


9-1-1981

## H & V News

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# H&V NEWS

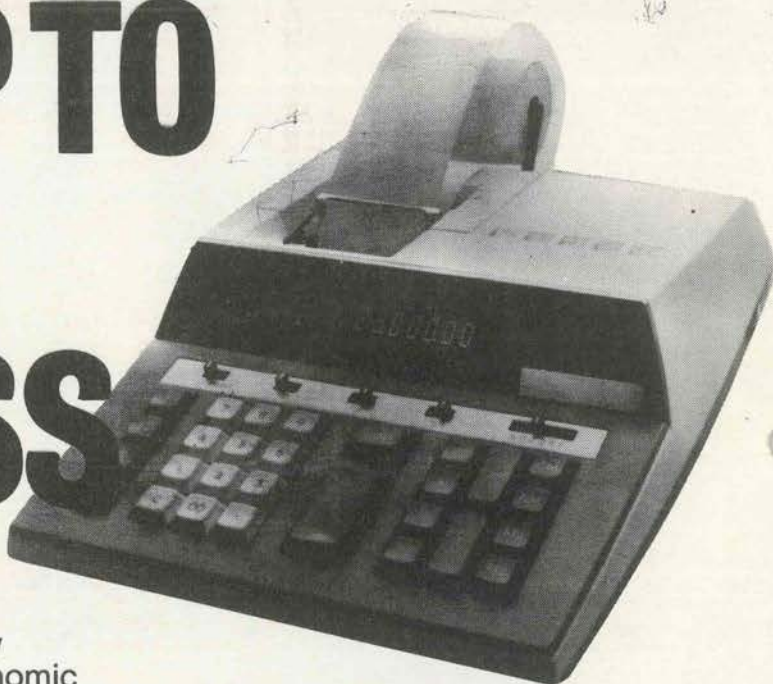
● **Coal and  
Ash Handling**

● Sanitaryware Feature ● Energy Demand Manager.

● Instruments and Controls Feature

● DI's Energy Report — Coal ● H & V Review Exhibition

# ELECTRIC HEATING ADDS UP TO BETTER BUSINESS



When all the pluses are taken into account, there's a strong case to show that electric heating makes good economic sense. Just consider:

- + **Low Capital Cost** — extra important when money is scarce.
- + **Simple Installation** — minimum disruption to your business.
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- + **Space Saving** — no flues, boiler house or fuel storage.
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- + **Secure** — electricity is generated from a variety of sources. So you are less susceptible to particular fuel shortages.

## INVESTMENT IN FUTURE SECURITY

Electricity dependence on expensive imported fuel oil is falling rapidly. It is at present less than 50% and by the end of this decade may be as low as 20%. Because of this fuel diversification — which includes a major coal-fired station at Moneypoint, coming on stream in 1985 — non-peak electricity rates will continue to be attractive. An investment in electric space heating is an investment in future security and economic operation.

If you are interested in an electric heating system the ESB will prepare a design to suit your particular needs. Indeed a suitable system can be devised for every type of commercial premises.

There is neither charge nor obligation in this design service which also covers lighting, waterheating and air conditioning.

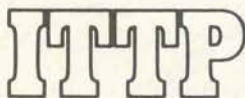


For further information contact your nearest ESB Office. There is a team of specialists just waiting to put you in the picture.

# H&V NEWS

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Services Magazine**

published by



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## Pipeline Contract

### Pipeline Contract

By the time you read this the rumour that the contract for the Dublin to Cork gas pipeline has been given to the Dublin firm of builders and contractors, John Sisk & Son Ltd and their French partners may have been confirmed, if so we may at last be seeing the start of what must be the biggest thing to hit the heating industry in Ireland ever. The scramble to get orders for equipment on the pipeline itself is now hotting up to the point where only the toughest will win through as there are great difficulties for local suppliers. One of the greatest difficulties is the seemingly black spot the specifiers have for home suppliers, manufacturers, assemblers and agents, the message on the pipeline seems to be Irish companies are not capable of supplying the equipment necessary. If this is the case then it is up to the industry as a whole to protest as loudly as possible because there is the expertise and the capability amongst suppliers and they deserve better treatment.

On the domestic front the pipeline should bring the promised orders of gas boilers, cookers etc., and most agents and suppliers are already geared up to meet this demand which could be worth up to £60m in the next ten years.

### IDHE Course

the IDHE have finally got their advanced membership course off the ground and has started in Bolton St, College of Technology, credit should go to Tom Dinnigan IDHE Education Officer who after many problems and difficulties finally got the go ahead from the College. Anyone still interested in either the new advanced or the original associated membership course can contact Tom at 785155 ext 411 during office hours.

### Systems — Alternate View

Terry McQueen the author of the Series Systems — Alternate View is on holidays and the next article in the series will not appear until next month.

### VMRA — Scotts Link Up

Sometimes things happen in the industry that H&V News fail to hear about. One such event happened in the summer and that was the link up of the mechanical and electrical section of Scott Tallen & Walker with the VMRA organisation. The former staff of S.T.W. mechanical and electrical section still occupy their offices at Merrion Square but are on the VMRA payroll.

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## Changes in Department of Energy

The Government has made a Transfer of Functions Order which directs the transfer to the Department of Energy of all functions in the Department of Industry, Commerce and Tourism which relate to industry generally. This has resulted in the establishment of a

new Department of Industry and Energy which is already in operation since August 21st last.

In addition to his existing responsibilities for energy the Tanaiste will have responsibility for policy on industrial development and job creation. The Semi-

State Bodies and other agencies involved in the various aspects of promotion of industrial development as well as certain state manufacturing companies will be under the aegis of the Tanaiste. He will therefore have responsibility for the IDA, SFADCo, IIRS,

NET, Irish Steel and Ceimici Teoranta, in addition to the energy related State-Sponsored Bodies i.e. ESB, Bord na Mona, INPC, BGE and the Nuclear Energy Board. The Tanaiste will be responsible for the new Department of Industry and Energy.

## Aerocowl Gains New Award

Another Continental award has just been won by the Aerocowl combined flue terminal and ventilator — this time “The Special Public Award” at an exhibition held at Bastogne, Belgium, on the Luxembourg border.

On this occasion, Aerocowl Marketing Ltd., were presented with a Diploma and a prize of 10,000 Belgian francs — the latter being donated by Aerocowl to a charity for handicapped children in Belgium.

This follows the winning by Aerocowl of five major awards at The Brussels International Inventors’ Fair some few months previously.



● Mr. Noel Hawkes (Managing Director of Aerocowl Marketing Ltd.) with the Diploma won at Bastogne, and another Director, Mr. Desmond Blayney, M.Inst.M., with the Award-winning Aerocowl. On the left of the picture is Mr. George Assleberghs, Head of the firm Matro, who are Aerocowl distributors in Belgium.

## Kane-May Agency for Intech

The Kane-May range of digital portable instrumentation is now distributed in Ireland through Intech Ltd., available is a selection of innovative thermometers with a choice of standard or custom made probes, humidity/temperature meters, rev counters and pH meters. New instruments for other applications are being developed and servic-

ing is carried out in Dublin.

Featured in the range are the highly accurate micro processor controlled KM 10 000, the non-contact infra-traces and the intrinsically safe 2002/2008.

For further details contact Andrew Millard, Intech Controls Ltd., 69 Deerpark Road, Mount Merrion, Co. Dublin, (Tel: 889594).

## Windmills to Drain Bogs

Hundreds of windmills may soon be dotted on the bog lands of the West of Ireland — pumping them dry.

A pilot drainage scheme to test the pumping power of windmills on boglands is **now in progress** at Knocknagulshie, near Ballinrobe, Co. Mayo, and a windmill is to be erected to continue the pump-drainage of a 42-acre tract of bog. The project is a joint project of the Department of Energy and An Foras Taluntais.

“The scheme has interesting possibilities in relation to the drainage of western bogs” said Mr. John Mulqueen of Creadh Research Station, near Ballinrobe, who is pioneering the project with engineer Chris Shouldice and Laurie Noone.



● Pictured at the signing of the No. 2 Contract - Mechanical Plant, for Ballina Main Drainage Scheme, were:- Seated, left to right: Mr. Jim Porteous, Managing Director, Harper & Fay Ltd. Mr. P.J. Downey, Chairman, Ballina Urban District Council. Mr. John O'Donnell, Assistant County Manager. Standing: Mr. B. Martin, Director, Harper & Fay Ltd. Mr. Pat Power, Project Manager, Harper & Fay Ltd. Mr. Fred J. Hanley, Consulting Engineer, Ryan Hanley & Company. Mr. John Walsh, Town Clerk, Ballina Urban District Council. The Scheme is designed to treat effluent from the town of Ballina, and to prevent pollution of the River Moy, an important fishery. Contractors: Harper & Fay Ltd., Consulting Engineers: Ryan Hanley & Company.

# The Renault Light Vans

## Renault strength with Renault economy, makes more sense than ever before.

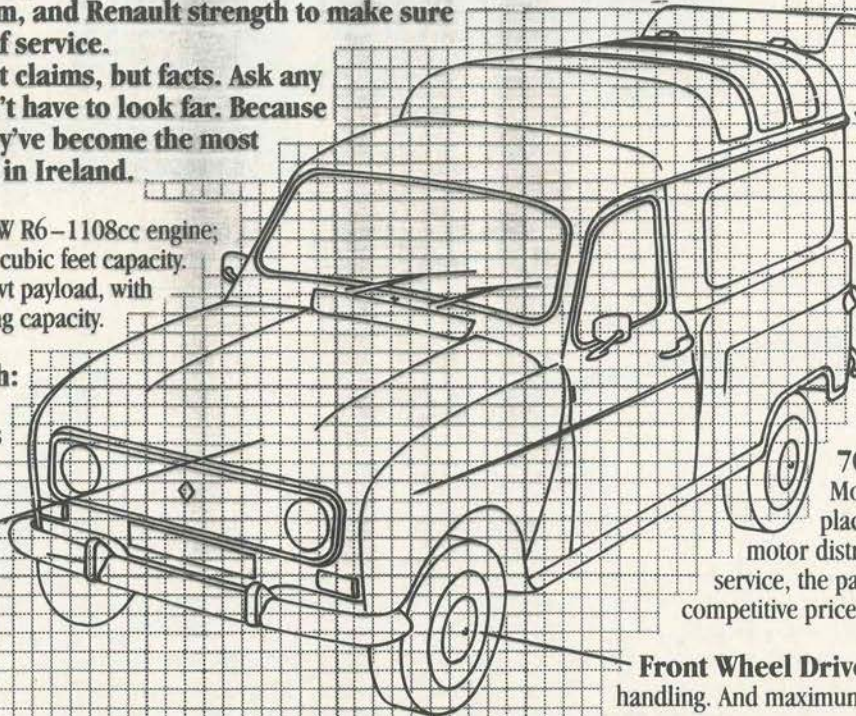
The Renault Light Vans. Tough and reliable workhorses. Easy to load, easy to maintain and keenly priced. With all round Renault economy to keep running costs down to a minimum, and Renault strength to make sure they'll give years of service.

These aren't just claims, but facts. Ask any operator. You won't have to look far. Because over the years, they've become the most popular light vans in Ireland.

**Two Models:** NEW R6-1108cc engine; 9cwt payload, with 83 cubic feet capacity. R4-845cc engine; 7cwt payload, with 66½ cubic feet carrying capacity.

**Renault Strength:** Built in at the design stage. To give you years of sturdy reliable service.

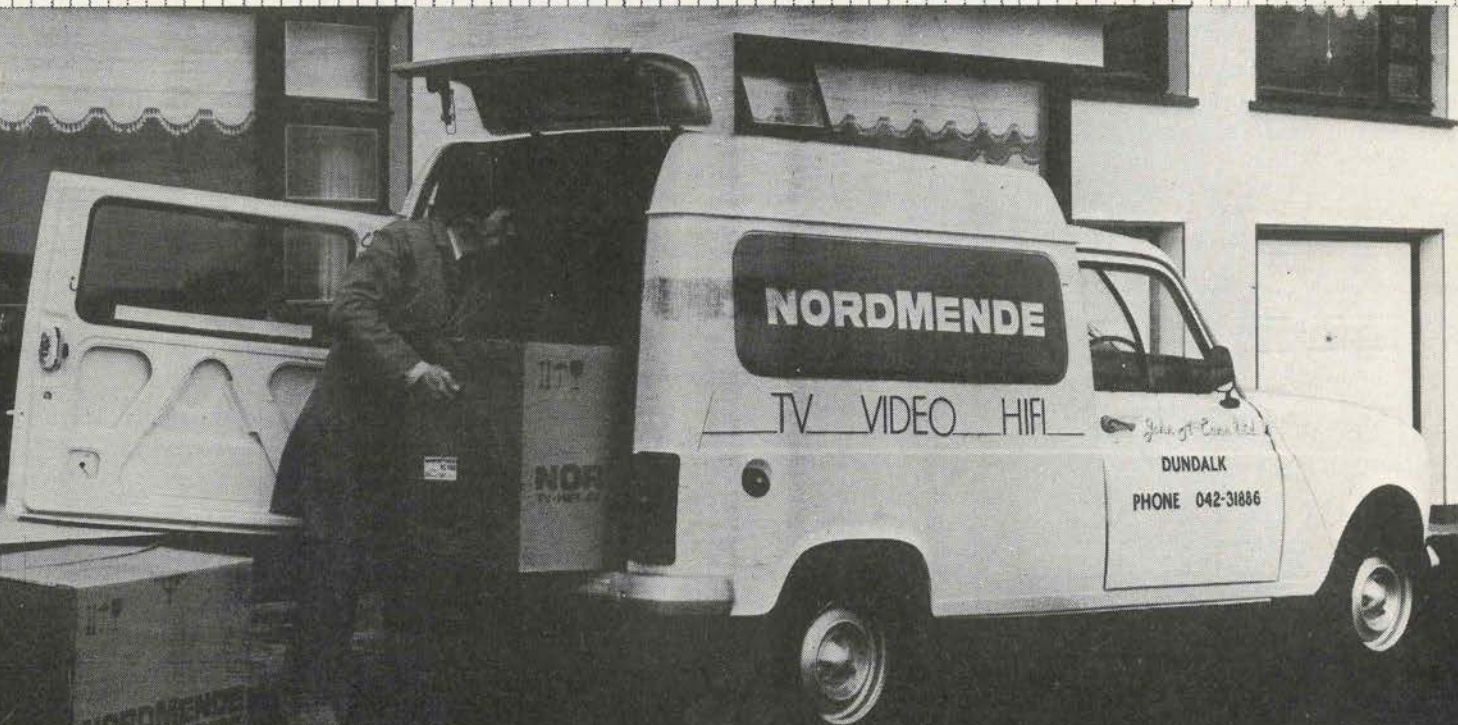
**Renault Economy:** Keeps running costs down. 10,000 miles major service intervals and up to 38 mpg.



**Loadability:** Easy access through the large back door. Lift up flap at roof level for ladders, planks etc. Low, flat platform for easy loading.

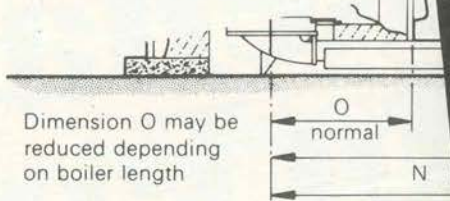
**70 Renault Dealers:** More dealers in more places than any other motor distributor. They have the service, the parts, the know-how and competitive prices too.

**Front Wheel Drive:** Sure, safe, predictable handling. And maximum traction on all surfaces.

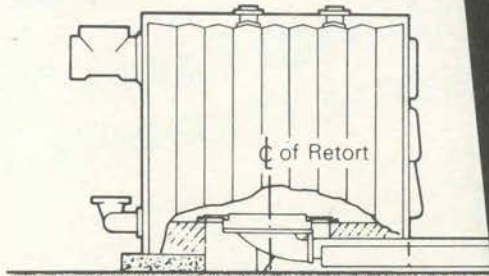


# RENAULT LIGHT VANS

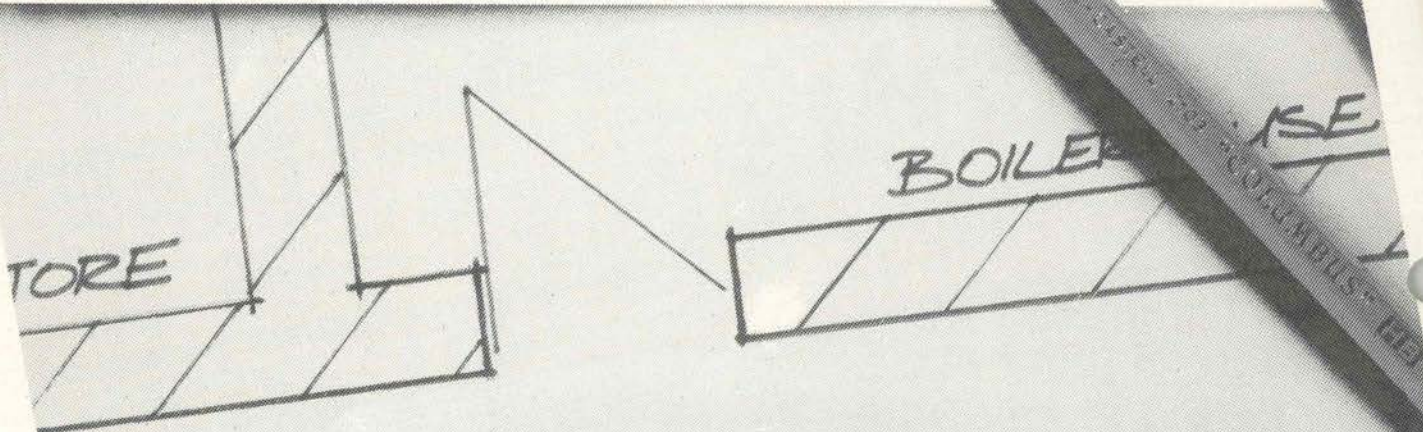
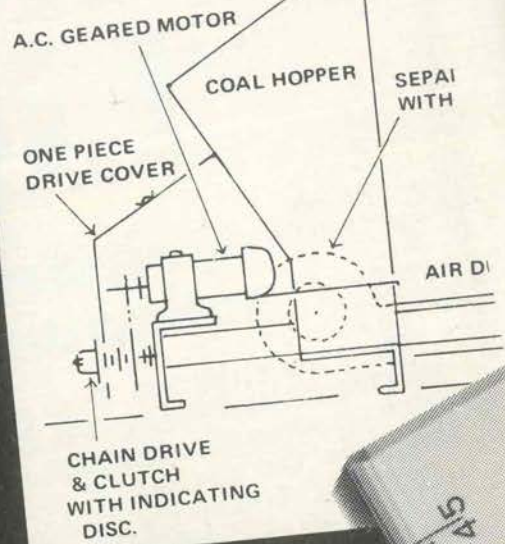
VANS THAT MAKE SENSE



Ideal Britannia boiler with stoker (hopper model)



Dimension C may be reduced depending on boiler length



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 Tipperary Road, Ballysimon, Limerick. Phone (061) 43402

## Clean Air and Good Pints!

When the Bolton Horse, a lounge bar in Dublin was rebuilt recently following a fire, one new addition to provide added comfort for staff and customers was the installation of a Honeywell electrostatic air filter.

Supplied by Walker Air Conditioning Ltd., sole distributor throughout the twenty six counties, the filter removes smoke by drawing in contaminant particles and giving them an electrical charge. These charged particles are attracted to collector plates where they are held until washed off. Since a greater proportion of the air is cleaned and recirculated rather than exhausted, heating and cooling bills are reduced as are redecorating costs.

Joe Renix, manager of the Bolton Horse is delighted with the effects of the filter and is considering having a second one installed to serve the quieter end of his 1,000 sq. ft., establishment.

## Members of Bord Gais Eireann

Mr. Michael McStay has been re-appointed as a member and Chairman of the Board of Bord Gais Eireann for a further period of five years. Mr. McStay was first appointed as Chairman in 1976. The Tanaiste and Minister for Industry and Energy also announces the following to be members of the Board:- Mr. Colm McCarthy, 34 Court Flats, Wilton Place, Dublin 2. Mr. Thomas S. Delahunt, Seafield House, Three Mile Water, Wicklow, Co. Wicklow. Mr. Enda Marren, Dun Grianan, Avoca Avenue, Blackrock, Co. Dublin.



● The Honeywell Electrostatic Air Filter which was recently installed at the Bolton Horse lounge bar in Dublin.

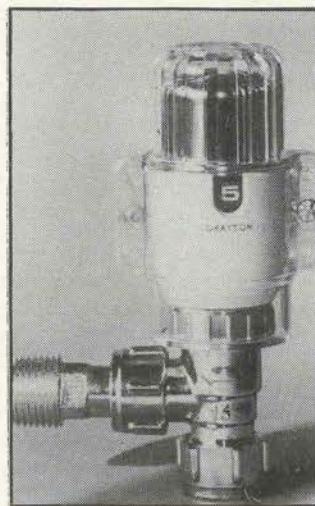
## Special Drayton Valve Offer Announced

The Drayton TRV2 thermostatic radiator valves are going to be available at even more competitive prices in Ireland this Autumn because of a special offer arranged jointly between Drayton Controls and their Irish Distributors, CHS (Ireland) Ltd. of Stillorgan.

The special offer, which is aimed at giving even more heating engineers the chance to offer these attractive valves to their customers is being made through the normal merchant stockists and should result in a considerable price reduction while the offer lasts. The valves have to be purchased within the four months starting September 1st.

Drayton are being rather cautious about setting a figure on the price reduction. When asked, a spokesman said "Our policy — and that of CHS too — is to sell through established trade channels, and of course, each outlet has the opportunity to reach its own conclusions about their selling price after discounts have been taken into account, so we cannot really say what the end result will be for the average heating engineer. But it should be large enough to be very attractive".

Drayton recently also announced the addition of the Vandal Guard for their TRV2. This is an anti-tamper device designed to fit the TRV2 integral head when it is fitted in public buildings, offices etc. The Vandal Guard, made in transparent polycarbonate, prevents the control head either being pilfered or having its chosen setting altered by unauthorised persons. Vandal Guards are now available in packs of ten, complete with fixing screws and a special screwdriver bit.



● The new Vandal Guard from Drayton.

## Wavin to Manufacture WavinGas System

Wavin Pipes Ltd., Ireland's largest manufacturer of PVC pipes and fittings, will manufacture an integrated natural gas pipe system. WavinGas is a high performance medium density polyethylene (DMPE) pipe system developed by the Wavin organisation and widely used in Europe and the U.K.

"In developing WavinGas, naturally the key considerations were safety and reliable performance," said Mr. Larry Carr, Sale and Marketing Director, Wavin Pipes Ltd. "The result was a pipe system with a unique range of fittings absolutely reliable." There is no possible leakage path through WavinGas fusion joints, which are also unaffected by corrosion. The fusion joint's integrity cannot deteriorate. The system is also virtually maintenance free and is made to last.

To ensure proper laying and handling by trained operators in accordance with the British Gas Corporation Codes of Practice for Distribution Mains and Service Laying of polyethylene pipes, Wavin Plastics Ltd., U.K., offers complete training in all the required procedures.

Over 4,000 operatives from many countries have been trained by Wavin.

Wavin Pipes Ltd., which has been manufacturing PVC pipes and fittings, as well as high and low density polyethylene pipes, for the past 23 years at Balbriggan, Co. Dublin, is currently investing £8.5 million in its 5-year development programme. The addition of the manufacture of WavinGas to its product range will be another step in the expansion of products and services of the company.



# Success of Euro Fuelmaster

Heating a 600 year old castle economically is no easy matter, but Stanley Browne of Killeskehan, Co. Tipperary has managed to do just that — heating an area of 7,000 sq. ft. comfortably while reducing his oil bill by £10,000 a year as a result of installing the multi-fuel Irish made burner Fuelmaster.

Manufactured by Euro Engineering in Dublin, the Fuelmaster can be fired by cardboard, paper, wood — in fact anything that is combustible.

Backed by the Irish Good Council and with the Gauranteed Irish label, the Fuelmaster has been approved by the Institute of Industrial Research and Standards. Today, it is used in hotels, manufacturing

industries, shops and many high waste businesses.

John Byrne, Managing Director of Euro Engineering is happy to outline in detail, the advantages of the Fuelmaster system. "It comes down to cost", he states. "A multi-fuel system which can burn waste and at the same time switch into an oil or gas system is a cost-efficient heating system".

The system has two automatic dampers and a timing device which can automatically ignite the boiler to heat up premises before a work day begins. The system is designed for maximum fuel efficiency.

Byrne is his own marketing manager and even now says he can't catch up on the £45,000 worth of orders he

landed over the last year. Already the expansion of the business is making it necessary for the Company

to move from it's Barrow Street works to a 22,000 sq.ft. factory on Baldoye Industrial Estate.

## AMA Group Opens Irish Subsidiary

Alexis Martin Airconditioning Ltd., part of the AMA group of companies, has opened a subsidiary company AMA Building Services Ltd. in Dun Laoghaire, County Dublin, to provide a full range of mechanical and electrical building services throughout the Republic of Ireland.

AMA Building Services Ltd offers a design, supply and installation service for new projects and refurbishment contracts based on the

Group's thorough knowledge of energy management procedures utilising the most cost-effective saving systems for use in supermarkets, clean rooms, shops and commercial premises of all types.

AMA Building Service Ltd. is located at 15/1 George's Place, Dun Laoghaire, County Dublin. Telephone: Dublin 805605. The General Manager is Brian McGuire.

# Potter Cowan Complete Skerries Contract

Potter Cowan (Ireland) Ltd., a wholly owned subsidiary of Potter Cowan (Belfast) Ltd. have recently completed their first free standing "Pace" chimney contract in the Republic at the new Skerries Post Primary school in Co. Dublin in conjunction with Artic Engineering Ltd. (mechanical contractors). The project architects were Edward N. Smith & Partners and the Consulting Engineers were Varming Mulcahy Reilly & Associates.

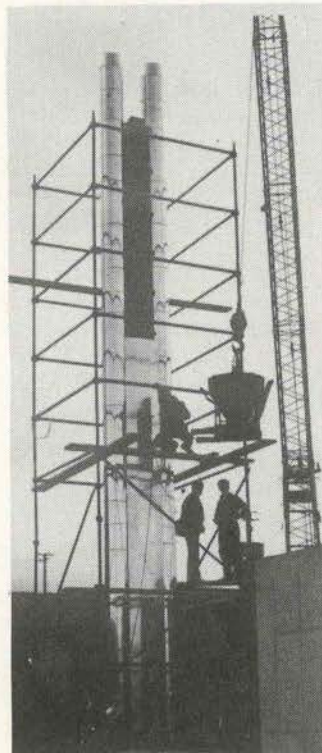
It consists of 2-355MM ID Chimneys 10.7 meters high with a purpose made mild steel support. The vertical flues run through the boilerhouse wall to service two Beeston Major Type 9M3 boilers. The complete chimney system was designed, manufactured and installed by Potter Cowan Ltd. Installation time on site was four days.

Potter Cowan (Belfast) Ltd. agents for Selkirk Metalbestos Chimney systems are well-known in Northern Ireland for the

design supply and erection of both "PACE" free standing and twin wall insulated stainless steel factory made chimneys and flues. Some of the larger "PACE" free standing Potter Cowan designed contracts already completed are listed below:

De Lorean Car Plant, 2 x 32"ID, 150ft high; BBC Belfast, 4 x 16"ID, 120ft high, Lurgan Hospital, 2 x 14", 2 x 12", 1 x 10", 90ft high, Springform District Heating Scheme 2 x 6", 1 x 22", 80ft high, Ashfield boys school, 2 x 14", 1 x 12", 1 x 10", 80 ft high.

One of the major cost saving advantages of this system on multi boiler installations is of course that mild steel support can be designed to take quite a number of chimneys which results in quite aesthetically pleasing designs and allows the architect to sometimes make a feature of the chimney. A further advantage is that should any part of the chimney require replacement then as the longest



● Potter Cowan's first free standing 'Pace' chimney contract in the Republic seen here, nearing completion.

section is only 3ft long it is only a matter of removing the sections to the nearest

support and replacing the damaged section.

Potter Cowan (Ireland) Ltd. through their general manager Brendan Bracken are now offering to Architects, Consultants and Mechanical Contractors a complete service including sizing design delivery and erection of all "PACE" flues and chimneys using Selkirk Metalbestos Twin Wall insulated chimney system and of course the Selkirk Metalbestos Gas Vent System. They also supply through their stockists Messrs. P. H. Ross Ltd. of 16 Old Cabra Road Dublin 7, Phone 309666 both single wall stainless steel and twin wall insulated Selkirk chimney in the domestic and light commercial sizes. On the larger commercial and industrial sizes Potter Cowan (Irl) Ltd. tend to deal direct with the Mechanical Contractors and Consultants

Potter Cowan (Ireland) Ltd. are based at 58 Castleview Rd., Clondalkin, Co. Dublin, (Tel: 513533).



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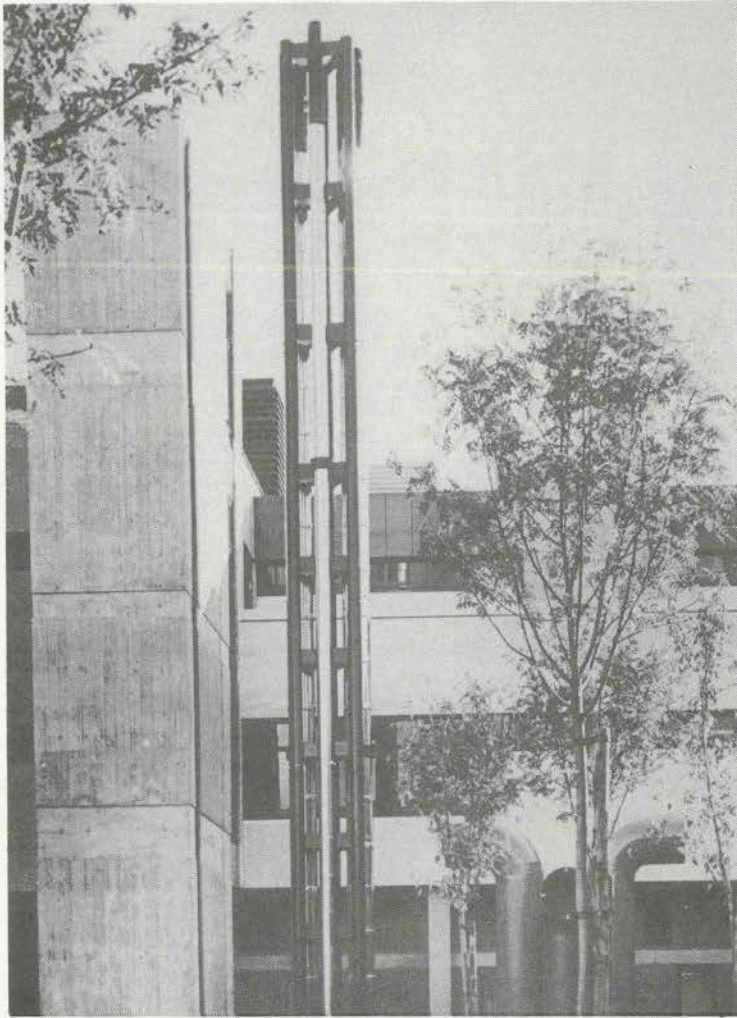
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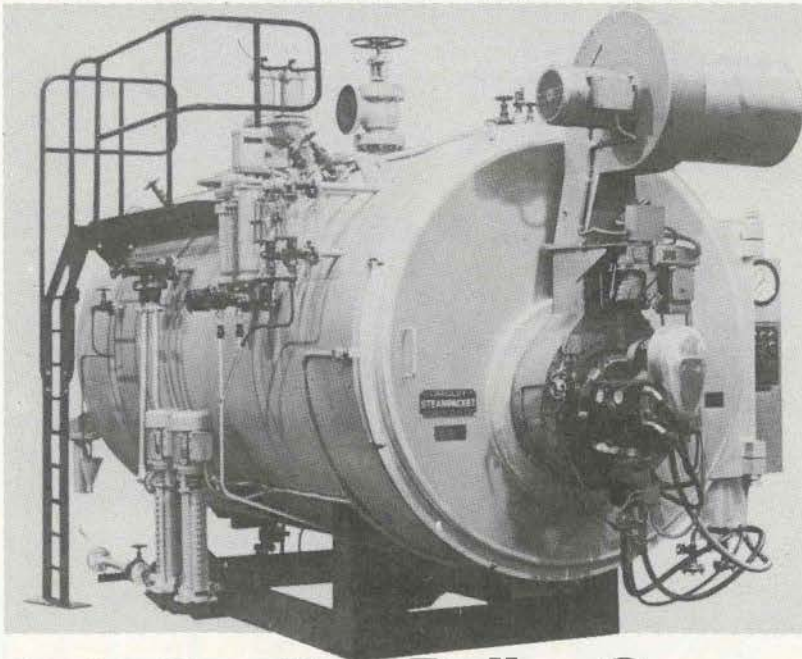
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8 Lower Mount Street, Dublin 2. Phone: 765627.

## NEWS

## Agents for Bestobell

Bentley Instrument Co have recently announced their appointment as sole agents in the Republic of Ireland for Bestobell Mobrey Limited.

They are now stocking a complete range of Boiler Controls, Level Switches, Ultrasonic Sensall Equipment, Safety Switches and Herion Valves.

This prestige agency will further enhance the wide range of instrumentation already carried by Bentley Instruments.

## HRP Walker Open Day

HRP Walker, the refrigeration wholesale subsidiary of Walker Air Conditioning, is holding a trade open day on Thursday 29th October at its new premises on Slaney Road in Dublin Industrial Estate.

The open day will give the trade an opportunity to inspect the 6,000 sq. ft. refurbished premises to which HRP Walker have moved from their warehouse in Artane. Invitations are being issued to the trade, and are available on application at the trade counter.

HRP Walker now offers copper tubes; Isceon refrigerant; Aspera, DMW Copeland, 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.

In addition, the Company has recently taken on the Searle range including 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.



● A large number of competitors from the heating profession from various parts of Ireland competed for the Clyde Perpetual Golf Trophy at the recent annual Clyde Golf Outing at the Dublin Sports Hotel. The Trophy was won by Mr. Larry McGettrick of the Office of Public Works. Our photograph shows Eamonn McGrattan, Frank Fleming, Eamonn Brown and Peter Johnston.

## ESB's District Heating Survey

The ESB has begun a preliminary survey to gauge the interest among customers in parts of Dublin and Cork in a district heating system. The survey is a prelude to more detailed investigations into the potential market for such a community central heating system.

These schemes operate by using reject heat from existing electricity generating stations to supply hot water through a specially insulated underground pipe-network. The scheme serves an area within a few miles of the station.

The hot water can be used to meet the central heating needs of homes, offices and factories, and schemes are already in successful operation in other countries such as Denmark, Sweden and Germany. Their main benefit is a reduction in energy usage and they can improve the overall efficiency of the generating stations by as much as fifty per cent.

The preliminary survey will consist of interviews with a small number of ESB customers to find out if they would be prepared to use such a district heating system. As well as domestic

customers the survey will include some small industries, offices, hospitals, shops and hotels.

In Dublin City the survey is being carried out in the area between the Royal and Grand Canals and in Ballsbridge, with reject heat to come from one of the three stations in the area. In Cork, initial investigations will concentrate on the Mahon peninsula where a new housing, industrial and commercial development is underway. Heat from Marina station would be used in Cork, and it is envisaged that a limited amount of heat could also be supplied to industries near the station.

District heating systems provide lower-cost heating and give greater security of heat supply as they can draw on a number of different energy sources. They also bring about significant energy savings and thus an improvement in the country's balance of payment.

Following an appraisal of the initial research work a more detailed survey will be carried out.

At present the ESB is engaged in a project at Lanesboro, Co. Longford, where

reject heat from the turf fired station is being used to grow tomatoes in a two acre glasshouse complex beside the station.

## DC Compute Air Saving Energy

D.C. Compute Air Limited have just received orders for 4 No. Hiross Energy Conservation Systems from a Government body who hope to reduce their refrigeration energy consumption by up to 80% from the original level.

Reports of the existing systems which are operating for over a year now, are showing free cooling at 8468 hours with the compressors only operating for 172 hours in a 8640 hour operational year.

This is achieved without introducing Freshair into the controlled space and therefore not increasing filtration costs.



# Mosten Engineering Supplies Ltd.

LARAGHCON LUCAN, CO. DUBLIN.

Telephone: 01/282851/592072



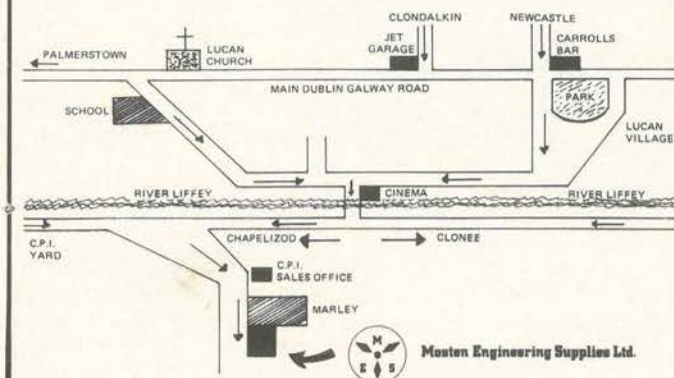
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*All standard components manufactured by the above mentioned companies are available "off the shelf" at our premises in Lucan and requirements for special applications can — subject to stock position — be obtained within 7 days.*



## BTU GOLF NEWS

# BSS Ireland Sponsored Outing

The following are the results of the BSS Ireland Ltd sponsored golf outing at Dunlaoghaire G.C. at which there was a great turn out of 71 players.

Winner: Michael Wyse (7) 39 pts from Garvin Evans on back six.

Class 1: Mick Devoy (8) 38 pts; Brian Farrell (4) 37.

Class 2: Eamon McGratt-

an (11) 38; Peter Reynolds (12) 37.

Class 3: Garvin Evans (17) 39; John Hoey (20) 37.

Front 9: Peter Johnston (5) 19.

Back 9: Bernard Sweeney Scr 19.

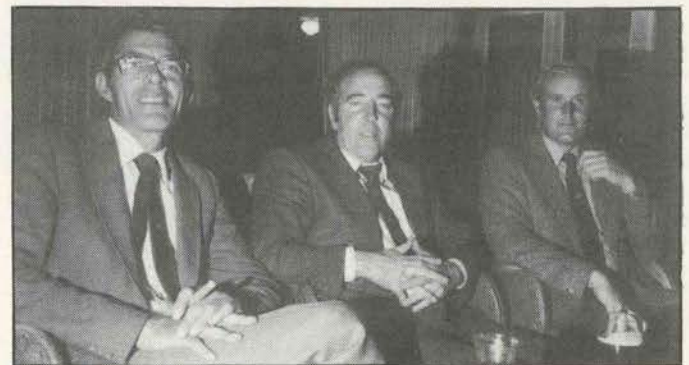
Visitors: Frank Cahill (10) 39; Liam Hurley (10) 38.



● Pictured at the BSS Golf Outing were (l-r) Mick Devoy, Brendan Stack, Eamonn McGrattan, John Doyle, John Ennis, Garvin Evans and Michael Wyse.

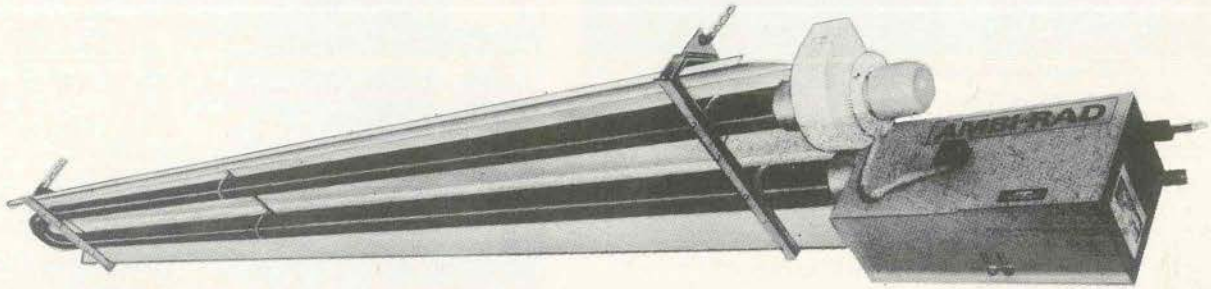


● Also pictured at the Outing were (l-r) Eamonn McGrattan, Brendan Stack, Michael Wyse, The Captain Dunlaoire Golf Club, Garvin Evans and John Brophy.



● In jovial mood were (l-r) Ray Byrne, Eamonn Cullen and Liam Stenson.

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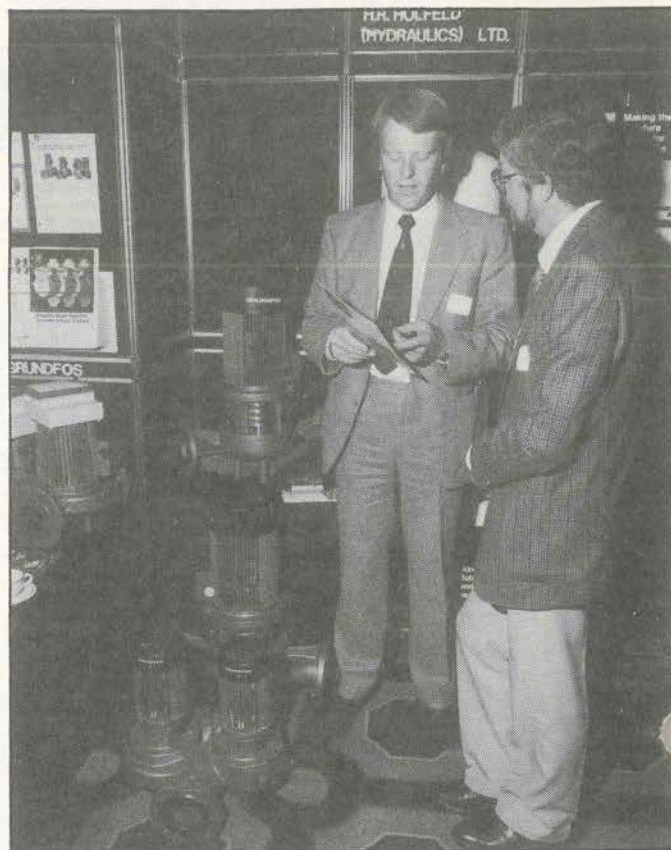
*FURTHER INFORMATION FROM:-*

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Industrial Estate, Kilkenny Road,  
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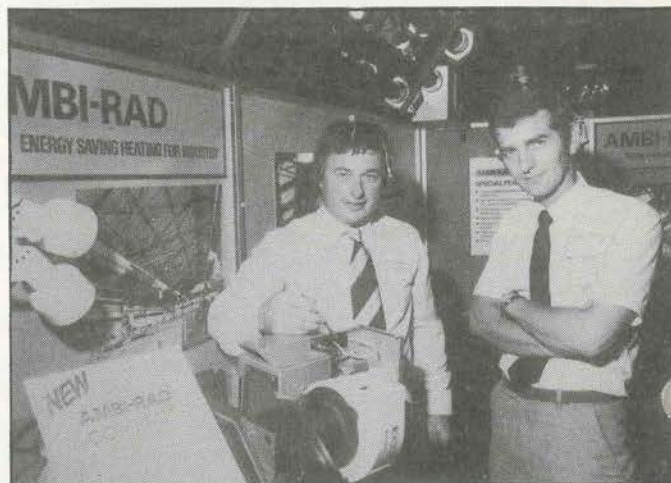
# EXHIBITION REVIEW

The first H&V Review Travelling Exhibition held in Dublin proved to be quite a success and the organisers were very pleased with the final number of visitors which turned out to be somewhere in the order of 900. Although most of the stands were booked by UK principles they were manned by Irish agents or distributors who established the necessary local link. The show proved to be not so much an exhibition of equipment but an opportunity to meet customers outside the normal environment plus the chance of meeting potential customers who had come in to see the show. In reviewing the show one must say that one fault was apparent to many visitors and that was the lack of bread and butter equipment like boilers and radiators and the air conditioning sector was poorly represented, although those that were there were of high quality.

It is planned to run a similar show next year and with the success of this one no doubt next year will also be successful, as the organisers are very professional in their approach. Finally a point that almost everyone agreed on if it is going to be a two day show please let us have a later closing time on the final evening.



● Chatting on the HR Holfeld stand were (l-r) V. Poerksen, Grundfos Denmark and Harry Solchting, Loewe.



● Examining the finer points of the new Ambi-Rad Compact Model ER13 were L-R John Fletcher, Ambi-Rad and Gerry Harkin of Turmill Engineering Ltd, the Irish distributors of Ambi-Rad products.



● Watermiser Ltd: Maurice Sommerville, Managing Director, Watermiser with Jim Scott and Ron Syme.

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- Strict quality control combined with modern automated manufacturing techniques ensure an efficient and reliable product.

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H & V REVIEW EXHIBITION



● On the C&F Ltd stand were John Duignan, Managing Director, C&F Ltd, and Joe Dunne of M.O'Donoghue, Heating Contractor.



● Discussing the Flexiflame range of gas boiler were (l-r) Neville Harns, Chaffoteaux, Dan Mooney, Irish Shell, E.V. Jurg, Irish Shell, and Andy Kavanagh of Taney Distributors Ltd.



● Assisting on the Eurenco Sales stand were (l-r) Dan Chaney, Netaline, Connor Massey, Sales Director, Eurenco Sales Ltd, and Vincent Douglas, Managing Director, Eurenco Sales Ltd.



● H R Holfeld (Hydraulics) Ltd. (l-r) James Cullen, T.V. Tierney & Co., Patrick O'Connor, Holfelds.



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H & V REVIEW EXHIBITION



● Glowtherm Ltd: (l-r) Sean Brady, Longford Ventilators, Miss T O'Halloran, and Joan Keenan, North Eastern Health Board, Collin Jutting, Watkins and Watson.



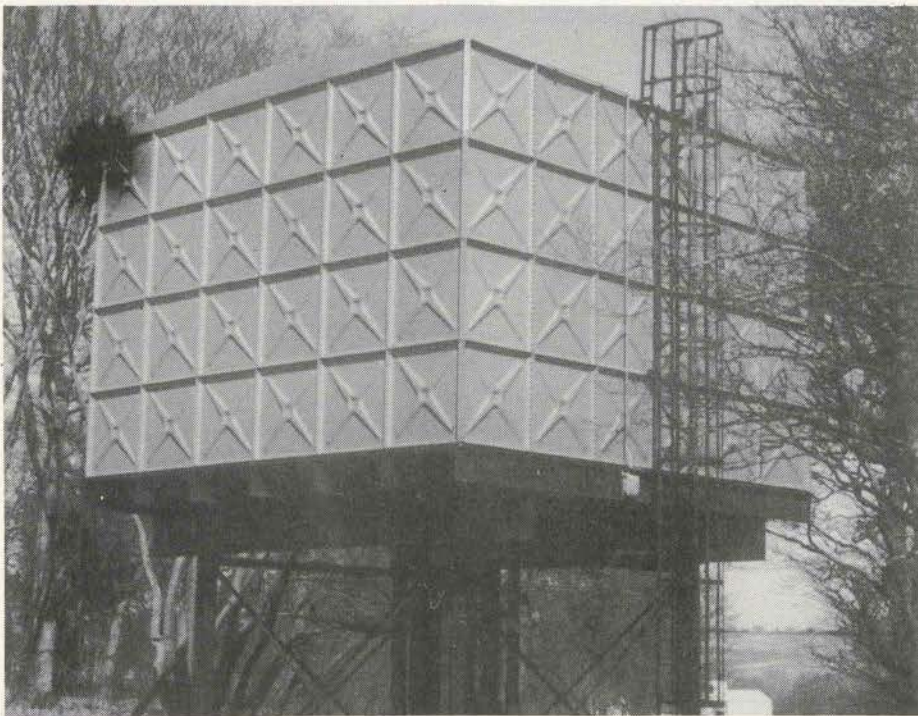
● Discussing a tank problem on the Braithwaite stand were: (l-r) Tim Flaherty, Finheat Ltd., Peter Wheeler, J.V. Tierney & Co., Consulting Engineers, Brian McGuire, Finheat Ltd., and Derek Sirrell, Braithwaite.



● On the BSS stand were (l-r) Bob Cherry, Flamco BV, Geoff Gibson, BSS, John Brophy, BSS, John Rowden and John Quinn also of BSS looking at the Aerco Heat Reclaimer.



● Helping out on the C&F stand were (l-r) Dennis O'Brien, Lennox, Barry Freeman, Lennox, Leslie Clarke, ITT Controls, Maurice Gunn, Hamworthy and Michael Melligan, Director, C&F Ltd.



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# ASHRAE and Health Concern

The Board of Directors of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has adopted a position statement declaring that Federal regulation on chlorofluorocarbons, which some theorists consider a threat to the ozone layer and therefore to human health, is "not warranted at the present time." The Board also voted to support, financially and otherwise, additional research into the causes and prevention of Legionella (Legionnaire's disease). Both votes were unanimous.

President Charles F. Sepsey, who announced the two actions, appointed two ad hoc committees to investigate the two problems early in his administration. Each committee, after spending nearly a year studying the problem, adopted a report which was accepted as its policy by the Board of Directors.

In its position statement on chlorofluorocarbons (CFCs), which are widely used as refrigerants in refrigerating and air-conditioning systems and in some insulation, the Board noted that a theory had been advanced that CFCs, when released into the air, have a destructive effect upon the ozone layer. This, according to the argument, permits larger amounts of cancer-causing ultra-violet light to reach the earth's surface. The Board said, "The theory has not been validated by experimental data".

The statement also pointed out that ozone depletion is a global concern and should therefore be addressed internationally. The statement recommended further research upon "the effect of ultra-violet radiation upon the earth's surface." The Board decided to develop guidelines to "minimize inadvertent losses of CFCs during

manufacturing and servicing of end products." It said it would "actively encourage" research, some of it funded by ASHRAE to "investigate alternatives to CFC's and methods of CFC reclamation".

The statement pointed out that "precipitous regulatory action could be detrimental to the public" because "CFCs are essential for refrigeration and air-conditioning and are a major contributor to energy conservation through their application to thermal insulation."

ASHRAE offered its "technical expertise and resources, as appropriate, to solving the ozone/CFC problem."

In its position paper on Legionella, the Society pointed out that its task group, consisting of experts and consultants in a variety of disciplines, inside and outside ASHRAE, is continuing to collect and analyze material on the

possible role of heating, refrigerating, ventilating, and air-conditioning (HRVAC) in the spread of disease and to prepare material on the subject for dissemination throughout the Society and to the public. The Task Group will also develop appropriate control practices.

The organisation will "encourage development of additional standards for special treatment of HRVAC equipment to control its potential contribution to the spread of (pathogenic) organisms." It will consider "the microbiological impact of new operating procedures in equipment being developed for energy conservation."

The Board noted that HRVAC equipment is by no means the sole culprit in the spread of Legionella. It indicated that the study of other sources of infection would be in the public interest.

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# The Irish Market for Coal

In this the first article on the Irish coal scene in DL's Energy Report series, domestic production is looked at and an in depth report is given on imports and how they have been handled over the years and by whom.

The Irish market for coal is supplied from two sources — Domestic Production and Imports. Domestic production of coal is on a small scale and is confined to anthracite in Leinster and semi-bituminous coal in the Arigna area of Leitrim. The production of anthracite has declined steadily from 135,000 tonnes per annum in 1963 to less than 10,000 in 1977. In the main the Irish anthracite seams remaining to be worked are very thin and faulted and as a result makes the deposits difficult to work. The semi-bituminous coal deposits at Arigna are enlargly used to fuel a 15 M.W. generating station, these deposits are expected to run out in the next decade. Some of the coal mined at Arigna is sold locally to domestic consumers. According to the last census of industrial production there were five coal mining establishments in 1974 and together they produced 64,522 tonnes of coal, production in 1977 was 54,000 tonnes. The future for domestic producers is uncertain, various possible uses for anthracite deposits have been considered but so far no totally suitable use has been found, one possibility is in electricity generation however, this is dependent on improvement in technology. At the present rate of technology our anthracite deposits are basically unsuitable for electricity generation.

There are fairly considerable reserves at Arigna of poorer quality of coal which has possibilities in electricity generation. The Electricity Supply Board and Arigna Collieries Limited are co-operating on experiments to determine whether this coal could be used for electricity generation by new methods of combustion. It would seem therefore that the future for Irish coal lies in electricity generation, the domestic market will continue to be supplied by imports.

## IMPORTS

The history of imported coal is rather like that of industrial development. Prior to 1955 approximately 95% of imported coal is obtained from the United Kingdom. After that year Irish coal importers actively sought alternative sources of supply partly because of the variable quality of British coal and partly due to the fact that supplies had occasionally been irregular and prospects for future supply were unfavourable. The importers obtain supplies mainly from two sources, Poland and the U.S.A. As imports from these two countries increased imports from the United Kingdom fell. Supplies from the U.S.A. reached the peak of 629,000 tonnes in 1963 and have since fallen as Poland gradually took over the role of major supplier to the Irish

market. Table one below shows the trend in the source of coal imports from 1961 to 1980.

In 1961 less than 11% of total imports originated from Poland but since 1970 that country has provided well over 70% of total imports.

Tedcastle MacCormack Limited were the first firm of coal importers to buy coal from Poland establishing contact with the Polish organisation of Weglokoks and eventually concluded a contract. At that time there was a fear that there would be objections to purchasing coal from Poland and due to the reluctance of other importers to deal in Polish coal Tedcastles open branches in Dundalk, Limerick and along the West coast. Some time afterwards a number of coal importers acting as a group arranged to obtain supplies of Polish coal. In these circumstances Tedcastles and other importers joined together in a contract with Weglokoks for the supply of Polish coal. There are fourteen separately named Irish companies who are parties to the contract, included are:-

- M. Doherty and Company Limited
- P. Donnelly & Sons Limited
- Heiton McFerran Limited
- J.J. Stafford & Sons Limited
- Suttons Limited
- Tedcastle MacCormack & Company Limited

## SOURCES OF COAL IMPORTS TONS (000)

YEAR	UNITED KINGDOM	UNITED STATES	POLAND	CZECHOSLOVAKIA	GERMAN FEDERAL REPUBLIC	BELGIUM	OTHER	TOTAL
1961	1,123	200	191	-	113	142	3	1,772
1965	429	335	343	-	136	5	-	1,268
1970	162	48	927	1	20	1	39	1,198
1971	166	38	759	-	13	2	43	1,021
1972	128	15	680	16	11	-	44	797
1973	130	1	585	22	15	-	45	879
1974	130	-	663	7	34	-	45	879
1975	179	-	475	-	7	-	18	679
1976	113	-	462	-	12	.5	9.5	597
1977	169	-	658	-	8	13	6	854
1978	175	-	601	-	-	-	6	783
1979	216	214	706	-	-	-	31	1,167
1980	256	398	482	-	7	-	95	1,231

The contents of the contract deal mainly with quantity to be supplied, quality and price. The parties to the contract naturally enough keep its contents a close secret and therefore the most recent information to be found is in the report of enquiry in to the coal trade.

In 1974 the Irish buyers negotiated for the purchase of seven hundred tonnes with a option of another 50,000 tonnes. The price agreed was £13.19p per tonne and the rebate was to be 50p per tonne. In September 1974 the contract was renegotiated, price was rising to £16.00 per tonne from the 1st October 1974 to the 21st March. The contract has been renegotiated several times since then and the price has risen accordingly. It would appear that the buying price for Polish coal was settled in annual negotiations between the Polish coal authority and signatories to propose agreement or a small number of them on behalf of the whole group. The signatories of the contract naturally enough benefitted in a number of ways, they have continuity and security of supply, the price is relatively low and substantial credit is given by the Poles (up to recently) and a rebate is given on purchases. The rebate has been part of the contract from the beginning, it was to be given if certain amounts were purchased each year. In 1972 the imports were to receive a rebate of 25p on every tonne purchased provided there was a minimum purchase of 700,000 tonnes. In addendum to the contracts signed in January 1974 the rebate for the period up to the 30th September was increased from 20p to 50p, the rebate was to be an automatic payment from all coal lifted during the period no reference being made to any minimum amount to be lifted.

Around this period we have the

total of seven. The Dublin trade in 1972 was characterised by inefficiencies there were about 11 coal yards scattered on both sides of the Liffey mainly in the port area. The yards were small under utilised and did not lend themselves to any form of modernisation.

As all coal from Poland came in the form of shared cargos importers who were signatories to the Polish agreement drawing coal the ships generally had to berth on the north side of the Liffey first and when sufficiently lightened the remaining berths of the cargo were discharged from the south side berths. The importers decided to emerge their coal business in 1972. A trading company called C.D.L. was formed, C.D.L. to be the wholly owned subsidiary of a newly formed holding company consolidated holdings limited. It would appear that the importers decided to join forces for a number of reasons.

The Polish coal exporters were critical of the large number of yards and the methods of discharging coal.

The National Prices Commission threatened to treat unfavourably any further application for price increases unless some progress was made to improve efficiency.

The Dublin Port and Docks Board notified the importers that grounds for unloading would not be given to each of the companies. For some years the Board had planned to construct a coal berth, a storage area at Ringsend and was anxious to see this plan implemented.

The agreement to form Consolidated Holdings Limited was signed by representatives of shareholding companies in December 1972. Since this agreement the composition of ownership has altered somewhat. This is shown as follows:-

	1972	1979
<b>Donnellys</b>	231/6 <sup>0</sup> %	—
<b>Dohertys</b>	20 <sup>0</sup> %	26 <sup>0</sup> %
<b>Heitons</b>	211/6 <sup>0</sup> %	27.6 <sup>0</sup> %
<b>McKenzies</b>	10 <sup>0</sup> %	13 <sup>0</sup> %
<b>Tedcastles</b>	252/3 <sup>0</sup> %	33.4 <sup>0</sup> %

development of Coal Distributors Limited, the company formed in 1972 is now a monopoly position in Dublin whereas 25 years ago there were 17 coal importers in the Dublin area. By 1973 the number of importers was reduced mainly by amalgamation to a

As can be seen from above Donnelly's are no longer shareholders having sold their interest to the other shareholders. The companies coal terminal at Ringsend is said to be the largest domestic coal concentration terminal in Europe with capacity to

handle up to 500,000 tonnes per year. The storage capacity in the yard is 100,000 tonnes. Coal is discharged by grabs from the ship into quay side harbours and then by means of a conveyor belt directly into the C.D.L. yard.

The C.D.L. market includes the city of Dublin and its environs and an area extending an average of 50 miles around the city. Coal merchants from as far away as Athlone and Mullingar obtain their supplies from C.D.L. From our investigations it would appear that C.D.L.s breakdown of sales of domestic coal is 55% of Dublin, 45% a zone of 50 miles around Dublin and it would appear that about 28% of the companies sales are direct to the domestic consumer and 27% to bellman. Wholesalers and other retailers from around Dublin account for 45% of C.D.L. sales, besides bellmen, wholesalers, retailers and small importers, C.D.L. have a network of agencies around the country, these people act purely in an order taking capacity, they take orders from consumers and past the orders to C.D.L. they are paid a commission on all orders they take.

Some of the shareholding companies in C.D.L. have importing operations elsewhere around the country, Tedcastles with the majority of shareholding in C.D.L. (33.4%) has branches in Waterford, Limerick, Cork and Sligo where the company has an equal partnership with Sutton in R & L Hunter, Tedcastles also own T & J Connick of Dundalk. O'Rourke's of Dundalk and Lockington Fuels Limited control McKinseys which has a 13% stake in C.D.L. Suttons is owned by Corey & Son Limited a shipping firm in London, this Cork based company has branches in Limerick and Tralee (through its wholly owned subsidiary McCowens) and in Sligo where its in partnership with Tedcastles in R & L W Hunter.

It can be seen from above that the coal trade is basically in control of three companies, C.D.L., Tedcastles and Suttons. After C.D.L. Tedcastles is the largest firm in the business if its shareholding in C.D.L. is included. Because of the inter-relationships between companies and its subsidiaries all the major importers are connected in some form with C.D.L. C.D.L. in turn have sole rights to Polish coal also a monopoly position in the largest segment of the market in Dublin. C.D.L. is a very powerful company, indeed it will be interesting to see the developments of the company in the next decade.



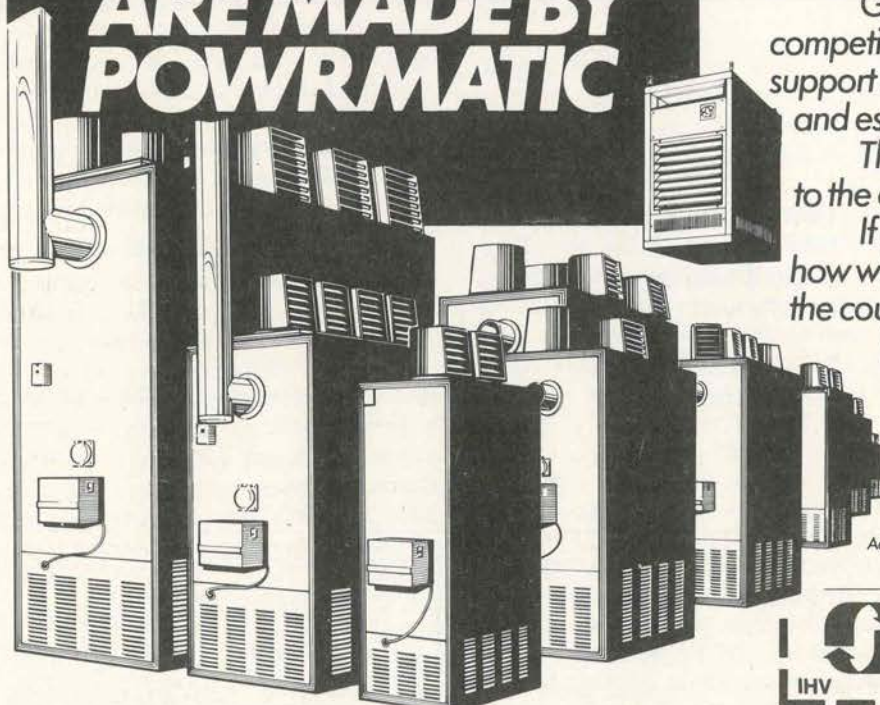
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# An Approach to Coal and Ash Handling Systems

By John Hoey, Managing Director,  
Thermoplant Engineering Ltd.

Firstly, all old ideas of coal handling and ash handling systems should be disregarded. The systems and equipment which are now available can be fully automated or semi-automated, as desired and can provide a degree of ease of handling and cleanliness, which is comparable with oil.

The type of system must be selected against the operating and environmental conditions applying in each particular site. The starting point must be to determine:

1. The specification of the coal to be burned i.e.
  - a) Calorific value
  - b) Size
  - c) Ash content
  - d) Swelling Index
  - e) Moisture content
  - f) Volatiles
2. The amount of coal per hour to be burned. This is governed by the amount of hot water or steam required.
3. The amount of ash per hour, which will be generated.
4. The type of boiler and the type of combustion equipment which will be used.
5. The number of hours operating per day and the load factor.

The standard coal available now for industrial purposes in Ireland would be very similar to the following analysis:

- Calorific value 11,500 Btu's/hr
- Size not greater than 50mm
- Ash content 8% (for American coal the ash content can be considerably higher and for design purposes a figure of 16% should be used.)
- Free moisture not greater than 10%.

On the basis of the above coal analysis, the coal requirement per hour based on a boiler efficiency of 80% is outlined in Table 1.

The ash produced in lbs per hour is also shown on Table 1. In most cases it is desirable and necessary to limit the handling and movement of coal to

Boiler size B.T.U. x 10 <sup>6</sup>	4	8	12	16	20
Coal consumption lbs/hr	435	870	1305	1740	2175
Ash generated lbs/hr	35	70	105	140	175

Coal consumption and ash production per hour

Boiler size B.T.U. x 10 <sup>6</sup> /hr	4	8	12	16	20
Rating of coal handling equipment lbs/hr	1305	2610	3915	5220	6525
Tons/hr	0.592	1.185	1.777	2.370	2.962

Boiler size B.T.U. x 10 <sup>6</sup> /hr	4	8	12	16	20
<b>Coal consumption tonne/day</b>					
1) For 8 hour day @ 90% load	1.42	2.85	4.27	5.70	7.12
2) For 24 hour day @ 75% load	3.56	7.12	10.65	14.24	17.80

Daily Coal Consumption

the normal day shift. This means that if the boiler is working 24 hours per day, the size of the coal handling equipment, based on the coal consumption of Table 1, must be rated by a multiple of 3. Table II shows the

rating of the coal handling equipment based on consumption only.

However, coal is not delivered on an hourly basis. Coal is delivered in economic lots of 10-20 tons. The coal handling systems, therefore, must

**Table IV**

Boiler size B.T.U. x 10 <sup>6</sup> /hr	4	8	12	16	20
<b>Coal consumption tonne/week</b>					
1) 8 hour day - 5 day week @ 90% load	7.10	14.25	21.35	28.50	35.60
2) 24 hour day — 7 day week @ 75% load	24.92	48.84	74.55	99.68	124.60

Weekly coal consumption

minimum spillage without over stressing the conveyor. The design must also take into account the difference in the flow characteristics of coal in both very dry and very wet weather conditions.

The conveyor will be outside in most situations and therefore the design must take into account weather protection, not only of motors, but also of bearings and moving parts. This system is very suitable for single boiler installations of a relatively small size. It has the advantage, that the reception hopper can also be fed by front loader shovel from an emergency stock pile and thereby remove the worry of none delivery of whatever reason, of coal from the coal supplier.

also be capable of accepting a full truck load of coal and allowing the delivery truck to return within a reasonable period. To enable this aspect to be studied further, Tables III and IV have been developed to show the daily and weekly coal consumption for the two conditions specified i.e. an eight hour day and a 24 hours day. In the instances of the smaller boiler range i.e. four and eight million Btu's on an eight hour a day operation, it would be feasible to consider deliveries of 10 ton loads. However, in all other instances, simple economic analysis of coal costs and deliveries, would indicate that 20 ton loads should be accepted.

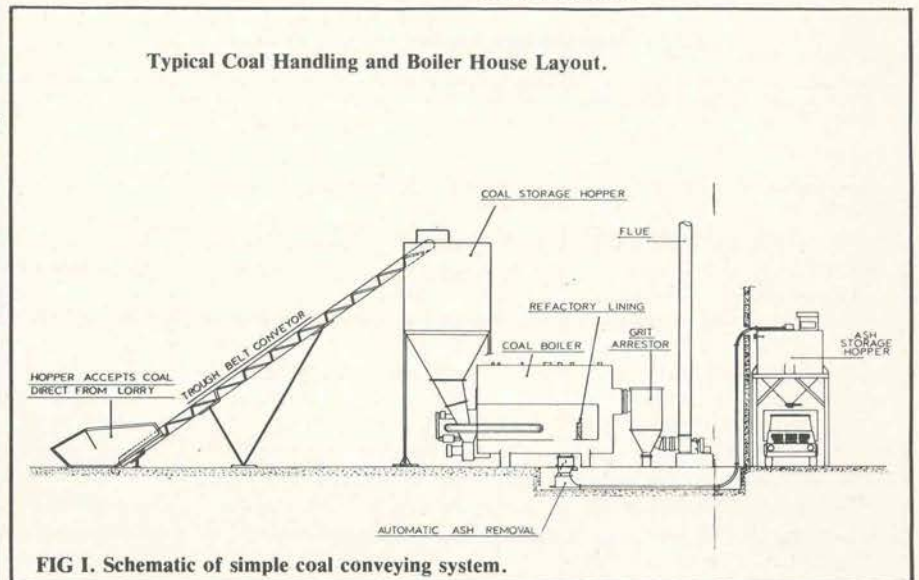
We therefore, have determined two of the requirements of the coal handling system. Firstly, the system must be capable of accepting a load of 10 ton or 20 ton. Secondly, the coal handling equipment must be capable of operating at a minimum at the rates shown in Table II. These figures in Table II are the theoretical minimums and the practical application engineering will show that the rating of the equipment will have to be considerably higher, than these theoretical minimums.

**Coal Handling Equipment**

Basically, there are two system available :

1. The mechanical system
  2. The pneumatic system
- and we consider each of these.

The mechanical or conveyor type system, is suitable for single boiler installations, where space is not a problem and also where there is not a strict environment problem caused by coal dust. Figure I shows a schematic of a simple system, whereby, coal can be fed to reception hopper, which feeds a special trough conveyor, which in turn feeds the hopper over



**FIG I. Schematic of simple coal conveying system.**

the boiler. Thermpant has recently installed an installation such as this, at Irish Nurseries Limited in Kimmage.

This type of system can be fed directly from a truck or by a front loading shovel. On the occasion rating must be such that a truck can off-load its full load without damaging either the conveyor or its motors. In this instance, a 10 ton coal load would be realistic with a conveyor capable of handling 20 ton/hr this would allow the coal truck to clear its load in a maximum of half an hour.

The control systems and safety precautions in this particular method are critical. The conveyor should be started up with the reception hopper full of coal. Level controls on the boiler hopper must ensure that sufficient time is allowed for the conveyor belt to clear its load, before the hopper is stopped. The design of the reception itself must be geared to accepting the full load of coal from the truck in a reasonable time with

The pneumatic systems provide a considerable flexibility on the conveyor systems. In the simplest case, where there are no special environment or dust pollution requirements, it is difficult to justify on a cost basis a pneumatic system for a small single boiler installation. However, figures II and III show schematically a pneumatic handling system, feeding a single boiler installation. In the first place, the pneumatic handling system i.e. a Macawber Dense phase system is intalled in the pit, with a reception hopper mounted over it. The delivery truck simply tips its load into reception hopper and the Macawber Denseveyor unit pumps the coal, as required, to the overhead hopper.

Where it is not allowable for whatever reason to dig a pit, then the pneumatic handling system can be installed as in Figure III. This requires a front loader to tip the coal into a small reception hopper unit over the Macawber Denseveyor. The



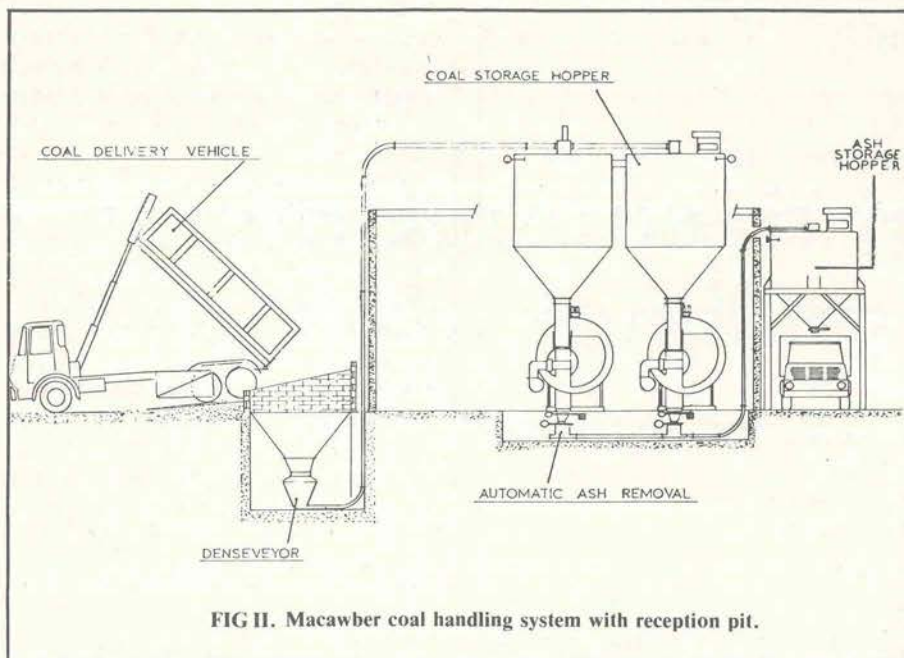


FIG II. Macawber coal handling system with reception pit.

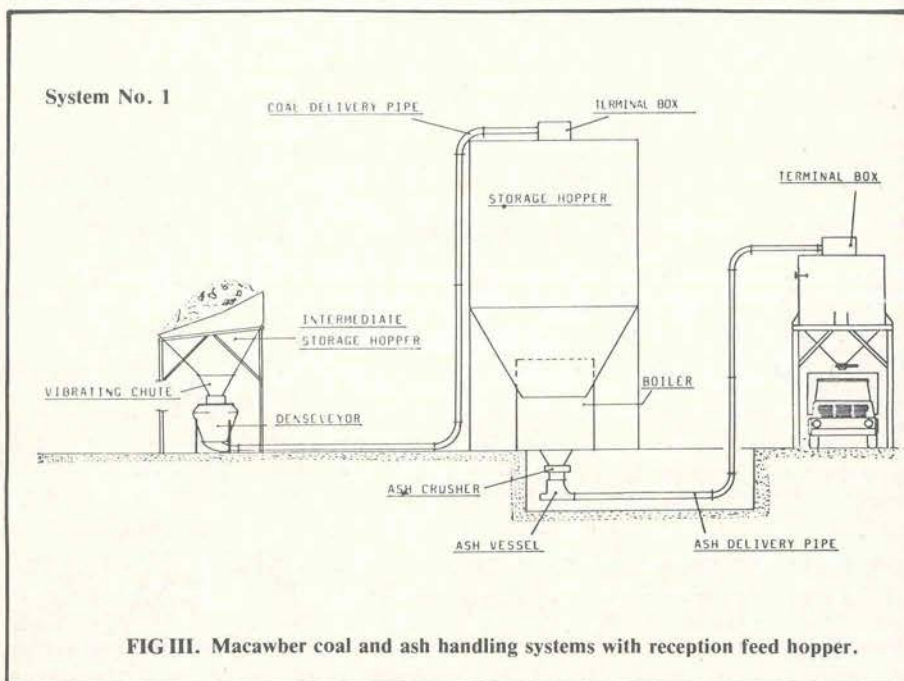


FIG III. Macawber coal and ash handling systems with reception feed hopper.

Macawber pneumatic Denseveyor unit has many advantages over the conveyor type system. Firstly, because the coal is conveyed through a pipe, its location is extremely flexible, as the pipe can go around corners, can go along the roof and drop down as required. It enables tremendous flexibility in the location of the coal reception unit in relation to the location of the coal boiler. This is a major advantage over the conveyor system. Secondly, maintenance of a Macawber Dense phase unit is very simple and considerably less costly than a mechanical system.

Where coal is tipped from a truck into a hopper mounted in the pit, the coal is fed automatically to the hopper feeding the boiler, as required and no labour is required from the moment the truck delivers its load.

However, where the operation covers a 24 hours, seven day week time of operation, this automatic nature of the Macawber unit is very important and ensures minimum labour handling costs.

When the installation is feeding more than one boiler, then in practical terms, mechanical type systems are unsatisfactory, expensive and maintenance prone. The cost aspect of a Macawber Denseveyor system on a multiple boiler installation, is extremely favourable by comparison with mechanical type systems. Also due to the simplified nature of the Macawber system for multi boiler installations, there are a number of other important cost factors.

1. Capital costs are competitive.
2. Installation costs are considerably

less.

3. Maintenance costs are much lower.
4. The flexibility provided by the Macawber unit allows considerable savings to be made in the design of the boiler house and the installations of the actual boilers.

A good example of the Macawber coal handling system is the recent installation at the Irish Sugar Company factory in Thurles, Co Tipperary. This particular installation shows the tremendous advantages of a pneumatic system in comparison with a mechanical system. The coal stockpile is in excess of 100 metres from the boiler house and the coal is conveyed a total of 150 metres across the top of the boiler house roof. In this particular instance, because the system is a sealed system, which is important in a food environment, no coal dust is transmitted into the atmosphere.

The advantage of the pit mounted Denseveyor unit is that it allows a truck delivery of 20 tons to be made without any undue delay of the truck in the unloading process. It also has the flexibility that the hopper can be fed by front loading shovel from emergency stockpile, if required. It is also interesting to note that it is claimed for the Macawber system, that no breakdown should take longer than four hours to clear. Therefore, with proper planned storage in the boiler feed hopper, minor breakdowns in the system will not create any problems. The Macawber Dense phase system of pneumatic handling of coal is the only system to have been installed successfully in Ireland to-day and as industry in Ireland continues to look to coal as its major energy source, the number of Macawber units, being installed in Ireland is on a steady increase. The real reason for this is that the Dense phase pneumatic system of conveying has been proven to be extremely reliable, extremely inexpensive in maintenance costs and very flexible in terms of installation. The flexibility in installation allows major cost savings, not only in the mechanical services, but also in the building itself, to be achieved.

It should also be noted in relation to Table II that the throughput per hour of even the smallest Macawber unit, is considerably greater than the rating required, as in Table II. This was considerable advantages in terms of labour costs and also in terms of maintenance time in the event of breakdown.

• Continued next month

# Good Control Systems

Can anything be done to improve the standards of comfort and economy in existing commercial and industrial buildings which are, on average 25 to 30 years old? A good heating and ventilating control system is the one that is accurate, so that it can deal with the large variations in demand which normally occur. A well controlled installation will give more comfortable working conditions at a lower cost than one which is poorly, or not at all, controlled.

Every heating system must be designed with sufficient output capacity to satisfy the daytime (for full time in the case of hospitals, old peoples homes and some factories) needs of the building under the coldest weather conditions that can reasonably be expected in its geographic area. Even the most old-fashioned system will normally do this, but what it will not do is meet this need economically, nor to the maximum benefit of the occupants in terms of comfort. When fuel was a relatively minor constituent of a company's running costs, a boiler could be switched on and left on; to achieve a comfortable temperature, windows were opened if necessary. This is now seen to be a waste of valuable natural and company resources.

When considering the facilities which should be available from a heating system, whether or not it incorporates forced cooling of some kind or full air conditioning, it is as well to bear in mind three relevant facts:

Fact 1. In our climate, for 50% of the heating season the actual demand for heat is only 25% of the system's capability, possibly even less (see figure 1).

Fact 2. For every 1°C for which room temperature exceed that necessary for comfort, 10% of the fuel being consumed is being wasted i making people uncomfortable.

Fact 3. A building used for commercial purposes is unoccupied for

approximately sixteen hours in every twenty-four, and for one or two days in every seven. A heating system which is on at all times, therefore, is wasted for three-quarters of the time. The apparently obvious answer of fitting a time switch is not the whole solution, as will be demonstrated.

What can be done to eliminate the wastage resulting from the over-production of heat implied by these three facts?

In a new building, a complete building services management system can give very accurate monitoring of all services, and similar sophisticated equipment can frequently be installed in older premises, but here quite considerable improvements can be made by much simpler means. Where

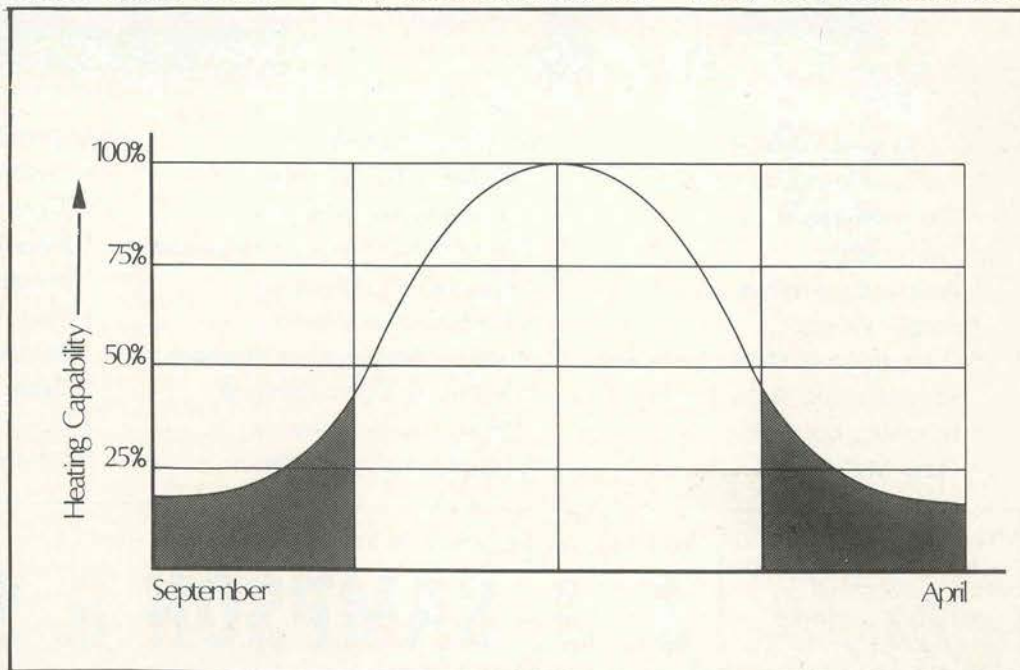
some controls do exist, for example, and are still serviceable, resetting and adjustment have been known to cut fuel consumption by up to 20% but this does not necessarily improve comfort levels.

Let us look at the various parameters which must be controlled to counter the three facts given earlier, the controls that may already exist on older systems, and then at the types of controls available to make an improvement.

Ideally, a heating system should incorporate some kind of timer, be variable depending on the weather, and be variable in different parts of a building to allow for such things as the difference between North and South facing rooms, the heat produced by office machinery and

the need for cooler conditions for some computers (although this is not necessary for most modern business computers). Such a system must be automatic, because if it requires frequent manual intervention it will be used inefficiently. If a heating and ventilating, or full air conditioning, system has all this, it will provide the maximum comfort for its occupants with the minimum use of fuel.

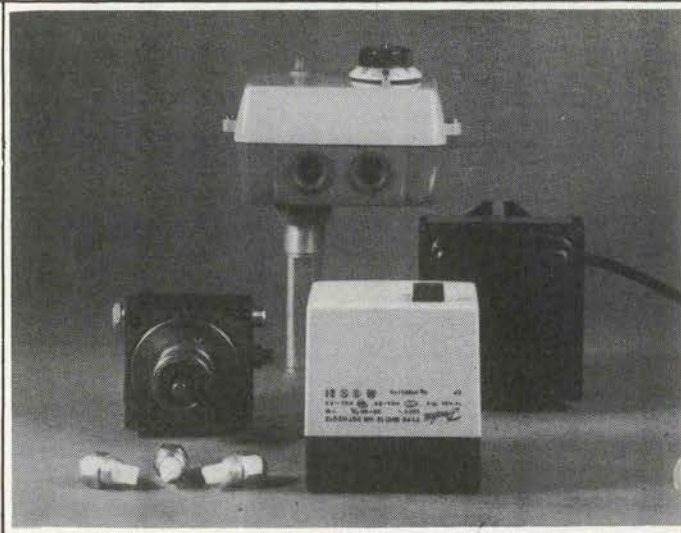
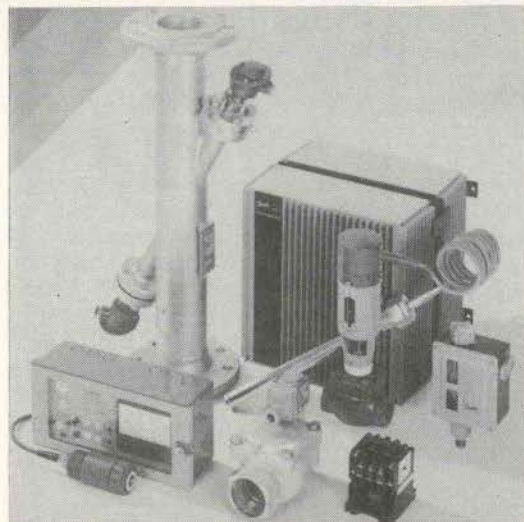
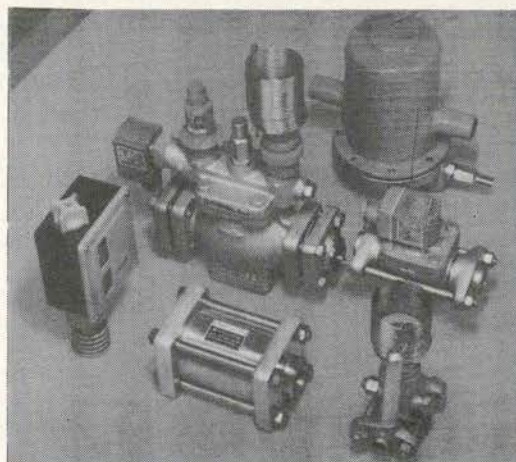
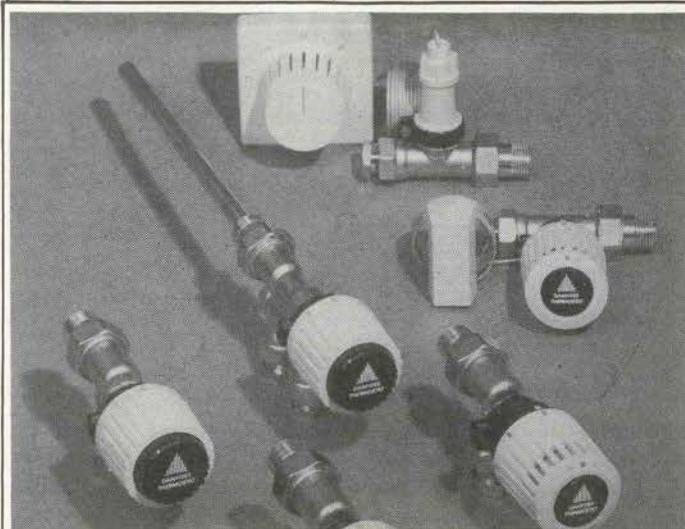
Old heating systems may well have a thermostat on the boiler, by means of which their owners believe they can regulate the temperature of their building. This is probably not so, as in most cases such thermostats merely provide protection against overheating for the boiler. Some kind overall timer may exist, but one is faced



● Figure 1. Showing how fuel savings of up to 25% can be made using an optimiser.

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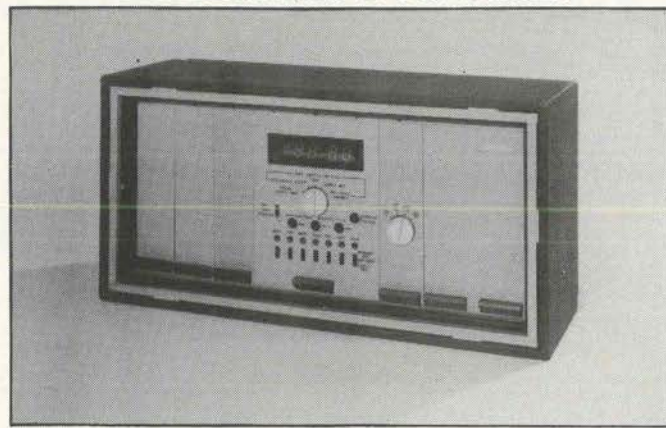
UNIT 71, CHERRY ORCHARD INDUSTRIAL ESTATE, DUBLIN 10. TEL: (01) 268111.

## INSTRUMENTS &amp; CONTROLS

with the problem of when to set it. If switched off, should it switch on again when work restarts or to reach a desired temperature by that time? And how, using just a timer, can you allow for the fact that after a cold night it may take six hours to reach this, but after a mild night only thirty minutes? Whichever it is, the system must come on when necessary to give protection against frost damage. Even quite old buildings which are centrally heated may have some room thermostats, but rarely do these control the temperature in their immediate area. In most cases they 'report back' to the boiler, which switches itself off when a maximum temperature is reached. This results in other areas being under- or over-heated, and even the area where the thermostat is sited may be subjected to unacceptable swings between maximum and minimum settings.

The simplest overall controller is an optimiser. It switches the boiler or other heat source on and off in order to achieve and maintain preset temperature levels, automatically adjusting the start-up and shut-down time with reference to the temperature outside the building. Optimisers come in various degrees of sophistication; Satchwell, for example, has models suitable for use where there are already other devices providing adequate daytime control, and others which include compensators, reducing heat output at any time, day or night, when the external temperature rises, and vice versa. Devices such as these also provide protection against frost damage, and can be installed in a number of configurations to minimise heat source output directly, or by regulating mixing valves to vary the heat supplied to the heating system.

Having ensured that the boiler is not supplying more heat more often than



● The Satchwell Optimiser.

is theoretically necessary to maintain the building as a whole at a comfortable temperature, one should now turn one's attention to the control of individual areas or zones. This is obviously necessary for the comfort of the people working there, but can furnish quite considerable energy, and therefore cost, savings as well. The simplest system is to arrange for a room thermostat, suitably sited (an extremely important and often overlooked point), which controls valves which in turn control the heat supplied to that zone. The control can be on/off or modulating. The former normally has to allow a wider variation between the hottest and coldest temperatures, and experience shows that the thermostat therefore tends to be turned up higher than necessary so that the cold is not perceived as too cold, even though this means that the highest temperature is rather too high for perfect comfort. A modulating control avoids this, usually by mixing hot and cold water or air in varying quantities, and it will achieve a much more even temperature than a simple on/off system.

Hot water for domestic purposes is another potential source of considerable waste, as the water is often almost at boiler temperature. A simple thermostatic

controller on this output not only saved money, but is also a useful safety feature in that it reduces the possibility of scalding.

If a complete building management system can be installed, it will cope with changes in external temperature, variable times of occupancy, and widely varying demands in different areas, completely automatically. The more advanced systems can do other things as well, such as switching off the least essential equipment if fuel consumption (usually electricity) is approaching an upper limit at which additional costs may be incurred.

Thus the benefits of accurate control can be summed up as primarily cost savings, but with the addition of improved comfort. The cost saving is usually expressed as the pay-back period, a spectacular example of which involved a Satchwell optimiser installed in a New York school. It save so much energy that it paid for itself in improved fuel usage in just three weeks. This is not typical; the pay-back time can range from three to eighteen months, but is most likely to be six to nine months — after that, the control system is just saving money.

*This article was prepared by John Coffey, Manager, Dublin Region, Satchwell Control System Ltd.*

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

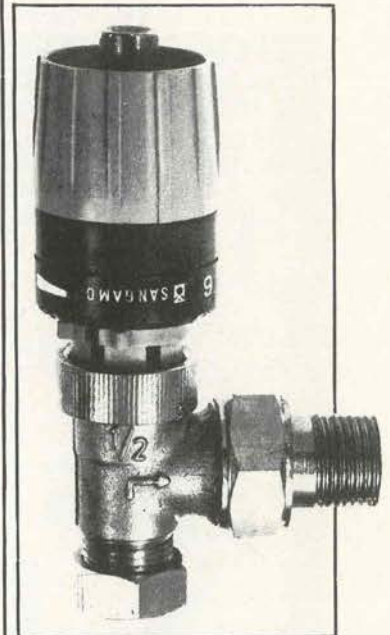
## Sangamo

Sangamo have introduced a range of thermostatic radiator valves well up to their usual high reputation for quality and reliability.

Basically there are three types of control heads and sensors to fit any of eight types of valve covering a range of angled and straight valves for 1/2", 3/8" and 3/4" BSP fittings.

These are head with integral wax expansion sensor for direct fittings, remote wax expansion head with 2 metric capillary tube connections and a similarly connected remote liquid expansion sensor.

Enquiries to Irish Industrial Supplies Ltd. Tel. 740786.



● Thermostatic radiator valve from Sangamo.

## J J Sampson

The Industrial Electrical Process Engineering Division of Danfoss announce the introduction of the EMAJ electronic heat meter for precise measurement of heat used in hot water

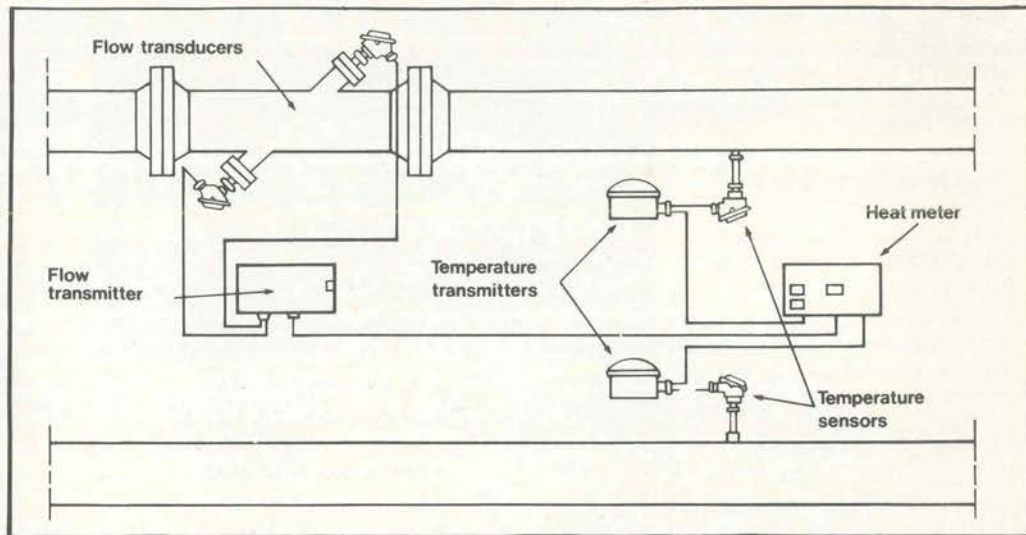
**INSTRUMENTS & CONTROLS**

systems in industrial processing, power stations, district heating stations, large factories, hospital complexes etc.

The Danfoss EMAJ heat meter calculates, displays and registers heat quantity, the measurements being based on the temperature drop in the water and its flow velocity. The temperature and flow values are measured by the Danfoss EMT temperature transmitter and EMUF ultrasonic flow transmitter.

The EMAJ, EMT and EMUF together provide a complete measuring system with the advantages of no regular maintenance or adjustment, with no obstruction in the pipe system. EMAJ also provides a current signal proportional to the heating efficiency enabling installation in automatic control and monitoring systems.

Calculation of heat given off by hot water on cooling is calculated by a formula with a heat content correction factor, k. The k factor, dependent on temperature



● Schematic of the Danfoss EMAJ heat meter system including pipe sensors.

and whether water quantity is measured in supply or return, brings about two different enthalpy curves which the Danfoss EMAJ corrects. A mains frequency controlled microprocessor progresses and calculates the formula, measuring every second.

After calculation the value is transmitted via a D/A converter as a current

signal, water quantity and heat effect are added together by two mechanical counters and, by means of 16 setting contacts and a potentiometer, the microprocessor can be programmed to register the heat effect from any large heating system. The EMAJ programming facility means that an increase in plant capacity does not require a change of heat meter.

Further information from J J Sampson & Son Ltd.

Drayton TRV1 was only available in three body types with either a remote or integral head. Now, the TRV2 boasts a range of 16 different body patterns for single-pipe, twin-pipe and steam systems, together with nuts and olives for three further pipe sizes.

In addition to the integral head, there are remote heads with 2m and 6m capillary, and a tough transparent polycarbonate Vandal Guard anti-tamper cover is available to fit the integral head for use where its location may allow it to be exposed to unauthorised interference.

Drayton also markets a further wide range of bodies with NPT threads for the American market and sell considerable quantities of TRV2s in Europe.

Another variant of the TRV has formed the basis of the Drayton Tapstat, a hot water cylinder temperature controller which provides installers with a simple non-electric self-operating control for the DHW circuit.

Further information from CHS Ireland Ltd.

**CHS**

Drayton Controls (Engineering) Limited, who trade under the single name "Drayton" have been notable automatic controls manufacturers for 67 years since they first set up to manufacture steam traps.

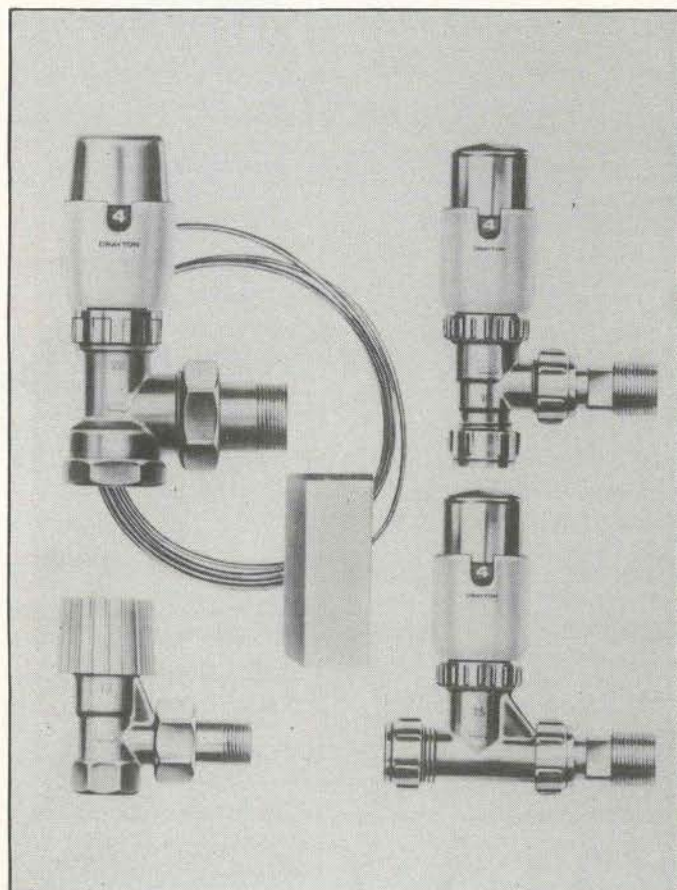
Since they first introduced their TRV thermostatic radiator valves in the 1960s these valves have become increasingly popular, largely because of their clean design which is ideally suited to the smaller domestic radiators and because of their excellent response characteristics obtained through their liquid-filled bellows-operated design. The present version, the TRV2 has become a market-leader despite the introduction into the market of many cheaper foreign competitors.

In the early days, the

**Satchwell**

Satchwell Sunvic are adding to their range of radiator thermostats by increasing the number of pipe sizes, to take in 3/8", 1/2" and 1" thread connections.

This will allow the TRVs



● Some of the variants in the Drayton TRV2 thermostatic radiator valve range which now includes single-pipe bodies and a Vandal Guard anti-tamper cover.



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GKEP Analytical Instruments have designed a unique heat loss meter to help you optimise boiler performance, maximise fuel economy and minimise running costs.



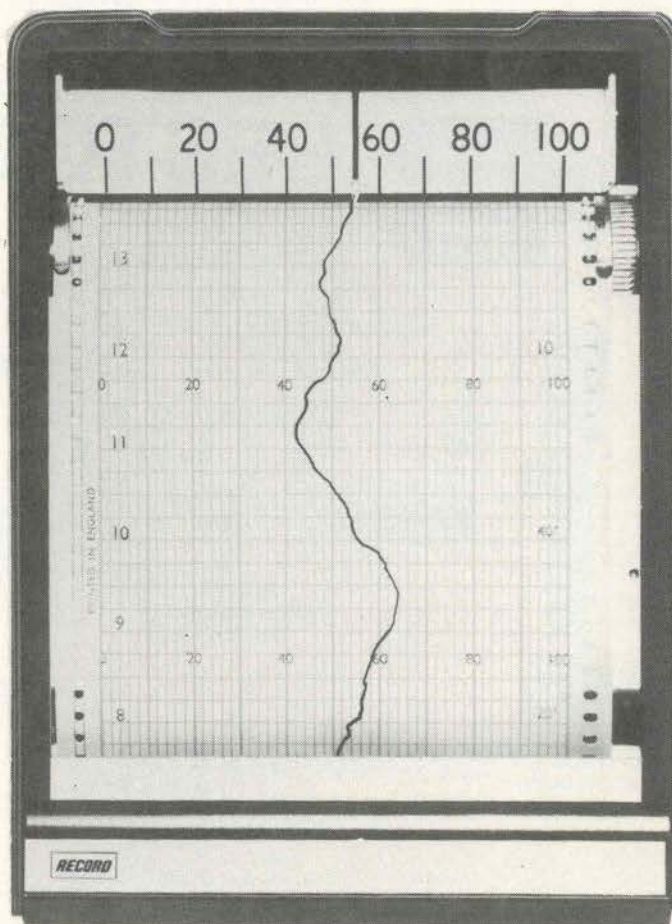
The model 6910 heat loss meter provides a direct measurement of boiler combustion performance. It gives a digital display of percentage heat loss; percentage oxygen in flue gas; flue gas temperature and temperature rise.

Knowing the combustion conditions causing your heat loss, adjustments can be made and monitored to ensure your boiler runs at maximum efficiency.

Plug in modules together with related accessories enable one portable recorder to measure voltage, current, watts/vars, temperature, humidity and many other parameters.

The first step towards energy conservation and improved plant efficiency is the use of a RECORD portable recorder with a range of plug in modules, suitable clip on current transformers, transducers and sensors. You can take the recorder almost anywhere to check on plant performance, load peaks, power factor - or any other parameter you cannot normally monitor.

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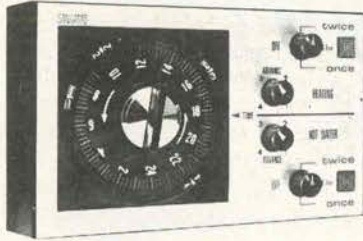


No calculations are necessary. The heat loss meter receives electrical inputs from two thermocouples and an oxygen analyser. These are interpreted by the meter and the results shown on its digital display



Industrial Instruments Ltd., 6 Herbert Place, Dublin 2 (01) 761691 (01) 764827 Telex 24789  
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# There's a Sangamo Time Switch or Controller for every application.

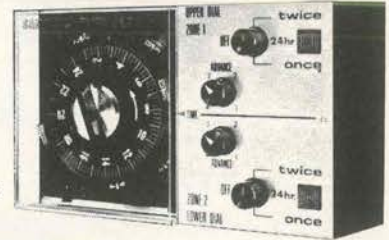


### The Sangamo 410 Central heating/hot water programmer

The 410 is available in a variety of forms for the control of Central Heating and hot water installations, two speed, fan-controlled storage heaters, warm air systems etc.

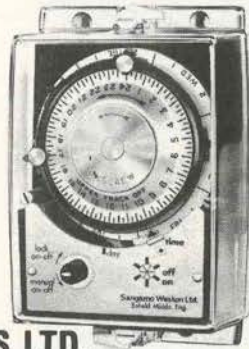
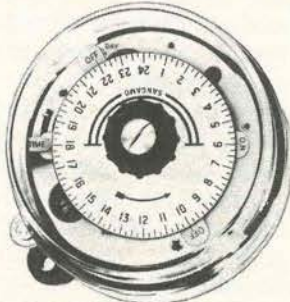
### The Sangamo Twin Set 414 Programmer

A sophisticated programmer with twin dials for the independent control of two separate heating zones (e.g. upstairs/downstairs, bedroom/living room areas). The 414 thus embodies in one unit the functions which would otherwise require two controllers.



### The Sangamo S 254

A very popular 24 hour dial switch in the round pattern. Normally supplied with 1, 2 or 3 pairs of "on" and "off" levers. Incorporates a day omitting device.



### The Sangamo S 611

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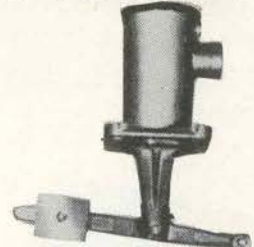
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to cater for a wider range of applications especially in the commercial and industrial field.

In addition a new range of remote sensing heads, covering all of these valves is being introduced, in addition to the standard 1/2" size.

These will have particular impact in the domestic field as, placed up to 2m away from radiators they sense a more accurate room temperature.

The TRVs, which come in angled, straight and horizontal shapes can be installed in all central heating systems with forced circulation as well as in district heating systems with flow temperature of up to 120°C. They can be used as whole-house system of temperature control or added to an existing system to give extra temperature control to selected rooms.

Outstanding features of the range are that units are packed complete with compression fittings to make the heating installer's job

easier and that, once installed, the upper gland packing can be changed without draining the system.

The TRVs are flexible, reliable and easy to use. As well as being able to control a wide range of temperature settings, the Satchwell TRVs can be set to pre-chosen high/low limits to give quick, positive selection of day and night temperature levels.

Characterised by a specially favourable flow pattern with low pressure loss, the TRVs are equally suitable for flow/return and for single pipe heating systems.

The built-in sensor is recommended when the room air can reach the thermostatic valve unimpeded and if the sensor is not subjected to direct sunlight or draughts.

The new remote sensors, however, are vital, if the radiators are covered by curtains or blocked in by furniture.

The introduction of this extended range of radiator

thermostats is in line with Satchwell's policy of offering their customers a complete range of central heating temperature and time controls - a comprehensive package unrivalled in the controls market.

**McKenna**

With fuel costs rising continually it is more important than ever to ensure that energy-hungry processes are carefully controlled. Airflow Developments' range of measuring instruments can help balance air movement systems for more energy-efficient operation. These instruments are also designed to monitor conditions in many industrial processes, laboratories and computer installations where special air flow, pressure or filtration standards need to be maintained.

Airflow's comprehensive range of portable direct reading anemometers provide models for every applic-

ation. The recently introduced EDRA 5 anemometer may be mains or battery powered and is available with either analogue or digital displays. It has a rotating vane head and will read velocities from 0.25 m/s to 25 m/s. The range also includes the TA battery-powered anemometers which measure velocity and use tiny thermistor beads in a circuit designed to eliminate the effect of air temperature on the readings. TAs are particularly useful where the airstream is not large enough to accommodate a standard vane anemometer and can give accurate readings at very low velocities ranging from 0.25 m/s up to 30 m/s.

The Airflow Precision Manometers are supplied as complete portable Test Sets including flexible PVC tubing, Pitot-Static Tubing and spare manometer fluid. The Type 4 consists of two adjustable-limb manometers which will read pressures over the range 0-5000

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### INSTRUMENTS & CONTROLS

Pa in seven limb positions. Laboratory versions are also available.

Airflow's Industrial Manometers include vertical and inclined models which can be mounted on walls or panels. They provide an instant check on pressure conditions within a ducted air system and one type - the Filter Loss Gauges - will indicate when a filter in the system needs to be cleaned or changed.

For permanent monitoring of air systems the EKM 1000 and Edralarm provide automatic warning signals if the pressure or flow varies from the limits set by the user.

Airflow Developments also provide precision made Pitot-Static Tubes and can supply various instruments for sensing temperature and humidity.

This very comprehensive range of test equipment covers most air and gas flow measurement applications and is currently available from stock. By investing in high quality instruments energy wastage and cost can be cut.

Further information from McKenna (Ireland) Ltd.

### Industrial Instruments

#### High Performance pH Meter/Controller

EIL Analytical Instruments, the water analysis specialists of Kent Industrial Measurements, has recently introduced a new high performance pH meter/controller for industrial use. The Model 9180 has been designed for the continuous and precise measurement of pH in the diverse fluid and slurry samples encountered in many process industries. The instrument is housed in a purpose-designed alloy case providing IP55 protection and has several important features offering benefits over similar units.

Measurements of pH are made in expanded ranges of any 2pH from 0-2 to 11-13pH; any 5pH from 0-5 to

9-14pH; any 10pH from 0-10 to 4-14pH, or 0-14pH. All ranges have automatic temperature compensation using a Pt100 platinum element in the electrode system.

#### Demountable Pre-Amplifier

An important feature of the 9180 is the pre-amplifier module. This can be located at the measuring point and thereby eliminates the need for expensive high impedance cable runs to the transmitter.

With small scale systems the pre-amplifier can be housed inside the meter. A dual high impedance differential input to the pre-amplifier reduces the generation of errors due to stray potentials at the reference electrode. The meter can also be used for redox (ORP) measurements using a fixed resistor instead of the Pt100 resistance thermometer.

#### Isolated Outputs

An opto-coupled circuit provides a choice of four fully isolated current outputs enabling local or remote monitors such as indicators, chart recorders and dataloggers to display or record the measured results.

#### Two Independent Alarm Circuits

Upper and lower alarm limits can be easily set on this meter, making it very suitable for closed loop control systems. Two separate circuits are each rated for 2A (non inductive) loads which is more than sufficient for most solenoids and small motors.

The 9180 measures 227 x 377 x 130mm and weighs 7.25Kg.

### RSL

The Robinair Division of Kent-Moore U.K. Limited announce an important extension to their range of 'Lightweight' Service Stations for the refrigeration and air conditioning industries. Originally designed to facilitate dehydration and accurate recharging of domestic refrigerators and freezers, the range is based

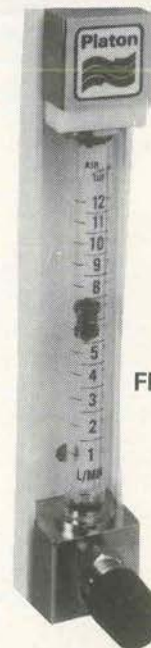
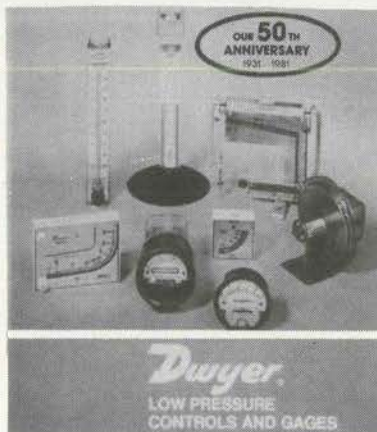
# A Condensed Guide to MANOTHERM activities

## THOMMEN CALIBRATOR EM



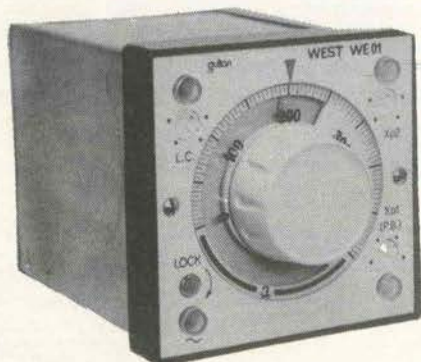
Type EM 421  
410 x 260 x 230 mm  
approx. 8 kg

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

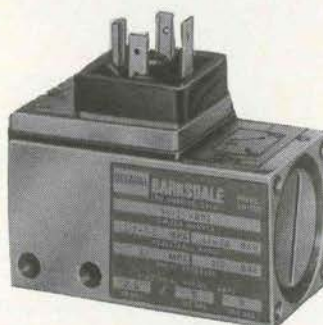


Platon  
Flowmeter.

## West WE 01 process controller



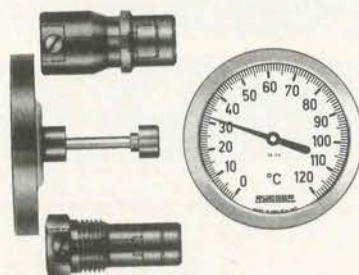
96mm square metal case.  
PD+PI control action.  
Limit comparator & controlling  
output option.



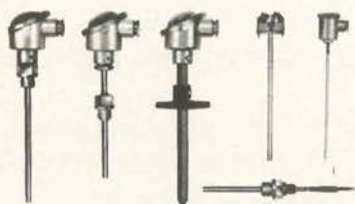
Barksdale piston pressure switch  
for pressures up to 315 bar.



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



Rueger thermometers.



Thermocouples &  
resistance  
thermometers

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Phone 645966

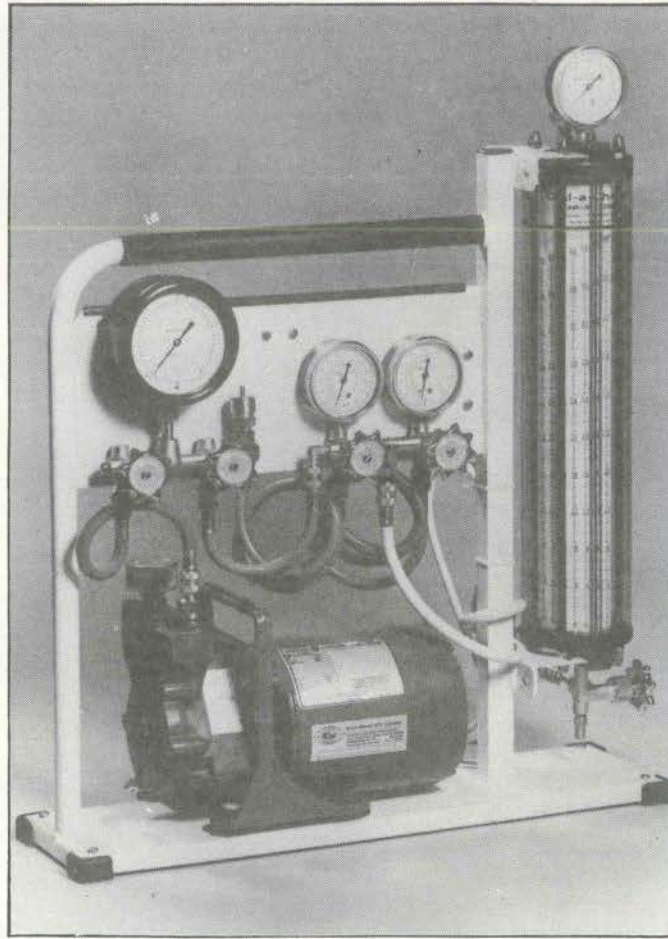


Roto-Bindicator.

**INSTRUMENTS & CONTROLS**

on a 1 cfm 'Robbivac' vacuum pump. Heated refrigerant measuring cylinders of 2½ lbs, 5 lbs, 10 lbs, with metric equivalents being available. The practical convenience and light weight of these Service Stations, coupled with an excellent performance, ensured their popularity, with applications well beyond those originally envisaged. Such diverse uses include Split System Air Conditioners and other refrigeration equipment, where access may be restricted or difficult, and Automotive Air Conditioning where the modest cost and portability are important factors.

In order to further expand these applications and with particular reference to servicing of Heat Pumps, Robinair are now offering a choice of three Robbivac vacuum pumps. The 'Lightweight' range of Service Stations continue to be based on the 1 cfm single stage vacuum pump which develops a guaranteed vacuum level of  $50 \times 10^{-3}$  torr. For



applications necessitating a greater vacuum level, a two stage version may be specified. Where larger systems are involved a 2 cfm vacuum pump is available. The weight penalty for either of these two alternative pumps is only 1 lb.

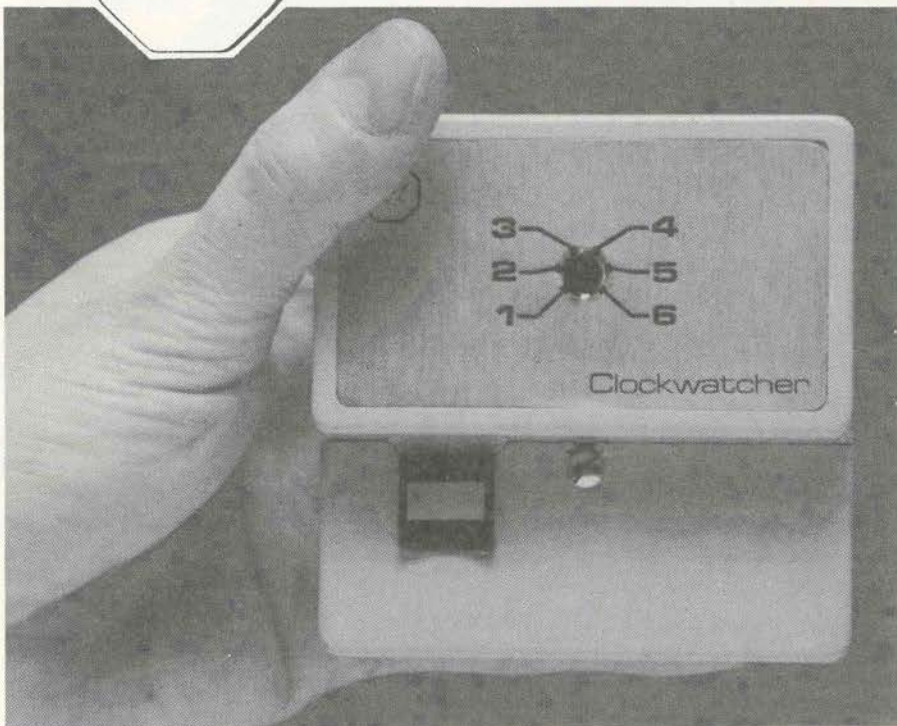
As with all Robinair quality products, there is a twelve month warranty covering both parts and labour.

Further details of the complete range of Robinair Service Stations, and other products, may be obtained from RSL Ltd.

● Left: The Robinair Lightweight Service Station.



**NEW FROM REDBRO**  
**CLOCKWATCHER DOMESTIC OPTIMISER**



*The simple domestic optimiser designed for easy installation to new or existing central heating systems, and to provide important fuel savings without any reduction in comfort levels.*

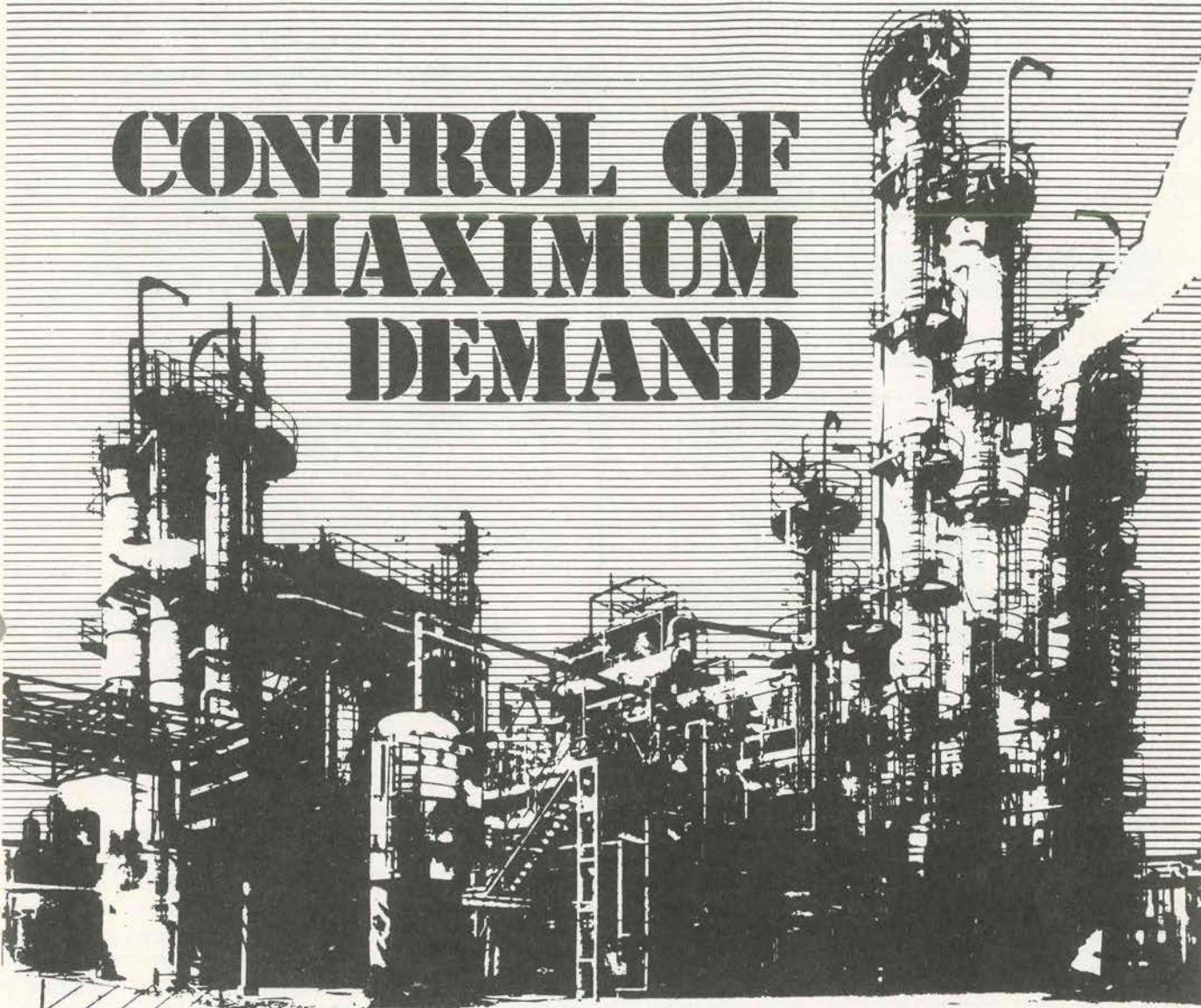
- Up to 28% reduction in Heating – on time possible
- Easily and quickly fitted to new or existing heating installations
- Low installed cost – usually recoverable inside 1 year
- Set-and-forget operation
- L.E.D. status indicators
- Override facility
- Attractive styling
- Choice of sensor options

Sole Irish Distributors

**REDBRO**

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Ballyfermot, Dublin 10.  
Tel: 266677 Telex:— 30898.

# CONTROL OF MAXIMUM DEMAND



One of the main outgoings of a building with air conditioning or refrigeration plant is electricity. This short article sets out to explain the Maximum Demand Rate of Charge for electricity and then to describe a device developed by the ESB and a local manufacturer which automatically limits the level of maximum demand and thereby curtails electricity charges. It is based on a paper first presented to a meeting of the Energy Managers Association last May and was prepared and delivered by E Richmond of the Commercial Department of the ESB.

Maximum demand tariff applies to the majority of large electricity consumers. (In all about 3000 consumers are billed in this way). The tariff is made up of two main components, viz. a KWH or unit charge which corresponds to the well known charge for units of electricity which domestic electricity consumers pay, and a charge for the "maximum demand" which is based on the maximum rate of consumption (averaged over 15 mins.) at which electricity is used during any two-month period. Thus, under this scheme, the KWH charge covers the energy used; the demand charge on the other hand covers the maximum speed of delivery at which this energy was supplied.

A high maximum demand in relation to the amount of energy used implies that much energy was deliver-

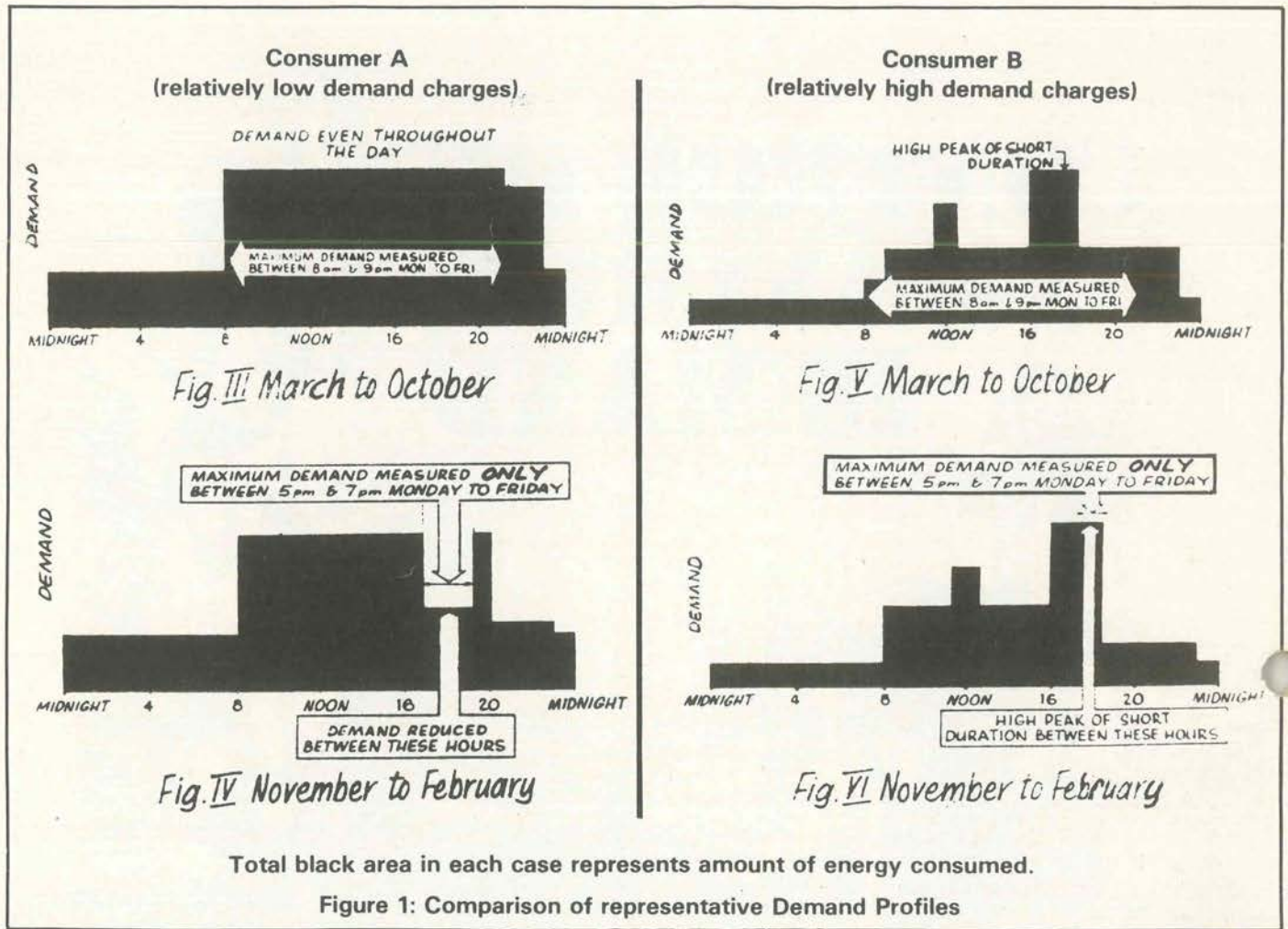
ed over a brief period. Such a demand pattern in turn calls for adequate cabling and transformer capacity to deliver this high power flow. It is in order to recoup investment on the necessary distribution network that the ESB includes a demand charge in its bills for large consumers. This charge is directly proportional to the level of maximum demand.

It follows that, for a given consumption of energy, it is least costly for such a consumer to use electricity at a uniform pace since by this means maximum demand charges are minimised. Two contrasting demand profiles shown in **Figure 1** (page 22) illustrate this point.

Maximum Demand is measured on weekdays only during the hours of 8 am to 9 pm. In the winter months of November to February, these hours (by request) are shortened to span

only the period 5 pm to 7 pm. In any large premises many appliances call for electricity intermittently and in a random fashion — just as for example the domestic fridge compressor and domestic water heater, in response to thermostatic control, call for supply occasionally and in a random fashion. Over a period of days, clearly these appliances will inevitably from time to time operate simultaneously.

In any premises, the greater the number of appliances which coincide in their operation, the higher is their aggregate peak demand for electricity. Since only one incidence of a 15-minute average demand — viz. the maximum 15-minute demand — is the basis of the maximum demand tariff charge, it is very much in the interest of the consumer to avoid unnecessary coincidence of intermittent loads and indeed to defer their oper-



ation when the usage of non-interruptible appliances is high.

Demand charges are typically about £45 per KW per annum. Thus if a customer can reduce his two monthly maximum demand by say 10 KW throughout one year, he reduces his bill by some £450. The tariff is in

fact a bit more complex than is here described but this argument remains valid nonetheless.

Viewed from another aspect, it can be shown that a consumer whose maximum demand in any period is 10 KW higher than that of the next highest ¼ hour average demand,

must pay  $10 \times £7.2 = £18$  (where £7.20 per KW is the present two monthly Industrial low tension maximum demand charge) for the incremental extra KWHs he consumed in creating that extra 10 KW of peak! (This is some 450 times the typical average cost per KWH.)

Table 1: Load switching algorithm (No's of loads switched).

Minutes Elapsed in Integration Period

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
$P \geq 1.2T$	0	0	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-4	-5	)
$T \leq P < 1.2T$	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-2	-3	-4	)
$0.8T < P \leq T$	0	0	0	0	+1	+1	+1	+1	+1	+1	+1	0	+1	+2	)
$P \leq 0.8T$	0	0	0	0	+2	+2	+2	+2	+2	+2	+2	+1	+2	+3	)

) Reset

P: Measured Power Consumption  
 T: Target Value  
 +: Loads Switched On  
 -: Loads Switched Off

**Automatic Control of Maximum Demand**

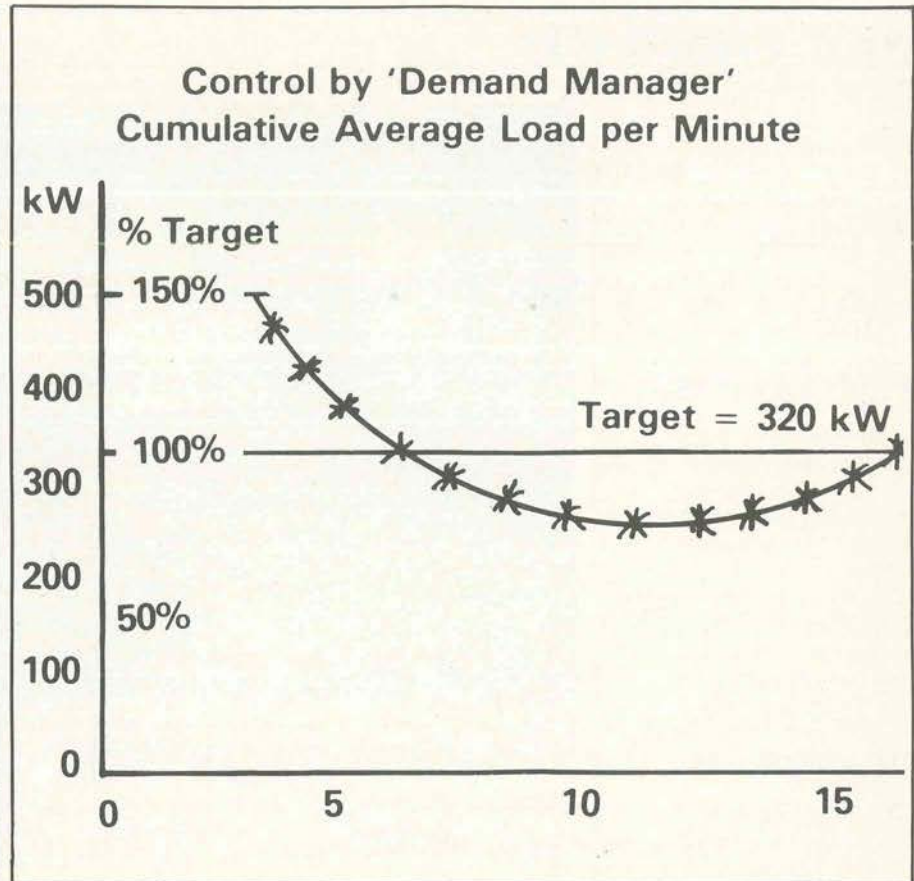
While it is evident that a considerable incentive exists for consumers to exercise control of maximum demand to ensure against unnecessary coincidence of appliances, the question remains — how is this achieved? For many years devices (demand controllers) have been available which do this task automatically. Prior to the advent of microelectronics, however, these demand controllers were relatively crude and insensitive and therefore were of limited interest to consumers on maximum demand rates of charge. Moreover, in that period there was a much lesser concern with curtailing electricity charges. Not surprisingly, few demand controllers were installed.

In recent years the price and versatility of microelectronics afforded the opportunity for improving the sophistication of demand controllers at modest cost. What is more, our indigenous new electronics industry provided the possibility of producing a unit in Ireland.

Accordingly, in 1977 the ESB commissioned a local electronics manufacturer to develop a low cost maximum demand controller which was simple to operate but versatile in performance. As a result, about one and a half years later, following close collaboration with ESB engineers on its design, production started on the "Maximum Demand Manager".

The unit is straightforward in operation. A "target" maximum demand is selected by the user which he gauges to be a reasonable demand limit below which he can operate. The Demand Manager, during each 15-minute integration period, sequentially switches up to eight groups of appliances which are "disconnectable" — typically heaters, air conditioners, refrigerators, etc — in order to maintain the average demand each 15 minutes below the selected target. Disconnectable loads tolerate such interruptions without impairing their performance. In effect, the demand Manager ensures that unnecessary simultaneous operation of these disconnectable loads is avoided.

Needless to say, a set of control wires to interconnect the Demand Manager to each appliance must be provided. In addition, a remote control switch or "contactor" generally must be installed in the supply circuit to each appliance. A simple control link is necessary too to keep the Demand Manager in synchronism



with the ESB meter's timing of the 15-minute integration periods.

The exact manner in which demand control is effected is set out in the algorithm in Table 1. Suffice to say that having disconnected loads, the unit ensures that any available capacity below the target is utilised to the fullest possible extent. The effect of this is that when the call for electricity is high, the Demand Manager will control the total demand to a level at or just below the target value.

The operation of the Demand Manager is illustrated in Figure 2 (above). This shows a typical control pattern over a 15-minute demand period. Initially, demand is high and well above the target. Control starts after an initial "settling down" period. Toward the middle of the period after successive disconnections to bring the demand below target, a degree of over-control has occurred. However, the Demand Manager recognises this condition and gradually switches back appliances to make full use of available capacity within the constraint of the selected target.

To assist the user, information is continuously displayed by the Demand Manager comprising the following:-

- (i) Minutes elapsed in the current integration period;
- (ii) Percentage of largest demand already reached in current integration

period;

- (iii) Status (on or off) of each of the eight disconnectable load groups.

Also, a permanent record of the demand profile is provided by a printer (which can display the demand value for each minute or each 15 minutes.) To facilitate the user selecting the optimum target, every occasion on which appliance disconnections are ordered is marked. Clearly, if such switchings are very rare the user can afford to lower his target and thus save more money.

When considering whether the Demand Manager would benefit a customer, the unit itself can be very easily installed in his premises and set to work in "monitor mode". In this way an exact record of the customer's demand profile can be generated with which a reliable judgement can then be made about the scope for effecting maximum demand control.

The Demand Manager has been installed in factories, mills, department stores, supermarkets and hotels. In many cases payback periods as short as six months have been achieved. The present design is not readily installed in those very large premises which are supplied by the ESB at High Tension. However, a special version of the Demand Manager is under development for this purpose and is planned to be on the market later this year.

## NEW PRODUCTS

### Crown Pipe Insulation

The first snap-on rigid pipe insulation with a built-in heat conserving interlocking seal 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 £30 million plant which came on stream recently in St. Helens.

The new Crown Pipe Insulation range is now available nationally in 263 sizes covering pipe o.d.'s from 17mm to 610mm, with wall thicknesses of 19mm to 100mm, and suitable for copper, steel and stainless steel pipes at temperatures ranging from 2°C to 540°C.

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

The new manufacturing process ensures that Crown Pipe Insulation 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.



● A lagger snaps Crown Pipe Insulation on to a pipe, where its interlocking Z-lock ensures a tight heat-saving longitudinal seal.

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.

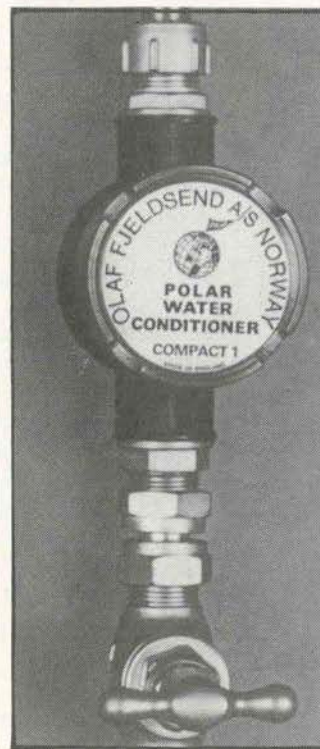
An important aspect of the new Crown Pipe Insulation range is the packaging. To help the lagers on site a typical carton is only 400mm by 1200mm weighing 12kg — an easy one-man lift. At the same time the carton is re-sealable and strong enough for repeated handling between store and site, with a large easy-to-read label for quick identification.

### Polar Water Conditioner

The Polar Compact is the modern way to overcome scale in domestic hot water systems. The Polar Compact-1 is not a water softener. It is designed to

prevent scale and protect water systems. A Polar conditioner had indefinite life with no power consumption. There are no expensive installation costs because fitting is simple. The Compact is truly compact and is fitted to the rising mains supply just above the shut off valve.

Most water will contain calcium and magnesium salts and the concentration



● The Polar Water Conditioner from Grantaid.

of these natural salts will determine the hardness of our water.

When hard water is heated or mixed with other substances, it cannot hold all dissolved calcium salts. Depending on the amount present the dissolved solids are precipitated and form hard scale in kettles, pipes, taps and washing machines. The scale also forms on immersion heater elements. This build-up impairs the efficiency of the appliance which in turn leads to higher fuel bills.

In the Polar unit the water passes through a strong magnetic field. The effect of this is that the salts which the water precipitates form microscopic, individual crystals. These do not lump together and form scale. The taste of the water remains unchanged and the healthgiving properties are retained. The effect lasts for a long time after treatment.

For drinking water the calcium salts are an advantage. They contribute to the taste and provide minerals which the body needs. There is evidence to prove that heart diseases are less frequent in areas with hard water than in areas where the water supply is soft.

Distributed throughout Ireland by Grantaid Limited, Tyrrellspass, Co. Westmeath, (Tel: Mullingar (044) 23114).

### Flue Economy

Savings of up to 23% have been claimed when the normally open flue of a central heating or processing boiler can be closed automatically during each "burner off" cycle. An open flue allows the chimney draught to extract room air, and also residual boiler heat.

The Flair Stack Pack is an automatic motorised flue damper of butterfly

## NEW PRODUCTS

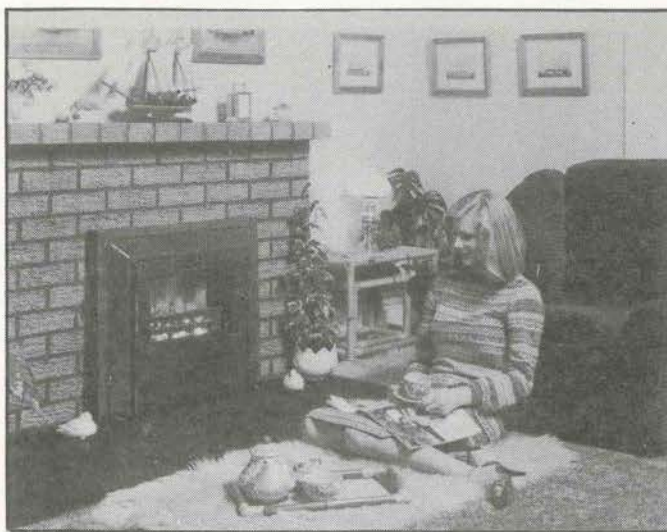
design which is inserted in the flue of the boiler. It opens on demand from the burner control thermostat, but the lighting of the burner is delayed until the flue is open — a direct drive rotary switch has to record the damper "open" before combustion can start. Another important safety feature is a clockwork mechanism which opens the damper if there is a motor or power failure. This also means that if the motor should fail the boiler can continue to function normally.

The body of the unit is in cast-iron, with taper spigots to fit cylindrical flues. The damper blade is aluminised steel and can have a small vent to allow a pilot light to burn safely. Gas and oil fired versions are made in sizes from 4" to 19" diameter, covering both domestic and commercial installation.

As the damper is saving energy when the burner is "off", other fuel saving

measures such as roof insulation increase the "off" time and make this damper more effective.

Enquiries to Aqua Distributors, 2 St. Agnes Road, Crumlin, Dublin 12, (Tel: 516664/523575).



● The wood effect surrounds, is a new optional accessory available from the Aga-Rayburn Division of Glynwed Appliances Limited for the Rayburn 80 room heaters.

## Rayburn 80 Surround

The wood effect surround, a new optional accessory

available from the Aga-Rayburn Division of Glynwed Appliances Limited for the Rayburn 80 room heaters, is easily fitted to standard models, enhancing the overall appearance.

The Rayburn 80, which is easily installed in a standard builders opening, consists of a range of three models:-

Rayburn 80/23 for room heating, domestic hot water and five to six radiators.

Rayburn 80/30 for room heating, D.H.W. and up to eight radiators.

Rayburn 80/39 for room heating, D.H.W. and up to ten radiators.

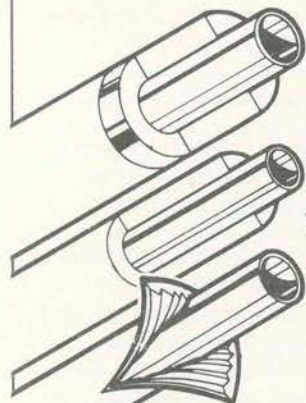
Incorporating a one piece fascia to the fire and ashpit doors, the clean and classical lines of the Rayburn 80 blend perfectly with virtually all room decors, while the exceptionally large glass fire door gives a full view of the real fire behind. All models are available in

## Now you've got a choice!

# WICU<sup>®</sup>

thermally insulated copper tubing

## available in 3 applications and full range of sizes.



### WICU<sup>®</sup>-extra

for hot water service lines and central heating systems.

### WICU<sup>®</sup>-plus

for cellars, shafts and outside walls.

### WICU<sup>®</sup>-standard

the well-proven tube with profiled interior for general use.

### WICU<sup>®</sup>-click

preformed plastic covers with snap-button closure for quick insulation of tube joints.

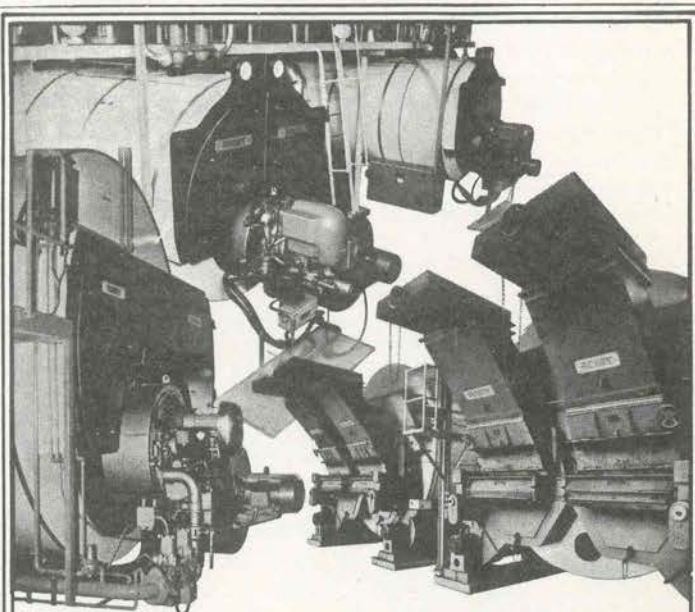
Send for literature on  
**QUICK EASY WICU**

Manufactured and patented by  
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8 Goldenbridge Industrial Estate, Inchicore, Dublin 8. Tel: (01) 718077. 718256. 718412



## Robey Reliability

When reliability and quality are required Robey are chosen again and again.

"In most instances your early delivery requirements for packaged boilers can be met from our extensive stock programme."

# ROBEY

A Newell Dunford Company

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S.L. Combustion Services Ltd.,  
158 Castlereagh Rd., Belfast BT5 5FT. Tel: Belfast 59282.



## NEW PRODUCTS

three colours — blue, copper and pewter.

The range incorporates several new features for simple and clean operation by the householder. An integral riddling device ensures that ash is cleared from the fire bed without raising dust in the room; an interlock system between the fire door and ash door prevents overfiring.

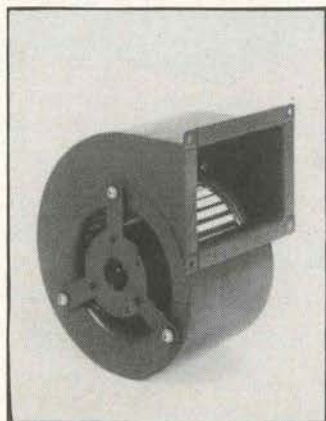
The Rayburn 80 is thermostatically controlled by the turn of the control knob which is conveniently positioned at high level.

Full details are available from Taney Distributors Ltd.

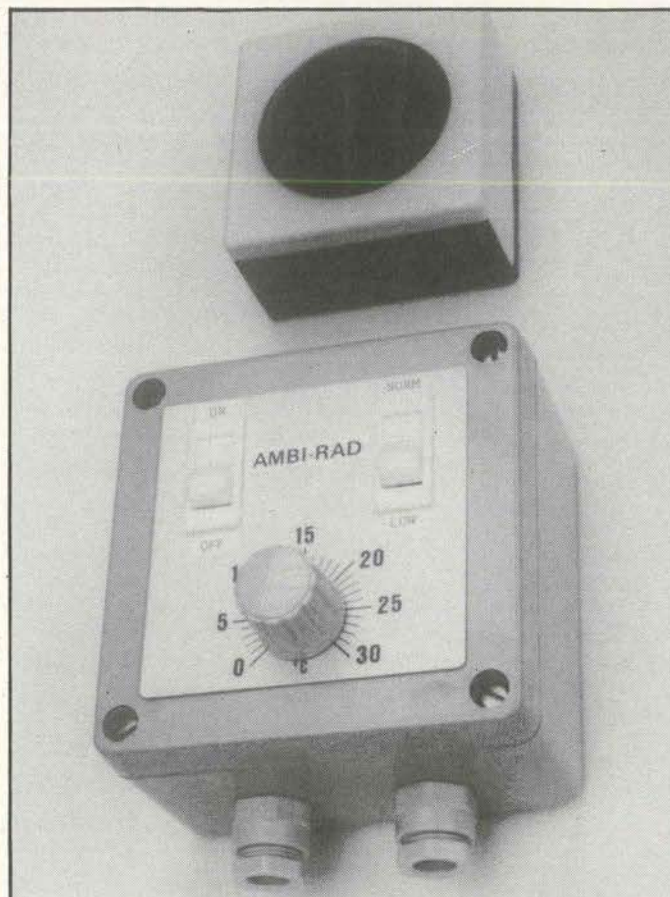
## Compact New Fan

Most centrifugal fans smaller than 250 cfm (120 litres/sec.) are driven by 2800 rpm motors, and are thus too noisy for space ventilation jobs. An exception to this is Airflow Developments' type 57 FTQR, fitted with a speed-controllable 1300 rpm motor.

Designed from the outset to combine compact dimensions with low noise levels, the new fan is ideal for ventilation of individual rooms such as commercial and industrial toilets/washrooms, athletics club changing rooms, small offices and shops. Typical duties (at



● The new compact fan Airflow Developments.



● The new Ambi-Rad thermostat which is sensitive to radiant heat.

240V) range from 60 cfm against 0.43 in. eg to 220 cfm against 0.1 in. wg. The fan may be speed-controlled by voltage reduction, the preferred methods being by autotransformer or resistive dropper.

Power consumption of the totally enclosed motor is about 80 watts at 240V, and the motor features lubricated-for-life sintered bearings. It is suitable for continuous use in ambient temperatures up to 40°C.

Further information from McKenna (Ireland) Ltd.

## Radiant Heating Thermostat

Ambi-Rad Ltd. announce the introduction of a new type of thermostat which is sensitive to radiant heat

and designed to provide close temperature control in building heated by radiation. The importance of radiant heating as an energy saving method of heating has become widely recognised in recent years. An adequate method of controlling this form of heating has until now not been available and conventional air temperature thermostats have been used.

The Ambi-Rad radiant or black bulb thermostat monitors the combined effects of air temperature and air velocity and control the heating installation so as to provide the selected constant level of environmental warmth.

Ambi-Rad black bulb thermostat is based on the principle of the Globe thermometer. For convenience of installation the Globe is in the form of a hemisphere of high thermal conductivity material with a blackened surface. Encapsulated within the hemisphere is a highly temperature

sensitive element.

This "black bulb sensor" is installed within the heated room or building at a height of 1.5m from the floor. The signal from the sensor is fed back to an electronic control unit via a three core cable which can be up to 50m in length.

The control unit incorporates a temperature setting knob, an on-off switch and a manual night set-back switch by means of which the set temperature can be reduced by a predetermined amount. By the addition of a timeswitch the night set-back function can be achieved automatically.

Because of its high sensitivity and its ability to respond to radiation, air temperature and air velocity the Ambi-Rad black bulb thermostat is able to constantly adjust the heating system to the instantaneous thermal needs of the building. Details from Turnmill Engineering Ltd.

## SMC Solar Circulator

SMC Solar 'Mini' and 'Maxi' circulators are available in cast iron and bronze versions, the former for use only in indirect or recirculating systems, and the latter for direct systems or for applications where serious contamination may occur.

Lower power consumption and high performance are important features of the SMC Solar Pumps, their materials being suitable for use in water, glycol mixtures, minerals and synthetic oils, all of which are common in Solar systems.

Complimenting the SMC range of pumps is a specially-developed shower pump and a selection of miniterm water manifolds for microbore systems.

Further information regarding the full range of SMC pumps can be obtained from John R. Taylor Ltd.



An improved version of the Aerocowl combined flue terminal and ventilator, designed for the complete elimination of flue down draught as well as to assist summer ventilation, is now being marketed by Aerocowl Marketing Ltd.

This new version incorporates a guard cage to prevent birds from entering the flue via the terminal; and an improved fixing method which, in addition to being safer and more secure, also improves cowl operating efficiency.

The new fixing method consists of a steel clamping ring which is secured around the outside of the chimney pot by means of four screws. This ring replaces the fixing legs which, on the original model, engaged with the inside of the chimney. The new method is more secure, and neither impedes exhaust from the flue nor affects the aerofoil design of the cowl.

Of aerodynamic design, the Aerocowl consists basically of an aerofoil mounted in an expansion chamber above a venturi system. In addition to eliminating down draughts and assisting with summer ventilation, it also reduces fuel costs, prevents rain entry to the flue, and balances pressure in the flue when the door of a room is opened. It works equally well on all types of fireplace or central heating system — enclosed fires with back boilers, underfloor draught fires, open and canopied fireplaces with box grates, solid fuel ranges, and gas, oil or solid fuel central heating systems. It makes for quieter ignition of oil and gas burners, and also considerably reduces the need for flue sweeping.

Only two sizes of Aerocowl are needed to cover all sizes of flue from 4in. to 10in. diameter.

The Dept. of Commerce have announced that they intend to build a small number of advance factories, which should provide a welcome addition to the small order books now with those engaged in the industrial market.

In the continuing saga of the Northern Ireland Gas Industry, the Dept. has appointed two firms to carry out yet another study of the feasibility of using natural gas as the source of supply.

In a parliamentary memo the Minister stated “— as part of the further studies into a supply of gas

from Kinsale into Northern Ireland, it is necessary to obtain further information about the potential market for natural gas and the engineering aspects of a possible pipe line.

To carry out these two briefs the Dept. has retained Coopers & Lybrands and the W. S. Atkins Group.

The death has taken place, in his nineties, of Mr. “Bob” Ferguson, one of the founders of the well-known consultants Ferguson & McIlveen. Mr. Ferguson was a man of immense experience and there were few honours in his profession, as a civil engineer, that he had not been awarded. His ready wit and reminiscences of travelling throughout Ireland, before we had the benefits of modern transport, will be sadly missed.

We had the pleasure of attending the unveiling of a plaque to honour the memory of H. T. (Harry) Browne late Managing Director of ? ? ? Ltd., Larne, the fuel distributors.

Harry Browne was, in his time, a leading member of the literary scene,

particularly well known for his short stories and folk poems written under the non de plume — John O’the North.

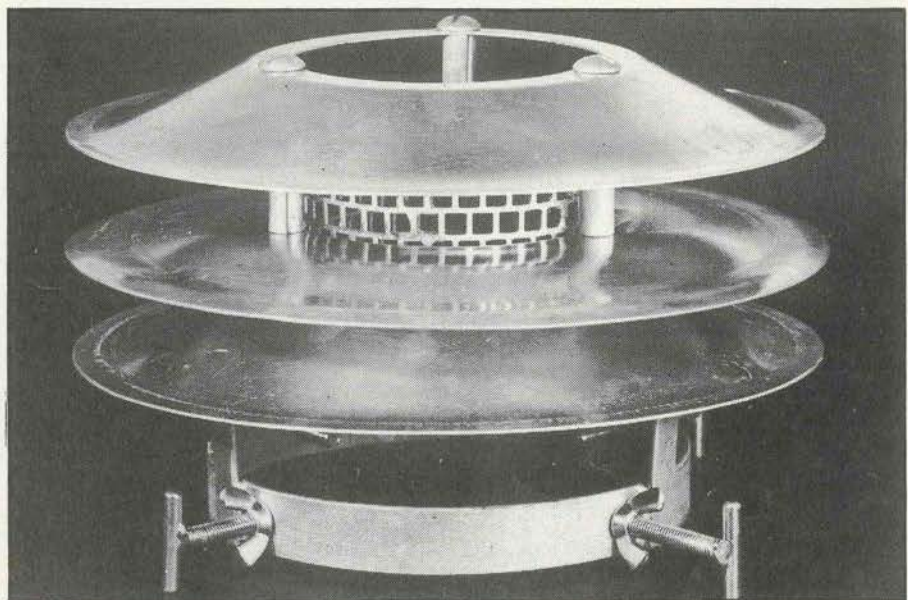
It has been announced that Sir Kenneth Corfield, chairman and chief executive of Standard Telephones & Cables is to be the unpaid chairman designate of the new engineering council.

The council represents the result of months of work to set up a body which will be responsible for the upgrading of the engineering profession.

Following publication of the Timmeston Report discussions have been taking place between the members of the C.E.I., employers organisations, trade unions and various other bodies not all of which could have been described as amicable. It would appear that considering “leaks” available in the early days when the Institutes appeared to be losing ground, that they eventually retrieved the situation and that their position in the new set up is certainly stronger than earlier anticipated.

The council will be set up under Royal Charter and have powers to set up qualifications and to form a new register.

It has been announced that C.E.I. chartered engineers, technician engineers and engineering technicians will be transformed into the register of the Engineering Council in similar grades, the chartered engineers being in the grade of professional engineer.



● The improved Aerocowl.

SANITARYWARE

# Upgrading of Bathrooms Popular

Recession plays tricks on certain markets. Some experience absolute disaster while others actually improve. Fitted kitchens and bathrooms in existing homes are areas that go against the trend and improve in times when there is not enough money to buy a new house but a change in surroundings is needed to take ones mind off the doom and gloom all around. The electrical trade experiences something the same with sales of TV's and more recently Videos, picking up when the general trend of sales is down. So what is bad for the builder is not necessarily bad for the builders providers.

Proof, if proof is needed for this theory is the growth of kitchen centres and kitchen displays in the merchants followed by similar centres and displays for bathrooms and accessories.

With the return of white as a popular colour, trends have turned full circle even though highlights and floral designs have been introduced to take that stark look from a completely white suite. Bidets are becoming more and more popular, certainly a change from the times when you could be asked what was it really for.

Finally, no brief look at sanitary ware would be complete without the comment that with a number of new designs from manufacturers, the hands of "Michelangelo" can be seen.

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

## Manning & Usher

In keeping with the Year of the Disabled Doulton Bathrooms have published their "Sanitary Equipment for the Disabled" catalogue. This included dimensions of a typical toilet layout as recommended in British Standard Code of Practice CP 96 Part 1.

This features the Maxton WC suite comprising a 20" high WC pan to allow easy transfer from a wheelchair, combined with the Forum semi-recessed wall basin and grab rails. The Peglers "Peglerspray" wrist action spray tap mixes hot and cold water and fits the Forum basin. Also available is the Maxwell urinal bowl designed with a specially extended front for per-

sons confined to a wheelchair. The range also includes the Maxim bidet which has a spray and a thermostatically controlled mixer.

Special baths include the well known Sitz (which will fit into an area only slightly larger than a shower tray), the Scandinavian with its traverse rail and grips and

the Churchill with an integral platform and optional center seat to assist the handicapped.

On the domestic scene Doulton have introduced a new colour, Cameo, to their successful new colours Whisky, Alpine Blue and Burgundy.

The range now caters for every choice from the standard bathroom right up to the Sovereign Suite which captures all the space and elegance of the finest bathrooms in one modern distinctive suite.

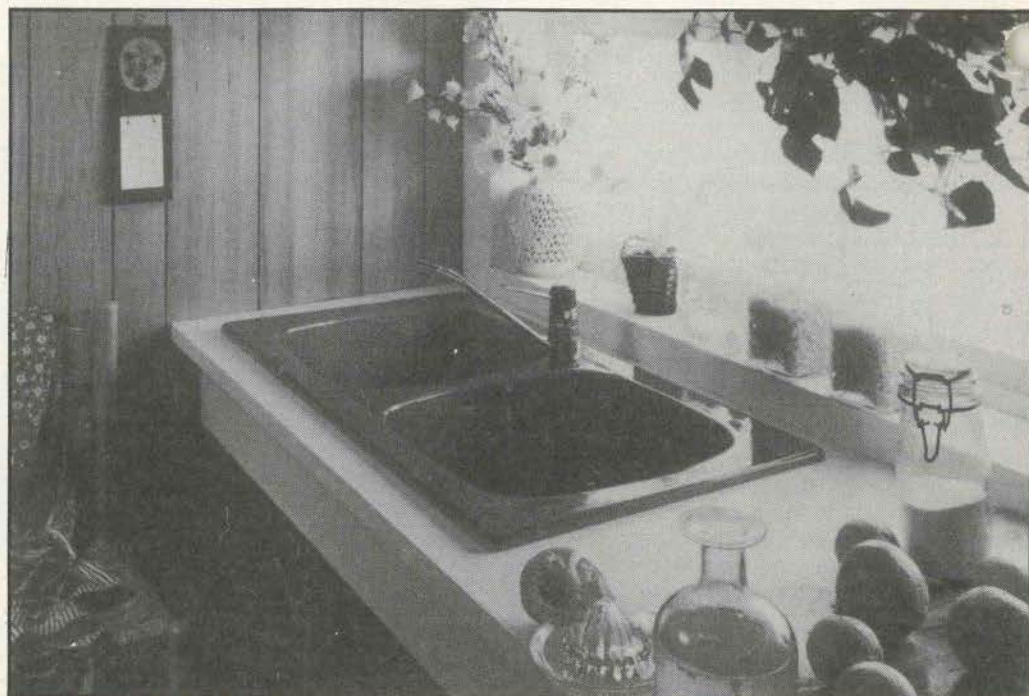
Manning & Usher, the Doulton and Peglers agents, in their warehouse at Walkinstown carry a vast range of Doulton bathrooms augmented by the classic range of Peglers Danum fittings in chrome and gold plated.

In stock also are coloured showertrays in fireclay and acrylic, plus corner baths in marble finishes.

Further details from Manning & Usher Ltd, Unit C2, Ballymount Industrial Estate, Dublin 12, (Tel: 509762, Telex: 31561) and McGregor & Manning Ltd. (Tel: Belfast - 084 53329).

## Koralle

Koralle "Classic" shower enclosures, having been



● Pictured above is the Picardy 6720 from the new Royal Doulton range of ceramic kitchen sinks. The Picardy has dimensions of 920 x 505mm and is shown here with a continental tap.

# Choose the elegance of **IRLIN** bathroom fittings



*The Irlin beautifully balanced range includes: 1/2" & 3/4" Basin and Bath Pillartaps, 1/2" Highlyne Sink Taps, 1/2" Pillar Sink Mixer Sets 3/4" Bath Mixers with shower attachments. Available in chromium plated finish including handles. They can also be obtained in gold finish. Surprisingly, they are keenly priced. Irlin fittings are made fully in Ireland by Sanbra Fyffe and are available from leading building and plumbing merchants everywhere.*

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introduced to replace the previously marketed Koralle range in December 1979, has rapidly become established as a leading brand on the Irish market. It is as suited to installation by the D.I.Y. enthusiast as by the professional.

The Koralle "Classic" basic element is the three-section sliding door, DSC, which is available with and without the addition of the fixed side panel TDC. Utilising the same sliding mechanism are the DSBC (bath mounted sliding door) and the corner entry models EDC2 and EDC3. Also available are the Koralle wing-door, model FT, which opens both inwards and outwards, and the three-section folding bath shower screen, model DF.

All sliding models feature the Koralle double axle roller suspension system, "Cascade" profile and the adjustable wall profile which caters for installation against out-of-true walls. All Koralle screens are made from high quality anodised aluminium and screens are of polystyrene. Silver, gold and bronze anodised models are all featured and screens are ice crystal or smoked crystal.

Irish agents for Koralle are K.M. Reynolds Ltd.

## Chloride Shires

A new bathroom suite has just been introduced by Chloride Shires Ireland Ltd, who have now completed their move to considerably larger premises at Broomhill Road, Off Airton Road, Tallaght, Co. Dublin.

Called pus this 4-piece suite comprises a wash-basin plus matching pedestal, a bidet and wc suite. The new Shires suite has been designed using distinctive, rounded styling and subtle simplicity of form. Opus looks modern with its easily identifiable modern round shaped bathroom furniture. But, the suite was also made to be simply fitted and it incorp-



● New Opus 3-piece suite, just launched by Chloride Shires.

orates a standard outlet which adapts to most installations.

The bold, clean design places Shires Opus in a class of its own. It is easy to keep clean and there are no concealed cleaning problems. However, one of the main advantages of this Opus suite is its "hush flush" silent siphonic operation. This is very much in keeping with to-days silently operated bathrooms.

And this 4-piece suite comes in a most interesting selection of Shires best selling colours including their two latest hues -- Sandalwood as well as Indian Ivory, in addition to White which is making a formidable come-back and Kashmir, Burgundy plus Sorrento and Avocado. The White shade in Opus stylishly complements the luxurious gold fittings which are supplied with this bathroom suite and produce a really eye-catching combination. The Opus will harmonise effectively with many other bathroom units including one's choice of bath, or accessories or decor used.

The Opus basin is very spacious, measuring 26" by

20½" by 30⅓" and offers ample room for soap plus accessories. The Opus basin is supplied with one, two or three tap holes which are suited to monobloc mixers, normal pillar taps or three hole mixer fittings.

The bidet is styled in an over-rim option only. Either monobloc mixer taps which provide a spray or stream of water, or conventional pillar taps which give a low level washing system are equally suited to the new Opus bidet which measures a generous 21" by 15⅝" by 15⅝".

The WC suite offers Shires successful styling of to-morrow with the new "hush flush" syphonic action. A horizontal outlet simplifies the fitting of the pan using a conversion connector. The large rounded WC seat cover when folded acts as a useful extra bathroom seat.

Chloride Shires newly announced Opus bathroom suite is available ex-stock from September from their spacious new Irish headquarters located at Broomhill Road, Tallaght, which operates regular country-wide deliveries ex-Dublin stock.

## 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 manufacture Irish Instantor Compression Couplings as well as a range of Plumbers Brassware 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.

SANITARYWARE

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.

To Merchants 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.

Midland International

Flair are proud to introduce Carazza cultured marble. Each piece is hand finished, is unique and is manufactured to the strict standards which have made cultured marble such a success in the United States.

As each piece is hand finished, no two pieces have exactly the same pattern. Carazza has a classic beauty that is timeless; a beauty that will enhance every home.

**The Florentine:** scalloped vanity top comes in Carazza cultured marble, and makes a decorative addition to any bedroom or bathroom. It can be ordered with its own distinctive cabinet.

**The Venetian:** vanity top has a classic simplicity of design, which is enhanced by the timeless character of Carazza cultured marble. It too can be ordered with its own distinctive cabinet.

Well finished, attractive and practical vanity cabinets are custom built to complement Florentine and Venetian vanity tops.

**Tuscan shower trays:** add



● The new Michelangelo wash basin - which measures 45 cm wide and 36 cm from front to back - from Ideal-Standard.

new strength to every shower, new beauty to every bathroom. They are hand-finished in Carazza cultured marble and two sizes are available.

Further details from Midland International Ltd; Bailieborough, Co. Cavan, (Tel: (042) 65382, Telex: 33810 MIL).

Ideal Standard

Ideal Standard has announced several new prod-

ucts — mainly extensions to existing lines.

The Isis, a new counter top drop-in basin which is available in the company's full range of colours — Bermuda Blue, Indian Ivory, Kashmir Beige, Sorrento Blue, Bali Brown, Harvest, Avocado, Pampas, Penthouse Red, as well as white — is stylish and measures 56cm wide and 47cm from front to back. It is available for a monoblock mixer, a three piece mixer, or pillar taps.

Ideal-Standard's Italian-designed Michelangelo range of bath-tubs, pedestal wash basins and water-closets has been complemented by the addition of a wall-mounted hand rinse basin as well as a back-to-wall closet suite.

Ideal-Standard has now reorganised the basic products in their range into two well-defined suites — the Coroline suite and the Tiara suite. This has been achieved by the introduction of a new cistern design which is common to both ranges, and a new range of BS basins.

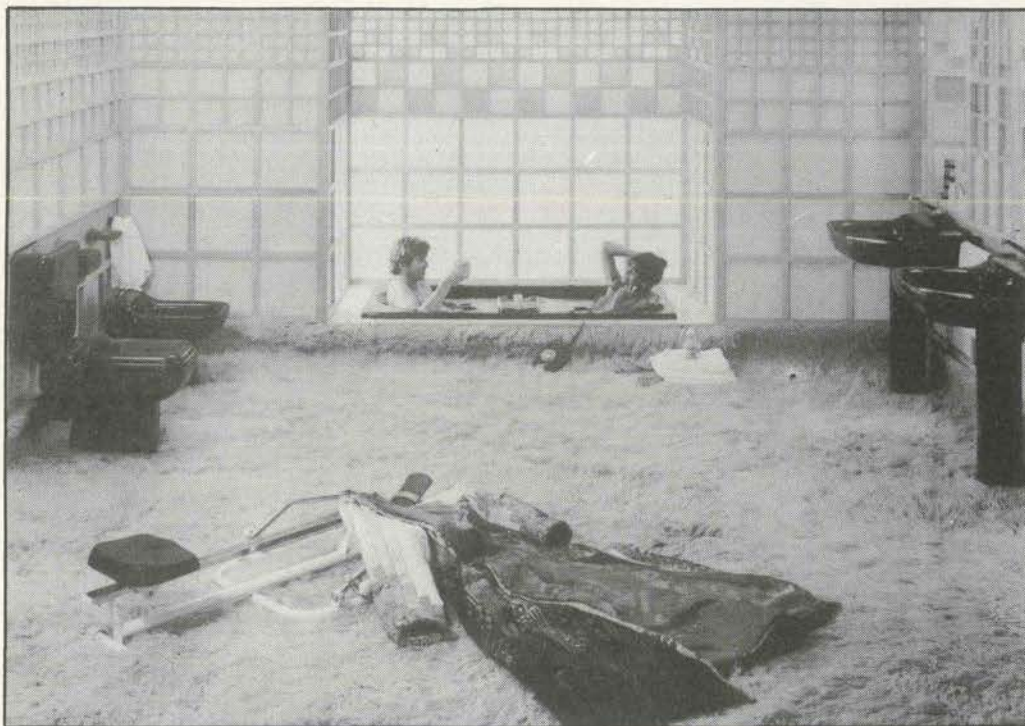
The suite now being marketed under the name Tiara comprises the existing pedestal wash basin, the Tiara bidet, and toilets which combine Ideal-Standard's existing close-coupled bowls and the new cistern.

Ideal-Standard's range of Jetline brassware — wash basin and bidet mixers, basin and bath pillar taps and bath mixer with shower attachment — has been ex-



● Theo Crosby, a partner with Ideal-Standard's international design consultants, Pentagram, designed the bathroom which is featured as a full-colour wrap-round on the company's new 20-page product Range Brochure. The brochure, with product illustrations in full colour throughout, is aimed at both consumers and designers and gives comprehensive coverage to Ideal-Standard's range of bathroom furniture and brassware and also contains a colour chart and a wall and floor colour co-ordination guide.

**SANITARYWARE**



● The shape of things to come is here in the new Debut suite from Twyfords. With their years experience in the sanitaryware industry, the Debut suite marks a new departure, with its sculptured angular lines it is very much up market and ultra modern. The very large bath (1800mm x 1100mm) is perfectly shaped for use in a sunken setting. Washbasins are angular and shallow with a large bowl to allow ease in use. The contours of the WC suite and bidet echo the angular shape and give a whole new aspect to these traditional pieces of ceramic sanitaryware. The new Debut suite is shown here in Damask (a rich burgundy shade) - and Twyfords latest addition to their very wide colour range.

tended to include 1/2" sink pillar taps. The high-necked taps are available with either acrylic or metal handles. For further information, please contact: K M Reynolds Ltd.

**RT Large**

Showerlux UK Ltd's Softline and L.S.O. ranges offer enclosures to suit all sizes of bath and shower tray and are available in several colour combinations, single, double or tri-panel units and in front or corner entry configurations.

The Softline range incorporates a magnetic lower track system for which the international Duscholux Group holds world patents. At the base of each sliding door section are small, powerful magnets which are attracted towards corresponding magnets housed within the lower track. The door sections are free to run smoothly against the track profile but the magnetic joint ensures a completely watertight seal.

L.S.O. stands for "Lift-Swing-O.K." and, as the

name suggests, all the user has to do to effectively clean the track is to lift a pivoting track bar, swing it away from the enclosure doors, wipe clean and re-swing into position.

The Showerlux range of bathroom cabinets and dressing room mirrors are "up-market". Aluminium bodied cabinets - in satin

gold, silver or bronze - carry 10 year guarantees and, in addition to standard models, may be manufactured to order in any length.

The units incorporate several arrangements of diffused lighting; crystal glass mirrors - guaranteed for three years; shaver sockets; integral cables with automatic rewind for shav-

ers and cosmetic appliances; adjustable smoked glass shelving, and doors mirrored to both sides (hinged units only).

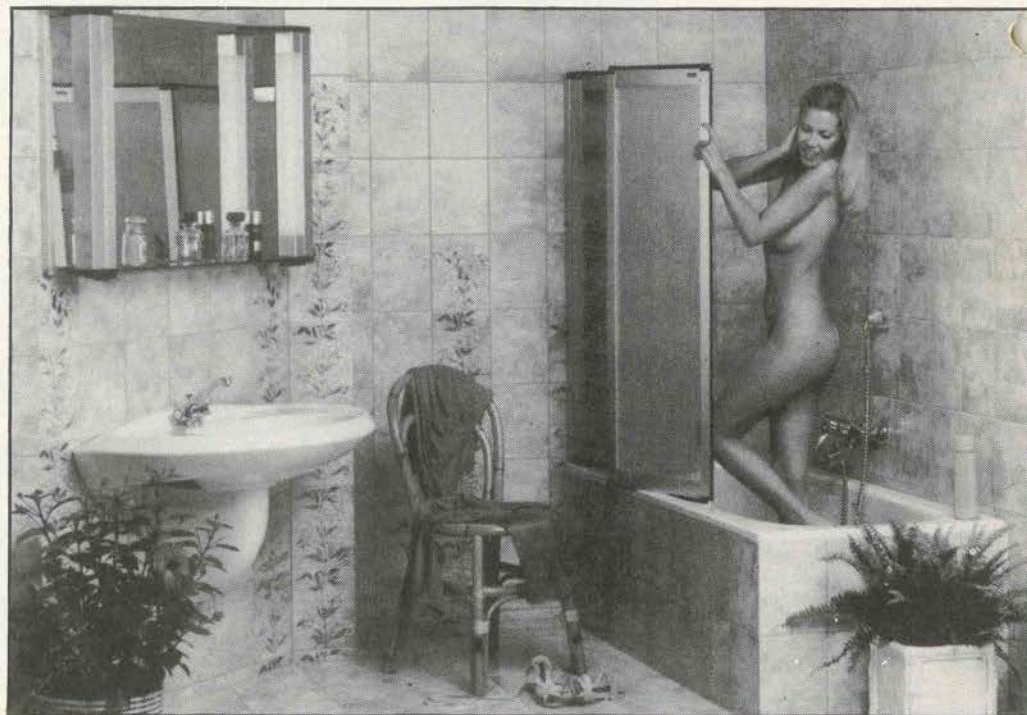
Irish agent for Showerlux is R. T. Large & Son Ltd.

**Armitage Shanks**

Armitage Shanks have added the 815x815mm Moray in Luxaware to their shower tray range - previously it was only available in 760mm size.

Luxaware is a ceramic material introduced some years ago by Armitage Shanks, giving a marked reduction in weight over equivalent fireclay trays and a high gloss smooth finish normally associated with vitreous china. Luxaware also has the ability to retain the straightness of line which can be difficult to attain in large pieces of ceramic ware.

The Moray has a slip resistant base and does not have an overflow thus avoiding the potential dirt and bacteria catchment area which is now the cause of some concern to health authorities. It is produced in all Armitage Shanks Group colours plus Kashmir Beige, Sorrento Blue, Harvest Gold and Bali Brown.



● Holydoor from Showerlux, a fold-away bath-shower screen for the smaller bathroom.



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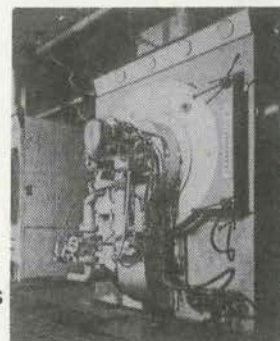
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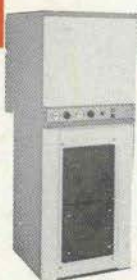
## Allen Ygnis

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



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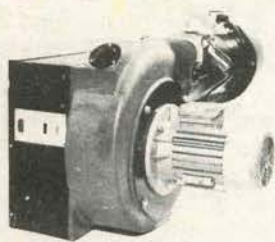
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Space Heaters  
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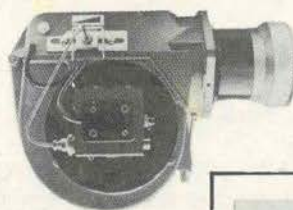


Blown Gas Burners  
60,000 -  
24 million  
btu/h

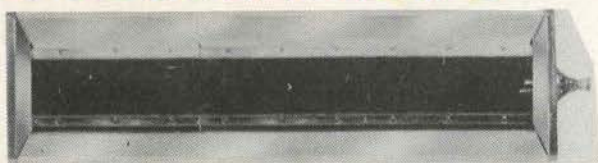


HEATING  
PLANT

Oil Burners  
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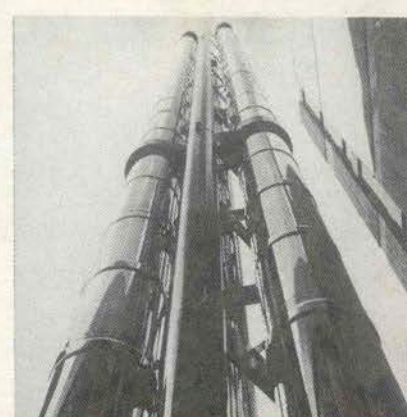


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