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The economy of Northern Ireland, like other parts of the country, has been under constant pressure and as a result industry has been in a depressed state. The general recession has resulted in a stunting of development and investment.

— F. R. McBride M.B.E.

Our cover picture this month is taken in downtown Belfast and is of the Fountain Centre which was completed in July 1980.

Architects: Byrne Johnston Associates.
Services Engineers: Williams & Shaw.
DISTRICT HEATING FOR BRAY?

Moves will be initiated shortly to have Bray designated as a base for an E.E.C. pilot project, which will revolutionise domestic waste disposal, and provide a cheap energy source for the town.

The project will involve the installation of a refuse-burning incinerator, fueling a water boiler for use as a large-scale heating source.

Similar systems are already in operation in some E.E.C. member-states and the move to have Bray chosen for a pilot scheme in Ireland is being led by Mr. Liam Kavanagh.

Mr. Kavanagh and Wicklow County Council secretary, Mr. Brian Johnston, have recently returned from a fact-finding mission in Britain, where they had talks with Mr. Gallagher and District Council officials in Mansfield, near Nottingham, where the local authority has an incinerator in operation.

Within the next few weeks proposals will be put before Wicklow County Council and Bray Urban Council and if the plans are approved, a formal application for a pilot project in Bray will be put before the energy committee in Brussels.

MOVING IN THE RIGHT CIRCLE

Cement group Blue Circle Industries has been successful in its second bid for sanitaryware firm Armitage Shanks. After being cleared by the Monopolies Commission the first time, Blue Circle with 64% of the equity had still to buy out Ceramics Investments' 29% share. The Lebanese Gargour family has finally accepted the £35m. bid.

HEAT RECOVERY SYSTEMS

Heat wheel for up to 100,000 m³/hr air flow

Cross flow plate exchanger up to 60,000 m³/hr.

Air handling units single: or double-skinned up to 100,000 m³/hr.

Waste heat recovery up to 80%
UN CONFERENCE ON LPG

It was recently announced in Dublin, Geneva and Paris, that the Irish Government will host the first ever conference on liquefied petroleum gases (LPG) to be arranged under the auspices of the United Nations Economic Commission for Europe, in Dublin on September 30, October 1 and 2, 1981.

The UN conference is being organised by the Irish LPG Gas Association (ILPGA) in close co-operation with the Association Europeene des Gaz de Petrole Liquefies, the European LPG Association (AEGPL), which has its headquarters in Paris. The Economic Commission for Europe of the United Nations has 33 member countries including Canada and the USA, and is based at the Palais des Nations, Geneva. The formal title of the 3-day conference is “Symposium on the LPG Situation in the ECE Region during 1980-90”.

The ILPGA organisers emphasise that the primary purpose of the symposium is to chart the worldwide future of LPG for the next decade at least and possibly thereafter. For this reason the theme has been divided into five separate subject groups to each of which will be allocated a half day for presentation of papers and reports and analysis of the discussion on them.

The five subjects areas are:-
2. Production of LPG.
3. Consumption.
4. Imports and Exports.
5. Safety, Efficiency and Environmental Issues.

Each theme will be handled by at least one international expert on that particular subject and they will be responsible both for the collection of international contributions to the topic and their presentation to the symposium. They will also act as discussion leaders.

The venue for the symposium is the Burlington Hotel, Upper Leeson Street, Dublin 4. The official opening will be performed by An Tanaiste and Minister for Energy, Mr. George Colley, TD. The keynote address will be given by M. Paul Lambert, France, Honorary President of A.E.G.P.L. and a past chairman of the UN/ECE Committee on Gas. The conference chairman will be Mr. John Donovan, past President of the Confederation of Irish Industry and former Chairman of Esso Teo. in Ireland. His Vice-Chairman will be Mr. A. D. Seckh of the Soviet Union.

The organising committee is under the chairmanship of Denis J. Shelly, Chairman of the ILPGA and also Chairman and Managing Director of Calor Kosangas. The Conference Director is Michael Higgins, who can be contacted as follows: Mr. Michael J. Higgins, Conference Director, Calor Kosangas, Long Mile Road, Dublin 12. Telephone: 783000.

NEW PENN PRESSOSTATS

Johnson Controls Nederland BV, manufacturer and distributor of Penn products, announced the release of its entirely new series of Penn P77/P78 pressostats — high — low — and dual pressure — for application in the refrigeration and air conditioning field.

This new series P77 single pressure and P78 dual pressure devices include models for ammonia service. The controllers are housed in an attractive well designed die cast aluminium enclosure, which ensures excellent protection against dust and moisture.

Specific features of these new controls are:
- new design SPDT contact block standard in the single pressure controls P77;
- a unique contact block allowing for separate signalization of low and high pressure side of the dual pressure control P78 (patent pending);
- long life bellows and linkages;
- stable switching points, construction in accordance with CEE requirements meeting all electrical safety standards.
- simple installation and easy wiring;
- enclosure tightness class IP-54 standard for all controls;
- TUV approved models available.

More details and information is available from: Manotherm Ltd.

Published by ARROW@DIT, 1981
Many people shy away from the disabled, in embarrassment. Not so Armitage Shanks, who have carefully considered the problems that so many find hard to face, and even harder to cater for. They have designed a whole range of sanitaryware especially for the disabled and elderly, with every detail tried and tested to ensure maximum comfort and efficiency at all times and in all circumstances.

For example, the 'Talbot' w.c. is 510mm high, especially useful for those who have difficulty in rising from a normal w.c., whereas the 'Melrose' style w.c. has an extended projection to allow wheelchair patients easier transfer to the w.c.

Awkwardness is avoided and maximum independence achieved for the disabled through a wide variety of grab rails. These can be straight, wall to floor or angled for easy installation near bath, w.c. or shower unit.

To eliminate the need for awkward reaching over a basin to operate taps and plugs, wash basins have front control fittings — neat, easy-to-operate lever action mixer taps. For wheelchair users a special washbasin with ducted services and concealed fixings leaves the underside of the basin clear for easy access.

The problems of all-over-freshness are successfully alleviated by a thoughtfully designed shower: the tray has a slip resistant base and there is a hinged seat for extra support, with a lever operated mixer, adjustable showerhead and grab rails. Some shower trays even have wheelchair access. If a bath is preferred, the new 'Cadet' style is only 380mm high and hence easy to get into.

Little has been forgotten: there is even a special range of fittings each one tailor-made to meet specific requirements: the lever action spray mixer, the 'knock on/off' hot and cold pillar tap and the foot operated valve.

The Armitage Shanks range of sanitaryware for the disabled does not stop here, for many of their standard designs are easily adapted. For example, acrylic baths have inherent slip resistant properties, the 'Starlite' range of taps and valves is exceptionally easy to operate; many wall-hung w.c.'s can be installed at any convenient level.

### TURNING BACK TO SOLID FUEL HEATING

The results of a poll commissioned by the Coal Advisory Service in 250,000 Ulster homes recently show that 67pc of all house-holders use coal as their main form of heating — a significant increase of 7pc since the last poll in 1977.

Of the 240,000 homes with open fires, 30,000 have opened up fire places in the last two years.

Solid fuel central heating is expanding at 3pc per year. This is attributable, according to a Coal Advisory Service spokesman, to the fact that coal is still the cheapest form of fuel and supplies are guaranteed for 300 years.
Heat Transfer Strengthens Coverage

Following Heat Transfer Limited’s recent purchase of the calorifier and heat exchanger business of Royles Ltd, agreement has been made with R S White Ltd, of Dublin for the sole selling agency throughout the Republic of Ireland for their complete range of heating and storage calorifiers, heat exchangers and spares.

Information on Heat Transfer Ltd heat exchange products, spares or Royles indented tubes, can be obtained from R S White Ltd, The Crescent, Donnybrook, Dublin 4 (Tel: (01) 693144) with the additional facility for the customer being able to negotiate in Irish currency.

The long established coverage for Heat Transfer in Northern Ireland continues through Wm Leech & Son Ltd, 299 Ormeau Road, Belfast (tel: 645339) who are now able to offer Royles in line ‘E’ type calorifiers, B20 cast iron swimming pool calorifiers, coiled heat exchangers and full indented tube spares.

DIESEL FUEL TREATMENT

Handican Ltd., Newcourt House, Strandville Ave., Clontarf, Dublin 3, (Tel: 339325/336913 Telex: 32273), have been appointed distributors in Ireland for Vivusol, the complete diesel fuel treatment.

Vivusol, is normally added to bulk storage tanks where it is self mixing (like milk in tea). Other benefits claimed for Vivusol are:-

- It prevents diesel from freezing during cold spells.
- Emulsifies water. Prevents carbon build up in combustion chambers. Keeps nozzles clean and ensures accurate fuel spray pattern.
- Eliminates black smoke.
- Reduces maintenance costs.

GOOD PRACTICES IN SOLID FUEL DOMESTIC HEATING DIPLOMAS AWARDED

30 Dublin and district heating contractors who successfully completed an intensive training course last summer, and passed an examination on ‘Good Practices in Solid Fuel Domestic Heating’ were awarded Diplomas by Mr Sean Moore, Minister of State in the presence of a distinguished gathering of guests at the Engineers Club, Clyde Road, Dublin. The course was organised by Coal Information Services Ltd.

The following is a list of those who passed the examination: James McGrath, Wexford; Kevin Flanagan, Dublin; Colm Slaney, Cork; Geoff Byrne, Dublin; Frank Purcell, Dublin; Frank Lupton, Skerries; Tom Curran, Dublin; Terence Byrne, Wicklow; Joseph O’Connor, Louth; Frank Lynch, Dublin; Arthur Quinn, Galway; Bobby Power, Galway; Liam Costello, Monaghan; Vincent McEnaney, Monaghan; Des McDonnell, Lucan; Paddy Daly, Dublin; Norman Haworth, Monaghan; Liam Sands, Dublin; Tom Nolan, Kildare and Noel Cullen, Dublin.

Brendan Killigallon, sales manager of the Walker Air Conditioning subsidiary of Jefferson Smurfit, has won the Group’s coveted ‘executive of the year’ award. Each year just one executive from within the Group receives the award, a trophy and a cash sum, in recognition of his outstanding contribution over the year. Brendan is the first executive to win from a company outside the Group’s mainstream packaging and print interests. The presentation was made by Jefferson Smurfit Jr., Group Deputy Chairman and Assistant Chief Executive Officer.
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In the recent newsletter from the UK based Heating and Ventilating Contractors Association's Home Heat group it quotes reports of 21 deaths last year from defective solid fuel heating systems, the worst total since 1972. HHG asked its members to help support Domestic Coal Consumers Council's current campaign by reminding their customers they must have their chimneys swept at least once a year, and the throat plate once a month.

A warning is also sounded on gas flues, based on an article in Gas Marketing. This concerns instances where combination c.h. boilers/gas fires cannot be installed in the conventional way, ie boiler fitting inside the normal fireplace opening with fire in front, and where false chimney breasts of plasterboard or similar material (or sometimes normal brickwork) have had to be constructed.

**BTU GOLF SOCIETY NEWS**

The BTU Golf Society has announced the dates for the remainder of the golfing season as follows: 4th May, Donabate, Sponsor, Finheat Ltd.; 22nd June, Woodbrook, Sponsor, Pump Services Ltd.; 3rd July, Clontarf, Sponsor, Listers Tubes Ltd. (Captain's Outing); 28th July, Dun Laoghaire, Sponsor, BSS Ireland Ltd.; 5/6th September, Wexford, BTU GS Weekend; 10th October, Hermitage, Sponsor, Burmah Castrol Ireland Ltd.; 22nd November, Hermitage, Ladies Night and Turkey Dinner.

At the AGM the following officers were elected to serve on the committee for the next year:

- **Captain**: John Doyle
- **Secretary**: Eddie Egan
- **Treasurer**: Des O’Gorman

Other members of the Committee are: Peter Johnston, Michael Wyse, Charlie Goudie, John Ennis, Tony Gillan, Des Bindley and Liam Stenson.

After many years on the subs bench the Dublin United Golfing Societies Association has accepted the BTU Golf Society into their ranks. The DUGSA, as many know, run a long established inter-society foursomes match play knockout competition, the qualifying round will take place in Hermitage/Forrest Little on Monday, 27th April.

**CHANGES AT SANBRA FYFFE**

The following recent Board changes have taken place in Sanbra Fyffe Limited. Mr F A C Jackson has relinquished the chairmanship in favour of Mr R A H Thomas, Mr Jackson remaining a director of the company.

Mr M W Taylor of the TMG Group; Mr M R Sholfield and Mr A F Hull of the Delta Metal Group of Companies were appointed to the Board on the resignation of Mr R Sinclair and Mr H J Sloper respectively.
International participation at the semi-annual meeting of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) held recently at the Conrad Hilton, Chicago, surpassed all previous records with more than 150 visitors from outside the US and Canada attending a variety of technical sessions, symposia, seminars, and forums during the six-day meeting. Six per cent of the sessions’ papers were delivered by foreigners, also a record.

Although international interest in ASHRAE programs has increased steadily over the last few years, this year’s showing was exceptional, Frank Versagi, Chairman of ASHRAE’s International Activities Committee, said. His opinion was confirmed by C. H. Stevens, Vice President of International Exposition Company, N.Y., the firm that manages the International Air-Conditioning, Heating, Refrigerating Exposition. Each year, an industry exposition under the joint sponsorship of ASHRAE and the Air-Conditioning and Refrigeration Institute is held in conjunction with the ASHRAE meeting.

Mr. Stevens, who has helped to organise the exposition since 1957, said that the number of international visitors to the show this year totalled more than 1,500 and that there were more international exhibitors than ever before.

Companies from Germany, France, Denmark, Sweden, Great Britain, Japan, Holland, Israel and elsewhere were among exhibitors. The ASHRAE meeting included discussion of several subjects from international perspectives, such as: a comparison of air quality standards in the US and Northern countries; spot cooling in Denmark; a computer program for calculating air-conditioning loads in office buildings developed in Belgium; a review of heat pump usage in France and America, and a series of papers on air motion in air-conditioned spaces presented by a group from Germany.

Equipment Manufacturers Association, and of CECOMAF, the European Organisation for Refrigeration Equipment.

Both speakers noted that the conditions for heat pump operation are different in the two countries, but that the differences have sometimes served to mask areas where interests are the same.

The major difference between American and French heat pumps, Mr. De Rouvray explained, is that American units tend to be reversible; that is, they can be used for both heating and cooling purposes; while the French pumps are almost restricted solely to heating. Dr. Fritz Steimle, President of Deutscher Kältetechnischer Verein, ASHRAE’s associate in Germany, pointed out that the Germans too have made important advances in the heat pump area. Dr. Steimle said that he has helped to develop a gas-driven heat pump, a reversible pump in which the heating function is more efficient than the cooling function. One function will always be optimised over the other in the reversible heat pump, Dr. Steimle explained. The gas-operated heat pump is ideally suited to France, Germany, Great Britain, and parts of the US where some cooling is necessary, but where the principal demand is for heating.

The differing needs and differing emphasis of the US and European heat pump technologies have fostered some misconceptions, the speakers said. "The French tend to think Americans use heat pumps only for cooling," explained Mr. Groff. "They therefore neglect to pursue the ways in which US technology might be helpful to them, and vice versa." "Americans, on the other hand, also tend to be short-sighted," he continued. "Until recently, Americans believed that the sun rose and set within the continental US. This is why US marketing efforts in France were often unsuccessful. American manufacturers took products over there and tried to sell them regardless of whether they were needed or suited to the conditions of the country," Mr. Versagi, whose work on the International Activities Committee for ASHRAE has brought him into close contact with the present state of foreign technology, added that Americans still entertain the mistaken idea that their technology is superior. This is not true, he said; for the most part, technology is now on a par throughout the world; only the applications differ.

Since some equipment has been in use longer in America, the US can give information about long-term operational problems and about the life of equipment, Mr. Groff said. But Europe, for its part, has lessons for America, particularly in the area of energy conservation, he continued. Because Europeans have suffered from the energy crisis more acutely than Americans, they have been forced to exploit alternative energy sources more fully and consistently. In the US, he explained, there have traditionally been many alternative energy sources available and this has diverted Americans away from perfecting any single technology. The French are far ahead in their development of nuclear energy for example. In this area, they may well serve as a model for many countries in the future.

"As engineers we must now think more creatively and abstractly; we must look beyond the differences among our technologies to the similarities and uncover those ideas where we can learn from each other," said Mr. Groff. "Some of our discussion at the heat pump workshop was simple comparison of basic problems common to everyone: outdoor coils are going to frost in the winter — what is to be done about this? When it comes to such things, we’re engineers trading ideas; nationality hardly matters," he concluded.
At the recent IhVex '81 exhibition the Chartered Institution of Building Services held a one day seminar. One of the papers presented at the seminar was a paper on ‘Experiences in Energy Saving’ by Liam McCallion, an engineer with P J Carroll & Co Ltd, Dundalk and H&V are pleased to present it in the following article.

One of the fundamental problems we have all had to face over the last number of years has been the fact of inflation. There are almost as many theories as there are economists to explain what has happened and to forecast what is going to happen. There is, however, one important piece of common ground in all the arguments and that is that the cost of energy is probably the greatest contribution to the problems.

As a result of this, we have all become energy managers in a very real sense. There are two distinct reasons for this, the first is the effect of increased costs on our pockets and the second is the realisation that the source of supply is not infinite as we all saw last year with the petrol and oil shortages.

The combination of both of these when they directly affected ourselves has really heightened the realisation of the need for an overall policy at personal, business and government level.

Energy conservation has been an “in” topic for most of the last decade and, as we all know, a lot of lip service has been paid to it over the years. But now actual definitive action is being taken by everyone who uses energy as we have been made painfully aware of the consequences of inaction.

In Carroll’s, however, we can legitimately lay claim to acting in a realistic and conservation-minded manner right from the beginning of the present problems. Our total energy bill, which is now running in excess of one third of a million, was considered as an item of expenditure and it was felt that it was one which required managing and which, given the right approach, could be successfully managed.

As a result of this we commissioned the IIRS to survey our total factory and prepare a report detailing various recommendations which would allow us to make positive savings. This was carried out from February to November 1977 by the Institute and resulted in a Three Part Energy Manual being prepared. This became the “bible” for our subsequent work.
The three parts of the manual are as follows:-
Part 1 — Incinerator and related study; Part 11 — General thermal and electrical study; Part 111 — Procedural manual for energy co-ordinator.

I am sure that there are some of you who can derive something significant from the fact that we worked in reverse order in our implementation of the recommendations. Nevertheless, our first action was the appointment of a full time Energy Manager. He was responsible for co-ordinating all the various energy consuming activities and for reporting and recommending what action should be taken.

The basic philosophy of our approach to the problem is summed up in Part III of the Procedural Manual — “The manual has been tailored specifically to the type of operation and equipment which the company operate, it leans heavily on the practical approach to solving problems and has been written by staff who carry out the field work and tests described in the various sections as part of their normal work function”.

We have continued to use this approach in all our work to date and due to the positive contribution of all concerned, we have achieved significant results.

The next section to be implemented was Part II which was the “General Thermal and Electrical Study”. The various energy saving proposals are summarised here with the action taken and results achieved.

(1) Savings in electrical lighting: The lighting load was estimated at approximately 380 KW, which represented 18% of total electrical consumption and 20% of the total maximum demand charges. The cost at the time of the survey was approximately £30,000 pa.

The switching arrangement was investigated and it was found that, because there was a centralised switching location, a large number of lights were left on unnecessarily. This was particularly true during non-production hours, i.e. during the night and at weekends. It was also apparent that the cost of “night” lighting was approximately £11,000 pa (at then current charges).

An immediate improvement was achieved by ensuring that all lights were turned off when not actually needed. This was achieved by removing the night security personnel aware of the problem and letting them know the significance of the usage. It is estimated that approximately £8,000 pa was saved in this way for no expenditure.

(2) Lighting levels: An analysis of lighting levels showed that we were substantially above the recommended levels for the type of work in which we were involved, (a legacy from “cheap” times). An immediate reduction in costs was attained by reducing the number of tubes per fitting from 4 to 3. This resulted in another saving of approximately 25% in lighting costs, i.e. approximately £5,000 pa. This work was carried out during 1977.

As we had an on-going policy of re-lamping all our fittings on a regular basis, the cost of the above change can be considered as nil. In fact, there was a “positive” contribution in terms of reduced equipment costs, i.e. only 75% of the original number of tubes was needed.

A further investigation at the end of 1979 showed that we were still within satisfactory illumination levels even though most of our tubes had exceeded their recommended life by several thousand hours and the diffusers were quite dusty. We therefore installed two high efficiency tubes in various fittings, cleaned the diffusers and achieved lighting levels greater than the recommended levels.

As a further check, we used two standard “white” tubes and found that the illumination was still satisfactory. We have therefore been able to reduce our lighting consumption by a further 25% approximately, i.e. 4% of total electrical consumption. We also have developed a regular programme of re-lamping and cleaning and will use standard tubes in all further work. At last year’s costs, we estimate savings of greater than £10,000 pa for an expenditure of approximately £2,000.

(3) Compressed air: The total costs of compressed air in the factory were approximately £14,000 pa. This was based on two compressors running continuously even though only one would be actually on load for considerable periods.

As a result of thorough checking of our air system, we were able to reduce the leakage of compressed air from a starting 77% to approximately 10%. This was achieved by repairing all air leaks and also installing solenoid operated valves on all machines to cut off the air supply wherever the relevant machine stopped.

Further savings were achieved by reducing our mains air pressure from 100 psi to 80 psi and also reducing the pressure on air blowers, which were used for cleaning purposes, to approximately 30 psi. There were two reasons for the latter work, the most important being the safety factor and the other, energy saving.

The end result of the above was that we were able to run for long periods with only one compressor in operation. The savings from this are difficult to estimate exactly, but a figure of £3,000 pa is realistic. Again, this was achieved at no cost to us.

(4) Night compressor: A further recommendation was that we should install a small air compressor for use at night and weekends when the factory was not in production. This should be suitable to supply air to controls for air conditioning plants and other essential equipment. This was implemented at a cost of approximately £4,000 giving a saving of £3,000 on our electricity bill.

(5) Space heating and air conditioning: We have reduced the number of air changes in the factory particularly during periods of low occupation. This has been achieved by running only one section of the air conditioning plants at half speed. This facility was included in the original design of the plant but was seldom used. We have now instituted a regular procedure for switching on and off plants as required.

A further feature of this method of operation has been the investigation of optimum start controls for our plants in the factory. We have, in fact, ordered a unit for installation in our Head Office, Grand Parade, Dublin. This will be used as a test bed for the system and will hopefully lead to the installation of a similar system in our main factory.

At the moment, our savings, as a result of the air conditioning changes, are of the order of £6,000 pa at zero cost again.

(6) Improved boiler house practice: As a result of regular testing of our boilers, we were able to improve our average efficiency by approximately 6% giving a
saving of upwards of £9,000 pa in fuel costs at the time of the improvements.

This was achieved by more regular monitoring of the combustion efficiencies of the boilers using a standard CO₂ monitoring kit. There are currently some relatively cheap and yet sophisticated monitoring instruments available for efficiency testing and one of the advantages, particularly for the smaller industries, is that very little technical skill is needed to use the apparatus and immediate gains can be made.

It is essential that accurate records be kept of boiler operating conditions to ensure continued savings. The minimum information required being records of steam/hot water flow, oil flow, flue gas temperature and % CO₂ in exhaust gases.

(7) Steam utilisation system and insulation: It was reported by the IIRS that our steam distribution system “was efficiently and logically routed taking into account the location of the boiler house and the main steam-using plant... This, of course, is what one would expect from a relatively new and well designed factory unit.” Nevertheless, there were certain features which required improvement. The basic faults were that flanges, valves and support positions were not lagged. An immediate programme of insulating these, including upgrading our existing insulation levels, were instituted. The cost of this was approximately £10,000, giving an estimated saving of £8,000 pa on oil consumption.

(8) Improved fuel oil storage and handling: This was probably one of the simplest improvements. It involved taking deliveries of hot oil, (we burn 3,500 sec. fuel oil), directly from the tankers to the ready-to-use tanks, which we situated underground within the factory and then to the boilers. Before this, we fed the outdoor storage tanks, and from them, the ready-use tanks. The high oil delivery temperature was, therefore, lost to us and had to be made up by steam heating. Again for negligible cost, we were able to save approximately £1,000 pa.

(9) Steam leaks and steam traps: An essential part of the energy...
conservation programme is the regular inspection of steam and condensate lines in order to repair any leaks or faults, etc. This is done in conjunction with inspection of all steam traps to ensure that they are working efficiently. It is almost impossible to estimate a saving as a result of this, except to say that a hole of less than 1 mm diameter in a steam pipe at 100 psi will cost approximately 300 gallons of oil per year, if not repaired. We constantly ensure that this situation does not apply to us.

(10) Flash steam: We have installed a flash steam recovery system in order to make use of the excess energy available in our condensate. This has involved the installation of two flash vessels and heater batteries to use the recovered low pressure steam. It is estimated that we will save approximately £3,000 p.a. in oil costs for an extenditure of just over £2,000.

The last section of the report to be implemented was Part 1: “Incinerator and Related Studies”. Work had commenced on this section immediately on receipt of the report but as it involved the largest expenditure in the programme, a thorough investigation was carried out by all concerned in the project.

The normal combustible waste generated in our factory amounts to approximately 7,000 lbs per day with an average calorific value of 7,800 Btu per lb. Assuming that 60% of the heat could be recovered using a modern incinerator and waste heat recovery system, approximately 43,000 gallons of oil could be saved.

We installed a suitable system early this year, 1980, and apart from some initial teething troubles, we confidently expect to make significant savings in our overall costs in the current year. We have found that we have been able to run on production using only one boiler and the incinerator whereas our normal situation would have been two boilers on load.

We have also investigated and hope to install a maximum demand control system within the next few months. Our current factory load is of the order of 2,000 KW MD and if we can reduce that by at least 100 KW using the controller, this will have a saving of up to £2,000 p.a. for a cost of approximately £2,000.

This is not strictly an energy saving device but as it reduces energy costs, it must be considered as a valid part of any energy conservation programme which, as I have already said, is basically about saving money.

Summary
Our experience to date can be summarised in the following way. In most cases improvements have been brought about by very little expenditure but the “Law of Diminishing Returns” again comes into play and we will have to spend more and more to maintain our good position. This is seen below. I have not attempted to put current costs on any item but instead have presented it as it appeared to us giving the year of implementation where applicable.

We can confidently expect to maintain our good record over the next number of years principally because of the commitment of everyone in the organisation to the concept of energy saving. This must be apparent to all because during a period of increasing production activity, the cost of energy to us has decreased in real terms despite the ravages of inflation.

In the period 1973/4 to 1978/9, our energy costs increased by a factor of 3. However, a significant fact in this is that they fell by approximately 1.5% in the two years 1977 to 1979. The estimated cost of energy to us in that period should have been increased by approximately one third using the Consumer Price Index, Fuel and Light Variation, as a factor for the effects of inflation. These improvements have been achieved even though our production has increased over the period in 1977/79 by approximately 9%.

A projection from last year’s costs compared with actual costs for this year to date, shows that our actual bill for 1979/80 will be approximately 10% to 12% less than the possible, taking inflation into account. Our production has also increased in the period by approximately 11%. We can, therefore, be justifiably proud of our achievements in this field.
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By their very nature, most Variable Air Volume Systems are energy efficient due primarily to their “tailoring” the air quantity to the actual cooling requirements and so eliminating reheat and reducing both fan energy and refrigeration load. But one of the problems with VAV in to-day’s energy-conscious building design is providing adequate air motion that relates directly to occupant comfort.

Consider then a typical commercial office application where there is one person per 100 sq. ft. and power usage is 2.5 watts per sq. ft. for lights and 0.5 watts per sq. ft. for machines. Converting this to BTUH per square foot and assuming that 75% of the recessed light fixture energy becomes a space heat gain, the internal heat gains are 10.3 BTUH per square foot.

If conditioned air is supplied at 20°F below room temperature, the air quantity amounts to 0.48 CFM per square foot. This is 3.2 air changes per hour for buildings with 9'-0" ceiling height. Remember that the same air change rate will also occur in the exterior zones as well when there is no solar load present and when the outdoor temperature is below room temperature, which in many locations would be the majority of occupancy hours.

Back in the days of inexpensive energy and constant volume air systems, good design practice dictated about 8 air changes per hour for interior zones to provide good comfort control. If one considers that most air conditioning systems are designed to provide for occupant comfort, then are the 3.2 air changes per hour which are available from a VAV system going to provide this comfort?

Of course, the air change rate can be increased by arbitrarily limiting the minimum air quantity and adding reheat but this defeats the very purpose of energy savings. Or the cold deck can be set at a higher temperature (say 10°F) which would double the air flow but again fan energy would increase considerably and humidity control would be doubtful.

Before the heating coil is energised. For example, if the 50°F supply air quantity were reduced to 500 CFM before heat is added, it will take 8100 BTUH to raise the temperature of that air to 70°F room temperature (1.08 x 500 x 15 T). With an induction VAV system the same 500 CFM would consist of 300 CFM at 55°F air (primary) and 200 CFM of 70°F air (induced). Then the reheat requirements reduce to 4860 BTUH (1.08 x 300 x 15 T). The reheat requirements for VAV systems are 67% more than for the Induction VAV for the same air quantity delivered to the occupied space. This could result in a considerable amount of wasted energy depending on the size of the system. (Fig 4).

Energy consumption can be further reduced by using the two minimum position control package. With this control, minimum air quantities during the cooling season can be low enough to eliminate Summer reheat. Complete shutoff is available to prevent overcooling during unoccupied times. This reduces fan energy and refrigeration load and then when heating is required, the minimum air quantity is raised sufficiently to
ensure the adequate amount of air for heating purposes. This same type of control can be used when a morning warm-up cycle is employed. In this case, the higher minimum air quantity would be supplied during the warm-up cycle.

The Induction Terminals are, as the name implies, terminals that induce air and mix it with conditioned air from the central system. Primary supply air from the central station enters the terminal, passes through the primary air dampers, travels through the induction tube and discharges as low velocity air. If the induced air dampers are open, the high velocity supply air entering the induction tube creates a negative pressure at the entrance to the induction tube. This causes air to be induced through the dampers into the tube, thereby mixing with the conditioned primary air. (Fig 2).

Air volume discharged is the sum of the primary air and the induced air and the temperature of that air would be determined by the mixture and temperature of the air at primary and induced air dampers. The amount of primary air is determined by design air quantity settings and space cooling requirements. Space thermostats position the primary air dampers to satisfy the space load. On full cooling, the primary air dampers are opened to provide maximum cool air and the induction air dampers are closed. (Fig 3).

On a decrease in room temperature, the primary air dampers start reducing the primary air flow and at the same time the induced air dampers start opening and admitting warm plenum or room air into the terminal. At minimum cooling load, the amount of induced air will generally be greater than the amount of primary supply air, thereby keeping the air change rate at a much high level than can be achieved with straight VAV.

At a time when energy conservation is of much vital importance, it is hardly surprising that VAV Induction or VAV Induction Re-heat, with their inherent energy-saving characteristics, will warrant serious consideration—it must be a better way!

* John Lawlor is a director of Coolair Ltd.

### IDHE GOLF

The Institute of Domestic Heating Engineers (Republic of Ireland Branch) will hold their annual golf outing at Bodenstown GC on the 14th May next. Also the new secretary of the IDHE is Harry Pattison of the Energy Department of the IIRS and can be contacted at the 370101 ext. 524.

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Published by ARROW@DIT, 1981
Heat Recovery Systems

This is the final article in a series of four on the subject of heat recovery from refrigeration systems. Ole Larsen B.Sc., an engineer with Danfoss Ltd., discusses heat recovery systems with condensers connected in series.

In systems with condensers connected in series it is possible to utilize all the superheat. Therefore, heat recovery systems for heating of water are, normally, constructed as series-connected systems. Through a suitable sizing it is thus possible to reach water temperatures which are higher than the condensing temperature.

Fig. 29 shows a series-connected heat recovery system with the heat recovery condenser placed on almost the same level as the ordinary condenser. The constant pressure regulator between the two condensers maintains a given pressure in the heat recovery condenser while the constant pressure regulator in the bypass line gives protection against too low a pressure in the receiver which is important especially during start-up of the system or if there is a sudden discharge of the hot water and thus refilling of cold water.

When placed out in the open, the air-cooled condenser will have a certain capacity even with the fans stopped. If the capacity of the heat recovery condenser is so high that all the condensation takes place in this condenser, there will be a considerable subcooling and a corresponding pressure reduction during passage through the normal condenser. When this type of system is to be sized, the capacity of the heat recovery condenser should, therefore, normally be somewhat lower than the total condenser capacity.

As show in fig. 30, the system can be equipped with a solenoid valve mounted in a bypass line. During periods without water heating requirements the gas can thus be supplied directly to the air-cooled condenser.

The high-pressure float system must be sized very carefully because of the small pressure difference between the heat recovery condenser and the receiver.

The high-pressure float should, generally, be placed as high as possible above the receiver and the main valve, provided with a special spring. Alternatively, connection can where possible be made to an intercooler or a low-pressure separator.

Fig. 31 shows a series-connected heat recovery system where the heat recovery condenser is fitted on the same level as the compressor, while the air-cooled condenser is placed on the roof of the building.

Fig. 32 shows a heat recovery system where the heat recovery condenser is divided into two sections. The cold water is supplied to the bottom of the condenser and heated to a level below the condensing temperature e.g. 30°C. Some of the preheated water is then sent through the superheat exchanger where it is heated further to a temperature which is close to the temperature of the superheated vapours from the compressor. In this case, 55°C. The additional condensation takes place in an air-cooled condenser.

If the heat recovery system is subjected to a heavy load, and the refrigeration system to a smaller load, a major part of the condensation will
occur in the heat recovery condenser, and a liquid column is, therefore, built up in the downpipe.

A differential pressure regulator opening on a rise in the differential pressure is fitted in a bypass line to the receiver. When a liquid column of the height $H$ has been formed, there will be a differential pressure $p = H x g x q$ across the valve. If this differential pressure exceeds the regulator setting, the regulator will begin to open and the condensate will flow directly into the receiver, thus bypassing the air-cooled condenser.

The heat recovery condenser of the system shown in fig. 33 is designed for room heating. On/off regulation of the output from the heat recovery surface can be obtained by the use of a thermostat and two solenoid valves. When solenoid valve I is closed, solenoid valve II is opened, and hot gas is supplied directly to the air-cooled condenser. The construction of the system is, therefore, conditional on the capacity of the heat recovery condenser not exceeding that of the air-cooled condenser with the fans stopped.

6. Conclusion
It is impossible to make generalisations and to say that one type of system is better than the other since the actual conditions will have to be taken into account in every single case.

Systems with condensers connected in parallel are characterised by the following features among others:
- They are used where temperatures above the condensing temperature are not required.
- There is a risk of liquid accumulation if special precautions are not taken.
- It is possible to interconnect a number of heat recovery condensers.

The following conditions apply to condensers connected in series:
- They are used where temperatures above the condensing temperature are required.
- Normally, the capacity of the heat recovery condenser should be slightly below the total condenser capacity.

Further precautions should be taken to eliminate the effect of excessive pressure drops across the system, e.g. because of unfortunate differences in level between the heat recovery condenser and the real condenser.

The following conditions among others are common to heat recovery systems:
- The system should primarily be controlled on the basis of the evaporator side of the refrigeration plant.
- The system should be constructed and automated as simply as possible, but, of course, with the necessary care.
- The size of the receiver should be increased as compared to the receiver of a system without heat recovery.
A new range of water heaters has been introduced by I.M.I. Stanton whose N.I. agents are Electrical Equipment Co (N.I.) Ltd., Kelvin House, Stranmillis Embankment, Belfast.

These electrical heaters for use as showers or handwashing have an on/off control by means of a touch panel, no external switches or valves are necessary. The only connections being to mains water and electricity.

Known as the Sprite, of which there are two in the range, it is a 7 KW instantaneous shower unit, the built in automatic temperature stabiliser keeps a constant temperature irrespective of water pressure. The unit has many advantages such as instant shut off, controlled time and supply and of course excess temperature cut out.

The Sanspray hand washer, 3 KW heater will deliver a spray of water for 10 seconds then it will cut off, thus ensuring maximum efficiency and low electrical demand.

* * *

Thermo Heating Ltd. of Main Street, Carrowdare, Co. Down are having considerable interest shown in their Jomair heat pumps. It is claimed that the pumps give savings of up to 60% against other fuels. It has a C.O.P. of 3.13 having an output of 63,000 Btu's at an ambient temperature of 55° water flow temperature 143 degrees and a flow rate of 420 gallons with an input of 5.75 KW.

A recent announcement of Meynell Valves Ltd. of Wolverhampton is that as a result of a research programme between leading shower manufacturers and regional health authority officials they are to introduce a modification to their showers which will eliminate one of the causes attributed to be attached to outbreaks of "Legionnaires Disease". Following outbreaks of the disease in Spain it has been suggested that one of the causes may have been due to the water cooling to a tepid temperature as the result of which the bacteria can germinate in the shower rising pipe filled with residue water.

The new invention for which application for world wide patent protection has been made, means that when the control knobs are turned to the "off" position, the mixer bottom outlet opens and the residue water drains off to the shower tray.

* * *

In an effort to increase membership the N.I. branch of the Institution of Domestic Heating Engineers held a wine and cheese reception on the premises of O.B.C. Ltd., White Street, Belfast.

* * *

The drilling rig has arrived at Larne, Co. Antrim to commence the drilling of the geothermal well commissioned by the Dept. of Energy, assisted by the EEC. The purpose of the well is to ascertain the
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temperature and quantity of hot water known to be present at depths of 1800 metres, the final depth of drilling will depend on the success obtained at the lower levels.

* * *

Dr. Ronnie Houston has been appointed corrosion and water treatment consultant with Alanwood Boiler Services Ltd. who now represent the Liverpool based chemical company Alkrite Ltd. Dr. Houston was formerly with the Dept. of Industrial Science and will be responsible for the development of the water treatment division of Alanwood. In addition to boiler water treatment Alkrite have a unique treatment with the purification of water to EEC and World Health requirements for domestic and agricultural use.

Alanwood Boiler Services Ltd. who specialise in burner servicing and cleaning, de-scaling and boiler overhauls also represent Byworth Steam Boilers and Andex fuel oil additives.

* * *

Mr. R. Jordan, MBE, Chairman of the Northern Ireland section of the Institute of Energy, presided over the Annual Dinner of the section in the Culloden Hotel, Belfast.

The principal guest, Lord Blease of Cromac, in proposing the toast of the Guests, which was replied to by Mr. R. B. Henderson, CBE, President of the Northern Ireland Chamber of Commerce, Mr. Henderson, who in a similar vein to Lord Belase, spoke of the part played by the section in the Commercial and Industrial life of the Province.

The dinner concluded with the Hon. Secretary, Mr. F. R. McBride, MBE, thanking members and visitors for their support.

ULSTER — WHICH WAY FORWARD

By F R McBride MBE

The economy of Northern Ireland, like other parts of the country, has been under constant pressure and as a result industry has been in a depressed state. The general recession has resulted in a stunting of development and investment.

Looking first at the industrial scene, the expansion of industry must have hit an all time low and even government and local authority work was severely restricted.

It is against such a background that those engaged in the mechanical services industry have had to battle for their existence. The number of major contracts awarded during the last year could practically be counted on one hand, and at the same time, some contracts under way were stopped.

Altogether, a depressing state of affairs.

Contracting has become highly competitive and a client has no difficulty getting extremely competitive quotations. Many firms who have had relationships with clients for a considerable number of years, cannot now expect that they will still get the work because of the long established contact.

Earlier we stated that very few major contracts were available and most of the work available was of a relatively minor nature and such work requires more supervision and often results in increased overheads.

Labour and material costs continued to rise, particularly the latter and one of the problems facing both the client and the contractor was that of increased costs while a project was under way.

The chances of obtaining a fixed price contract were non-existent.

Added to the foregoing problems, one had to battle daily against failure of delivery dates being kept and jobs being held up because of the absence of a minor section or part of the installation.

Yet with all of these headaches, there was a continued sense of
optimism and while some companies did retract a little, most remained in business and as one principal said, "you have to work a lot harder for a lot less".

Domestic
As in industry those who were concentrating their efforts in the domestic field had not their troubles to seek.

Over the last few years the private house-building market has been reducing and reducing until last year it had practically stopped.

Again developers or builders played the market to obtain the very keenest prices.

However, the Northern Ireland Housing Executive continued to provide a valuable source of work, not only with new housing but also with conversion from electric and gas heating.

Every few years a new craze starts and for many years the craze was to modernise kitchens which provided a limited amount of work to the plumbing trade. Now the current craze is to modernise the bathroom which is certainly giving a lot more work. Evidence of the craze to be found in the various showrooms of the merchants who are all displaying bathroom suites of untold luxury. One remembers a few years ago one firm showing gold plated taps on their stand at Balmoral Show, which people gazed upon with wonder and now they are to be seen in every showroom.

You have on display square baths, oval baths, round baths, stepped baths of every colour and hue, but I have not seen one yet which could be advertised as the bath that does not require cleaning - there's an idea for someone.

When it comes to heating, there has been little change, clients and contractors both relying on the traditional small bore water systems. The one big change has been the swing to solid fuel but more of that elsewhere.

This year the Institute of Energy held their first Home Heat Exhibition and what a success that was.

The exhibition was held as part of a building exhibition. The promoters and exhibitors were delighted with attendance figures that beat all previous records and the amazing thing was that the business matched the attendance figures.

One can assume that what one sees at an exhibition is a foretaste of what is to come and if this be so then the future is going to be built around heat pumps and multi fuel boilers.

A number of heat pump installations have been completed in the Province both domestic and small commercial installations.

Multi fuel boilers, mostly from mid-Europe appeared in practically every stand and every day one hears of someone who has installed one. The burning of wood, which at first appears to have a romantic simplicity about it, is however proving to be somewhat difficult.

Firstly there is the difficulty of getting the wood in the correct form, and also many people are finding that it takes an awful lot of wood to provide the heat previously supplied by one of the high calorific valued fuels.

Insulation
The insulation market has settled down, with the cavity wall contractors having eliminated the less scrupulous of their fraternity. It is a pity that just when it was really getting under way it was decided to stop the "grant system" for home insulation.

Fuels
It is in the fuel market that the big changes have taken place both in the industry and domestic heating world.

Rising oil prices coupled with the, at times, uncertainty of supply has caused industry to start looking at solid fuel as an alternative. The move started last year and is slowly gaining momentum.

A number of coal-fired boiler plants have been installed and over the next few months a further number will be commissioned.

Consultants are now examining every case on its merit and certainly on the larger installations solid fuel on pure fuel costs is the cheaper.

There has been much talk about a proposed gas line, suggestions have been made that a gas link could take the form of a link with Britain by means of a submarine pipe or a direct link with the Kinsale field. While it is impossible at the time of writing to say whether it will happen or not, the recent Belfast Energy Speech by Mrs Thatcher would appear to hold out little hope of a gas main.

In the end it is the household who decides what fuel he wants and certainly over the last few years the choice has swung in favour of solid fuel. In the early days the swing was confined to the glass-fronted room heater market, however in the last year the demand for the gravity feed boiler has practically risen to take over proportions.

The practice of building houses without chimneys has stopped and it is now realised that chimneys not only remove smoke and fumes but played a material part in maintaining the fabric of the structure.

It is rumoured that a number of new makes of gravity feed type boilers may be coming on the market for next winter.

One wonders has anybody come up with an automatic de-ashing unit?

Credit
One of the major problems facing all sections of industry and commerce has been that of credit and the heating industry has suffered like everyone else.

Merchants and suppliers alike are attempting to reduce credit periods. If, on one hand, the money is not coming in, then the clearance of bills becomes difficult. It is up to all sections of the trade to ensure that their accounts and the only advice one can give is, it is essential that a strict watch should be kept on the financial state and steps taken to deal with any problem immediately if makes itself evident, for if it is left it could rapidly reach an irretrievable situation.

Training
Various methods are being used to improve standards, but the most successful could be said to be the training schemes being run by the Construction Industry Training Board at Nutts Corner. Not only do these schemes provide a solid base of training, but they also serve to keep everyone abreast of modern developments.

The Institute of Energy, the Chartered Institute of Building Services and the Institute of Domestic Heating Engineers all maintain a regular programme of lectures again helping those interested to keep up with modern developments and at the same time providing platforms to enable developers to introduce the result of their efforts.

A recent innovation has been the forming of a Northern Ireland Energy Managers Group, with representatives from all sections of industry providing a forum for discussion mainly on the subjects of energy conservation. There has been considerable co-operation between this Group and their counterparts in the Republic of Ireland, The Energy Managers Association.

Seminars sponsored by various organisations have been somewhat spoiled by the fact that all sorts of bodies such as trade unions, accountants, architects etc. have decided to have a seminar related to energy subjects. The same could be said about schools' competitions, teachers must be sick and tired of preparing projects on energy subjects.

Regional Review — Ulster

22 IHNV, April 1981

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Exhibitions still seem to attract not only exhibitors but also visitors. Two have been held this year, the Institute of Energy’s previously mentioned Home Heat Exhibition, and the commercially sponsored one-day energy exhibition, both drew capacity audiences with exhibitors well pleased with the result.

It will be interesting to see how the long established Heat and Power Exhibition fares in October.

Future
If it was possible to accurately forecast what the future holds for this industry, then we would not be writing this article.

Earlier the overriding factor of the year was how the recession has affected the year’s working.

There are those who say it has or is about to bottom out but there are few who say it with conviction.

Let us, however, look at the facts. There is little or no visible expansion in the private building sector, public authorities are under restrictions to curtail their building plans and so one cannot see a big increase in that particular direction.

However, there is one glimmer of hope in that commercial property developers seem to be moving and there are a number of major commercial developments earmarked to commence this year, in various parts of the Province.

In addition there are a small number of government sponsored projects which could reach the tender stage in the near future.

None of this will set the world on fire but at least it could be described as something positive.

Will there be any major changes in the design and layout of schemes?

Firstly, the new building regulations and other legislations are going to ensure that buildings must have a higher “insulation factor” thus helping to reduce energy input.

One cannot see a major change in the types of installations now being installed and, of course, whether they be oil, gas or coal will be decided by the clients and the relevant fuel charges. If the present pattern persists then solid fuel will remain the favoured choice.

It would appear that district heating as we knew it has little or no future in the Province. Smaller units may become popular, and the name “Group Heating” could become the byword. This is dividing an estate up into a number of small sections each with its own boiler plant.

The “in thing” at the moment appears to be C.H.P., combined heat and power, and certain interested parties are lobbying very hard for such a plant to be installed in the Province.

The Government have agreed that Belfast should be one of the six U.K. cities to be the subject of an indepth investigation as to whether it should be the centre for a C.H.P. plant. It faces strong competition and on the face of it would not appear to be the leading contender.

Earlier we said that, irrespective of the conditions now prevailing, there was an air of optimism in the heating industry. There is no reason why that attitude should change.

Aerocowl
Five major awards were won by Aerocowl Marketing Ltd, at the recent Brussels International Inventor’s Fair held every four years in Belgium.

The Aerocowl combined flue terminal and ventilator took first place in the “Oscar du Public” Award, voted for by all visitors to the exhibition, and first place also in the award for energy conservation made by the Belgium Prime Minister, M. Martens. The unit also took second place in the “Grand Prix de Jury” Award, while the company’s exhibition stand presentation won a Jury Award and The People of Brussels Award.

The Aerocowl is dynamically designed to eliminate down draughts, but also assists with summer ventilation. Other features include a reduction in fuel costs, prevention of rain entry to the flue and the balancing of flue pressure even when the door of a room is opened. It works equally as well on all types of fireplaces or central heating systems and, further, makes for quieter ignition of oil and gas burners and reduces the need for flue sweeping.

Made of aluminium with steel fixing legs, the Aerocowl can be fitted very simply in a couple of minutes. Fixing is achieved by turning a wing-nut on the top of the unit, causing the three self-centring fixing legs to expand outwards.

Recent Fermanagh Gas ‘Find’
At the time of going to press details were being announced of a gas ‘find’ in the Fermanagh/Cavan area. Although these results are being hailed as being a possible saviour for the doomed 13 gas companies of Northern Ireland, it is likely that the find may come too late for some of these companies. It must be remembered that Kinsale Head gas in Cork was located in 1971 and as yet supplies have only reached Cork city with Dublin and Limerick still holding on with considerable Government aid and if this can be taken as any kind of yardstick a similar period of development may be far too long for Northern Ireland to wait. On the other hand with present estimates of £78m cost for closing down the gas industry added to that grants to consumers the total present cost to Westminster may run to £125m making Fermanagh a very viable proposition indeed. So the doubts and speculation continue.
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Terrain solvent welded stacks provide controlled expansion. They’re quiet too. So once the plumber’s fixed it he can forget it.

Professional
Terrain themselves use solvent weld on their prefabricated stacks. 20 years’ experience has shown them that it provides the best all round system. And it’s well accepted by the specifier, installer and customer. Solvent weld is a professional technique. Work with solvent weld and be with the professionals!
Regional Review — Ulster

HRP WALKER

It has been an outstanding first year for HRP Walker in Belfast. This new division of Walker Air Conditioning, whose mainstream business is Carlyle distribution, was launched in late ‘79 to supply a local based refrigeration spares service to the trade.

A range of some 30 or so lines is offered from stock and demand has been heavy for copper tube, refrigerant, spot coolers, and Copeland compressors and condensing units.

“We believed there was a real need for this service locally,” said Walker Belfast Director, Brian Hunter, “and, in fact, we have proved correct to an extent where we have captured 18% of the market since start up”, he concluded.

JOHN KELLY

John Kelly Limited Agency Branch caters for the heating installer trade in Northern Ireland. A full range of equipment, parts, and spares is carried and they pride themselves that customers get very prompt service.

Agency Branch also supply the larger type of boilers in the Talisman range produced by Tomlinsons of Leeds who also make tanks for storage purposes, pressure vessels and factory chimneys which are custom made to suit requirements.

John Kelly Limited Agency Branch are also Northern Ireland Agents for the world famous range of Wilo pumps; while most of the Wilo pumps sold are for use in domestic installations, Wilo also have a very good range of heavy duty pumps for special purposes such as swimming pools and small pumping stations.

If you want to stoke your boiler automatically this can be done with their “Brencede” range of automatic solid fuel handling systems.

Also sold by Agency Branch is the now famous “Aerocowl” invented by Dr. Mitchell of Kilkeel.

“All in all” one could say if its connected with heating:- call in at John Kelly Agency Branch.

W J HOGG & CO LTD

Commenced operations in April 1979 as supplier of heating, ventilating and air conditioning plant.

Willie Hogg has been involved in building services industry for 20 years as contractor, designer and for the six years prior to commencing his own business, as a partner in a firm of agents and distributors. He has used this experience to negotiate agency and distributorship agreements for top quality equipment at competitive prices.

As a corporate member of the CIBS Willie hopes that his technical knowledge and experience will be of use in negotiations with users.

To avoid uncertain deliveries some equipment such as industrial air heaters, twinwall flue, flexible ducting, spiral duct and fittings, valves and gauges are already stocked by the company. However, it is hoped that other products e.g. pumps, axial fans, silencers and grilles will also be available from stock in the very near future.

cost efficient alternative methods of heating or cooling buildings, sales of Carlyle heat pumps to the small commercial sector have soared.

Walker, find that the 50 series packaged rooftop heat pumps are particularly popular with building societies and other high street commercial users. By installing this type of heat pump system, the running costs during the normal heating season from October to April are highly attractive. In one building society, for example, costs for the heating season are around £980 compared with an estimated £1,510 for oil and £2,700 for direct electric heating.

Apart from the obvious of low cost heating, the heat pump will provide summer cooling at no additional capital cost and requires no space for boiler house or fuel tank — a prime consideration where space is at a premium.

IAN A KERNOHAN

Ian A Kernohan is one of the best known companies in the heating trade. Set up six years ago, a measure of their success is that they have moved to new premises at Ballino Way, Balloo Industrial Estate, Bangor, Co Down, their new phone numbers are 62841 and 55233.

Products available from Kernohans include room heaters, cookers, water heaters, flue pipe, radiators, gas cabinets and commercial heaters, insulated chimneys, copper fans, silencers and grilies.

WALKER AIR

Since the introduction last year by Walker Air Conditioning, Belfast, of Unikal, a mini computer programmed to calculate

- Taral Tropical 80 high output radiator from Ian A. Kernohan.

- The elegant bath mixer with shower attachment from Peglers luxury Danum range of bathroom fittings.
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connectors, shower heaters and fittings, hotplates and cookers, oil and gas boilers. Randall nephews for these products include such names as Agaheat Appliances, Agni, Sensotherm Tropical, Parkabest, Triton and Saunder Duval. Recent additions to the range include Ageis insulated aluminium and with condensers and ancillary including the Botan range Saunier Duval. Recent components of the units the cleaning of heat Details of all the above Saintex, Sales Manager, additions to the range are manufactured in exchangers, boilers, items and many more, Randall controls including timeclocks and programmers, Barter burners for the bitumen and horticultural businesses, and most recent of all clean sweep flue brushes for insulated chimneys. The team at Kernohans include Ian Kernohan himself, V A Stauex, Sales Manager, V Stauex Jnr, Technical Representative and Mrs C Evans Secretary/Clerk.

**AIRSTREAM /SERMET**

Airstream Environmental Products is a Bristol based company manufacturing a full range of industrial ventilating and heating products. During 1979 Sermet (NI) Limited and Sermet (Dublin) Limited were appointed sole agents for the full range of equipment throughout Ireland. The first major contract secured was for the new factory of an oil car factory in Belfast in which a combination of 80 Airstream recycling ventilation and heat units and 70 air handling units are providing even circulation of clean, warmed, filtered air. The principal item of the order is for 80 recycling ventilation and heater units, built from standard Airstream inlet modular components. Each unit comprises an inlet section, washable filters, hot water heater battery, fan and a high level discharge grille. These units collect the fresh air or heat provided by 70 Airstream air handling units mounted at high level. The total system provides constant circulation of all fitted with Airstream's new dual would Class F motors, developed in conjunction with Brook Crompton Parkinson Motors Limited and designed to give a minimum 15 years service life in harsh industrial conditions. The components of the units are manufactured in aluminium and with flanged connections enabling assembly in virtually any combination. Consulting engineers for all mechanical services are Abbott & Partners of Belfast and installation work was carried out by a number of locally based companies. Further information: Jim McFadden, Sermit (NI) Limited, (Tel: 0846 682531).

**DUFFERIN SERVICES**

The necessity for operating clean and efficient boiler and steam raising plant in the present depressed economic situation, both in financial and conservation terms, is more important now than ever before.

Dufferin Industrial Services Ltd, have always recognised the need to provide a fast chemical cleaning service embracing all types of boiler plant from the large power station units to the smaller factory package boilers. They take pride in being the leaders in the cleaning field in Ireland for the past thirty years, achieved by seeking out and acquiring the latest equipment and methods enabling us to keep ahead of our competitors. This expertise has been utilised in solving the cleaning problems of many customers both North and South. They have also been the innovators in the high pressure water jetting business, taking delivery of their first machine in 1965 and are founder members of the Association of Water Jetting Contractors. At the present time they operate a fleet of highly mobile self-contained high pressure water jetting units capable of pressure of up to 12,000 PSI which, coupled with the technical know-how, accumulated only through long experience, principally in the cleaning of heat exchangers, boilers, condensers and ancillary equipment, including oil storage tanks in oil refineries, power stations, fertiliser plant, etc., but over the years they have cleaned buildings, cranes, bridges, ships' hulls, drains and sewers and various other items too numerous to mention. They are now perfecting new techniques which will take the firm even more competitive and look to the future with growing confidence.

**G W MONSON**

G W Monson & Sons Ltd of 18 Ballyblack Road, Newtownards, Co Down, Tel: 812350 are agents in Ireland for Cradley boilers which have been widely used throughout the country over the past 20 years. Of robust construction the 'Cradley' has an excellent reputation for both durability and reliability, and is available for oil, gas and solid fuel applications. Sizes range from 1,000 lb/hr to 30,000 lb/hr. Medium and high pressure hot water boilers are also available complete with their own packaged pressurisation equipment. Complementing this range of boiler, G W Monson & Sons Ltd are the representative in Ireland of Midland Combustion Limited, whose range of oil pumping and heating units are widely used.

In the field of high and medium pressure hot water installations the 'Pillinger' Nitromatic is a leader in its field. G C Pillinger and Co (Engineers) Ltd also provide a comprehensive range of quality cold water pumping equipment with units available for every application. A comprehensive range of building services pumps has recently been introduced and has created much interest. Details of all the above items and many more, including the Botan range of industrial water treatments can be had on request. A comprehensive catalogue is available and a full after sales service is available on all items supplied, ex Newtownards.

**INSUL TUBE**

Insul Tube is a closed cell structure PVC nitrile rubber insulation. Insul Tube is produced using a microwave cure process which results in an even cure throughout its whole cross sectional area unlike other insulation tube production methods. The continuous line microwave process also ensures that correct wall thickness and diameters are supplied to our tolerance specifications which are available on request.

Insul Tube has a built in vapour barrier due to its closed cell structure, and due to its high flexibility can be installed quickly and economically. Insulmaterials are produced in tube, sheeting and tape. Insul Tube will not support combustion and is classified 'self extinguishing', it has excellent resistance to weathering, ozone, oil, grease, liquid fuels, acids and alkali.

With its closed cell structure it offers a good noise absorbancy and reduces noise created by liquids in cold or hot applications.

With a temperature range of -75°C to 116°C Insul tube is suitable for the insulation of hot water pipes to minimise heat loss, or for chilled water.
and refrigerant lines to control condensation and heat gain.

It is produced to fit all standard and metric copper and iron pipes and can be slipped over the pipe before assembly.

Prior to brazing, Insul Tube should be pulled back clear of the joint and released on completion and allowed to return to its original length. Compression may effect the insulation factor and cause condensation on cold pipe lines.

On existing installation Insul Tube can be supplied slit and can easily be wrapped around the pipe and joined by Insul Adhesive. The tube should not be stretched as this will create stress at the glued joints.

For the insulation of tanks and large pipes Insul is supplied in sheet form. It has the same thermal and chemical properties as Insul Tube.

Insul Sheet is supplied in various thicknesses and each sheet measures 48" x 36". The sheets are adhered to tanks and pipes with Insul Adhesive and can be painted with special paint.

For insulating pipes that are not easily accessible or short lengths of pipe, self adhesive Insul Tape is recommended. It has the same properties as Insul Tube and Insul Sheet. Due to the self adhesive backing it is easy and quickly applied.

The tape is supplied in rolls of 30 feet long x 2" wide x 1/8" thick.

Insul Products are manufactured by Kenmare Ltd and distributed by McGregor Manning Ltd.

**OBC BELFAST**

OBC Belfast are a wholly owned subsidiary of Wolseley Hughes Merchants and have been established in Belfast for 18 years and for the past two years have been operating out of their new custom built premises at Whitla St Belfast.

As main suppliers to the trade of heating and plumbing equipment OBC carry comprehensive stocks of all leading makes of both industrial and commercial equipment.

On the heating side — both commercial and industrial — boilers and manufactured by Potterton, Ideal, Polystatic, Trianeo, Thorn, Worcester Engineering, Parkray and Aga, are all available ex stock. A comprehensive range of P & K type Stelrad and Thorn Radiators, Nibco and Yorkshire Fittings SMC Eurauno, and Grundfoss pumps and Selkirk Metalbestos Flues are stocked.

On the sanitary side — both domestic and contract — large stocks of white and coloured items are available. Ideal Standard China and brassware across the range is stocked in depth, as are Mira Showers and a range of shower cubicles, Flairline and Peglers Brassware.

During March this year OBC introduced their own brand name of loft insulation to the market and this is known as Insulay. This product is acceptable for DOE and N1 Housing Executive contracts and is available at very attractive prices.

Belfast branch of OBC are fed with stock from their Ripon Feeder Depot and a vehicle leaves Ripon every Friday, is delivered into Belfast Depot on the following Monday/Tuesday, thus ensuring availability of stocks.

Hundreds of items are stocked by OBC Belfast and these are all described in their OBC Heating and OBC Plumbing Catalogues, which are readily available free to all clients with current credit accounts. These can be purchased for the sum of £3 and £2 each respectively.

A monthly OBC Price Guide is published and has proved to be of immense assistance to the trade.

Also available is their '5 Star Buy' Guide quoting various popular items available each month at extra special discounts. These publications are also sent free to customers operating credit accounts.

As a company OBC Belfast are very anxious to secure business and give customer satisfaction but they also endeavour to repay their customers for giving them their business and over the past few years have organised various trips to places of particular interest to the trade ie. exhibitions in Scotland and England, a visit to their feeder branch at Ripon to enlighten the customer on the services available to them. On March 20th this year 56 people including customers and company representatives, flew out from Dublin to Germany to visit the International Sanitary & Heating Exhibition at Frankfurt, as guests of OBC. This was a very successful trip and was available to all members of the trade who joined the ISH promotion which ran from September, 1980 until February 1981, on a points system.

For further information please contact Mrs A Burnison, OBC, 2/6 Whilda Street, Belfast, BT15 1NJ. Telephone: (0232) 751626.

**McGregor Manning**

McGregor & Manning Limited have been associated with the supply of plumbing and heating materials to the merchant trade only. Presently they act as sole agents and distributors in Northern Ireland for Peglers Limited, Doncaster; Royal Doulton Sanitaryware Limited, Stoke-on-Trent; Kenmore Refrigeration Limited ("Insul Tube") Crook, Co. Durham, and Barlo Heating Limited, Clonmel.

Peglers Limited manufacture the well known range of "Danum" luxury bath shower mixers, bath and basin taps, bidet fittings, and sink mixers as well as a comprehensive range of gate valves, stopcocks, ball valves, waste fittings, hose union bittaps and general plumbers brasswork, including "Premax" compression joints. The heating trade will be very conversant with Peglers extensive range of radiator valves, viz: Belmont glassless, Belmont No 97 and 99, Terrier and the 2063/2076 range.

Royal Doulton's comprehensive range of sanitaryware both in vitreous china and fireclay needs no introduction to both merchant and specifier. On the domestic side, their new Sovereign range has been extremely well received and like all their VC products it is available in ten colours, including Burgundy and Whisky. Doulton's acrylic baths which are manufactured in their Cirencester Works are proving very popular especially their Corrinium corner bath and the luxury Cressida rectangular topped bath. These two styles are also available in a wide range of plain colours as well as Mink Marble, Beige Marble and Dark Onyx.

Kenmore Refrigeration Limited manufacture "Insul" insulation in tubular form to Class 1 specification. A very comprehensive range of sizes is available for both GB and copper tube and can be supplied slit if required.

Barlo Heating Limited who manufacture the well known "Barlo" radiators in a very modern factory, in Clonmel have become recognised in Northern Ireland for a quality radiator with round top. A very extensive range of lengths and heights are available and each radiator is delivered in shrink wrapped polythene with cardboard protective.
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18 Ballyblack Road, Newtownards, Co. Down. Phone: 812350.
8 Lower Mount Street, Dublin 2. Phone: 766627.
corner pieces to minimise damage either in transit or stock.

McGregor & Manning Limited hold extensive stocks of Peglers, Doulton and Kenmore products in their 12,000 square foot store, thus enabling them to give rapid back-up service to the merchants.

AEROCOWL MARKETING

Six years ago a Northern Ireland doctor with a flourishing practice at Kilkeel walked into the Belfast office of the Coal Advisory Service (CAS) carrying the inside of a breakfast roll and a device made out of a breakfast cereal packet. As a result of that visit the world has its first aerodynamic chimney cowl, now being manufactured in the Province.

Known as the Aerocowl, it prevents down-draughts in all chimney and boiler flues and is claimed to be the first to be totally effective under all wind conditions, even still air.

In its first recently completed year Aerocowl Marketing Ltd has recorded sales worth over £3.5 million. Although initial sales have largely been in the United Kingdom the company is at the early stage of developing a European distribution network. Plans are to maintain production of the Aerocowl in Northern Ireland.

Decisive step

When the doctor, Arthur Mitchell, took that decisive step into the CAS office he used the inside of the toilet roll to represent a chimney flue while the prototype of his cowl was made out of the breakfast cereal packet.

Dr Mitchell had previously spent a long time in hospital during which he had taken a correspondence course in draughtsmanship. His thoughts had also turned to a pressing domestic problem — smoke filled rooms caused by chimney downdraughts.

He came to the conclusion that few, if any, of the chimney cowls on the market were effective and deduced that this was largely because they were not aerodynamically designed. The Aerocowl, made of special aluminium, consists of three shaped metal plates enclosing a circular aerofoil. A central spine with clamps provides the secure location in the flue or chimney. There is an expansion chamber at the end of the chimney and ventur-convergent and divergent duct system which speeds up gas flow.

Energy conservation

The design converts all winds to a laminar flow across the top of the chimney. As winds flow across, or even downwards, the pressure is reduced by the aerofoil/venturi arrangement so that the flue or chimney pressure is always lower than air pressure inside the house or workshop. This also applies when the outside air is still, as in winter fog conditions.

Aerocowl also contributes to energy conservation by allowing clean burning of the fuel source, giving no obstruction or choking of the flue and embracing displacement of all exhaust gases.

Since the air is always circulating in the chimney system between the cowl and the blast door of a central heating appliance, for example, there is no accumulation of condensation or of heavy damping cold air. When ignition occurs it does so rapidly without resistance to the flame or the hot gas expansion and therefore completely burns the oil gas. Since there is no resistance from the flue it means energy always ends up around the heat exchanger which is usually above the flame and it also means that heat retained in the firebox is drawn up around the heat exchanger after flame-out.

SERMET LIMITED

Sermet Ltd is now well established in the supplies and service of equipment for the Building Services Industry. The specialised nature of their water treatment plant particularly, has ensured that the strength of the company has developed along the lines of "after sales service".

The team of sales engineers Jim McFadden, San Ramsey, Ron Macartney and Stanley Bell offer a wide range of experience gained over a number of years in the heating and ventilating industry.

Through Peabody Water Services Ltd Sermet supply water treatment equipment from the simple base exchange softeners to the most sophisticated automatic plant for high pressure boilers, soft drinks industry and the dairy industry of which there are many successful installations now in operation all over Ireland.

With the increased use of the cast iron boiler and the natural desire for robust construction and long life the Beeston Boiler has come back into prominence, with the old well established Robin Hood Boiler regaining popularity because of its facility for solid fuel or oil.
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firing. A full range of specially designed oil and gas fired boilers, however, still account for the largest section of business. Sermet Ltd give a wide coverage of the heating and ventilating market and represent some of the best known and reputable manufacturers. Names such as F H Biddle, IMI Rycroft Calorifiers, Armstrong Pumps together with those mentioned above are synonymous with quality products and give confidence to the specifier, contractor and end user.

The Rycroft calorifier factory at Ballymoney has proved to be a great asset to the trade. The convenience of having this type of product made locally is obvious, as transport costs are reduced and damage in transit is now virtually eliminated. A recent addition to the Sermet range is the well known Horseley Bridge Sectional Tanks for which there is an application on almost all building contracts.

Over the past few years there has been a preference to use air handling units for ventilation and air conditioning but there are still many advantages in the use of separately built up systems using separate fans, filters, heaters, etc, not the least being accessibility and ease of maintenance and the Keith Blackman range of fans provide one of the widest range from which to choose. Sermets range and quality of equipment makes them one of the leading suppliers to our industry and it is good to see a company developing with customer satisfaction as a prime factor.

Wm H Leech & Son Ltd

Engineers' agents and distributors, Wm H Leech & Son Limited, who have served the heating and ventilating trade in Ireland for over 50 years and are currently enjoying considerable success with the new Mira timed flow control valves manufactured by Walker Crosswell & Co Limited whom they represent as sole distributors in Northern Ireland.

The Mira timed flow valve is of a press-action design which automatically turns water flow off after 30 seconds. It is primarily intended for multiple shower point installation, such as schools, factories and leisure centres where hot water is often wasted through showers and taps being left running after use. The Mira timed flow control valve will considerably reduce the increasing energy costs associated with such water wastage.

The Mira timed flow control valve is extremely vandal-resistant being suitable for concealed pipework via 15mm compression fittings and the valve itself is protected by a polished chrome circular wallplate.

When used with the Mira vandal-resistant shower head, the timed flow control valve completes a unique package which provides a virtual vandal resistant shower installation.

The new Grosvenor Road Recreation Centre in Belfast and the Valley Leisure Centre in Newtownabbey are just two examples of recent installations using the Mira timed control valves. The latter having decided to replace their existing flow control fittings with Mira after obtaining successful results with one fitted on a trial basis.

Wm H Leech & Son Limited carry extensive stocks of all Walker Crosswell products including spares and accessories which can be readily purchased through their appointed plumber's merchants.


Further details of the Mira time flow control valves or any of the above products can be obtained from Wm H Leech & Son Limited, 299 Ormeau Road, Belfast, BT7 3GG.

Telphone: Belfast 645339.

The Northern Ireland company offers off-the-shelf service on all the popular pipeline
Irish H & V News offers exclusive coverage of the Heating, Ventilating, Air Conditioning, Refrigeration and Plumbing Industries in Ireland and with the incorporation of Zone specialist coverage of the Environmental Engineering Market.

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CENTRIFUGAL PUMPS

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Telephone: 0232 660219.
Some five years ago when the energy crisis was beginning to be seen as a reality rather than an alarmists dream, Gerry Welsh and Frank Boyles, directors of Aldershot Ductwork Services, through their involvement in the dust extraction business, realised the possibilities opening up for energy conservation and formed a company, Extracta Engineering Ltd. This company was to be solely involved in energy conservation and environmental improvement.

Having been intimately connected with waste removal by air extraction, they realised that great energy savings would be effected by a system that returned heated air, used for extraction, to the work area and also that by filtering that air to a fine degree, working environment would be improved as a bonus. Draughts would be avoided caused by air replacement through doors and windows and obviously heat would be saved. They also saw that in some industries waste withdrawn from machine areas could be utilized as a fuel for heating premises or providing heat for processing.

They coined a phrase “We sell independence” as their watchword and set about finding the finest equipment in the world with which to build a complete system of waste extraction, filtration, storage and burning which would render their customer independent of outside fuel supplies. As initially they saw an obvious market in the timber industry they investigated the Scandinavian market with its vast experience in woodworking machines and techniques. Their belief that the Danes were the most advanced in the type of processes in which they were interested, was proven and Extracta have now put together and installed systems based on Danish equipment for extraction, dust and automatic waste stoking. These systems give the independence of outside fuel supply that Extracta are looking for whilst keeping chimney emmission within public health requirements.

briefly, return air filters are used to filter extracted waste and to return air to the work area and then waste is stored and when required automatically stoked into boilers, which produces electricity. This is then returned to the factory area through pipework and heat exchangers for work space heating or for processes. Systems are now being used to burn carbon paper, ground nut husks, carpet cuttings, straw, coffee grounds and many other forms of waste.

Extracta systems took care of fuel savings in winters of 1977/78 and they are still installing systems to take care of the remainder of this winter and the future. Extracta’s customers are well aware not only of increasing costs of oil and other fuels but the doubts over reliability of supply. An additional feature now available is the Turbolub steam turbine which is coupled to an alternator to provide electricity. Thus a waste fired boiler can produce steam which in turn produces electricity. The steam after giving up part of its energy in this way can be used for processes or heating. Conversely steam being vented after use in processing can be used to create electricity by being passed through the turbine. Having become involved in factory environmental improvement it was

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**P & D MACFARLANE**

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decided to add further to the company's capabilities in this respect. After a great deal of investigation, Extracta have signed a sole agency agreement with an Italian company manufacturing equipment to cover a very complete range of work environment improvement equipment. Their products include wet scrubbers, oil mist separators, oil and swarf separators, welding fume removal equipment and fine dust separators. The company's recognition of the need for every employee to recirculate heat wasted at roof level and the possible saving of energy is pointed by their marketing engineers and the experience in fan engineering and the noise pollution in mind. So Extracta feel that dedication to energy conservation can be achieved whilst keeping factory noise to acceptable levels.

Further information from P&D Macfarlane Ltd.

HENRY R AYTON

Mr Henry R Ayton, who was a professional engineer, came to Ireland in 1913 with particular experience in fan engineering and the efficient use of steam. He commenced business as an engineer's agent working from Belfast with an agent in Dublin from the early 1920's until a Dublin office was opened in 1932 and in 1933 the business incorporated as a private company registered in Belfast. Since then the company has grown to meet the needs of developing industry, both North and South, and is now a team of more than fifty people working from establishments in Belfast and Dublin.

The company policy which has not changed with the years, is to develop representation of well leading companies in the field of mechanical engineering through competent sales and technical support. In so doing, ensuring that products are correctly applied. To study the needs of customers so that the company can supply ex stock those specialist products for which there is a demand.

To provide whatever after sales service is necessary. A review of just a few of the products available from Henry R Ayton Ltd follows:

**Crane**

From greasy string for packing glands to sophisticated mechanical seals and gland packings for pumps, compressors, mixing vessels and other rotating machinery — that is the history of Crane product development.

Product innovation, however, is only part of the story. Advice on how to obtain the most satisfactory product use is available through Henry R Ayton Ltd.

**Wika**

Part of the large Wika range of gauge include the solid front pressure gauge with limit valve switches. For feedback and feed-forward applications or for central plant monitoring, Wika solid front pressure gauges are equipped with electrical limit value switches and/or inductive transmitters. These additions are installed in the pressure gauge casing. The electrical connection is made by a lateral cable connection box or by a pressure gland.

**The Burgess Metro-Flex Isolator**

Consider what happens to the heat in your boiler when you go home at night or for the weekend. The temperature/pressure for much longer periods resulting in fewer surge demands on burner starts, lower fuel consumption, lower electrical consumption and minimised smutting potential.

Site tests have shown that fuel savings of up to 15% are possible, and pay-back periods of under one year on the low capital cost are common.

The type of plant installed, fuel used and chimney arrangement will vary and specific expert advice is recommended.

**Engineering Services**

Systems designed and manufactured to your requirements.

As a further aid to customers Henry R Ayton Ltd are now able to offer a service from their Engineering Services Department. This has been established to provide design and draughting facilities for the manufacture of complete engineering systems. By incorporating principals products they can offer complete package systems providing the best technical specification and optimum performance combined with the most economical price.

**B&E European Fully Automatic Treble Pass Wet Back Steam Boiler**

The European steam boiler is offered in 15 shell sizes ranging from 2250 Kg (5,000 lb/hr) to 16300 Kg (36,000 lb/hr) F & A 100°C and for standard pressures up to 1.722 N/mm² (250 p.s.i.g.). Higher pressures are available on request. The boiler is of treble pass design and has a low set furnace with the final passes formed by two banks of straight horizontal smoke tubes expanded into three tube plates.

The boiler range is constructed to the latest British Standard Codes 2790 and will comply fully with proposed amendments.

**LaBour**

The LaBour range of pumps have been designed to incorporate a minimum number of parts, yet allows wide interchangeability of parts from one pump to another. Different mechanical seal arrangements are possible and as an alternative to mechanical seals, packed-glands can also be supplied.

Whilst the range has been designed for standardisation of parts, the shaft sizes and bearing arrangements are such that a very sound, mechanically robust pump has been evolved which substantially reduces shaft vibration and hence seal mal-operation. This, coupled with the range of stainless steels and LaBour alloys in which the pumps can be made, has resulted in a superior range of pumps to suit a wide choice of processing applications.

**Saunders Valves**

Part of the Saunders range include the Saunders diaphragm valve which is made in a range of materials to suit the fluids handled and the valve glandless because the diaphragm isolates the operating mechanism from the fluid in the pipeline. Virtually a new valve is made by replacing the diaphragm.
The Michelangelo range by Ideal-Standard has brought a new sculptured quality to bathroom furniture. Ideal-Standard in the UK with headquarters in Hull, is part of a European organisation, and the Michelangelo design had previously won wide acclaim in other European countries.

The Michelangelo is available in six fashion colours and white, including four colours, Kashmir Beige, Sorrento Blue, Harvest and Bali Brown, which are the latest on the fashion colour bathroom scene, as well as the established Penthouse Red and Penthouse Blue.

Paolo Tilche, who created the Michelangelo range, is a leading Italian designer. With the range he has produced shapes which have flair and feeling, appealing consistency of form and practical good sense — a combination of which Italian design has become famous.

The quality and styling of the Michelangelo “collection” epitomises the comprehensive range of vitreous china bathroom furniture offered by Ideal-Standard to meet all requirements.

Ideal-Standard also market a range of plastics bathtubs. It includes the ultra Nagoya; the luxury Michelangelo which features a wrap-around head-rest; the luxury Brasilia — design co-ordinated with the stylish range of Brasilia vitreous china bathroom furniture — and the Status.

The ceramic disc valve principle now features strongly in bathroom brassware fittings which are offered by Ideal-Standard including the single-lever controlled range of Ideal-blend blender showers which are based on this technologically-advanced principle.

Idealblend showers — with single lever control — offer a choice between built-in or exposed models, both designed for easy installation. With the Ideal-blend, precise control of temperature is provided by the same lever that gives control of flow. The light action and immediate response are made possible by the unique ceramic disc mixer cartridge contained within the body of the shower.

The Idealblend range is made to a high standard of design and engineering and Ideal-Standard claim the same qualities for the Jetline range of conventional fittings, and the Idealmix range of thermostatic showers.

The conventional Jetline range comprise pillar taps, for both bath and wash basins, monoblock and three-piece wash basin mixers, with either swivel or fixed spout, a monoblock bidet mixer for over rim supply and a three-piece bidet mixer for flushing rim and spray, as well as a rollmounted bath mixer with shower attachment.

The valve assembly in all Jetline mixers and pillar taps has a non-rising spindle and is sealed with two ‘O’ rings which give a longer-lasting seal than the traditional gland packing.

Idealmix thermostatic showers and mixers are precision made, accurately controlled units of modern design which give particularly neat installation. Their high quality manufacture and finish are combined with easily-understood operation and reliable performance.

Idealmix units have two controls — one to select the temperature, the other to determine the water flow rate. All models are fitted with safety stops.
which prevent the control being accidentally turned to a temperature that could cause scalding. A further safety benefit in the Idealmix range is that if, for any reason, there is a failure of the cold water supply, the flow is very quickly shut down. Idealmix showers will operate on water heads of down to one metre in favourable conditions, but a head of 1½ metres, or more — obtainable in almost every home — is recommended. This means, therefore, that Idealmix showers are suitable for all domestic installations, as well as other applications.

The thermostat mechanism operates on the bi-metallic principle and the design facilitates the replacement of the thermostat cartridge should this be necessary.

All Ideal-Standard bathroom brassware fittings are available in either chromium or Karatclad hard gold plate finish.

* Pictured here is Ideal-Standard’s Italian-designed Michelangelo bathroom furniture.

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**Regional Review — Ulster**

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**Reduce Shower running costs: pay in 30-second instalments.**

Mira timed controls automatically switch off showers after a thirty-second flow. Which means no hot water is wasted. And that you don’t pour money down the drain. We’re so confident that you’ll appreciate the benefits, we’re offering a free one-month’s trial.

For more information on saving energy and water, spend thirty seconds now on filling out the coupon below.

[Form for Mira timed shower controls]

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Regional Review — Ulster

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* Pictured here is Ideal-Standard’s Italian-designed Michelangelo bathroom furniture.

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For more information on saving energy and water, spend thirty seconds now on filling out the coupon below.

[Form for Mira timed shower controls]
MANOTHERM LIMITED

Manotherm Limited is a leading company in the instrumentation business in Ireland. They have had an office in Belfast since the early sixties, and for the past ten years Bob Livingston has been the man at the helm.

The Manotherm range of instruments is vast and covers in the temperature field, everything from temperature sensitive crayons which melt at a specific temperature through dial thermometers, multi-point electric thermometers, thermostats, controllers, portable digital thermometers to portable infra-red thermometers through which you merely look at the object and the temperature is displayed digitally.

In flow measurement they represent G.A. Platon famous for the Gapmeter and Flowstat — this latter a unique device which ensures a uniform flow of media regardless of pressure fluctuations upstream and downstream in the line. A big outlet for the flostat is in distinct central heating schemes — everybody gets the same heat and the fellow at the end of the line is not left to freeze.

Manotherm is also very much in the air conditioning field with the famous Velometers which is a stock item, and its younger brother the Thermo-Anemometer for very low air flows. They stock a wide range of vacuum and pressure gauges, and pressure switches sensitive enough to detect a change of 0.01" WC to others capable of operating at 20,000 psig.

Manotherm also stock flow switches for all applications from fan-control in ducts to D.P. cell types for corrosive media in large pipelines. The current energy crisis coupled with the recession is helping Manotherm to sell more.

They supply the measuring instruments and controls for checking all parameters such as, ventilation and insulation flow rates, temperature and humidity in clean rooms, cold rooms, storage rooms etc. They also supply recorders to check on these parameters and to check electrical consumption. With their vast expertise they are able to advise the customer how best to achieve fine control over their particular problem areas, and this conserves costly energy.

Bob Livingston may be contacted at Belfast 645966.

REGIONAL REVIEW — ULSTER

ENVIRONMENTAL SUPPLY CO

A new concept from Roof Units Ltd packages all the best characteristics of their centrifugal fan units and presents them in slim line cases ready for connection to ducting or flexible hose systems. Speed controllers are available.

The elegantly designed external rotor motor matched to a backward curved impeller, gives quiet effortless performance against resistance and the important feature of full speed control allows the user to select precise performance in site.

The "in line" or straight through air flow concept renders obsolete additional connecting ducting to the fan unit, and since the fan is housed within the duct then only marginal space is required to contain the power unit.

No protruding motors, no pulleys, full speed control, quiet and powerful, straight from the carbon and bolted or clipped in the system in minutes.

Performance from 100 c.f.m. to 5,000 c.f.m. operating up to 1.5 ins. w.g.

Further information from Environmental Supply Co Ltd (Tel: Belfast 54429).
Pillinger, the water boosting pressurisation company, announces the launch of a complete range of building services pump. With over 1,100 models to choose from it is believed to be one of the most comprehensive ranges available.

The pump range from small centrifugal monobloc to sump, sewage and borehole pumps. Those of most interest to the h&v industry are the close coupled in-line circulating pumps, which can be supplied for either horizontal or vertical mounting, with maximum flow rates of 36 L/s and heads up to 25.5m. They should be able to satisfy most circulating needs in both chilled and hot water systems.

Included in the range of circulators are belt driven pumps with a maximum flow rate of 53 L/s and heads of up 18m. These pumps are ideal where the exact duty is not known as the pump pulleys can be changed to vary the speed.

The “universal workhorse” is the end suction pump, either in monobloc or direct drive configuration. With a duty range of 0-100m and flows of 0-240 L/s they are suitable for water transfer, boosting, circulating and fire fighting applications.

For much high heads the range of horizontal and vertical multi-stage pumps have maximum heads of 610m with flows in excess of 23 L/s so that direct lift or split level pumping can easily be achieved on the highest of high rise buildings.

When water transfer is required, and it is not possible to achieve a flooded suction facility, Pillinger offers a range of self priming pumps. With a suction lift of 7m and heads of 200m, together with a maximum flow rate of 10 L/s, most water transfer applications can be catered for.

A complete range of submersible sump pumps is available, whether for small cellar drainage or large dewatering applications.

A selection of gear pumps suitable for pumping gas oil, fuel oil or lubricating oil is available. They can be supplied with or without by-pass. The duties range from 0-10 L/s with maximum head values of 50m.

For more details: agents for G C Pillinger & Co Ltd, G W Monson & Sons Ltd, 18 Ballyblack Road, Newtownards, Co Down, Newtownards 812350.

LENNOX — BL

BL Refrigeration and Air Conditioning Limited of Belfast have recently been appointed distributors of the Lennox range of commercial, industrial and domestic warm air heating, ventilating and air conditioning equipment and accessories.

The range spans virtually every HVAC need, from oil or gas-fired warm air furnaces for high quality domestic use through packaged rooftop units and split systems for 'High Street' applications, to single-zone or multi-zone control systems for major industrial and commercial installations.

Heat pumps figure prominently in the Lennox range, and a useful new publication entitled “What's All The Fuss About Heat Pumps?” is available free on request from BL Refrigeration and Air Conditioning Limited, 149/151 Albertbridge Road, Belfast BT5.
YOU’RE IN CONTROL WITH
THE NEW Penn PRESSURE
CONTROLS P77 & P78

Designed to meet European standards of the 1980’s

In addition to the traditional Penn pressostat features of:
Stable switching points - Leakproof bellows - Ease of wiring and adjustment - Long life

We have added the following extra’s:
- Splashproof enclosure (IP54) standard
- CEE requirements, standard
- SPDT contacts standard on all P77 single pressure controls
- A unique contactblock on all P78 dual pressure controls, allows separate signalling for both high and low pressure side (Patent Pending)
- TÜV approved - and NH₃ models available

From now on you’re in control with the new Penn P77 single pressure- and P78 dual pressure controllers for refrigeration, air-conditioning and heatpump applications.

For further information please contact your nearest supplier.

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Published by ARROW@DIT, 1981
THE 'ALL-IRELAND' 
ELECTRICITY PROBLEM
— THE INTERCONNECTOR SOLUTION

Multi-channel viewers were treated to an interesting review of Northern Ireland's electricity dilemma on BBC's Spotlight programme which was transmitted on Friday, March 13. The programme brought home the need to get off the "oil-hook" as soon as possible and underscored a great many of the points made in recent months.

Power in Northern Ireland is even more dependant on oil than it is in the Republic. Consequently, the North has suffered to an even greater extent as a result of the steep and steady increase in oil prices over the past decade.

There are two major power stations on the Northern Ireland Electricity Services (NIES) network — one at Ballylomfort and another at Kilroot. The latter is a massive project that has become a white elephant even before its completion. Designed to have a total capacity of 1,200 MW (Ardnacrusha, on the Shannon, is a mere 60MW), it now looks that Kilroot will do well to have half that capacity finally installed; And some of what is already there may go into mothballs because demand for electricity is now running below last year's level.

With the interconnector between North and South broken, both the ESB and NIES are forced to keep additional plant on load to meet peaks and unexpected demand. This spinning reserve, as it is called, would be greatly reduced if the power link was restored. At present it costs each utility about £3 million a year. The total loss to date for the all-Ireland economy is close on £50 million at today's prices; how ironic that the only real symbol of national unity has been smashed by the very people who claim to seek a united Ireland.

The options open to NIES at this time are:

1. Continue with the building of Kilroot and take a chance on oil. This is a non-starter as the oil situation is destined, in the long-term, to get worse, not better. The load-growth wouldn't justify it and the "build it and supply Eire" scenario (used to political advantage by Mr Colley in recent months) has been roundly knocked on the head by the ESB's outgoing chief executive, Dr J J Kelly — more about this anon;

2. Stop building now and suffer the cost of the cancellation; it seems the about half of the Kilroot station will suffer this fate;

3. Convert Kilroot to coal. This is under review at present and would seem to be a sound proposal in the light of the long-term prospects for oil. It is, however, a costly option, and capital is not exactly growing on the trees in Mrs Thatcher's Britain.

As long as the North-South interconnector remains out of operation, the conversion to coal will be tricky because plant shut-down necessary to do the job might coincide with an unforseen breakdown elsewhere;

4. The so-called "Scottish Option" is much more...
EX STOCK

PEGLERS


The DANUM RANGE of luxury brassware in gold and chrome. ½ Basin Taps — 4” and 8” center — basin mixers — monobloc. ¾ Bath Taps — bath fillers — bath shower mixers. Bidet Sets — spray 8” center and overrim monobloc. Sink Mixers — stand fixing and single hole. All ex-stock in solid and acrylic heads — GP + CP.

CP WASTES: Basin — Bath — Shower Tray.

GP. WASTES: Basin — Bath Assembly — Shower Tray (Basin and bath with solid plug).

PEGLERS: Prestex Compression Fittings — Limited Range.

ROYAL DOULTON


ACRYLIC: Corinium Corner Baths 8mm — White and Colour and Marbled. Sheba 1700 Baths 5mm — White and Coloured.

CRESSIDA: 17.00 in Beige and Mink Marble Finish.

SABRINA: 1700 3mm Baths — White and Colour. Full Range of Panels, Acrylic Shower Trays.

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FIRECLAY: 30 x 30 Shower Trays — White and Colour. 18 x 15 x 8, 24 x 16 x 10 Sinks. Slab Urinals.

COLOURS: White, Alpine-Blue, Whisky, Burgundy, Avocado, Sepia, Sunking, Harvest & Mink Marble and Beige Marble.

Rely on Peglers & Royal Doulton for Quality
Rely on Manning & Usher for Service
favoured by some politicians in Northern Ireland. This calls for connection to the South of Scotland Electricity Board which has an ample (nuclear-supported) supply. The Scots are not too keen on this proposal which would be welcome enough in the short-term but would force them into building new generating capacity ahead of schedule; the Scottish Electricity Boards are separate authorities from the Central Electricity Generating Board (CEGB) which supplies power to England and Wales;

(5) A direct link with the CEGB is the option favoured by Mr John Gaston, chief executive of NIES who put this forward on the programme.

The overall tone of the BBC programme was one of grave concern for the North’s electricity supply with some relief being expressed at Mrs Thatcher’s recent announcement of subsidies to bring power prices in N Ireland into line with those in England. The programme was one of grave concern for the North’s electricity supply with some relief being expressed at Mrs Thatcher’s recent announcement of subsidies to bring power prices in Northern Ireland into line with those in England and Wales.

An interesting item in the programme was the pricing philosophy used by NIES. They apparently structure prices to favour industry — the argument being that “jobs come first”. Maybe we could learn from this and apply it to electricity and natural gas in the Republic.

For God’s sake let us recognise the dilemma we are in and do something about it.

Three-Way Interconnector
Reliance is one thing, mutual assistance is another and this brings us back to the urgent need for the South to establish an interconnection with another supply system. The obvious choice is Britain which, at present, has colossal over-capacity built on a broad base of primary fuels — with coal and nuclear providing a secure foundation to the system.

We are now suggesting a three-way link-up that would bring countless benefits to all concerned. From Britain’s point of view it would improve plant utilisation while it would bring greater security of supply to the Irish networks North and South. From a construction point of view it would mean a reduction in capital investment; we have to build in “cover” for the system at present by having over-capacity which is an extremely costly business (base-plant can cost from €600-€800 per KW installed). And with the over-sized generators installed by the ESB (with the interconnection in mind) we are living dangerously. Already there have been several power cuts directly related to failure of big sets which could not be covered when a malfunction occurred.

One obvious weakness in the old interconnector was the exposed nature of the power lines. The underwater link, which we now suggest, could be monitored visually and electronically. The ideal location for such a connection is Carlingford Lough a coastal inlet which occurs at the divide of North and South.

The three-way link would allow electricity to flow from the UK to NIES and the ESB. It would also allow NIES to link up with the ESB. From Britain’s point of view it has advantages as power could be fed from both Irish grids to the UK if required; and this could happen quite often as the peaks in Britain do not usually coincide with those on this side of the water.

From a construction point of view there are no special problems involved (undersea lines were constructed between Sweden and Denmark 70 years ago). Costs would certainly be reduced if design and construction effort was pooled — not to mention the benefit, of standardised equipment. The seabed between ourselves and our EEC neighbours is shallow and sandy which greatly simplifies the mechanics of the job — trenching etc and the aftercare and maintenance. With only one route the effort required to mark and protect the cables from accidental damage by shipping etc would be minimal.

Knock for George’s ‘Power Game’
Dr J J Kelly — the ESB’s chief executive — was his typical honest self when he appeared on the same ‘Spotlight’ programme to answer questions on North-South power relationship. Unfortunately for George Colley, and some of the other politicians who have been making political mileage out of the plight of the unfortunate power workers in Northern Ireland (George has met one delegation and made numerous ‘good guy’ noises about the possible interconnection of gas and electricity supplies).

Dr J J Kelly spelt it out without the frills and reliance, he said, by the ESB on Kilroot or any other source outside the State is just “not on”.

In putting the record straight, Dr Kelly said that an interconnection was a normal and desirable arrangement for every electricity supply company as it provided for normal reciprocal assistance, and emergency back up, between the parties concerned without impairing the capacity to function independently. He rejected out of hand the suggestion that the ESB could use some of the Kilroot plant for the regular supply of power to the South. It would be unwise and unacceptable, he pointed out, for a country to rely on power generation equipment outside its jurisdiction and control.

Any sane person would agree with him but then there are those who might not have the foresight to see how a whole nation might be held up to ransom.

For God’s sake let us recognise the dilemma we are in and do something about it. Our whole electricity supply system is vulnerable and continuing with an un-linked supply is national and economic madness. If there is a murmur about cost let us point to the gas pipeline — the self-same money invested in an underwater link with Britain and NI would save enormous amounts of capital by reducing power plant investment (we have over-invested now because we lack emergency cover) and give us insurance against oil-shortages in a crisis. If fact, there must be EEC money available to support such a project.

A power-link may lack the glamour of windmills, solar energy and the other so-called “free” sources of power beloved by politicians but it is a realistic and urgent requirement for this country. For the electrical industry it is a must if growth and development is to be maintained.
FULL RANGE OF BATHROOM WARE IN VITREOUS CHINA
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Road, Walkinstown, Dublin 12. Tel: 509761 Telex: 31561
Regional Review – Ulster

IDHE DINNER DANCE

• Pictured at the Institute of Domestic Heating and Environmental Engineers (Northern Ireland Branch) dinner were (L-R) Maurice Stevenson, Bob Carson, Gerald Atkins, Phillip Downey and Eric McBride.

• Enjoying the IDHE annual dinner at the Strangford Arms Hotel were (L-R) Brian Page, Phillip Johnston, John Gorman, Gordon Sargent and William Hunter.

• Also at the IDHE annual dinner were (L-R) Fred Frazer, Ed Martin, Joe Leonard and Millar Greer.
It's a recipe for instant success:— stock Danum taps in rich golds and gleaming chromes and your turnover will flow faster than Niagara. Danum Luxury Performance taps are British engineering at its beautiful best and people are more than willing to pay for the luxury of having them. There's Danum Luxury for bathrooms in the shape of bath taps, fillers, mixers with shower diverters and shower kits. Basin taps, monobloc, 2 hole and 3 hole basin mixers with or without pop-up waste. Luxury bidet fittings with rim feed spray and monobloc spray with pop-up waste. Then there's Danum Luxury for kitchens. High neck sink taps and mixers in Chrome with a choice of classic handles. So if you want to turn water into gold, what better way than to turn your attention to Danum Luxury Performance taps. They'll give you the Midas touch when it comes to higher profit margins.

Available from:

Sole Agents: McGregor & Manning Ltd., Connswater Industrial Estate, Belfast BT4 1AH. Tel: (084) 53329 Telex: 748136

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**Hevac Limited, Lister Complex, Ballymount Road, Clondalkin, Co. Dublin. Telephone: 519411.**

[Image of various heating equipment brands and models with specifications and features]