Water Treatment and Boiler Descaling

- Energy Conscious Control Systems
- DL's Energy Report
- Air Conditioning

Published by ARROW @TU Dublin, 1982
ELECTRIC HEATING ADDS UP TO BETTER BUSINESS

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

- Low Capital Cost — extra important when money is scarce.
- Simple Installation — minimum disruption to your business.
- Economical — takes full advantage of the cheaper non-peak rates of charge.
- Space Saving — no flues, boiler house or fuel storage.
- Clean, Controllable — makes for a better working environment. Control is automatic.
- Secure — electricity is generated from a variety of sources. So you are less susceptible to particular fuel shortages.

INVESTMENT IN FUTURE SECURITY

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

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

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

For further information contact your nearest ESB Office. There's a team of specialists just waiting to put you in the picture.
GAS SHOW ALREADY A SELLOUT

To celebrate our 21st year of publication we decided to promote Gas Ireland, an exhibition which we knew would be needed in the industry to help promote the many companies who have either recently gone into gas and allied equipment or who were already established but wanted to further promote themselves in a time when there is so much discussion and planning for natural gas and the further use of LPG in our industry. The response we got was unbelievable and within two weeks we had already sold out the first area that we had planned to confine the show to. So now we have taken some extra space in the Burlington and can now accommodate those who are just finding out about the show and are keen to come in. We will be publishing the list of those who have already booked the show in next month's issue and from this list you will see that as the advertisement says “IF your business involves gas then Gas Ireland is the place to be.”

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• Our cover this month is a photograph of Dublin County Council’s New Swords water treatment plant catering for a population of 25,000. The photograph is by kind permission of Harper & Fay Ltd, the contractors on the project.
People in the trade are aware that Myson Ireland Ltd. has recently undergone a restructuring designed to provide for a more efficient service for their customers in Ireland.

From 1st January 1982 Myson Ireland Ltd. operates from new premises at Newcastle West, Co. Limerick, which is known as the location of Scanglo International Ltd., a sister company within the Myson Group and one of the largest and most successful producers of hot brass stampings including radiator valves. The change of location will in no way impede their ability to service requirements for the range of Myson products, fan convectors, radiator valves, circulators, boilers and radiators.

Managing Director of Myson Ireland Ltd. is Sean Hanratty and sales will be the responsibility of Eddie Cahill, Sales Manager. Ciaran MacDermott has been appointed Technical Sales Representative and they will naturally be pleased to provide every possible assistance with regard to the Myson range of products.

Scanglo International
As mentioned already Scanglo International is part of the Myson Group and after twelve years in existence, is now the leading supplier of radiator valves in this country and has captured a phenomenal 40% of the U.K market. Set up in 1969 at Newcastle West with an initial workforce of 75, the company now employs 150, the majority of whom are female. A skilled and dedicated work force backed by the most advanced machinery and equipment, the plants output has increased dramatically over the years.

In fact the company has since its inception increased output in the radiator valve area from a figure of 500,000 to two and a half million.

According to Mr. Sean Hanratty, who is Managing Director with the company, one of the main reasons for Scanglo International's astounding success, apart from a dedicated work force, incorporating a variety of industrial skills was the fact that the firm was acquired by Myson — the largest heating and air-conditioning company in Britain.

"This has had its peripheral effects as far as markets are concerned", said Mr. Hanratty, who pointed out that the company had now developed a thermostatic radiator valve in Newcastle West which was tested to the very highest British standards and undoubtedly one of the best of its kind in the market place. It was also, he pointed out, contributing substantially to energy conservation in this country.

Pilkington to Re-organise
Pilkington is to merge the operations of two of its insulation contracting subsidiaries in the UK: Hastie Insulation Ltd. and the Kitson's Group.

Kitson's is already the largest insulation contractor in Britain's heating and ventilation market. By complementing Kitson's capabilities with the industrial insulation expertise of Hastie, the merged companies will be able to offer the most comprehensive range of insulation services available to industry and commerce in the United Kingdom and abroad.

Cosworld Insulation Ltd., the Pilkington insulation contracting company specialising primarily in home insulation, and Hastie Insulation (Ireland) Ltd., of Drogheda, will continue to operate independently.

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LETRERS

The following is a letter recently received from Coal Distributors Ltd. in reply to our November article on coal distribution.

"Dear Sir,

Your November issue included an article on coal distribution containing clear errors.

In the first instance, we do not have a shareholding in distribution companies in all major cities and towns in the 26 counties. Companies with shareholding in this company (I might add that none of these are majority shareholders), do have interests outside the immediate operational area of Coal Distributors, e.g. Cork, Waterford, etc.

You referred to times of scarcity when importers give preference to their own domestic customers. In the case of this company, there was only one real time of scarcity of supply which was during 1979. This followed a crisis in oil imports leading to a quadrupling of the demand for coal almost overnight. In those circumstances this company was forced to introduce a system of allocation and this system was applied equally to our domestic customers as to our wholesale customers.

Our disagreement with the National Prices Commission during 1981 arose over an original decision of theirs to allow less on price increases for our own deliveries than on our wholesale sales — quite the reverse to what was evidently the logical outcome. Our presence in domestic deliveries is a help to ensuring the control of bell retail prices. The Bellmen deliver more coal to the final consumer than does this company but the prices charged by them have been higher than ours.

I hope the above points help to clarify the November article as published.

Yours faithfully,
S. Cormican
Managing Director
Has the edge over all other lagging.

To appreciate our belief that the new Crown Pipe Insulation is superior to any other alternative, you'll need the latest Fibreglass brochure. You can then see the unique heat-conserving Z-lock joint on the opening edge of the thicker walls.

And examine full-colour photographs that show how long glass fibres are finely interwoven to combine a high tear strength with a density which resists compression. And read about the hundreds of sizes available - each of which will comfortably insulate temperatures as high as 540°C.

The latest Fibreglass brochure will give you the proof you need to share our belief that Crown Pipe Insulation is the most advanced pipe insulation ever produced.

Please send for it.
Or if you really want to be convinced, ask Maura Kirby at our Dublin office for a free sample.

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the best way to say insulation

Fibreglass Limited, 21 Merrion Square North, Dublin 2. Telephone: Dublin 767060 and 762395

A subsidiary of Pilkington Brothers PLC.
Dimension D may be reduced depending on boiler length

Dimension C may be reduced depending on boiler length

Ideal Britannia boiler with stoker (hopper model)
New Specialist Tank Company

The amalgamation of the combined talents of Alec Florence and Sean Doyle has brought about the setting up of a new company, Storage Tanks of Ireland Ltd. Although the name is new the company has many years of experience through its two directors, Alec Florence having many years experience in Consulting Engineering practice followed by five years of running Sprinkler Tanks of Ireland Ltd and Sean Doyle who has run BTR Tanks for many years. The idea behind the company is to supply a specialist service to the industry from a company solely involved in tanks. In fact the directors claim that theirs is the only company in the country solely involved in supplying tanks.

STI Ltd handle three ranges of tanks, Vulcan, NEI Horseley Bridge and Decca Plastics with large stocks of the latter being available through major builders providers or direct from STI Ltd. More product information in the Water Treatment Feature.

For further information contact Storage Tanks of Ireland Ltd. Tel: 450135.

Changes in HTIL

Following the agreement between Hall Thermotank Ireland Ltd. and Delta R A Ltd. HTIL will distribute and market Deltaclima air conditioning equipment in Ireland. HTIL also recently announced considerable reorganisation which they feel will make them better placed to increase their market share of business and provide a better all-round service.

The company’s activities cover a wide spectrum encompassing refrigeration contracting, supply of spares for Hall, Sterne and Grasso compressors and other refrigeration components, the servicing and maintenance of refrigeration and air conditioning plant and the distribution of Deltaclima and Qualitair packaged air conditioning equipment together with the supply of Hall-Thermotank Products Ltd. cooling towers, water chillers and air distribution louvres.

The company is now headed up by Hamish Hunter who has been with the HT organisation for some 10 years. The contracting and product selling activities are managed by Colin Huggett while all service, maintenance and spares business is run by Freddie Barber. Philip Barber is responsible for product selling to the trade while Gerry McCrudden looks after the day-to-day business of sales sales. Competent design and service engineers provide the technical back-bone of what is regarded as one of the foremost companies in the refrigeration and air conditioning industry in Ireland. The service engineers are in-house trained and strategically located throughout the country.

Hall-Thermotank Ireland are keeping abreast of developments in heat pumps and are presently installing a custom built system which will provide hot water as part of the heating system for an abbey. The installation is made all the more interesting by the fact that the compressor will be driven by a water turbine and the evaporator coil will be submerged in the raceway.

Hall-Thermotank Ireland Ltd. are therefore very much in the refrigeration contracting field and, while not at all being contractors for air conditioning, they are the source of reliable and competitive products which will be of interest to air conditioning contractors.

CIBS Lighting Division Conference

Registration forms with provisional programmes are now available for the CIBS Lighting Division’s National Lighting Conference 1982 being held at the University of Warwick from 5th-7th April. Registration commences on the evening of 4th April when delegates can meet informally over a buffet meal.
If your business is involved with gas then **GAS IRELAND** is the place to be next JULY.

**GAS IRELAND** is a major new exhibition being promoted by **IRISH H & V NEWS** to celebrate its 21st year of publication. It will also be run with a one day conference with important speakers from the gas industry. The exhibition will be the main platform from which many new products and ideas will be launched and is a must for everyone involved in the gas industry.

**VENUE:** Burlington Hotel  
**DATES:** Tuesday 6th and Wednesday 7th July, 1982.  
**OPEN TIMES:** 11am to 8pm daily.  
**ADMISSION:** By invitation to Consulting Engineers, Architects, Contractors, Specialist Gas Engineers, Energy Managers, Plant Engineers, Specifiers and Buyers.

Further details from ITTEX Ltd., 57 Main Street, Blackrock, Co. Dublin. Tel: 885001.
More than 8,000 Corporation homes in Dublin are still without the basic facility of a bathroom.

Because it would cost "millions", Dublin Corporation can do nothing to relieve the situation.

Throughout the city, there are more than 5,000 houses and 3,000 flats without bathrooms; but with each bathroom costing an estimated £5,500 to provide the final bill would be over £40 million.

Because the money needed was not available, Dublin Corporation says it is not feasible to consider the programme.

Instead, city officials say that tenants could avail of the home improvements grants to carry out the work themselves.

When councillors were given the details at a meeting of the Housing Committee recently, Councilor Paddy O'Mahoney argued that the Corporation should, at least, make a start on providing bathrooms.

It was important that the Corporation go ahead with some programme, even if it meant only providing ten bathrooms a year, he said.

Councillor Tony Gregory said he was shocked to learn that such a high number of homes in the city were without "this basic facility".

It was agreed that the matter be raised again when the Corporation's estimates were being prepared.

HEVAC Sponsorship

The Committee of the Irish branch of the IDHE have asked us to point out that Hevac Ltd., were one of the sponsors of the recent IDHE Convention. Their name was inadvertently left out of the list of sponsors published in last month's issue.

More Industries rely on Fulton than any other boiler

- Simple and efficient
- Proved in over 60,000 installations
- Low capital cost
- Low installation cost
- Low running cost
- Low maintenance cost

Get all the facts... then get a FULTON

A.P.V. (IRELAND) LIMITED

Galvone Industrial Est, Limerick, Tel: 061/45211. Telex: 26923
New ATS Telemetry Base

Automation and Technical Services (Telemetry) Ltd., a leading independent telemetry specialist based in Haywards Heath, Sussex, have expanded into the growing market in Ireland for remote control and monitoring of industrial plant.

ATS have established Automation and Technical Services (Ireland) Ltd., headed by their former Chief Engineer Alan Rouse, to provide sales, service and support facilities to the Irish Republic and Northern Ireland. The new company is based in Drogheda, Co. Louth, and has plans to also manufacture in the future.

Head of ATS Telemetry, Norman Holden, identified the potential in Ireland for their range of products, which use telephone lines or radio links to communicate between sites. The equipment is used extensively for monitoring and controlling water, electricity, gas, oil, radio and T.V. installations, but is increasingly being used for energy management, fire and security systems and a wide range of other applications. The product range extends from point-to-point links to sophisticated computer-based schemes, supported by fully flexible conversational software, enabling their use by unskilled operators.

S & P Coil Products in Heat Recovery

S & P Coil Products has signed an agreement with American energy conservation specialists Des Champs Laboratories Inc. to market a range of economical, high efficiency heat recovery units. The agreement gives the company exclusive distribution rights within the UK, Ireland and some European territories.

The Des Champs products are a range of modular, air-to-air heat recovery units called Z Duct. This system has been successfully applied to thousands of heating and ventilating and industrial process installations in America. A very simple system with relatively low initial cost, Z Duct has provided very rapid pay-back periods for many industrial process applications with efficiencies up to 70 percent.

With the addition of the Z Duct air-to-air system, S & P Coil Products now has a wide range of heat recovery technology including run-around coils and heat pipes.

S & P Coil products are distributed in Ireland by Finheat Ltd.
Join the top brass.

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

Sanbra Fyffe

Everything On Tap For Plumbers.
Southern Branch of IME Visits Belfast

The Northern Ireland Branch of the Institution of Mechanical Engineers played hosts to their counterparts from the South of Ireland on a recent visit of the Southern Branch to Belfast.

The party, led by Dr. Kelly, Chairman of the Mech. E. and D. Kenny Chairman Elect of the I.E.E., were welcomed to the North by Professor Blair, Chairman of the N.I. Branch.

The visit commenced with a tour of the De Lorean car factory outside Belfast followed by a buffet reception the same evening at Queen's University.

W. Stafford, Managing Director of Davidson & Co. Ltd. (Sirocco works) acted as host on the Saturday morning when the Committee of both branches toured Sirocco works followed by a most pleasant lunch. Following lunch the party toured Alexander coach works and then the Glens of Antrim in a new type bus specially loaned by Ulster Bus for the occasion.

It was unusual for both the North & Southern guests to see the well known scenic spots of the Glens and the Antrim Coast Road under six inches of snow which at this time of the year added unusual beauty.

The visit concluded with a small dinner party in the Ballygally Hotel, when all agreed that the visit had done much to cement the relationship between the two branches.

His many friends will be glad to hear that Bill Caughey of W.H.C. Industrial Promotions Ltd. is well on the road to recovery after a very severe and sudden illness. No doubt when the exhibition season starts, Bill will be once again in the thick of it.

Following a “lock out” of the receiver by the workers at the Princes (Sirocco works) factory at Culcavey near Hillsborough it would appear that the company may survive its present crisis.

The company which specialises in the fabricator of double skin insulated district heating pipe and chimneys has apparently possible large orders in the “pipe line” which may result in a standing off of the duties of the receiver.

McGregor & Manning Ltd., Connowater Industrial Estate Belfast 5 have been appointed agents/distributor for Vogue bathrooms.

The move will enable builders merchants in the Greater Belfast area to keep their own stocks to a minimum, while at the same time getting a better delivery service from the new locally based distributor. Mr. Murphy, a Director of McGregor & Manning will be responsible for this side of the company’s activities.

J. & T. Baleentine (Sales) Ltd. have been appointed agents for ECS — Energy Conservation Systems Ltd. and will handle the complete range of their lighting control products.

Northern Ireland sole agents for Kent Instruments, Kent Meters, Foster Cambridge Electronic Instruments, Geo Kent Electronic Products Ltd. — Messrs. D. D. Butler Ltd. 34 Roughfort Road, Mallusk, Newtownabbey, telephone is now Glengormely (02313) 42133/4.

The Royal Society of Ulster Architects, through their Energy Committee have arranged a series of meetings with the theme “Energy in Buildings”. The lectures will be:

- January 21st — A case history of designing a building of energy conservation.
- February 8th — Insulation of buildings for cold climates and its attendant problems.
- March 1st — An introduction to heat pumps and their application.
- March 2nd — Basic principles of solar energy.
- April 19th — Predictive techniques and methods of calculation for the value.

The lectures at £2.50 each (including VAT) or £10 for the complete series will be held in the Castlereagh College of Further Education, Montgomery Road, Belfast.

Applications and full details from Robin McKelvey, Convener Energy Committee R.S.U.A., 51 Malone Road, Belfast.

Booking is now commencing for the Northern Ireland Section of the Institute of Energy Home Heat Exhibition.

The exhibition to be held in the
Granville Nugent Hall adjacent to the Kings Hall, Balmoral, Belfast, will feature all types of domestic heating and the equipment associated with it.

Held in conjunction with the Building Exhibition taking place in the Kings Hall the show will be open to the public in addition to the thousands of complimentary invitation sent to builders, architects, consultants, heating engineers etc. The exhibition will run from Monday 22 Nov. to 26 Nov. 1982 and will be organised by W.H.C. Industrial Promotions Ltd. from whom full details can be obtained at Bluestone House, Drumhirk, Newtownards, Co. Down, telephone Newtownards 812577 or the Hon. Sec. of the Institute F. R. McBride, telephone Belfast 63694.

The Culloden Hotel was the venue for a seminar on the application of the heat pump for central heating and the building of timber framed houses. The seminar consisted of a series of talks, films and slides dealing with the subject Organised Thermal Energy Control and was sponsored by Chieftan Industries and Oliver Homes.

W. J. Hogg & Company Ltd., Engineering Agents specialising in heating and air conditioning equipment have moved to new premises at 2 Lower Kilburn Street, Donegal Road, Belfast, BT12 6QS and their telephone number is (0232) 47668.

Alan Coote has been appointed Regional Sales Manager for Thermocomfort Ltd., the Royal Dutch/Shell Group company. He is responsible for domestic sales of the Shell cavity wall insulation system throughout Northern Ireland and the Isle of Man.

Belfast born and educated at Ballyclare High School, he started his career by building up his own supermarket and wholesale food business. After this, he was Field Sales Manager of Empire Stores in Ballyclare High School, he started his career by building up his own supermarket and wholesale food business. After this, he was Field Sales Manager of Empire Stores in Northern Ireland form 1972 to 1979 and then spent two years as an associate of Hambro Life before joining Thermocomfort as Training Manager.

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**Yes.**

**But We Start Here And Advance**

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Published by ARROW @TU Dublin, 1982
Energy and Economics

Apart from the big operators in the heating and ventilation industry, who have to interest themselves, the general state of the Irish economy does not mean too much to the remainder. For one thing it is usually dressed up in high faluting language and by the time one gets over the jargon like "current budget deficit", "multiplier effect" or "knock on effect", it becomes increasingly difficult to understand how exactly it effects the normal "Joe Soap". When the economics expert from a prestigious body, together with an employer, union representative and politician gets on the T.V. to explain the facts to Joe Soap, he ends up by turning the goggle box off or reaching for the nearest box of Anadins. All this is, however, unfortunate because the very decisions taken by the Government on economic matters affect all of us. The decision to spend money borrowed, and in turn give it in the form of wages to Civil Servants, may help T.V. shops sell the latest video cassette recorder, but will not help the building industry or the heating and ventilation industry, because it will take from spending on sewage, schools and houses. If no houses or schools are built it will not help radiator sales, boiler sales or cement sales. If economic decisions are bad ones they do effect the whole community. That they are the perogative of a small group of people like the Cabinet and Senior Civil Servants in the Department of Finance is not good. One group had generally no training in economics or business matters, their main concern being that of elections. The other group have economic training but also permanent and pensionable jobs and can if necessary, cover up any mistakes by saying that it is the politicians who have the final decision. This is true, as it is also true by saying that it is they who give the advice.

That we all get in a dither about January of every year, in anticipation of the budget, is ridiculous. Agreed, it helps the cash flow in January of some businesses like cigarettes and drink, it adds to the income of the T.V. commentators, it helps pub discussion on the merits or otherwise, on the increase of the pint or the half one, but it does nothing for economic planning. If, as is the case, every business is advised by banks, Harvard Business types and other such business educationalists, as to the importance of planning with the annual budget and the 3-5 year plan, together with cash flow and net profits, why then should the biggest company of all - Ireland Ltd. - be exempt.

ANNUAL JAMBOREE

Therefore is there not a case that we scrap the annual jamboree of a budget, or at least allow it if the Government of the day has a plan and the budget is to report on this plan. It might save us from the almighty mess we now find ourselves in. There is a considerably body of opinion who share this view. The problem is that it is not the politicians and it is they who have the power. To keep power it is necessary to be elected. To get elected you need to implement new programmes or schemes. You get no thanks for making existing services more efficient or scrapping existing services, so you do nothing. If you doubt me, well what about N.E.T. and C.I.E. This of course is a bad thing. We should judge our politicians on their success in reducing their Department borrowing, like we reward somebody who saves overheads in the running of a company.

ENERGY POLICY

If you think we have planning, I would ask you this question — Since the formation of the Department of Energy, have we had an energy policy? Have the number of politicians who held the brief of the Department of Energy given us a comprehensive policy on diversification of our sources of energy, or a comprehensive conservation programme? Have we an energy policy spelt out for the next ten years as to where we are going to get our oil, how much we are going to diversify from oil into coal, what we are going to do about our indigenous sources of energy, where does biomass fit in. On conservation? Have we a policy with regard to existing houses and the need to bring them up to adequate standards of insulation? Have we any energy conservation policy with regard to office and high rise? Have we any policy with regard to the agricultural buildings? Have we any policy with regard to transport? Re-

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* Based on expected January-March imports assessed on the basis of demand in the first quarter of 1981. ** Net exporter.

Source: IEA
BS 864/2 COMPRESSION FITTINGS
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  Output 5,300 B.T.U. to 20,000 B.T.U.
* Vertical Discharge — 1 size — 1 model.
  Output 6,300 b.t.u./h to 10,000 b.t.u./h.
* High level discharge — 3 sizes — 1 model.
  Output 5,500 b.t.u./h to 20,000 b.t.u./h.

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

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

## MYSON

### MADE IN IRELAND

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WE CHALLENGE YOU TO FIND A MORE RESPONSIVE VALVE

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

## MYSON

### CIRCULATING PUMPS

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

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Energy Conscious Control Systems for Domestic Central Heating

by J G BRICKENDEN MIDHE

The first article in this series — "Efficient Control of Central Heating Boilers" — discussed some factors affecting the efficient application of automatic and solid fuel boilers to domestic and smaller institutional/commercial buildings. Due to an error Paragraph 5 to 15 should not have appeared there in the article but where it was repeated at the end of the article on page 19. Much has been said about reduction of heat losses and a great deal of money has been spent on structural insulation and draught proofing but there is now a general realization that the savings expected are not achieved without proper system control.

Although individual manufacturers have promoted items of control equipment or control packages, there has been no integrated approach to the overall question of effective control systems and some of the equipment advertised is not always applicable to Irish conditions. Traditional contractor resistance to controls along with the absence of training and standards in the heating trade have obscured an untapped market and also propagated a lack of confidence in prospective customers. Even commercial control installations were often badly designed, incorrectly commissioned and nobody knew whether they ever worked properly or not.

This puts forward a new philosophy — a totally new approach to control application for smaller commercial and most domestic central heating installations. Step one had to define an "Ideal Control System" and step two had to find a practical method of applying these ideals to existing and new installations in an acceptable form.

An "Ideal Control System" might fulfil the following performance requirements:-

(1) Precise control for individual rooms ranging from "OFF" to "background" and "comfort" temperature levels.

(2) Domestic hot water temperature controlled intelligently.

(3) Choice of timed set-back or intermittent heating.

(4) Use to be logical, easily understood, requiring minimum householder intervention or vigilance.

(5) Optimum fuel economy.

(6) Minimum electro-mechanical complexity of installation and maintenance/service requirement.

(7) Boiler/burner cannot function unless there is a specific demand for heat for space heating or hot water.

(8) Standby or residual heat partially recovered, stored and utilised.

(9) State of the system to be readily discernible at any time.

(10) Zone control of bedrooms or special circuits.

(11) System to be capable of upgrading at a later stage.

(12) Suitable for retrofitting to existing installations as well as new.

However most available control systems fail to meet the standards of fuel and comfort efficiency now required. Those providing maximum fuel efficiency fail to provide optimum comfort and ease of use. Moreover they are too complicated for installers, potentially un-reliable and relatively expensive. Those providing optimum comfort and convenience at reasonable cost eg. thermostatic radiator valves on all radiators and direct thermostatic control of the domestic hot water fall because they cause short-cycle firing of the boiler during low and no-load...
ENERGY CONSCIOUS CONTROL SYSTEMS

conditions.

The second step philosophy had to overcome the traditional confusion — amounting at times to animosity — between heating contractors, electrical contractors, builders and even householders. The householder usually had very little say in the matter as components/systems were determined by whatever the merchant happened to stock. The householder should have the option of a good control system when he discovers (later) that he needs it. Solid fuel boiler interlinks or other house improvements or replacements are seen as an ideal opportunity — perhaps even a "once only" opportunity — to adapt present oil or gas-fired systems to meet future exigencies. So the installer has to be ready with a suitable system that will make sense to the client.

Finally the system had to really work in the sense that installation/maintenance problems were foreseen and eliminated and that, on completion, the householder could actually see and understand the system functioning.

The IDHE in the UK have publicly criticised "those controls companies who are cashing in on the public's desire to save money on fuel and are using unscrupulous sales methods". There is a real danger that gimmicky systems will soon appear on the Irish market, promoted by cowboy operators. This could adversely affect the work opportunities and destroy credibility for genuine qualified installers offering effective systems.

The methods used in the description which follows have been used for some time in energy-conscious installations designed by the writer. The components comprising an entire control package for an installation will be available through specialist outlets so that the contractor has to deal with only one source for all controls. Some of the principles have not previously been applied to domestic heating — certainly not combined in an extendable package.

The ECS Energy-conscious Control System for Domestic Central Heating was originally conceived as a practical method of improving existing uncontrollable and wasteful "automatic" oil or gas-fired heating installations. The method had to avoid major re-work, be possible to complete in one day and be compatible with all typical two-pipe layouts.

The system is intended to be complementary to Thermostatic Radiator Valves and the philosophy is based on:

(a) Simple standard wiring provisions, installation, checking and maintenance.

(b) Maintaining optimum fuel efficiency/comfort levels with minimum householder intervention.

(c) Equal suitability for retro-fit or new installations.

There are five energy-conscious "elements" in the system but it may not always be practical or desirable to use all five, especially in retro-fit jobs because of installation difficulties/variations. In new installations the essential first-fix wiring requirement is simply to run four wires and an earth from a moulded plastic box in the boiler house to another similar box in the cylinder area, via a timeswitch preferably in the kitchen and a fused power supply.

The five "elements", starting off with the essential basic wiring described as "0" are:-

0. Timeswitch control only using a temporary twin-switched socket outlet in the boilerhouse, can be used for test running the installation.

1. TRV Flow Sensor. This is the important prime component which switches off the boiler when heat is not required even when the timeswitch is "On". A manual adjustment allows it to be set for optimum

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1. TRV Flow Sensor. This is the important prime component which switches off the boiler when heat is not required even when the timeswitch is "On". A manual adjustment allows it to be set for optimum
economy/comfort requirements.

2. Residual Heat Recovery Unit. This saves part of the heat remaining in the boiler and circulating pipework at the end of a heating period — which would usually be lost up the chimney and to the boilerhouse. This recovered heat may be (a) distributed to any "ON" radiators, (b) used to boost domestic hot water or (c) used to preheat the cold supply for the domestic hot water. (A separate preheat tank or cylinder can double as a solar preheater). Consequently the time-switch can be set to switch off earlier.

3. Remote Timeswitch Over-ride. This encourages a more conservative timeswitch programme because a temporary boost is available with no need to remember to reset the timeswitch. Additional wiring is required to push-switches but the module is "add-on" and fits within the box in the cylinder area.

4. Pump Saver. This is an "add-on"/"plug-in" module which switches off the circulating pump for about 96% of the time that heat is not required during the timeswitch "ON" period. It can be added to Element 1 at any time and operates by switching on the pump for 10 seconds every 6 minutes thereby allowing the TRV Flow Sensor to sense a call for heat; the pump remains on until the call for heat is satisfied or until the timeswitch goes "OFF".

5. Information Centre. This is a small panel, preferably mounted visibly beside the main timeswitch in the kitchen, having indicator lights to show the state of the system/installation at any time. The lights show:
Timeswitch/Recovery — Uses basic wiring.
Oilburner/Water Hot — Additional wiring required at time of installation.

The total system is integrated within either one or two boxes/wiring centres (One for element 1 and 4, or two if elements 2 & 3 are used). These are deep (50mm) moulded boxes to which are fitted specially modified twin switched socket outlets. Flat-pin plug-tops with 2A fuses and indicator lights simplify installation, checking and maintenance. The electronic circuitry is on printed circuit boards (PCB's) attached to back of the socket outlets and protected inside the box. The electronic circuitry can be over-ridden for testing or in the event of component failure by means of the socket switches. The switches are normally off and have not other purpose, but this ensures that heating can be maintained except in the event of pump or boiler failure.

Repairs to electronic components are effected by exchanging PCB's.

Potential savings are related to the householder's lifestyle and to the level of inefficiency of the system before improvement. It is apparent that people tire of constant vigilance and that most heating installations, having no effective controls are very wasteful.

Well insulated draught-proofed houses especially require effective controls in order to realise optimum savings without loss of comfort efficiency. It is apparent that radiators and boilers are usually found to be oversized as soon as houses are thermally improved.

The TRV flow sensor may be used with any pumped two-pipe system and is a practical, simple, economic and effective way of improving
options requiring additional printed circuit boards including:
(a) Auto pump speed changing.
(b) Auto by pass control (for low water content gas boilers).
(c) Residual heat extraction.

Residual Heat Recovery Unit
When the timeswitch switches off the oil-fired boiler at the end of a heating period, the boiler itself, much of the central heating pipework and the circulating water is still very hot. Most of this heat is usually lost to waste as the system cools down.

In many systems with small DHW cylinders when generating DHW only, the amount of heat lost as above is about equal to that required to heat the cylinder. Consequently, assuming a combustion efficiency of 75%, the overall efficiency can never exceed 37%. In reality this figure is much lower due to poor pipe insulation and poor controls.

The RHRU maintains the circulating pump (and a motorised valve if fitted to the primary circulation) after the timeswitch has turned the boiler off, but only until the boiler and pipework temperature has dropped to the same temperature level as the DHW. This way from 20%-40% of the residual heat is recovered and saved.

It will be apparent that very large and well insulated DHW cylinders (storing enough hot water for say 2 or 3 days supply and having a large thermal capacity in relation to the boiler and its associated pipework) contribute to high efficiency DHW generation. This is because the boiler has to heat up only once every 2 or 3 days.

The RHRU can make a worthwhile saving with typical small cylinders: obviously the saving is improved with larger cylinders.

A more sophisticated version of the RHRU, requiring an additional motorised valve and cylinder modification, uses part of the residual heat to increase DHW temperature and most of the remainder to preheat the incoming cold feed water.

The principal benefit of the RHRU is energy efficient cheap domestic hot water. Additionally, during the heating season, the RHRU allows the central heating to be timeswitched off at least 15 minutes earlier, because the residual heat is distributed to the radiators after the burner has stopped.

Remote Timeswitch Over-ride
In order to save fuel with automatic domestic central heating, the timeswitch should be set to switch off as early as possible. On a cold night or if later heating is required, it would be convenient to over-ride the timeswitch for a present time period, from several remote positions. This is arranged by means of a special electronic timer which can be supplied initially or added later. Any number of remote operating positions can be used. The timeswitch reverts automatically to its normal program as the timer times out.

There is an obvious saving if the heating stops 30 minutes or so earlier most mornings and evenings. It can obviously be used also for an economical midday boost.

Summary of ECS System Benefits

New and Existing Installations
1. Standard control package of known cost reduces heating contractors risk.
2. Minimal stocking — basic package suits all installations.
3. Minimal wiring to a simple standard plan.
4. Final connections to boiler, pump etc. by flex and plugs with neon indicators.
5. Need for co-ordination of electrician and heating contractor virtually eliminated.
6. Commissioning, testing and maintenance simple/fast by standard check routine.
7. Basic package has future add-on facilities for additional convenience/economy.
8. Summer hot water cheaper than Electric immersion group.
9. Attention or vigilance not required of householder because of simple logical operation.
10. 15%-30% and more savings depending on how bad initially.
11. Once commissioned no further attention or adjustment required.
12. Even "generous" timeswitch settings cannot waste much fuel.
13. Rooms and domestic hot water at the temperature wanted with minimum fuel consumption.
14. Ingenious sensitivity feature switches off the boiler earlier on warm mornings, as the weather changes in Spring and Autumn.
15. Takes maximum advantage of natural solar gain and other free heat.

Improving Existing Installations — 1 to 15 above plus:
16. Virtually the only cost effective

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DOI: 10.21427/DTK149

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method of improving any existing two-pipe installation.
17. Complete installation including thermostatic radiator and cylinder valves is one-day job.
18. Savings can be "seen" at once.

Control Effective Control of Electric Domestic Water Heating
A well-designed/controlled oil-fired heating system is still the most economical method of automatic domestic hot water generation in summertime. However, consideration should be given to electric water heating in the following circumstances:-
1. Very small hot water requirements.
2. Indirect cylinder less than 40 gallons storage.
3. Poor design or control of oil-fired system.
4. Night and day rate meter already installed enabling cheaper night-rate electricity to be used for water heating.

There are several timeswitches on the market intended for electric water heating control. Ideally the water is heated only during the last 2 or 3 hours of the cheap night rate period in order to minimise costs and overnight storage losses. All can be manually overridden if extra hot water is required during the day but this will be at the more expensive day rate and the householder must remember to switch back to automatic.

A special ECS timeswitch has a boost button which reverts to automatic time control as soon as the cylinder reaches set temperature thereby removing the need to cancel.

An add-on internal module can allow one or more additional boost buttons to be strategically placed anywhere in the house. A built-in rocker switch selects "sink" or "bath" elements and indicator lights show which element is heating. The switch has a centre-off position.

Controlling Interconnected Systems
There are now many systems interlinking automatic central heating boilers with high output back-boilers, cookers, roomheaters and other types of solid fuel boilers. Apart from shortcomings of the boilers themselves, many installation defects and deficiencies are now being identified even in "good" installations. In the panic of 1979/80 little thought was given to overall thermal efficiency or convenience of control: these aspects are now recognised as complementary and necessary.

The ECS piping plan allows either boiler to be operated separately or together without the need for manual operation of valves. Thus everything can be automatic except stoking. The boiler not in use does not heat up so the back-boiler does not make the oil-fired unit into a wasteful convector or vice versa: this is important because the standby heat losses of an oil-fired boiler can be up to 3Kw thus swallowing up much of a back-boiler output.

The ECS Energy Efficient Control System is compatible with the ECS Piping Plan. This overcomes the conflict in control functions between automatic and hand stoked systems which commonly occurs with interlinked installations.

The next article in this series will discuss the possibilities for improving and controlling solid fuel boilers and interconnected solid fuel/automatic boiler systems.

TRAVELLING TO

EXPOCLIMA

Hevac 82?

National Exhibition Centre, Birmingham 24-28 May 1982

The twinning of Expoclima to the Hevac '82 exhibition combines the two top European shows to provide an event of outstanding international status. Special arrangements have been made by Irish H&V News to cover travel and accommodation. For further details contact: Victor Gibson, H&V News, 5/7 Main St., Blackrock, Co. Dublin. Tel: 885001.
Waste/Water Treatment & Boiler Descaling Review

Water Technology

Water treatment has come of age in Ireland with the development in this country (by an Irish manufacturing firm) of innovative technology linking the normal water purification techniques (such as filtration and ion exchange) to the rapidly advancing microcomputer technology.

Under the technical guidance of Dr. Bernard Creedon at their factories in Cork (now totalling 30,000 sq.ft.), Water Technology Ltd. is developing and advanced new concept called "Aquamonitor" which is "state of the art" in this field. Essentially, the package entails a deioniser which removes minerals and salts from water to produce a high quality water suitable as make-up for boilers and cooling systems or other specialised industrial processes. This equipment is erected "on-line" to a computer system (also made in Cork by a well known Multinational Firm) which assesses overall performance and operational details. A visual display unit in the supervisor's office enables him (between games of space invaders etc? . . . ) to judge, at a glance, the current situation, for example quality in/quality out/ current throughput.

Furthermore, daily, weekly and monthly reports are produced on site by the on-line printer. These details are retained by the computer (even in the event of a power failure) on special magnetic disks which may be filed normally - thus avoiding the usual avalanche of paperwork, charts and graphs. This system does not even require supervision by a programmer, as the entire package is fully automatic - even after a power failure.

At a recent public lecture in Cork, Dr. Creedon demonstrated some of the recent modifications possible - including voice control and radio-operation. These modifications are easily installed in existing plant as the basic system facilitates continuous improvement and customised arrangements. For instance, where the treated water is boiler make-up, details relating to steam flow, water flow, oil consumption, combustion gas analyses etc. would enable a complete energy review to be printed out daily, weekly or whenever required.

Equipment manufactured to date ranges from small domestic units for iron removal up to very large softeners and deionisers for industrial application.

Another development is a range of water conditioning aids including intelligent pH control, intelligent chlorine dosage etc. These units are unique in that they provide pH or chlorine adjustment in direct proportion to the instantaneous requirement, and are very cheap! In fact, pH controller, acid pump, alkali pump and probes with inter-connections have been installed for under £1,000.

Ex stock items also include water meter and pump combinations which provide "proportionate to flow" dosing by monitoring water/oil flow and dosage of appropriate level (pump marked in ppm) of chemical.

High quality water meters with built-in totalisers and remote display of instantaneous flow rate are also available. These can also be used to index or prompt process events (for example initiate regeneration of softeners).

This range of equipment and associated chemicals is backed up by engineering, chemical and electronic expertise.

Further details from Water Technology Ltd., Togher Industrial Estate, Cork, Tel: (021) 965600; Telex: 75191.

Portals Water Treatment

Water, effluent and process liquids treatment

Portals Water Treatment Limited, through its Permutil-Boby subsidiary, provides total water treatment engineering from consultation and design to installation, commissioning and operation of plant. The Company is one of the leading international contractors in...
DOES YOUR WATER BUG YOU? [✓]

DO COMPUTERS BUG YOU? [✓]

If your answer to these are yes and no respectively we may be liable to help you with AQUAMONITOR.

AQUAMONITOR is a comprehensive automatic system based on a water treatment technique of your choice, incorporating computerised monitoring and/or control:

- filtration;
- softening;
- dealkalisation;
- deionisation;

Our prices will surprise.

Water Technology Ltd. are manufacturers of water filters, ion exchangers and chemicals. We interface computers in monitoring/control modes to the equipment and have already delivered softeners up to 1,000,000 g/day, dealkalisers up to 250,000 g/day, deionisers up to 200,000 g/day. We also carry in stock the largest range of dosing equipment in the country, ranging from simple to intelligent control.

Our prices will surprise.

Water Technology Ltd.

30,000 square feet of factories, offices and laboratories in Cork.

Togher Industrial Estate,
Cork.
Tel: (021) 965600
Telex: 75191

Published by ARROW@TU Dublin, 1982
PERFORMANCE STANDARDS OF

TURBOMAG™

ELECTROMAGNETIC WATER CONDITIONING SYSTEMS

NO CHEMICALS    NO POLLUTION

WITHOUT REGARD TO THE CHEMICAL/MINERAL COMPOSITION OF THE SOURCE WATER OR THE APPLICATION, TURBOMAG WILL ACCOMPLISH THE FOLLOWING:

REMOVE EVERY TYPE OF EXISTING SCALE FORMATION FROM ANY SURFACE IN CONTACT WITH THE TREATED WATER. PRIOR CLEANING OR ACIDIZING IS NOT NECESSARY.

PREVENT FUTURE SCALE FORMATION AND WATER CREATED CORROSION.

PRODUCE THE EQUIVALENT OF "SOFT" WATER FOR ALL INDUSTRIAL AND COMMERCIAL APPLICATIONS.

THESE RESULTS ARE ACCOMPLISHED WITH NO ADVERSE EFFECT TO ANY SURFACE IN CONTACT WITH THE TREATED WATER.

TURBOMAG IS A NON-CHEMICAL, POLLUTION FREE WATER CONDITIONING PROCESS FOR THE REMOVAL OF SCALE AND THE CONTROL OF CORROSION IN ALL WATER SYSTEMS AND PIPE LINES.
its field and offers worldwide capability in water, effluent and liquids treatment for power generation, industrial manufacturing and process requirements.

Portals Water Treatment has specialised know-how in boilerfeed water treatment including pre-treatment systems, ion exchange plant technology and condensate polishing techniques. The Company has considerable experience in treatment water in many parts of the world, including the successful application of such processes as clarification and filtration for the effective removal of suspended solids, colour and organic matter from raw water and in effluent treatment at steel works, paper mills and similar industrial facilities. Its expertise covers the conservation of water and its economic use from supply to the discharge of final effluent.

The activities of Portals Water Treatment — Permutit-Boby include two specialist divisions, Stella-Meta Filters and Permutit-Boby Service.

Stella-Meta Filters
Stella-Meta specialises in fine filtration and the separation of solids from liquids. The Division’s filtration technology is employed in such diverse activities as gold extraction, fine beer ‘polishing’, food processing and water purification. Two of its best known products are the Stellar and Metafilter candle type pressure precoat filters.

Permutit-Boby Service
The Permutit-Boby Service Division is exclusively devoted to the service support of the Company’s plant. It operates an advisory service on plant operation for overseas customers backed by the supply of spares and, in certain circumstances, ion exchange resins to some 75 countries. The Division’s expertise includes the conversion of manual plant to automatic operation.

Further details from R S White Ltd.

Storage Tanks of Ireland

Storage Tanks of Ireland Ltd as reported in the news section of this issue have three ranges of tanks to offer:

1. Vulcan Tanks
These are cylindrical bolted sectional tanks available in either vitreous enamelled or galvanised finish with capacities from 1660 to 900,000 gallons. They are also approved for F.M. and FOC standards and widely used for sprinkler fire protection systems and are also used for process work. These tanks have been used by many County Councils including Cork and Mayo County Councils. Other users include Golden Vale and Mitchelstown Co-Ops, and they are widely specified by engineers throughout the country.

2. NEI Horseley Bridge
STI have been recently appointed agents for all Ireland for the NEI-Horseley Bridge range of GRP sectional storage tanks. These tanks are not only approved by the National Water Council but are also approved by all relevant water authorities. Capacities available are from 1000 gallons upwards.

3. Decca Plastics
This range of tanks fill the requirement for the smaller tank with one piece of GRP tanks from 100 to 2000 gals. Decca Plastics tanks meet the standard for galvanised units called for under B S Specification and are stocked by all leading merchants countrywide or are available direct from STI Ltd in Coolock Industrial Estate, Dublin 5, Tel: 450135.

A typical NEI Horseley Bridge GRP sectional storage tank available Decca Plastics

For all water flow measurement situations Prema means precision at competitive cost. ½ inch to 4 inch ex stock with BSP or BS 4504 table 16 flanges.

Nibco end feed solder fittings at a fraction of the cost of conventional compression fittings, are now available in Ireland. A full range of fittings and valves for the plumbing and heating industry, from the world’s largest producer of capillary copper tube fittings.

For catalogue and further information contact:

Noel J. Simpson & Co. Ltd.
(MECHANICAL DIVISION)
33 Leeson Close,
Lr. Leeson Street,
Dublin 2.

Telephone: 686709/767186/763748 Telex: 90541.

PREMA WATER METERS

NIBCO COPPER TUBE FITTINGS AND VALVES

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Peabody Water Services

Claiming the widest range of package water treatment systems in the UK, Peabody Water Services are currently enjoying a constant flow of export orders, many from the developing countries and Middle East.

They include modular drinking water plants and low-cost, high performance water treatment packages for soft drinks production for leading brand names in Nigeria. Also 5000 g/h capacity demineralising/ filtration plants, for power stations, with over 300 plants in operation.

In the UK motor industry, major car manufacturers are installing PWS packaged demineralising plants to provide purified water for cleaning and rinsing down vehicle bodywork and components.

The unrivalled technical competence of Peabody Water Services is reflected in the high engineering standards governing the manufacture of PWS packaged plants which are pre-assembled and fully tested in the works prior to despatch to site. These packaged plants can make any water source compatible with the demands of industrial processes and drinking water applications by the removal of various impurities including iron, manganese, organic matter, dissolved and suspended solids.

In many cases the continually rising cost of water purchase and disposal can be substantially reduced by PWS treatment of alternative sources such as borehole water, or by recycling and treatment of rinse or wastewater to reuse in differing processes.

Peabody Water Services are backed by the resources of the Peabody International Group, well known in the field of environmental engineering.

Further details are available from Peabody Water Services Ltd., St. John's Industrial Estate, Tylers Green, High Wycombe, Bucks. HP10 8HR. Telephone: (049-481) 5611, or local agent Serment (Dublin) Ltd.

Finheat

The choice of a suitable sectional tank is primarily dependent upon site conditions in relation to the volume of storage needed. The most economical tank is one constructed from plates 1,220mm sq. with flanges arranged externally. Braithwaite sectional tanks are site bolted but they can also be welded at site. Depths of tanks do not usually exceed four plates, but deeper tanks can be specially designed.

Tanks can be enlarged in length, width and depth as storage demands increase. Care must be exercised that foundations and supports are suitable for any additional loads that may be induced. The scope of Braithwaite sectional tanks can be increased by the use of special plates, baffles and division plates.

For the rare occasions when an externally flanged tank cannot provide a required capacity at a particular site, a tank with externally flanged side plates and internally flanged base plates or with internally flanged plates throughout can be supplied. Depths of tanks so constructed should not exceed three plates.

In addition to its obvious merits in relation to the configuration of tanks the sectional method of construction enables transportation costs to be kept to a minimum and for apparently uneconomic and unsuitable locations to be efficiently utilised for the storage of liquids.

The standard shop finish for Braithwaite Tanks is one coat of non-toxic black bituminous primer, this is intended to protect the components during transit. It is essential that tanks and structures be painted as soon as possible after assembly.

Site painting is not always necessary for galvanised tanks.

Further information from Finheat Ltd.

Foss Electric

Foss Electric (Ireland) Limited, as part of their water and waste treatment programme offer the very successful Sigmamotor range of automatic samplers and flowmeters. Extremely versatile, compact, reliable and highly recommended by each and every user.

New to the Sigmamotor range is the ‘Dipper Type’ automatic sampler.

Designed particularly for permanent treatment-type installations the unit has a range of features to cater for every requirement.

For Kjeldahl, COD, Phenol and Ammonia determinations the Buchi system offers rapid analysis, safety and ease of operation. Also suitable for wet digestion of samples prior to instrumental analysis and operates at all times without the need for a fume cupboard.

Polarography, dissolved oxygen, pH and conductivity are well represented by Metrohm with a reputation built on quality and reliability at a realistic price.

Perkin-Elmer announce the new automatic thermal desorption system for routine environmental monitoring together with their famous atomic absorption, ultraviolet-VIS and infra-red spectrophotometers.

The new ‘Microtox’ toxicity analyser system from Beckman complements their total
BRAITHWAITE

Sectional Tanks

- Ability to store almost any liquid
- Adaptable to special requirements
- Reliable & Strong
  Easily transported
- Unlimited range of capabilities
- New protective finishes

Economical, easy to erect, dependable, versatile and strong the Braithwaite Sectional Tank has all these features and many more.

If you have a liquid storage requirement call Finheat for a speedy answer.

FINHEAT LIMITED

17 Usher's Island, Dublin 8. Tel: 778109/778120/728431 Telex: 30751

EURENCO TANKS

Sectional water tank modular design. 1m x 1m and 1m x ½m panels. Erected by our own trained personnel.

Eurenco/Galglass liquid storage tanks, F.O.C. approved. Galvanised or glass lined. From 13m² to 1000m³ capacity in standard sizes.

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Vulcan Vitreous Enamelled and Galvanised Tanks.
F.O.C. & F.M. Approved Capacities 10 Cubic Metres - 5000 Cubic Metres.

Capacities 100 – 2000 Gallons Corresponding to Galvanised Tanks.

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TEL: 450135 TELEX: 24311
organic carbon analyser. The Microtox gives a reproducible quantitative measure of toxicity with a biological system in minutes instead of days. The system is based on the response of live luminescent micro-organisms to toxic solutions. The instrument determines the state of health of the organisms by monitoring their light output and may be directly compared to the 96 hour fish test. With its simplicity of operation and speed of results this system has a very wide range of applications.

**Tank Engineering**

Tank Engineering Ltd. are a recently formed Irish Company based in Dublin. Their main aim is to provide high quality professional service and products to the Irish liquid and bulk storage and associated markets. They can provide the client with a complete professional service, from the completion of the civil works associated with tank installation right down to supplying all valves, hydrants, and piping.

Tank Engineering are the Irish agents for "Sunbridge Liquistores" the design of which provides tanks of capacities ranging from 40m$^3$ (8,800 gallons) to 130m$^3$ (286,000 gallons). The standard range has diameters ranging from 3.82m to 15.28m and heights from 3.6m to 8.3m. Non-standard sizes of tanks are available to meet clients’ special requirements.

"Sunbridge Liquistores" which are aluminium sectional tanks are fitted with an open top Butyl membrane bag fabricated from 0.75mm thick Butyl rubber of hot vulcanised construction, the properties of which make it an ideal material for the storage of water and many other bulk and liquid commodities, including effluent, most chemicals and acids and dry goods of various types. For sump liners, 1.50mm thick Butyl sheet is used when required.

The 'Eurenco' industrial tank has been designed to incorporate a modular system using metric sizes in common with EEC countries. The materials used are the most technically advanced glass reinforced plastics commonly known as S.M.C., precision manufactured in matched metal tools. The S.M.C. is compression moulded at high pressure and under closely controlled temperature conditions and offers an accurate and consistent product with properties unequaled by hand or spray laminating processes. The panels U.V. stabilised and pigmented to pale blue/grey to BS 5252 18 B 19, require no maintenance or special protection, and therefore are not subject to the damage that results to painted or plastic coated steel tanks during installation. The modular design incorporates two sizes of panel, one metre square or half by one metre. Fixing is by bolting externally or internally. If externally bolted the tanks can be erected in confined space provided 500mm is allowed around the outside of the tank. The shape of the completed tank can be infinitely varied although, in general, the two metre deep tank offer the most economic installation. Tanks may be installed on plinths, piers, underground, lofts or towers. If necessary erection staff are available from Eurenco. Further information from Eurenco Sales Ltd.

**Noel J. Simpson**

Noel J Simpson and Co Ltd are agents in Ireland and the UK for the Prema range of water meters.

Sizes range from ½ inch through to 4 inch and are ex stock in their Dublin warehouse.

The meters are particularly suitable for the measurement of fluctuating flows and can
be supplied in the larger sizes to cater up to 200 oc (i.e. boiler applications).

The smaller sizes are capable of registering from 5 to 10 cubic metres per hour, with the flanged sizes registering from 30 to 150 cubic metres per hour.

Pree meter sizes are very competitively priced and you can obtain full details from: 33 Leeson Close, Lt. Leeson Street, Dublin 2. Telephone: 686709/767186/763748.

**Liff Industries**

Liff Industries Limited are now distributing throughout the U.K. and Ireland a unique product that will solve a major problem for the HVAC Industry. The build up of calcium scale on heat transfer surfaces means reduced efficiency, higher maintenance costs and longer periods of down time.

Effluent Samplers and Flow Monitors — with a difference

Turbomag Electromagnetic Water Conditioning System is a non-chemical, pollution free process for the permanent removal of scale and the prevention of water created corrosion on all surfaces.

The product conditions water by means of a highly sophisticated intensive rotating magnetic field produced by the action of a freely revolving magnetized impeller in the water stream. It is a major step forward from simple static magnetic devices available previously.

Heat transfer surfaces in boilers, cooling systems, etc. can obviously benefit. Flow rates from 2.5 gallons per minute upwards can be treated. Industrial applications are wide so a range of 15 sizes is available for accurate sizing.

Installation is simple and running costs minimal. For more information contact: Liff Industries Limited, Unit 7 Industry Road, Carlton Industrial Estate, Barnsley, South Yorkshire S71 3PQ.

**Modern Plant Ltd.**

Modern Plant Limited are well established over many years in the development of the Irish Water Industry, specialising in flow measurement, pipeline valves and level controls. They promote the interests of a wide range of international companies by carrying stocks and liaising with specifying authorities worldwide and of course where necessary servicing and commissioning customer’s plant when required.

Modern Plant Limited, through their principals Sparling Envirotech — have had considerable success in promoting sales of the Sparling Series 500 ultrasonic range of water meters in sizes up to 48in. to a number of local authorities, such as Dublin and Cork County Council and also into industry. This advanced form of metering has also gone a stage further and modern plant can now offer a Sparling ‘Weld-On’ kit for the conversion of existing pipelines to ultrasonic flow metering.

Modern Plant Limited, are also well known in the field of effluent measurement and control, through their principals — Arkon Instruments of Cheltenham. The Arkon System 10 range of instruments is now enlarged to include a new recorder along with a new portable liquid sampler, battery operated and designed by engineers with a wide experience in sampling. This instrument has gained awards for its ingenious design.

Complementing the meters and sampling — Modern Plant also carry large stocks of Serek Audeo Valves, Alexander Controls range of solenoid valves, Birkett safety relief and pressure reducing valves and Budenberg pressure gauges. Most of these items are to be found in any water works or treatment plant throughout Ireland.

Modern Plant Ltd., Otter House, Naas Road, Clondalkin, Co. Dublin. Telephone: Dublin 514944

**Harper & Fay Ltd.**

Harper and Fay Ltd, an Irish Company is a member of the Jones Group, one of the major mechanical engineering service companies in Ireland. The group employs in excess of 1,500 people.

The company offers a complete service in design, fabrication and installation on all water and effluent treatment plant and ensure that each project is handled with particular emphasis on the customer’s specific requirements. Harper & Fay Ltd., Beechill, Clonskeagh, Dublin 4. Telephone: Dublin 694300

**Mahon & MacPhillips**

Ireland’s largest supplier of water and waste water treatment plants, Mahon + McPhillips (Water Treatment) Ltd will highlight contracts both in Ireland and abroad, for International Companies such as Pfizer, Burlington Industries, Abbot and others and major municipalities, including Dublin, Cork, Galway and Kilkenny itself.

Mahon + McPhillips offer a complete package from design through to fabrication, installation and after sales service. The Company, part of the 600-employee Mahon + McPhillips Group, was the first winner of the Bowmaker Award for Irish Industry. Mahon + McPhillips (Water Treatment) Ltd., Larchfield, Kilkenny, Ireland. Telephone: (056) 22152.
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Published by ARROW @TU Dublin, 1982
NEW PRODUCTS

Pressure Relief Flap from Finheat

The new Pressure Relief Flap from Myson RCM permits the flow of air in one direction only. The gravity controlled hinged flaps are made from light gauge aluminium so that they open at a very low pressure difference and the pressure differences can be adjusted by the addition of weight to the flaps.

PRF's are normally used in walls or partitions to exhaust air and are not suitable for use in doors, or in duct systems as back draught shutters. They are not air-tight.

New Virax Range of Pipe Equipment

Virax of France have recently announced the following new products for 1982.

New Virax Universal Pipe Cutter with interchangeable chains is designed for cutting by rotation of pressure pipes generally used in sanitary, plumbing, public works, water and gas intakes, agricultural hydraulics — it may also be used as a chain wrench and has proved highly successful in the cutting and removing of damaged pipe in situ.

New Virax Pressure Pump. This pump allows pipes and plumbing to be tested at up to 50 bars before running water through the pipes in order to detect any possible leaks.

Plastic Pipe Cutter for hard plastic pipe (PVC) 2 sizes available 1/2" to 2 1/4" and 1 1/4" to 4 1/4".

Virax Electrically Powered Hydraulic Bender. This new ram allows bending up to 3" in a single thrust with a large reserve of force. This model can be equipped with the special 4" adaptor and automatic stopping device where repetitive bending is required. Available in single phase and triple phase.

For further information please contact sole distributors in Ireland — Combe Engineering Ltd., 3 East Road, East Wall, Dublin 3. Tel: 748371/2; Telex: 31319.

Jetfreezer

Jetfreezer pipefreezing equipment is a heating and plumbing tool that is popular throughout Europe. This innovative product allows pipework repairs to be undertaken without draining down the system. The Jetfreezer jacket is tied around the pipe and connected by a high pressure hose to a cylinder of liquid carbon dioxide. When the cylinder valve is opened, the liquid CO₂ floods into the jacket and immediately turns to CO₂ dry ice. This has a temperature of -78°C (-109°F) and will freeze the water within the pipe, creating an ice-plug. The plug will hold back the water in the system, removing the need to drain the entire installation.

There are five sizes of Jetfreezer jacket, able to freeze pipes of up to 100mm (4") diameter. Each jacket is made of special flexible low-temperature nylon and can freeze pipes on bends and in awkward places. Jetfreezers can freeze all metal pipes, and also plastic pipes given extra time. And with Jetfreezer, there is no danger of the ice-plug splitting the pipe. Plumbers throughout Europe have saved time and money by using this unique tool.

Jetfreezer equipment is now available in Ireland through branches of P. J. Matthews and Co. Limited, the plumbing and heating distributors. Carbon Dioxide cylinder refills are also available from Matthews, and from several CO₂ refilling points throughout Ireland.

Complete literature on Jetfreezer, including prices, is available from P. J. Matthews in Dublin, Santry, Limerick and Waterford.

New Penn Fan Control

Johnson Controls Nederland B.V., manufacturer and distributor of Penn products, announces the release of the P78ALA dual fan cycling control. This is a new addition to the series P77 single and P78 dual refrigeration pressure controls which were released for sale earlier this year and is a dual fan cycling control for air-cooled refrigeration condensers.

The features are: Splash proof enclosure, IP 54, identical in size to the other series P78 models; One control does the job of two single fan cycling controls; Both cut-in points can be set individually, no restrictions on minimum or maximum interstage. Differential per stage is fixed; Long life bellows, important for the normally tough fan cycling applications; Simple installation and easy wiring; Stable switching points and construction in accordance with European electrical requirements (CEE-24).

Further details from Manotherm Ltd.
Many and Varied AC Systems

There are many types of air-conditioning systems available and an outline description of the more common ones shows the main characteristics.

Individual packaged room coolers. The cheapest and probably the most commonly used throughout the world is the self-contained window/wall packaged unit. These units are designed to be installed in the external window/wall of the room to be treated and generally have a maximum cooling capacity of approximately 5,000 Kcal/h. Although flexible in operation these units are noisy, bulky and soon become shabby.

The units require maintenance from within the conditioned space, but installation is straightforward as they usually only require a single-phase 3kW electrical supply and a suitably framed opening through an external wall. The continual load makes 13A sockets unsatisfactory for feeding such units because of overheating of the socket contacts, and the 3kW load favours radial circuits. Where the units are installed in existing multi-storey buildings the routing of condensate drains can be problematical.

A sophisticated development of the window/wall unit is the self-contained packaged terminal air-conditioning unit. This unit is principally for through-the-wall fixing, and incorporates a direct expansion coil unit which does not require a drain connection. Electric or water heater batteries may be incorporated if required.

Split system. Here the direct expansion coil and air conditioning fan only are contained within the conditioned space; the condenser unit being housed externally.

The advantages of a split system compared with a packaged unit are in its quieter room operation and in there being no requirement for a large opening through the structure for heat rejection.

Fan coil units. These are generally located within the conditioned space — either under windows or within bulkheads over the room door. The units incorporate fans and heat exchangers and are served with either warmed or chilled water from a central plant.

To provide the minimum amount of fresh air required to prevent the build-up of vihited air, the units are either connected directly to the external atmosphere with a grille in the external wall, or connected, through a ductwork system, to a central air handling plant.

Perimeter induction units. Centrally located air handling plant(s) distributes (primary) filtered, and generally fixed temperature, air through a single high velocity duct system to induction units located within the conditioned space — usually below windows. The induction units incorporate heat exchangers which are served by either warmed or chilled water from a central boiler or refrigeration plant.

The primary air enters each induction unit via a series of nozzles, thus inducing a flow of (secondary) air from the room to pass over the heat exchanger. In doing so the secondary air is either heated or cooled before being mixed with the primary air and discharged into the room. The basic induction unit system generally employs three or four pipes to enable warmed or chilled water to be simultaneously available to each unit. Maintenance problems can arise with induction units if the filtering of the primary air allows dirt to pass into the induction unit nozzles.

The ductwork, if any, for a fan coil system, and for that an induction unit system, is much less extensive than for an all-air system. This can be particularly important where the space available in the building for distribution ductwork is restricted.

Dual duct system. Such a system generally takes the form of a centrally located air handling unit distributing air through separate supply ducts; the air in one duct is heated and in the second duct it is cooled. Ceiling mounted mixing boxes are connected to both the hot and cold ducts and the air streams are blended to the correct temperature before delivery into the conditioned space. High air velocities within the ducts — often up to 30m/s — are standard with such systems, although a balance has to be held between a reduction of duct cross section, the higher quality of ducting required for the high air speed, noise generation and fan power.

Depending on circumstances approximately 75 per cent of the air volume supplied can be returned to the fan for re-use.

Variable volume system. These systems consist of a central unit which supplies conditioned air through a single distribution duct, with flexible duct connections to zone control terminals located in the ceilings. The temperature in a zone is individually controlled by a space thermostat which varies the volume of the conditioned air liberated into the zone. As the volume of supply air from the central system is usually constant, the air not required in the space is returned to the central system for recirculation.

With constant volume, variable temperature systems, the supply air duct are sized for the total maximum air flow required by all zones in the building, and regardless of the required load each zone receives the maximum air flow. With variable volume systems some duct sizing advantages may be taken from load diversities and they can also be engineered using supply fans capable of varying the bulk volume of air supplied. The use of such fans on large projects can show substantial savings in running costs.

Decentralised heat reclaim system. Here, self-contained air conditioning units comprising fan, refrigeration compressor and heat exchangers are situated within the conditioned space and connected in parallel to a low temperature water distribution system. They are looped together through either a central boiler plant or a cooling tower.

This water provides the source of cooling for the unit by extracting heat from the room, and also provides a limited source
PRODUCT REVIEW: AIR CONDITIONING AND VENTILATING EQUIPMENT

Lennox direct single zone outdoor unit DSSI available in Ireland through C & F Ltd.

- Centrifugal water chiller from Westinghouse.

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

The range of Wolf unit heaters ranges in capacity from 5.5KW to 275KW and 1,300 m³/hr. to 10,200 m³/hr. The solid and elegant casing consists of a welded frame construction with galvanised steel sheet panels. The panels are finished in both water and heat resistant paints. The smooth running motor has built-in thermo-contacts for complete motor protection. Heat exchangers are manufactured of copper/aluminium suitable for a nominal pressure of 16 bar and a temperature of 180°C. Units can be supplied with all accessories including mixing boxes and discharge plenums.

The Wolf range of direct fired air heaters have capacities from 20KW to 1,160KW with air volumes up to 71,000 m³/hr. Their main design features are, space saving compact construction and operating reliability. Units can be supplied with outlets suitable for either duct connection or in space heating, filters, bypass dampers etc.

The NuAire range of fans is all that the designer or contractor can possibly require in roof mounted, duct mounted and wall mounted twin fan and single fan units. All twin fan units can be supplied with their own controls for both fan failure indication and automatic change-over. Single fan units can be supplied with speed controllers.

A Brief list of the NuAire range includes the Mark 10 extract units with mixed flow impellers, solo series units with propeller fans, twin fan and inline duct mounted units, to give 100% standby and sundry equipment including domestic toilet extract units and kitchen extractors.

The products available in the fibreglass range include HEPA terminals, absolute filters, autoroll filters and panel filters of all sizes. When required special units can be manufactured to client requirements. In addition to standard panel filters Fibreglass also manufacture the well known B12 range used for spray booth application by the motor assembly and repair industries.

For further information on the above products contact: Reconair Ltd., Unit 4A, Coolock Industrial Estate, Coolock, Dublin 5.

Walker Air Conditioning
In the recently introduced SD6F range of packaged air conditioning units from Walker Air Conditioning Ltd., there are five models and all are single zone, curb mounted cooling units particularly suited for rooftop installation from where they will provide efficient air conditioning for a wide variety of commercial and industrial applications.

The units can be specified as conventional cooling models with cooling capacities ranging from 64 to 160KW or can come fitted with electric heaters to deliver heating capacities from 68 to 162kW. Power exhaust, economizer, energy management controls, high efficiency bag filters and Modu-pac options are available, factory installed. For those who do not have factory installed electric heaters, the units are supplied with tracks to accept a hot water coil.

The new economizer (accessory or factory option) with enthalpy control permits more efficient cooling with outside air. The electronic control system uses outside air when suitable for first stage cooling, adding just enough mechanical cooling to maintain required indoor temperatures. Low leakage outdoor air dampers are shut automatically on a power failure by a spring-return damper.
ROOM AIR CONDITIONER
Heating/Cooling
Capacities from 4,860 btu/h to 22,800 btu/h.
7 Models to choose from.

SPLIT SYSTEM
Heating/Cooling
Capacities from 9,760 btu/h to 24,000 btu/h.
4 Models, simple installation.

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**Instant control in a nutshell**

Euroseries and Eurofoil—a new generation of superbly engineered External Rotor Motor Axial Fans that hopelessly outdates and outperforms traditional fans.

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

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

Now look at our other benefits:
- Electronically balanced for vibration free running.
- Silent, effortless performance against resistance.
- Vastly improved cooling characteristics.
- Corrosion resistant and maintenance free.
- Ready wired and assembled.
- Individually packed ready for installation.

And that’s it in a Nutshell.

This is what took us to the top...

The Z.A. external motor—the heart of all Roof Units products brilliantly designed and precision engineered specifically for fan applications.

An aluminium impeller factory matched and balanced with the superb external-rotor motor to give silent, efficient, vibration-free running. Fully speed controllable and totally maintenance free, backed by the largest nationwide distributor network—that’s what took us to the top.
PRODUCT REVIEW: AIR CONDITIONING AND VENTILATING EQUIPMENT

The casing can be set-up for left or right hand motor locations, with the motor sited in any of four positions on the casing or alongside the fan on an extended base frame. The discharge position can be at any of eight positions being in the vertical or horizontal plane. Dual bearings, of the deep-grove type, carry the end-thrust and dynamic loads of the fan wheel. The bearings are fitted in dust and watertight housings. The fans are supplied either bare-shaft or complete with suitably selected V-belt drives, guards and motors. Further information from Dan Chambers Ltd.

Saireco, who claimed a major slice of the Irish heat pump market in 1981, will be aiming to capture an even bigger share next year with the introduction of the RAS-M456 "multi" heat pump - the first of its kind to be offered in Ireland. Saireco who are sole Irish distributors for Toshiba air conditioning products have now introduced the RAS-M456 multi-split heat pump system to their existing range. The RAS-M456 is the most advanced multi heat pump system available, and it will give them a vital lead in the Irish marketplace at a time when in both commercial and

Novenco
A completely new and comprehensive range of fans designed for industrial, marine and offshore ventilation and air conditioning applications is introduced by Novenco Limited of Blaydon, Tyne & Wear. There are two designs available known as type CNA and CNB. The CNA design is available in nine standard sizes, the CNB, which is suitable for higher impeller speeds, has seven standard sizes.

The high efficiency fan impellers are of the backward curved design and are capable of handling air volumes up to 20 m³/s (72,000 m³/h) for single inlet designs or, 40 m³/s (144,000 m³/h) for double inlet designs, at a total pressure of up to approximately 1,600 N/m² (160 mm w.g.). For even higher air volumes within the same pressure range, each fan can be supplied in the double inlet configuration giving exactly twice the air volumes in slightly less than twice the single inlet fan width.

For applications requiring variable air volume control the fans can be provided with inlet guide vane control.

Besides applications in standard ventilation and air conditioning the high efficiency backward curved fan design enables the fans to be used on the downstream side of an industrial dust control system, where the self-cleaning characteristics of the fan wheel minimises unbalance and maintenance problems.

The fan casings are made up of two rectangular side plates and a scroll plate manufactured from galvanised sheet steel. The fan inlets are specially designed to guide the air to the impeller without loss in pressure, this also provides a spigot for connection to ductwork.

Propellor Fans
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A selection of Novenco fans.
Halifax fans are the natural choice when it comes to quality, reliability and efficiency. The result of many years of engineering design and development, these fans are available in a wide range of forms to serve a variety of industrial purposes:

- High Pressure Blowers.
- Bifurcated Axial Fans. Fans can also be individually designed to suit customers' specific requirements.

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Specialists where service and quality count.

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MISTRAL WORKS, ROOKERY LANE, SALTHEREBBLE, HALIFAX, WEST YORKSHIRE HX3 0PY. TEL: 0422 56776.
domestic sectors people are beginning to appreciate the cost-saving potential of the heat pump.

Unlike the current Toshiba energy-efficient air-to-air heat pump splits which operate on a one-to-one basis, the "multi" enables up to four indoor fan-coil units, either wall-mounted or free-standing to be teamed with a single outdoor condenser unit.

In Japan, total sales of air conditioning systems in the past 12 months amounted to 2,434,000 units, of which 600,000 were heat pumps. Toshiba's sales amounted to 486,000 units, of which 117,000 were heat pumps — and included 20,000 of the RAS-M456 multi systems, originally launched in 1979.

**Hiross**

The Supersaver in a closed circuit system comprising room unit (RU), rad-cooler (RC) and air-cooled water chiller (CH), through which a water/ethylene glycol antifreeze mixture is circulated at a constant flow rate.

Coolant is pumped to the room unit where it extracts heat from the room air. During normal operation the coolant supply temperature does not drop below 11°C (52°F) and therefore avoids wastage of energy through unwanted dehumidification. The coolant supply temperature is only reduced below 11°C when dehumidification is necessary. The externally located rad-cooler (airblast water cooler) and the water chiller cool or "chill" the coolant down to the supply temperature necessary to dissipate the heat load in the room. This temperature is determined by the electronic Supersaver control system (ESC) and by keeping it at the maximum value consistent with dissipating the heat load, the controller ensures the greatest possible heat transfer in the rad-cooler. Depending upon the exact Supersaver system configuration, at external ambient temperatures below 9°C (48°F) the rad-cooler will provide all the cooling capacity required without operation of the chiller compressors. Considerable savings are also effected at outside temperatures between 9-10°C (48-50°F) and 18°C (64°F), when the rad-cooler fans operate as precooling stages and the chiller compressors only intervene occasionally in order to reduce the temperature of the coolant to the value determined by the electronic control system.

At outside temperatures above 18°C (64°F) no "free" cooling effect can be achieved and the full cooling duty is carried out by the chiller. At the same time, a 3-way valve automatically opens to ensure that the coolant bypasses the rad-cooler to avoid any heat gain. The control system then also switches off the rad-cooler fans to prevent wastage of energy. Thanks to very generously dimensioned evaporator and condenser heat exchangers, and the relatively high coolant temperature, the chiller operates with a high evaporating pressure and a low condensing temperature, resulting in a high coefficient of performance (cooling duty/energy absorbed). Since the chiller compressors operate for a fraction of the time that those of a conventional system would, wear is reduced and the working life of the system is considerably extended.
The perfect finish for every job

Once you've done that air conditioning or ventilation job, finish it off properly—with Myson grilles, registers and diffusers. There's a model in our famous RCM range for just about every application—either for wall, ceiling, floor or sill mounting. They're all specially designed to give correct aerodynamic performance with the absolute minimum of noise generation. And all are beautifully made from extruded aluminium with mitred and welded corners—to give a real professional finish to your job.

Then for that low-budget installation, there's our 'E' range—made from satin anodised extrusions.

FINHEAT LIMITED
16/17 Usher's Island, Dublin 8. Tel: 778109/778120/728431 Telex: 30761
Deltaclima

Looking forward to 1982 Delta RA Limited are now in production of a new range of Deltaclima Air Cooled Curved Coil Condensing Units for use with the matching Deltaclima Vertical and Horizontal Air Handling Units. In addition, it is anticipated that the condensing units will fulfil a considerable demand for applications with alternative types of air handling units, as may be selected by a contractor.

Delta has always been particularly aware of the need to export and it is gratifying to note the extent and success achieved in reducing the volume of the new condensing unit by some 40%. Apart from introducing considerable shipping cost savings the reduced size and weight enables more discreet and easy siting. High ambient capabilities are an important consideration when exporting and despite the reduced size, the performance in adverse climatic conditions has been verified in the sophisticated test facility, operational at Delta's Haverhill factory.

By the very nature of the construction the economies introduced reflect lower prices to the benefit of contractors and customers, while in no way deviating from the high quality that is synonymous with Deltaclima. The units offered will incorporate 3, 4 and 5hp fully hermetic compressors with single phase fan motors to enable head pressure fan speed control to be incorporated as standard. The components are so arranged to facilitate servicing, while the entire unit is constructed from galvanite steel sheet with external surfaces finished in epoxy polyester powder coat to give maximum prote...
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.
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PRODUCT REVIEW: AIR CONDITIONING AND VENTILATING EQUIPMENT

**Powrmatic**

New-styled Powrvent and Powrjet extract units, introduced recently by Powrmatic Limited, are already proving their value in meeting the powered ventilation needs of commercial and industrial users.

Manufactured in flame retardant glass-fibre, both the general-purpose Powrvent and heavy duty Powrjet extract units feature polypropylene impellers available in a choice of five sizes, 400, 500, 630, 750 and 900 mm.

This means that powered ventilation systems can be matched closely with the volume of air to be handled, thereby achieving optimum efficiency, which is so critical in these days of energy conservation.

The general all-round improvement in design standards has also been carried through to ductwork components associated with Powrvent modular input systems, these easily assembled flange connected components, such as duct bends and mixing boxes, now being finished in plain aluminium.

Installation of Powrvent and Powrjet extract units and Powrvent modular input system roof top assemblies pose no problems, a comprehensive range of glass-fibre soaker flanges being available to match the five most common asbestos, cement

**Eurenco**

Eurenco Sales Ltd. have a complete range of ventilation equipment from J.J. Ventilation Ltd. Bristol. On the powered ventilation side a range of low profile roof extract units, vertical extract units, and powered...
PRODUCT REVIEW: AIR CONDITIONING AND VENTILATING EQUIPMENT

range of heat recovery equipment.

The effectiveness of the "Recuperator" has been designed into numerous new projects. These include Hospital Operating Theatres, Leisure Centres, Swimming Pools, Paint Spray Booths, Laundry Driers, Dye House Vats and Paper Processors. Some of these are for fitting in ductwork but other units have been incorporated within the Climapack Air Handling Unit. Recuperator stationary heat recovery units can be profitably used in a variety of commercial and industrial installations of heating, ventilating and air conditioning, where there is a temperature difference between the exhaust and the supply air.

The application enables the recovery of up to 90% of the thermal energy contained in the exhaust air transferring it to the supply air, obtaining considerable savings in the operating costs of the installation (oil, electricity, etc.). In addition, when designing a new installation, a considerable reduction in size and cost of the heating and cooling equipment (boilers, chillers, pumps, piping, coils, etc.) can be achieved, which usually more than compensates for the cost of the recuperators and their installation.

Run-a-Round Coils have been used for similar projects, in cases where the inlet and exhaust ducts cannot be brought together. Heat Pipes have also been specified where small physical size was important or where high temperatures were involved. All these products have the common advantages of:

- No mechanical moving parts;
- Ease of cleaning;
- Efficiencies compatible to other forms of heat exchanger;
- Low Capital Cost relative to other forms of heat exchanger.

Using meteorological data for the area concerned, plus information on hours of use, type of fuel used, air conditions and allowing for extra fan power, "Climate" can produce a detailed Economic Evaluation to show potential users the time taken to recover their capital. Climate Equipment's Sole Agent in Northern Ireland for Heat Recovery Products is: W. J. Hogg & Co. Ltd., from whom full technical information is available.

Dan Chambers

A comprehensive selection of ventilation equipment is available for all applications and a large variety of roof fans, wall fans, axial fans and centrifugal fans can be obtained ex-stock. Principal products include those manufactured by Roof Units Ltd, Novenco, Ziehl-Abegg and Marcal Plastic Fans Ltd. The wide range of centrifugal, axial and twin roof units with matching roof soaker sheets to suit almost every corrugated roof profile and regulatable motors, from Roof Units Ltd, meet the demands for most specifications. Novenco make aerofoil fans, centrifugal fans (250mm-1000mm), heating coils, unit heaters and air handling units. The revolutionary external rotor motor is fitted to all Ziehl-Abegg fans and it shows its benefits in the slim compact design of their products. The motor needs no maintenance and is vibration free with low sound level. Speed controllers are available.

To complete their range, Dan Chambers Ltd offer PVC fans, PVC fume scrubbers and PVC roof units from Marcal Fans Ltd, for installation where resistance to corrosion from acids and alkalis is required. Further information: Dan Chambers Ltd.

NEW TO IRELAND

A Complete Range of Condensers and Coolers From West Germany’s Largest Manufacturer

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Telephone: 508011 Telex: 4818.
Multi-duct ventilation: purpose-designed by Vent-Axia

Vent-Axia means more effective—and more cost-effective—solutions to many different ventilation problems.

For example, in ventilating internal rooms (particularly individual lavatory cubicles), the use of a multi-duct system often means that a single Vent-Axia unit can provide extract ventilation for a number of cubicles.

The installation featured here is typical of many: a series of four lavatory cubicles are ventilated by a single Vent-Axia unit fitted through the roof of the building. In each cubicle, stale air is drawn through a grille in the suspended ceiling, passing through flexible ducting connected to a four-branch spigot plate mounted under a housing directly below the Vent-Axia unit. The result is effective ventilation at relatively low capital cost, with minimum disruption during installation.

Multi-duct systems such as this can use horizontal or vertical duct configurations in conjunction with Vent-Axia units in roofs or walls.

Next, unobtrusive grilles conceal the terminal connector assembly and ductwork and provide for stale air extraction from the room.

GKN Autoparts offer a design service and will be pleased to advise on the ventilation of internal rooms, and to draw up specifications if required.

Multi-duct ventilation. Just one of the many applications that add up to Vent-Axia: versatility in ventilation, with Universal and Standard units in four impeller sizes: 6" (152 mm), 7½" (191 mm), 9" (229 mm) and 12" (305 mm).

Multi-duct ventilation: purpose-designed by Vent-Axia

Proven reliability (we know of units installed twenty and more years ago which are still performing to peak efficiency, day in, day out), coupled with quiet operation and ease of maintenance, make Vent-Axia Universal or Standard units the ideal choice for multi-duct internal ventilation.
Chryotemp

Chryotemp Engineering Ltd. offer a wide range of airconditioning, cold rooms and heat-recovery equipment from leading manufacturers such as Airtemp, Imaco — Samp, Bally and Dairy Equipment Company. A complete design and selection service is provided to the Specifier with on-going installation assistance to the Contractor and after-sales maintenance service to the Client.

The Airtemp range includes water chillers ranging from 16 to 1000 tons capacity; condensing units both air and water cooled with nominal capacities of 20 - 120 tons; compressor units both hermetic and direct drive from 20 - 110 tons. Systems can be offered in packaged or split form both for heavy-duty industrial/commercial applications and form room air conditioning. A recent addition to the Airtemp range is a Heat Pump Water Heater which collects heat from the surrounding air, concentrates it and transfers it to the water in an existing tank. This Heat Pump uses about ½ the energy of an electric Resistance Water Heater.

The two most popular Chillers in the Airtemp Range would be the "Whirl-Pac" is a completely factory-assembled package which carries the listing marks of Underwriters' Laboratories. This means assured quality and safety for the owner because of the many stringent UL standards which must be met before the label can be affixed. Not only must all electrical components, wiring and circuitry meet Underwriters' requirements, but such items as pressure vessels, gauges, insulation and even exterior paint are scrutinised. Three of these chillers have recently been installed in one of Dublin's major office developments. Also recently installed in a major public-sector development were a number of HAW Packaged Air Cooled Chillers. Model HAW Chillers present a clean, architecturally attractive appearance suitable for either Rooftop or Ground Level installation. All models have a profile of only 54½ inches (1384mm) and 56½ inches (1435mm) high. Each Chiller is completely factory-assembled, wired, charged with oil and tested. Their reduced weight also means easy rigging and economical installation. A mild ambient control which permits the units to start and operate at temperatures down to 25°F (-3.9°C) is standard on all models. For operation at temperatures as low as 0°F (-17.8°C), an optional low ambient control is available. No condenser fan dampers are required. Other standard features include motors inherently protected under all start and operating conditions, and condenser fan motors designed to withstand windmilling conditions without damage.

Airtemp Packaged Rooftop air conditioning systems answer the require-
A Condensed Guide to MANOTHERM activities

THOMMEN CALIBRATOR EM

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

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

West WE 01 process controller

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

Barksdale piston pressure switch
for pressures up to 315 bar.

Rueger thermometers.

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

MANOTHERM LTD.
Controls and Gauges for all industries

THE CONTROL CENTRES
4 WALKINSTOWN ROAD, DUBLIN 12
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10 KNOCKBRACKEN PARK, BELFAST BT6 OHL
Phone 645966

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Air conditioning running costs don't have to leave you gasping

If a building has a heating/cooling system that's not energy efficient, tightening the belt is sensible housekeeping, but alas, it's closing the stable door after the energy horse has bolted.

So don't just put in a good heating and cooling system—put in one that's been tailor-made for the job. Like Carlyle from Walker, designed for energy efficiency.

A range of more than 4,000 Carlyle air conditioning and heating products means unequalled choice and flexibility. And to help you choose we can offer alternative systems, computer selected for energy efficiency.

We offer the world’s biggest range of heat pumps too, each with reversible compressors specially engineered to cope with the wear and tear of heat pump operation. From single-piece to splits, rooftops and you-name-it, Walker has it.

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

Systems that think for themselves? Walker has the answer to that, too. Carlyle VAV systems have terminals that automatically adjust to the heating and cooling needs of the moment—never using more energy than required to deliver the perfect atmosphere.

With all that on offer, what more do you need? The most energy-efficient system to meet your precise needs, the equipment to give you long-lasting reliability—and the pre-and after-sales service that gives you the back-up you need.

With building running costs going through the roof, it's nice to know Carlyle from Walker can help to bring them back to earth. Carlyle from Walker. Helping to ease the squeeze.
mean with your energy.
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

**Siime**

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

**Space Heaters**

150,000 - 1½ 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.

**HEVAC LIMITED, LISTER COMPLEX, BALLYMOUNT ROAD, CLONDALKIN, CO. DUBLIN.**
**TELEPHONE: 519411.**