with a copy of Fintan O'Toole's Irish Times' Book of the Century.



Sean Smith and Robert Holland making a case for the moustached brigade!



Rogues gallery! — Greg Traynor and John Cuthbert (standing) with Paddy Clonan and Michael Buckley.



Sean Mulcahy, without whom CIBSE celebrity lunches would not be the same.



John Murray and Margaret Dolan looking very focussed.



No, these glasses are not all ours! ... so claimed Paul Riordan and John Doherty.

Coming Events

Tuesday, 15 February

IT Distribution Systems in Buildings (Cork Region). Speaker: Anthony Levington. Convenor: Barry Leach;

Thursday, 17 February

Educating BS engineers in the new millennium. Speakers: D Byrne/D Clements-Croome. Convenor: Albert Byrne;

Monday, 13 March

Students Awards & President's Prize at DIT Bolton Street. Speaker: CIBSE President. Convenor: Albert Byrne/Sean Ascough;

Monday, 13 March

Simulation-Assisted HVAC Control Research. Speaker: Tom O'Brien. Convenor: Greg Traynor;

Thursday, 13 April

AGM. Convenor: Margaret Dolan.

All activities are at IEI, 22 Clyde Road, Dublin 4.

A Successful Story to Finnish Successful Growth in Ireland!

Retting Warne, Jacobstad in Finland, welcomes the association with Tommy Kelly of Keen Rads and the Rettig Heating Group for whom Tommy distributes the Purmo range of central heating products from his purpose-designed warehouse and office complex in Athlone.

Recognising the growing importance and potential of the Irish market, Retting realised that it was all-important to appoint a professional who had experience of the Irish market and the facilities to carry and distribute stock throughout the country. To date Tommy has delivered significant market share and

Rettig look forward to increasing market penetration for the Purmo brand in the future.

"Tommy has an excellent reputation with the merchant trade for reliability and trust. In this highly-competitive market merchants demand keen pricing, allied to the very best in service and product reliability", says Reijo Haarala, President of Rettig Warne. "Tommy Kelly gives us the means to deliver this level of high-quality service, not just to Leinster but throughout the midlands and taking in all the west coast.

"The combination of the ideal location of Keen Rads — together with substantial stocks — in Athlone, a weekly delivery service from Finland, and an excellent trading partnership with local transport companies, guarantees the best possible service to Ireland's merchant trade".

Purmo radiators are available to suit virtually every possible application and system design, with a total of over 100 models in the range. This versatile and compact radiator can be supplied in both single and double configurations, with heights from 300mm to 700mm, and a choice of lengths varying from 400mm to 2300mm.

The Purmo is an ideal partner for every central heating system boiler, whatever the fuel.



Tommy Kelly, Managing Director, Keen Rads Ireland

Each unit is degreased, phosphated, dipped in primer and stoved before receiving a final epoxy polyester powder coating and final stoving. All units are finished in high-gloss colour white, RAL 9010.

The result is a stylish, compact product, complemented by an efficient heat transfer design, ensuring economical running costs.

The Purmo radiator is guaranteed and certified to EN442 heat output. It is supplied complete and fitted with a replaceable air vent which is a unique feature on top-seam radiators.

The aesthetics of the design, together with the connection options, allows the installer fitting the units to prepare the most suitable piping layout to best suit the demands of each particular situation.

Contact: Tommy Kelly, Keen Rads Ireland. Tel: 0902 78707; 087 - 224 9559.



Purmo compact radiators are now available to merchants throughout the entire country from Tommy Kelly's Keen Rads of Athlone

Danfoss Ireland

Integration Process Completed

Following the acquisition of JJ Sampson & Son Ltd by the Danfoss Group late last year, the process of integrating the company into the parent organisation has now been completed with the announcement of the name change to Danfoss Ireland Ltd. "While the name change is effective from 1 January 2000, the actual process of integration has been ongoing over the last 12 months", says Managing Director John Sampson.

"In the operational sense we are now a fully-fledged subsidiary of Danfoss Group, and not just an intermediary distributor", he continues. "We are now in a position to bring the strengths of being part of a \$2.2 billion global market player to bear on the service we provide to our customers throughout Ireland.

"As a direct factory outlet serving the Irish marketplace we have immediate and unlimited access to the entire Danfoss product portfolio. Equally important is that it affords us instant access to the knowledge base, experience, training, and technical support facilities of the Group. As a consequence, the quality of service provided by Danfoss Ireland is far superior to that of our competitors, right across all the primary market segments we cater for.

"That is not to suggest that the culture of the company has changed. While integrating these strengths into the service we now provide, we have retained the same commitment to customer care and direct market involvement. If anything, this has been reinforced".

With access to such a strong, diverse and all-embracing product portfolio, Danfoss Ireland has re-structured its operational procedures to ensure dedicated, knowledge-based support

across each Division while, at the same time, facilitating cross-Division reference and support where appropriate. Brief details of the Divisional structure are as follows:—

Heating & HVAC

Contact: Brian Maguire, Sales Manager

Danfoss heating control products cover an extremely broad base, catering for virtually every conceivable domestic, commercial and industrial requirement. Characterised by state-of-the-art technology and innovative design concepts, the emphasis is very much on automation and energy-conscious management and control solutions. It is not merely about having specific products for a particular purpose, but rather the selection and application of product — or a combination of products — to achieve the required solution.

In this respect consultation, advice and technical support are essential.

Industrial Process & Applications

Contact: Ed Keating, Sales Manager

Because of the diverse requirements of process industries such as dairy, food and beverage, pharmaceutical, etc, applications knowledge is critical if cost-effective, energy-efficient solutions are to be devised. Danfoss Ireland industrial process and applications personnel are highly-qualified and totally familiar with the needs of the various specialised industry sectors.

Refrigeration & Air Conditioning

Contact: Dave Killalea, Sales Director

Refrigeration is a very precise and defined marketplace which demands knowledge, experience, technical know-how and understanding. Danfoss is the European market leader in refrigeration controls and systems. This standing is not based on product alone, but more on the



John Sampson, Managing Director

manner in which quality Danfoss product is used to devise optimum control strategies for all types of refrigeration applications.

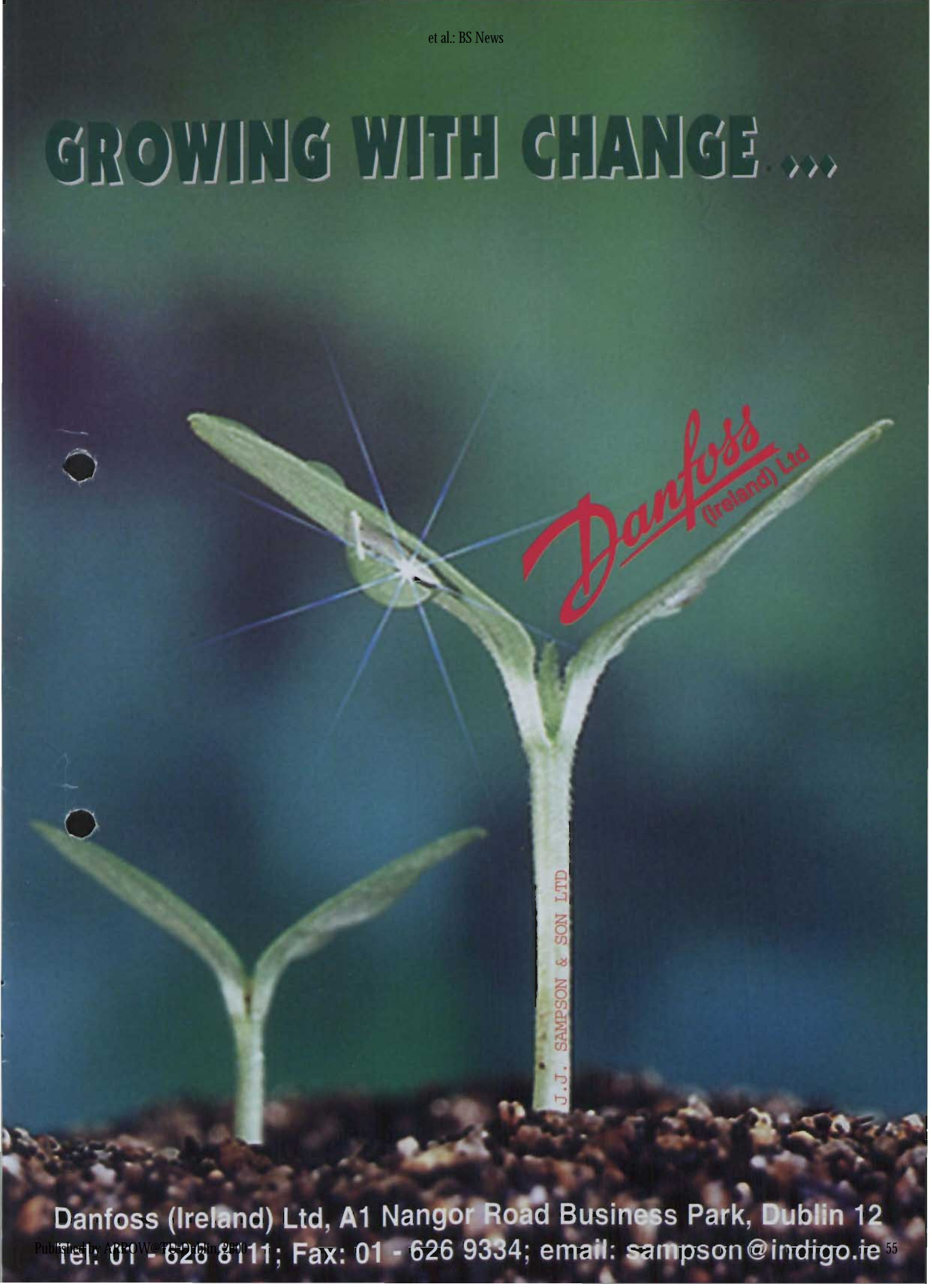
After-Sales Support

Contact: Bruce Higgins, Service Centre Manager

After sales service and technical support is provided by a team of highly-qualified, experienced engineers who undergo regular training and educational updates on a structured bases. Part of the programme is conducted in-house at Danfoss Ireland's own training facilities in Dublin, while the remainder is carried out at the purpose-designed facilities at Danfoss Group's headquarters in Denmark. The services provided by this Division are not restricted to post-sales installation. More often than not the technical support personnel are instrumental in helping to arrive at the optimum design solution in the first instance.

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GROWING WITH CHANGE ...



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