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PROJECT PROFILE—
Bord Na Mona

INTERVIEW—
Seamus Homan
GIIBS CHAIRMAN

PRODUCT REVIEW— Refrigeration
Sole Irish Agents

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Dear Reader

Welcome to your new-look IHVN which has been designed to coincide with the introduction of a whole new series of regular features selected to give the industry an even better service and more professional coverage than ever before. This new size embodies the most modern of formats and lends itself to the presentation of features in a manner hitherto impossible. The decision to change followed a great deal of planning and research and we are now confident that we can consistently produce a magazine of the quality and value - both from a news worthy and feature point of view - that the industry deserves. We are therefore confident that we can maintain your active readership and, on this count, invite you to write to us with your advice or indeed criticism. We also welcome letters of a more general nature which we will be pleased to publish for the benefit of all our readers. With this issue then, we give you an eminently more readable magazine which we hope will be warmly received.

The Editor

Guaranteed Irish Bathrooms

Musical Choirs (man)

Did you know that Seamus Homan, the incoming chairman of the CIBS and one of the most respected and proficient designers/consultants within the industry, could have been lost to the musical profession? Turn to our interview on page 17 to find out how and read about his plans for the CIBS now that he has taken office as chairman.

Catching the Sun

With the introduction of the new-look IHVN comes a new section within the magazine called ZONE which will deal exclusively with environmental matters. We begin this month with two specially commissioned features which are the first in a comprehensive series on solar energy (page 36).

Refrigeration Special

This month we take our annual look at the industrial and commercial refrigeration sector with particular emphasis on the latest developments in new products (page 21).

CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musical Choirs</td>
<td>3</td>
</tr>
<tr>
<td>Recommended Irish Bathrooms</td>
<td>9</td>
</tr>
<tr>
<td>Buy Irish&quot; Bathroom Campaign</td>
<td>12</td>
</tr>
<tr>
<td>Northern Ireland Review</td>
<td>14</td>
</tr>
<tr>
<td>Trade Literature</td>
<td>15</td>
</tr>
<tr>
<td>IHVN Interview: Seamus Homan</td>
<td>17</td>
</tr>
<tr>
<td>Product Review: Refrigeration</td>
<td>21</td>
</tr>
<tr>
<td>Company Profile: J J Sampson &amp; Co.</td>
<td>34</td>
</tr>
<tr>
<td>ZONE</td>
<td>36</td>
</tr>
<tr>
<td>New Products</td>
<td>42</td>
</tr>
<tr>
<td>Newsdesk</td>
<td>3</td>
</tr>
<tr>
<td>Project Profile: Bord Na Mona Building</td>
<td>9</td>
</tr>
<tr>
<td>Catching the Sun</td>
<td>12</td>
</tr>
<tr>
<td>Refrigeration Special</td>
<td>21</td>
</tr>
</tbody>
</table>

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Tallaght, Co. Dublin.
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Published by ARROW@DIT, 1978
Now that we've taken inches off them, oil-fired boilers never looked better.

Meet the new generation of Thorn oil boilers - the new P55/65 and the new P70/90. They're small in size. But really big on performance. The P55/65 is only 300mm (approx. 11/3") wide and the P70/90 450mm (approx. 17/4") wide. They're the most compact oil boilers of their output on the market, indeed smaller than many gas boilers of the same output. You don't have to see the pump on these models either. Available in kit form, it disappears neatly into the boiler casing if you want it fitted inside. Installation couldn't be simpler. And there's one more thing that's noticeable by its absence - noise. Decibel rating on the P55/65 and P70/90 is really low. These new boilers are fully automatic pressure jet units. They can be fitted with a programmer and in the event of overheating, a built-in safety device shuts down the burner. Maintenance? A quick and easy job, annually.

Together the two boilers cover the output range 55,000 - 90,000 Btu/h (19.05kW - 26.3kW).

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Solar Collectors Manufactured in Ireland

Advanced non-tracking focussing solar collectors are to be manufactured in Ireland by Solerin Ltd of Belmullet, Co Mayo. The company also intends to manufacture wind machines for which Belmullet provides an ideal test bed, with a weather station only ¾ mile away.

The new factory, being established in conjunction with Gaeltarra Eireann, will be alongside the existing premises of White Lighting Ltd and will share the Dublin office of that company at Greenmount Industrial Estate, Harold's Cross, Dublin 12, (Tel: 751123).

Noise Control Course

Sound Research Laboratories Ltd have appointed Ventac & Co Ltd as agents in Ireland as a natural extension to their services throughout the British Isles.

SRL provides a unique service of research and consultancy on all aspects of sound and vibration. Over the last ten years it has rapidly grown into one of Europe's largest technical centres for noise control, with a range of activities that includes laboratory testing and product development, experimental research programmes, auditorium and studio design and studies for mechanical services noise control, together with training and information services.

To mark the event, the course "Controlling Noise in Industry" is to be held at the Burlington Hotel, Dublin, on 20 and 21 June and qualifies for AnCo Technical Assistance Grants. This course has been designed to help engineers, safety officers and managers to understand how noise in industry can be measured and controlled.

The lecturers are SRL consultants who are working on a wide range of noise problems every day, and therefore the emphasis will be on the practical. Delegates are encouraged to bring along their own specific problems for discussion, particularly where these are likely to be of general interest.

Anyone interested in attending should contact Ventac & Co Ltd, 2 Pembroke Row, Dublin 2, (Tel: 765671).

New Agency

Dan Chambers Ltd have now been appointed sole Irish distributors for the entire range of fully regatable axial flow fans by ZIEHL & ABEGG Ltd of Germany.

The fans, in the Euro-series range, have an aerofoil blade and are supplied complete with mounting plates and motorside guard.

The shallow depth of the motor and vibration-free running, together with excellent speed control, are the most notable features of the fans.

Further details are available from Dan Chambers Ltd, 3 Echlin Street, Off James's Street, Dublin 8, (Tel: 720488).

Solar Energy Conference

An inaugural speech by the Italian Minister of Industry, Mr Do nat Cattin and another one by the Energy Officer of the European Economic Community will open the works of the international conference on solar energy which will be held on June 15-18 1978, in the auditorium of the Genoa Fair premises.

The Congress, entitled "Science, Technology and Economy of Solar Energy" will be divided into three sessions, the first geared towards solar energy in the habitat, the second on the production of electrical and mechanical energy from the sun, and the third on solar energy in agriculture. Each session will consist of two parts, the first dedicated to scientific reports and the second to operational examples.

Hand in hand with the Congress, an exhibition of the items related to solar energy will also take place.

Forms Own Company

Seamus Homan, a well-known figure in the heating and ventilating industry and the incoming chairman of the CIBS has now left Ted Bourke & Co to form his own firm of consulting engineers to be called Seamus Homan Associates.

They will deal exclusively with the mechanical and electrical services within the building contract and already have a number of interesting projects lined up.

Seamus believes that there is ample room within the current system for another company offering the type of service he proposes and says that the response to date bears out this theory.

The new firm will operate from Roebuck Hall, The Palms, Roebuck Road, Dublin 14, (Tel: 968627).

ESB Contract for MF Kent

M F Kent & Co Ltd, the Clonmel-based multi-services contractors, have been awarded the contract for the assembly and complete installation of the ESB's new 85 MW gas turbine alternator at Marina, Cork. The turbine, which costs £5m, is one of the ESB projects designed to make use of the natural gas from the Kinsale Head field.

The mechanical services division of M F Kent are undertaking the project for Alsthom Atlantique. Belfort, France, manufacturers of the set. The installation includes the fitting of all

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accessories to the turbine alternator, prefabrication and erection of all pipework, and the provision of commissioning systems. Welding on the project is to ASME IX standard.

It is expected that the turbo/alternator, which weighs in excess of 230 tons and which is only the fifth of its kind in the world, will come on stream by September 1978.

**Gerkros Launch New Boilers**

Gerkros are planning to launch a new range of IIRS-approved boilers suitable for Irish conditions on the Irish market in June. The company has also acquired the sole agency for Lambourghini burners and products, and the existing range of Gerkros boilers have now been approved by the British Solid Fuel Advisory Service, which opens up a new export market for the company.

---

**Wavin 5" Rainwater System**

Wavin Pipes Ltd have introduced a new 5-inch rainwater system with a full range of fittings. The 5-inch gutter with 3-inch downpipe system is designed and styled to integrate into modern household environments. The modern 5-inch gutter is already in widespread use in Britain where it was introduced first by Wavin. Unlike its original 4½-inch gutter, the new fittings are profiled. Designed to give long lasting and trouble free service, great emphasis has been placed on secure and true joints. With its integrative grey, it blends well with modern housing structure and finish.

---

**Offshore Blocks**

The Minister for Industry Commerce and Energy Desmond O’Malley, TD, and an offshore exploration group headed by Amoco, have agreed on arrangements which provide for an extension of their operations into the Porcupine basin. The participants already have an interest in licences covering acreage off Donegal, where they will be drilling later this year, and in the Kish basin off the East Coast.

---

**Midland Seeks Designers**

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IHVN NEWSDESK

currently recruiting a team of freelance international designers to work on the future development of the company's Flair range of shower and bathroom products.

Working in conjunction with its internal research and development department, the team's prime task will be the development of new products for each of the company's export markets.

According to Midland International's Sales Development Director, Louis Cahill, "with over 80% of production being exported and new markets being continuously opened up, it is essential that designs be introduced which meet the customer requirements in the particular market environment."

Marketing Agreement

Bronswerk Heat Transfer BV and APV - Desco (Ireland) Ltd recently signed an agreement to co-operate on the manufacture and marketing of a wide range of heat transfer plant in Ireland.

The agreement covers both the Republic and Northern Ireland for shell and tube heat exchangers, air cooled coolers and condensers, industrial fans and air conditioning.

By virtue of this new agreement APV - Desco will have access to the sophisticated computer design facilities of Brons-

HTI Contracts

Hall-Thermotank Ireland Ltd have been awarded contracts to the value of £503,000 in the first quarter of this year. Among the contracts awarded to the company are the supply and installation of a refrigeration system for Gland Supplies Ltd, Dungannon Co Tyrone; the expansion of the refrigeration system at North Connaught Farmer's Co-op, Sligo; and the supply and installation of refrigeration plant serving three cheese stores being erected at Mitchelstown Creameries.

The company has increased its engineering design staff with the appointment of Mike Nash and Barry Cooper as design engineers. Mike Nash is a former winner of the silver medal in the City and Guilds examination in London.

The recently opened Cork office is now fully operational, having two engineers and a sales engineer based in Cork, covering the Munster area.

Independent Fire Testing

After extensive preparation, the very first independent tests on automatic smoke, fire and explosion release ventilators have been carried out, and the first products to undergo the rigorous tests have come through with flying colours.

Argosy Fenton, Europe’s leading fire vent specialists, submitted their Pyrobel, Argosvent and Contouramic units to the Fire Insurers Research and Testing Organisation (FIRTO) to allow some kind of independent test procedure to be established. Up to now only tests devised by manufacturers, and therefore suspect, have been available.

The AF products were tested at RAF Cardington's hangars in Bedfordshire with each unit fitted to the roof of a specially constructed fire proof hut which was wired with comprehensive testing equipment supplied by FIRTO. Independent observers from many organisations including the DOE and fire authorities were present.

The hut was sealed and a wood fired started with petrol. Temperatures in the hut reached over 800 degrees centigrade and the tests showed not only that the ventilators operated but more importantly the fact that within a short space of time the interior of the hut became choked with smoke and fumes.

This indicated that a fire in the building could
fill the area with smoke within four minutes, thus making it impossible for fire officers to locate the source of the fire or put it out. In fact, the first increase in the volume of smoke clogging could occur even faster.

Essentially, these tests were designed to test the Argosy Fenton units to the maximum and hence the temperatures generated by the fire in the enclosed space were excessive. This however enabled FIRTO to confirm the fact that the fire vents reacted to extreme conditions without any significant effect on the all important effective vent area of the units.

Looking at the results, the most rewarding point to emerge for Argosy Fenton is the fact that they had predetermined the right moment for units to open and had built them to retain a large venting area even under extreme conditions. Without exception, they came up to the specified requirements.

**SRL to Open in Dublin**

Sound Research Laboratories Ltd of Sudbury, England are to open offices in Dublin shortly as a natural extension to their services throughout Britain and Ireland. The company provides a unique service of research and consultancy on all aspects of sound and vibration. Over the last ten years, it has rapidly grown into one of Europe’s largest technical centres for noise control, with a range of activities that includes laboratory testing and product development, experimental research programmes, auditorium and studio design and studies for mechanical services noise control, together with training and information services.

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Anyone interested in attending should get in touch with Ventac & Company, 2 Pembroke Row, Baggot Street, Dublin 2, (Tel: 686610).

**CIBS Golf**

The Chartered Institute of Building Services Golf Outing at the Hermitage GC on 12 May attracted 55 golfers and 190 for the dinner dance. Thanks are due to CIBS organiser John Doherty and Master of Ceremonies Michael O’Doherty.

Prizes were presented by CIBS Chairman Seamus Homan to the following winners:


- **O’Neill Perpetual Cup** (Best Nett Score in trade consultant, contractor or supplier). Winner: Phil Murphy, Jacobs International, handicap 20, 69 nett.

- **Trade Prize**

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**Visitors Prize**

**Best Front 9**
Don Byrne, College of Technology, Bolton Street, 17; **Best Back 9**
Brian Herlihy, McArdle McArdle Partners, 36.

---

**PWS Wins Contracts**

PWS (Ireland) Ltd, pumping and effluent treatment engineers with offices at Celbridge and Newry have recently been awarded contracts in Ireland valued at approximately £0.8m.

The work includes the design, supply, installation and commissioning of new sewage treatment works plant for Mayo County Council at Castlebar and Naas-Osberstown for Kildare County Council.

Typical plant required includes inlet screw pumps, automatic coarse bar screens for raw sewage, sedimentation tank scrapers, aerators, grit removal and complete electrical controls. Switchgear Consulting engineers are Nicholas O'Dwyer and Partners, Dublin.

Another contract won by PWS is the Department of the Environment's Holywood (Belfast) main pumping station plant which incorporates five "special" 12" diameter vertical extension shaft driven combined disintegrating/pumping units for sewage and storm water duties up to 227 l/sec (3,000 GPM) capacity each, together with all associated, electric motors, pipes, overhead travelling crane, valves, steel flooring and composite multi-pump stator rotor control panel.

The sewage and effluent treatment section of PWS has also tendered successfully for several recent contracts in Northern Ireland including Downpatrick main drainage and Whitehouse sewerage scheme for the DOE as well as Killyman Creamery effluent treatment plant.

---

**BTU Golf**

The recent BTU golf outing at Newlands GC sponsored by Thorn Heating Ltd attracted 56 players, with prizes being presented at the evening dinner by Northern Sales Manager Ed Martin and Irish agent Andy Gallagher to the following:


Mr Martin confirmed that Thorn Heating would be continuing their support next year.

---

**Marley Increase Sealite Production**

Marley have greatly increased production of Sealite flashing, a self-adhesive sealing material consisting of an adhesive-backed lacquer-coated aluminium foil, that is claimed to be easier and more economic to use than traditional lead flashing.

The pressure-sensitive bituminous adhesive (protected by a release paper until the time of use) is specially-formulated to retain its adhesive properties even at relatively low temperatures.

Easy to cut and mould, Sealite is supplied, wound on to a cardboard core with integral plastic end rings. These end rings allow the product to be handled, used and stored without the mess from adhesive creep normally associated with this type of product.

Available from builders' providers, Sealite is offered in rolls 10 metres long in widths of 50.75, 100, 130, 225, 300, 450 and 600 mm.

---

**Putting Waste Heat to Work**

A method for which world patents are pending, that uses waste process heat to heat and chill factories is now being marketed by the consortium responsible for its development – Weetabix, Stuart Bear Associates, Daly Heating and Engineering and Baker Perkins.

Prolonged proving trials have been carried out at the new 100,000 sq ft Weetabix factory at Burton Latimer, Northants. The ovens from which the waste heat is recovered and put to productive use are gas fired and were supplied by Baker Perkins.

Investigation shows that, at current costs of gas, the payback period will be four years. The continuing saving of 40% on energy costs will provide free heating of the Weetabix factory.

The waste heat of the combustion gases is recovered by a ducting arrangement. This collects the gases and passes them to a heat recovery unit that heats fresh air drawn into the system prior to the gases being discharged. A sensor automatically controls the equipment and switches from heat to chill and vice versa according to atmospheric conditions. Apart from the fans which circulate the air there are no other moving parts so maintenance is really no problem.

The equipment is equally well suited for use with gas as well as in new or established premises. The capital recovery period will vary according to size of factory and the number of ovens used. In a factory with one oven having a heat input of 7-10,000 BTU's per sq ft of oven band, the likely period would be five years and limited to heating only. To heat as well as chill would require at least two ovens.

---

**MF Kent Complete Tipperary Contract**

M F Kent & Co Clonmel, has completed a £1/5m multi-services contract on the £9m phase two extension of the Merck Sharp & Dohme pharmaceutical plant at Killaloe, Co Tipperary. The contract, which embraced the company's three divisions, had a number of special features.

All three divisions had to ensure that there were no disruptions to the existing £24m plant. This was particularly critical in the case of the instrumentation installation which included the integration of the extension with the existing process control. The contract also involved modifications to part of the existing plant and the link up of the process control with the Merck computer.

The mechanical services division installed over 40,000 ft of piping including 2,000 ft of special glass piping in the solvent recovery area.
The new-look IHVN will be making regular visits to heating and ventilating installations during construction. We begin with the new headquarters for Bord na Mona in Baggot Street, Dublin, designed by Stephenson Associates. Here, Dermot Grumley, Head of the practice’s Mechanical Section, outlines the installation, which includes turf-fired boilers, and the reason for their selection.

The new Bord na Mona development comprises 40,000 square feet of office space in a five-storey tee-shaped block over a basement car park with space for 66 cars. Vertical circulation consists of two main staircases and two lifts in the central core. The core also contains male and female lavatories, tea rooms and vertical ducts.

The office areas contain a mixture of partitioned rooms and open Bürolandschaft space. A fitting out contract has been included in the development, fittings being purpose made to the client’s requirements and selected furniture being stained and upholstered to match.

Externally the building is clad in grey Wicklow granite fixed in an ashlar pattern and a curtain wall of grey tinted glass and anodised aluminium. A feature of the development is the external landscaping which comprises semi-mature trees, varied plants – many of which are from the Bord na Mona nursery, lawns, a pool and fountain, all of which are located over the basement car park.

An unusual feature of the office block is the entrance hall, which rises through five floors to a glass roof. The lift lobbies in the central core have access galleries which overlook the entrance hall at every floor level giving unobstructed views across Lower Baggot Street.

Another interesting feature of the development is the aluminium pergola which frames the entry to the site from Lower Baggot Street to the entrance hall doors.

The structure has been designed as an insitu reinforced concrete six-storey framed structure, tee form in plan. The basic configuration is 9" concrete slabs spanning continuously over three support lines – two edge spandrels and a central downstand spine beam. All internal walls are non-loadbearing and external curtain walling is bolted to cast...
in slots on spandrel beams.

Lateral stability to the frame is basically provided by a combination of load sharing between columns and shear walls of service core, gables and two stair blocks. The external ground level area consists of a landscaped plaza in flat slab construction over an overground car park. The superstructure was constructed rapidly averaging 14 days per storey, due to the repetitive nature of construction and a rapid formwork system.

Specifically designed for owner occupation, the air conditioning system had to have built-in flexibility which was essential for the building design. As office practices and procedures are constantly being revised and modified to improve efficiency and productivity, the system must be flexible enough to accommodate the clients' needs, both present and future, as future alterations would be costly if the system had not got maximum flexibility.

The determining factor for an air-water system as against an all air system lay with the percentage of glass, external, internal heat gains and the total air quantity required, together with a typical bay flexibility. The air quantity calculated was over 3 cfm/sq ft which eliminated the possibility of an all air system. The air-water systems considered were induction units and fan coil units.

With the ventilation rate of 30 cfm/occupant, the primary air to the fan coil unit was established but not to the induction units as an increase was necessary to achieve the cooling and heating capacity of the induction units.

This would have necessitated increasing the central station air handling plant physically, motor horse power, cooling and heating flow rates and all associated pipeworks, pumps, etc which increases power consumption and running costs. Another factor that was important in the decision was that, should the central station air handling plant be out of commission, the induction system would cease to operate whereas the fan coil system would maintain air circulation with secondary cooling and heating and would minimise discomfort.

With the foregoing considerations the air conditioning system installed was a four pipe coil with a primary air system. All the fan coil units have a three-speed motor rated high, medium, low speed and selected not to exceed the office N.C. level of 35. These units are located within an architecturally designed cill around the perimeter of the office floors with front access panels.

Primary air to the units is distributed through a low velocity ductwork system from the central station sprayed coil air handling plant in the roof plantroom. This all-fresh air plant filters, cools, heats, humidifies, de-humidifies the primary air as required by the controls function.

Return air from the office is exhausted through air handling light fittings thus decreasing the heat gains from lights within the space and decreasing tonnage of the central chilled water plant.

Chilled water to the units is distributed from a central packaged water chiller which has two semi-hermetic reciprocating compressors with dual circuit evaporators. The chiller is coupled to two air cooled condensers capable of handling the total heat rejection of the chiller. Each refrigeration circuit is independent with its own air cooled condenser, thus providing 50%/50% standby facility.

The heating to the units is a low pressure hot water system distributed from turf fired boilers which is the first newly developed city centre office block to be heated using turf as a fuel.

The solid fuel packaged steel boilers are three pass full wet back economic hot water boilers suitable for low temperature operation. Turf is conveyed from storage hoppers by means of an automatic screw feed stoker to a stepped grate and horizontal burning-off grate where combustion takes place. Air is delivered to the combustion area via an air duct by a forced draught fan.

High efficiency cell type grit arrestors with swirl vanes have been installed on the boiler flue outlets to eliminate grit carryover to the atmosphere by the flue gases.

The entrance hall feature is air condit-
An air conditioning system to the ground floor computer suite has maximum flexibility and standby facilities, with the computer room system independent from the associated computer office system and both totally independent of the main office block system.

The basement car park consists of an extract ventilation system and the area is totally covered by a sprinkler system.

Below: A typical fan coil unit with three-speed motor housed within the architecturally designed cill.

The TEPOI Boiler is extra combustible and operates equally efficiently using oil, fuel or coal. It gives consistently high outputs. A special door permits the use of any type of burner without any modifications.

Cast Iron Domestic and Industrial Boilers for Gas, Oil and Solid fuel firing are all stocked by Mark Plumbing, sole Irish agents. Call us for full details of our Technical Advisory Service:

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Sievert Propane Gas Appliances are especially designed to provide the maximum heat output utilising the minimum amount of propane fuel, thereby affording a greater degree of efficiency and economy.

The range includes a wide selection of burners, supports and appliances to meet almost every need and many individual requirements too – its good to have the experience of Sievert behind you.

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Top: Louis B Cahill, Midland International, talking to the Minister of State at the Dept of Industry, Commerce and Energy, Raphael Burke; Michael Egan, Armitage Shanks and Joth Wilton, Peerless Rug (Europe) Ltd at the launching of the Irish Bathroom Manufacturers Association, Borton; Mr E Brennan, Celmac Ireland Ltd and Margaret O'Brien, Helton McFerran discussing one of the shower units on display with Brendan Quinn, Kenneth Lee Ltd, talking to Ciaran O'Byrne, also from Kenneth Lee, on their right.
Bathroom Manufacturers Form Own Association

The Minister of State at the Department of Industry, Commerce and Energy, Raphael Burke, TD, recently opened the door on a novel promotion being undertaken by the Irish Goods Council on behalf of seven Irish manufacturers of bathroom fixtures. At the opening of an exhibition of Irish bathroom fixtures at Ireland House, Mr. Burke also announced the formation of the Irish Bathroom Manufacturers Association.

Each member of the new Association produces an essential bathroom fixture and they have joined with the Irish Goods Council to promote the sale of Guaranteed Irish bathroom products on the Irish market. Through a joint effort, a Guaranteed Irish promotional bathroom has been created, which will feature in advertising and hardware store promotions throughout the country.

The Irish Bathroom Manufacturers Association and the Irish Goods Council are aiming to increase the sale of Irish bathroom fixtures in a market which is worth at least £10 million in retail terms.

Guaranteed Irish bathroom settings as displayed at the Ireland House exhibition will feature in a TV and trade press advertising campaign as well as displays in leading hardware stores throughout the country.

The three settings at the exhibition demonstrate what the fashion conscious householder can achieve with luxury, standard and economy ranges of fixtures. The economy setting shows what can be achieved with a modern bathroom setting even when space is at a premium.

Commenting on the Irish Bathroom Manufacturers Association’s promotion, Raphael Burke congratulated the organisers for one of the most enterprising campaigns to date in the three year programme for the promotion of Irish goods. The success of joint promotions such as this could be measured by the fact that sales increases of up to 20% had been recorded by firms participating in earlier schemes, Mr Burke continued.

He also pointed out that imports of sanitary ware and plumbing fixtures of ceramic, iron and steel had increased by 114% since 1975 and last year totalled £3.9 million. Against this background of rising levels of competing imports, the Irish Bathroom Manufacturers Association initiative was welcome.

Replying to the Minister’s remarks, Michael Egan, general manager, Armitage Shanks (Ireland) Ltd, and spokesman for the Association said that, in the last few years, there has been an upswing in bathroom renovations which now account for about 50% of the overall market. A modern bathroom, even in older homes, is now considered an essential when it comes to selling a house.

There has been quite a swing, Mr Egan continued, away from the traditional white fixtures to more fashionable colours and styles. A fully-fitted and co-ordinated bathroom is now as sought after as a fitted kitchen. It is now possible to co-ordinate all bathroom fixtures and furnishings even though these might be produced by different manufacturers in his association.

He also pointed to trends in Irish bathroom design. Sinks, baths, wcs, showers and soft furnishings are now designed with an eye to fashion, comfort and safety. Plumbing is streamlined to such an extent that pipework is now invisible in the modern bathroom. Items such as bath and sink taps, cistern handles and shower mixers have become the object of the designers attention to such a degree as to be very easily operated.

The Members of the Irish Bathroom Manufacturers Association are: Armitage Shanks (Ireland) Ltd; Midland International Ltd; Celmac (Ireland) Ltd; Sanbra Fyffe Ltd; RCC Engineering Ltd; Silent Gliss (Ireland) Ltd; and Peerless Rug (Europe) Ltd.
The Institute of Fuel and the Institution of Chemical Engineers recently combined to sponsor a lecture by D McVitty Esq, Dept of Commerce – Energy Division. The subject of the lecture was energy resources and energy policy in Northern Ireland.

S Fisher Ltd, the long established Newry concern of builders providers, have opened a branch at 33 Balloo Road, Bangor, Co Down. The manager of the depot is James W Henning who will have Maurice Mason as his senior assistant.

The Institute of Domestic Heating Engineers Northern Ireland Branch have issued their Summer Golf programme, which will take place as follows:

UDT & Carplant Ltd outing, St Helens Bay on 2 May 1978; Thorn Heating Ltd outing, Craigavon on 20 June 1978; Shell Marketing Ltd outing, Cladyboyne on 30 August 1978; NFPM (NI) outing, Malone on 21 September 1978.

Further details are available from the Hon. Secretary, B Puge, 17 Erinvale Avenue, Belfast 10.

A one day seminar – design for energy conservation – organised by the Energy Division of the Dept of Commerce (N.I.) was held recently at Newforge Lane, Belfast. The speakers and their subjects were:


The manufacture of Talisman boilers, which have been the product of McFarlane Bros of Glasgow, will now be undertaken by R Tomlinson (Engineering) Ltd, Lotherton Way, Garforth, Leeds

In Northern Ireland, John Kelly Ltd, 2 High Street, Belfast will remain as selling agents while Mr T Jamison, 31 Beattie Park Central, Dummurray, Co Antrim becomes technical representative.

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As one of the country’s largest shell boiler manufacturers we have established a sound reputation for quality and reliability in design and workmanship.

The European and Windsor shell boiler ranges are offered for steam or hot water applications and as part of our continuous research and development programme, both types of boiler embody unrivalled design standards including the following differences:

- Low H.P. consumptions and consequently lower electricity bills.
- Good access both internally and externally.
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- Low furnace combustion intensities— as low as 0.746 \( \text{Kw/Co.M} \) (90,000 \( \text{BrCu. It/hr}. \).
- Low furnace exit temperatures.
- Low pressure losses.
- Low H.P. consumptions and consequently lower electricity bills.
- Good access both internally and externally.
- Great emphasis is placed upon our flexibility and willingness to meet our customers individual requirements. Once installed, back-up service by fully trained and qualified staff ensures efficiency and fuel saving is maintained. Send today for literature on full range.
Mr Denis Logan, a director of A J Clancy Ltd, has been elected Chairman of the NI Branch of the Institute of Quantity Surveyors.

Following the appointment of Mr Harold McCallum as Managing Director of the McNeill Groups Plant Division, the company has announced that two equally well-known persons in the industry, Mr Wallace Parker and Mr Bob Allison have joined their sales staff.

One of the longest established companies of engineering agencies—W E Bullick—have moved into new offices, showrooms and stores at 195 York Street, Belfast. Founded in 1886 the company has over the last few years concentrated on the environmental side of the business. Included among the companies represented by Bullick & Co, include Tonge & Taggart (cast iron pipes); J Blackborough & Sons Ltd (valves); and Samuel Binkett Ltd (safety valves).

The Northern Ireland Training Executive has appointed Mr Geoffrey Toplis, assistant director in succession to the late Mr Joe Craig.

**Viggen Generators**

The new technical brochure illustrating the Viggen range of diesel generating sets from 65 to 250 k.v.a, is announced by Atalanta Engineering Ltd of Chertsey.

The Volvo Penta 6 cylinder direct injection, cold starting industrial diesel engine is mounted on a robust fabricated steel base frame. The complete unit is finished in a strong hammer black with control panel in stove-enamelled grey. The fuel tank has a capacity for 8 hours continuous running on full load. The alternator is brushless, self exciting, self regulating, drip-proof and screen protected.

Optional extras include a weather protecting...
LITERATURE

sheet steel canopy with hinged, lockable sheet steel side doors which are easily mounted and supported on the base frame.

Standby and emergency applications include banks, hospitals, factories, water authorities, agriculture, shops, quarrying and base load applications, and for the trailer mounted models public works, building and construction as well as some industrial use.

Copies are available from Atalanta Generators, Atalanta Engineering Ltd, Hanworth Trading Estate, Hanworth Lane, Chertsey, Surrey.

Air Handling

A new technical leaflet on Standard and Pochin's Deluxe-Aire air handling units has just been published.

Designed specifically for the specifier and/or engineer, the leaflet has full performance graphs for heating, coil and cooling. The heating section is split into hot water and steam and has detailed correction factor charts. Coil performance is divided into wet and dry coil chilled water charts with more correction factor charts and finally the cooling section is split into wet and dry coil direct expansion charts again with correction factors.

There are further details of dimensions and all necessary details for installation plus general information on the Deluxe-Aire units.

The Deluxe-Aire range of air handling units are a one-piece arrangement for floor or suspension mounting. They can be supplied with spigots for duct mounting or with an inlet grille and decorative discharge plenum. The fans are belt driven with variable pitch motor pulleys ensuring precise speed to give the required volume.

Coils are of the highly efficient plate fin type. The unit will accommodate a total of 6 rows of coil which can be a combination of heating and cooling. The cabinet is fully insulated and has removable panels for easy access to the fan motor.

The new leaflet, number 302A, is available from Standard and Pochin Ltd, Evington Valley Road, Leicester, LE5 5LS.

Pipework Insulation

Fibreglass Ltd has published a new application sheet on the insulation of pipework, which gives detailed information on the complete range of Fibreglass pipe insulation products for new plant and existing pipes.

Efficient pipe insulation saves fuel and reduces running costs and enables the temperature of fluid in a pipe to be maintained nearer the correct level, irrespective of external conditions. When considering the installation of new plant, efficient insulation at economic thickness can save on overall plant size and high levels of fire safety can be designed in.

The correct insulation thickness should be determined by using the Economic Thickness of Insulation method (ETI).

Copies of the application sheet and the ETI calculator are available from the Publicity Department, Fibreglass Ltd, St Helens, Merseyside, WA10 3TR.

You Now Have The Answer To Your Chimney Downdraught Problems

The outstanding success of the 'O.H. 'CHIMNEY COWL in converting downdraught into updraught - irrespective of the strength or direction of the wind is now helping Irish heating engineers to avoid those profit-wasting service calls to attend to flue-draught problems. You can now obtain your requirements from the following stockists:

- BELFAST: Aerocrete (Ireland) Ltd; Begg & Partners Ltd; John Kelly Ltd; McNaughton Blair Ltd.
- COLERAINE: John McCandless Ltd.
- NEWRY: A. Shields & Co. Ltd.
- NEWTOWNARDS: Warden Bros., Ltd.
- STRABANE: Linton, Robinson & Co.
- DUBLIN: Heiton McFerran Ltd.
- DONEGAL: Oil Burner Trading, Letterkenny.

Recommended by the Coal Advisory Service, leading Oil Groups and appliance manufacturers, specified by Housing Authorities.

O.H. LIMITED Avon Centre, Kingsbridge, Devon.

Noise Data Application

A new paper published by F H Biddle Ltd, originally as an instruction manual for new members of its staff, deals with the application of noise data for unitary equipment, such as fan assisted convectors and fan coil units, installed within a room.

Though not intended as a comprehensive textbook, some technical aspects have been included in order to explain the subject clearly.

F H Biddle Ltd hopes that students and apprentices other than those in their own company will receive some benefit from the paper, and it is available from the publicity department, at Newtown Road, Nun-eaton, Warwickshire.

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Building Services News, Vol. 17, Iss. 6 [1978], Art. 1
Seamus Homan, the incoming chairman of the CIBS, mused over the fact that if his career had taken a different twist he would probably today be struggling for his living as a pianist. Seamus revealed a little-known part of his past to IHVN when he said that during his early days as a junior with Varming Mulcahy Reilly Associates, as well as attending Bolton Street College one full day a week and three nights a week, he was also awarded a scholarship to the School of Music, which meant he had to practice music for two hours a day, do his normal day's work, and then dash off to the college. This hectic style of living lasted for five years when, like many other young men of his time, he took the boat to England to further advance his studies and career.

He worked for Midland Heating & Ventilation Ltd in Birmingham, continued his studies and was rewarded for his tireless thirst for knowledge by being granted a British Government grant to study full time at the National College for Heating, Ventilating, Refrigeration and Fan Engineering in London.

Seamus is quietly proud of the fact that when he qualified as a service engineer he finished second out of a total of 200. "At that time", he said "unless you had a University education, you were nothing. In my early days at Bolton Street for instance there was no tailor made course for the Institution of Heating and Ventilating Engineers, as it was known then. I felt that I had to go to England in order to gain contracting and industrial experience which was difficult to obtain at that time in Ireland. It was ok to produce ideas and master-plans on paper but far too often the projects fell down because of the failure to come to grips with many of the factors involved, such as site preparation and labour schemes. That's why my experience in Birmingham was so valuable".

For a few months Seamus worked for Matthew Hall in London but was dissatisfied with the restrictions and holdups which he describes as akin to the frustrations of dealing with civil servants. His thirst for knowledge continued, however, and after more supplementary studies he became a member of the Institute of Fuel, thus becoming a Chartered Engineer.

As if sensing his unhappiness in England he received a letter from his old employees Varming Mulcahy Reilly Associates asking him to return and take up an appointment. Service engineers with Seamus's qualifications were then a rare breed — when he took up his appointment in 1963 there were only some half a dozen similarly qualified engineers in Ireland.

In 1968 he was made an associate of the firm. About this time there was an attempt to form a branch of the IHVE — an ad-hoc committee was formed, of which he was a member, and since then he has continued to be involved with the Institute in one way or another.

In 1973, along with Ted Bourke, Seamus
decided to form a new company. "Ted had a very successful contracting mechanical service organisation going", he said "and we thought the time was right to set in motion a company which would incorporate the design expertise which I had and Ted's contracting expertise. It worked very well. I'm glad to say."

In addition to early successes, the new company also managed to show growth during the oil crisis and the subsequent recession which seriously affected the air conditioning market.

Seamus confesses that although he was happy with his lot at that time he always resolved. To his knowledge, all the corporate members who applied for membership were accepted and Seamus recalls that the dissatisfaction related to some junior members who were unhappy with the grades offered. "I believe that this situation has now been settled amicably," he explains. "The changeover procedure was explained to Irish members at a meeting convened in Dublin and a small number of marginal cases were subsequently interviewed by a representative from London. Those who were turned down for membership were invited to apply again when they had received more experience. The door, I must emphasise, is never shut on anybody".

The selection of the committee of the CIBS is controlled by strict rules laid down in the by-laws as incorporated in the Charter in London. To ensure a turn round of personnel the longest serving members must retire each year and so allow for the selection of new members. To ensure the continuity of the committee the members nominate people to fill the vacancies from members within the branch. In the past the response to these nominations has been negative but this year for the first time the ESB has accepted a nomination which, according to Seamus, was a tremendous stroke.

Encouraged by the ESB's willingness to serve on the committee, Seamus intends to ensure that the present committee will reflect the interests of the IES members who have amalgamated with the IHVE to form the CIBS, and to this purpose he intends to propose that they invite a member of the IES to join the committee and help develop the programme for the current year.

Education and involvement of the student population are just some of the problems that Seamus feels the CIBS will have to come to grips with. He is distinctly unhappy that young people still take the boat to England and blames this on the weakness in the training of corporate members. He admits that part of the problem is that the industry is so small that effective courses in the mechanical and electrical services industry, especially in the students' final years, are just not possible. Added to that is the more serious problem that the CIBS seems to appear as a secondary choice to the majority of students. To improve this situation and to make the student population aware of the possibilities within the CIBS, a subcommittee has been drawn up to organise competition for a students prize. The competition will be open to anyone who is associated with a full or part time course relating to the building industry. The successful student will have to prepare a paper which will be read at the end of the current year to the CIBS. This, according to Seamus, should go a long way to help project the image of the CIBS and will make for future effective communication within the industry and among the students.

Invariably Seamus harks back to the theme of projecting the CIBS. He is very conscious of past failures to promote an effective image, especially among other members of the building design team. He speaks with regret about the demise of the joint meetings between the CIBS and other

Transfer of membership from the IHVE to the CIBS in the early days was a little controversial and not, unfortunately, without acrimony. However, this problem has now been happily resolved.
I believe that the time is now opportune when other building professions are ready to accept the CIBS for what it is — a professional body with the greatest wealth of building service information at its disposal.

bodies representing members of the design team such as the Architectural Association of Ireland. “I intend during the coming year to resurrect these useful meetings and also to extend them to take in the other professions. I believe that the time is now opportune when other building professions are ready to accept the CIBS for what it is — a professional body with the greatest wealth of building service information at its disposal.”

As proof of this Seamus points to the many publications they have produced over the year such as design guides, commissioning codes of practice for air handling plants, oil-firing plants, refrigeration plants and a whole list of other services. “In other words,” he emphasises, the documentation is there for the industry . . . if only they would use it”. Inevitably, Seamus is aware that the success or failure of his term of office depends a lot on the direction in which he steers the ship. During the coming year he believes that his successful tenureship depends greatly on the total commitment of his fellow committee members and the CIBS establishing itself as the effective voice in the field in which its members are the specialists. To this end the committee are aware that they have to choose a programme with much more thought than in the past. “I believe that we should reflect the views of our broadened membership” he said; and with this viewpoint uppermost, we already have embryo plans for a one-day seminar on lighting and hopefully later in the year we will have resurrected a joint meeting with the Architectural Association of Ireland and also possibly the Irish branch of the Irish Electrical Engineers.

Certainly Seamus's capacity for work and dedication to his beliefs would convince you that he will achieve his hopes and plans in the coming year. The CIBS will, of course, emerge as the benefactor.

CIBS COMMITTEE
Chairman: Seamus Homan, Seamus Homan Associates; Vice-Chairman: Eoin O'Connor, J A Kenny & Partners; Hon Secretary: Paddy Conlan, P J Conlan & Co. Ltd; Hon Treasurer: Jim Rodgers, Robert Jacob & Partners; Region Almoner: Eamon O’Brien.
Committee: Joe Murphy, McArdle McSweeney O’Malley; J J Doherty, McGrattan & Kenny (Tempair) Ltd; John Murray, Varming Mulcahy Reilly Associates; Michael Buckley, Walker Air Conditioning Ltd; Dan Cooney, ESB; Larry Kane, Varming Mulcahy Reilly Associates; and Ray Grimson, Designed Heating Ltd.

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Walker Air Conditioning Ltd. require Sales Engineer

The company is the largest distributor of air-conditioning equipment in Ireland and has significant branch operations in N. Ireland, Scotland and the U.K.

The Engineer required should preferably have some sales experience and will be involved in negotiating new contracts and designing and selecting appropriate equipment.

An attractive salary will be negotiated commensurate with the successful candidate's ability and experience. In addition, a company car will be provided and normal fringe benefits include a contributory superannuation scheme.

Please reply in strict confidence not later than June 6th, 1978 to:

Sales Director,
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Glasnevin,
Dublin 9.

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Contact ICI Ireland Ltd.,
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The refrigeration market in Ireland is currently enjoying a period of growth, with the current market being worth some £4-5 million and an annual growth rate of 10% per annum. However, as architects and mechanical engineers focus greater attention to designing buildings with reduced overall energy consumption, and hence reduced heating and cooling loads, the growth areas are not so much in the air conditioning of buildings but rather in the process cooling and refrigeration for food processing.

Increasingly the more important of the two is process cooling for manufacturing industries which are being established in Ireland through the efforts of the Industrial Development Authority and which require cooling water for plastic extrusion machines, for example.

In recent years also the development of meat processing plants has brought valuable business to the refrigeration market, but while this particular sector is now slowing down, there are other opportunities arising in food processing of fish and agricultural products.

The trend away from air conditioning to process cooling and food processing is reflected in the increasing number of companies traditionally offering air conditioning to the building sector who are now moving into the refrigeration field.

Yet another indication is that IhVex '79, the third Irish Heating & Ventilating Exhibition which is to be held in the new Simmonscourt Pavilion at the RDS next April, will, for the first time, include a special section devoted entirely to refrigeration.

**Wide Range from Manotherm**

Manotherm, the Walkinstown instrument and control specialists, offer a wide choice of products in the refrigeration field, some of which are briefly featured here:

- Type P70 low pressure refrigeration control - Rugged, dependable design. Direct reading scale; up-front wiring and space-age power elements. Surprisingly reasonable cost.
- Type V46 water regulating valve - The standard of the industry for over 30 years. Exclusive internal design takes the roughest field conditions in stride. Repairs easily accomplished on the job. All sizes immediately available from authorised wholesalers across the country.
- Type A72 cooling tower control - The only control designed expressly for this tough job. Heavy duty 2-pole contacts, weather tight enclosure, neoprene coated bulb and power element which will resist chemicals, cleaning solutions, bad water conditions. Models available to maintain proper head pressure on either forced draft or atmosphere type cooling towers.
- Type A19 remote bulb temperature control - An extremely compact temperature control to fit any refrigeration or air conditioning application. Small bore cap tubing and mini-diaphragm contribute to precise control with rapid response to temperature changes. Concealed differential adjuster, SPDT contacts, 16 Amp. ratings, wide choice of ranges and on-the-job adjustable limit stops.
- Type A19 space thermostat - Same compact control as above for space temperature control, walk-in boxes and similar applications. Rugged bulb is rigidly and securely mounted.
- Type P28 lube oil protection control - The latest in lube oil protection controls from Penn... the people who designed the first one over 35 years ago. Built with the same space-age power elements as the P70. The P28 will handle crank case heaters, provides an alarm circuit and will directly replace earlier model, the Penn Type 275.

For comprehensive details on all these products contact Manotherm Ltd, 4 Walkinstown Road, Dublin 12, (Tel: 504025).

**Arcton—Improved Delivery**

ICI manufacture and import 'Arcton' refrigerants into Ireland on a regular basis. RSL, as an authorised distributor, handle the day to day deliveries and have considerably improved the service following introduction of a nationwide delivery system so that most areas are reached at least every ten days.

Details concerning supplies of 'Arcton' refrigerants are available from ICI Ireland Ltd, 5/9 South Frederick Street, Dublin 2, (Tel: 765801), or RSL (Ireland) Ltd, 48F Robinhood Industrial Estate, Clondalkin, Co Dublin (Tel: 508011).

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HRP IRELAND LTD., HARMONSTOWN RD., ARTANE, DUBLIN 5. TEL: 336046.
Danfoss has introduced a new milk cooler panel which is a special design for control of farm cooling tanks working with direct expansion in the refrigeration circuit.

The panel, which is designated EPT 22, maintains the required milk temperature in the cooling tank by starting and stopping the compressor in accordance with the cooling requirement.

At the same time, it controls the operating cycles of the stirring device, thus ensuring a uniform milk temperature. The electronic unit of the panel has a graduated dial thermometer showing the actual milk temperature. Dial 0 - 40 degrees C.

The temperature is monitored by a 100Ω nickel sensor encapsulated in melt and shrink flex which can be connected to the panel via a 5 m sensor cable. By means of a selector switch, Type EPT 22 can be set for five different functions.

The electronic unit also has separate settings of temperature and differential. The temperature range is 0 - 15 degrees C (factory setting = 2 degrees C); the differential range is 0.5 - 2 degrees C (factory setting = 0.5 degrees C).

For details on the Danfoss electronic milk cooler panel, and the many other units in their refrigeration range contact sole agents J J Sampson & Son Ltd., 12A Wexford Street, Dublin 2, (Tel: 752317/8).
New Method of Coldroom and Cold Store Construction

W.H. O'Gorman Ltd are the only refrigeration company actually manufacturing their own insulated panel on a continuous process machine and are able to offer alternative insulation cores to best suit a particular application. A design team facility will advise on the most suitable scheme to utilise to the best advantage movement of product, store utilisation, site access and position.

Major savings in erection times — often by more than 50% — plus extra economy and improved insulation performance are provided by a new method of coldroom and cold store construction — the O’Gorman Isowall system — which is being marketed throughout Europe.

The system is suitable for the production of coldrooms of any size and for any kind of industrial and commercial application, from giant cold stores to compact units for retail stores and catering operations.

The Isowall O’Gorman construction method is based on the use of panels formed from a foamed polystyrene insulating core, sandwiched between stressed skins of plastic-coated metal.

O’Gorman’s special manufacturing process produces panels at the rate of 24 sq ft per minute at a basic length of 4 ft to a machine tolerance and to any handleable length.

Walls, floors, ceilings and doors of the coldrooms are all built up from these panels, to provide a frameless, self-supporting structure. The wall panels are linked together simply by slotting into extruded metal sections and the joints are hermetically sealed to provide a vapour-proof barrier which also excludes outside contaminants.

The O’Gorman Isowall stressed panel construction provides outstanding strength and durability combined with extreme lightness: coldrooms built from panels of the maximum thickness (10 in.) can be erected to a height of 45 ft., without needing any additional support for walls or roof — except in the case of a ridged roof.

Factory production of all the
Each Year Marks New Record

Two of HRP's most important product ranges are condensing units and forced air evaporators. Now in their sixth year as distributors of DWM Copeland semi-hermetic compressors and condensing units, they report that each year marks a new record in their sales volume. The range of units covers nearly every requirement from the smallest nominal half horse-power rating up to 80 horse power tandem compressor units. During the recent years there has been a marked increase in the number of 30 horse power to 80 horse power tandem compressors being

Designing for Specific Requirements

RSL Ireland Ltd, are distributors of the ALCO range of refrigeration and air conditioning controls. ALCO have been very successful in the US market, supplying OEM's in the heat pump market which has grown considerably over the years.

The TCL series of expansion valves are unique in that they can be used for either direction of refrigerant flow and their application thus saves the use of a second expansion valve complete with two check valves.

ALCO have also designed a new liquid line filter dryer through which the refrigerant can also be reversed, again saving the installation of another dryer and check valve.

In the parallel field of heat reclaim, the ALCO 3031R pilot-operated, three-way solenoid valve has proved very successful. These are especially designed to meet the requirements of the high temperatures and pressure existing in compressor discharge gas applications.

When the 3031R solenoid is de-energised, the pilot line to the suction side of the compressor is closed and discharge gas drives the piston downward allowing gas to flow to the normal outside condenser. Energising the solenoid opens the pilot line to the suction side and permits the discharge pressure on top of the piston to flow to the suction side enabling the piston to be driven upward against the top seat and diverting the gas to the auxiliary condenser.

Further information is available from RSL Ireland Ltd, 48F Robinhood Industrial Estate, Long Mile Road, Dublin 12, (Tel: 508011).
installed and their performance and reliability have proved to be major contributory factors in their selection for installation in many beef and fish freezing plants throughout Ireland.

In line with this trend, HRP moved into the industrial refrigeration field and as already reported in IHVN, have introduced the Sabroe range of line valves and other components into their range. The Sabroe range of line shut-off valves, ¼" to 12" diameter connections, features a famous steel spindle standard and may be applied with ammonia or any of the fluorocarbon refrigerants.

Although launched only last year, HRP report that sales of the Myson range are already exceeding their expectations and again the products have been successfully supplied to large freezing plants to be installed in the very near future in Ireland.

Liquid and suction line driers also represent important business to HRP and for several years they have successfully distributed the KMP range of Ceramic Kore throw-away driers and the larger replaceable filter kore drier. The latter items cover the range from eight tons refrigeration to 100 tons refrigeration.

Almost 100% Budget Increase by Walker Air

In its first year of operation, the Refrigeration Division of Walker Air Conditioning Ltd, distributors for Carlyle air conditioning and refrigeration equipment throughout Ireland, has beaten its budget by 96%.

This division, under the control of Tony Madden, has handled a number of interesting projects. These include low temperature blast freezing, blood cooling, refrigeration on oil rigs, fish freezing at a research laboratory, cooling for a poultry packing station and for mushroom storage, and refrigeration for a flake ice plant on the North West coast of Ireland.

One of the more interesting projects carried out recently has been the supply of a Carlyle 30GWO05 chiller for use as a prototype on an installation in an animal blood cooling plant. This air-cooled, packaged water chiller required only modifications to the safety devices to operate on ethylene glycol which cools 400 litres per hour of blood from 38 degree C to 4 degree C.

Walker has been supplying custom built electrical control panels for all Refrigeration Division projects in order to be able to take full responsibility for the complete installation and provide warranty for the complete system.

Further information is available from Walker Air Conditioning Ltd, Dublin Industrial Estate, Finglas Road, Dublin 11, (Tel: 300844).

EST Success Story

RSL Ireland Ltd, report success with their new range of shell and tube pipe water chillers from EST. In the past, most installers have thought in terms of complete packaged chillers, ie combined compressor.
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EST shell and tube evaporators can be used with water or any liquid compatible with copper, brass, steel, etc. For special fluids, designs are available with stainless steel tubes.

Standard types are available for single or multiple refrigerant circuits. They are designed for direct expansion and require externally equalised expansion valves with low superheat settings, eg ALCO. They are available with capacities from 9,000 to 306,000 K Cals.

**Expansion Proves Worthwhile**

Refrigeration Appliances Ltd, part of the Delta Group of Companies has been established for over 40 years and recently received investment from the Delta Group to modernise and extend the existing factory at Haverhill in Suffolk.

This extension was all part of a plan to increase the penetration of RA heat exchanger products for the refrigeration and air conditioning industry on a world wide scale. Over the last year and a half RA appointed distributors in several countries in Europe, Mediterranean and Middle East areas, and this policy of export expansion of sales through distributorship outlets is a continuing policy.

Coupled with increasing volume and efficiency, RA is also involved in development of new product lines, both by the extension of the range of existing products and the introduction of new ranges. To this end, the factory extension includes a new and extensive test and research centre, incorporating an environmental test room.

The latest products to be added to the range are the HSC and VSC air-cooled commercial condensers.

Extra Emphasis Put on Service

The Frigopol compressor system is a semi-hermetic unit with a unique separating hood and many other advantages.

Contamination from burned out stators is eliminated as each one can be changed in as little as ten minutes by disconnecting the power leads at the terminal box, loosening and removing two (or four depending on size) of the retaining bolts and then removing the top cover plate. The old stator can then be lifted out and a new one simply dropped in.

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Now a Vast Selection Available from Atmos

The separating hood is made from 0.2mm chrome-nickel steel and separates the refrigerating part of the compressor from the electrical problems which are isolated from the refrigeration system.

The special segmented connecting rods make possible the arrangement of the cylinders lying on a single plane horizontally to the vertical crankshaft which means that the three and two cylinder compressors function quietly and almost free from vibration.

The reliability in the service is the result of the patented structural features, such as the hood and rods but another important factor is the precision of manufacture and the quality of the material used. In addition, the robust method of construction by large scale dimensioning and exact production testing give added stability.

Further details on the entire range, which has been extensively increased, are available from Arctic Refrigeration Ltd, 167 Upper Rathmines Road, Dublin 6, (Tel: 972229).

Their appointment as sole distributors in Ireland for the world famous Hitachi range of refrigeration and air conditioning plant was a major break-through for Atmos Ltd, as well as a significant addition to the choice of equipment available to Irish specifiers.

Hitachi became a world leader 25 years ago with the introduction of the first reciprocating water chilling unit, the use of a high-speed multicylinder refrigeration compressor being considerably in advance of world technology.

Five years later, the company invested in mass production and began a major expansion of exports. In 1963 the European market was taken in hand, and outlets were also opened in South East Asia, the Near and Middle East.

A two-year guarantee is offered on Hitachi equipment and the standard range can be delivered to site within 10-14 days. Otherwise, firm delivery dates can be quoted on request.

Hitachi units now on the market include the following:

Compressors are available in a wide variety of models suitable for low and high temperature application, the low pressure type being particularly suited to custom built cold rooms and cold storage areas.

Designed for loads in excess of 100 TR, hermetic centrifugal refrigeration machines find application in almost all types of public and commercial building as a summer air conditioning plant, and also in such special applications as spinning mills, chemical and drug manufacturing plant, breweries and

Hitachi twin circuit reciprocating chiller giving 110 tons with Stardelta start and thermomexcel tube. Picture shows side panels removed.

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other areas where temperature and humidity control are important. The range also has applications for cooling water at various types of industrial and process plants.

Important features are the compact size, light weight, package design, quiet operation, ease of installation and the highest class of automatic control. Eight models are available with nominal capacities ranging from 262 TR to 1322 TR. The models are completely factory assembled and tested to comply with international standards.

Reciprocating water chillers (water cooled) range from 3 HP to 200 HP and are efficient, economic, and easy to install. The chillers can be easily combined with Hitachi fan coil units and/or other air-handling units to automatically cool, dehumidify, clean and ventilate. The bigger capacity units, Models RCU 4002S-RCU-2002S, are especially suited for air conditioning large buildings such as hospitals, hotels and public properties, including many individual rooms which require different air conditioning loads.

Reciprocating water chillers (air cooled) are essentially complimentary to the water cooled chillers and can handle the same general duties and applications. Capacity motors range from 2 hp to 200 hp.

Packaged air conditioners for computers (water cooled/air cooled) fill all the requirements needed for air conditioners of this type, including refrigeration systems, reheaters, humidifiers, blowers,

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Palmerstown, Dublin 20.
Tel: 366576. Telex: 31641

Also at London (01-567 7258) Liverpool (051-647 4781) Sheffield (0742-23583) and Stockport (061-483 0615).
Split-type air conditioners are in two parts: an air-cooled condensing unit and a cooling unit. The condensing units are weather-proofed for installation on roof or ground as required and the cooling units can be installed on the floor, on the ceiling, under the ceiling or in any required location. Installation and commissioning is simple and inexpensive.

Packaged air conditioners - some 13 different capacities in either water or air cooled variations are available for quick delivery. Cooling capacity in the water cooled series ranges from 3,300 Kcal/h to 80,400 kcal/h and in the air range from 6,300 kcal/h to 70,000 kcal/h.

Further details of the Hitachi range are available from Atmos Ltd, Klima House, Palmerstown, Dublin 20, (Tel: 366576, Telex: 31641 Amos EI).

Control/Quality Guaranteed

Cross Refrigeration (Ireland) Ltd, a member of the Cross Group of companies, specialises in the supply and installation of commercial and industrial refrigeration equipment. Through the provision of a comprehensive range of services, this company has become established as a leading operator within its field.

Employing its own planning and design staff, Cross has the capacity to carry through projects from the initial drawing stage to final commissioning. The company's own manufacturing and assembly facilities ensure control over the quality of work and materials employed in projects requiring these services.

In order to ensure that a consistently high standard of service is maintained Cross Refrigeration has, in recent years, expanded its operation by establishing further offices and service centres in major industrial areas. Main offices are at Dublin, Cork and Limerick, with service depots located at Galway, Waterford and Killarney. This coverage enables the company to provide fast and effective sales and service support to new and existing customers.

Refrigeration applications in which Cross is currently involved include commercial warehousing; meat and fish processing; the hotel and catering industry; the bakery industry; supermarkets and shops; and industrial process chilling.

Further information is available from Cross Refrigeration (Ireland) Ltd, Unit C, Cookstown Industrial Estate, Tallaght, Co Dublin, (Tel: 511915).

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APPOINTMENTS

Fleury was educated at Presentation Brothers College, Bux, and Bolton Street College of Technology, Dublin.

Charles Fleury, who has recently been appointed Sales Engineer with Atmos Ltd, previously worked for W H O’Gorman Ltd, both in England and Ireland, Mr. Fleury accepted the additional appointment of Planning Officer for the St. James’s Hospital project.

Robert M. Hogg who has been appointed Dublin Branch Manager of Mercantile Credit Company of Ireland Ltd, Mr. Hogg, a native of Dublin, was formerly Branch Manager in Galway and prior to that held management positions within the Mercantile Group in the UK and Zambia.

Joe Kennedy has been appointed manager of the mechanical services division of M F Kent & Co, Clonmel. Mr. Kennedy has been with the company since early 1977 as Project Manager on Kent’s extensive mechanical services contract for Merck Sharp and Dohme at Ballydine Co Tipperary. A graduate of UCD he previously worked for Atlantic Plant Construction and Howmedica International Inc.

Fergus Glendon has been appointed to the Board of Atmos Ltd. A native of Dublin, Mr Glendon was educated at Gormanstown College, Co Meath, and at North East Surrey College of Technology, London.

Prior to joining Atmos, he held the position of Project Manager with Tylin CAE Ltd – an engineering subsidiary of Tate and Lyle – specialising in air conditioning contracts and later Senior Contracts Engineer, with Denco Miller Ltd, manufacturers of packaged air conditioning equipment.

Nevin O. Dowling, B. Comm., FCA, was recently appointed Chief Executive of Bord Gais Eireann, the Board responsible for the development and utilisation of Ireland’s natural gas. He received his B. Comm degree at UCD and qualified as a chartered accountant in 1964. He was appointed a Fellow of the Institute of Chartered Accountants in 1975 and worked for six years with the London offices of Peat Marwick Mitchell & Co. In 1970 he was appointed Chief Executive and Planning Officer to the Central Council of the Federated Dublin Hospitals and later accepted the additional role of Planning Officer for the St. James’s Hospital project.

Mr. Dowling, who now resides in Cork, is married and has two children.

Peter Duncan has been appointed Chairman of the UK National Building Agency in succession to Lord Goodman. Mr. Duncan, a founder member of the Institution of Structural Engineers and a partner of Ove Arup & Partners of Dublin, Cork and Waterford.

Further expansion into the activities of project management and process engineering has required E G Pettit & Co, consulting engineers and architects of Cork and Dublin, to increase the number of its Board of Directors. It has met the expansion by recently appointing five new Technical Directors: T. F. Dwane, P. F. Kelleher, M. L. McNally, C. J. O’Connell, and T. J. O’Donovan.

Brian W Davies, Marketing Director of Bartol Plastics Ltd, for the past three years has been appointed Managing Director of Fordham Plastics Ltd with effect from 1 May. He succeeds Mr. V. J. Roberts, a Director of Hepworth Plastics Ltd and Deputy Chairman of Bartol Plastics, who now becomes Fordham’s Deputy Chairman following a period since January as temporary Managing Director.

In this the first of a new series of company/ personality profiles, IHVN takes a look at J J Sampson & Son Ltd, the Dublin based distributors whose best known agency is probably that of Danfoss.

The company was founded in 1920 by John Joseph Sampson who began as a small manufacturing engineer repairing such things as dynamos and working on general light engineering projects.

Immediately after the war he extended their work into electrical products such as cables, plug tops etc. Around this time they also undertook their first agency, Couthrie, a Glasgow based firm who specialised in outside light fittings but it was not until 1955 that they undertook their most successful agency ie Danfoss.

As their agencies built a reputation for high class quality goods and the business went from strength to strength, so the decision was taken to run down the manufacturing end of the firm’s activities. The last goods manufactured were five years ago when they completed an order of lead seals for the Department of Posts and Telegraphs.

Today Sampson direct all their energy towards the wholesale market, both their agencies have expanded their products considerably over the past few years, with Couthrie introducing glass fittings and an additional line...
in polycarbonate which is claimed to be vandal resistant.

Danfoss have extended their range to include heating and industrial components, refrigeration hydraulics, burner controls and compressors. This has given Sampsons a much bigger area of application and it is not unknown for them to receive requests for all kinds of unusual control setups.

Sampsons believe that the main areas for expansion will be in industry, particularly with a move to electronics, components and temperature transmitters and the possibility of selling quite a range of comprehensive lines of products in shipbuilding.

Although they are a relatively small company with only a workforce of seven, they are fortunate in that they have central premises at 12a Wexford Street. However, this can often be a drawback because while it may be easier for themselves as regards location for both the Northside and the Southside, they find that the serious traffic congestion in the centre of town is sometimes offputting to potential customers.

Because of this problem they are toying with the idea of moving to one of the industrial estates on the outskirts of Dublin. John Junior Sampson explains "It's a question of what comes up really. We are also faced with the large growth in our trade and are now beginning to find that we will require more space for our stocks."

He is confident that with the expansion of the electronics area their firm will involve themselves more fully with this type of product. Among the new products which are now available are the sonic flowmeter, static frequency converter.

Danfoss, according to Mr. Sampson, are also presently involved in the development of solar energy and with this in mind are currently engaged in a venture with the Danish Institute which is supplying them with control components for various projects. But Mr. Sampson claims that it will be some time yet before there is a breakthrough of the type that would benefit the domestic market on a broad scale. "I think it's simply a case of not enough research" he said "It's also a case of endeavouring to find the most economical way to achieve the results. At the moment, we certainly have an effective source but we still have not found a way to harness the energy economically. Progress has been made but it is still too expensive at present to be a viable market.”

With plenty of work and new areas for growth, the staff of J J Sampson look forward to the challenge facing them over the next few years. The family tradition set by John Sampson in 1920 has been maintained by his son Brendan, the present Managing Director.

John Junior, the present General Manager, never had any doubts that he would follow his father and grandfather into the firm. In 1974 he qualified as a B Comm in engineering and immediately went to Denmark and worked in the Danfoss parent factory where he was put through a course on the factory process and was given the basic training in ordering and processing products from the factory floor through to the final consumer.

The younger brother David has also joined the company after a technical course at Bolton Street and he deals with the entire Courthie range and the heating side of the business. With the addition of John Tapley as Technical Sales Manager, the firm now believes that they are adequately equipped to meet the future requirements of this fast expanding industry.
Public awareness of the importance of energy matters is again becoming manifest after a comparative lull since the price jumps and scarcities of 1973/4. Some debate on policy matters is developing; to date this has focussed on the ESB proposal to construct a nuclear station at Carnsore Point in Co Wexford and, to a lesser extent, the use of the natural gas from Kinsale. Inevitably though, more fundamental issues are being thrown up since decisions on energy policy have of course not only technical and economic effects but also important social and political implications.

In addition, there is a reasonably substantial research, and development effort underway in some areas in Ireland. Strangely, apart from these discussions and studies there is little evidence of action—there is an ever-increasing gap between the fuel shortages and price increases now generally foreseen and the actual doing of anything to ameliorate these difficulties which are likely to face us in five or six years' time. In spite of advertising campaigns our wasteful ways continue.

Most architects and engineers now include some additional thermal insulation in the buildings which they design, and waste heat recovery is becoming more common in commercial and industrial buildings. But when one considers that before half the useful life of these buildings will have elapsed the most important fuel now used in their operation will simply not be available for such purposes, then the design changes being implemented are minimal.

In many other countries, energy affairs are being taken very seriously. Earlier this year Owen Lewis of the UCD School of Architecture and John Haslett from the Statistics and Operations Research Laboratory in TCD travelled to the International Solar Energy Congress in New Delhi. In this issue, Owen Lewis reports on the ISES Congress and on some of the work underway around the world to harness renewable sources of energy. He then reviews solar energy in Ireland.

Next month John Haslett will describe some of the conclusions of his studies at TCD and IHVN will also report on similar work being undertaken in UCD and the ESB.

India has a population of 600 million which is growing by more than 12 million per annum— one fifth of the world’s population with an enormous diversity of peoples and of environments. Cradle of advanced civilisations centuries before Europe became literate, her people are now among the poorest in the world. Although 80% of India’s inhabitants still live in villages, her 3,000 towns and cities include some of the world’s largest. In a country with tremendous natural resources, one third of the people exist below the poverty line.

Contrast is an overworked word in anything written on India. Travels in Europe and in Africa provided no preparation for the Indian sub-continent and a set of experiences which it is not possible to assimilate in just three weeks. To resist the inclination to make comparisons is impossible, to judge by European criteria humanly inevitable and entirely inappropriate. The staggering poverty and filth which form a first impression is after a while consigned to another and more remote level of consciousness. Occasionally one’s understanding may glimpse another conception of personal sanctity, of dignity, of function. But to comprehend differences of caste, race and religion and the importance of symbolism is out of the question. To travel between Varanasi, holy place of the Hindu and world’s oldest living city, and Chandigarh, Le Corbusier’s new capital of the states of Punjab and Haryana, is to travel a distance not measurable only in miles. It is a good deal easier to report on a technical Congress.

The International Solar Energy Society (ISES) was founded in 1954 and now has about 7,000 members around the world in 13 national and regional sections. The strongest section on a per capita basis is the Solar Energy Society of Ireland which has 85 members forming the Irish Section while another 25 members are not affiliated with the International Society. Every two years ISES organises a Congress to provide a forum for discussions on advances in solar energy. The previous meeting was in Los Angeles in 1975 and the 1977 Congress...
was originally scheduled for November in New Delhi but during last summer this was postponed to January 1978. Fears about the effects of postponement proved unwarranted as 1,100 delegates turned up to hear and see 450 presentations and to exchange ideas and information and experience.

The Congress was sponsored by the Solar Energy Society of India with the support of several Indian and international organisations. Delegates from over 50 countries participated. While naturally there was a particularly strong representation from the host nation (where a substantial interest in solar energy was evident) the United States, Canada and Australia were well represented as well as most European countries, Africa, Asia and several UN agencies. The delegates represented a wide spectrum of interests, from the advanced technologies exemplified perhaps by those involved in the American, European and Russian “solar towers” for large scale electricity generation, to rural development workers from Nepal and Botswana interested in raising water from a depth of 10 metres or heating water using “intermediate technology” devices.

Other issues could be detected underlying the debates: those who have been in solar energy for many years as “prophets in the wilderness” greeting with mixed emotions the appearance of the big organisations, the multi-national corporations and national research bureaucracies those who see in solar energy a means of retaining greater control over their lives, suspicious of centralised and profit-orientated approaches; and the more cynical who despairing of a widespread use of solar energy because of the marketing problems inherent in such a freely available resource welcome the investments of the industrial giants as an assurance of more rapid progress in exploiting renewable energy sources.

Certainly I came away with an impression that architects and engineers were less in evidence than at previous solar energy meetings and that scientists and technologists both from state and industrial groups and academia, and administrators, were becoming pre-dominant.

The first day of the Congress at the Vigyan Bhawan Conference Centre was spent in plenary session with a generous helping of addresses from Prime Ministers, Presidents, Chairmen and sundry others. Then began the hard work, with over the remaining four days usually three simultaneous sessions in progress in order that a total of 342 technical papers might be delivered, not to mention the poster sessions where an additional 108 visual presentations were made. It is quite impossible to briefly summarise such a diverse meeting and in this report I will merely try to note some of the developments which I thought of interest or importance.

At the national level the USA is the most advanced with over 5,000 buildings using solar energy, and a commitment to space heat 2.5 million buildings by 1985. The progress here has to a great degree been due to extensive Federal support of research and demonstration programmes and to schemes of grants and tax incentives. Many other countries with far less resources being expended also described impressive solar energy programmes.

Perhaps because of its trans-national nature, solar energy has become a feature of several international programmes including the European Communities, the International Energy Agency, NATO Committee on the Challenges of Modern Society, the Organisation of American States, UNIDO, and the United Nations. All of these were reported at the Congress. While Ireland is actively involved in the first two of these it remains essential that the circumstances of our resources be the subject of particular study here – we will have to resolve our own problems, even if we do utilise technologies developed elsewhere.

Yours truly described Irish developments in solar energy to the Congress.

The area in which most effort is being expended is undoubtedly collection technology. Some 56 papers were presented on flat plate collectors while another 33 dealt with concentrating systems. There is already a great deal of experience with this equipment; an article in a recent issue of The Co-Evolution Quarterly described the 1891 to 1930 boom in solar water heating in California! A lot of the current developments are more in the nature of refinements. Fred Morse of the US Department of Energy reported that in the search for ways to deal with the occasional freezing conditions experienced in climates such as ours the drain-down and anti-freeze approaches have been supplemented by flexible collectors designed to withstand frost damage with collapsible inserts. Selective surface finishes are being developed for paint application.

If the flat plate collector is now at something of a plateau in its development, the next plateau in collector technology according to Morse is the tubular collector. This is projected to achieve a cost similar to flat plate collectors but with twice the effectiveness. General Electric and Owens Illinois already have such collectors commercially available in North America while Philips is active in Europe. Concentrating, non-tracking “V-group” collectors represent another line of development, and it is encouraging that a collector of this...
The emphasis in the sessions on architecture was on passive solar heating methods. Doug Balcomb of Los Alamos Scientific Laboratories in New Mexico presented a very useful review of the more important approaches and in the session on practice chaired by your reporter Jeffrey Cooke of Arizona State University described his earth wrapped solar greenhouse house. P. Ohanesian reported from Melbourne some conflict between the conclusions of his simulation studies which indicate an optimum thickness for solar ("Trombe") walls of 250-300mm and Balcomb's figure of 450mm. Overall it was encouraging to see a degree of recognition that passive systems are possibly the cost-effective approach, particularly since this is the area in which the architect can make a special contribution.

Agricultural and industrial applications attracted a large number of contributions at the Congress, appropriately enough in Delhi since these technologies are of particular interest to many developing countries in view of their resources and climate. There was a lot of interest in photovoltaics (solar cells) including a substantial Indian contribution. This was at first surprising — expensive, "high technology" — but without a National Grid the economics can become attractive in providing electricity for radio, television, lighting and perhaps water pumping. The large number of companies and institutions active in this area in India are clearly demonstrated at the exhibition held in conjunction with the Congress at the National Physical Laboratory, and these sophisticated displays contrasted with the simple solar cooking devices also on show. Other areas reported at the Congress included solar radiation, energy storage (still no magic solution despite very varied attempts), photochemistry and photo-biology, solar thermal power systems and wind power (disappointingly little).

All in all then a successful conference despite the seemingly inevitable variation in the technical quality of the presentation of some contributions. Noteworthy was the smoothly run and unobtrusive Congress organisation which facilitated matters wonderfully; no disadvantage at all (if the reader will overlook a MCP observation) that many of its components were delightfully clad in saris!

**Solar Energy Developments in Ireland**

Clearly Ireland is not among the most favoured zones of the world for the practical use of solar energy. While total radiation available on an optimally-inclined surface is about one half of that at the most favourable locations in the world, serious limitations arise due to the variation in this availability. Nevertheless we have some climatic and demographic advantages: the Gulf Stream protects the island from the more extreme temperatures experienced by continental nations at the same latitude, the atmosphere is relatively free of pollution, parts of the island have excellent wind climates and compared with some other countries the population density is low (45 persone/sq km) — an obvious advantage when seeking to harness a "dilute" energy form. A less advanced stage of industrialisation (in European terms) may well make it easier to contemplate the adjustments necessary to make best use of ambient energy sources.

Eamon Lalor outlined in 1975 the national potential for solar energy: here we survey the work now being done to develop and realise that potential by a variety of state and private agencies.

Firm links have been established between energy research and development in Ireland and programmes in other countries. The National Board for Science and Technology is responsible at the official level for maintaining these links and developing and co-ordinating the national programme. Ireland participates in the International Energy Agency’s wind and system modelling projects. While not yet party to the solar
agreement, contact is being maintained with the agency's work on solar heating and cooling components and systems, and component performance testing. Several contracts have been concluded under the European Community's energy research and development programme.

Ireland is fortunate in having a good network of weather stations. Solar radiation data is required at five stations in the Republic and one in Northern Ireland, with data for Valentia Observatory available since 1954. The Irish Meteorological Service has prepared a Test Reference Year on the Danish model but valid for Irish climatic conditions. The Test Reference Year contains 8,760 hourly data collections and provides an array of weather data which is close to the real climate and hence useful for comparison and simulation studies, in a format suitable for calculations on energy consumption. The climate model has been prepared, on magnetic tape, for the Valentia and Dublin Airport weather stations.

The useful energy output of flat plate collectors in the Irish climate is being investigated using cumulative frequency distribution curves for each hour and each month of the year, based on global solar radiation at Valentia over an 11-year period. The Meteorological Service is also participating in an analysis of the data available for stations throughout the European Community which have been in operation for at least five years, with the objective of preparing an insolation handbook in a format convenient for users.

In Northern Ireland the new University of Ulster is active in energy research in related fields. There are two basic themes underlying their work on solar and wind energy: the determination of available energy, and the pattern of availability. Current work focusses on the influence of energy available on thermal storage systems — how frequently will collector equilibrium temperatures fall below storage temperatures during the winter months, making pumping of the store impossible so that collectable energy is actually unusable. A full tele-metering and computer logging system has been implemented, and work on systems modelling and simulations is continuing.

Not surprisingly in a country where agriculture plays such an important role, there has been particular interest in agricultural applications of solar energy in Ireland. As well as large amounts of agricultural waste there is available extensive areas of land of poor utilisation and value for conventional agriculture — some 6% of the land area is classified as bogland, for instance. Lalor suggested considering the bogs not as depleting reserves (peat now being harvested for use as a fuel in either electrical power stations or in housing) but rather as a renewable resource through the cultivation of energy crops on cutaway bogs.

An Foras Taluntais has studied extensively the photosynthetic production of organic matter and is now actively investigating the technical and economic viability of energy production from biomass, with support from the European Community. In conjunction with the Meteorological Service a model has been developed to predict maximum yield from biomass from solar radiation data and results are being correlated with existing yields of agricultural crops. In another project a first phase feasibility study has been successfully completed which has concentrated on short rotation forestry.

The dry matter yield per hectare of energy crop is critical in determining the viability of biomass energy. Trees have a moisture content of about 50% compared with 75-80% for most herbaceous plants. Some broad-leaved species have rapid growth making pumping of the store impossible so in the early years and these over the last decade in the US and Europe have been investigated as a source of cellulose for paper pulp production. Results from many centres in Europe have shown that good yields can be achieved on land which is unsuitable for other purposes, while the limited amount of systematic breeding of trees which has taken place indicates that there is considerable scope for increasing yields further.
ZONE

AFT is concentrating on the willow which has a high annual biomass yield and will grow in very wet conditions, through a number of potentially useful species (including 'er and poplar) are being grown in energy plantations in five different centres. The second phase of the project has recently begun: this entails a series of practical tests on increasing the yield and minimising the cost of harvesting and conversion. The research has drawn on forestry expertise within the country, while much of the technology for processing energy crops can be related to the peat industry. Bord na Mona has experience in the development of processes such as large scale automated harvesting, crop drying and preparation of organic matter for combustion. Forests have the further advantage that if not immediately needed they may be left growing until required.

In a recently announced International Energy Agency agreement on joint research and development on biomass conversion Ireland is to lead a group on systems analysis of biomass projects. In another area of this field of solar energy, the Agricultural Institute is also active in work aimed at improving the design of horticultural glasshouses. Oil for heating such buildings now represents about 50% of the operating costs of early tomato production in Ireland.

A solar cell development project at the Solid State Laboratory of the Department of Electrical Engineering, University College Cork, is also supported under the EEC programme. The project is concerned with increasing the efficiency of Schottky barrier solar cells, and has investigated various methods of growing very thin oxides of the required thickness and uniformity on the surface of gallium arsenide crystals.

An array of Philips solar cells operating a water pump.

Using an inexpensive low temperature plasma oxidation technique a reliable method of reproducibly growing uniform oxides in the required thickness range has been developed. This technique is being used in the construction of solar cells so that the parameters of the oxide giving the highest efficiency cell can be isolated. While work to date has involved expensive single crystal gallium arsenide layers, in an extension to the project which has recently received approval, it is intended to construct low cost polycrystalline cells which would be produced using already existing radio frequency sputtering equipment.

A high proportion of Ireland's incident solar energy is in the form of diffuse radiation. Since only the direct component can be effectively concentrated high temperature applications are less likely in such a climate, and work in thermal applications has emphasised low temperature development. Because of the seasonal variability solar heating is likely to be supplementary to a conventional system, if capital costs are to be at all acceptable.

Some 33% of our total primary energy is consumed in domestic buildings, and the substantially greater proportion of this is used for low temperature applications. With a year-round demand for water heating a reasonable target for a solar system would be the provision of about one fifth of total requirement - almost all the summer demand, and some preheating during the winter. There is growing experience of the use of flat plate collectors for this purpose and quite a few companies are now active in the market, though a reliable estimate of the number of installations is not possible. Significant "do-it-yourself" interest and activity also exists.

The establishment of performance standards for solar energy systems and components is widely seen as a priority. A solar test laboratory has been established at the Institute for Industrial Research and Standards, as part of the European-wide programme to develop standard test facilities. While US National Bureau of Standards methods have initially been used these have not been found entirely suitable for European conditions. The German standard test which requires just one day of outdoor testing (the remainder being conducted indoors) would appear better suited to Irish conditions. Testing equipment is continuing at IIRS and it is hoped later this year to proceed to the testing of complete heating systems, using real collectors and stores and a heat exchanger responding to computer simulated load conditions.

A major co-operative research effort in this area has also benefitted from European Community support under the indirect action programme for systems studies of domestic solar energy applications. The project aimed to determine the specification of systems for collecting and storing solar thermal energy that will be optimal for any given building design and cost scenario, and was co-ordinated by IIRS. The research sought to exploit stochastic storage theory to achieve more efficient analysis in evaluating the performance of solar energy systems than the often crude models or simulations involving very large computer resources which are currently in use.

The work of the Energy Research Group at the UCD School of Architecture has involved mathematical modelling in a
NBST-funded project entitled “Optimisation of building fabric to maximise solar gain during the Irish heating season”. This work, which emphasises “passive” rather than “active” approaches to solar energy utilisation, has as its objective the preparation of aids for building designers to facilitate climatically sensitive design. While there is generally a broad measure of understanding on these parameters and indeed an awareness of traditional buildings as exemplars of such qualities, the quantitative data is not in a form accessible to most architects engineers and builders. Based on an examination of the sensitivity of the energy demand of the house to variation in factors such as shelter orientation, fenestration, thermal capacitance and so on, it is intended to prepare graphical design aids to help remedy this.

While mathematical modelling can do a great deal to anticipate the results of much more expensive and long term physical modelling and to expand the usefulness of such few results as are currently available it can never provide a real alternative to the experience gained by practical and applied research with real systems.

A handful of solar houses have already been built and some of these have excited a great deal of interest. That more have not been built must be largely attributed to the non-availability of tax allowances, grants or other incentives designed to subsidise the construction of such prototypes. Unfortunately none of these houses have yet been instrumented. The June issue of PLAN will look at some of these houses as well as the work of John Cash of Bolton Street College of Technology.

When attention was so sharply focussed on energy needs five years ago the Irish data base was seen to be quite inadequate for any serious study. There has since been a vigorous effort to acquire the basic data on both existing and possible new energy technologies and to organise these in a form useful to those conducting technology assessment studies or looking at energy economic interactions. The Economic and Social Research Institute is developing as part of the European Community indirect action programme on energy systems analysis, mathematical models of Ireland’s energy/economic system. Through the NBST Ireland, along with the other 12 nations participating in the IEA’s systems analysis project, has constructed a Reference Energy System for the years 1974, 1985 and 2000. This is a network representation of all the technical activities required to supply various forms of energy to find consumption: it can be used to assess the impact and evaluate the viability of new technologies or conservation measures on the basic energy systems by the technique of perturbation analysis.

The heat pump is an example of a technology (not strictly within the scope of the present paper but possibly qualifying since its upgrades ambient energy) which has been so assessed. The potential for heat pumps in the temperate Irish climate appears promising and work is in hand to develop machines whose performance is optimised for minimum seasonal energy usage in this climate: the two main centres are at UCG and the New University of Ulster in Northern Ireland.

Ireland is dependent on imported oil and coal for 80% of gross energy consumed. Despite the inevitability of oil becoming more scarce and more expensive, current projections show in the longer term an increasing dependence on oil. A natural gas deposit estimated at $32 \times 10^9$ cu m which has been found off Kinsale together with the planned 45% increase in peat production should temporarily reduce this dependence to 70%. The ESB proposal for a 650 MW nuclear power plant, originally approved in principle in 1973 but deferred due to the sharp reduction in demand for electricity in 1974 and 1975, is again being considered: its long lead time and various other problems do not suggest an immediate solution to our dependence. The need to exploit renewable energy sources is clear. The emphasis on energy from biomass is perhaps particularly appropriate. Solar thermal utilisation presents a totally different set of challenges with very diverse consumer patterns and circumstances. Schemes to subsidise development and improvement are particularly necessary in this field if the public and professional imagination is to be caught. The effort being devoted to harnessing wind power may seem less than might be expected given the natural advantages with which Ireland is endowed.

The renewable sources are indigenous: exploiting solar energy will tend to create jobs in Ireland. The theoretical work is largely underway. We need the political vision to formulate a policy which will allow us make best use of Irish resources, both human and physical, in the achievement of social and economic objectives while husbanding the environmental of future generations.

Acknowledgement
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