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H & V News

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Building Services News, Vol. 20, Iss. 8 [1981], Art. 1
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Fridge Business on Ice

In this column last month we discussed the state of the refrigeration industry in Ireland and said that at least one well-known and long established company were about to close their doors for the last time. This unfortunately came to pass but not only did one refrigeration company close but another four have also closed in quick succession together with a company involved in the manufacture of ventilation equipment. The resultant losses to certain suppliers must certainly bring about a further tightening of credit which was already very tight anyway. On the brighter side the new public cold store in Dublin has brought some good business in the direction of Sean McCauley’s new company and we wish him well in the future.

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A heat pump installation need not be complex, this article expresses the customers view.
Shires Ireland Move to Larger HQ

Having completed their move to considerably larger premises on the south side of the city, Chloride Shires Ireland Ltd. have settled into their new spacious head-quarters at Broomhill Road, Off Airton Road, Tallaght, Co. Dublin.

The international sanitary ware manufacturer Chloride Shires now has over 18,000 sq. ft. available, including impressive, spacious warehouse, showrooms, car parking and offices plus a trade counter.

Shires Ireland will shortly be announcing the addition to their product range of a new bathroom suite together with two new colours. Further details will be available in due course.

Shires new telephone number is (Dublin) 515877.

GOLF

RESULTS

The overall winner of the Captains outing at Clontarf was Brian Farrell with a score of 38 (6).

Class 1: Matt Ronan 36 (2); 2nd Aubrey Moriarty 34 (5) on the back 9 from Jimmy O’Neill.

Class 2: 1st Charlie Goudie 36 (14); 2nd Eamonn Cullen 35 (11).

Class 3: 1st Ray Byrne 33 (19); 2nd Victor Maddigan 32 (18) on the back nine from Gerry Baker.

Visitors: Liam Hurley 37 (10) back 9; Seamus Bennett 37 (20) last 6; Jimmy McClean, Captain, Clontarf G.C.

1st Nine: 1st Mike Deveoy on last six from 2nd Des Sullivan.

2nd Nine: 1st Garvin Evans on last six from 2nd Bernard Sweeney.

Sponsor for the day were Lister Tubes.

Thermplant Name Change

Thermplant Ireland Ltd. have changed the name of the company to Thermplant Engineering Ltd., but will still retail Thermplant as their trade name. John Hoey, Managing Director explains: "This name change was necessary to avoid confusion with an English company of the same name. We still act as agents for Thermplant U.K. Limited and sell their range of hot water and steam fluidised beds."

IDHE Course

In a recent statement from the Institute of Domestic Heating Engineers it has been announced that the Irish branch intend to begin an additional course in the College of Technology, Bolton Street, Dublin. The course is for full membership of the Institute and is in two parts over two years. The first part covers air conditioning and electrical technology and having passed the examination at the end of the year the student can then continue for the final year which covers management and administration. Having passed the final year examination the student is then eligible for full membership of the Institute. The course is open to those who have passed the Associate Membership Examination or who are otherwise qualified. The membership course is in addition to the existing Associate Membership Course which will be continuing as usual, covering Heat Transfer, Combustion, Equipment and Systems Design. Enrolment for both courses starts on the 7th September in the College of Technology, Bolton Street, Dublin 1. For details contact the College or the Education Officer, Tom Dinnigan at 785155 ext 411 during office hours.

Netaline Appoint New Irish Distributors and Agents

Netaline Air Distribution Products Ltd. have recently announced the appointment of new Irish distributors and agents.

Eurenco Sales Ltd. have been appointed sole distributors for the Netaline range of grilles, diffusers and louvres. A comprehensive stock will be maintained at their new premises at 118-119, The Coombe, Dublin, where a trade counter will be available to facilitate immediate ex-stock purchasing. The Netaline range caters for the complete needs of the H&V trade in its particular field with technical excellence and high asthetic qualities.

NEW SERVICES COMPANIES

DELAP & WALKER IN COMMUNICATIONS

The first independent consulting firm offering a specialised service in communication engineering in Ireland is being set up by Delap & Walker Communications. The new company, Delap & Walker Communications, will be based in Dublin and 18 new jobs will be provided by 1984.

Delap & Walker Communications has been set up by Delap & Walker Consulting Engineers, an Irish company established in 1971 and Norconsult Telecommunications A S, a Norwegian firm employing 450 skilled telecommunication engineers. The new company will offer the full range of services for telecommunication consultancy including:
- Preliminary studies;
- Planning & Design;
- Site supervision;
- Factory Inspections etc.

PEGAUS ENGINEERING SERVICES COMPANY

Pegasus Engineering Ltd. of Cobh, Co. Cork has concluded negotiations with the IDA to establish a new company to deal with export work which is expected to provide 22 new jobs by 1986.

The company will provide a full engineering design and project management service for all process related industries. The company will concentrate on the chemical, oil, pharmaceutical and food sectors. Services will include feasibility studies, economic analysis, hazard and operability studies, environmental impact studies, equipment and plant specification, plant layout, piping and instrumentation design, project management, procurement and cost control.

Pegasus Engineering Ltd. was formed in 1980 by Dr. John Healy and Mr. P. North. Both are graduates in engineering with extensive experience in process and chemical engineering projects worldwide. The new company will concentrate its services on markets in Northern Ireland, Scotland, Holland, the US and Saudi Arabia.

The IDA has agreed to provide grants totalling £58,000 towards the cost of the new company’s training programme. The company has devised a training programme which involves a balance between on-the-job training and suitable exposure on short specialised courses abroad aimed at improving design skills of new recruits.
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Delegates at the recent conference on Natural Gas held in the Burlington Hotel in Dublin came out of the conference with a touch of 'Gas Fever' as it was suggested that as the conversion to natural gas begins in early 1983, up to 250,000 cookers and heaters will have to be converted and as many as 50,000 of these are over 30 years old; these will have to be exchanged for new appliances.

Gilbert Little, Distribution Manager of Dublin Gas, said the installed cost of putting a pipeline around Dublin will be £40m, while 1,500 miles of cast iron pipes will be replaced by plastic pipeline.

Jim Owens, Industrial and Commercial Manager, Dublin Gas, said the move would create a market for £30m worth of cookers, £15m worth of gas fires and £15m of central heating boilers in the next 10 years.

Michael Boyle, Assistant Chief Executive of Bord Gais, said construction of the 150-mile gas pipeline to Dublin would begin this year and is expected to be finished by November, 1982.

This will involve 12 to 13 above-ground installations and a city gate station to monitor gas flow.

While Bord Gais has successfully involved Irish companies in the past, no Irish engineering firm is capable of producing the high pressure-resistant steel pipes in large quantities.

 Asked if the time scale of ½-a-mile a day was not a little optimistic compared to the British experience of ¾ to ½ of a mile per day, Mr. Boyle said that, in laying the pipeline to Cork City, Bord Gais had achieved progress of ¾ of a mile per day when things were going well.

Asked if the turnkey contract for the pipeline minimised the opportunities for Irish suppliers, Mr. Boyle said that there would be other possible projects such as extensions to Northern Ireland, Limerick and Waterford.

Bord Gais is anxiously awaiting final approval for the pipeline from the new Minister for Energy. It at present has six bids for the turnkey construction project for the pipeline. A committee was established recently to assess the bids and it hopes to make its recommendations early in August.

Basic design is 80% complete, Mr. Boyle said, and Bord Gais is waiting the Government's final decision following its economic valuation of the project and the viability of providing natural gas to the Dublin Gas company.

If Government approval is forthcoming shortly, Bord Gais is confident that it can meet the target of bringing the pipe on-stream by 1983.

The general route or the pipe-line has been determined and provision has been made for some five spurs to be included, allowing distribution of gas to other centres of population en route. The pipeline will be able to carry up to 60 million cubic feet of gas a day — ten times more than the current average annual gas usage in Dublin Gas company. This includes provision for the pipeline to be extended to Northern Ireland, and Bord Gais has already had tentative discussions on this proposal with its counterpart in the North.
Mr. Harry Quigley of the Heavy Industries Division of the Industrial Development Authority confirmed that discussions between the IDA and the Natural Gas Programme Co-Ordinator had been widened. Initially the IDA had intended concentrating natural gas using industries in Cork, but with the possibility of gas take-off at other points it was now considering the establishment of industrial sites in other areas.

Is this the Ireland of the future? — No. Its 18th century windmills south of Rotterdam in Holland where there are 19 mills which were built around 1740 and it is a condition of ownership that they be kept in working order to pump our water from the Nederwaard and Overwaard polders in an emergency. Normally the water level is kept down by power-driven equipment which includes Europe’s largest water screw pump.

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EUROSERIES & EUROFOIL FANS

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New Government Grant Scheme for Industry

The Department of Commerce, together with the Department of Industry have announced a new grant scheme whereby industry will receive a grant of up to 25% of the total cost including buildings, plant etc. involved in converting their boiler plant from oil firing to coal firing. The scheme also includes the provision of new boilers if required.

The scheme is relatively simple. The minimum value has to be in excess of £25,000 and must not exceed £4m. The grant will be in addition to any local grand schemes and available and in such cases the client will receive up to 25% of the amount remaining when other grants are taken into account. This will mean that most industry will receive up to 47% of the cost.

It is particular to this scheme, that in addition to the grant for the coal firing equipment whether it be an automatic stoker or coal fired boiler the grant also covers if necessary coal handling equipment, ash disposal plant, construction of coal bunkers etc.

Full details and application forms are available from the Energy Division, Department of Commerce, Chichester House, Chichester Street, Belfast.

Mr. Arthur Goulborn was the main speaker at a seminar organised by Rockwool Ltd. at the Culloden Hotel near Belfast.

In his talk to factory consulting and heating engineers, Mr. Goulborn told how Rockwool was made from diabase rock. Mineral fibres are coated with oil and a binder added to produce an easily handled material.

Taking part in the seminar also were Strangford Insulation Products Ltd., sole distributors in Northern Ireland. Details were given of Strangford's cutting and laminating service and also of their rigid pipe section manufacturing facilities. In attendance in addition to Mr. Goulborn were J. B. Barrowman, Marketing Division of Rockwool and Mr. F. Thompson (Sales Manager), Mrs. Jennifer Bell (Marketing) and W. Selfridge of Strangford Insulation Services Ltd.

The Northern Bank Development Corporation which had a substantial holding in the Lisburn-based Simms Steel has announced that it has sold its shares to Walker & Sons, the Blackburn based company who have also a steel plant and stockyard practically next door to Simms at Lisburn.

The future of the Euroweld plant at Sydenham Belfast remains in doubt. The company which produces industrial gas storage tanks for the LPG market closed down some months ago and there has been various rumours of take overs, co-operative ventures and also that a team of the workers had come together to continue production.

It would appear that one of the many alternatives will come to fruition and that once again gas tanks will be seen coming out of the plant.

As it was about to go under the auctioneers hammer a reprieve has been granted to Everton Engineering Ltd., the Newtownabbey company. Following an unfortunate venture with the oil off-shore market the...
American owned company closed.

It has been announced that the plant is being taken over by the Belfast-based company, F. G. Wilson Ltd.

A long established company, F. G. Wilson have specialised in the supply of generators and electrically related products.

Elected President of the Chartered Institute of Building Services for 1981-1982 is Professor Roger Burgess.

Professor Burgess has worked in both the public and private sector and now holds the Chair of Construction at Salford University.

Building Design Partnership Consulting Engineers have opened a new office at Greenwade Street Ballymena.

This office will be in addition to their Belfast office and will be under the management of Mr. Joe Kerr.

C. Monaghan & Co. have moved to new offices at 25 University Street Belfast. The new premises will provide increased facilities for their mechanical and electrical consulting practice.

Modern Tool Co. Ltd. of Lambeg have recently become agents and distributors for the 3 M range of messor film, widely used for heat conservation and security purposes.

McCaig Collem Ltd. 6-8 Greenwood Ave., Belfast, have been appointed agent and distributor for the Heatrae Sadia Industrial range of water, oil and air heaters, including the popular range of water storage heaters.

In a recent Parliamentary Statement, Mr. Adam Butler announced that the Government were keeping an open mind on the possibility of providing natural gas from Kinsale to the Northern Ireland gas industry.

A preliminary examination has led the Government to conclude that further studies of greater depth and on the basis of much firmer information should be undertaken to determine whether and on what terms the project will be capable of achieving and maintaining financial viability.

To enable this study to take place the existing gas undertakings will not be required to proceed with their agreed rundown arrangements for a period of six months.

Mr. Eric McBride chaired the last meeting of the present session of the Northern Ireland Energy Managers Group.

Some weeks previously the members were invited to submit questions on any subject relevant to either the use of energy or its conservation. As a result some forty questions were received.

The questions covered such subjects as the economics of the various grades of fuel oil application of heat pumps, the use of optimisers, coal or oil for steam raising, the economies of pre-heating fired water etc.

One or two specialists were invited to join the meeting to discuss the questions but in the main the discussion which the same fifty people provided also provided the answer to many of the problems.

A large number of factory engineers were guests of Belzona Molecular at a demonstration of their products at the Stormount Hotel, Belfast.

We are informed that the Heat & Power Equipment Exhibition sponsored by the Institute of Energy (NI) to be held at the Alexander Hall, Balmoral Show Grounds beginning the 28th September 1981 is sold out and all stand space has been allocated.
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STAND No. 41
Just before we closed this issue of H&V News we spoke to Patrick Liddy of Travelling Exhibitions Ltd. who is running the H&V Review exhibition in the Burlington Hotel, Dublin, on the 1st and 2nd of September next and he was delighted to tell us that the show was a sell out with the full 50 sites taken up. As this was their first visit with the travelling exhibition to Ireland they were very happy with the response especially from local firms who came directly into the show and not through UK principles.

As the show is designed to be a travelling one the stands are set up quickly with most of the exhibitors coming over from the UK on the Sunday night previous to the show and then setting up on the Monday, leaving everything in readiness for the opening. As the show promises to be of great interest attendances are expected to be high so H&V News wishes the show every success and hopes to meet many old friends and indeed some new ones.

We present here a preview of some of the exhibits which will be shown at the H&V Review exhibition.

**Eurenco**

Eurenco Sales Ltd. of 106, The Coombe, Dublin, 8, will be exhibiting their full range of products at stands 25 and 26. This includes the comprehensive heating and ventilating products of J. J. Ventilation Ltd., Combat free-standing industrial air heaters with outputs varying from 200,000 btu’s to 1,000,000 btu’s and the complete range of Netaline/Grada grilles, registers, louvres and diffusers, along with Netaline flexible ducting. H.C.P. perimeter heating and fan convectors will be prominent on their stand and, of course, the highly successful Eurenco G.R.P. water storage tank will also be featured. Vincent Douglas and Rod O’Shea will be in attendance for the two days.

**Taney**

Taney Distributors Ltd. will have on show Chaffoteaux domestic and industrial central heating boilers TG and LPG, Benraad balanced flue wall heaters LPG, industrial and commercial air heaters LPG, and Agaheat Appliances, Rayburn 80 range of room heaters. Part of the Chaffoteaux range on show will be the Corvec 45. Two models of the Corvec 45 are available. The balanced flue model is supplied with an outlet which terminates on a outside wall. Where there is not suitable outside wall, an open flue model is available which can be connected to an existing flue within the building. For Agaheat Appliances the Rayburn 80 from Taney Distributors.

*The Rayburn 80 from Taney Distributors.*
burn 80 will be on show. Whilst being completely new, the Rayburn 80 is easy to install using straightforward traditional methods. A wide variety of solid fuels can be burnt for up to 10 hours without attention. There are five models in the range to cover all needs — room heating, central heating and hot water. The 80/NB is a non-boiler version.

The 80/10 is for room heating and domestic hot water, as are all the following: The 80/23 will also heat five radiators, the 80/30 will also heat eight radiators and the 80/39 will also heat 10 radiators. The Rayburn 80 has several special features built-in. The positive riddling arrangements made from the outside ensure that ash collected from the firebed without dust entering into the room. The interlocking firedoor and ashdoor is designed to prevent overfiring and is a unique feature exclusive to the Rayburn 80. The high level control for the thermostat is simply operated. The flues need cleaning only once a month. Thus the Rayburn 80 can be burning continuously. As an optional extra, all models are available with an attractive teak finish surround and ash tidy. There is a range of colours to choose from, all in wipe-clean vitreous enamel.

P & F Pipetools

P. & F. Pipetools (Ireland) Co. specialise in the sale, hire and service of pipe threading machines and tools. P. & F. are the sole importers of the MCC range of pipe and bolt threading machines (¼" to 4"), EGA KUT pipe threading equipment and Lyndon taps and dies.

To celebrate their first anniversary, P. & F. have announced a new agency agreement which they have signed with T-Drill of Switzerland. With this agency comes a completely new method for making branches in copper tubing without the use of tee fittings. The unique features of this system are: * Eliminates the fittings. * Eliminates two joints per branch. * Cuts brazing and tube preparation. * Cuts labour time by 71% * Extremely versatile.

Since its recent introduction, there has been remarkable interest in this new technology and interest is expected to be high at the exhibition.

Ambi-Rad

Ambi-Rad is an energy saving heating system for industrial and commercial buildings. It heats by radiation in exactly the same way as the sun. The infra red rays are directed downwards by the Ambi-Rad on the people working in the building and they feel an immediate sensation of warmth. At the same time the floor and surroundings absorb radiation and become secondary emitters producing an all round radiant warmth. The desired comfort level is achieved with an air temperature several degrees lower than would be necessary with an air heater system, and substantial savings in the cost of heating the building are, therefore, possible. The Ambi-Rad heater incorporates a pair of radiant tubes above which is supported a polished stainless steel reflector. An automatic gas burner fires into one tube and the hot gases are drawn through the twin tube arrangement by a small vacuum fan mounted on the second tube. The burner incorporates full flame monitoring and safety interlocks to British Gas Corporation requirements. The vacuum fan incorporates a totally enclosed fan cooled motor and is constantly monitored by a self checking vacuum proving circuit. The Ambi-Rad heater may be suspended from the ceiling by chains or drop rods or may be inclined and mounted on the walls. Adjustable wall mounting brackets can be supplied on request.

The product has been developed to offer optimum efficiency with reliability and ease of installation and maintenance. All safety controls are tested and approved by British Gas Corporation. Clients may be assured that a personal service will be provided from preliminary project investigation to completion and full after-sales service. Full details will be available at the exhibition.

H R Holfeld

H. R. Holfeld (Hydraulics) Ltd., Ireland's leading pump and allied pumping equipment manufacturer and supplier presently employs 60 staff at their new Sandyford premises. The company originally established in 1949 by the late Harry R Holfeld, formed it's present reputation on simplified quality orientated pump supply to the agricultural community which included undisputably the most successful single pump of which over 50,000 units have been supplied to date throughout Ireland and through to this day, the company continues to manufacture Waterpak and more recently the newer and

* The Ambi-Rad system installed in a factory.
THE BURLINGTON, UPPER LEESON STREET
Tuesday, September 1st — 10.30 am-8.00 pm
Wednesday, September 2nd — 10.30 am-6.00 pm

In September 1981, the Dublin Industrial & Commercial Heating, Ventilating and Air Conditioning Trade Exhibition will take place at The Burlington, Upper Leeson Street. We hope you will make a point of being there.

There will be over fifty stands at the Exhibition with many manufacturers displaying new products for the first time. The show provides an ideal opportunity to keep in touch with your market and discuss business in a pleasant and relaxed atmosphere.

There will be a free buffet and a licensed bar to make this an enjoyable as well as an interesting and profitable show to visit.

Entrance to the exhibition is entirely free of charge to you and as many of your business colleagues as you care to bring.

THE ORGANISERS
The 1981 Dublin Industrial & Commercial Heating, Ventilating and Air Conditioning Trade Exhibition is organised by Travelling Exhibitions Ltd in conjunction with Heating and Ventilating Review — Members of The Faversham House Group.

EXHIBITORS
Advance Tapes (UK) Ltd – Airstream Environmental Products Limited – Armstrong Pumps Ltd
Wright Air Conditioning

THIS IS YOUR TICKET TO JOIN THE HEATING, VENTILATING AND AIR CONDITIONING INDUSTRY IN DUBLIN THIS SEPTEMBER — SEE YOU THERE!!!

Visitor Registration
To speed entry into the Exhibition, please complete this coupon and bring it with you. Present it to one of our receptionists in the registration area when you arrive and you will be issued with a free buffet ticket and a lapel badge.

1981 Dublin Industrial & Commercial Heating, Ventilating & Air Conditioning Trade Exhibition, The Burlington, Upper Leeson Street, September 1st (10.30 am-8.00 pm) and September 2nd (10.30 am-6.00 pm).

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- Combat Air Heaters
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Stand Nos. 25/26

IHVN, August 1981
In last month’s article we looked at the desirability of controlling the space temperatures and the domestic hot water temperature of an oil or gas domestic central heating installation in order to give our customers, the householders, comfort with convenience as cheaply as possible.

We summarised the minimum requirement as:-
(A) Space temperature to be measured as accurately as possible, and automatically maintained at the lowest temperature compatible with the user’s Comfort Band.
(B) Domestic hot water storage temperature should be measured and controlled to maintain it at about 140°F (60°C) average.
(C) When space and hot water temperatures are satisfied, at the same time, the boiler should not be allowed to cycle ‘ON’ and ‘OFF’ for no apparent reason.
(D) The controls should shut the boiler ‘OFF’ when there is no demand for heat output, and switch it ‘ON’ when heat output from the appliance is required.

These minimum requirements need to be considered in relation to the two currently popular arrangements of central heating installations namely, Gravity Domestic Systems and Fully Pumped Systems, especially since the minimum control for a Gravity Domestic Installation will not be sufficient to give the same level of control on a Fully Pumped Installation. Consequently we will examine each technique separately.

The Minimum Control Package

Gravity Domestic Installation

The minimum control package to meet the parameters listed for this type of installation can be seen from Fig. 1, to consist of:-
(i) An accurate room thermostat, located in a suitable position that will, as accurately as possible, measure and control the space temperature.
(ii) Either a strap on or an immersion type cylinder thermostat, suitably located on or in the hot water cylinder, will measure the hot water temperature, required in parameter B, and further.

Since in a Gravity Domestic Installation, the cylinder will get hot whenever the boiler is fired; then a zone valve is essential to prevent this happening at all times, by closing or opening, allowing water flow on the primary hot water flow as shown.

This will allow the cylinder to heat up only when the cylinder thermostat indicates a demand for heat has been made by the cylinder.

The cylinder thermostat should be wired to ‘open’ and ‘close’ this zone valve is in accordance with the D.H. water demands for heat from the boiler (Parameter B needed).

Ideally, the zone valve should allow water to flow with as little resistance through the valve as possible, and preferably the valve should have a built in end switch, linked mechanically to the valve motor system, to recognise when the valve is open or shut.

This independently wired end switch can then be wired to switch ‘on’ the boiler whenever the valve is operated by the cylinder thermostat.

The sensible use of a Junction Box, and the inclusion of a Clock or Programmer to enable the customer to automatically programme the times when the installation should be run, will complete the minimum Gravity Domestic Control Package, to meet the summarised parameters A to D.

Fig. 2 indicates a suggested cabling arrangement showing the typical cables this control package requires, and Fig. 3 gives a recommended termination drawing for such a control package, utilising a simple 10 way junction box for simplicity of wiring.

Observation of Fig. 4, the
Schematic operation of this electrical control package, will show how boiler cycling is eliminated, and correct boiler 'ON' and 'OFF' operation is achieved.

**Gravity Domestic Control Package Operational Schematic**

When programmer is 'OFF' for both heating and hot water, the pump and boiler are without power and cannot run or fire respectively, similarly the spring return valve is closed.

If programmer is 'ON' for heating, power is supplied via the programmer heating switch to the room thermostat, and when the room thermostat calls for heat and the switch closes, then power is supplied to the pump and water is sent to the radiators only. (The D.H.W. valve is still closed at this time).

Power from the room thermostat is also supplied via the D.H.W. valve end switch in the normal position (CLOSED) to the boiler, and so the boiler fires.

If the room thermostat switch or the programmer heating switch opens, the power will be removed from both the pump and the boiler.

If the programmer switch for domestic hot water is 'ON', power will be supplied to the cylinder thermostat, and if the cylinder is cold (call for heat) power from the cylinder thermostat will be supplied to the valve motor, and the valve will open electrically. When the valve is fully open (approx. 14 seconds) the end switch will operate and connect power to the boiler. The boiler will fire and hot water will gravitate to the cylinder.

Should the room thermostat again call for heat, with the programmer heating switch 'ON' at this time, the pump will run and supply water from the already fired and hot boiler to the radiators.

When both cylinder and space temperature are satisfied, both controls will remove power from the pump, the valve and the boiler, until another demand for heat is made.

The Minimum Control Package (2)

**Fully Pumped Installations (2 Zone Valves)**

The control package used for the Gravity Domestic Installation will not be adequate for the Fully Pumped case, due to the differences in pipework etc., seen when comparing Fig. 5 (fully pumped pipework) with that of Fig. 1 (gravity).

Whilst the Room Thermostat, Cylinder Thermostat, Junction Box and Programmer are all equally essential to both techniques, a Single Zone Valve on the hot water will be unable to prevent water reaching the radiators whenever the pump was switched on by the cylinder circuit.

The pump in this application, is common to both the D.H. water pipework and the radiator supply pipes.

However, by the addition of only one more Zone Valve to the heating pipework we can produce a minimum control package to meet our parameters for controlling this fully pumped installation.

Within design limitations, we can also offset some of the cost of this additional valve by changing from the 28mm valve on the D.H.W. to a 22mm valve at a small cost advantage.

The cabling arrangement suggested in Fig. 6 indicates that with judicious design, it may be possible to include the 2nd valve to Fig. 2 with hardly any changes to the cabling plan.

Similarly, Fig. 7 shows that only minor alterations are needed at the junction box terminals to ensure the package is terminated correctly to give independent D.H.W. and heating control of both pump and boiler, and to meet our minimum control plan parameters.

**Fully Pumped Installation Control Package Schematic Operation**

When the programmer is 'OFF' for both heating and hot water, both Zone Valves are spring return closed, and no power is available at either the pump

**FIG. 3 Honeywell Sundial 'C' Plan Wiring Terminations**

**FIG. 4 Gravity Domestic Control Package Operational Schematic**

**FIG. 5 Honeywell Sundial 'S' Plan Pipework Layout**
or the boiler, since the valve end switches are open circuit with the valves closed.

When the programmer is 'ON', for the heating and the room thermostat is MADE (calling for heat) the central heating zone valve will open. When the valve is fully open, the end switch in the valve will close, and power both the pump and the boiler to fire.

Water will flow only to the radiators since the D.H.W. valve will still be closed. If the room thermostat becomes satisfied (OFF) or the programmer heating switch turned 'OFF' the valve will spring return shut, the end switch will open, and remove power from the pump and boiler.

This sequence will be repeated for the D.H.W. side of the installation if the cylinder thermostat calls for heat (with D.H.W. Programme 'ON') and is later satisfied, but in this case the D.H.W. valve will be the unit energised, and its end switch will power the pump and burner.

Consequently, should both heating and hot water call simultaneously, both heating and hot water will be heated simultaneously, and again the pump and boiler will only be powered by a real demand for heat from either the room thermostat, cylinder thermostat or both.

When there is no demand for heat from either the heating or the D.H.W. water, the pump and boiler will be de-energised, and boiler cycling will be eliminated.

Conclusion

Obviously these techniques are the minimum, or thereabouts, that we should consider.

They are not the only answer to controlling space and hot water, and they can be improved upon, to provide extra convenience to the user.

They do represent however, fuel economy in usage commensurate with a reasonable investment cost by the user.

We will look at other techniques and improvements in future articles, and particularly at the Pipework Errors to avoid when fully pumping installations.

Terry McQueen MBIM is the Domestic Heating Division Sales Manager for Scotland, Ireland and N.W. England for Honeywell Control Systems Ltd.

WHO REPRESENTS WHOM? 1981/82

The publishers of IRISH HEATING and VENTILATING NEWS are compiling a directory of manufacturers, agents and distributors in the H & V trade. Its lists of suppliers of goods to the market in Ireland will make this yearbook a valuable reference for merchants, contractors, consultants, architects and engineers alike.

WHO REPRESENTS WHOM?

Irish Trade and Technical Publications Limited
5/7 Main Street, Blackrock, Co. Dublin. Phone: 885001.

18 IHVN, August 1981
Heat Pump — The Only Choice!

“When it came to heating my home, there really was no alternative to the heat pump as far as I was concerned”. So said John Freestone, an American who settled in Dublin eleven years ago, and operates his company, Blackrock Glass & Glazing from premises adjacent to his home. Coming from a country where the heat pump has been well known and accepted for several years as the cheapest form of heating, to John the choice was incredibly simple.

The Freestones purchased their picturesque cottage some five years ago and John then set about extending it, doing much of the work himself, to add a lounge, kitchen, additional bedroom and a bathroom. The design of the system was handled, by Walker Air Conditioning who specified a Carlyle 50DQ024 packaged heat pump, with an 11 kW electric heater battery for supplementary heat. The heat pump, with a nominal heating capacity of 7 kW, is installed at the back of the house and underfloor ducting distributes supply air at the rate of 1000 cfm (0.47m³/s) throughout the house via strategically located floor grilles. Return air is taken back through ceiling grilles to a common return air duct installed in the roof space.

As a further demonstration that the heat pump system presents no mysteries, John Freestone installed all the ducting himself, using fibreboard in place of metal to further reduce costs. As the system has not been operating for a full year, it is obviously too early to determine how great the savings in running costs are over conventional heating systems, but the Freestones are so confident that the costs will be low, that they not switch off the heating at night. They merely reduce the temperature by about five degrees, thereby keeping their home warm the whole time. As the bedrooms are located at the extreme ends of the house anyway, they are slightly cooler than the rest of the house.

As a man with an engineering background, John Freestone readily appreciated that to get the best from the system, there had to be a high level of insulation and so all outside walls have 4” insulation, and all interior walls have 1”.

A fresh air intake on the cold air duct to the machine provides all the ventilation that is needed in the summer. ‘Unfortunately’ says John ‘I don’t think that the Irish weather is warm enough to make air conditioning a necessity for us during the summer, but of course, we can switch to cooling if we are lucky enough to need it’.

Mrs. Freestone, a prominent dog breeder, is completely non-technical but as a busy housewife she is absolutely delighted with the heating system. ‘Because we never have to open the windows, not only do we get no traffic noise, we get very little dust, and as far as I am concerned that’s a very big bonus’.

Walker Director, Michael Buckley, is also very pleased to be associated with this installation. ‘It takes the mystery out of the heat pump and demonstrates very clearly that this type of system can save energy, and therefore money in all sorts of ordinary homes, not only those ultra-modern, architect designed houses that feature in the glossy magazines.

‘Of course, there has to be a three phase electricity supply, which involves added expenditure at the outset, but at the moment we estimate a payback period for John Freestone of about six years. Inevitably, fuel costs will rise and reduce this period even further, making it a more attractive proposition than ever’.
Regional Review: Munster

Industrial Sector — Outlook Not So Grim

Perhaps no other aspect of the heating trade reflects the economic climate than the industrial segment of the market. Despite the level of unemployment and the grim economic forecasts, there is still a reasonably healthy level of foreign investment in Ireland. The resultant construction activity generated is the life line of the industrial segment, which is in a reasonably healthy state, given the economic scenario at present.

Limerick and Clare are particularly fortunate in this respect having the Alcan and Moneypoint ESB projects underway. The £500 million Alcan project has had enormous spin-off benefit for suppliers and contractors, according to sources on the Shannon.

"In terms of the industrial segment of the heating trade at present, Limerick is going through somewhat of a boom period. If suppliers and contractors cannot get a slice of a £500,000,000 project, then it's their own fault. Equally, we have Wang, Verbatim and other projects to keep the market viable. It has been better in that sense than it has been for many years", was the comment of one local supplier.

For Clare, the Moneypoint project is of huge significance. An estimated £40 million of local goods and services will be used over the period of construction, and while the ESB obviously will have large input of own-sourced equipment, there will still be considerable spin-off to contractors and equipment suppliers.

Despite the growth of the Cork region as the main location for new electronics investment, the benefits for the industry are more imagined than real. Apart from input at construction stage, the long term benefits will be marginal.

A leading supplier in Cork told us that there was an appreciable slump in activity in the city at present. "There is no major construction project being undertaken in this area and hasn't been since the Marino Point project for NET. This is obviously hitting our activities and also of course hitting badly the construction industry as well. A cancellation by Schering Plough, the American pharmaceuticals corporation, of a £10 million expansion project at their plant in Brinny, was a big disappointment for the trade here", he said.

However, he was optimistic that matters were picking up and would improve.

Increased IDA activity has resulted in the attraction of some major industrial projects for the Cork area, which will commence construction within the next year. Among these are the Moog Inc. project for Ringaskiddy, expansion of Apple Computers, and the construction of SIFCO Industries aerospace industry at Little Island. There are others earmarked for Cork, which ought to open up the market for the industrial section of the heating business.

Natural Gas — Natural Justice?

To many in the Munster area natural gas is a dirty word at the moment. It has taken 10 years from the time of discovery of the gas to get to the present stage where the Cork Gas Co are still not using natural gas but are converting it into Towns or Manufactured gas.

Time is very short for Cork for as soon as the pipeline starts to go to other areas in the country opportunities will not be passed up as easily as they have been in Cork and the opportunity to be the forerunners of a natural gas based industrial revolution will be overtaken by progress in other areas. The heart of the problem is the apparent dispute between Cork Gas Co and An Bord Gais Eireann over the price of natural gas being supplied to Cork Gas and the reluctance of the Gas Co to invest large sums in conversion and replacing of pipes until a favourable price is set. This should not be allowed to continue as the future industrial progress of Cork city and area is now in the balance. What has happened with Cork Gas Co has added much weight to the ESB’s argument that the gas should be converted directly into electricity and fed into the existing distribution system and if difficulties as experienced in Cork are encountered in other areas then the ESB deserve to get what they are looking for. If on the other hand things can be sorted out between the two gas operations then the heating industry as we know it today will have a bright future in Munster and especially in Cork.
Dimension O may be reduced depending on boiler length

Ideal Britannia boiler with stoker (hopper model)

Dimension C may be reduced depending on boiler length

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Regional Review: Munster

The following is a review of just a few of the many companies in the building services trade operating in the Munster area and looks at the products manufactured or distributed by these companies.

Euro Pumps

Euro Pumps see themselves as moving very nicely in the market at present. In spite of the fact that the total market is becoming depressed they feel their overall share has increased and thus are reasonably happy that they are still on the correct course.

Apart from consolidating their leading position in the domestic market, they have become well known in the mechanical services field with the complete range of ‘Euramo’ products including the larger ‘C1000/C2000’ glandless circulators; the ‘LRB/JRB’ single and twin glanded pump-sets and the ‘PM’ range of monobloc end suction pumps.

Undoubtedly, the success that Euro Pumps are enjoying is due in the main to the fact that the Euramo range is of such high quality, which gives total reliability and silent operation. A further contributing factor is that a wide range of stocks are kept in both Cork and Dublin for immediate off-the-shelf deliveries in most cases.

Euro Pumps Ltd. also act for Pressman (Pressurisation) Ltd. who are manufacturers of the most comprehensive range of pressurisation units for heating systems and general purpose cold water boosting equipment in Europe. These fully packaged sets are very competitively priced and built to the highest specification and standard of finish possible. Delivery periods on this equipment are very favourable and can be programmed to meet almost any requirements.

Zwicky Engineering Ltd. have recently appointed Euro Pumps Ltd. as their sole stockist/distributor for the complete range of Zwicky uniplex and biplex filters, Zwicky controlled pressure reducing/regulating valves and the complete range of viking rotary gear pumps.

For further details contact Don Lauhoff at Cork 43822.

Wilo

Wilo Engineering Co. are happy to announce the introduction of the new Wilo range of domestic central heating circulating pumps to the Irish market. The pumps which are manufactured in Limerick by Wilo have a much improved performance over the old Wilo range. With the aid of a large research and development department at their parent company in Dortmund, West Germany, Wilo in Ireland can stay ahead of the ever changing market requirements both home and abroad. The Wilo domestic range (the RS25 series) has three basic models. The RS25/50 for low head system, the very popular RS25/60V (variable speed) for standard domestic systems and the RS25/70V (variable speed) for systems having larger flow and head requirements in domestic systems. A big feature of Wilo circulators for domestic use in the electric motor used. This motor which is manufactured by Wilo in Limerick has an extremely low power input requirement. The RS25/60V for example has a power input on low speed of 43 watts and an amazing input of only 77 watts on high speed. Added to this are the larger port dimension sizes thus eliminating hydraulic noise from the systems. The pumps are available with either 130 mm or 180 mm housing thus making them fully interchangeable with all other pumps on the Irish market.

Wilo Engineering Co also market the very extensive range of Wilo commercial and industrial pumps. This range which runs from the 1¼” RS30/80 having screwed unions (BSP) through to the largest pumps in the range having 125 mm flanges. Included in the range are the RS30/80, RS40 and RS50 all of which are available with either single phase or three phase motors. The Z series of secondary water (bronze) pumps offering excellent value for money. The Wilo range of mechanical seal pumps offers either single-type inline pumps (IP range) or dual-type inline pumps. The dual-type (DP series) are perfect for duties where a standby pump is required.

The Wilo Bloc pump is a close coupled end-suction pump and is available in three different speeds depending on flow and head requirements. The come available with a variety of different type motors for various hazardous working conditions. The Wilo Norm pump is also end-suction but has a flexible coupling between pump and motor. The Norm pumps range can handle volume up to 500 m3/h and heads of 100 metre.

For full details and literature please contact Wilo Engineering Co., Raheen Industrial Estate, Limerick, (Tel: (061) 27566 (5 lines) Telex: 28202 EI).

Carter-Halligan

The first Irish based water cooling tower manufacturer, Carter-Halligan of Parnell Street, Bandon, Co. Cork is preparing to double up on its present production capacity.

It was during September of 1980 that the IDA grant aided factory started to turn out towers and, despite the recession, the growth of the operation has been considerable.

Readers will remember the announcement in HVN of the licence negotiated between Halligan Engineering and Carter Industrial Products of Birmingham, England. Managing Director, Vincent Halligan, after successful negotiations were concluded with Carters, appointed Vincent Flynn as General Manager and the successful partnership that emerged is evidenced by the many tower installations already carried out and the healthy condition of the firm’s order book.

Carter-Halligan are perhaps better known by the larger tower users, particularly in the pharmaceutical and food industries, but Vincent Flynn is quick to point out that...
they do make the smaller packaged towers for the industrial and air conditioning markets.

In addition to producing towers, Carter-Halligan carry out refurbishing of existing towers and, here again, the larger users have used this useful local service more than others.

Being located in Munster, particularly as Vincent Halligan was and is well known in the steel fabrication business in that province, has meant that more sales emanate from there, but Vincent Flynn expects to make an appointment soon in the Dublin area.

Dust Control

Some readers will be interested to know that the rather unusual additional expertise which this expanding organisation has relates to dust and fume control.

There are, of course, companies in Ireland producing cyclonic type dust collectors for applications such as joiner's shops, the milling industry and the like, but, in the main, collectors such as pulse jet fabric filters have been imported either from the UK, Europe or the USA. Carter-Halligan have a comprehensive range of dust and fume control equipment which, like their cooling towers, is produced, under licence, from Carter Industrial Products.

With the ever increasing demand for a clean environment and high energy costs, Carter-Halligan design their systems with both of these aspects in mind and, to complement this important part of the company's activities, they are distributors for Ireland of Gore-Tex PTFE Membrane Filter Bags. This unique material allows the filtered air to be re-circulated, thus reducing heating costs, particularly when larger volumes are being handled.

---

**Robey Reliability**

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**Pioneer**

The name Re-Verber-Ray is nothing new to the heating industry as it has long been established as the market leader of high intensity radiant heaters. The success of the brand has been largely attributable to its advanced design coupled with the 50% reduction in annual fuel costs obtainable with the Radiant heating systems.

During the year however, Pioneer hopes to place major emphasis on the new Re-Verber-Ray Radiant Tube Heater MK II. This new heater will be marketed primarily as a vented radiant system as opposed to the alternative high intensity unvented system. This new heater faces an un-
If you know about radiant heat already you know why the RE-VERBER-RAY is the best RADIANT TUBE HEATER you can buy.

Unique cast alloy burner/exhaust assembly gives super-silent operation
Well ventilated exterior case in safety orange colour
Fully adjustable support brackets
Easily removable reflector secured by adjustable screw fasteners

Vented Design
Overhead Mounted
No Wasted Heat
Automatic Control

*20-50% Fuel Saving
*Gas Fired
*Instant Heat
*Healthy Heat

The Re-Verber-Ray range of radiant gas heaters
A GUARANTEED IRISH PRODUCT

Manufactured by:
PIONEER RADIANT PRODUCTS LIMITED
enviable task if it is to be compared with the success of the original MK 1 version. When we asked Pioneer's managing director — John Sullivan, the reason for introducing a new heater in view of the success of the original unit his answer was simple "We have always led the market and we will continue to do so, we have merely increased the gap a little"

The standard unit comes with a rated input of 22 KW (75,000) Btu and is available for either overhead or wall mounting. A very impressive flueing system shows a great deal of both creativeness and practicality in its design.

**Coolair**

Air conditioning specialists Coolair Limited of Tallaght and Cork are sole distributors in the Republic of Ireland for the full range of Barber-Colman air conditioning equipment and Daikin Heat Pump packaged air conditioners.

A recent addition to the Barber-Colman range is the MPC-8901 Microprocessor Controller, which can be programmed to automatically adjust a building's exact needs and so reduce operating costs. Designed to provide automatic starting and stopping of mechanical and HVAC equipment, the new Controller has a 24-hour clock and 365 day calendar, understands long weekend and holiday schedules and also caters for daily variations.

The MPC-8901 unit reduces KW demand and KWH usage, provides a continuous power monitoring of building services and includes instrumentation to display such data as time-of-day and day-of-year. It incorporates Solid State electronics and four software programmes to achieve maximum optimization of electrical and mechanical systems.

The Microprocessor is part of a Barber-Colman range of electronic building optimisation systems, which includes a dual room temperature controller, an air-handling equipment programmable controller and a chilled water optimiser.

Variable air volume systems, developed by the Barber-Colman company are now becoming increasingly acceptable and are available in Ireland from Coolair Limited. VAV systems are energy efficient, due primarily to their "tailoring" of the air quantity to the actual cooling requirements, so eliminating reheat and reducing both fan energy and refrigeration load. VAV also allows 3.2 air changes per hour as against 8 per hour with a constant volume system and so improve occupant comfort.

Induction VAV combines the advantages of VAV supply air to the induction terminal, which in turn induces and mixes return air with the supply air to provide a greater air quantity at a warmer temperature to the occupied spaces. It is a system economical on first cost and operating cost and is designed for people comfort rather than "to cool a building".

Other Barber-Colman products include a wide selection of louvres, grilles, diffusers, dampers, panels, terminal boxes and integrated ceiling systems to suit numerous applications.

The Daikin range of heat pump packaged air conditioners has three model variations, comprising UH, FRY/CRY and EFHY/ERY model types and each using a 50 HZ power supply. The UH model is designed to convert heat
Pump Action from WILO

Series SP
Glandless Pumps

Series TS+TP
Twin Pumps in series

End-suction block pumps

InLine pumps with mechanical seals

Dual pumps for standby duties

End-suction norm pumps

Wilo Range of Circulating Pumps
Tel. (061) 27566.
from outdoor sources to warm air discharging to indoor space. Conversely a reversible refrigeration cycle also allows a cooling operation.

The FRY + CRY models are designed for heating and cooling operations by a change over switch. The FRY units are packaged floor standing types for indoor installation and are matched to the CRY air cooled condenser units. The EFHY unit is a ceiling mounted direct blow unit deal for heating and cooling offices and shops with quiet operation. It is linked with the ERY air cooled condenser unit, designed for outdoor heat pump application. Coolair Limited is also sole distributor for the Veqip range of air handling units and Airedale air conditioning equipment.

Further information from Coolair Limited, 25 Cookstown Industrial Estate, Tallaght, Co. Dublin. Telephone: 511244 or Mallow Rd., Cork, Tel: (021) 503630, telex: 6152.

Robey

The new range of Incendo boilers is an addition to the existing comprehensive range of Lincoln boilers already marketed by Robey of Lincoln which are suitable for firing by the various types of fuel available. The Incendo boiler has been introduced into the Robey range in order to cater for an increasing market requirement for solid fuel fired boilers and by its introduction now enables Robey to offer its customers a wide choice of combustion equipment for solid fuel.

The Robey Incendo has been developed in conjunction with Greenforge Limited, and in the majority of cases, the boilers will be available as packaged units although some items of equipment may require re-fitting at site. These boilers are of the three pass wet back design and will be available for outputs from 5000 to 25,000 lbs. of steam/hour, from and at 100 degs. C.

Robey boilers are available from S L Combustions Ltd.

Manutec

Manutec Ltd., a Limerick-based engineering services company recently announced its sole distributorship for all Ireland of the prestigious U.S. manufactured range of energy saving devices using the brand name Powerwatch.

Powerwatching is a microcomputer-based timing system which will allow sophisticated energy management programmes to be established showing savings of 10 to 30% on electricity bills.

It is capable of controlling up to 15 independent electrical circuits, each with multiple loads, and can be programmed for a year-long schedule.

Routine or special load schedules are entered through the keyboard which is built into the face of the unit.

The system will accept up to nine start/stop operations per circuit per day, plus nine duty cycle patterns per circuit, and will also stage loads on sequentially whenever schedules call for more than one load to start at the same time.

An extra schedule programmes holidays, restoring the system to normal operation as they end.

During the normal "on" time of a circuit, the load can be cycled "on" and "off" for independent intervals ranging from one minute to 12 hours, resulting in over 500,000 possible duty cycle patterns.

Manual override switches are provided. In the event of total power failure, Powerwatch maintains time of day and schedule data for a period of 10 days using battery back-up. All control and panel wiring is low voltage 24Vac.

For further information contact: Mr. J. Carney, Manutec Ltd., Bank House, 106-108 O'Connell St., Limerick. Tel: (061) 47341.

James Gleeson

James Gleeson & Co., are 50 years in the heating business, and their range includes:

(a) Hoval industrial steel boilers from 500,000 to 20 million Btu/hr and dual fire domestic boilers suitable for oil/gas and solid fuel, waste incineration systems with heat recovery, calorifiers, pumps, controls and valves.

(b) Hogfors cast iron sectional boilers from 85,000 - 4 million Btu/hr.

(c) Weishaupt oil and gas burners. Equipment installed throughout the country in schools, offices, hotels, factories, private residences etc.

Sales and services offices in Limerick and Dublin. Extensive stocks held at the Limerick stores.

BTU Captain's Golf Outing

* Pictured with John English (left) Lister Tubes, the sponsors for the BTU Captain's golf outing at Clontarf are (centre) the overall winner Brian Farrell and John Doyle.

28 IHVN, August 1981

* Some of the prize winner and BTU golf committee at the Captain's outing in Clontarf GC.
COAL COMBUSTION EQUIPMENT

In this article R. C. Huxford of the National Coal Board, U.K. looks at coal combustion equipment both conventional and experimental, the article is based on a paper presented at the National Conference on Energy Use Management held in Dublin earlier this year and extracts from 'Boiler House Design for Solid Fuel' by the N.C.B.

These are exciting days for solid fuel, and this is reflected in the greatly increased efforts by manufacturers — often with encouragement from the NCB — to improve existing solid fuel equipment and/or introduce completely new types. This process is of course characteristic of any healthy industry but it is particularly marked in relation to ours at the present time because we do recognise that those who have become used to burning oil or gas may find it a little discouraging to have to deal again with a fuel which is neither so consistent in its characteristics nor as easily handled. Perhaps too much should not be made of this — after all, until the late 50's industrial consumers coped with solid fuel very well indeed, but higher standards, higher efficiency and reduced labour costs are expected nowadays and wherever there is scope for improvement we have made or are making the attempt to achieve it.

Looking at conventional equipment I should say at once that although the work carried out by ourselves and others on fluidised bed combustion has been given massive publicity in recent years, we do not look upon so-called conventional equipment as being obsolescent or inferior. Rather, it is a case that the new equipment is regarded as being an extension to the range now available to consumers. It is in fact heartening that conventional equipment is now being made by newcomers to the solid fuel field, whilst in other cases designs which have not been marketing for some years are again made available.

Gravity Feed Burners (Fig. 1)

For smaller plant these appliances have been popular both as integral units and as pre-burners. Limited in the past to small grades of smokeless fuel, there are now efforts being made to adapt them to bituminous coals and an experimental Suxe pre-burner has been operated at 9 million Btu/h on high volatile fuel.

Underfeed Stokers (Fig. 2)

Also at the smaller end of the commercial/industrial range of equipment the underfeed stoker continues to be as popular as ever for burning bituminous singles. In this stoker combustion takes place at the surface of a retort which is fed with fuel from a hopper or bunker by means of a rotating screw. Residual ash and clinker gather round the edge of the retort and are removed periodically by hand. Underfeed stokers are available in sizes ranging up to about 3 megawatts (10m Btu/h). They are particularly favoured for smaller furnaces and boilers because of their low capital and running costs. The simplicity of the machine results in maintenance costs being low and maintenance work does not require the use of skilled staff. Recently, a self de-ashing unit has been developed, in which the retort fired bed is discharged sideways on to a grate of reciprocating bars. The action of these bars discharges the ash automatically. Automatic ignition has also been applied, based on air jets heated by electric elements.

Coking Stoker (Fig. 3)

In this stoker a flat reciprocating ram introduces coal into the furnace. The fuel, singles or smalls, is first deposited on to a coking plate where the volatile matter is partially distilled and gasified to be burned subsequently as it passes over the firebed. As fresh coal is introduced the coke mass is forced off the plate on to the grate below. This comprises a number of fire bars which, again, are given a short reciprocating movement. Under the action of cams, the bars move down the furnace together for about 75mm, then alternate bars or groups of bars make the return movement, followed a few seconds later by the others. This causes the fire bed to progress along the grate during the combustion process and the ash residue is discharged over the end of the grate. The coking stoker is available in ratings from about 900 - 4,400 kW (3m - 15m Btu/h) and is widely used for firing horizontal shell boilers. It has also been used on small water tube boilers and kilns.

Recently reciprocating grate stokers have been developed for use on small welded steel heating boilers. One of these, the Proctor Minicoker...
is in most respects a smaller version of the stoker already described. Built on very compact lines, it includes a rotary coal feed valve on the hopper to prevent burning back. Automatic ignition has been applied to this unit.

The other is the Escom stoker and this departs from the usual coking stoker design in having no coking plate or ram. High intensity combustion is maintained under a refractory arch and ahead of a refractory front. Secondary air passes through the forward end of the bars to complete combustion of volatiles.

**Chain and Travelling Grate Stokers** (Fig. 4)

In chain and travelling grate stokers fuel gravitates in a continuous uniform layer on to a moving grate which carries it through the furnace, finally discharging the residual ash and clinker at the rear. The grate structure is in the form of an endless chain of links or bars. Control is by a damper at the far inlet and both the height of the guillotine door which fixes the height of the fuel bed, and the grate speed can be varied. Fully automatic control is usually applied.

These stokers are produced in a wide range of sizes from miniature units suitable for sectional heating boilers up to industrial and power station units for boilers with ratings of over 75 megawatts. Recent developments include the provision of automatic ignition, based on air jets heated by electric elements.

**Spreader Stoker** (Fig. 5)

A spreader stoker is similar in construction to the chain or travelling grate stoker but the grate movement is in the opposite direction, that is, towards the furnace front. The fuel is sprinkled over the grate by a rotating impeller, the fines being burnt in suspension while the larger pieces fall on to the grate and form fire bed. This form of combustion offers the important advantages of being able to cope with a wide range of fuels and also sudden changes in fuel quality. It is very flexible and responds to load changes. The spreader stoker is very suitable for water tube boilers and only due to the mechanical strength limitations of the grate components that the upper limit on rating is about 80 megawatts (270m Btu/h).

**Vekos Combustion System**

This combustion system forms an integral part of the Parkinson Cowan GWB Multifuel and Powermaster.
boiler ranges. These boilers are of the packaged economic type and have fixed grates comprising rows of chrome iron firebars. The fuel, washed singles, is taken to the crown of the boiler, usually by a screw or pneumatic conveyor, where it falls down a drop tube leading to the furnace tube above the grate. The drop tube also admits overfire secondary air which passes with the fuel through a distribution cone at the lower end of the tube. This cone serves to spread the fuel over the grate. At the outlet of the second pass of smoke tubes a grit arrestor collects unburned carbon and other grit and dust and these particles are re-injected into the furnace.

De-ashing is by hand and this imposes a limit on the boiler rating which can conveniently be worked. However, a self de-ashing grate is under development and, if successful, it will further improve a unit which has already proved extremely popular.

Hamworthy Combustion System
This has attracted a lot of attention recently. It offers a real possibility of reducing total dependence on either oil or gas on boilers fired by these fuels. Briefly, it comprises an oil or gas fired burner which at full load never supplies less than 30% of the output. The remaining 70% output can be provided by a pulverised fuel burner. Of course, pulverised coal is more costly than an ordinary industrial grade, whether it is produced on site or delivered from a central milling plant, but we are following progress with interest. Certainly this development comes closest to offering a substantial — if partial — conversion to coal whilst utilising existing boilers.

Fluidised Bed Combustion Equipment
It is in the field of fluidised bed combustion technology that most effort and money have been expended in recent years. The work has been necessary because the system apparently offered considerable advantages but the novelty of the process in relation to industrial applications meant that the design data was lacking.

The basic concept is that coal is supplied to a hot bed of particles, for example, coal ash or silica sand, and is fluidised by the upward passage of a steam of air. Coal is supplied continuously to the bed and the ash remaining after combustion is removed continuously to keep the volume constant. Because of rapid mixing and the high rate of coal combustion, the amount of unburnt material in the bed is small; typically the bed will contain 0.5-5% of coal. For satisfactory operation the bed is kept below the temperature at which coal ash begins to fuse or sinter; the bed is therefore operated within the range 750-950°C, the temperature at which a soft, fine ash is produced.

The special advantages of fluidised bed systems can be summarised as:

(a) The high rate at which heat can be transferred from the bed for steam raising or other purposes enables more compact boilers and furnaces to be used.

(b) Because the concentration of coal in the bed is small, combustion is hardly affected by coal type, ash or moisture contents. The burning coal is surrounded by inert material, so that there is no tendency for coal particles to stick together. For the same reason, coals of variable ash and moisture contents do not upset the process, in contrast to pulverised fuel firing where coal of fairly uniform properties and ash content is necessary.

(c) In contrast to pulverised fuel firing, fluidised bed can use commercially available grades of coal without further treatment, in this way saving costs.

(d) At high temperature, small amounts of certain salts are vapourised from coal ash; the higher the temperature, the more the amount vapourised. Salts emitted from hot ash in a boiler condense on steam or water tubes, causing gradual fouling. At a maximum of 950°C, the temperature in fluidised combustion is well below that in other systems, for example, over 1200°C in pulverised fuel firing. Emission of deposit forming materials is, therefore, much less than in other boilers and tube fouling is minimal.

(e) Particle velocities are well below that at which steel is eroded by impact; scouring by the moving particles can be beneficial in preventing build up of deposits on pipes.

(f) The evenness of the fluidised bed temperature enables automatic control to be more precise than in other coal burning systems.

(g) More efficient methods of generating electricity can be developed using coal fired gas turbines.

(h) The environmental contribution of fluidised bed combustion is significant. Low operating temperature in the bed helps to reduce control and even eliminate emission.

In the application of fluidised combustion to industrial boilers attention has been given in particular to coal grade and bed depth. Although there are advantages in using crushed coal in fluidised bed combustion for power stations, industrial systems need to burn ordinary commercial grades of coal without further crushing and need to be shallow to suit the more compact boilers in this field.
NEW PRODUCTS

Trianco Launch New Oil Boiler

Trianco Redfyre, have introduced a new highly efficient range of pressure jet boilers which supersedes their TRO range.

Designated the TRO Mark II, the new Dobeta approved models achieve 80% thermal efficiency burning kerosene, with an even higher efficiency using gas oil.

There are six models from 41,000 Btu/hr to 249,000 Btu/hr and the range is doubled by the addition of fully-insulated boilerhouse models to augment the white cased standard units.

All models feature a plug-in multi-role programmer option, a plugged fifth tapping facilitating the installation of a circulating pump within the casing (white cased models only) and are especially designed for use with the Trianco patented flue terminals (four domestic models only).

Trianco have obtained the extra efficiency by improved combustion techniques and all the boilers feature the latest mark of Electro-Oil Inter oil burners. Extra-thick all-round thermal and acoustic insulation, which even covers the back of the boiler, reduces operating noise to an absolute minimum.

New Corner Bath from Ideal

Lido is the name given by Ideal-Standard to their new corner bath. It has been designed by John Beauchamp, the talented English designer who has already created three highly successful bath-tubs for the company — Michelangelo, Brasilia and Linda.

The new corner bath — the first to be offered by Ideal-Standard — is being made at their Hull bath facility and, will be marketed throughout Europe under the same name.

The Lido, with each wall side measuring 140cm and with a height of floor to rim of 55cm, has a spacious and deep interior with a back slope at the left and the taps at the right. There is a spacious seating area in the corner, and the Lido’s elegance is completed by an attractive acrylic panel.

Installation has been facilitated by easy access to the plumbing. Lido is available in Ideal-Standard’s full range of colours — Bermuda Blue, Indian Ivory, Kashmir Beige, Sorrento Blue, Bali Brown, Harvest, Avocado, Pampas, Penthouse Red, as well as white — to match their ranges of wash basins, water-closets and bidets.

Lido is included in the bath-tubs to which Ideal-Standard have extended their whirlpool feature as an optional extra.

The whirlpool feature is available on the four baths in the full colour range except Sorrento Blue and Harvest. Further information from K M Reynolds Ltd.

Smoke Detection

A new optical smoke detection unit which uses a reflected infra-red light beam to detect the presence of smoke in the air has been introduced here by Chubb Fire Ireland.

Called the Mini Beam Master, it consists of a wall-mounted beam emitter and reflector.

Simple to install and maintain, it is available in 10 m. and 25 m. beam sizes, the largest of which monitors up to 400 sq. metres.

Fan Assisted Flues

Flueboost and Flue Dilution fans have been developed by Aidelle Produces to overcome the restrictions of conventional flue systems. Boilers no longer need to be situated on an outside wall and costly, long vertical flue runs are unnecessary.

The units incorporate powerful centrifugal impellers to overcome high flue resistance and outside wind...
Aidelle's flue boost fan (left) and GBDF flue dilution fan from McKenna (Ireland) Ltd.

- **Aidelle**'s flue boost fan provides the draught necessary for correct combustion even when the flue is horizontal, sloping downwards or contains right-angle bends. A safety switch ensures that, if for any reason there is insufficient draught, the gas supply to the appliance is switched off.

- The GBDF range of Flue Dilution fans provide an excellent solution to the problem of handling combustion products from gas burning appliances. The waste products are mixed with a high proportion of fresh air from an outside source, enabling the resultant mixture to be safely discharged at low level.

**New Range from Rite-Vent**

Rite-Vent Limited have recently developed two new products for the commercial and industrial heating market.

1. **Model ICIC Three-skin Insulated Chimney**: This is suitable for use with oil or solid fuel burning appliances and is available in stock sizes 14 ins to 24 ins, with larger sizes available on request. The construction is as follows:
   - Inner liner — liner stainless steel 304 S16
   - Air cavity — 12.5 mm
   - Inner-skin — Galvanised steel
   - Insulation — 63.5 mm high grade vermiculite
   - Outer casing — Stucco-embossed aluminium

   A full range of fittings is available and standard lengths are 914 mm installed.

2. **Maxflow-gas Vent**

   Twin-Wall Flue with an inner liner of aluminium, a 25.4 mm (1'') air gap and an outer case of Stucco aluminium or galvanised steel. Maxflow is available in stock sizes 14'' to 24'' with larger sizes available on request. It is also available with a stainless steel inner liner and a wide range of fittings including Header Tees for use in Modular Boiler installations.

   C & F of Mill Lane, Palmerstown, telephone 264898/264917 are the Rite-Vent Distributors in Ireland.

**Electric Pipe Bender**

New electrically powered hydraulic pipe bender is claimed five to six times faster than any of the current manual versions.

Capacity of the type 2408 bender is from 3/4'' to 2'' (or with adaptors up to 4'') gas pipe dependent on the accessories fitted and it is available in three forms: with a reinforced cheek, an open cheek mounted on a tripod, and with a sliding cheek.

Simple assembly without tools ensures the unit can be quickly made ready for use whatever size of pipe or cheek configuration is required. Safety is maintained by the components locking together automatically as the load is applied. Over-extension of the ram is obviated by a relief valve in the oil circuit, and a built-in valve prevents loss of oil due to changes in atmospheric pressure.

Contact: Combex Eng Ltd., 'phone: 748371/2/3/4.

**Flue Economiser**

Continuously rising fuel prices should result in cutting energy consumption and saving foreign currency. Legislation and government demands may be introduced to cut energy consumption and this may also be the case with regard to efficiencies of heating installations.

Dantherm has developed a flue economiser complying with all demands!

Dantherm Flue Economiser is a tiny air heater with
NEW PRODUCTS

- The Dantherm flue economiser from Blackenberg Ltd.

its own heat exchanger, fan, automatic controls, etc. It is placed between the air heater and the chimney.

Dantherm Flue Economiser is made of corrosion protected steel sheet, which is resistant to the corrosive flue gases. In the economiser the temperature is reduced to about 180°C which is the lowest practicable temperature — far below any legislation demands.

By blowing cool fresh air through the flue economiser on the outside of the heat exchanger the heat is transferred from the flue gases to the cold fresh air.

For further information please contact: Blackenberg Limited, Baldoyle Industrial Estate, Grange Road, Baldoyle, Dublin 13. (Tel: 393071/393126).

**Time-Saving Tap**

Newly launched by Salamander (Engineering) Ltd. is the adjustable self-drilling tap specifically for the plumber/installer engaged in plumbing-in washing machines or adding radiators to existing central heating systems.

The adjustable tap is suitable for 10, 12 and 15 mm diameter tube. In the "closed" position it can be fitted in a matter of minutes without turning off the mains water supply. Also, it can be used to "tee" into the flow and return pipework of an existing central heating circuit for the addition of new radiators without any draining down.

To fit the adjustable tap a universal cutting tool is used. No-nonsense installation is ensured by five hinge pin positions which enable exact matching of the tap to each diameter of tubing.

When using the Adjustable (self-drilling) tap on central heating systems Salamander says that it is important to remember two essential features of the product. The ¾" x ½" male hose union adaptor is removable which makes possible the use of a ½" female BSP by 15mm capillary connector for the flow and return to any extra radiators. Being adjustable for 10, 12 and 15 mm pipe-work also means that the tap is suitable for small bore and microbore system applications.

Further information from: C H S Ireland Ltd.

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**BALTIBOND™**

**BEST BY TEST**

- **CORROSION RESISTANCE**
  - No failure after 6,000 hours of test when immersed in 5% sodium chloride salt spray solution
  - No signs of chemical attack after 6,000 hours of immersion in acidic (pH4) and alkaline (pH11) water solutions

- **CHEMICAL RESISTANCE**
  - Not affected during 3,000 hours continuous ultraviolet exposure testing and equivalent of 60,000 hours of normal sunlight radiation

- **ULTRAVIOLET RESISTANCE**
  - Negative effect after samples cooled to -32°C were immersed in +82°C water

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  - No signs of wear due to erosion after 6,000 hours continuous high pressure water jet spray

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  - The best corrosion protection system by test without the high additional cost premium of other systems

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Middlesex, UB7 8NS
West Drayton 40546/7/8

34 HVN, August 1981

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International Coal Scene

At a recent conference, the chairman of the Institute of Industrial Research and Standards stated that "Ireland's present position is perilous if our energy problems are not resolved. The ability to manage our economy effectively would be put seriously in question which would fundamentally damage the prospects for a sustainable growth and employment". We also stated in our last article that while the world presently has an oil glut this is more due to a recession than to conservation. In fact, what the world appears to have got is breathing space. Even the International Energy Agency is with-holding judgement on the present glut stating that "it will not be clear for some time whether the savings are of a permanent nature or not". As against that, a group of economists in the U.K. have predicted another oil crisis within 1982/83. If this is the case, prices of crude oil will increase and will ultimately be reflected at the petrol pump and industry. Figure 1 shows oil increases over the past few years.

Is Ireland then the only country facing the oil problem. Not so, according to a recent EEC document. This document state that in Europe more than half the energy consumed is imported although the level of dependence varies from each country. In 1979, Luxembourg relied on imports for 99% of it's energy, Ireland 81%, whereas Germany was only 60% and the United Kingdom 17%. Of these imports oil is about 51% of total primary energy consumption; coal 24%; natural gas 18%; nuclear and other sources 7%. The EEC have stated that the energy problem is a key one to all industrial societies. Without energy everything would grind to a halt. The availability of energy in sufficient quantities on a sure and sound economic basis are necessary preconditioned to any economic and social goals. With that in mind the European Community has set specific objectives for energy to 1990. These are:-
- That the average ratio of the rate of increase in energy consumption to that of gross domestic products should be 0.7 or less. The EEC have commented that the results from 1973 to 1979 vary considerably. They also stated that results were less impressive particularly in Ireland and Greece and for the U.K. and Germany, France and Denmark.
- They also stated that member states should adapt comparable overall programme within the framework of a community energy saving strategy.
- That oil consumption should be put to around 40% of gross primary energy consumption. Here it is stated that Ireland intends to reduce its oil from 74% to 65% of total energy consumed by increasing the use of coal.
- Solid fuels and nuclear energy must cover 70% to 75% of total electricity generation. Some countries have already passed this threshold i.e. the U.K., Germany and France but four countries, Ireland being one of them are well below the figure.
- The significant item beside conservation within the EEC is for diversification of energy sources. Considerable emphasis regarding diversification is the switch to coal. This is what the EEC document had to say: "In the coal sector internal community production is only been maintained at high public costs. Finance by the producer countries and justified as much in terms of security of supply as by social and regional needs. Table 2 below shows in fact the costs required.

On the consumption side the EEC document states that, coal burning is economically viable for a number of industries. But conversion only takes place as existing fuel or gas equipment is replaced. It would be desirable to speed this up. Finally, turning to imports, which could triple or even quadruple by the end of the century, they state that considerable investment is required in infrastructures (ports and storage facilities etc.) Therefore the immediate outlook for coal supplies look promising.

This has been the turning of the wheel full circle. The world economy was once based on coal but since 1945 it became based on oil and gas now it would appear it is rapidly reverting to coal. The implications are clear.
- World coal production will have to be increased considerably in the next twenty years if demand is to be met.
- For the first time coal will have to be shipped around the world in vast quantities.
- Advances in mining technology and coal appliance manufacturing are expected to occur.

<table>
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<th>Table 1</th>
<th>1970</th>
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<td>Middle East Crude</td>
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<tr>
<td>Crude per barrel</td>
<td>15</td>
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*HIVN, August 1981*
The switch of the world economy to coal will have major implications for international relations. Industry worldwide is phasing in coal to replace oil. Research in the United Kingdom which is perhaps the world leader in coal application showed that it can do everything oil can do, it can be turned into petrol, kerosene, petrol chemicals, e.g. animal food. As these coal based technologies are developed and they become commercially viable alternatives to the existing oil base method, world demand for coal will rise further. This can be envisaged as becoming a significant factor in perhaps ten to fifteen years time. Even without this effect if history is any guide coal prices will tend to rise with oil prices.

Coal however, has one advantage overall, in that it can be found for the most part in political stable countries of the world. The United States has 24% of proven coal reserves, China 15%, Russia 16%, Australia 5% and South Africa 7%. The United Kingdom has half the EEC reserves of coal and with present rate of consumption has sufficient reserves to last for up to 300 years. It is also expected that some third world countries notably Chile, Columbia, Indonesia, Zaire may become prominent exporters for coal. It is clear that recovering coal reserves throughout the world and many times those of oil and natural gas and they could last for a hundred years or more. However, giving the lead times involved for coal using and producing projects there is a risk that the bulk of new facilities needed to meet the required acceleration and demand and trade from 1985 onwards will not be available on time. In our next article we will look at Ireland, the problem of switching to coal, and the problem of the monopoly position of CDL.

### Table 2

<table>
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<th>State Aid to Community Coal Industries in 1979</th>
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<td>1. Aid to current production (£/tonne)</td>
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<tr>
<td>2. Social Security Aids (£/tonne)</td>
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<tr>
<td>3. Other (£/tonne)</td>
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<td>TOTAL</td>
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</table>

Irish Agent: G.W. Monson & Son Ltd.
18 Ballyblack Road, Newtownards, Co. Down. Phone: 812350.
8 Lower Mount Street, Dublin 2. Phone: 765627.
The last two or three years has seen a gradual increase in the use of fan coil unit systems with standard or close controlled packages which allow individual areas to be air conditioned and a swing away from the concept of central station systems. These changes have come about more by the type of buildings and areas required to be air conditioned rather than any technical development away from the central station system. From the users' point of view the use of these, in essence mini AHU's, allows considerable flexibility in the operation of the entire AC system and it also prevents long periods of down time when there is fault in only one area.

As far as the economic future is concerned the Telephone Exchange business is nearing an end and although foreign investment continues to come into the country through the IDA this seems also to be slowing down. So let us hope that the recession will turn soon as the business may be faced with what other sectors of industry have had to suffer for the last few years.

### AHU Market - Future Uncertain

The essence mini Trane system.

The recession will turn soon as the business may be faced with what other sectors of industry have had to suffer for the last few years.

### Trane

Selecting climate changer AHU's is made easy by the Trane system.

This computer service is available through the local Trane sales office via the General Electric Mark III worldwide computer network.

All you have to do is input your required summer and winter design conditions, including details of cooling and heating, filtration, specification, electrical characteristics and any of 22 special feature requirements. The computer takes it from there and give you these items for your design decisions.

1. Two Selections. A reduced first cost (usually the lowest cost) unit selection which meets a specified maximum coil face velocity and all other specified performance requirements.
2. A Psychrometric Analysis of Your Performance Requirements. Mixes the specified outside air and recirculated air. Selects the lowest first cost combination of coils, humidifier, fan(s) and special features to meet your performance requirements. Prints out the leaving air temperature from each section (mixing box, heating and cooling coils, humidifier and fan) along with the air pressure drop and other performance data for each.
3. Supply and Return Fan Performance Point. Based on the specified total supply air volume and external static pressure, the computer adds the air pressure drop through each selected component and selects the best available supply fan with the proper motor drive. It prints out the rpm, absorbed kw and fan efficiency, plus the motor size and drive.
4. The return fan, if required, is selected based on the specified air volume and external static pressure. Similar printouts are given. A fan performance allowance is made when using vertical and/or blow through fan discharge configurations.
5. Sound Power Octave Band Analysis. Printed out at the fan inlet and outlet, as specified for your system acoustic design.
6. Weight/Dimension/Price Index. The operating weight and overall dimension are summarized for your equipment room planning. A price index can be given for the total unit and easy component for your economic analysis.

### Chryotemp

Chryotemp Engineering Ltd., have recently announced the introduction of a new range of air handling units to the Irish market. Manufactured by Imaco of Milan, these comprise the series "ZS" single zone type and series "ZM" multi zone type. The "ZS" and "ZM" modular central station air handling units are designed for commercial, industrial and residential use; these air handlers can filter, wash, heat, cool, humidify and circulate air for specific applications.

All modular sections are made of hot dipped galvanised sheet metal, single panel or double skin construction with thermal insulation, stainless steel or aluminium construction. The modular construction offers considerable flexibility in the selection of a package suitable for specific applications and also keeps shipping costs to a minimum thus making Imaco one of the most competitive on the Irish market to-day.

Mixing box sections and dampers are constructed from galvanized sheet metal; the dampers are mounted in nylon bushes. Dampers can be supplied either with manual control or with electric or pneumatic servomotors.

Filter sections are fitted with a large access door for ease of maintenance. Four standard types of filter sections are available:

- High velocity filters, cleanable type.
- Low velocity filters, cleanable type.
- Bag filters for low, medium, high efficiency.
- Roll filters.

Automatic roll filters are also optionally available.

The coils are of the continuous flat fin type with die formed spacing collars. Coils are tested hydraulically at 25 kg/sq. cm. and the direct expansion coils are evacuated, charged with nitrogen gas under pressure and sealed. The following types of coil are available:

- Copper tube and aluminium fins.
- Copper tube and copper fins.
- Copper tube and copper fins electro tinned.
Three types of humidifying section are available as standard:

- Recirculating spray humidifying sections complete with electric pumps.

The casing is constructed of heavy gauge galvanised; sections single or double banks (air washers) with self-cleaning plastic nozzles. Banks and basin are protected with special bitumastic coating. The basin is equipped with a float valve, over-flow and drain plug.

- Non-recirculating humidifying section with brass spray nozzles.

- Steam humidifying sections with brass nozzles.

Multizone sections and dual duct sections are capable of supplying heated or cooled air simultaneously and independently to several zones. Multizone sections and dual duct sections are provided with a large access door; the sections are internally insulated in fibre glass.

Chryotemp believe that the wide range of options within the Imaco range will satisfy the most demanding applications. A spokesman for Chryotemp told H&V News that sales to date of the Imaco range had surpassed all expectations and that its exceptional price/performance ratio was causing quite a stir in the market.

Coolair

Air conditioning specialists Coolair Limited of Tallaght are sole distributors in the Republic of Ireland for the full range of Vequip air handling equipment. Manufactured in the U.K., the Vequip range comprises air handling units in standard and fast build form, twin fan extractors and air purification equipment. The Vequip air handling range consists of fourteen models all with double skinned infill panels for better thermal insulation and reduced noise break-out. Sections bolt easily together for rapid site assembly and all moving parts are isolated from casings for increased anti-vibration.

For situations where space is limited or of irregular dimensions, Vequip air handling equipment can be assembled in fast build kit form. Models from the Vequip range of twin fan extract units are specially designed with a duplicate stand-by fan system for use in hospitals, hotels, factories and offices and are constructed from corrosion-proof steel for internal or external mounting. The Vequip air purification unit is fitted with an activated carbon filter to enable large quantities of air to be recirculated and purified thus increasing the efficiency and reducing the running costs of heating and air conditioning installations. The Vequip range supplements the range of Daikin, Airedale and Barber & Colman air conditioning equipment also distributed by Coolair Limited.

Walker Air

The Carlyle 39 series air handling units distributed throughout Ireland by Walker Air Conditioning Ltd., comprise three ranges capable of handling air volumes ranging from 1,461 m³/hr to 101,930 m³/hr.

At the lower end of the scale is the 39B range. Available in three single zone, draw through sizes with nominal capacities ranging from 1,461 m³/hr to 6,370 m³/hr, these units are suitable for either horizontal or vertical applications, with or without bypass.

The most recent addition to the Carlyle range of air handling units is the new 39M series. These combine the benefits of modular air handling units with flexibi-
Nobody handles air better than Bahco.

The Bahco ABC range of air handling units more than meet today's exacting requirements for minimum energy consumption. There are 9 units in the range—all providing complete flexibility. The infinite number of layout possibilities with Bahco ABC helps to solve the problems created by limited plant space. We have a 12 page colour brochure on these air handling units. With true Swedish efficiency, it illustrates and describes the range in detail—including a section on how Bahco Heat Recovery Section can cut air treatment costs dramatically.

Air Curtains · Air Handling Units · Air Pollution Control · Space Heaters
Also (Bahco Tools Ltd) · Adjustable Wrenches · Screwdrivers · Spanners · Hydraulic Tools · Engineers' & Electronic Pliers

BAHCO VENTILATION LTD BAHCO HOUSE BEAUMONT ROAD BANBURY OXON OX16 7TB TELEPHONE: BANBURY 57461

Sole Irish Agents CLIMAVENT LTD. 29 North Brunswick Street, Dublin 7. Phone: 776615 Telex: 31718
lity of system design previously only available in built up systems.

The design philosophy for the 39M has been to provide maximum individual component efficiency without surplus space requirements. This has been achieved by offering nine sizes of base components (coils, filters, humidifiers, mixing boxes, access sections), and 13 fan section sizes producing a mix/match facility of 25 possible capacity combinations.

The 39M has an air volume range of 3,500 m³/hr to 48,000 m³/hr with forward curved or backward inclined air foil fans, and operating pressures up to 250 mm wg.

Chilled water and refrigerant coils are available in over 100 variations of row fin spacing and circuiting options to match job requirements.

Completing the series at the larger end of the market are two models from the 39E range with nominal capacities ranging from 47,567 m³/hr to 101,930 m³/hr. These modular central station air handling units are perfectly suited for high-rise buildings, industrial plants, and shopping malls using multi-zone, double duct or single zone constant and variable air volume distribution systems. Modules are dimensionally uniform in each size and have predrilled flanges with identical hole locations, assuring complete compatibility between all components.

### Climavent

All Bahco's ABC air handling units are built up entirely from individual modules. Each module is an entity in itself, capable of performing its designed duty at maximum efficiency. For example, the fan unit, filter section, and heater battery are each quite separate sections and are put together like red, yellow and green building blocks. In all there are more than twenty of these modular sections in the ABC range.

This makes for complete flexibility of layout. Many shapes are possible. Individual sections can be stacked vertically or horizontally. By using deflector sections a U configuration is possible, so that the exhaust and supply air connections are adjacent to each other at the same end of the unit. A Bahco ABC ventilation unit may be twisted through six or seven different directions. In fact, the number of permutations has not yet been charted.

In practical terms, Bahco's ABC can cope with whatever restricted space is available for a plant room. There are now ten sizes of ABC (sizes 0-9) giving a choice of air flow from 0.25 m³/s (450 cfm) to 23 m³/s (50,000 cfm). This means that the ABC range will provide a complete air conditioning service for anything from the board room to a huge factory complex.

The ABC also incorporates duty overlap. Adjacent sizes overlap with one another in the amount of air they are capable of shifting for any given amount of time. This ensures that the unit chosen will neither be too big nor too small for the intended function. Thus, specifying engineers and authorities can be certain that there will be a unit of the right size to provide high operating efficiency and economy for every duty.

While all ABC sizes are available in modular sections, it is possible to have a fully assembled packaged unit as an alternative. These integrated units usually comprise mixing dampers, filters, heating coil and fan in the smaller sizes of ABC.

It is not surprising that the ABC is described as an air handling unit which treats air with the respect it deserves. Prices are competitive and delivery normally takes six to eight weeks. Bahco equipment is available from Climavent Ltd.
THE TRANE TECHNOLOGY OF A LIFETIME
is compressed into these UNITARY air conditioners.

For nearly a century TRANE engineers have demonstrated time
and again their technical ability to design and manufacture some of the world's
largest and most complex refrigeration and air conditioning machinery.

Now, TRANE has put this expertise
into its 7 kW to 60 kW UNITARY range.

For all airconditioning installers needing
7 kW to 60 kW equipment,
TRANE has a story worth listening to:
TRANE offers you, not only the experience and technical support you've
grown accustomed to expect, but also a wide range of products that should
meet nearly all your air-conditioning machinery requirements in the
7 kW to 60 kW UNITARY range.

Products
- They are built in Europe (1)
- With as far as possible European parts.
- They meet European codes and English standards,
- Designed on a modular concept, using common parts wherever possible.
- The design focuses on weather protection and aesthetic appeal,
- With the sound levels reduced to an economic minimum.

Service
- Most products are held in stock.
- Deliveries can be made in the shortest possible time to any site in the country.
- The products and parts are guaranteed
- 8 offices in the U.K. and Eire, are ready to give you every technical assistance, one of them near you.

(1 except the Computer Room units which are manufactured by TRANE, USA)
A Total Capability in Residential, Commercial and Industrial Heating Plant. Representing exclusively in Ireland the following.

**CHAPPEE**

Domestic: Duel fuel boilers 55,000 to 250,000 btu/h

Industrial: 300,000 to 5 million btu/h

Also full range of Francia Hoval steel panel radiators.

**Allen Ygnis**

Hot water boilers 400,000 - 24 million btu/h

Steam Boilers 250 - 2,400 lbs/h

Combination boilers 250,000 - 2 million btu/h

**Sime**

“Rio” Domestic and Commercial oil fired boilers 60,000 - 604,000 btu/h

Rio Gas Boilers (Atmospheric Type) 60,000 - 400,000 btu/h

**Benton**

Space Heaters 150,000 - 1½ million btu/h

**Blown Gas Burners**

60,000 - 24 million btu/h

**Schwank**

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

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

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

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