H & V News

Follow this and additional works at: https://arrow.tudublin.ie/bsn

Part of the Civil Engineering Commons, Construction Engineering Commons, and the Construction Engineering and Management Commons

Recommended Citation
doi:10.21427/D7V99G
Available at: https://arrow.tudublin.ie/bsn/vol21/iss1/1

This Article is brought to you for free and open access by the Journals at ARROW@TU Dublin. It has been accepted for inclusion in Building Services News by an authorized administrator of ARROW@TU Dublin. For more information, please contact yvonne.desmond@tudublin.ie, arrow.admin@tudublin.ie, brian.widdis@tudublin.ie.

This work is licensed under a Creative Commons Attribution-Noncommercial-Share Alike 3.0 License
H & V News

- Energy Conscious Control Systems
- Gaelwood 40 — The Inside Story
- DL's Energy Report
- Filters, Fans & Air Heaters
- Plumbing & Equipment
- Coldstores

Published by ARROW @TU Dublin, 1982
Ideal Britannia boiler with stoker (hopper model)

Dimension D may be reduced depending on boiler length

Dimension C may be reduced depending on boiler length

Ideal

R. M. A. T. H. E. W. S
R.

RING MATTHEWS
RE: IDEAL STANDARD
SOLID FUEL BOILERS
AND MECHANICAL STOKERS

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) 273506

Johnstown, Ballytruckle. Waterford. Phone (051) 72171/4
Tipperary Road, Ballysimon, Limerick. Phone (061) 43402
The theme of our cover this month is the conversion or the installation of new solid fuel boilers in industrial, commercial and government sponsored projects. The change over to solid fuel has been very gradual outside the domestic sector and a lead has to be given to the industry to ensure that our dependence on imported oil is drastically reduced. Such a project is the new Beaumont Hospital in Dublin nearing completion and our cover shows the boilerhouse at the hospital. Our thanks to the Jones Group for permission to use this picture.

On the subject of thanks, our thanks also goes to Finheat Ltd. who provided our cover last month on the subject of pressure vessels and storage tanks, the tank was one supplied by Braithwaite Ltd.

IN THIS ISSUE

News
EMA Programme; Fibreglass Seminar; Kellys to Handle Trianco; Damper on Open Fires; IDHE Exam Results; New Hose Protection and Safety Co.; CIBS Technical Evening; Heatech Launched; IDHE Programme.

IHVN Interview
Our interview this month is with Brian Hunter, General Manager HRP Walker.

The Inside Story of the Gaelwood Forty
As promised last month we look at the winner of the Multi Solid Design Competition.

New Products
Efficient Control of Central Heating Boilers
This is the first of a series of three articles on the subject of Energy Conscious Control Systems by J G Brickenden MIDHE.

Plumbing Equipment & Supplies

Filters, Fans and Air Heaters
Cold Stores, Refrigerated Displays & Accessories

© All editorial contents and all advertisement artwork prepared by the publishers, Irish Trade & Technical Publications Ltd, 1981.
**KELLYS TO HANDLE TRIANCO**

It has been recently announced that John Kelly Ltd. has been appointed the sole agents in Northern Ireland for the Trianco Commercial and Industrial Range of solid fuel boilers.

The T.G.C. Series of gravity-feed boilers is available in the following outputs, 300,000, 450,000, 600,000, 750,000, and 900,000 Btu/hr.

The TGC anthracite gravity fed boiler ensures optimum heat absorption with a heat to water efficiency in excess of 80%. Of vertical tube design, the TGC requires the minimum of attention: large hopper and economical burning rate ensure that refuelling is only required once a day under normal operating conditions.

Spent fuel forms solid clinker which is removed by the ram ejection mechanism into the large ash tray whilst the fire door remains closed, eliminating dust and fumes. The hopper is easily hand-fed, but a simple screw elevator can be employed to perform this function.

The boiler incorporates a thermostatically-controlled fan with a patented air control device for metering blast and idling air. Secondary air is provided above the bed for completion of combustion.

TGC boilers are fully clad in a heavy gauge hammered grey stove enamelled casing and thermally-insulated with glass fibre panels. The fire-door is stove enamelled black. To facilitate handling and installation in confined spaces, the boilers are supplied in two pieces, an upper and lower section, each section being small enough to pass through a standard 30in wide doorway. The five models have a common side elevation with increments of width according to output.

**New Companies**

**Paularino Ltd.**

Paularino Ltd. is a new company being established to manufacture complete systems for gas and fire protection equipment. The company will locate in the IDA’s Small Industries Centre at Ballybrit Industrial Estate. Most of the company’s products will be for the export market. Projected employment over a two year period is 11 people.

**J.S.L. (Ireland) Ltd.**

A new company, J.S.L. (Ireland) Ltd., has been established to manufacture a range of acrylic household baths for the Irish market.

The project is being promoted by two local entrepreneurs who, in discussion with the IDA’s Project Identification Unit, identified a market for these products which are at present imported.

The company has located in Unit 4 of the IDA Small Industries Centre at Mervue Industrial Estate, Galway, and is being aided under the IDA’s Small Industries Programme. Total investment in plant and machinery amounts to £55,000. IDA grant £33,000.

**Galway Project to Provide Jobs**

General Monitors Ltd., which manufactures gas delection and monitoring equipment, plans to further extend its premises at the Ballybrit Industrial Estate, Galway in an expansion which will create an additional 20 jobs to bring total employment to 55 by 1983.

The company was established in Galway in 1974 and in 1975 moved to a 6,250 sq ft factory at Ballybrit. In 1976, this was extended to cater for increased production.

**ESB to Install Heat Pump**

A contract to supply two Daikin-manufactured Heat Pumps for installation at the new Electricity Supply Board headquarters in Cork has been awarded to air conditioning specialists Coolair Limited.

The system comprises two Daikin water-to-water reciprocating heat pump water chillers together with matching closed circuit cooling towers.

Varming Mulcahy Reilly Associates were the Consulting Engineers and Climate Engineering the Mechanical Contractors on the project.
The new Crown Pipe Insulation has an outstanding advantage that only Fibreglass can provide. It has Z-lock: an interlocking, heat-conserving seal along the opening edge of thicker walls.

That's one reason why we believe it's superior to any other pipe insulation; but it's not the only reason.

Snap-on application. Smooth interior and exterior surfaces. A dense, closely-intertwoven structure that's hard to tear or compress – but easy to cut and shape. Alternative wall thicknesses that make it easy to attain an economical thickness of pipe insulation. A choice of sizes that could make your 'special' a standard.

We've given Crown Pipe Insulation either traditional canvas or multi-purpose never-rot, never-age Class 'O' facing.

Even the cartons are the right size, shape and weight to encourage safety on site.

Hence the claim that Fibreglass Crown Pipe Insulation has ALL the advantages. Which, of course, you can easily prove for yourself by sending for the new Crown Pipe Insulation brochure.

Fibreglass Limited, 21 Merrion Square North, Dublin 2. Telephone: Dublin 767060 and 762395. A subsidiary of Pilkington Brothers PLC.
A report recently handed over to the Minister for Energy has come down very hard on the open fire. The report was issued by An Foras Forbairtha and was based on a survey carried out on 21 homes.

The survey showed that dissatisfaction with temperatures throughout the house was most prevalent in houses heated by open fires, and that this often curtailed the occupants’ use of their homes.

An average improvement in efficiency of four percentage points was found in central heating systems when oil-fired boilers were cleaned and serviced with improvements of up to 10% achieved in some cases.

Three ranges of efficiencies for the main heating systems studied were identified: Central heating oil or gas fired - 60-70%; solid fuel stove - 45-50%; open fire 20-25%.

Recommending that open fires should not be installed the report which was completed last June says: “The current fuel situation suggests that efficient solid fuel combustion units are the most appropriate alternative.” The report says that if solid fuel for domestic heating is to be adopted and to prove satis-

factory in this country steps should be taken at a national level. These should include the introduction of a system for the testing and approval of all combustion units being marketed for domestic heating appliances as well as measures to ensure the continued availability of the necessary quantity and quality of fuels. There would also need to be national standard specifications for the various grades of coal required.

Bob Hutton Still Talking Warm Air

Congratulations to Bob Hutton who celebrates his 17th year in the heating business all of that time having been with Powrmatic the company who are best known for their air heaters but who also manufacture and distribute many other heating products, HVN takes this opportunity to wish Bob every success for the future, and hope that the next 17 years will be as successful for Bob and Powrmatic.

GET UP AND GO!

- The highly successful Heatair exhibition run recently in Belfast required a lot of hard work, as much on the part of the exhibitors as by the organisers. Miss Sherie Dallock, marketing assistant at Satchwell Control Systems Limited in Slough, has masteredmind, transported, erected, attended and then taken down her company’s exhibition stand at three different venues. She is now here with the estate car she loaded up and drove across to Belfast, Sherie, who is twenty-four, has been with the Satchwell organisation for just under a year. She is currently sitting the examination for the Diploma of the Institute of Marketing.
New Hose Protection and Safety Company

A new joint company has been formed by BSS (Ireland) Ltd., and H & H Equipment Ltd., Cork, to distribute industrial, chemical, rubber and hydraulic hose, and industrial protection and safety equipment. The company named BSS Hose & Safety Services Ltd., commenced operation from 46 Marrowbone Lane, Dublin 8 (Tel: 782155) on January 4th. It is under the joint direction of Mr. Rex Ottman, M.D. H & H Equipment Ltd., Cork, who are in the industrial hose distribution business for some nine years in Cork, and Brendan Stack of BSSD (Ireland) Ltd., who are distributing safety and protection equipment in Ireland for over three years. The new company holds a comprehensive stock at its new premises, and will be in a position to offer a one day service for flexible connections and hoses with a large variety of swaged-on end connections. The company will be sole Irish distributors for Goodyear Hose Products, Danfoss Hydraulic Motors, Fondermann of Longford, the only Irish manufactured industrial protection equipment and distributors in Dublin for “Tuf” Irish manufactured safety footwear.

Crannog Enterprises

Crannog Enterprises Ltd. has reached agreement with the IDA to set up a manufacturing operation in a 4,000 sq ft premises at Ballybane, Galway to manufacture cultured marble products which will include vanity basins, shower trays, counter tops, wall panels, bath surrounds and coffee tables. These will initially be sold on the home market and the company plans to develop export markets as production increases. The products will replace similar goods at present being imported.

The promoter, Mr. Des O’Doherty, is a qualified civil and industrial engineer and will be involved full time in the running of the business. His wife, Therese, will also be playing an active part in the running of the company.

The company, which hopes to employ 20 persons has been assisted under the IDA’s Small Industries Programme.

Don’t Drain Down!

Jetfreezer pipe freezing equipment can save you time and money when undertaking pipework repairs. With Jetfreezer for example you need not drain the system when you need to change a valve or extend the pipework. Simply freeze the pipe. Jetfreezer forms a temporary ice plug which isolates the section and holds back the water. You undertake the job without draining down.

Jetfreezer can freeze pipes of up to 4” diameter. The ice plug will not damage the pipe. Fast, clean and simple.

Jetfreezer is available through branches of P J Matthews & Co Ltd in Dublin, Limerick and Waterford.

For further information, please fill in and return the coupon.

Crannog Enterprises

To: The Distillers Company (Carbon Dioxide) Limited
Cedar House, London Road, Reigate, Surrey, England.
Telephone: Reigate 41133.

Please send me full information about Jetfreezer
Name ____________________________
Company _________________________
Address __________________________
Telephone _________________________
a new standard of energy efficiency in close control air conditioning a must for energy conscious people.

Supplied by:-

D.C. Compute Air Ltd.
AIR CONDITIONING CONTRACTORS & COMPLETE COMPUTER ROOM OUTFITTER
Foxes Grove, Shankill, County Dublin, Ireland.
Telephone: 821765
Heatech
Launched

A new Irish manufacturing and distributing company, Heatech Ltd., made its debut at a launching reception staged before Christmas in the Gresham Hotel, at which the Minister Mr. Fergus O'Brien, TD, Minister for State at the Departments of the Taoiseach and Defence was the guest of honour.

Heatech Ltd., an Irish owned firm was established recently by its joint managing directors, Jarlath Downes and John Harrington, the same design and engineering team who created the widely successful Heatilator Fire-Flor.

This new concern who have premises and offices at 15-16 Old Kilmainham, Dublin 8 have already experienced much favourable reaction to the two products which they are currently marketing, namely, Whisperfire, a heat amplifier for any open fire and Autostop, an automatic locking barrier for car security.

The Whisperfire heat amplifier captures the heat that is usually lost up the chimney as well as giving up to three times the heat into a room. It can be operated with all open fires including back-boiler fires. This heat amplifier is technically more advanced than the original fan assisted fire grates as it incorporates automatic operation and also enables one to use one's existing fire grate and fret.

Speaking at the reception to introduce Heatech to industry, semi-state bodies plus the press Jarlath Downes, Managing Director, Heatech Ltd. commented "Heatech have just appointed R & R Home Insulations of Lisburn as sole distributor for Northern Ireland which has already developed as a substantial market, and B & D Commercial Sales of Chester Lancs as sole distributor for Northern England & Wales. We confidently predict that in our first full season with Whisperfire, Heatech will achieve sales of 1,500 units. We also provide a full after sales service together with a one year guarantee with our products".

CORK/DUBLIN PIPELINE GETS GOVERNMENT APPROVAL

The Government has finally officially informed the Board of Bord Gais Eireann at a meeting in the Department of Industry and Energy that the Government had approved the laying of the Cork/Dublin gas pipeline.

At the meeting Mr. Collins the Minister of State, reviewed progress on the major projects of the Cork/Dublin Gas Pipeline and the Link Main from City Gate to City Centre in all their aspects.

While expressing satisfaction with the degree of progress to date Mr. Collins impressed on the Board his concern that these projects be carried out within the planned timetable and within the budgeted cost.

He called on the Board to ensure that the fullest management and engineering expertise be committed to attaining these ends. He underlined the economic value of these projects to the National Economy as well as to the City of Dublin and warned the Board against any cost overruns or delays. It is understood that such meetings will be a recurring feature for the duration of these projects.

Mr. Collins also announced that he had arranged that a consultancy study would be carried out by the City of Waterford Gas Company to assess the Company's potential to take natural gas from the Kinsale Field. A supply to Waterford, would require a branch pipeline from the Cork/Dublin transmission main.

CIBS
Technical Evening

The first of this seasons CIBS Technical Evenings was held last October in Dublin.

Messrs Arthur Kavanagh (I.D.A.), Michael Greene and Tony O'Neill (C.I.F.), Fred Browne (Robinson Keefe & Devane) and John Balance each made a short presentation.

Mr. Kavanagh mentioned that the team leader on I.D.A. projects was normally the architect but that sometimes either a structural or electrical engineer co-ordinated the work of their design teams. He considered that very few service engineers did project management and was critical of the traditional system of P.C. sums covering mechanical contracts, suggesting that a Bill of Quantities might help reduce costs for prospective clients.

Messrs Greene & O'Neil concentrated on large sites and outlined how best to avoid contractual and industrial relations difficulties. They stressed care should be taken in satisfying the short term needs of a client on a 2/3 year contract should not cause problems for C.I.F. and the country generally.

Mr. Fred Browne developed the role of the architect from the early days of what he termed the simple brief to the changes of the sixties with foreign investment creating a new breed of client, greater sophistication and the term project management.

Mr. John Balance felt that a project manager was needed when a task reached proportions that normal management could not handle. He considered that complex issues required what he termed lateral coordination and that the architect was not the man to deal with such cases.

The evening was sponsored by Finheat and 72 attended.

Published by ARROW@TU Dublin, 1982

et.: H & V News
Boost to IDHE

A recent letter to members of the Institute of Domestic Heating Engineers, Irish Branch, from the committee outlined policy for the next year and matters such as the list of contractors to be submitted to the Gas Co., education, Cork Branch, and more autonomy for the branch will be the main topics for the coming year. The mailing list is also being revised and members are advised to return the forms as requested in the letter as soon as possible.

T. Bourke & Co. on the Move

T. Bourke & Co. Ltd., mechanical service contractors, formally of Ardee Road, Rathmines, Dublin 6, have moved to new premises at T22 Stillorgan Industrial Park, Stillorgan, Co. Dublin. Tel: 952721/952718.

SCANGLO INT. APPOINTMENTS

Mr. S. Hanratty has been appointed managing director of Scanglo International, a member of the Myson Group.

Mr. J. Conellan has been appointed works manager of Scanglo.

STEAM PRODUCTION AND HEATING EFFICIENCY

START WITH A ROBEY BOILER AND GO ON AND ON AND ON AND ON AND ON

- 212 Boiler/Generator versions - to suit your specification.
- Coal, Gas, Peat, Wood, Oil and Waste Heat firing systems.
- Steam outputs from 1,000 to 60,000 lbs/hr.
- Hot Water Generators giving 5 to 60 million BTU’s/hr.

S.L. COMBUSTION SERVICES LTD. LAHERDANE, BALLYDANE, CORK Tel: 501411

CASTLEREAGH RD., BELFAST BT5 5FT. Tel: Belfast 59282

https://arrow.tudublin.ie/bsn/vol21/iss1/1
DOI: 10.21427/D7V99G
UK Fire Safety & Security Conference

The personal hardships encountered by a kidnapped industrialist in relation to the measures that can be taken by other potential kidnap victims to minimise their vulnerability; an analysis of the success — or otherwise — of ten years of the UK Fire Precautions Act as fire loss figures continue to rise; and an insight into why skin diseases could become an industrialist epidemic.

These are just three of the seminars in a programme of 32 papers, to be delivered during the conference session of the 1982 International Fire, Security and Safety Exhibition and Conference (IFSSEC '82, Olympia, London, April 19-23).

Other subjects in a wide-ranging programme covering the three areas of Fire Protection and Fire Engineering, Security, and Occupational Safety and Health, include the use and operation of closed circuit television for security surveillance; a look at why the potential of the micro-computer is not yet fully utilised by the Safety Advisor; and why the inter-action between fire sprinklers and fire venting may be 'counter productive'.

With last year's event attracting 54,850 visitors from 92 countries — over a four day period — the organisers say that IFSSEC '82 will 'easily exceed 60,000' when the event returns to its customary five-day status.

Conference programmes, tickets and further information can be obtained from the organisers, Victor Green Publications Limited, 106 Hampstead Road, London, NWI 2LS, Tel: 031-388 7661. Telex: 8811108.

* Aesthetically Pleasing *

Available Ex Stock from Sole Irish Agents

TEMPRITE SERVICES LTD.

48 Hardwicke Street, Dublin 1. Tel: 740304/740184

Published by ARROW @TU Dublin, 1982
Fibreglass Seminar

Fibreglass Ltd. recently held a Seminar at the Gresham Hotel, Dublin, when they launched the new Crown Pipe Insulation for the heating, ventilating and air conditioning market.

During the Seminar a film 'Snap Judgement' was shown which described the manufacture of Crown Pipe Insulation on the most up-to-date fibrous insulation plant in the world.

The occasion also provided a platform for consultants, specifiers and contractors to raise issues about mechanical services insulation; and also allowed a constructive discussion on the needs of this sector of the insulation industry. The new Crown pipe insulation is the first snap-on rigid glass fibre pipe insulation with a built-in heat conserving interlocking seal and has been developed by Fibreglass Limited.

The specially developed Z-lock 'Save-it' seal is one aspect of a completely new range of Fibreglass Crown Pipe Insulation being made at a new multi-million plant which came on stream recently in St. Helens.

The new Crown Pipe Insulation range will become progressively available in over 200 sizes covering pipe o.d.'s from 15 mm to 610 mm, with wall thickness of 19 mm to 100 mm, and is manufactured for copper, steel and stainless steel pipes operating at temperatures ranging from 2°C to 540°C.

The specially developed Z-lock, available on wall thicknesses from 50 mm to 100 mm, ensures all-round insulation even if pipes are oversize. Normally heat would leak from the edges of but joints on conventional pipe insulation. Fibreglass tests, using thermographic photography, show that the Z-lock system closes the gap, cuts down joint wastage thereby contributing to an improved insulation performance along the pipe.

The new manufacturing process ensures that Crown Pipe Insulations has a uniform density reducing hot spots and structural weakness, and improving tear strength. The strong fibre cohesion also gives a resistance to vibration, compression and repeated impacts, and helps reduce pipeline noise. Furthermore, the uniform density aids on-site cutting and shaping.

The launch of the new pipe insulation has also enabled Fibreglass to rationalise the range of facings offered to two — and still meet all specifications. In addition to the standard canvas facing there is a Class 'O' finish — a laminate of white lacquered aluminium foil and Kraft paper. This facing acts as a vapour barrier, and is simple to clean.

An important aspect of the new Crown Pipe Insulation range is the packaging. To help laggers on site, a typical carton measures only 400 mm square by 1200 mm long and weighs no more than 12 kg — an easy one-man lift. At the same time the carton is re-sealable and strong enough for repeated handling between stores and site, with a large and easy-to-read label for quick identification.
IHVN INTERVIEW

IHVN: HRP Walker was formed as a division of Walker Air Conditioning Ltd., the Carlyle air conditioning distributor, two years ago — how has it fared?

Hunter: Well, as you can imagine, we have learned a lot. As promised two years ago, we have increased our stocks and at the same time rationalised our product range, resulting in a higher sale from stock ratio. We have also been very successful in our decision to provide a regular, and more importantly, reliable country-wide service.

IHVN: What about sales?

Hunter: Two years ago we promised to move to new premises that would be more convenient for our customers and we did, in fact, open our new premises on the Dublin Industrial Estate this September. The mere fact that this expansionist move has gone ahead during a time of recession with no improvement expected before 1983/84 must say something for our success, wouldn't you think? Even so, since the formation of HRP Walker, sales have shown a steady growth and with the new premises and strengthened product offering, we are anticipating a definite upward curve in the level of trade next year. As an aside, the trade seemed to react very favourably to the new premises at our recent opening day and since then we have seen a slight but noticeable increase in 'over the counter' sales.

IHVN: You mentioned a 'strengthened product offering' — could you enlarge on this?

Hunter: We have been analysing, since day one, all the product ranges we offer with a view to strengthening our already extensive coverage, and our most significant switch to date has been from Myson to Searle, resulting in more Searle sales in two months than for Myson in two years.

We are now able to offer the Searle range of air cooled condensers, coils, unit coolers and allied products throughout the 32 counties. The major Searle products available are the T range of compact coolers for cabinets and small cold rooms; the UCL and K ranges of standard unit coolers for medium or low temperature applications and the new low velocity coolers ideal for food preparation areas and a wide range of condensers.

DMW Copeland, another of our suppliers, have introduced a new range of COMEF open type compressors for the small commercial market, and of course, this range has been added to the other DMW condensing units we offer. Our other major lines are copper tube, Isceon refrigerant; Aspera, Danfoss and Lec compressors and condensing units; Teddington thermostats, pressure controls, and expansion valves; KMP driers; Imperial Gould servicing tools; Watsco line valves; Ranco controls; Armaflex insulation and Sabroe components.

IHVN: So have you now finished your product rationalisation programme?

Hunter: Yes and no. We are aware that we still have weaknesses in a few of our product areas, particularly in the price of our small condensing units, but this is currently being reviewed. We have also discovered recently that Teddington expansion valves do not have a very good track record in our market place. However, we are confident that this will be rectified by a new range of valves now on offer by Teddington.

IHVN: You mentioned prices. How do your prices compare with competition?

Hunter: Generally our prices are very keen. However, due to the nature of wholesaling an extensive range or products, someone, somewhere will always come up with a cheaper price on a particular range of items, loss leaders if you like. But we are working hard in the pricing area, particularly with regard to capital equipment.

IHVN: You also mentioned that your service extended throughout the 32 counties. How does that operate?

Hunter: At the same time that HRP Walker was formed as a division of Walker Air Conditioning in Dublin, we did the same thing at our premises in Dundonald and from there we supply the same range of goods to the trade in the North. At that time we believed that there was a real need for this service locally, and, in fact, we have been proved correct to the extent that in eighteen months of trading we captured 18% of the market. We are now considering opening new premises in Belfast, more conveniently situated for our customers, to provide an even better service to industry there, and consequently increase our market share yet further.

IHVN: Who runs HRP Walker?

Hunter: I am General Manager with responsibility for its operation throughout the 32 counties, and I report direct to Jim Anderson, Walker M.D. I have also retained my position as the Director of Walker Air Conditioning (U.K.) Limited for the company's mainstream activity in the North, the distribution of Carlyle air conditioning, refrigeration and heat pump equipment. And I am still,
The Inside Story of the Gaelwood Forty

Last month we promised our readers an in-depth account of the design and operation of the prizewinner at the multi-solid fuel design competition, open to all E.E.C. countries, that was recently announced. The joint winner was the Gaelwood 40 from Multifuel Heaters Ltd., which incidentally was the only working model to win a prize.

The competition was organised to encourage manufacturers, and ultimately the public, towards the use of the closed fire behind glass, instead of the inefficient and wasteful open fire. There are several such appliances that burn smokeless fuels with an acceptable efficiency but, until the advent of the competition, there had been no inset fire behind glass with the capacity to burn coal, wood, or peat. While smokeless solid fuel is a good deal cheaper than gas or oil it is still in everyone’s interest to find ways of efficiently using the lower cost fuels that are more freely available.

The competition rules called for an appliance that would fit into a fireplace opening only 16” wide by 22” high. The finished appliance, the Gaelwood 40, while fitting into this space, was shown on test (witnessed and confirmed by the I.I.R.S.) to have an average output to water of 26,940 Btu/hr burning peat briquettes over a two hour test. The average output on coal was 33,387 Btu/hr with an average efficiency of 69.2%. There was also a substantial warm air output, this is not normally a feature of an inset stove.

Figure (1) shows how this remarkable performance was achieved. The heavy arrows show the flow of air and combustion products. Air enters the combustion chamber from the front via an ingenious air control that consists of two concentric stainless tubes. Note that this is above the fire, the appliance makes use of the well known down-firing system that has widely patented and is exclusive to Multifuel Heaters and their sister companies.
company Gaelwood Exports. The incoming air is heated, within a stainless baffle, and deflected downwards away from the glass. This helps to keep the glass clean, overcoming one of the biggest problems of a multifuel fire behind glass.

After passing through the firebed the combustion products pass between the bars of the chrome iron shaking grate, turning upwards at the rear of the ashpit. Thus they start their upward journey to the flue from a very low level in the appliance; this enables maximum heat transfer to take place.

The flueway up from the ashpit follows the practice that was established several years ago with the design of the Conserva. One side of this flueway is bounded by the boiler, the boiler also receives radiant heat from the areas that face the fire. The rear face of the flueway transfers heat to a convection airstream (outlined in small arrows) that enters below the ashpit and exits via large channels to either side of the smoke outlet. There is a damper control which opens for direct up-firing, this is used when lighting or refuelling. Flue cleaning is quite simple, a front cover plate gives access to the rear flue and there is ample room to sweep the chimney in the normal manner.

The Gaelwood Forty is designed for low cost standardised production, one of the interesting features is that a freestanding version will be available which incorporates almost all of the same sub-assemblies as the inset (see fig. 2). Apart from a limited run of field trial units the new appliances are not expected to be in production until several months into the coming year but there are, of course, ample supplies of the company's existing range of products including the Conserva in various forms, the Gaelwood 65/90, and the Centrafire back boiler. All these products are noted for their advanced design and high efficiency, in fact the Centrafire when tested to BS 4834, gave 7.4 kW total output burning 2½ lbs per hour. A well known competitor on the same test but burning 3 lbs per hour could only produce 0.65 kW more! We need more appliances designed to the Gaelwood standards; one way of saving heating costs is to use cheaper fuel but another and perhaps better way is to use appliances that get more heat out of the fuel. We congratulate all concerned in Multifuel Heaters on a well merited first prize.
NEW PRODUCTS

E.I.L. pH Meters

E.I.L. Analytical Instruments, the water analysis specialists of Kent Industrial Measurements, have introduced two new laboratory pH meters. The new instruments are mains operated with bright (LED) digital readout, featuring illuminated touch switch range selection. Model 7045 measures pH to 0.01, has a relative mV scale with 0.1 mV resolution for ion selective electrode measurements and offers an absolute mV range (0-1400 mV) for titration procedures. Temperature readout is available in conjunction with PT100 resistance thermometer and both automatic and manual temperature compensation operate over the full 0-14 pH range.

Model 7046 has the additional facility of an accurate two decade concentration scale thereby eliminating the need for calibration graphs. This extra range can be added on to a Model 7045 retrospectively by the addition of a plug-in lineariser board.

E.I.L.’s new pH meters comply with the safety recommendations for Hospital Laboratory Equipment and are supplied complete with combination pH electrode, buffer sachets and laboratory stand with electrode holder.

Picture shows new pH meter being operated by Ms. Sue Faulkner, who recently conducted the Selective Ion Seminars in Dublin and Cork organised by Industrial Instruments Limited, the Instrument People.

Further information is available from their Dublin office at 6 Herbert Place, Dublin 2 (01) 761691 or Kilcooleishal in Cork (021) 822186.

Buffalo Hottojet

The Buffalo Hottojet takes steam from an existing supply, and cold water at a low head, delivers a high pressure, high temperature jet of water through any of the various types of nozzles supplied. It can also entrain concentrated liquid detergent through a needle valve under the appliance, and deliver the detergent mixed with the hot jet of water, to give a powerful cleaning efect.

The complete equipment comprises the Body Unit complete with Overflow Funnel and Detergent Control Assembly, 25 feet of ¾” bore high pressure hot water hose for the discharge, stainless steel cleaning lance (bronze fitted) with adjustable handles, and a set of three disc nozzles.

Extra 25 ft. or 50 ft. lengths of hose, complete with connections, can be supplied if desired.

A barrel nozzle, to screw straight into the end of the hose instead of the cleaning lance can be supplied as an optional extra.

The output ranges from 300 to 500 gallons/hour, at a discharge temperature of 200°F to 150°F (95°C to 65°C):

Further information from Hendron Bros. Ltd., Tel: 376061.

Myson Square Diffusers

The Myson RCM ED square or rectangular diffuser, manufactured from anodised aluminium extrusions, is now available from...
Finheat Ltd.

It is available with cores giving one, two, three or four way discharge patterns, without the use of blanking plates.

Principally for ceiling mounting, the ED can be used in free space when the throw will decrease by about 30% and the angle of the discharge will be approximately 25 to 30% from the horizontal.

Stove enamel finishes to BS colours are available and the diffuser is made with an inner sub-frame, which carries the control damper, and can be fixed to the duct outlets during the construction of the ceiling. The louvered cores are easily removable for access to controls or where frequent cleaning is necessary.

All Myson RCM products can be manufactured to individual specifications if required.

If you require any further information, please contact Finheat Ltd.

---

Robinair Flushing/Washing Pumps

The Robinair Division of Kent-Moore U.K. Limited, suppliers of the well known range of refrigeration and air conditioning service equipment, recently announced an optional extra to their motorised flushing/washing pumps. These pumps were introduced primarily using refrigerant R11 to flush contaminants from refrigeration pipework for which purpose they have rapidly gained general acceptance within the industry.

Originally incorporating a strainer in the reservoir it has become evident that an improved level of filtration would be desirable. Robinair are now offering, as an option, full flow 10 micron filtration in the return line from the system to reservoir. The filter is rated for maximum pump pressure, has extra large dirt holding capacity and incorporates an internal by-pass to guard against overloading.

In addition to flushing refrigeration circuits the Robinair pumps are increasingly used for external power washing, particularly of air cooled condensors, etc. In this application detergent is normally employed rather than refrigerant. Robinair supply a highly concentrated biodegradable detergent and the pumps come complete with spraying lance and choice of nozzles. Demonstrations for either purpose will be arranged with pleasure through recognised Robinair Wholesalers.

For further information contact RSL Ltd.

---

Weather Compensator

The heating & ventilating division of Danfoss announce the introduction of the new ECT 602 electronic weather compensator which offers direct control of heating plant burners to vary flow temperature dependent on outdoor temperature.

The new Danfoss ECT 602 electronic weather compensator is particularly suitable for the upgrading of single boiler installations as it requires no mixing valve. This, combined with the availability of a clamp-on flow sensor, enables whole installations to be completed without the need to drain down the system for pipework changes.

ECT 602 is available with a 24 hour or 7 day clock for programmed setback of supply temperature during the night and at weekends. The clock allows a number of setback periods to be included each day.

Remote control by means of room temperature limiter ESRL makes possible minimum limiting at night and at weekends and remote control of certain ECT 602 functions. An ECT 602 regulation system also includes an outdoor temperature sensor and a supply temperature sensor.

Further information from J. J. Sampson & Son Ltd.

---

Eltron Drum Heaters

Eltron (London) Limited manufactures a range of three types of drum heaters, each with a different form of built-in control system for energy saving. All three feature quick installation, adjustable diameter between 570 to 610mm (22.5 to 24 inches), clean and simple operation, and easy transfer from one drum to another. Intended for indoor use only, they are not suitable for operation outdoors, even in fine weather.

Applications include the heating, melting and thawing of solids, semi-solid and viscous materials — such as resins, greases, fats, gelatin, jelly, viscous and heavy oils, asphalt and tar.

Further details from Redbro Ltd.
Efficient Control of Central Heating Boilers

by J. G. Brickenden M.I.D.H.E.
Energy Conservation Services Ltd.

This is the first of a series of three articles on efficient control of central heating systems. This first article looks at some possible solutions to the problem of boiler control with the follow-up articles looking at new control systems philosophy and the final article will look at the possible refinements in the interconnecting of solid fuel and automatic boiler systems.

Oil or gas fired central heating boilers are usually oversize because they are chosen to meet a "design load" which seldom occurs: usually an arbitrary allowance is also added. The design load occurs for perhaps three or four days during the coldest part of the winter. Since many houses now have improved insulation, boilers have become grossly oversized, making good control imperative in order to realise savings made possible by reduced heat losses.

For much of the heating season, domestic central heating boilers are loaded to much less than 30% of their capacity. At say 20% loading the burner fires intermittently for about 30% of the time and for the rest of the time the boiler is "standing-by" at working temperature. The smallest pressure-jet burner is about 65,000 Btu/h which is now usually much larger than generally required.

If a boiler is switched on all day for heating domestic hot water in the Summer it is loaded to perhaps 6% of its capacity. At 6% capacity, the boiler can fire intermittently for 10-20% of the time (depending on how "bad" the installation is) and the rest of the time it is "standing-by" hot.

Most hot domestic central heating boilers on stand-by lose anything from 6,000 to 12,000 Btu/hr (1.75 to 3.5 Kw) to waste, some of the heat being radiated to the boiler house and the rest being drawn up the chimney by convection (chimney draught) i.e. the boiler acts like a radiator, sucking air in through its burner, heating the air and then discharging it through the chimney. Some boilers are badly insulated, or not insulated at all, thus radiating heat through the casing. The minimum insulation should be 50mm and new standards are on the way. A high chimney without draught stabiliser draws more air through the boiler than a low one with stabiliser. A combination of a high chimney and badly insulated boiler could waste much more than 3.5 Kw.

(a) Minimise acidic condensation in the boiler flue ways due to short-cycle firing thus prolonging boiler life and minimising maintenance.
(b) Load as fully as possible thus reducing the duration of standby losses and improve overall fuel efficiency.
(c) Reduce space temperature and domestic hot water temperature re-

Typical Schematic Heating Layout - Ireland & U.K.  

Rad. valves, feed exp. omitted for clarity
As these boilers can be 40 minutes of improved and of turned settings. Therefore inefficient usually many thermostatic solid fuel interlinks, disappointing back-boilers and escalating solid fuel prices have now positively demonstrated the need for effective boiler control whether they be solid fuel or automatic oil or gas-fired boilers. People have found that efficient oil-fired heating can be more economical to operate than mediocre solid fuel systems.

Manufacturers of the larger cylindrical wood/straw burning boilers have begun to meet the need for positive combustion control and greatly improved combustion efficiency. Timber and straw are no longer regarded as waste materials and have a steadily increasing value. Rated outputs have not been achieved in some cases not only because of high moisture content fuel. Many of the shortcomings and operational problems of these boilers can be overcome by enlightened installation design incorporating heat stores and by expert application of appropriate control principles.

The next article in this series will consider a new control system philosophy/package in detail and a further article will discuss the possibilities for refining and controlling interconnected solid fuel/automatic boiler systems.

Some kitchen boilers, (especially gas-fired) have no insulation inside the casing and whilst this may be acceptable in very cold weather, it may grossly overheat the kitchen at other times.

These are some of the reasons why it is generally thought that central heating boilers are always inefficient for heating domestic hot water in the summertime. The people in some countries have been taught to believe this by means of nationwide advertising campaigns in favour of electricity for water heating, claiming overall efficiencies as low as 10% for oil. This figure is conceivable with a really bad system.

The solution to this problem of the underloaded and therefore inefficient heating system is technically simple. Just switch off the boiler when it has fulfilled the heating requirement for the day. In a well designed domestic system, the boiler takes less than an hour to heat the full contents of even a larger domestic hot water cylinder, and fires almost continuously whilst doing so provided also that the cylinder heat-exchanger has sufficient effective heating surface area: many indirect cylinders on the market are substandard in this respect. Under properly controlled conditions the boiler is loaded almost 100% and operates with an overall efficiency which cannot be approached by electric water heating. The possibilities for improvement have generally been totally unknown, ignored, or even suppressed by commercial interests in the United Kingdom and Ireland, and probably many other countries.

An alternative but unacceptable technical solution is to use a highly

IHVN, January 1982 17

Published by ARROW @TU Dublin, 1982
Fully insulated boiler fitted with automatic fully closing chimney dampers. This is accepted practice with large commercial boilers (usually steam boilers) and is extremely effective but not practical or economic for domestic boilers. A partial solution, used by some burner manufacturers, is a fully closing air damper on the burner. Because the boiler and main pipework in domestic heating installations is usually badly insulated, or not insulated at all, and therefore wastes heat in addition to the boiler) it is better to have an arrangement which automatically switches off the boiler and the pipe circulation as soon as heat is no longer required.

A traditional method of solving this problem has been a complicated electro-mechanical arrangement of zone control where electric thermostatic controls operate motorised valves for several zones, e.g. upstairs, downstairs, and domestic hot water. This arrangement can be quite effective provided that the motorised valves are fitted with end switches, or a system of relays is used to switch the boiler and circulation off as soon as all valves are closed (heat no longer required).

The disadvantages with this method are generally:

1. Boiler control has not usually been incorporated.
2. Individual thermostatic room control is not practical unless each room is a separate zone. (This would be extremely costly).
3. The system is potentially unreliable because of the large number of electro-mechanical components and the extent of relatively complicated electric wiring.
4. Installation, commissioning and maintenance problems due to non-availability of expert or properly trained personnel.
5. The householder does not know whether the system is working correctly or as designed or even if it has ever worked efficiently.

This commentary would apply equally to many guest houses, institutions, small hotels and even some larger hotels. However, the factors involved are more easily described and perceived in the domestic context and may be more easily measured.

Another now popular approach to improvement is the use of thermostatic radiator valves together with a thermostatic valve at the domestic hot water cylinder to control the temperature of the domestic hot water. This arrangement gives good comfort control with some fuel economy but fails to ensure that the boiler is switched off when not required. Obviously there are many hours throughout the year when the boiler is switched on unnecessarily in spite of careful timeswitch settings.

There is a need for a system using thermostatic radiator valves (to provide the independent comfort efficiency in each room) combined with an arrangement to switch the boiler off when it is not required (fuel efficiency). Such energy conscious systems have been possible up to now only by using expensive complicated controls and have been difficult or impossible to retrofit when improving existing installations. Schematic diagrams of typical existing UK and Irish systems are shown in figures 1 to 4 and any suitable improved control system must be compatible with these and with current new installation techniques.

Continental practice using mixing valves has some advantages over typical UK and Irish systems, but is still wasteful (Automatic setback when using TRV's is a typical problem on the Continent where TRV's are widely used). Although standards of insulation are very much higher in the Continental European countries, the problems of boiler control are similar and the potential for improvement is equally great. Irish house builders promote higher standards of insulation but seem to be totally unaware of the disservice they are doing their future customers by failing to give them properly designed installations and carefully planned but simple energy-conscious control systems.

Wasteful systems have been acceptable in the past due to the relatively low cost of oil, but with the recent cost increases in all forms of energy, it is fundamental priority that a different approach must be taken to heating control giving improved comfort and fuel economy. Many wasteful systems are still being installed because an unenlightened market habitually demanded the cheapest installation cost.

In the context of this commentary and assuming effective secondary controls, automatic heating boilers should normally be operated as hot as possible/practical, typically 85°C for open systems and higher for closed systems in order to:-
Solid fuel boilers need appropriate control otherwise the expected benefits do not materialise, as many people will have discovered during the last two years. The control requirements being a mixture of manual and automatic seem to conflict with oil-fired control practices. Solid fuel boilers, especially wood burners should, like oil-fired boilers, normally be operated as hot as possible/practical. In this respect Continental practice using 3 or 4-port diverting valves (shunt pumps on big boilers) emphasises the need to keep the boiler as hot as possible irrespective of variations in the heating load.

Smoke, soot or creosote are obvious signs of poor combustion control and too low a combustion temperature leading to incomplete combustion. High boiler temperatures greatly improve these conditions especially with high output back-boilers, which need to have a good fire going and a hot boiler before the pump is turned on.

High output back-boiler manufacturers seem to ignore combustion requirements hence the typical very low combustion efficiencies (40%-30% and lower) and recurrence of smog problems in the Dublin area. One notable exception (Irish) can maintain much higher levels of combustion efficiency by means of a refractory environment for the fire-bed and a controlled preheated secondary air supply: this efficiency can be maintained at high or low outputs.

Thermostatic combustion air controls on some enclosed roomheaters prevent boiler temperatures rising sufficiently to induce a satisfactory gravity circulation to an indirect cylinder. Substandard coils (less than 1” or having inadequate surface) also inhibit a good circulation.

Complicated/unhandy solid fuel interlinks, disappointing back-boilers and escalating solid fuel prices have now positively demonstrated the need for effective boiler control whether they be solid fuel or automatic oil or gas-fired boilers. People have found that efficient oil-fired heating can be more economical to operate than mediocre solid fuel systems.

Manufacturers of the larger cylindrical wood/straw burning boilers have begun to meet the need for positive combustion control and greatly improved combustion efficiency. Timber and straw are no longer regarded as waste materials and have a steadily increasing value. Rated outputs have not been achieved in some cases not only because of high moisture content fuel. Many of the shortcomings and operational problems of these boilers can be overcome by enlightened installation design incorporating heat stores and by expert application of appropriate control principles.

Would it help to talk to someone?

If you are lonely, depressed or suicidal, phone, visit or write to:

THE SAMARITANS

Dublin, 01-778833
Cork, 021-21323
Galway, 091-61222
Limerick, 061-42111
Waterford, 051-72114

- To those who may wonder how inflation affects a voluntary organisation, it may well do to consider The Samaritans.

- The above advertisement identifies The Samaritans. In 1980 the Dublin branch received 40,000 contacts, 6,000 of which were new callers. The cost of the operation in 1980 was £22,000, voluntarily subscribed.

- The cost in 1976 was £13,000.

- There were 3,000 new callers that year.

- The 320 specially trained volunteers provide a caring service 24 hours a day, 365 days a year to those whose problems include Depression, Loneliness, Bankruptcy, Unemployment, Alcoholism, Marital, Sexual, Health, Drug Addiction, Bereavement, Relationships etc. etc.

- The limited and modest Publicity Budget available cannot reach all of those who could avail of the services.

- The Samaritans know that when their publicity is increased the numbers of callers increase correspondently.

- 25% of all those who call the Samaritans are suicidal. The service is anonymous, non-secretariat, non-judgmental and strictly confidential.

The Samaritans would be extremely grateful if any firm would donate a small portion of their publicity to the organisation. It could be a bonus spot on radio, an occasional newspaper ad, a bus shelter site, a television slide or a financial contribution.

- The callers are from every walk of society, the young, the old, the rich, the poor. They may be members of our own families.

- As the stresses of society increase more people are seeking help.

- If interested please write to DON, PUBLICITY OFFICER, SAMARITANS, 66 SOUTH WILLIAM ST. DUBLIN 2.
Join the top brass.

IRISH INSTANTOR® – Full range of over 300 Couplings for connecting copper and polythene tubes. Made in Ireland since 1934. Solid, reliable and backed by first class service. New bright and shining finish, easy to identify as the market leader. The Irish Instantor® range complies with the Irish Standard Specification for Compression fittings issued by the Institute for Industrial Research & Standards I.S. 239: 1980. We are the Top Brass. Irish Instantor® – Meigiri na hÉireann.

Sanbra Fyffe

Everything On Tap For Plumbers.

Another Tough Year for the Plumbing and Allied Sectors

The general heading of Plumbing Equipment covers a multitude of items varying from sanitaryware to pipe clips but the sales of these items normally depend on the rate at which new houses are being built. Official projections for the next year are very poor for new housing and so the trade would seem to be in for another lean time. However there is some hope in the existing house market as recent surveys have shown that 87,000 are without internal water supply, 141,000 are without internal sewerage and 185,000 are without a bathroom or a fixed shower. To remedy the situation the government has introduced grants on the following basis:

1. £200 for internal water supply. 2. £200 for sewerage facilities. 3. £600 for the provision of a bathroom or shower.

These grants may very well have come at a good time for the trade but far more should be done to let the public know about them if the trade hope to get the full benefit.

P J Matthews

Plumbing and heating specialists P. J. Matthews & Co. Ltd. have recently opened a new branch at Matthews Corner, Swords Road, Santry, Dublin 9, (Tel: 373606). Here, as with their branches in Limerick and Waterford, architects and designers can have made available any item displayed in their extensive showrooms at 134-135 Lr. Baggot Street, Dublin 2, (Tel: 789055).

Their bathrooms display includes beautiful bathroom ware from Saareguesmines, Selles, Cerabati and Porcelaine de Paris — and to go with such luxurious suites there is a wide selection of accessories and fittings, from gold-plated taps and mirrors to wall tiles and Pier Cardin matching towels.

Royal Doulton

Sanitaryware manufacturers Royal Doulton have moved into the kitchen with a range of built-in coloured ceramic kitchen sinks.

Produced in durable, scratch-resistant, stainless ceramic the sinks come in shaded tones of beige, brown and yellow — Missouri Beige, Nevada Brown, Dakota Brown and Maryland Yellow. They can be supplied as double or single oval, circular or rectangular bowls with or without left or right hand drains and can be built into any worktop or standard kitchen unit.

The Moselle 6760 is a double oval bowl 920mm long x 450mm wide with a central taphole. The Loire 6740 is a single oval bowl an drainer measuring 920mm x 450mm with centrally sited tapholes for mixer and spray which permit fixing for a left or right hand drainer. The Alsace comprises a separate circular bowl (Alsace 6740) both with a diameter of 450mm.

The Moselle, Alsace and Loire can also be supplied with an optional grill drainer and wooden chopping board.

The Brittany 6710 is a single rectangular bowl and drainer, 920mm long x 505mm wide. The tapholes for mixer and spray allow for a left or right hand drainer. The Normandy 6700 is a double bowl with a single drainer, 1125 long x 505mm wide. The two tapholes for mixer and spray permit fixing of a left or right hand drainer. Both the Normandy and the Brittany have been designed so that, if required, a dish-washer can be accommodated under the drainer.

The Picardy 6720 is a double rectangular bowl with a centrally sited taphole. Overall dimensions: 920mm long x 505mm wide.

Further details from Manning & Usher Ltd.

Marley Plumbing

Marley Plumbing have perfected an Integral “O”-ring socketed PVC sewer and soil pipe.

By eliminating the need for a separate coupler the new Marley pipe is quicker and easier to install and therefore more economical in use. Lengths of the integral socketed Marley pipe are simply and permanently connected to each other with the aid of a rubber “O”-ring seal built into the cleverly designed coupling end of each section.

The 110mm (4”) diameter pipe is made in 6m lengths for sewer systems and in 2½m, 3m and 4m lengths for soil systems. Developed by Marley, the new pipe is being manufactured at the company’s extensive
Belco Selecta shower mixer valve (flush fitting) shown with Selecta shower kit.

Belco

The Selecta shower system is the perfect answer to the American and Continental criticism that our showers are ineffectual. This Selecta booster pump and shower mixer valve, combine to produce a shower of such potential that even the sternest critic will be deflated. When the Selecta shower kit is added the result is a shower of such versatility that the most fastidious will be happy.

The Selecta shower booster pump was launched on the market some twelve months ago during which time it has been acclaimed as one of the greatest innovations in the sphere of shower evolution. This pump produces an 18ft. simulated head to any existing head of water. The twin impellers will remain unaffected by other demands on the water system. Easy to install it produces a shower that is safe and reliable. Every new shower area will be incomplete without a Selecta shower booster pump but it can also be installed in existing systems.

The Selecta shower mixer valve is the very latest and most up to date shower mixer valve on the market. Of modern design, in three finishes, it is simple and safe to operate and automatically activates the pump. Modern technology has provided design and materials which ensure less wear and tear, less scalding or corrosion so that the valve is virtually maintenance free. The Selecta shower mixer valve is an important feature on the whole Selecta shower system and when used with the pump is so sensitive that a thermostatic control valve is not necessary. When fitted on its own, modern design engineering ensure a more abundant shower even without the pump.

Details from Doherty Ross & Armstrong Ltd., 40b Ravenhill Road, Belfast 6. Tel: Belfast 52613.

Twyfords

Twyfords Bathrooms, one of Britain’s leading bathroom manufacturers and exporters have something like a 300 year old pedigree in the production of ceramics.

Twyfords have recently launched a new colour Almond. A creamy off
BS 884/2 COMPRESSION FITTINGS
AND BRASSWARE

CREVAN s.r.l.
Via D. Alighieri
25064 GUSSAGO (BS)
ITALIA
tel. 030/2770769 - 2771498
telex: 300650 CREVAN 1

M’LEAN ROBERTS AGENCIES
Woodfarm Cottage
Kennelsfort Road
Palmerstown
DUBLIN 20
Ireland
tel. 267356
Seal-ring joints only where needed for thermal expansion

The Terrain soil system uses seal-ring joints only to accommodate normal expansion. Fewer joints mean fewer fixings, and savings in time and labour.

Stress-free solvent-welded joints

A true weld, as strong as the parent material. The system is stronger, more rigid, and needs less support.

Accessibility throughout the system

Our branches, bends and connectors provide maximum access. In addition, access doors are available where required.

Close coupling bend for tight areas

Terrain is ideal for installation where space is limited, as in narrow service ducts.
Prefabrication of multi-piece assemblies

The solvent-weld system is ideal for prefabrication. Terrain will assemble purpose built stacks, accurately under factory-controlled conditions, with no errors, no waste, and no security risks.

If you want to construct the finest possible soil system in the shortest possible time, here’s a tip—insist on Terrain. Terrain is the system made by professionals, for professionals. Its solvent-weld joints give you a rigid, stable structure which can be put together on site, or prefabricated in the factory. And either way, it needs less support—which means faster and easier installation.

Find out more about Terrain drainage systems today, by ringing us on Freephone 3115. You’ll find we’ve got all the answers at our fingertips.

Telephone 771801 for technical advice

ARE TERRAIN SOIL

Systems for Professionals.

Unidare Limited, Finglas, Dublin 11. Telephone 771801
If all bathrooms are the same, why do more people choose ours than any other?

The superlative quality of Armitage Shanks.

Armitage Shanks make beautiful bathrooms. Quality bathrooms with an extra splash of colour and an added touch of style.
You can choose your own, very individual suite from our Armitage Shanks range, right now.
And make your bathroom the beautiful place it ought to be.

armitage
shanks
The one you know best.
Armitage Shanks (Ire) Ltd.

Cookstown Industrial Estate, Tallaght, Co. Dublin.
Phone: 510731, 510951
PRODUCT REVIEW: PLUMBING EQUIPMENT AND SUPPLIES

White, Almond is the perfect foil for any other colour in the bathroom. It also represents the launch of a seventh new colour within three years, by Twyfords.

Like all the others, Almond was tested by householders and emerged as perhaps the new classic for the whole range, which now includes 10 colours plus two decorated suites.

Fashion favours pastels and reports show that the majority of people prefer to use ceramic tiles in the bathroom and they chose Almond as the best complement for any other colour. Almond looks most luxurious of all with Aztec 24 carat gold-plated fittings by Twyfords.

The third generation two-tone colour is new Harlequin Pampas from Twyfords. The familiar and proven Harlequin Sandalwood and Avocado was so heavy that Twyfords have added a new colour treatment to the popular Pampas.

Along with the new Harlequin Pampas comes another alternative choice of basin. In addition to Astral and Louise is the Nocturne, now available in all the Harlequin colours. Harlequin Avocado, Harlequin Sandalwood and now the new Harlequin Pampas.

Twyfords New Showers Shape Up
Twyfords Bathrooms have recently formed a new division, Twyfords Showers.

Twyfords Showers new '3000' luxury range is completely different in shape and finish from any other shower enclosure on the market. Manufactured by the British owned Huppe Company in Germany for Twyfords, the new luxury range includes a new side panel cleverly moulded with extra shelving outside and inside the shower itself. Called the 'Butler' side panel, it makes the most of every inch of bathroom space. Making a virtue from necessity it gives the new '3000' a unique look and a unique selling point.

Another exclusive look for the '3000' is its raindrop design moulded into the polystyrene doors and sides. It comes from one of Huppe's leading women designers who cleverly turned the water droplets which naturally form, into a design feature.

Also by Huppe from Twyfords, is the '1000' series, a limited range, designed for the budget conscious. Available in Clear or Topaz Brown polystyrene all the framework is in silver anodised finish and incorporates a front gliding door, fixed side panel and a corner unit.

Other Unique Features
The whole '3000' range has been commended, both for its good industrial design and safety by authorities in Germany, where the '3000' and the '1000' ranges are manufactured by Huppe, the leading shower enclosure manufacturers.

All '3000' models have the 'raindrop' design and frames in Classic Grey and Topaz Brown shades. Topaz blends with the gold anodised aluminium framework and grey with silver. All doors on the '3000' range incorporate a full length magnetic strip to ensure a positive closing action and glide smoothly along the fully enclosed lower guide rail for which a patent has been applied. This lower guide rail is specially designed without a groove so that it will not harbour dirt and can be easily wiped clean.

Both ranges are delivered complete with fixing screws and sealant for easy installation and in addition to standard models, special sizes can be made-to-measure. Frames are adjustable on all models to allow installation to out-of-true walls and stocks will be available for speedy delivery after Interbuild.

Another new product is the Colourarmour range of Twyfords' shower enclosures. The name says it all - 'colour' because they are bright and available in a choice of eight and 'Armour' because they are most indestructible.

Further details from John Usher Ltd., Tel: 519152.

Sanbra Fyffe
Irish Instantor Compression Couplings are manufactured in strict compliance with the Institute for Industrial Research, & Standards Specification, ref. I.S. 239:1980 and at the same time Sanbra Fyffe have applied to the Institute for a licence which will enable them to use the Standard Mark on Irish Instantor fittings as well as literature and this will be a further guarantee that Irish Instantor Compression Couplings are guaranteed and are the best available.

Sanbra Fyffe manufactured Irish Instantor Compression Couplings as well as a range of plumberware in a modern factory in Santry and they give employment to close on 300 people. The factory is capable of manufacturing the total requirements of the Irish market for Compression Couplings on specialised equipment which includes a high level of automation and this ensures accuracy in machining to the closest tolerances.

Irish Instantor Compression Couplings are freely available from builders merchants throughout the country and the comprehensive range includes a fitting for every conceivable type of job. The plumbing and heating industries are familiar with the quality and reliability of Irish Instantor Compression Couplings which for generations have been the market leaders and they are in demand by those who require dependability and an effective back up service.

We say, why not make sure that your stocks are adequate to meet the demand for the standard bearer - the all Irish reliable coupling.

Sanbra Fyffe introduced the Saflo range of chromium plated plumbers brassware to meet an increasing need in the middle sector of the housing market and since then the taps and mixers have proved extremely popular. The new Star Cross Top taps are ideally suited for municipal housing and are being selected because of the robust nature of the fittings. The Saflo range is manufactured to comply with BS 5412 Performance Standard.

Unidare
The Unidare-Terrain soil system has stress-free solvent-welded joints to give a strong, stable structure requiring less supports than other systems. Seal-ring joints are only used to accommodate normal expansion.

Published by ARROW@TU Dublin, 1982
Ideal Standard

Ideal-Standard’s range of Dualux bathroom brassware fittings, which incorporate the advanced ceramic disc valve principle, has been extended to include wash basin pillar taps. The new washerless taps which, like the other members of the Dualux family — wash basin and bidet mixer, and three types of bath mixer — and the Idealblend shower mixer range, offer years of maintenance-free operation.

The new Dualux wash basin pillar taps, which carry the ceramic disc technology into the area of the most simple and widely used type of water fitting, were previewed by Ideal-Standard at Interbuild '81.

In addition to completing the Dualux bathroom range, a new and wholly logical shape is introduced with the new wash basin pillar taps, in which the ceramic discs are housed in a neat and easily removable brass cartridge.

Consistent with other items in the Dualux range, the handles on the pillar taps are turned through only 90 degrees from closed to fully open.

Mr. Roger Coopoo, Ideal-Standard’s Marketing Director, said: “We believe that low cost is no longer the priority as people seek to improve bathroom standards. The new, technologically advanced and sophisticated Dualux pillar taps have been introduced because research has shown us that some people still prefer pillar taps on the wash basin but also demand trouble-free operation and top modern design”.

Smaller Brasilia bath

The luxury Brasilia suite has also been extended by the introduction of a 170cm x 75cm bath (approximately 5ft 6ins x 2ft 6ins). Together with the original 180cm x 80cm (approximately 6ft x 2ft 7ins) bath, the appeal of the Brasilia range — one of the most successful Ideal-Standard’s stable over the last decade — has been greatly widened.

Both the new, smaller bath and the larger bath will be supplied with new and elegant cast grips, which, if necessary, can be removed without the need for access to the underside of the bath.

Back-to-wall Michelangelo bidet

Ideal-Standard have also introduced a back-to-wall bidet to match the back-to-wall Michelangelo water closet which was announced recently. The new bidet, which fits neatly between wall and floor, is for use with a monoblock over-rim supply fitting. The introduction of the bidet means that water closets and bidets in the Michelangelo range now cover three applications — floor standing, wall mounted and back-to-wall — which makes the now famous Italian-created range by far the largest design-related range of bathroom products in the United Kingdom.

New urinal

A new urinal has been introduced to the Coroline range, which now comprises two sizes of wash basin (63cm and 56cm), a well-designed low-level wash down water closet as well as the urinal. The attractive urinal — planned to replace the Coronet urinal — may be used with a back inlet or top inlet spreader.

Crated complete bathroom

To be known as Developer Packs, Ideal-Standard are re-launching their packaged bathroom concept to offer complete suites — bath, wash basin, water closet and fittings — packaged in a single self-contained damage-resistant crate.

The new Developer Pack can be lifted by two personnel or a fork life truck. The choice of suites in the packs includes Brashila and Tiara wash basin and water closet, the Brasilia bath or Status bath, and a choice of pillar taps or mixers from Ideal-Standard’s Jelline range.

Protection for luxury

Sensitive to the need to ensure top quality luxury products are not damaged in delivery, Ideal-Standard now protect water closets and bidets in their Michelangelo, Linda and Brashila ranges, in blocks of polyethylene foam which cushion the extremities of the pieces.

Rough handling tests, simulating the worst kind of treatment — including hard knocks and even drops — have proved that the packaging is highly effective against damage-producing situations.

Further details from K M Reynolds Ltd., Tel: 520333.
Efficient Ventilation

This feature discusses various aspects of ventilation in modern offices and works and why it is essential for health, comfort and optimum efficiency of personnel.

Ventilation in the home is something we regard as essential to prevent cooking smells, steam, fumes and grease from the kitchen spreading through the rest of the house, causing condensation, an unsavoury atmosphere and damage to décor. In the office and works environment, although there may be no cooking smells to contend with, a pleasant environment is equally vital to the well-being and efficient operation of staff who spend each working day (on average, seven or eight hours) in the same room. Basically, ventilation in any room where there is a high concentration of people is necessary to remove the impurities in the air caused by those people. These include carbon dioxide from breathing, tobacco smoke, moisture loss from the body and body odours. Add to these the heat generated by office machines and the dust when emanates from paper, particularly near a duplicating machine, and it is clear that the random opening of windows on a pleasant day is far from enough to keep the air reasonably fresh and clean. In factories and workshops, the situation is aggravated by the tremendous variety of manufacturing and handling processes which give off a wide range of pollutants from heat to toxic gasses.

Health is also of great importance and every personnel manager knows to his cost how quickly a particularly virulent "bug" can do the rounds of personnel. The continuous removal of foul air can do a great deal towards stopping the build-up of germs. This is amply demonstrated by research carried out in hospitals on cross infection and ventilation of wards, where the bacteria count was reduced from 263 per 100 cu. ft. to between 3 and 7 per 100 cu. ft. (2.83 cu.m) by adequate ventilation using extract fans. On the subject of health, consider the presence of carbon dioxide in the air. This is regarded with sufficient importance to merit official recommendations on permissible levels in the air. These are laid down in the Chartered Institution of Building Services Engineers Guide which states that the carbon dioxide level should not rise above 0.5%. Admittedly, to prevent it exceeding this level it is necessary only to provide 0.001 cu. m of fresh air per person, and natural ventilation is normally sufficient for this. However, it has long been accepted that ventilation for carbon dioxide alone is not the best basis for designing a ventilation system. Worth mentioning at this point are the symptoms caused by excess carbon dioxide - drowsiness, slight headaches and a slowing down of work rate.

In offices and factories, there is legislation in the U.K. applicable to ventilation. In offices this is dependent on the air space available per person and the minimum is 11.5 cubic metres per person. With that minimum volume there is a minimum fresh air requirement rate of 4.72 l/s (0.00472 cu. m). There are other statutory requirements but, under normal conditions, to create a feeling of lightness and freshness in the air, a minimum of six air changes per hour has been found to be necessary in practice for offices and eight air changes per hour for factories and workrooms. These rates of extraction are usually more than adequate to deal with both the statutory and actual bodily requirements, but much higher rates will be needed when problems such as heat, fumes and smoke are present. If our weather conditions were always perfect, the wind always blew in the right direction at the correct speed and temperature, were always moderate, the normal ventilation rates could be achieved by simply opening windows and doors. However, to create reliable conditions, mechanical ventilation using electric fans is necessary.

Warm, four air rises to ceiling level so it is logical to extract that air at high level and the extract point should be as close to the ceiling as possible, as this prevents foul air 'pocketing' above the fans.

There is a popular misconception that when people think of mechanical ventilation they imagine only cold, outside air being blown into a room. On its own, without an extract system as well, all this tends to do is blow foul air from high level down to occupation level (although there are systems which introduce treated air at high level with low level extract, these systems tend to be expensive and complicated and require careful design by a ventilation engineer). For the simplest and effective ventilation schemes, in the majority of cases high level extraction is the most effective in both practical and economic terms. To give the best clearance of four air from rooms the fans have not only to be sited at high levels, but also as far away as possible from the points where air is going to enter the room (for example doors or, in good weather, windows). In larger rooms a number of fans can be used to distribute the air flow more evenly. One of the simplest and most economical ways of doing this is to use straightforward window units or where these cannot be ideally situated, fans can be sited in walls or roofs.

What we have dealt with so far is the average application of the basic necessities of ventilation. Stop now to consider our large, modern premises with their vast expanses of glass and their enormous array of electrically powered equipment — and we have a somewhat different ventilation problem. The solar heat gain in the warmer months of the year and the heat generated by electrical equipment require much more careful treatment, if we are to prevent staff feeling drowsy and less like work as the day goes on. Circumstances obviously vary from one building to another, and require a ventilation engineer to evaluate the heat problems and make recommendations to solve them.

The removal of fumes and heat from work processes is an even more specialised job. There are recommended maximum concentrations for many of the toxic dusts, fumes and gases etc., which may be given off in industrial processes. These "Threshold Limit Values" or T.L.V.s originate from the U.S.A., and are the maximum concentrations of the chemicals to which workers may be continuously exposed.

To get the necessary dilution of a pollutant, needs careful analysis of the conditions, calculations, and treatment, and should only be undertaken by a specialist in this field. This is very important, as warmer conditions, longer working
PRODUCT REVIEW: FILTERS, FANS, BLOWERS AND AIR HEATERS

Chidlow

Chidlow's entry into industrial space heating was based on the precept that escalating cost are causing everyone to examine ways and means of using energy resources more efficiently — no one more so than the industrialist.

The Chidlow industrial space heater has been designed to take advantage of off peak night rates for electricity by using energy storage techniques.

Two sizes are available, 60kW and 72 kW and they are particularly suited to factory areas of around 2,000m².

Chidlow's involvement in the domestic space heater business over the past 20 years and the company's expertise in the design of industrial switch gear and other specialised equipment has given them the experience and background knowledge required to research and develop this addition to their product range.

Built at their Shrewsbury factory this new industrial space heater embodies all the benefits of using electricity — it is clean, easy to maintain, is fully-automatic and responds to the prevailing weather conditions by self regulating controls. It can be pre-set for working-day use only and because it gives out clean air and causes no exhaust gases the Chidlow space heater provides better working conditions.

Environmentally, of course, because no fumes are emitted there is no question of pollution.

For the factory/warehouse manager or maintenance engineer the Chidlow space heater will become a favourite — there are no burners to maintain, it does not consume oxygen, no messy fuels to order, store or worry about, no additional ventilation is required — just clean, quick response, automatically controlled heating, when it wanted, where its wanted.

Further details from Redbro Ltd., Tel: 2666677.

Roof Units

The most comprehensive range of bathroom toilet duct and wall fans ever offered, is being launched from a platform of guaranteed engineering, quality, design, and a unit to suit most installations.

Roof Units Marketing Limited is the first company to market a range of fans primarily designed to give the specifier and installer the widest possible choice to suit personal and project requirements.

The Maico (say My co) range represents new concepts in fan engineering and are the product of years of research and development.

Elegant, but more important unobtrusive in today's modern bathrooms, the Maico range of toilet extract and duct fans are available in varying motor sizes, shutter fittings, automatic shutter actions, speed controls, even with plastic wall sleeve, wallplugs and screws.

The range has been specifically designed to give a fan to suit most installations.

Designed for the builder and electrician for fast, easy installation the Maico range incorporates many advanced design features.

The main development has been the introduction of a completely silent automatic shutter control system.

A tempered bi-metal strip automatically controls the shutter open/closed action, silently and positively.

In addition, the design of the fans eliminates the traditional "blister" on the wall and replaces it with a precision wall fitted unit.

Ted Peacock, Managing Director of Roof Units Marketing Limited, commented "Never has a specifier or installer been

Frank R. Latham,
Technical Sales Manager,
Vent-Axia

Picture shows the 72kW version of the newest form of industrial space heating, the Chidlow space heater.
Denhu Limited

HEATING, VENTILATING and AIR CONDITIONING ENGINEERS and... SHEETMETAL CONTRACTORS

Suppliers and Manufacturers of:

Cowls
Lacquer Board
Spiro Ducting
Oil Tanks
Olsen Warm Air Furnaces
Twin-wall Steel Flues
Manhole Covers

WALKINSTOWN AVENUE,
DUBLIN 12
TELEPHONE 505954/505576/505178

Keep the straight through air flow!

Two new radial fan systems from Helios for direct installation into ducting or flexible ducting systems with straight through airflow. Low cost, no additional connecting ducting required, space saving, can be installed in any position, speed reguletable from 0-100%.

HELIOS Radial Duct Fan RRV

Turbo fan with high pressure characteristics, in 7 sizes to suit nominal duct diameters. Performance from 150-1330 m³/h, and suitable for moving small and medium air volumes in domestic, commercial, and industrial applications.

HELIOS Radial Duct Fan Radax

To be integrated into a duct system as a module of the duct work, installed simply and quickly. Suitable for standard duct dimensions. High pressure, low noise. Complete range available with 20 models, ranging from 1000-10,000 m³/h in air volume.

Details available from our Irish Distributors:

Published by ARROW@TU Dublin, 1982
Dantherm fully automatic warm air heater

Flue Economiser

GTA Gas Fired Unit Heater

Call - Contact:
Glen Tolka, P.O. Box 298, 144 Richmond Road, Dublin 3. Phone: 376061 Telex: 5892
offered such a wide choice of bathroom, toilet, duct and wall fans. The Maico range is available with combinations of grilles, fixed, automatic and electrically operated shutters to suit most needs. Wall sleeves are offered and, wallplugs and screws are provided. Now the specifier is going to be spoilt with Europe’s No. 1 range”.

Further details from Dan Chambers Ltd., Tel: 720971 720448.

GKN Autoparts

Vent-Axia produce two ranges of extract/intake ventilation units, providing a total of over 50 different models. The Universal range comprises size 12 (305 mm), size 9 (229 mm), size 7 (191 mm) and size 6 (152 mm), all available in window, roof, wall and panel units. The range is specially designed to incorporate the qualities of long life, quiet operation and minimum maintenance and all units feature one of Vent-Axia’s exclusive developments, the Autospring shutter — which operates perfectly at whatever angle the unit is installed.

The models in the Universal range are finished in tundra to blend easily with most backgrounds. The Vent-Axia Standard range is available in the same sizes and models as the Universal range, but in black or ivory finish. For both ranges there are Rangemaster controllers to vary the speed and direction of air flow.

Vent-axia produces a complete range of Ventilation Accessories to make this sort of installation simple and effective. These Accessories increase the versatility of the fan units, providing a complete ventilation package deal. Application techniques are simple, thus filling the gap between expensive complicated central ducted ventilation systems and the basic fan in the office windows. The range includes a wide selection of grilles, plates, louvres, flexible ducting, filters and fire dampers. Installation costs using Vent-Axia equipment can be at least 50% lower than the cost of installing central ducted systems. The extensive range of accessories makes installation simple, even in roofs and walls where accessibility would normally be difficult. Many modern buildings have widely spaced double

• The Roof Unit Ltd. Maico range provides a fan to suit virtually any installation.

GKN Autoparts

SERMET (NI) LTD

13 Lisburn Street, Hillsborough, Co.Down BT26 6AB
Tel: Hillsborough 682531

SERMET (DUBLIN) LTD

70 Lower Mount Town; Mount Town Road, Dunlaoghaire, Co.Dublin.
Tel: Dublin 801964

Published by ARROW@TU Dublin, 1982
PRODUCT REVIEW: FILTERS, FANS, BLOWERS AND AIR HEATERS

windows to minimise traffic noise and this presents no problem, as Vent-Axia fans can be split into two halves and, with additional accessories, mounted offset in the window panes so that sound cannot pass straight through into the room. Although the importance of air extraction has been stressed, the ability of Vent-Axia fans to be reversed is particularly useful in very hot weather when the turbulence caused by air being pumped into the room can give added relief to the occupants.

GKN Autoparts offer a free design service to architects, consulting engineers and specifiers for ventilation problems. They also carry a very comprehensive range of Vent-Axia and Helios ventilation units and accessories. These accessories complete the range of products and provides even greater flexibility in solving all kinds of ventilation problems.

Accessories ex-stock include: Roof plate assemblies (for flat or pitched roofs), soaker flange sheets to suit most profiles of corrugation, ceiling housing (for ceiling void or concealed ventilation), wall plates (fixed and removable types), egg crate grilles, non-vision door grilles and external weather louvres. PVC flexible ducting in sizes 102mm, 178mm, 229 mm, 254mm, 305mm, and 405mm and the corresponding worm drive clips.

Adaptor kits for splitting Vent-Axis fans to accommodate a large fixing thickness between the two are also available. Four core white PVC cable is supplied in minimum lengths of 5 m.

A comprehensive ventilation ring binder can be obtained from Vent-Axia Division, GKN Autoparts (Ire) Ltd., Camac Close, Emmet Road, Inchicore, Dublin 8. (Tel: 781700 Telex: 30830).

Dantherm

Dantherm gasfired unit heaters are factory assembled, low static pressure type for use with natural or propane gas. They are equipped with either a powerful axial fan for free blowing and heating or with a centrifugal fan or duct or downflow application. The unit heaters can be suspended anywhere and are designed for effective heating or ventilation of areas such as factories, workshops, garages, supermarkets and sports centres.

Further details from Hendron Bros. (Machinery) Ltd., Tel: 376061.

Halifax

Multivane forward curved fans were originally developed for the Heating and Ventilating Industry, where air movement requirements are characterised by the need to handle high air flow rates against relatively low pressure differentials, with minimum power consumption and equally, if not of even greater importance, low noise levels.

Wider applications subsequently developed, and included many in the process engineering industries, where there is a requirement to handle fumes and hot gases, for example in continuous ovens, batch drying and textile processing plants, to name but a few.

To a design and quality production orientated organisation such as the Halifax Fan Manufacturing Company (International) Ltd., this increasing use of multivane forward curved fans provided a welcome impetus to invest in a coherent research and development programme directed towards improving standards in all aspects of performance and advanced production techniques.

And it is from this basis that Halifax Fan now introduce their latest range of multivane forward curved fans which cater for the widest fields of application, operating at both ambient and elevated temperatures, with the optimum combination of efficiency, generated sound levels, reliability and cost.
A MAJOR NEW EXHIBITION

GAS Ireland

DATES: Tuesday 6th and Wednesday 7th July 1982.
VENUE: Burlington Hotel Dublin.
OPEN TIMES: 11 am - 8 pm daily.
ORGANISERS: Irish Trade & Technical Exhibitions (ITTEX) LTD.
5/7 Main St., Blackrock, Co. Dublin.
Telephone 885001, 885056.

powrmatic air heaters

Full range ex. stock.
100,000 btu/h
to 1 million btu/h
FITTED WITH RIELLO BURNERS

Ring Immediately for the Most Competitive Prices in Ireland

Sole Distributors for:
LANDON KINGSWAY
Fire Protection Equipment and Accessories
powrmatic

HEATING CONTROLS & DEVICES (I) LTD.
45 Broomhill Close, Tallaght, Co. Dublin.
Telephone: 01-521533/521635.
6 Ballyoran Lane, Upper Newtownards Road, Dundonald, Belfast BT 16 OTL.
Dundonald 9111
A SUBSIDIARY OF FERGUSON INDUSTRIAL HOLDDINGS LTD.
Airflow

Mechanical noise, wasted space and the need for regular maintenance have always been problems with belt-driven fans. To overcome these disadvantages, Airflow have added a large direct drive fan to their Category One range.

The 11412WL is a powerful double-inlet, double-width centrifugal fan which is intended for use in medium sized ventilation systems where a low noise level is of paramount importance. It is also useful for large clean-room installations where each fan can serve up to 2.3 m² (25 ft²) of “absolute” filter.

The fan is fitted with a 950 rpm capacitor start and run motor with thermal overload and lubricated-for-life bearings. It is wound for 240V single-phase supply and is suitable for continuous use in ambient temperatures up to 40°C. A 3 phase version will be available shortly.

Performance of the 11412WL ranges from 240 litre/s against 330 Pa to 1700 litre/s against 60 Pa (530 cfm against 1.3 in wg to 3600 cfm against 0.24 in wg). The mounting feet supplied are adjustable to allow vertical, top horizontal or bottom horizontal discharge. Alternatively, the fan may be mounted by means of the outlet flange.

As with all Category One fans, details of the 11412WL is immediately available from Airflow stockists.

Statistics show that our policy for selling industrial warm air heaters is proving successful.

It's a simple policy based on the principle of not letting people down. We ensure that all our stockists and installers get what they want.

Good reliable products. Highly competitive prices. Prompt delivery, and the support and specialist advice of a respected and established company.

These benefits in turn are passed on to the customer.

If you want to find out more about how we have become Europe's no. 1 post the coupon.

We'll send you some of our free colour literature and more details.

Contact R. Hutton, Area Manager (Ireland), 42 Wesley Lawns, Sandyford Road, Dublin. Tel: Dublin 953343
Standard & Pochin

Designed on simple principles, BH Series air handlers from Standard and Pochin are inexpensive and versatile packaged units for smaller sized water-fed heating and ventilating systems.

BH units have a flanged outlet for duct connection and can be installed free-standing or suspended from roofing in either horizontal or vertical positions. Four models are available with heating capacities varying from 60,000 to 260,000 Btu/hr and air volume outputs in the 0.34 to 1.8 m³/sec. range.

The cabinet is a robust, steel panel construction.

Join our Fan Club...

Halifax fans are the natural choice when it comes to quality, reliability and efficiency.

The result of many years of engineering design and development, these fans are available in a wide range of forms to serve a variety of industrial purposes:

- High Pressure Blowers.
- Bifurcated Axial Fans.

Fans can also be individually designed to suit customers’ specific requirements.

HALIFAX FAN MANUFACTURING CO. (INTERNATIONAL) LTD.
Specialists where service and quality count.

HALIFAX FAN MANUFACTURING CO. (INTERNATIONAL) LTD.
MISTRAL WORKS, ROOKERY LANE, SALTERHEBBLE, HALIFAX,
WEST YORKSHIRE HX3 0PY. TEL: 0422 56776.

Recuperator, in common with all Colt products, is yet another practical example of Colt’s drive to cut their customers’ operating costs.

Colt

Immediate fuel savings and a fast payback in less than two seasons are the business benefits promised by Colt International’s newly launched Recuperator.

Recovering heat normally wasted with flue gases and using it to pre-heat combustion air on their already acclaimed MK IV turbostatic heaters, the Colt Recuperator can create a further 5% reduction in heating bills.

And the system can be fitted simply on the air inlet of Colt’s unique forced draught combustion system if installed as well as new Colt heaters – putting those savings easily within the grasp of thousands of companies.

Guaranteed for up to 10 years, backed by regular maintenance and 24 hour emergency service, the Colt Recuperator, in common with all Colt products, is yet another practical example of Colt’s drive to cut their customers’ operating costs.
COMPLETE FILTRATION FROM GLOWTHERM

Guaranteed Irish Panel, Washable, Grease and Bag Filters

FARR FILTERS
• Extended Media • Carbon Filters • High Efficiency Bag Filters • Stainless Steel Grease Filters • Tank Dust Collectors.

Luwa
Ultrafilters, Fine Dust Filters, Safe Change Housings, Filtrasept Terminal Units, Positive Shut-off Valves.

LANCASTER GLASS — Complete range of replacement auto roll refills for all models.

AUCHARD DEVELOPMENT CO — Acrylic fibre media as supplied to all major car manufacturers in Ireland.

(CLEAN ROOM CONSTRUCTION LTD)
Design, construction and equipment for all types of — contamination control including laminar flow clean rooms completely serviced portable clean rooms are also available on request. * Monitoring service for clean areas.

Further information available from the sole all Ireland agents.
Perrystown House, Whitehall Cross, Terenure, Dublin 12.
Tel: 513887/516531/518644.
Telex: 30841

The Total Package

FROM WOODS

*Series MF
Mixed flow, low profile, 6 sizes, for curb or purlin mounting. Unit constructed of moulded glass fibre reinforced resin. Impeller of aluminium.

VAROFOIL FANS
12 sizes, 630-2800 mm diameters. Air volumes up to 200m³/s (425000cfm). static pressures up to 2.2kPa (58 lb). Pneumatic or electric actuation available. Infinitely variable pitch angle in motion adjustment -4° to +32°.

GEC Distributors offer the architect and consulting engineer a comprehensive range of fans, silencers, air handling units, roof extract units, and air distribution equipment.

GLOWTHERM FILTRATION LTD.
Aidelle

In line with their policy for continued product development, Aidelle are introducing a new design for their small Loovent Extractor Fan. The Mark II Loovent, while retaining the powerful centrifugal impeller incorporated in the previous version, includes several refinements to improve installation and efficiency. The new Loovent features a secondary chassis which can be first fixed on the wall or ceiling. The fan unit is then fitted to the chassis by simply fastening three screws and plugging in the electrical connections. This arrangement provides greater on-site security and in conjunction with the new plug-in timer design, facilitates future maintenance and servicing.

Installation is further simplified by the shorter outlet spigot which makes ducting easier in confined spaces by enabling a bend to be fitted closer to the unit. The fan motor is resiliently mounted to reduce vibration and, together with a larger fan scroll case and grille area, ensures quieter running and operation.

The Loovent cover has been re-styled to give a modern appearance and the smooth white finish and flush grille make cleaning easy.

Further information from McKenna (Ireland) Ltd., Tel: 300977.

Reconair

Reconair Ltd., are sole distributors in Ireland for Wolf, NuAire and Fibreglass Ltd.

The range of Wolf unit heaters ranges in capacity from 5.5KW to 275KW and 1,300 m³/hr to 10,200 m³/hr. The solid and elegant casing consists of a welded frame construction with galvanised steel sheet panels. The panels are finished in both water and heat resistant paints. The smooth running motor has built-in thermo-contacts for complete motor protection.

Energy Conservation and High Efficiency Centrifugal Fans

Over the next few issues of HVN we will be publishing an article on Conservation of Energy by the Application of High Efficiency Centrifugal Fans to Dust Control Systems. The article is by David A. Scott, Managing Director, Halifax Fan Manufacturing Co. Ltd., and was presented to the Filtration Society of London recently. This important article gives us the most up to date thinking on fan design and how to improve efficiency.

Published by ARROW @TU Dublin, 1982
A new company, Modern Plant Components Ltd., Removal House, 195 York Road, Belfast, is representing Alcon Solenoid Valves, Bamford Flow Indicators, Birkett Relief Valves together with a range of shower and wash fountains will be managed by Mark Hewitt, who has had a long connection with the heating and catering trade.

The Energy Studies Group of the New University at Coleraine, headed by Dr. McMullan has obtained a grant from the E.E.C. exceeding £200,000 to continue their research into the world of the heat pump.

Some years ago the group stole the thunder at the Heat & Power Exhibition at Balmoral when they introduced their own locally produced unit. Since that date the group has continued its research into the development of the heat pump and other alternative forms of energy.

Last month the Irish Marinex Petroleum Corporation commissioned a survey by the French company, CGG, in a renewed search for oil or gas in Fermanagh. The survey which is usually conducted by the sending of vibrations into the earth and analysing the result by special instruments will take place over a period of a couple of months.

Now available from HVCA Publications, Old Mansion House, Eamont Bridge, Penrith, Cumbria, is the second edition of the Model Conditions of Sub-sub-contract costing £2.00 (sterling) and the Revised Guidance Notes at £1.50 (sterling).

John Kelly Ltd., Agency Dept., of 23 Station Street, Belfast, has been appointed sole agents on Northern Ireland for the Triancio Redfyre commercial and industrial range of solid fuel boilers.

The T.G.C. series of gravity feed boilers is available in the following outputs: 300,000, 450,000, 450,000, 600,000, 750,000 and 900,000 btu's per hour.

The TGC anthracite gravity feed boiler ensures optimum heat absorption with a heat to water efficiency in excess of 80 per cent.

Of vertical tube design, the TGC requires the minimum of attention — large hopper and economical burning rate ensure that refuelling is only required once a day under normal operating conditions.

Spent fuel forms solid clinker which is removed by the ram ejection mechanism into the large ashtry whilst the fire door remains closed, eliminating dust and fumes.

The hopper is easily hand-fed, but a simple screw elevator can be employed to perform this function. The boiler incorporates a thermodynamically-controlled fan with a patented air control device for metering blast and idling air. Secondary above the bed for completion of combustion.

Belfast architects Shanks, Leighton, Kennedy & Fitzgerald have won third prize in a national architectural competition for the design of low cost energy saving homes to be erected on a proposed London site at Crystal Palace.

Jack Willis, Managing Director of Willis Heating Ltd. presented the William Welles Perpetual Trophy to the Belfast College of Technology to be presented annually to the best craft apprentice in heating and ventilating. Also present at the presentation were Mr. Welsh head of the department, Mr. Galway a lecturer, Mr. E. Willis and Mr. J. Pettis, Director of Willis Heating Ltd. Appropriately the first winner of the Cup was a Wells apprentice, Graham Cully who received the trophy from Mr. Pettis.

I.E.S. Industrial (Ireland) Ltd., 21 Station Street, Belfast, have increased their sales force by the appointment of Mr. Bob Hobson as a Sales Engineer with special responsibilities for the Energy Related activities of the company.

Mr. Hobson, a chartered engineer has a long experience in the industrial field. He will cover all Ireland concentrating on the range of Maxecon and Westgarth boilers, Clayton steam generators, Babcock Bristol instruments and Ruston diesel generators which the company represents.

Over 150 members and their guests gathered in the Culloden Hotel, Craigavon for the Annual Dinner of the Northern Ireland Branch of the Chartered Institute of Building Services, CIBS.

Mr. Harry Flanagan, Northern Ireland Chairman presided over the function. The toast of the Institute was proposed by local radio presenter Tony Martin who set the tone for the evening in a light hearted speech and instead of the Irish jokes we had the heating engineer jokes.

The reply to the toast was by the President of the Institute, Mr. Peter Coles who had travelled to Belfast for the occasion. Mr. Coles congratulated the N.I. Branch on their activities and spoke of the Institute’s desire to maintain and improve standards.

The toast of the Guests, who included J. Morrison, Chairman of the RIQS, H. McVieen, Chairman of the ICE, S. Holmes of the CITB, G. Stewart, Chairman of H.V.C.A. was proposed by Terry Jackson who specially welcomed Mr. E. O’Brien, Chairman M. A. Maloney, Vice-chairman and L. Kane, Secretary of the Republic of Ireland Branch of the Institute.

Mr. Eric McBride, Secretary of the N.I. Section of the Institute of Energy expressed the thanks of the guests and again issued a special welcome to the Southern guests and expressed the hope that there would be more co-operation between the various institutes.

Of course the party after the party always ensures a successful evening and this one was no exception as many parties went on to the wee small hours.

H.A.C. Catherwood & Sons (Belfast) Ltd. of Hopefield Avenue, Belfast, have been appointed distributors for C.I.B.C.O. Armex cellulose loft insulator material. C.I.B.C.O. Armex approved by the N.I.H.E. and N.H.B.C. is available under the loft grants scheme. It is unlike mineral and glass fibre insulation in that it is organic which it is claimed by its structure provides greater heat resistance.

Using special blowing machines to ensure penetration & even distribution there are a number of approved contractors already appointed in the Province.
Cold Stores, Refrigerated Displays and Accessories

Just walk into any supermarket and what is the first thing that you notice, apart from the food that is — of course it is the vast amount of space that is given to the frozen foods department. The popularity in supermarkets of refrigerated displays in its various forms has grown recently and together with the use of the home freezer has popularised frozen foods beyond all expectations. This is the only sector in the refrigeration business to show any kind of growth. The industry has taken a bashing, especially the agricultural end as the meat industry has lost out to live export. Supermarkets do not have the sole rights to frozen foods and the local grocer has been quick to see the benefits of stocking foods that have a good shelf life and good profitability. If he buys just one or two units there are up to 10,000 small grocers across the country who are also potential customers.

Fermod

The Fermostock shelving system being manufactured from anodized aluminium (20 micron) is extremely strong, durable and resistant to corrosion. Its “food classification” is due not only to material quality, but also to design. Ease of maintenance and cleaning is achieved by having removable shelves.

The food classification properties are maintained throughout its long life due to the non-corrosive material — even when it becomes marked or scratched.

Standard shelf dimensions: lengths 700, 800, 1000, 1200 and 1300mm — widths 400, 480, 560mm. These five sizes give maximum flexibility of design for any shelving system.

The height of the shelves can be adjusted in increments of 150mm. Two types of uprights: end upright and intermediate upright. Standard upright dimensions: height 1800mm — width 400, 480 and 560mm. Load bearing capacity uniformly distributed: aluminium 200 kg/m² — stainless steel 300 kg/m². Options: rollers — meat hooks — other design to special requirements.

Features:
- Easy cleaning with removable shelves.
- Easy access from all sides.
- Extremely rigid construction.
- Maximum flexibility of application.
- Can be erected in L - T - U and X configurations.
- Quick assembly without bolts.
- Stainless steel and aluminium can be used together in one system.

Adjustable screw feet, to allow minute adjustment for irregular floors.

Applications: Cold rooms, butchery, grocery, supermarkets, hospitals, restaurants, hotels, can­teens, etc.

Further details from RSL Ltd.

Searle

HRP Walker, the Dublin and Belfast refrigeration component wholesale subsidiary of Walker Air Conditioning, is offering the Searle range of air cooled condensers, coils, unit coolers and allied products throughout the 32 counties.

Walker has been analysing all the products available from its HRP Division with a view to strengthening its product offering to the frig trade and is now taking on the Searle range in place of Myson. HPR Walker claim the Searle product offering is greater, the quality is well established, and the price competitive.

The company is also seeking new larger premises in Dublin from which to operate in order to further improve its service to the trade. A number of possible new locations are being actively considered at present.

HRP Walker will now add Searle to its other major lines which are copper tube; Isceon refrigerant; Aspera, DWM Cope­land, Danfoss and Lec compressors and condensing units; Pedding­ton thermostats, pressure controls and expansion valves; KMP driers; Imperial Gould servicing tools Watts line valves; Ranco controls; Armaflex insulation and Sabroe components.

The major Searle products available from HRP Walker are the T range of compact coolers for cabinets and small cold rooms; the UCL and K ranges of

Published by ARROW@TU Dublin, 1982
standard unit coolers for medium or low temperature applications and the new low flow velocity coolers ideal for food preparation areas, and a wide range of condensers.

The Searle products for HRP Walker will be supplied by HRP Export, the overseas arm of the HRP Group which has won the UK franchise for Searle.

HRP Walker also hold large stocks of compressors, evaporators, piping, controls and components, in short the package of products for virtually any job. Among the franchise the company holds are, Isecon refrigerant, DWM Copeland condensing units, Myson coolers and condensers, Teddington thermostats and expansion valves, KMP driers, Imperial Grould servicing tools, Watts line valves, LEC condensing units and compressors, Ranco controls, Danfoss compressors and condensing units, Robinaire tools and service equipment, Armaflex insulation, Yorkshire Imperial copper tube, Sabroe components.

But whatever the product it is vital for the wholesaler to have real product knowledge. Some manufacturers offer a seemingly bewildering choice, as a wholesaler with a list of alternatives to offer, HRP can be relied upon to recommend the right hardware for the job.

Further information from HRP Walker Ltd.

Walker

Two recently introduced reciprocating liquid chillers are available from Walker Air Conditioning Ltd.

The 30HK and 30HL Series are each available in four sizes with nominal cooling in the range of 118 to 210kW and are ideal for use in chilled water air conditioning systems and various type of process cooling applications.

The 30HK models are packaged units complete with cooler, condenser(s) controls, factory refrigerant charging and internal piping and wiring.

The 30HL series is a condenserless version of the basic 30HK, shipped with a holding charge of refrigerant and specially designed for applications with remote water, air-cooled or evaporating-type condensers.

Both ranges are designed for easy installation. On-site the only connections to be made are external water and power to the 30HK and refrigerant line connectors to the remote condenser for the 30HL.

The series are also extremely compact, easily able to pass through standard doorways and requiring minimal floor space.

In all applications, quiet operation is important and Carlyle have ensured this with both Series.

Enclosure panels around the compressor are insulated and mufflers are fitted to deaden hot gas pulsations. The compressors are also mounted on heavy sprints to minimise operation noise and the transmission of potentially damaging vibrations to the building structure itself.

Both 30HK and 30HL models have low running costs, enhanced by sequential starting and stepping up multiple compressors, two separate refrigerant circuits for the most efficient operation on part-load and refrigerant subcooling which increases system capacity without raising power consumption.

Both Series also have low maintenance costs, which are minimised by ease of service — achieve, for instance, by incorporating bolted semi-hermetic compressors — and several self-protecting features.

These include a filter-drier, fitted as standard to keep refrigerant circuits free of harmful moisture and contaminants, quick-
sensing elements fitted to compressor motors to protect them against overheating and a moisture-indicating sight glass which allows continuous and direct monitoring of the refrigerant circuit, showing its moisture content on an easily read colour indicator.

For both Series, nominal cooling capacities are the same — 118kW for the 030 model; 144kW for the 040, 167kW for the 050 and 210kW for the 060. Operating weights range from 798 to 993 Kg for the 30HL series, and from 1284 to 1542Kg for the 30HK units.

Optional accessories available include oil pressure safety switch (fitted as standard to the 30HL), a remote control panel and a control circuit transformer.

Ranco

A versatile design of electronic digital commercial refrigeration thermostat offering either one or two-stage switching with indication, are available from Ranco. Known as the E49 series, this is stated to be the first commercially marketed electronic readout thermostat for commercial refrigeration use offered by a major controls company. Typical applications include cold rooms, blood banks, milk coolers, display cases, freezers and water chillers.

The E49 is a self-contained unit, with clear LED read-out of sensor temperature, combining the function of two normally separate mechanical units, a thermostat and a thermometer. Already a desirable concept for the UK, this is becoming a mandatory requirement in some countries. Read-out itself is more visible than a normal mercury thermometer. The read-out and thermostat are housed in a DIN-standard enclosure designed for simple panel mounting. Remote sensing up to 100m is possible, since the E49 works in conjunction with an NT C sensor located in the controlled medium.

The digital LED read-out displays at all times the temperature at the sensor. As the temperature of the controlled medium rises and falls around the set point, an s.p.d.t. relay is energised and de-energised. (In the case of the two stage versions, the two stages switch sequentially). Signal lights are lit when the relay(s) is energised (when the sensor temperature is above or...
PRODUCT REVIEW: COLD STORES, REFRIGERATED DISPLAYS AND ACCESSORIES

Robinair
Robinair's development programme for a new range of test instruments, which commenced with new analogue and digital temperature testers last year, is continued with the introduction of a solid state Thermistor Vacuum gauge. Robinair's new vacuum gauge not only covers the refrigeration and air conditioning service engineer's requirement to be shown accurate vacuum readings, but is also an instrument that is rugged enough to stand up to field service work. Robinair's new gauge features solid state circuitry to provide this robust requirement and 10 individual light emitting diodes to indicate clearly and accurately the vacuum levels. Part No. 14830 is battery operated and is provided with a durable plastic carrying case that can be hung from a hook for convenience. Competitively priced against compensated dial type vacuum gauges, this new Robinair instrument is the ultimate in convenience and accuracy for vacuum measurement.

The latest addition to the Robinair range of test instruments, following the introduction of temperature testers and vacuum gauges for the refrigeration service, is a brand new Volt/amp/wattmeter, Part No. 14865.
Robinair's new instrument has normal and peak switch settings which enable the serviceman to read both normal and peak conditions. The 14865 comes in a rugged carrying case, provides an easy to see, digital reading and is capable of holding peak current readings.

Further details obtainable from RSL Ireland Ltd.

Danfoss
Danfoss automatic controls for industrial refrigeration plants are the obvious choice for the majority of refrigeration systems, e.g. in cold stores, slaughterhouses, breweries, dairies and refrigeration ships. Danfoss attach great importance to having an extensive programme so that their automatic controls for refrigeration plants can cover practically all the functions you could wish for.

Their range of automatic controls for industrial refrigeration plants includes for example: Thermostatic expansion valves; Modulating low and high-pressure float systems; Electronic liquid level regulators; Thermostatic liquid level regulators; Liquid level alarm; Thermostatic injection valves; Evaporating pressure regulators; Media temperature regulators; Crankcase pressure regulators; Capacity regulators; Condensing pressure regulators; Thermostats; Pressure control; Solenoid valves; Check valves; Automatic and thermostatic water valves; Filter driers.

Further information from J G Sampson Ltd.

Cool Prod.

Cool Products Limited of Belfast are sole distributors of 'PoLadaire' open-type compressors and condensing units in Northern Ireland. The company also serves the Republic. A full range of 'PoLadaire' units and spares are carried. 'PoLadaire' spares are fully interchangeable with the equivalent Frigidaire parts and, following the purchase of the rights to manufacture Frigidaire 'opens' from General Motors 'PoLadaire' is now the sole supplier. Cool Products, although established just over two years ago, is now one of the leading wholesale refrigeration companies in Northern Ireland. The company is a member of the

Freezing permits the preservation of all qualities of fish, as if just caught.

The screw compressors of this refrigeration plant in a large, modern slaughterhouse are equipped with RT pressure controls and thermostats from Danfoss.
If quality is the requirement contact

Mosten Engineering Services Ltd.
LARAGHCON LUCAN, CO. DUBLIN. Telephone: 01/282851/592072

Specialists in Installation & Fabrication for the Refrigeration Industry

Our Service Includes:

- Manufacture of pressure vessels to any design.
- Workshop packaging of plant.
- Site installation.

All welding carried out to BS2633 Class 1

AUTOMATIC CONTROLS FOR COMMERCIAL REFRIGERATION PLANT AND HEAT RECOVERY SYSTEMS

J. J. SAMPSON & SON LTD.
Unit 71, Cherry Orchard Industrial Estate, Dublin 10. Telephone: (01) 268111
Operating costs that kindle a little glow in the coldest of mortals

With building running costs going through the roof, there are two ways to bring them down to earth.

Buy candles.

Or by getting in touch with Walker.

Walker is helping to put the lid on heating and air conditioning running costs. For a start, there's a range of more than 4,000 Carlyle air conditioning and heating components - with computerised matching of these components and your needs to design a system that's absolutely right for the job.

Then there's the world's biggest range of heat pumps - in stock, ready and waiting - each with specially engineered reversible compressors that can take the wear and tear of heat pump operation.

And as if that weren't enough, there's the sophisticated range of Carlyle VAV systems, with terminals that automatically - and independently - adjust themselves to the heating or cooling needs of the moment.

And then there's our latest product, Heat Machine, which is going to make a few boilers redundant in the eighties. It removes heat from waste warm water and by dint of its 2.3 to 6.0 C.O.P. (depending upon the water temperatures involved), produces cheap useable heat for comfort or industrial process use.

The widest range of components; computer system design; the incredible energy-cutting benefits of Carlyle VAV systems; the sensational new Heat Machine - all available with Walker's own brand of pre-and after-sales service.

Try us, with great expectations!

Generous with our knowledge,
mean with your energy.
J. Norman Fulton Group who were previously official distributors in Northern Ireland for Frigidaire opens.

The management team has many years experience in the refrigeration industry.

Further information, including literature on ‘PoLadaire’ open refrigeration equipment, is available from Cool Products Limited, Balmoral Road, Balmoral Industrial Estate, Belfast BT12 6QD. Tel: 084 664935.

**Manotherm**

The West WE01 Controller has been designed mainly for temperature applications where there is a requirement for precision control performance coupled with low capital investment.

**Main Features**

Plug in construction giving minimum plant downtime.

Digital (pulse modulation) circuitry giving high stability control terms and increased reliability.

PD + PI control action giving minimum warm up times coupled with low overshoot and no offset from set point. Indicator giving actual temperature indication at all times. No routine maintenance. All metal case. Splashproof. Optional cover to prevent unauthorised adjustments. Adjustable integral and derivative terms.

**Principle of Operation**

The controller is of the comparison type, i.e. it accepts a signal from a thermocouple or resistance thermometer and compares it with a stabilised reference signal determined by the positioning of the set point potentiometer slidewire. The slidewire operates at a high voltage level in order to minimise the effect of dust etc.

The difference between the reference signal and the sensor input is fed to the control amplifiers. The amplifiers modify the signal and develop an output which is used to operate the final contactor, solid state switch or solenoid valve. The change in process temperature resulting from this action causes the input signal to change so that the difference between the input and reference signals is reduced essentially to zero.

Further information from Manotherm Ltd.

---

**Stop Valves**  
**Check Valves**  
**Solenoid Valves**  
**Expansion Valves**  
**Ball Valves**  
**3 & 4 Way Valves**  
**Pressure Relief Valves**  
**Strainers**  
**Pressure Regulators**  
**Float Switches**  
**Oil Level Regulators**  
**Gauges**  
**Oil Separators**  
**Accumulators**  
**Vibration Eliminators**  
**Mufflers**  
**Heat Exchangers**  
**Filter Driers**  
**Pressure Switches**  
**Thermostats**  
**Condensers**  
**Evaporators**  

---

-A Sadia Airofreeze K2 modular coldstore.
A Condensed Guide to MANOTHERM activities

THOMMEN CALIBRATOR EM

Type EM 421
410 x 260 x 230 mm
approx. 8 kg

Indep. from mains Separate power supply 24V D.C.

Platon Flowmeter

West WE 01 process controller

96mm square metal case.
PD + PI control action.
Limit comparator & controlling output option.

Barksdale piston pressure switch for pressures up to 315 bar.

Rueger thermometers.

Platon 'M'—valve. Air operated miniature control valve for automatic control of most media.

MANOTHERM LTD.
Controls and Gauges for all industries

THE CONTROL CENTRES
4 WALKINSTOWN ROAD, DUBLIN 12
Phone: 522355, 522018, 522229. Telex: 24467

10 KNOCKBRACKEN PARK, BELFAST BT6 OHL
Phone 645966
A Total Capability in Residential, Commercial and Industrial Heating Plant. Representing exclusively in Ireland the following.

**CHAPPEE**

Domestic: Dual fuel boilers
55,000 to 250,000 btu/h
Industrial: 300,000 to 5 million btu/h
Also full range of Francia Hoval steel panel radiators.

**Allen Ygnis**

Hot water boilers
400,000 - 24 million btu/h
Steam Boilers
250 - 2,400 lbs/h
Combination boilers 250,000 - 2 million btu/h

**Sime**

"Rio" Domestic and Commercial oil fired boilers
60,000 - 604,000 btu/h
Río Gas Boilers (Atmospheric Type)
60,000 - 400,000 btu/h

**Schwank**

Gas fired overhead infra-red heaters
26,000 to 140,000 btu/h. LPG or towns gas.

Also solid fuel handling equipment, fluidised bed boilers and incineration.

**SELKIRK**

Stainless steel twin wall industrial chimney systems from 5" up to 36" I.D.