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H & V News

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IDEAL VICEROY Mk. 3 Oil Fired Boiler

Contact—
P.J. Matthews + Co.

STELRAD GROUP

P.J. Matthews & Co. Ltd.
the plumbing and heating people—

134/135 Lr. Baggot Street, Dublin 2. Phone (01) 789055
Matthews Corner, Swords Road, Santry, Dublin 9.
Phone (01) 373606

Johnstown, Ballytruckle, Waterford. Phone (051) 721711/4
Tipperary Road, Ballysimon, Limerick. Phone (061) 43402

IDEAL VICEROY Oil Fired Boiler

P.J. Matthews & Co. Ltd.
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Telephone: (01) 789055

Building Services News, Vol. 21, Iss. 7 [1982], Art. 1
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DOI: 10.21427/D7170X
Our cover this month shows radiators incorporated into the design of a modern school. The radiators were supplied by Runtalrad, the Services Engineers were McArdle, McSweeney, O'Malley and the Mechanical Contractors were FKM Ltd. The building is featured as it won the Plan Magazine "Building of the Year Award" and was highly praised for its sensible use of materials, i.e. central heating pipes were exposed in many areas to avoid expensive ducts but at the same time the pipes were unobtrusive.

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IHVN, July 1982
A Condensed Guide to MANOTHERM activities

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Good Wood Guide
A very valuable little guide has been recently published on the subject of good wood. The idea is that it looks at the whole business of wood as a fuel and the types of stores you can and should put it in. It also describes all the common trees, the various types of wood they produce for burning and for other purposes. The publisher puts a price of £3.00 for two copies post in Ireland or if you want a quantity, say, for promotional use, contact Harms Press Publishers, Thornage, Holt, Norfolk, NR 257QG, England, Tel. Milton Constable 861218.

Latest Energy Conservation Booklet on Steam
The latest in a series of booklets on energy conservation issued by the Department of Energy and prepared by the IIRS has just been published. It studies the problems of steam distribution systems and looks at such topics as drainage of mains, air venting, trapping, flash steam discharge, insulation, temperature control and also looks at some case histories. If your business involves steam a very worthwhile read.

New Association for the Irish-Owned Oil Industry
The five principal Irish independent oil importers have come together to form a new association. The role of the Association is to represent both to Government and to the public the distinctive views of the developing Irish owned companies in an industry formerly dominated by multi-nationals.

The founding members of the new Association are Campus Oil Company Ltd., Estuary Fuel Ltd., McMullan Bros. Ltd., (Maxol), Ola Teoranta, Tedcastles Oil Products Ltd., (TOP).

Independent Petroleum Association will be stressing the benefits to the economy of a strong Irish-owned sector in the oil industry. These benefits include:
- Proven security of supply
- Increased competitiveness leading to reduced consumer prices
- Reduced market dominance by a small number of multinational oil companies
- Increased oil storage capacity.

Cork Branch for IDHE
The inaugural meeting of the IDHE Munster Branch took place in the Silver Springs Hotel, Cork, on the 17th May. The following officers were elected: Noel Harte, Chairman; Mervin Black, Hon. Sec. & P.R.O.; Tony Crowley, Treasurer.

They are supported by a very enthusiastic committee among which were Robert Beattie, Richard Sullivan & Brian Ford.

The Chairman of the I.D.H.E., Mr. Victor Madigan and the Hon. Secretary Mr. Harold Pattison attended this meeting and promised the support of the Irish Branch to help them in their early days, and also giving them a full backup at all times.

The Munster Regional Group also held a Press Reception on 14th June in the Imperial Hotel Cork after which a number of eligible members from the area were recruited.

We wish them all the best for the future.
**NEWS**

**Association of Solid Fuel Cooker Distributors Formed**

An Association of Solid Fuel Cooker Distributors has been formed in Dublin recently.

The Association brings together the leading distributors of solid fuel cookers in this country.

"Our objective is that all distributors in Ireland should be members of the Association," a spokesman said in Dublin. "To that end, all distributors who are not already members are being sent invitations to join."

The new group will seek to inform national standard specifications for solid fuel cookers by means of consultation with relevant bodies such as the IIRS. It will also look towards the creation of a register of qualified installers and for agreed standards in relation to chimneys.

One of the organisations making up the Association commented yesterday that the creation of the new group was overdue.

"The fact is," he said, "that most of our members have up to twenty years experience of supplying cookers, and they obviously have a great deal of expertise to contribute when it comes to upping national standards of equipment and installation."

Chairman of the new Association is Mr. Michael Harbourne, A.H.L. The Association member companies include: Campbell & Cooke, McKenna Heating, MVD, AHL, Grant Aid Ltd., Wamsler Ireland, Hamco Enterprise, Sean Murphy Ltd., Glengorm, Combes Engineering.

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**Bosch 2-Kilo Rotary Hammer**

The introduction of the new Bosch 2-Kilo rotary hammer on the Irish power tools market fills a very important gap for tradesmen and craftsmen in Ireland. In the past, when drilling into concrete they have had to choose between an ordinary impact drill which in many cases is not powerful enough, or a heavy weight hammer drill which is too awkward to handle. The new Bosch 2-Kilo rotary hammer is light and easy to use, but has the powerful technology of an electro-pneumatic hammer drill. The lightweight drill is particularly useful where there is a lot of overhead drilling required such as ceiling assemblies.

The new product was launched at a reception in Blooms Hotel, Dublin on Tuesday 25th May, '82 in the presence of Mr. Chur, the European Sales Manager of Bosch Power Tools.

Bosch products are distributed in Ireland by Beaver Engineering Ltd.

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**Cork Gas Training Course**

Peter Michael of Cork Gas has recently told us of their plans to set up a training course open to fitters and plumbers in the Cork area. The course will specialise in gas heating and will last for six months on a two nights a week basis. Subjects covered include studies in gas installations, gas engineering, fault diagnosis and repairs. Award certificates will be issued at the end of the course but anyone interested should contact Peter very soon as there are only 30 places on the course.

---

**Lingard Industrial Holdings Ltd., of Westminster Road, Wareham, Dorset have purchased the centrifugal fan business of Standard & Pochin Ltd., and the company will now operate from the Group's address in Wareham.**

Dan Chambers Ltd., who are distributors for the Duro-Dyne range of duct work accessories have announced that a comprehensive range of duct work accessories have announced that a comprehensive range of flexible connectors, vane rail, self-adhesive insulation hangers, damper blade kits and regulators, drill screws, portable pin spotter and girder clips are now available ex-stock.
A major British Manufacturer of Heating and Air Conditioning equipment requires a Representative on a Sales Agency or Sales Agency/Distributor basis for the Republic of Ireland.

Candidates having a successful record in selling, preferably within the Heating and Air Conditioning Industry will be given consideration for this position.

The product range is both wide and well respected within the industry, so that the achievement of Sales Targets will provide attractive earnings to the right applicant.

Please apply in writing giving full details of career experience and any other Agencies being handled to:

Mr M J Welch, Sales Manager — Midlands
F H Biddle Limited, Newtown Road, Nuneaton, Warwickshire, CV11 4HP

THE BIGGEST RANGE OF VENTILATION IN THE NATION — FEATURES:

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With Euroseries plate mounted and Eurofoil cased axial fans you are in control — because of the high degree of precision, both single and 3 phase are suitable for stepped or fully variable speed control, allowing you to vary airflow to suit conditions.

And they are compact, having a sleek profile, just look at our cased axial, no long or short case versions here, just one — super slim fan.

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Designed by Fabian on advanced lines, Dualux promises you a great deal.

Sauter "Revolutionary" Time Switch

A revolutionary new micro-electronic time control switch which can be programmed for up to 168 different switchings a week is being launched in Ireland by Sauter Automation Limited through its agents Dwell Controls Limited of Dublin.

Called the Sauter Memotime, this new time control switch is as easy to operate as a pocket calculator and is so reliable that Sauter is offering a special 10 year free service guarantee.

Combining the best of British and Swiss micro-technology, the Memotime enables a complex series of timing commands to be programmed through a single unit which would previously have required a range of mechanical time switches. Indeed, so versatile and economical is the Memotime that Sauter expect it to have wide appeal for industrial, commercial, domestic and local authority applications.

Attractively designed to a DIN standard, the Memotime has 24 memory addresses which allow 168 switching times to be set with a minimum interval between switchings of only one minute. A running reserve also ensures that the Memotime will continue to operate for up to 48 hours following any power disruption.

Accurate to within one second, the Memotime is also extremely simple to operate having 12 pocket calculator-like buttons with which programmes can be set in detail. Instructions on how to operate these are also printed on a plastic drawer which slots into the casing of the device for quick reference.

To further aid the user, an illuminated panel on the face of the Memotime shows a constant read-out of the day of the week, hours and minutes as well as the on or off switching status.

Further details of the Memotime, including a full colour leaflet, can be obtained from Dwell Controls Limited, 36 Cookstown Industrial Estate, Belgard Road, Tallaght, County Dublin. Telephone Dublin 511144.

Agents in the Republic of Ireland
K. M. REYNOLDS LTD.
Unit 2
D.C. Industrial Estate
Knockmitten Lane
Naas Road
Dublin 12
Tel: 520333

Memotime, the revolutionary new micro-electronic time control switch being launched by Sauter Automation Limited.
Furnaces Conference for Birmingham

The 4th Furnaces, Refractories, Heat Treatment & Fuel Economy Exhibition is being held in Halls 6 and 6A, National Exhibition Centre, Birmingham, England, from 27th September to 1st October 1982. The exhibition is sponsored by the Society of Industrial Furnace Engineers; the British Contract Heat Treatment Association; and Metallurgia — the journal of Metals Technology, Metal Forming and Thermal Processing.

Furnaces will provide technologists, managers and buyers from all over the world with a unique opportunity to view the very latest plant, equipment, fuel, refractories and the diverse services associated with furnace technology and thermal processing.

Only a few minutes walk away from Halls 6 and 6A, at the Hotel Metropole, a two-day conference will be held to discuss “Improving Efficiency in Thermal Processing” on the 28th and 29th September. Eminent speakers from the industry will cover this essential topic in four detailed sessions:
1. Materials Handling
2. Improving Energy Efficiency
3. Innovation in Thermal Processing
4. Furnace Updating

Full details of the "Furnaces '82 exhibition and conference can be obtained from Colin Dann, Furnaces '82, Queensway House, 2 Queensway, Redhill, Surrey, RH1 1QS, England. Details of stand space can be obtained from George Kynicos at the same address.

We Got it Wrong

In our catalogue of the Gas Ireland exhibition, we mixed up two well known Andys in the trade, the entry for Taney Distributors should of course list Andy Kavanagh and not Andy Gallagher as stand executive for Taney Distributors Ltd.

Hall-Thermotank Ireland Limited

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IHVN, July 1982
New Irish-Designed Energy Saving System

Irish engineers at Westinghouse Electronics and Control Plant in Shannon have designed a new low-cost, energy saving boiler trim system, using micro-processor technology, which will be manufactured in Shannon and also by the parent company in the United States for sale throughout the world.

The development of the Minitrim, as the system is known for short, is very much a local story, which is contributing to the strategic growth of the Westinghouse Plant. The design team of Tim Cummins, Noel Barry, Jim Ryan and Padraig Barry, began work last August. They received a research and development grant from Shannon Free Airport Development Company towards the project, and were supported in their work by Dr. Eamon McQuaid, one of the Westinghouse Research Professors at NIHE, Limerick. The packaging design of the Minitrim was undertaken by the Kilkenny Design Centre, under the direction of Oliver Hood.

The first Minitrims, selling at approx. £1,500 sterling (this includes a sensor, a cable and an electronics unit) will be delivered to customers in September. Sales in excess of 1,500 are projected in Europe for 1983. It's claimed that the improvement in combustion efficiency, with fuel savings and reduced maintenance costs, pay back the cost of the unit typically in less than 12 months.

This is the first low-cost oxygen unit developed by Westinghouse. Intended specifically for combustion systems of the smaller type, the Minitrim is designed for steam or hot water boilers in the range of 5m Btu upwards. Such installations can be found for example, in hospitals, shopping centres, apartment complexes, large hotels, universities, dairies, breweries, laundries and with other operators of small package boilers.

The Minitrim microprocessor-based controlled system can now be easily retrofitted to replace the very often non-operating ineffective sampling systems or portable units. The Controller is easily characterised to suit individual boiler parameters using an integral keyboard for oxygen level, set point, load index, etc. Minitrim has a built-in dual fuel facility for boilers burning gas or oil.

Boilers trim control is obtained by signals derived from a zirconium sensor (a high technology developed by Westinghouse) which has the property of generating a voltage in inverse proportion to the amount of oxygen in the flue gas passing over it. A trim actuator is then operated through signals received from the electronic package in response to conditions sensed by the zirconium probe, adjusting an air/fuel ratio linkage to maintain optimum combustion efficiency. Installation of the system is a simple operation and easily commissioned by Westinghouse trained local sales and service organisations.

The Minitrim was enthusiastically received when displayed for the first time at the Hevac exhibition in Birmingham.
**CIBS Golf Outing**

**NEWS**

**Nu-Way Benson Bought Out**

The management of Nu-Way Benson Ltd., makers of oil and gas fired warm air heaters and ancillary products, are buying their company from the Wolseley-Hughes group. The company now trades as Benson Heating Ltd. It is based at the existing, well-equipped 95,000 sq. ft. factory in Knighton, Powys.

The new owners plan to continue the current range of heaters for industry, agriculture and horticulture while introducing more models to maintain the company's position as one of the industry's leaders.

Commenting on the new company, John Wheller, managing director, said: "When Wolseley-Hughes decided that its resources should be concentrated elsewhere rather than in the manufacture of industrial, agricultural and commercial heaters and dryers at Knighton, we decided that we wanted to keep our people employed here, so we were delighted when Wolseley-Hughes Ltd. accepted our offer. They have been most helpful."

**LECTURE**

On Wednesday, 22nd September, at the Burlington Hotel, Dublin, Elga Products Limited will be holding a free, illustrated lecture together with a private exhibition covering all aspects of water treatment techniques and their application in industry. Invitations may be obtained from: Mrs. Sheila Pitter, Elga Products Limited, Lane End, Nr. High Wycombe, Buckinghamshire, Tel: (0494) 881393, Telex: 85316.

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**Thank You**

"To the Sponsors of the CIBS Golf Outing.
I would like to thank all those people who so generously sponsored prizes for our Golf Outing and Dinner on 28th May.

The Outing was a great success and the profits from it have been sent to the CIBS Benevolent Fund.

Many Thanks,
Eamon O'Brien
Chairman CIBS — Republic of Ireland Branch."

---

**CHART FROM ARMSTRONGS**

The Insulation Products Division of Armstrong World Industries Ltd. have produced a new A4 size AF/Armaflex heat loss chart showing typical savings which can be made when pipes are insulated with various thicknesses of AF/Armaflex — a flexible closed cell pipe insulation which can make a substantial contribution to energy saving by achieving major reductions in heat loss from pipe work.

The heat loss chart, shown in graphical form, enables actual heat losses in watts per metre to be read off a vertical axis, for bare pipe insizes from 15mm to 54mm O.D. and the same pipes fitted with AF/Armaflex in 9mm, 13mm, 19mm and 25mm wall thicknesses.

AF/Armaflex is an efficient insulating material with a thermal conductivity value of 0.036W/M°C at +20°C and represents an effective means of reducing heat loss from hot pipes.

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—the perfect combination from THERMOX.

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Sandyford Industrial Estate, Leopardstown Road, Foxrock, Dublin 18

Telephone: 01 - 953301 Telex: 24316 foss ei

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**Published by ARROW@DIT, 1982**
WHO REPRESENTS WHOM?

Directory Addendums

The following are changes we have received for our 1982 edition of "Who Represents Whom" and if there are still any outstanding entries we will publish them as soon as we receive them.

Address and/or telephone changes:
Halpin & Hayward Ltd.,
76 Roebuck Rd.,
Clonskeagh, Dublin 14.
Tel: 884687 Telex: 31158

Brendan O'Gorman Ltd.,
10 Sutton Park, Dublin 13.
Tel: 323361 Telex: 32283

Agencies Changes:
Section A4 & A5 - Radiant Superjet -
agents: Superjet Ireland Ltd. Tel: 742855.

Coolheat Ltd., 16 Railway St.,
Lisburn, no longer represent Hall-Thermotank Products Ltd.

Turbo Dynamics Ltd.,
Clondalkin Industrial Estate, Clondalkin, Co.
Dublin. Tel: 32875 wish is to list the following as equipment they distribute.

Section B5 — Airscrew Howden Ltd., Davidson & Co. Ltd., Sirocco, Turbofan.

Section B4 — Turbo-vac, Torit Ltd., Joy, Western Precipitation;

Section D5 — Actair;

Section B11 — Turbo Exx;

Section F7 — B.V.C. (British Vacuum Cleaner) Abrasion; Resistant Linings Ltd.; Skega — A.B., Rota-Val Ltd.
Hall-Thermotank Ireland Ltd. have asked us to make the following changes.

Their phone number is 580311. We incorrectly listed Fridge Spares Ltd. as agents for Deltaclima in sections B1, B3, B8, B10, B11, these sections should of course have been credited to Hall-Thermotank Ireland Ltd. The following should also be added to the directory as represented by Hall-Thermotank Ireland Ltd: Qualitaire in sections B3, B8, B11, D4. Bitzer in sections D2, D3, D4, D8. Grasso in sections D2, D3, D8. Witt in sections D2, D8. Sterne in sections D2, D3. In sections D1, D3, D4, D5, the entry for Hall in sections D1, D3, D4, D5 should read Hall-Thermotank. The entry in Section D3 for Veebloc should be deleted. In Section D6 we incorrectly listed Fridge Spares as agents for Deltaclima equipment, it should have read Delta RA products.

D.P. Engert & Co. Ltd.,
7 Ardee Rd., Dublin 6,
Tel: 977531, Telex: 24289, wish us to list the following as equipment they distribute.

A3 — Clever Brooks;
A10 — Idrorame, Alcon, Drum & Plenty, Stuart Turner;
B5 Mechavent,
Greenwood Airvac;
B7 Greenwood Airvac;
C4 P. Van Leevwen Jr.'s;
B.K.L. Alloys Ltd;
C6 Hattersley,
Auld, Crosby, Worcester & Keystone;
D8 Comprimband;
C7 Stuart Turner,
Idrorame, Alcon.

IF CENTRAL HEATING IS BURNING A HOLE IN YOUR CUSTOMER’S POCKET, GIVE HIM A GAELWOOD the only thing it won’t burn is his money!

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Or he may prefer the Conserva “core-type” warm air system boiler, as approved by the NCB, which burns all kinds of solid fuel.

For full details plus name of your nearest stockists write today to:
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Name: ____________________________
Address: ____________________________

GAELWOOD
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CONSERVA
Solid Fuel Warm Air Boiler
Starlite Taps from Armitage

The Starlite taps range from Armitage Shanks has been completely redesigned to give the widest choice whilst at the same time, the merchant the lowest stockholding.

A smoother modern shape has been adopted for the pillar taps and a single flow 200mm basin mixer has been added to the already extensive range. Nine alternative handwheels are now available to cover the middle and luxury markets, from standard chrome, the handwheels include simulated onyx in three colours, veined oyster an exclusive pearl look and up-market red, brown and green enamelled tortoise-shell.

Prices have been reduced and all handwheels will be supplied separately enabling merchants to effectively cover any choice with the minimum stock. A further bonus is that seven of the handwheels are in one size to suit basin or bath. The presentation and packaging of the range, handwheels and fittings, has also been completely redesigned.

A further important development is the replacement of gold plating with stunning Lustron. Still using gold to give the expected luxury appearance the new process breakthrough costs little more than chrome finish. As good as gold at nothing like the price.

Solara — an entirely new range of inexpensive all metal taps has now been introduced by Armitage Shanks. Available in chrome finish only, the range will comprise basin and bath pillar taps, a 200mm basin mixer, basin and bidet monobloc, bath/shower mixer and a deck mounted bath mixer. All to BS5412 they offer exceptional value for money.

Sanbra Fyffe's Eirline

New from Sanbra Fyffe is the Eirline range of bathroom and kitchen taps and mixers. Introduced to counter the flood of imported brassware on the market, the new range consists of attractive basin and bath pillar taps for the kitchen, and, for the bathroom, a choice of bath mixers with shower attachment or an independent manually operated shower control valve with attachments.

The trade name Eirline was chosen because Sanbra Fyffe want to emphasise the 'Irishness' of the new range, which is manufactured in Dublin and conforms in every respect to B.S. 5412. The Eirline range is available from builders and plumbers merchants throughout Ireland.

“Hot” Fan from Airline

A high temperature, centrifugal ventilation fan is the latest addition to Airflow’s Category I range.

The 83F2WXL will operate on the hot side of heat exchangers giving ventilation equipment designers greater freedom with design layouts. It is also useful for removal of hot stale air in buildings where high temperature processes are carried out and is suitable as a superior fan replacement in many domestic electricaire units.

The fan is a compact, double-inlet, double-width unit designed for continuous use in ambient temperatures of up to 70°C. The integral motor operates from a 240V single phase supply and is specially wound to achieve an internal temperature.
NEW PRODUCTS

rise of only a few degrees. The sealed ball bearings are lubricated-for-life with high temperature grease.

Performance of the 83FW2XL ranges from 50 litre/s against 140Pa to 350 litre/s against 25Pa (105 cfm against 0.56 in. wg to 740 cfm against 0.1 in. wg). The scroll case is of welded construction finished in heat resistant black stove enamel.

As with all Category 1 fans, the 83FW2XL is immediately available from stock from any of Airflow’s nationwide chain of stockists. Details from McKenna Ireland Ltd.

Windhanger Cooker from Grantaid

The new Windhanger central-heating cooker, from Grantaid Limited, has been developed to meet the increasing demand for a wood/turf/solid-fuel cooker with a sensible central heating performance — 100,000 Btu max.

The unit is a multi-fuel boiler allowing the user to burn wood, turf, coal, anthracite, coke and manufactured fuels. The grate in the burning chamber is adjustable in height so that the size of the chamber is altered and the output of the stove can be varied to cope with different requirements throughout the year.

The unit is equipped with a thermostatic control for automatic regulation of the rate of burning, two hob covers, a warming drawer and a double-glazed see-through over door with a thermometer. There is also an oven by-pass and boiler temperature gauge.

The Windhanger has four possible flue outlet positions — no more stocking left or right hand oven options — and all at a sensible height. The unit is designed for easy access for cleaning by the householder and for any servicing that may be necessary; for example the complete boiler can be removed and replaced without moving the cooker or disconnecting pipework.

The Windhanger is supplied in brown with white as an option and all new flue gas monitors are lubricated-for-life with refrigerant flow check valves is designed to be brazed into the refrigeration system. A variety of connection sizes and throughputs are available between 3.5m to 30mm O.D. (1.6 to 250 l/min). The bodies are brass and connecting tubes copper.

Details from RSL Ireland Ltd.

Refrigerant Flow Check Valves

The Ranco ‘VN’ Series is a family of check valves designed to permit refrigerant flow within a refrigeration system in one direction only. Some of the valves are “ball” valves and some are “needle” type. These products can be used in any refrigeration system where direction of flow is important. Typical applications include heat pumps, to bypass the expansion devices in heating or cooling mode; multi-evaporator refrigeration systems, to avoid oil/refrigerant migration; and any system where refrigerant flow reversal must be avoided. The standard range of check valves is designed to be brazed into the refrigeration system. A variety of connection sizes and throughputs are available between 3.5m to 30mm O.D. (1.6 to 250 l/min). The bodies are brass and connecting tubes copper.

‘Safe’ Steam Trap Tester

Dawe Instruments Limited have extended their highly successful Steam Trap Testing and Leak Detection Range, by the inclusion of a Steam Trap Tester which has been granted an Intrinsic Safety Certificate Number EX76067/2/B for Group II C gases and temperature Class T4 BASEEEFA specifications SFA-2012-1972.

The Type 8902C(IS) is believed to be the only Intrinsically Safe Ultrasonic Leak Detector available for steam trap testing.

The Type 8902C(IS) instrument when used with the Type 8902-20C(IS) Contact Probe detects the ultrasonic energy generated by steam passing through a trap. The energy level is displayed on a meter or is used to drive headphones. Defective traps can be identified by observing or listening to the passage of steam and condensate through the trap as demonstrated by the ultrasonic energy.

This unit is marketed in Ireland by The Instrument People, I.I.L. Dublin & Cork.

Thermox Analysers

Thermox introduces two new flue gas monitors designed specifically for smaller boilers and furnaces. The Thermox CV-1 combustion oxygen analyzer is a complete, low-cost instrument for measuring excess oxygen in flue gas. When used on gas or oil-fired packaged boilers or small furnaces, the CV-1 can help improve combustion efficiency and reduce fuel usage. The Thermox CV-IC oxygen/combustibles analyzer is similar to the CV-1 but has an integral combustibles detector. By monitoring unburned combustibles (CO and H2) in addition to oxygen, the CV-IC can determine the minimum level of excess air required for most efficient combustion.

The simple design of both CV analyzers makes installation easy. No reference gas or aspirator air is required. And all working parts are readily accessible for quick maintenance and servicing with basic handtools.

Both the CV-1 and CV-IC can be used with the Thermox Air-Mizer II control system for closed-loop oxygen trim control on oil or gas boilers with jackshaft or mechanical parallel positioning control systems.

For further details contact: Foss Electric (Ireland) Limited, Sandyford Industrial Estate, Foxrock Dublin 18, telephone 953301.
Hevac

During this current recession Hevac Ltd. have found that top quality products will increase rather than decrease sales. When money is in short supply, hard pressed consumers will shop around and insist on the best value available. Selkirk Metalbestos prefabricated flues have proved over the last few years that they are definitely the best value around. The fact that sales of Selkirk have significantly increased last year speaks for itself. Selkirk manufacture a wide range of prefabricated flues for every conceivable application and stocks are readily available through merchant outlets on a country wide basis.

S.M. flue is a twin wall stainless steel chimney for all flue types, available in seven sizes from 125mm to 350mm.

S.T. flue, a triple wall insulated stainless steel lined chimney system for large fuel plant, is available in 11 sizes from 250mm to 914mm.

I.L. flue, a twin system suitable for domestic and small commercial gas fired appliances available in three sizes from 102mm to 152mm.

Q.C. flue, a twin wall gas vent system for commercial and industrial gas fired installation, available in ten sizes from 178mm to 610mm.

S.W. flue, a single wall flue pipe for domestic and small commercial gas fired air heaters and appliances, available in eight sizes.
from 125mm to 350mm. The new S.C. safety chimney is an advanced design twin-wall stainless steel chimney encasing high grade mineral wool insulation.

Designed to give protection against the risk of chimney overheating, the S.C. chimney ensures rapid temperature rise and reduces the risk of condensation and the build up of tar and creosote deposits — the major factors leading to chimney fires and corrosion within the chimney.

S.C. is suitable for external and internal installation and all fuel, particularly solid fuel, and woodburning appliances which are liable to user abuse. Should chimney overheating occur the S.C.'s construction ensures that it will stand the resultant high temperatures. The chimney is tested up to 540°C under continuous firing, 760°C under short firing and 1150°C for repeated chimney overheating conditions of short duration. It is available in five diameters from 125mm to 250mm to suit most commercial and small industrial installations, room heaters and stoves.

It has a structural support system which employs’ common components across the range of sizes to keep specification, supply and erection as simple as possible.

Every Selkirk Metalbestos chimney system has a complete range of accessories and fixings for rapid assembly, and where relevant all chimneys comply with British Standards and current building regulations and are approved by the British Gas Corporation.

Monodraught

One of the most common problems associated with chimneys and flues in Ireland is down-draught and poor combustion due to exposed and turbulent situations. The recent introduction of the Monodraught chimney enables any conventional flued boiler, whether gas, oil or solid fuel, to be converted to a balanced-flue condition, thereby completely eliminating the effect of down-draught. The Monodraught chimney is only 2ft. (600mm) high and can be used for single storey boiler houses eliminating the need for tall brick or prefabricated chimneys to the top of the adjoining roof showing a saving of many hundreds of pounds. The Monodraught flue consists of a number of pre-cast concrete blocks with a central flue core surrounded by four air ducts with the intakes sited directly under the chimney capping. Provided the boiler is in a sealed boiler house a balanced-flue condition is provided since the air inlets and the flue outlet are in the same pressure zone and the system is therefore "balanced" at all times quite regardless of outside wind conditions. The only requirement is that the chimney is sited one metre away from any higher wall or building. In a cross wind situation the wind is simply channelled down the air ducts on the windward side of the chimney and any excess air is vented on the leeward side.

The very short chimney height ensures that the products of combustion leave the Monodraught flue at the highest possible temperature and velocity and the products of combustion are so dry and buoyant that they are quickly dissipated within 2-3ft. of leaving the flue outlet.

Although the main advantages of the Monodraught system are apparent more with the larger commercial and industrial installations, even the domestic Monodraught installations are considered immeasurably better than the traditional horizontal balanced-flue outlets.

Five sizes of chimney are available for boilers of 100,000 Btu/hr up to 2,000,000 Btu/hr capacity. The Monodraught chimney will soon be available from local stockists throughout the Republic of Ireland.

Since stable combustion conditions are created, the boiler will also run far more efficiently resulting in reduced maintenance and running costs as well as reducing pollution caused by poor flueing conditions.

The agent for monodraught in Ireland is Pat O’Donovan of Lisheen, Elton Park, Sandycove, Co. Dublin, telephone 803771, and further information is readily available. Mike Taylor of General Heating Co. will be pleased to deal with enquiries in the Galway area.

BSS (N.I.)

Whether you are building or specifying for new housing developments, or faced with any size housing modernisation programme, factory built chimneys from ICL are the answer.

ICL products are the result of years of research and development in Canada, the USA and Europe, and were the first to be developed, and produced in the United Kingdom.

ICL installation costs can be half those of traditional bricks and mortar construction and the chimneys can be built in at any convenient time during the construction schedule.

ICL chimneys meet and
Steel Chimney Stack Manufacturers

Turnkey Design

Manufacture & Installation of Free Standing Single & Multi Core Chimney Stacks

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FAST INSTALLATION

MAXIMUM EFFICIENCY

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Building the New or modernising the old Oil, Gas or Solid Fuel

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Class 1 chimneys are manufactured to meet and exceed BSS 4546. New incorporated in current building regulations.

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CHIMNEYS AND REFRACTORIES

exceed stringent Agreement Board tests and are manufactured to comply fully with BSS 4543. Extensive use of stainless steel, galvanised or PVC-protected steel, and moulded mineral wool insulation has enabled the chimneys to withstand the most arduous conditions for many years, including the maximum 1800°C temperatures generated by solid fuel appliances.

Class 1 chimneys are manufactured to meet and exceed BSS 4543 now incorporated in current building regulations. ICL chimneys are a must for your next project so make sure you have all the facts by writing now to their stockist/agents for N. Ireland, BSS (N.I.), Ballysillan Industrial Estate, Ligoniel Road, Belfast BT14 8EZ Telephone: 0232-740221.

Parkastack

Parkastack is a new lightweight masonry block Class 1 chimney system designed by Park Sectional Insulating Co. Ltd. to be built at the same rate of construction as the wall of which it is part and requiring no special expertise other than normal bricklaying skills. Full scale pilot installations have proved to be completely successful in terms of both practice and performance.

The Parkastack system comprises a range of precast lightweight concrete blocks that are manufactured to tolerances required by BS 2028/1364: 1968 “Precast concrete blocks” enclosing rebated refractory concrete liners and to dimensions compatible with standards wall blocks and bricks for ease of bonding and construction. The blocks are made with lightweight aggregates and ordinary Portland cement, while the integral liners are manufactured from kiln burnt aggregates and High Alumina cement. In addition to the rebate of the liner, the main body of the block also includes a socket and spigot which is both reversed and stepped with that of the liner.

The main part of the blocks may be bedded in the mortar being used for the surrounding masonry of the building, but the flue liners should be jointed in High Alumina cement compound — available pre-packed from Park Sectional — in order to comply with good construction practice.

Standard blocks include right and left hand bonding blocks, slab loadbearing, cavity closure, corbel blocks, coping caps and 135° and 150° offset blocks.

Parkastack complies with all Building Regulation requirements for a Class 1 chimney system.

Park Sectional products are distributed in Ireland by the following companies from whom further details and prices etc. are freely available:

Republic of Ireland: Heating Distributors Ltd., 145-7 Richmond Road, Dublin 3, Tel: Dublin 375144/5.

Northern Ireland: KTK Heat Conservation (NI) Ltd., Baloo Way Industrial Estate, Bangor, County Down, Northern Ireland, Tel: Bangor 62841/5523.

Class 1 chimneys are manufactured to meet and exceed BSS 4546. New incorporated in current building regulations.

Your Symbol of Quality

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PREFABRICATED CHIMNEYS FROM HEVAC

Selkirk Metalbestos installed within windshields at Beaumont Hospital, Dublin and supplied and installed by HEVAC LTD.

MAIN STOCKISTS IN REPUBLIC OF IRELAND FOR SELKIRK METALBESTOS

- Twin wall stainless insulated flue for solid fuel appliances. Range 5" - 14" I.D.
- Single wall stainless flue for gas and oil fired heaters, warm air blowers and gas fired ceiling heaters. Range 5" - 14" I.D.
- S.T. chimney system for venting gas, oil or solid fuel plant — industrial and commercial. Range 16" - 36".
- Q.C. gas vent system, twin-wall galvanised steel and aluminium vents for commercial and industrial gas fired installations. Range 7" - 24" I.D.

Extensive stocks held at our Dublin and Cork warehouses.

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Catalytic heating is the result of intensive research on the effectiveness of catalysts in promoting the reaction of combustible gases with oxygen or air to produce heat. There is no flame to create a hazardous situation and a catalytic heat can operate efficiently on low cost natural gas, butane or propane.

The use of catalytic heaters has been approved and accepted in dozens of industrial, oil and gas applications.

How the Catalytic Principle Works

The normal ignition temperature of natural gas (80%) in air (20%) at atmosphere pressure is given as 1,260°F. In the presence of the catalyst the reaction takes place with sufficient velocity to start a chain reaction at a temperature of 225°F. Thus, if natural gas is brought into contact with the catalyst at 225°F, in the presence of oxygen, it is oxidized to carbon dioxide and water vapor. Sufficient heat is, therefore, evolved to raise the temperature of the bed of the heater and will continue the oxidation as long as gas and oxygen are supplied.

No flame is produced under these conditions since the gas are well below the ignition temperature (1,260°F). However, approximately the same amount of heat is produced as would have been if the gas had been burned in the normal manner.

The thermal efficiency of a catalytic heater is much better than a conventional heater. In the catalytic heating principle, a considerably larger proportion of the heat produced is radiant heat of wave lengths of 2-16 microns and much less heat is required to heat the evolved gases. Practically no heat is utilised to heat the large volume of nitrogen associated with the oxygen as in a conventional heater because most of the heat content of the carbon dioxide and water is recovered as radiant heat.

In a catalytic heater, the temperature attained in the catalyst bed is determined by two factors: one, the flow of the gas to the catalyst bed; and two, the rate at which oxygen diffuses through the bed to replace that utilised in the reaction.

If the rate of gas flow is too high, not enough oxygen can enter to completely burn the gas. If the rate of gas flow is too low, the gas is BURNED DEEPER IN THE BED AND THE SURFACE BECOMES COOLER.

Therefore, the temperature of a catalytic heater is self-limiting and will operate stably for long periods of time with no attention as long as gas and air are supplied.

The Catalytic Principle

Catalytic heat is radiant heat. Radiant heat, like light, is electromagnetic wave energy, travels in straight lines at 186,000 miles per second, casts shadows, may be transmitted, absorbed or reflected by matter, may be focused or dispersed by lenses or prisms of the proper material.

A source of radiant energy — such as a catalytic heater — floods the area around it with heat energy in just the same way a light floods the area with light. The intensity of the heat energy varies with the square of the distance as does light and it travels any distance without loss as long as it does not contact matter which absorbs it.

The absorption of radiant energy by various materials is a specific property of each material. Certain wave lengths will be absorbed to a considerable extent, others less, and some very little or not at all. Thus, each molecular substance has an infrared absorption spectrum which is a fingerprint of that substance. The absorption data for many substances can be found in an atlas of infrared absorption spectra.

Since the absorption of radiant heat is highly selective, there are opportunities for many selective applications. By selection of proper substances to act as a filter between the source and the object to be heated, it is possible to filter out all but the desired wave lengths to heat certain substances.

SCHWANK

Thermo-Schwank 2100

Launched last Autumn, this industrial range breaks new ground in the gas-fired radiant heater market by achieving 28% greater fuel efficiency than even the field proven Schwank 2000 series in achieving effective downwarm radiation.

Fully approved by British Gas, the range of four Thermo-Schwank 2100 heaters provide by a substantial margin the most economical means available for heating medium to large commercial and industrial buildings.

Infraboy

The new Infraboy is a portable radiant heater for use in workshops, building sites, temporary work areas and also for leisure activities, such as camping and caravanning.

This heater has been newly developed to
Danfoss control accuracy provides the constant individual room temperature control essential for heat economy, heat comfort and customer satisfaction.

Danfoss radiator thermostats are backed by 30 years experience in manufacturing, research and development.

The new series thus have: * High Sensitivity  
  * Low Flow Temperature Dependency for Accuracy.  
  * Wide Choice of Sensors and Valves.  
  * Valve Sizes in $\frac{3}{8}$", $\frac{1}{2}$", $\frac{3}{4}$", 1".  
  * Tamperproof Versions.

For further details and our catalogue on Danfoss “Energy Efficient Heating Controls”

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Runtal: For people who want style & economy in a heating system.

The most advanced radiator in the world
Runtal have created radiators so advanced that they completely revolutionise our whole concept of radiators. Specify them for all your clients, be it for the home, commerce or industry. Choose from a complete range of radiators. There's a Runtal radiator to meet every conceivable need. They're easily maintained! They give more heat! And are immediately available from stock!

75% more heat
Most Runtal radiators, such as the HL, have unique Swiss-designed fins that dramatically increase the radiators output by up to 75% compared with conventional panel radiators of the same dimensions.

Immediate delivery
Runtal HL radiators, made from 1.5 mm gauge steel, in a wide range of sizes, all guaranteed for 5 years, are available from stock now! There's no delay! Delivery from our depot is immediate!

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Runtal
A Jones Group Company
incorporate a 50% turn down valve facility and has been tested by Calor Laboratory to BS 4096.

It features a bottle clamp that fits securely on the guard of the L.P gas bottle and is designed to be used on all propane gas cylinders from 11 Kg. gas weight and above. The Infrablitz operates on propane at 50 mbar (20" GW) and is rated at 3.7 kW (12,500 Btu/h).

**DANFOSS**

Danfoss as the world's leading manufacturer of Radiator Thermostats offer the heating trade 30 years of experience of research and development into home comfort and energy saving controls. This position has been reached through constant, intensive and objective development of their radiator thermostat programme.

It started with the "RA" series in 1952 and later evolved into the "RAD" and the "RAY" series. The latest results of Danfoss development now give us a new series of radiator thermostats which on several important points are both technically and operationally superior in meeting to-days demands for effective room temperature control. The new series have been designated "RAVL-N", "RAVL-S" and "RAV-N".

The core of the new radiator thermostats is the specially developed Danfoss vapour-charged bellows system which has been tried and tested to meet the strict technical control requirements that Danfoss itself imposes on all its products, quality for which it is well known both in the heating trade and other trades. This experience and traditional Danfoss quality is reflected in many advantages the new Series offer,

* High sensitivity
* Lower flow temperature dependency
* Friction free bellows system

involved. Mounting Danfoss radiator thermostats presents no problems, in fact the overall dimensions of the valve and the wide variety of valve choice minimize the installation work. Valve sizes available in 3/4", 1/2", 3/4" and 1", while varying the copper compression rings allows use on micro bore and/or other copper pipe systems.

Danfoss models are available to control any type of L.P.H.W. systems and from the complete range cover, standard radiators, enclosed convectors, skirt radiators, underfloor grill systems, combined heating and ventilating systems etc.

For further details and your up-to-date catalogue on Danfoss energy efficient heating controls contact J. J. Sampson & Son Ltd., Unit 71, Cherry Orchard Industrial Estate, Dublin 10.

**FINHEAT**

The new FBM metric range of fan convectors has been developed to meet the demands of the commercial and public authority users for quietness, efficiency, high performance, versatility and robustness.

The range incorporates many improvements over our successful and well proven 'V' range fan convectors, whilst maintaining some of the unique features of that range. A wide variety of models are available as standard, containing the features listed below.

- Casing lengths are in metric modular increments of 700, 900, 1,200 and 1,500mm, with a height of 600mm and a total depth of no more than 250mm.

Available in freestanding and concealed models suitable for floor, wall or ceiling mounting.

A choice of heating duties is offered ranging from 4.0 to 15.0 KW (13,500 to 51,000 Btu/h) at standard conditions and on the quiet running normal speed setting.

Streamlined extruded aluminium grilles are included in the basic freestanding models which combined with the distinctive casing lines give the unit an extremely attractive look.

A slideaway plenum
"New convecto special about
Here's how you'll find out fast.
Ask for new THORN EMI convector radiators.
Available now to meet big demand.
Along with our famous single and double panel range they offer even greater options on sizes and outputs!
And they're probably the best looking radiators into the bargain.
THORN EMI convector radiators have got:
THE UNIQUE ROUND TOP.
THE SUPERIOR PRIMED FINISH.
THE INTEGRAL AIR VENTS.
THE HALF-INCH BOTTOM-OPPOSITE END TAPPINGS.
THE HIDDEN BRACKETS SAME-FIT FOR ALL HEIGHTS.
THE TOUGH PROTECTIVE PACKAGING.
THE COMPREHENSIVE RANGE MARC APPROVED.
AND NO PLUGS TO BUY AND FIT.
All the attractive features, in fact, that make all THORN EMI radiators good news for even the toughest customers.
They arrive safely. Fit simply. And look really great.
Reliability? We test each radiator to 100lb.psi pressure.
You can't lose. Remember—THORN EMI radiators are completely British made. Send for the facts, especially about our new convector radiators.
And get those orders in now!

Tough on the competition.
chamber, incorporating all moving and mechanical parts, is employed, which can be completely removed for servicing once the unit has been isolated and the inbuilt electrical plug and socket disconnected.

The casing is extremely robust in construction and will allow for reversal of pipe connection handling and air flow arrangements on site, yet offering a generous pipe void area. Each unit is fitted with a single ‘sealed for life’ permanent capacitor induction type motor to BS 5000 pt. II which is resiliently mounted and controlled through an autotransformer giving low, normal or boost fan speeds.

An anti-surge fuse is fitted as standard for protection of the unit. The standard finish on the freestanding models is the durable and attractive hammer grey stove enamel although for that special application units fitted with sapele wood surrounds and white painted front panels are available as an optional extra.

An extensive range of optional extras is available which include inbuilt thermostats, fan speed control switch, plints and filters etc.

**HCP**

The new Perivector wall and floor mounted hot water natural convector units recently introduced by HCP Limited have a number of special features. Available with outputs from \( \frac{1}{2} \) to 3 kW the new convector units have a low water content two-row heating element manufactured from steel tube with steel-fins to provide rapid warm-up.

Installation is very simple. The heating element is mounted independently of the convector casing and the combined top and front one piece cabinet is dropped into position over the brackets and element mounting straps. This design also makes for easy removal for decoration and maintenance.

Finished in stove enamelled paint and topped with a linear grille outlet, all models have a factory fitted damper and recessed operating knob.

The heating elements can be purchased separately if required.

HCP have also entered the radiant-heater market with a range of hot water radiant-heater panels for commercial and industrial applications.

Designed for overhead installation, HCP radiant-panels contain no moving parts. Silent rapid warm-up with even-heat distribution is achieved without the noise, draughts and dust usually associated with mechanical warm air systems.

Panels are made from one millimetre thick aluminium, light in weight, and an excellent conductor of heat. The panel sides are returned to increase rigidity, and flame retardant polyisocyanurate insulation is pressure applied in the factory to the whole of the upper face for high thermal efficiency, and to ensure a totally rigid panel. The closer panels are similarly constructed and have specially designed quick fasteners. Made in several widths to accommodate either a single one inch diameter steel tube, or as many as five one inch tubes for a wide range of heating outputs, the panels are sized in standard lengths of 2.5m, although smaller or larger panels can be provided if required. Ideal for use in factories, warehouses, and for many buildings of lesser height, such as showrooms and supermarkets, HCP radiant panels are very simple to install. Fitting costs are similar to those for installing ordinary one inch steel tube.

Stove finished to a temperature of 170° in light grey, the panels can be repainted on site if desired, but a matt finish must be applied as so called ‘metallic paints’ can reduce radiation by as much as 50%.

With a comfort condition two or three degrees Centigrade lower than other warm air schemes, a shorter heating-up time, and absence of electrical consumption through fans and motors, it is possible using HCP radiant panels to achieve an energy saving of 30% over other systems. HCP Ltd agents for Irish Republic are Eurenco Sales Ltd, 106 The Coombe, Dublin 8.

HCP Ltd agents for Northern Ireland are Harland Johnston & Co., Glenbank Industrial Estate, Crumlin Road, Belfast.

**RADIATORS, CONVECTORS & RADIANT HEATERS**

- HCP Perivector hot water natural convector units are available with outputs from \( \frac{1}{2} \) to 3 kW. Simple to install the design makes for easy removal for decoration and maintenance.

- The Thermal Radiator is capable of giving out more Btu's than a conventional single panel radiator of twice the size.
MYSON VELAIRE . . . THE QUIET BOILER

* 4 sizes from 50,000 B.T.U. to 135,000 B.T.U.
* Suitable for 28 secs. and 35 secs. oil.
* De-Luxe and Standard Models.
* Ideal for indoor use . . . quiet and odourless.

* Low level discharge — 3 sizes — 2 models.
  Output 5,300 B.T.U. to 20,000 B.T.U.
* Vertical Discharge — 1 size — 1 model.
  Output 6,300 b.t.u./h to 10,000 b.t.u./h.
* High level discharge — 3 sizes — 1 model.
  Output 5,500 b.t.u./h to 20,000 b.t.u./h.

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VALVES

* ½ and 10mm valves.
* Chrome and brass finish.
* Angle and straight pattern.
* Suitable for copper and G.B.
* G.B. valve adapts for copper.

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WE CHALLENGE YOU
TO FIND A MORE
RESPONSIVE VALVE

MYSON

CIRCULATING
PUMPS

* Two Speed.
* Economical.
* Quiet.
* Flanged base model & bronze model available.
* Pump valves:
  1” B.S.P.
  ¾” & 28mm compression.

* Pressed steel panel radiators.
* 4 x ½” tapping T.B.O.E.
* 4 Heights — 12” — 17” — 23” — 29”.
* PVC shrink wrapped.
* Supplied in white primer finish.

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We have the experience and the know-how to give you the choice and the quality

ALL THE WARMTH YOU NEED

Go Anywhere Dimplex Radiators

Room Temperature Controlled Models

This range with the famous dimple design incorporates the unique Dimplex 'air-sensitive' thermostat which responds to the actual air temperature of the room and provides a fine degree of control. Choice of eight models and five loadings from 1/2 kW to 2 kW. Finish bronze or white - supplied with feet and wall bracket - castors are an optional extra.

Warm Relaxed Convector Heating

Special summer stocking terms now available.
For details contact:-

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Belmont Court, 1 Belmont Ave., Donnybrook, Dublin 4. Tel: 686711

DOI: 10.21427/D7170X
FARAL TROPICAL

Occupying half the space of a conventional double panel steel radiator for the same output, this new range from Europe's largest manufacturer brings new design potential for the cost-conscious 80's. Italian charm units with strength, versatility and colour that is backed by a full ten year warranty.

Die-cast in lightweight aluminium alloy with a range of versatile fittings, the Faral Tropical 80 is suitable for one and two pipe systems, available off-the-shelf in two distinctive styles with four heights (680, 580, 430 and 280mm).

Variable lengths are achieved by "crocodiling to order" the 80mm long sections. All radiators are transported in strong export cartons to protect the high standard of enamel finish.

Output performance data conforms to CEDRIC ISO/TC/116 standards approved by the University of Liege.

All individual sections and pre-assembled multi-section units of Faral Tropical radiators are pressure tested to 9 bar (130 lbs. per sq. ins.) for working pressures up to 6 bar (86 lbs. per sq. ins.). For each radiator type, the tables are calculated on a differential temperature of 56°C (100°F). For other temperature differentials, the correction factors from the table should be applied to the standard outputs.

Details from Heating Distributors Ltd.

THERMAL RAD

As the demands and necessity to conserve energy become increasingly higher, the future of the thermal convector radiator looks bright.

During recent years, central heating boiler designs have become geared to low water content concepts. Thermalpanels and Thermalrads convector radiators from Reading-based Thermal Radiators Limited, part of the McKechnie Group, are proving to be the ideal partners for this type of boiler.

Thermalpanels, for domestic use, and Thermalrads, designed for industrial and commercial applications, feature ultra-low water contents, utilising approximately 80% less water than required by standard steel panel radiators.

They have a very rapid response to demands for heat, which permits low fuel consumption and ultimate cost savings.

Both are described by the company as "natural convector radiators", offering twice the heat output of single panel radiators of the same size.

Considerable space-saving and flexibility in location is, therefore, another important feature. While output is high, a louvred design gives a low surface temperature preventing people burning themselves on the radiators. This safety aspect has led to both Thermalpanels and Thermarads being specified in several hospitals, nursery schools and old peoples homes.

Their attractive white epoxy powder factory finish has led to their installation in several private executive housing developments and confidence in the quality of the product is shown by a three year guarantee.

Muhr Ireland Ltd.

The only Irish made radiator which offers a stove-enamelled finish and a five year guarantee against leakage. A range of sizes and types to suit all requirements at competitive prices. Manufactured in Ireland since 1974 by

MUHR IRELAND LTD., Bunbeg, Co. Donegal. Tel: Bunbeg 87/129. Telex 4244 DIAT EI.
Energy — The Mood in Europe

A recent report from the European Commission gives us an idea as to thinking in Europe with regard to energy and there is no doubting that these ideas will influence energy pricing in Ireland. The report states that in 1973 the Middle East crisis triggered supply problems. Successive price rises for crude oil since then quadrupled in 1973/74, then doubled in 1979 and have been a key factor in the economic crisis. For EEC Member States it has been a particularly challenging period because EEC countries as a whole is the largest single oil importer with over half its supplies coming from three countries — Saudi Arabia, Libya and Nigeria. Oil accounted for 51% of Europe's energy consumption in 1981 (compared with 61% in 1973). The EEC oil bill (in dollars) multiplied eight-fold between 1973 and 1981, even though net import of oil fell by 40%. This drop in imports was the result of an increase in EEC production (the development of the North Sea oil), substitution of oil by other energy forms and conservation measures and a slackening in demand, reflecting the economic recession.

The report, however, does warn that unless lasting structural changes are made there is a risk that an upturn in economic activity will stimulate an increase in demand for oil. The EEC balance of payments, already in problems by oil imports, could be upset at any moment by oil exporting countries deciding to increase oil prices again, the strengthening of the dollar, the currency in which oil prices are expressed, or an increase in demand from other importing countries. The report states that the oil challenge imposes constraints on EEC countries to respond in a unified manner. The problems of today call for a solution of energy problems, reduction of unemployment, inflation and restoring dynamism to European industry. Although some countries have a degree of energy independence, mainly the Netherlands and the United Kingdom, most European nations are very vulnerable. So, the common energy policy with common objectives was finalised in 1980. In these objectives the Member States must rationalise energy use to keep the average relationship between the rate of growth of energy consumption and that of G.N.P. to 0.7% or less. Oil consumption must be cut to around 40% of gross primary energy consumption. Solid fuels and nuclear energy should supply 70%-75% of electricity generated. Use of renewable energy sources must be encouraged and energy pricing policy must be compatible with the Commission's energy objectives. The report states that the EEC must call on all its available resources to reduce its dependence on oil. Between now and 1990 it must maintain gas consumption by doubling imports. Between now and the year 2000, the Community must increase coal consumption from 314 million tonnes to about 500 million tonnes of which half will be imported. The Community must develop renewable energy sources (solar, hydro electric etc) whose potential, however, will increase only slowly.

More controversially, it states that the Community must stimulate nuclear power because it cannot afford to ignore any source of supply and because nuclear energy will increase industrial competitiveness. The report states that a kilo of uranium can generate as much electricity as 10 tonnes of oil for one-third of the price. The share of nuclear power in electricity generating should increase from 16% to about 38% in 1990. Development, it states, has to take account of health, safety and environmental needs. Given in Ireland that we have no plans for nuclear energy and that there is a ten year planning horizon, it is unlikely that by the year 1990 we will be able to help the EEC achieve its objectives. However, the report states that these objectives can only be achieved by greater co-ordination, co-ordinated action between the ten Member States and the Community in the interest of greater efficiency. They list five fields of action which should be regarded as priorities:
- Investment
- Prices and Taxation
- Research and Development
- Technological Demonstration
- Safeguard measures to offset the risk of market instability and external relations.

It is in the area of pricing that the report is most interesting, because the report states that energy accounts for a varying but often substantial share of industrial production costs. This is particularly true in Ireland. It also states that the price of energy therefore influences industrial competitiveness between Member States and Third World countries. Certainly in Ireland if we were to consider the

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Building Services News, Vol. 21, Iss. 7 [1982], Art. 1
cost of electricity we would also see that it is causing us problems with regard to competition. The E.S.B., however, would not agree with this, but it is true.

The report also states that care must be taken to ensure their prices give the consumer an accurate indication of long-term market developments and encourage him to invest accordingly. The most important factors the report states are the measures that influence prices artificially. They must be clearly identified and price disparities between Member States gradually reduced, so that they do not lead to significant cost differences. This was always a bone of contention with regard to our energy costs, particularly electricity, and say German costs. The report states that prices are sometimes deliberately kept below economic levels, either generally or for specific groups of consumers. As a result they want greater coherence in the way that Member States set prices for each form of energy. Naturally, if you want a Common Market (for energy) prices should not vary from one country to another more than is justified by local advantages.

(transport costs etc.) or by priorities conforming with the Community's objectives. Further measures are necessary to prevent national price control systems from conflicting with common energy objectives. They also state that taxation sometimes has a significant effect on prices paid by the finer consumer. The oil sector needs special attention in this respect, they state. The Commission, it would appear is pressing for a gradual alignment of national tax systems in order to limit distortions in competition. Taxes must not be used to create differences in energy costs from one country to another, they state, nor must they act as an obstacle to the adjustment of prices to long term market conditions or the establishment price hierarchy for different energy forms which would encourage people to save energy and substitute other fuels for oils.

The important thing, according to the report, is that after the events in Iran in 1979, it became clear how a limited and temporary reduction in supplies or even the mere threat of a serious shortfall in supplies could provoke a sharp rise in oil prices unrelated to the real state of the market. The report states that Community solidarity has defused the impact of such a situation. Firstly by a system of fuel stocks for power stations equivalent to 30 days consumption. Secondly that compulsory stocking systems for oil (90 days consumption) is now in operation to offset the risk of any serious shortfall in supplies.

Finally they state that in coal and gas sectors stocks and safeguard measures would be useful in times of crisis and that the Commission proposes placing some of European gas resources in reserve linking distribution networks and extending the system of exchangeable contracts for large consumers to switch from gas to coal or oil. All in all this report is about presenting any united front to the world. They state that ensuring security of energy supplies calls not only for internal measures but also external purchases. The establishment of stable relations with exporters and a dialogue with other major importers. Given that if they can have a unified of sectors of 270 million European consumers, it should ensure a more balanced dialogue with all concerned.

---

Hall-Thermotank Ireland Limited

Refrigeration and Air Conditioning

**PUNKAH LOUVRE**

High velocity spot cooling is provided by the Punkah Louvre. This unit is fully adjustable and can be used as either a jet or diffused air outlet. Fully adjustable for direction of throw, the Punkah Louvre is particularly useful where ventilation is required in remote areas as its air velocity reduces the length of branch ducting needed.

**DRUM LOUVRE**

The Drum Louvre is designed and developed for applications requiring long throws with a minimum of ductwork. It is manufactured in aluminium with a satin anodized finish which, together with a versatility of mounting, enables it to blend into any architectural scheme. It incorporates adjustable deflecting vanes for complete air control for large enclosures such as shopping precincts and other public areas.

**VOLUME CONTROLLER**

The volume controller is designed to fit into the ductwork behind the Drum Louvre. Its purpose is to direct the flow of air evenly at the louvre and provide a balanced flow through the blades. Its vanes are adjustable to enable a precise air flow to be achieved through the louvre.

---

Hall-Thermotank Ireland Limited

Hall House, Main Street, Rathcoole, Co. Dublin.

Tel: (01) 580311 Telex: 30943
Glas Seal Ltd., the Ballynahinch based manufacturer of double glazing units has received British Standards approval and is therefore allowed to display the coveted "kite mark" on their products.

T. McVeigh, the Belfast heating contractor has formed a new company, T. S. McVeigh & Co. (Insulation) Ltd. based at Owen O’Cork Mill, 288 Beersbridge Road, Belfast. The company as its name indicates will specialise in insulating contracts of all types and sizes.

Guarantee Boiler Services Ltd., 5 Wandsworth Parade, Belfast, have become Northern Ireland distributor of Monomix. Monomix is a fireproof insulation ideally suitable for an in-fill when fixing high output solid fuel heating units. The material is produced by Monitor Coatings (Ireland) Ltd. of Robert Street, Newtownards.

The Drumkeen Hotel was chosen for the launching of the Walltherm dry glass wool system of cavity wall insulation. Already in wide use throughout the Province, Walltherm have appointed as their installers J. C. Quinn (Insulation) Ltd., Coalisland, W. J. Dolan, Sion Mills, Insulation Service Ltd., Londonderry and G. A. General Works Ltd., Belfast.

The installers were introduced to the visitors by Mr. D. Moore, Director of I.T.M. Ltd., producers of Walltherm.

The Northern Ireland Branch of the Institute of Domestic Heating Engineers held their Annual Dinner at the Strangford Arms Hotel, Newtownards.

Mr. Philip Johnston, a long serving member of the Institute and manager of the Irish Activities of Thorn Heating Ltd. was in the Chair to welcome the principal guest, Mr. D. Hayes, National President of the Institute. About eighty members and guests attended the dinner which was followed by the usual, for this dinner, cabaret.

A party of leading insulation distributors including one from Northern Ireland has recently returned from a visit to the USA organised by the Insulation Products Division of Armstrong’s major distributors with the opportunity of visiting their counterparts and contractors in the United States.

The party, accompanied by Tony Nicholls, Armstrong’s UK Sales Manager, and John Stewart, European Marketing Manager, also visited the company’s AF/Armaflex manufacturing plant at Braintree, near Boston, and the head office facilities and Research and Development Centre at Lancaster in Pennsylvania. The group used one of the Armstrong company plants between Boston and Lancaster, and the photograph was taken in the Armstrong hanger on arrival at Lancaster Airport.

Other places of interest on the itinerary included Orlando, New Orleans and New York where some members of the party visited the United Nations Building and were able to listen to the debate on Resolution 502. The group returned to the UK after a short stay in Washington.

One cannot but admire the optimism of the N.I. Housing Executive in the announcement that 13 of the houses to be erected in the Bishops Street development in Londonderry are to be equipped with a solar heating system. The houses will be built to a high degree of insulation and will have face South across the River Foyle. A back up electric system will be provided, as they state, to cover against the period of little or no solar heat being available.

If the weather of the last few years is to be taken as a standard, it is to be hoped that the tenants will have an ample supply of 50p’s.

An Eire-based firm Fibireland which is backed by a Swiss company, Chemische Fabrik Eutikon are rumoured to be investigating the possibility of setting up a company in Lisburn to process waste. Many millions are involved in the project and could set a new fashion in Ireland of dealing with the growing problem of waste disposal. Those involved in the energy scene know the answer but there appears to be a great reluctance by Local Authorities to combine with their neighbours to erect a plant which by the nature of the process must be large to ensure its profitability.

Springvale Polyproducts were the hosts to architects, engineers and officials of Local Authority and housing organisations at a seminar to introduce the “Isorast” building system.

Mr. Boyd, sales director of Springvale introduced the speaker Mr. M. S. Sharzynski, Managing Director of Oakhouse Ltd., the distributors of the system for the U.K.

The system allows for quick building and even introduces for the first time, as experience on the
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Because Kuterlex Plus, "Yorkshire" copper tube sheathed in a profiled and durable polythene sleeve, is designed to give maximum protection in all plumbing and heating situations.

Benefits are tremendous:

- Protection from corrosive elements found in screed, plaster and soil.
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Tel: 0232 - 6676311.
Continent has proved, a do-it-yourself form of construction. Hollow "Lego" type polystyrene blocks are fitted together, concrete poured in, and the external and outer walls faced as you desire, thus giving a construction with an inbuilt "foam" filled cavity. Services may be installed in the blocks before filling.

Present at the Seminar in addition to those mentioned above were Mr. V. A. Cooke, M.D. of Springvale Polyproducts and Mr. Peter Cooke of their Building Products Development.

The 55-year old, Lisburn based Modern Tool & Equipment has been taken over by six of its own directors with financial help from the Industrial & Commercial Finance Corporation.

The company, which specialises in all forms of machine and engineering tools will have as its Chairman Mr. Ken Craig who will have as his supporters on the Board — Brian Wilson, Gerald Torrens, Robert Anderson, Norman Wilkinson, Liam Clifford, all old employees and Mr. Joseph McGough an Eire businessman and nominee of I.C.F.C.

Mr. George Whillock, former manager of the Belfast office of Walker Air Conditioning has been appointed Managing Director of the Company based in Glasgow.

Brian Thompson Ltd., 16 Brunswick Road, Bangor, has recently supplied to a number of new multiple stores products of Diffusion Radiator Co. Ltd. This company specialises in the equipment in the field of air curtains and fan convectors.

Three unique features of Shell’s bonded bead cavity wall insulation system were behind the choice of the method for three blocks of flats in Windsor Park, Belfast.

The system was specified by the Buildings and Works Office of The Queen’s University of Belfast, as agents for the Maline Housing Association, in line with the Association’s energy conservation policy. Installation was carried out recently by the Shell authorised installation contractor for Northern Ireland, Springvale Polyproducts Ltd. of Ballyclare.

The main characteristic of bonded beads that appealed to the specifier was the preservation of the basic role of the cavity so far as air circulation and a barrier against damp are concerned. This is achieved because the beads are point bonded, leaving millions of tiny pockets in the mass through which the air can circulate and any moisture penetrating the outer leaf can drain away to the footings.

Secondly, the Buildings and Works Office considered that bonded beams were more likely to fill cavities than other methods which may leave sizeable pockets unfilled.

The third point is that Shell guarantee the system for the life of the building. This guarantee is transferable to a new owner.

The expanded polystyrene beads are coated with an aqueous adhesive and injected into the cavities through 22mm holes drilled in the mortar joints. Inside, they settle into a mass which will not shrink, crack or overflow should the cavity be opened at a later date. Bonded polystyrene beads do not deteriorate with age and remain effective for the life of the building.

Since the introduction of the system, over 10,000 houses have been treated in addition to hospitals, schools, supermarkets, shops, banks hotels and many types of industrial buildings.

Shell cavity wall insulation is marketed by Thermocomfort Ltd. of Newbury, a member of the Royal Dutch/Shell Group of companies.

Airflow Developments of High Wycombe, Buckinghamshire, recently announced the appointment of a new stockist to their established distributor network for the famous Airflow range of high performance industrial fans in Northern Ireland.

Airflow fans are now available for the first time in Northern Ireland from W.J. Hogg & Company Limited, Belfast. The Airflow Category 1 fan covers duties from under 4 cfm to 4,000 cfm (2-2,000 litres/second), and includes single inlet, double inlet and twin scroll blowers for maximum breadth of application. All models are based on the forward curved multivane centrifugal principle, and are for use on 240/1/50 HZ electrical supply.

The addition of the new stockists brings the Airflow distributor lists up to 14, providing "instant blower" service nationwide specially suited to the needs of the over-the-counter user.
Air-Side Heat Recovery

In this paper it is proposed to deal with four different variants of heat recovery devices.

Heat recovery wheel — rotating heat exchanger (regenerative)

Run-around coil — liquid-coupled heat exchanger (indirect recuperative)

Heat pipe — heat exchanger with two-phase medium (indirect recuperative)

Air-to-air — heat exchanger (directly connected recuperative).

It is customary to distinguish between two main types of heat exchanger:

Recuperative — in which heat is transported from warmer air stream via heat conducing partitions. This can take place directly between the air streams (directly connected heat exchangers) or via an intermediate medium (indirect heat exchangers).

Regenerative — in which the accumulative capacity of the heat exchanger material is utilised for the heat transport between the two air streams. The heat exchanger is frequently manufactured in the form of a slowly rotating rotor which covers both air ducts.

It is not possible to state generally which is the "best" system. We have installed recovery systems which are based on each of the described heat exchangers. This would scarcely be the case if some principle for heat exchanging was preferred to the other types available.

The following are very important factors to be taken into consideration from case to case when comparing the various heat recovery devices:

(a) Operational reliability

(b) Control possibility as regards transferred effect

(c) Air flow leakage between exhaust air and supply air

(d) Highest permitted temperature

(e) Durability and corrosive environments

(f) Risk of clogging when air contains high proportion of dust

(g) Icing risk when supply air temperature is low

(h) Placing of the supply and exhaust air ducts

(i) Space requirements

(j) Efficiency — net conservation — profitability

In certain cases one or more of the listed factors can be completely decisive for the choice of heat exchanger.

For example, with regard to operational reliability, if it is not judged possible to use heat exchangers with moving parts, or if air flow leakage between the supply air and exhaust air ducts cannot be permitted. Environmental conditions frequently determine the choice of heat exchangers in industrial applications.

**Detailed Explanation of Products and Their Applications**

**Heat recovery wheel (rotating heat exchanger).** This product consists of a cylindrical drum or wheel constructed in various materials such as asbestos, a form of wire wool or, as in our case, aluminium. This material is assembled in the form rather like a honeycomb and rotates between the supply and exhaust air and transfers heat and in some cases moisture from the exhaust air to the supply airstream (refer to fig. 3, diagram of heat recovery wheel).

This form of heat exchanger can be equipped with a purification sector in which a certain volume of outdoor air is used to press the exhaust air out of the rotor's air ducts before the latter enters the supply air sector.

**Advantages of rotating heat exchangers:** high temperature efficiency (approximately 85%); moisture transfer possible; simple effective control.

**Limitations of rotating heat exchangers:** fixed duct position; some air flow leakage conveying odours, particularly food odours.

**Run-around coil system — liquid-coupled heat exchanger.** The principle components in this form of system are exhaust air coils and supply air coils. The warm exhaust air flows across the coils in the exhaust air ducts and gives up most of its heat to the liquid being circulated through the pipework system to the supply air coil.

At the same time cold outdoor air flows across the supply air coil and absorbs as much heat from the liquid as that extracted by the exhaust coil. (refer to fig. 4 diagram of run-around coil system).

It should be noted that the additional components of such a system are pipework, insulation, expansion tank and pump. The materials used for the coils are selected to suit the environment in which the system is to operate. This may be:
(a) For normal air conditioning applications copper tubes and aluminium fins.

(b) For high temperature or corrosive air or gases, copper tubes and copper fins, steel tubes and aluminium or steel fins and finally stainless steel tubes with no fins. Water with an anti-corrosive addition, such as glycol or ethyl alcohol is normally used in the circulating liquid.

Reasonably high temperature efficiencies can be obtained in such a system. However it is important to note that the optimum selection of coils is made in relation to the circuitry and flow rates, thus achieving the most economical installation with regard to the desired recovery rate.

An additional feature of the liquid coupled exchanger is that the location of the supply and exhaust coils is entirely independent of each other.

Multiple supply and exhaust coils can be used in any one system, thus requiring fewer alterations to existing ducting arrangement.

Limitations of run-around coil system: relatively large heat surface required if very high temperature efficiency is sought.

Heat pipe heat exchanger with two-phase medium. This unit consists of a finned coil, the bottom of which acts as an evaporator and the top part as a condenser. (Gravity system.) The coil is partially filled with an evaporative refrigerant, usually R22.

As the warm exhaust air flows across the evaporative part the liquid in the coil is vapourised. The vapour rises to the condenser section across which the colder supply air flows. The vapour condenses and the heat of condensation raises the temperature of the supply air.

The materials used depend on the environment in which the coils operate, but are normally copper tubes and aluminium fins or copper tubes and fins.

The coil banks have a centre dividing section and the system is built on a modular basis to meet the varied air quantities and efficiencies.

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Building Services News, Vol. 21, Iss. 7 [1982], Art. 1

DOI: 10.21427/D7170X
**Air Conditioning**

**INTRODUCE**

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SECURITY: Being electrically driven guarantees long term security of energy supply compared to oil, gas and coal. The only viable alternative if gas or oil supply for full space heating is limited.

LOCATION: Rooftop or outdoor location frees internal areas as letable floor space.

FREE HEATING: The ‘unique’ cooling plus recovery mode, exclusive to YORK’s ENERGYPAK can simultaneously satisfy building cooling and heating demands during intermediate seasons.

OPERATING COST SAVINGS: The winter season average C.O.P. of 3:1 (three KW heat output for each KW of electrical energy input) means MISERLY POWER CONSUMPTION compared to oil fired heating installations.

Running costs are generally more favourable than gas or oil fired heating installations.

LESS CAPITAL EQUIPMENT: Eliminates necessity for condenser water cooling towers, pumps, pipework, water treatment and maintenance.

APPLICATION FLEXIBILITY GUARANTEED

THE ENERGYPAK can be applied on any project which can utilise the WARM WATER HEATING CONCEPT and ideally compliments YORK’s range of CS Air Handlers, two and four pipe induction and fan coil units and high and low velocity variable air volume units.

**THINK HEAT PUMP — THINK YORK/SMC**

**THIS IS JUST ONE OF THE COMPREHENSIVE RANGE OF YORK PRODUCTS AVAILABLE FROM THE SOLE IRISH DISTRIBUTORS**

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Published by ARROW@DIT, 1982
Efficiency is dependent on the number of rows in depth, the relationship between the air flows, the humidity of the exhaust air, the air velocities and temperature difference between the supply and the exhaust air.

The foregoing is a description of our particular heat pipe. However there are variations on this basic theme in terms of configuration and also the type of charge used in the heat pipe design.

**Advantages of heat pipe:**
- Simple (no moving parts); easy to clean;
- Can be supplied for gas temperature up to 800°C.

**Limitations to heat pipe:**
- Temperature efficiency usually 50-60%;
- Fixed duct positions; difficult control.

**Air-to-air exchanger:**
- There are two popular types which fall into this particular design.

### 1. Plate heat exchanger

This design consists of rectangular plated shaped so that passages are opened alternately to hot and cold air streams. The direction of the air flow in adjacent passages is at 90°C to each other.

### 2. Tubular heat exchanger

This design consists of tubes through which one air stream flows while the other air stream passes over the outside. These are used mainly for high temperature applications in the process industry.

**Advantages of air-to-air plate or tubular heat exchangers:**
- Easy to clean; simple (no moving parts);
- No air flow leakage; exhaust air-supply; air.

**Limitations:**
- Fixed duct positions;
- Relatively large heat surface required.

Appendix No. 1 of this paper is an air-side heat recovery product check list. This list hopefully gives the potential user of a heat recovery product the opportunity of making a fundamental check to establish which of the products available may be best suited for his particular application.

Where have these products been applied?

Mention was made earlier in this paper that there was very limited use of these products during the 1950s and 1960s. However that is not to say that these products were not available many years prior to that era.

In fact it will be immediately recognised that none of these products is a new design concept. However there has been limited demand on their use, but I am pleased to report that in the past few years there has been a considerable upturn in the number of successful installations completed.

Appendix No. 2 shows by product a list of applications in which these products have been successfully used.

Deterioration in existing plants

An important factor to consider is the possible deterioration of plant due to the inclusion of a heat recovery system, in both existing systems and to a lesser extent new projects.

It becomes obvious that in certain circumstances there can be serious consequences in reducing the exhaust air temperature. For example it could
be found that condensation could form in considerable quantities downstream of the heat exchanger. This in itself can be troublesome, however, when dealing with a typical industrial heat recovery system applicable to some types of process plant where the exhaust gas has collected certain chemical contaminants the effect of condensation being formed could have a severe effect in terms of corrosion of the existing plant.

It therefore becomes obvious that a good deal of thought and consideration should be given to the positioning of the heat recovery equipment and every effort should be made to keep the exhaust air after the exchanger entrained for the shortest possible time.

Assistance in preparing the justification for air-side heat recovery system

We have found it is of considerable assistance if the presentation of all relevant data is made in such a way that it can be easily understood by non-technical people.

It has been our experience that there is little difficulty in justifying to an engineer the sense of installing heat recovery systems of the type dealt with in this paper.

To this end, in keeping with many other companies, we extensively use the computer facilities available to us. These can be of great assistance in calculating:

(a) the anticipated temperature efficiency of such a system
(b) the annual energy saving for a given location

One such programme uses the temperature efficiency in relation to the average monthly temperature conditions existing within the location that the system is to be installed. The programme gives a resultant saving in energy in "degree hour" terms. These units can be converted into more popular energy terms and then related to the prime fuel cost being used in the heating or process scheme.

Conclusion

It would not be practical in such a paper as this to cover all the various possibilities there are with regard to air-side heat recovery.

It is hoped that from this paper it has been clear there are a number of tried and tested recovery products now available in the United Kingdom.

Experience in the field of heat recovery is growing and there are many Government and privately owned organisations devoting a great deal of time, effort and money to encourage people to consider conservation of energy.

Already there is a growing number of consultants and contractors who are specialising in the field of energy conservation and may I at this point stress the importance of dealing with designers and suppliers of equipment who are prepared to assist you in ensuring a completed system has been designed with the most sensible efficiency in mind.

New Small Heat Pump Range

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IHVN, July 1982
### APPENDIX NO. 1

**AIR-SIDE HEAT RECOVERY PRODUCT CHECK LIST**

<table>
<thead>
<tr>
<th>Requirement and prerequisites</th>
<th>run around coil</th>
<th>heat pipe</th>
<th>heat recovery wheel</th>
<th>air to air exchanger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply and exhaust ducts independently located</td>
<td>X</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Supply and exhaust ducts adjacent</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Versatility</td>
<td>G</td>
<td>F</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>Moving parts within product</td>
<td>pump</td>
<td>none</td>
<td>motor &amp; wheel</td>
<td>none</td>
</tr>
<tr>
<td>Moisture transfer undesirable</td>
<td>X</td>
<td>X</td>
<td>O</td>
<td>X</td>
</tr>
<tr>
<td>Possible cross contamination</td>
<td>X</td>
<td>X</td>
<td>O</td>
<td>X</td>
</tr>
<tr>
<td>Corrosive exhaust air</td>
<td>X</td>
<td>X</td>
<td>check materials of construction</td>
<td>X</td>
</tr>
<tr>
<td>Water soluble solvents in exhaust air</td>
<td>X</td>
<td>X</td>
<td>O</td>
<td>X</td>
</tr>
<tr>
<td>Extremely dusty (humid) exhaust air</td>
<td>X</td>
<td>X</td>
<td>check on wheel construction</td>
<td>X</td>
</tr>
<tr>
<td>Odorous substances in exhaust air</td>
<td>X</td>
<td>X</td>
<td>O</td>
<td>X</td>
</tr>
<tr>
<td>Serviceability</td>
<td>F</td>
<td>F</td>
<td>G</td>
<td>F</td>
</tr>
<tr>
<td>Product energy consumption</td>
<td>small</td>
<td>none</td>
<td>small</td>
<td>none</td>
</tr>
<tr>
<td>Temp. efficiency</td>
<td>F</td>
<td>F</td>
<td>G</td>
<td>F</td>
</tr>
<tr>
<td>Normal temp limit</td>
<td>400°C.</td>
<td>800°C.</td>
<td>850°C.</td>
<td>800°C.</td>
</tr>
</tbody>
</table>

### APPENDIX NO. 2

**INSTALLATIONS IN WHICH HEAT RECOVERY DEVICES HAVE BEEN USED**

- **Heat recovery wheel**
  - Offices
  - Dept. stores
  - Printing
  - Pharmaceutical manfrs.
  - Warehouses
  - Welding shop
  - Paint drying ovens
  - Hospitals
  - Swimming pool
  - Sports centre
  - Brickworks
- **Run around coil**
  - Offices
  - Dept. stores
  - Animal rooms
  - Laboratories
  - Maltings
  - Printing
  - Foundries
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  - Laundries
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  - Schools
  - Swimming pool
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Walker Air Conditioning

A new range of air-sourced heat/pump chiller packages, designated 30GQ, announced by Walker Air Conditioning Limited, authorised distributor of Carlyle air conditioning and refrigeration equipment, provides high performance, economical and dependable air to be saved.

Combining the well tried 06D Carlyle compressors with generous outside coils, efficient fans and shell and tube heat exchangers, the 30GQ units have a C.O.P. ranging from 2.0 to 4.0 over a wide range of summer and winter conditions. All units show a C.O.P. of 3.0 or better at nominal performance conditions.

Multiple fan units maintain positive head pressures in low ambient temperatures by automatically cycling one or two of three fans. Coil defrosting is automatic in response to both temperature and time elapsed since last defrost. The solid state device provides both perfect control of the water temperature and complete protection against freeze-up and overheating.

Accessories include supplementary electric heating packages in sizes from 15 to 30 kW; pipe heater cable to prevent freezing or external water piping; and copper finned coils for use in especially corrosive atmospheres. Operating weights range from 1430 to 3200 kg.

Danfoss

The Compressor Group of Danfoss announce an extension of their range of heat pump compressors with the introduction of three new models. Designated the 'D' range, the new heat pump compressors are designed for R502/R22 refrigeration systems and offer heat outputs in the range 1780W to 2770W with C.O.P.'s from 3.42 to 3.56. Measurements are taken at test conditions 0°C evap/45°C cond/32°C ambient.

The Danfoss heat pump compressor range now comprises 8 models. The existing 'H' range consists of five models, designed for R12 refrigerant, featuring heat outputs from 800W to 1600W with C.O.P.'s from 3.63 to 4.00.

All models in the Danfoss 'D' range and 'H' heat pump compressor ranges have integral oil cooling circuits which enable the units to operate at both high and low evaporating temperatures. The efficiency of the oil cooler also allows the manufacturer to completely insulate the compressor ensuring that all of the insulator heat is transferred to the condenser.

Details from J. J. Sampson Ltd.

Walker Air Conditioning

The new 30GQ heat pump/chiller package, announced by Carlyle Air Conditioning Co. Limited, provides high performance, economical and dependable air to be saved. Water cooling and heating for commercial and industrial applications. Available in six sizes from 70 kW to 210 kW, these compact packaged units may be used with central air handling units, fan coils or room terminals for controlled-comfort air conditioning office buildings, factories, shops, schools, hospitals and hotels.

Used with conventional air handling units, or zoned with radiators, radiant panel or floor heat, they adapt to both new and existing hot water heating systems. As heat pumps, they can augment or replace themselves to storage systems, to avoid high demand charges and to take advantage of off-peak electrical rates. They are specially suited to new buildings in which the cost of a boiler can often be saved.

HEAT RECOVERY

The following notes are based on material submitted by the companies concerned.

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Details from J. J. Sampson Ltd.

Hall-Thermotank Ireland Ltd.

Hall-Thermotank Ireland Limited have concluded an arrangement with Technibel of France for the handling of their range of packaged heat pumps in the Republic of Ireland.

Technibel have vast experience in this field and have developed a range of both air-to-air and air-to-water pumps manufactured in their 10,000 sq. metre factory near Lyon. They are particularly proud of their record of producing highly reliable equipment.

Applications for the heat pumps include domestic, recreation, supermarket and stores, agriculture and horticulture, swimming pools, factories, schools and commercial premises. In times of very high energy costs the heat pump can provide a very attractive alternative to conventional heating systems.

At conditions of +7°C (44.6°F) outside and +20°C (68°F) inside available models give outputs ranging from 7.8 kW to 14.8kW. The Coefficient of Performance vary between 2.5 and 3.0.

For further information please contact Hall-Thermotank Ireland Limited, Hall House, Main Street, Rathcoole, Co. Dublin. Tel: 01-580311, Telex: 30943.

Equator

Following its first appearance at Interbuild the new Equator heat pump from F. H. Biddle Limited is now in full production. This new pump has been designed by Biddle to utilise that heat which is present in the loft space of most homes.

This Equator is a self contained air-water heat pump unit and insulated storage tank which should fit easily into most standard British loft
Running costs need not run away with themselves

Running costs don't need a ladder to make economy go out the window. But you might find that a marriage of convenience with Walker will help keep them firmly under your thumb. Walker knows about heating and air conditioning. We've worked, and are working, on some of the biggest projects around. Not to mention a large number of the smaller ones as well.

With Walker, there's computer matching of your precise needs from the 4,000 Carlyle air conditioning and heating components. It's the only sure way of getting a system that truly meets your needs. There's the world's biggest range of heat pumps, all engineered for the heat pump market with built-in reversibility to ensure longer life. And the complete range of Carlyle VAV systems — engineered to automatically adjust themselves to the heating or cooling needs of the moment, and in so doing cut your energy bills.

Then there's Carlyle's latest and hottest property, the Heat Machine. This was conceived to remove heat from waste warm water and produce cheap useable heat for space heating or industrial process use.

Whichever way you look at your running costs, Walker can help keep them under control. The widest component range with computer matching; cost cutting VAV systems, the amazing Heat Machine — and all available with Walker's pre- and after-sales service.

Go on, take the plunge!
mean with your energy.
HEAT RECOVERY

Spaces.
Once in position it can be readily connected to standard plumbing connections serving the existing domestic hot water system and is compatible with the existing domestic electrical system and heating controls.

During operation the Equator, which is fully controlled by its own thermostatic system, will utilise that heat which is present in the loft space to heat up a supply of water to 55°C using the well established heat pump principle.

Performance figures obtained by Biddle during their extensive development and testing programme, indicates that substantial cost savings may be achieved in homes which presently use electric immersion heaters for the production of their domestic hot water requirements.

Operation of the unit should be possible for the maximum number of days in the year. Where very low temperatures, below 0°C, are anticipated Biddle can supply an optional low ambient kit for use with the Equator.

Built to a 500mm x 500mm cross-section, the Equator incorporates British components wherever possible, all to the relevant British Standard Specifications.

At present the Equator is available with a water capacity of 20 gallons (nominal) and work is proceeding on models having larger capacities.

Currently the Equator is being marketed by Biddle through C. P. Glorney Ltd.

Essential facts on the Equator are contained in an explanatory leaflet. Typical cost savings for domestic hot water indicated in the leaflet being between 25 and 75% according to the current method of hot water heating employed by the household.

The Equator is equally suited to new installation systems or to refurbishment or improvement schemes.

For further information contact C. P. Glorney Ltd.

DC Compute Air/Hiross

This heat pump, a direct result of collaboration between Hiross and Fiat, doubles the heat produced from the combustion of a gaseous fuel (such as methane, natural gas, propane, etc.) with respect to a traditional boiler.

The unit is available in two versions: "all heat" or "electricity + heat" both of which produce hot water at 60°C at two temperatures, 50°C and 80°C, by extracting heat from either air or water. The most interesting areas of applications are in the heating of industrial and commercial premises, and small communities, the production of hot water for industries such as breweries, dairies, abattoirs etc.

The units are modular in design, one unit of which can give a heating capacity up to 110 kW and produce 7 kW of electrical energy with a fuel consumption of only 5 kg/h of LPG.

Other energy multipliers include air to water, water to air, water to water and air to air.

Details from D. C. Comput Air Ltd.

Finheat

Isoclaim heat pipe heat exchangers for industrial and commercial energy recovery applications are fully described in a new 8 page brochure from S & P Coil Products.

In addition to the usual product description, the brochure gives a detailed account of the interesting way in which heat pipes transfer thermal energy. Typical installations are discussed. These demonstrate how heat pipes can be integrated with air conditioning or process exhaust and inlet ducting to recover waste heat at claimed efficiencies of up to 70%.

Several pages are used to assist specifying engineers in calculating physical performance characteristics, using detailed equations, and selecting equipment from typical performance graphs.

Details from Finheat Ltd.

HTIL

Hall-Thermotank Ireland Limited have recently completed the installation of a heat pump which is believed to be the first of its type in the Republic of Ireland. The site is Messeray Abbey in Co. Waterford and the project was carried out through local consulting engineers Barry Consultants Limited.

The application is particularly appropriate and cost effective due to the existing abundance supply of water which at present drives a turbine and then runs to waste. This waste water is used as the source of heat and is upgraded by the heat pump system to heat the Abbey. The water turbine

not only generates electricity but is also used as the prime move for driving the refrigeration compressor at the heart of the pump system.

The equipment comprises a compressor, shell and tube condenser and direct expansion submerge coil evaporator operating on refrigerant 12. Heat is extracted from the turbine waste water at 5 Degrees C and upgraded to 60 Degrees C from the condenser. A Coefficient of Performance of almost 5 is obtained with the output of 60kW.

The installation was carried out smoothly in the beautiful surroundings of the Abbey and the system is now fully operational.
VAPOURISING KITCHEN BOILERS
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* boiler and non-boiler models

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* boiler and non-boiler models

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