H & V News

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IRELAND'S BUILDING SERVICES MAGAZINE

H & V News

CONTRACTING — The Year Ahead

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H&V NEWS
IRELAND'S BUILDING SERVICES MAGAZINE

DON'T FORGET
IHVEX '81 AND
ILECTRA '81
IN THE RDS
DUBLIN
17, 18, 19th
FEBRUARY

Contracting — The Year Ahead
Contracting, or to be more precise, sub-contracting, in the building services industry had always been a very competitive field and up to recently the sub-contractor was willing to accept the archaic methods of payment which had been imposed on him, but with the unprecedented rise in bank interest charges any monies outstanding for any length of time makes for a very shaky financial base for any company to depend on. Our cover story this month looks at the problem and makes some suggestions as to what should be done to relieve the problem.

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CONTRACTING — THE YEAR AHEAD

As we start the second year of the eighties, every contractor must ask himself the question, "Why am I in business?". The only answer to this question must be to make a profit. Other answers such as remaining in business to earn a living, to keep people employed or to be independent, are secondary to this, as without a profit any of these things cannot be realised.

To make a profit, the price has to be correct the first time. In other words, the quotation for the job must be realistic. It must ensure that a profit be made on the job without the help of extras or variations. Unfortunately, many firms believe that, if they can maintain their high turnover, irrespective of profit, they can hope to get over a bad patch. This works for a while until the turnover starts to drop or just level off, immediately the firm is in trouble and as they have no profit made to rescue them, the firm can no longer survive.

Slashing prices is not the way to be competitive, rather it is increased efficiency that will make every contractor ask himself "Do I know what the job will cost? How quickly or how slowly are the payments? What steps did and can I take to influence the speed or otherwise of the payments? How was the work programmed?"

Did the contractor plan the job carefully or is it just happening? Most contractors are familiar with planning in some form or another. Most general contractors use line charts or critical path analysis methods and the contractor has to comply with the building programme. Yet although work programmes are fixedly adhered to (which is not easy), mention is rarely made of adhering to a programme of payments.

The system of payments to the contractors is archaic. We have the ridiculous situation which has been allowed to continue where the contractor is paid through a third party. How often has it happened that the contractor has a job 90% completed before he is paid 50% of it? Indeed, some times, he has it completed before he receives any payment. Then we find that anything from 50%-80% of the total price of the job will go into the final account, and this for many reasons, almost all of which are outside the control of the contractor, can at best take three months and up to a year to agree.

This is a situation which the contractor cannot afford to allow to continue. The contractor must insist on direct payment and must further insist that his final account cannot be held up by the failure of any other contractor or sub-contractor, to agree on producing a final account.

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The following are messages from the Chairman of both the Chartered Institution of Building Services and the Institute of Domestic Heating Engineers for the year 1981, both look forward to a busy year ahead.

Chartered Institution of Building Services — Michael McDonagh, Chairman (right).

We, in the CIBS, are looking forward to a very active year in promoting the Institution’s affairs in our Branch, particularly the one-day Seminar on ‘Practical Energy Strategies’ which will be run during the IHVN/Electra Exhibition and our other visits and technical papers and, of course, our Annual Golf outing and Ladies evening in May.

We, also, will continue to encourage the recruitment of the right calibre of student into the industry through the new CIBS Schools Recruitment Package which is adapting to suit local conditions. To encourage those already studying in the industry, we will be continuing our student award schemes and in the coming year we are, also, sponsoring an educational visit to the UK, by a party of students from the College of Technology, Bolton Street. The integration of our lighting and heating members, which is progressing very well, will also receive our full attention.

So, all in all, we have a busy and interesting year ahead of us and my hope is that our activity will be matched by similar activity in the Construction Industry and all other sectors of business in our Country.

Institute of Domestic Heating Engineers — Michael McDermott, Chairman (left).

Since the removal of the grants to reduce dependence on oil, a marked change has taken place in the volume of interest to change over from gas or oil to solid fuel. There is, however, an interest still in installing solid fuel with existing oil and gas systems. One fact has emerged from the renewed interest in solid fuel, which is that the expertise required to install and design solid fuel systems is indeed, sorting out the men from the boys. I feel therefore there is a good immediate future for contractors and installers that are able to come to grips with the old and basic principles of designing and installing.

I also feel that there would be good sense in not forgetting the application of gas installations, as I feel there could well be a renewed interest in the not too distant future.
**NEWS**

**Brennan Group**

**Air Handling Units**

Because of the expense of shipping air handling units from abroad Brennan Group recently set up a manufacturing division to manufacture air handlers in Ireland. The company market the main components as separate items—viz., heating and cooling coils, and fans. These items are manufactured by Haynes Coils (Kettering) Limited and Neupro of Germany respectively. Units are now available in sizes up to 160,000 m³/hr and can also be made to measure to suit almost any application. Motors are of the T.E.F.C. up to 7.5 kW and thereafter Drip-Proof. Units can be fitted with Iby motors, flame f motors or variable f motors. A wide x of attenuators is available when exceptional sound operation is called for. All coils are tested to 16 mspheres and are designed to give maximum transfer per unit area of oil. They are designed for expansion and contraction without distortion. A drip tray and drain connection are integral parts of all cooling coils. Filters can be provided for any standard of filtration required. Easy access is ensured with easily removable doors. All units are available in a fully weather-proofed version for outdoor mounting.

The following is a list of product features we hope to publish during 1981. For the first time we hope to travel to Munster and Ulster to do what will be the first special regional features in which we will look at the industry in that particular area. We will be going back to Ulster at the end of the year to the Heatair exhibition in Belfast and of course every month will see the pre IHVex issue of H&V News.

### SPECIAL FEATURES PROGRAMME 1981

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**H&V NEWS PRODUCT FEATURES FOR 1981**

The largest trade fair on this topical subject is to be held in Frankfurt, Germany. The fair will be held from Wednesday 17th to Saturday 20th March 1982. This will be the 14th ISH (Heating, Sanitation, Air-Conditioning) Trade Fair. The show is very international and will be preceded by an international trade fair on the same subject. The fair will provide an international forum where the latest developments in these branches of engineering can be discussed.

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LSP (IRELAND) LIMITED
11/15 Tara Street, Dublin 2
Tel. 71.18 61, Telex 52 52
OIL — MINUS 9°C

Home-heating oil is much less likely to freeze up this winter following the adoption of Government guidelines by the Irish Refining Company.

It was announced recently that the company is to start manufacturing gas and diesel oil at the Whitegate Refinery to a specification of minus nine degrees Celsius.

This will be consistent with the anti-freezing standards now operating in the United Kingdom and will, in fact, mean that there will be less chance of home-heating oil freezing in this country than in Britain because of the milder climate we enjoy here.

A controversy arose in recent weeks as a result of the failure of the major oil companies to introduce the Government recommendations geared to prevent domestic heating oil "turning to jelly" during periods of low temperatures.

There were allegations that the oil companies had failed to implement the Government guidelines and were, therefore, responsible for considerable inconvenience which had been caused to domestic customers.

A spokesman for one of the oil companies said that while the new system did not provide a blanket guarantee that home-heating oil would not freeze up it at least meant that the consumers in this country are now better protected in this area than their counterparts in Britain.
Following the presentation of the paper indicating the Government policy as regards the winding up of the N.I. gas industry, the L.P. Gas Association of N.I. held a news conference to draw attention to the fact and their displeasure that no compensation was proposed for those who decide to replace their town gas appliance with one using L.P.G.

A campaign will be launched to gather support for the Associations point of view.

Two of the best supported lectures for some time have recently been held in Belfast. The first, sponsored by the N.I. Section of the Institute of Energy was given by Dr. Les Brealey, of the Mechanical Engineering Development Section of N.E.I. John Thompson - Clark Chapman Dr Brealey spoke of the development to which his company has undertaken in the provision of fluidised beds for shell boilers.

Before the meeting few people knew much about fluidised beds and indeed were sceptical about whether they would be widely used. However, interest has been growing both at the local conferences and in discussions with potential customers. In view of the fact that the amount of capital involved was minimal Mr. McGriskin also spoke of the savings which had been achieved by the installation of an incinerator.

Both Mr. McGriskin and Mr. Brealey know that their efforts had been appreciated when they each had to undertake a hard and sustained question time, which continued even after the closure of both meetings.

Mr. McGriskin gave details of the work which had been undertaken by his conservation units as a result of which impressive energy savings had been achieved at the Dundalk factory.

John Kelly Ltd., the Belfast Fuel distributors and heating merchants have acquired the whole capital of Aerocowl Marketing Ltd. Directors of the new company are W. Devlin, J. Hingston and R. McChesney with Dr. A. Mitchell as construction manager. Mr. Taylor was previously with Louns.

Listeners were impressed to hear of the savings which had been made particularly in view of the fact that the cost of capital involved had been minimal Mr. McGriskin also spoke of the savings which had been achieved by the installation of an incinerator.

The second lecture, in which impressive energy savings had been achieved, was given by Mr. Devlin, J. Hingston and R. McChesney with Dr. A. Mitchell as construction manager. Mr. Taylor was previously with Louns.

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Unit Construction (N.I) Ltd have announced the appointment of Mr. David Taylor as construction manager. Mr. Taylor had previously with Louns.

The courses are confined to 25 persons at a time thus allowing for closer discussion. Following the success of this inaugural programme it is intended to run a further series details of which are available from B. Page Esq., 1.T.B. House, Glenmount Road, Church Road, Newtowndautical.

Anglo International Mining, a Hague based British company, have taken over one of Ulster's major civil engineering, J.M.T. Contractors Ltd. J.M.T. formed a number of years ago, have proved to be one of Ulsters most successful new companies, carrying out major contracts in the South of Ireland, the Scottish offshore activities and overseas.

Mr. Sam Nutt, Managing Director in confirming the view over stated that it was principally a take over of the companies share holdings and would not mean any material change in either the work force or the company activities.

An interesting survey just completed shows that there appears to be a strong preference in N.I. for solid fuel heating.

The survey showed that 67% or 317,000 houses used coal, 13.9% or 65,900 houses, electricity 12.6% or 59,000, town gas 5.6% or 26,700 while bottled gas had 1.6% or 4,700 homes.

Pipe line Components of Ballynahinch have been appointed sole N.I. distributors for Neptune Glennfield's range of valves, hydrants and flow control products.
PRODUCT REVIEW: FILTERS, FANS, BLOWERS AND AIR HEATERS

will be pleased to hear that the new design enables greater flexibility in positioning and installing the unit. The casing measures 9 in x 6 in — the same size as a standard air-brick — and when recessed only the grille and bezel are seen, giving a modern and attractive appearance.

The Loovent incorporates an exhaust spigot for use with standard 110 mm O.D. (4 in nominal) plastic pipe and is capable of extracting through systems with up to 15 m (50 ft) of ducting.

Large Loovent Extractors can be wall or ceiling mounted and may also be installed on the partition wall between bathroom and toilet to ventilate two rooms simultaneously.

Further information from McKenna Distributors Ltd, 2 Aston Quay, Dublin 2. (Tel: 773132).

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650 cu. ft. per minute
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* Century runs on one of the cheapest forms of fuel — paraffin.

Get Century INSTANT heat today! The X60 £245, X100 £310, X160 £400. V.A.T. extra.

AAF

AAF Ltd supplies the building services industry with a range of filtration equipment covering every efficiency requirement from that demanded by occupied air conditioned spaces to the most stringent Clean Rooms specification.

A complete selection is offered which includes primary filters to trap the majority of larger airborne dust particles, secondary stage filters which capture the vast quantity of small contaminants, and AAF’s Astrozel HEPA filters which are capable of removing virtually 100% of sub-micron sized particles.

AAF’S primary filters encompass disposable pads, panels and automatic rolls, a washable panel and a self cleaning unit.

The inexpensive AMERICA glass cell is a heavy duty viscous impingement panel filter. Filtering media consists of continuous strands of interlaced glass filaments constructed in a graduated density, bonded together, and coated in AAF’s Viscoline adhesive. When the panel has collected its dust load it is simply discarded and replaced.

AAF Ltd manufacture the Roll-O-Matic, the most versatile renewable roll type filter on today’s market which is available in an extensive range of options.

It has the advantage of low installation and maintenance costs, offers a constant resistance to air movement and has a high dust holding capacity.

A primary filter highly recommended for use in locations where above average dust concentrations occur, for example the Middle East, is AAF’s Multi-Day. The unit comprises a continuous overlapping panel curtain which passes through an oil bath where the dust is automatically removed and the Viscoline coating renewed.

Increasingly popular for incorporation within air handling systems is the DRI-Pak cartridge. Offering efficiencies from 30% to 95% by the Dust Spot Test according to ASHRAE 52.7-76 (Eurovent 4/5) using atmospheric dust, the DRI-Pak (second stage) extended surface filter is used extensively in hospitals, computer suites and manufacturing processes where the requirement for clean air is critical.

Especially suitable for building service this filter stops microscopic particles of carbon, smoke, fly ash and other contaminants from staining ceilings, walls, curtains and light fittings. Up to 12m of super fine media is used in the bag construction of each cartridge, which are available in five efficiency ranges and a large variety of sizes.

High efficiencies with long operating hours characterise the Rollotron, a dry plate electrostatic agglomerator combined with roll filter. Supplied in either compact vertical or horizontal formats, the latter being ideal for filtration requirements in air handling systems where headroom is often a limiting factor. Access from both sides effectively eliminates the need for a plenum access, enabling the Rollotron to be housed completely inside ductwork.

The SA unit is predrilled to match AAF air handling systems and has the advantage of a sealed oil bath which is easily maintained.

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Reasons like robust design, reliability, flexibility and fast delivery (from stockists throughout the country).

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We also manufacture air handling units using these famous fans.

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tel: 01-603-8713
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DAN CHAMBERS

A new concept from Roof Units Ltd packages all the best characteristics of their centrifugal fan units and presents them in slim line cases ready for connection to ducting or flexible hose systems. Speed controllers are available. The elegantly designed external rotor motor matched to a backward curved impeller, gives quiet effortless performance against resistance and the important feature of full speed control allows the user to select precise performance in site.

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

No protruding motors, no pulleys, full speed control, quiet and powerful, straight from the carbon and isolated and clipped in the system in minutes. Performance from 100 c.f.m. to 5,000 c.f.m. operating up to 1.5 ins. w.g.

Further information from Dan Chambers Ltd, 57/58 North Brunswick St., Dublin 7 I 0.72097 720566 / 720446 / 720555. Tel: 7200971. Fax: 7200971. Environmental Supply Co. (Tel: Belfast 54429).

We've slimmed down to a beautiful figure

Unlike some of our rivals, these new elegant Eurofoil Cased oval fans are available in short or long case versions. They come in just one Super 3m. Simply because our revolutionary external rotor motor is so beautifully engineered that it makes long case obsolete. The superb motor design gives you full speed control at the flick of a switch. Don't be misled by our shapely fans shinky looks, either. The reason it looks so good is that the body is electrically bonded then rough, sprayed raw with acid resistant paint and then spray painted to an immaculate finish. Underneath it sits, easy to handle, controllable exterior it's a very rough baby. This particular baby comes in ten sizes from 300mm to 1000mm. And each one is individually packed for your convenience. Get your hands on one soon.
PRODUCT REVIEW: FILTERS, FANS, BLOWERS AND AIR HEATERS

GEC (IRELAND)

GEC Distributors (Ireland) Ltd, leading suppliers to the ventilating trade for many years, now offer an even more comprehensive range of fans and ancillary equipment ex-stock Dublin.

Included in the range are the well known Woods Colchester regulatable Aerofoil fans 150mm to 800mm diameter, fume cupboard fans 150mm to 315mm, portable cooling fans, galvanised and fibreglass roof units for cup and purin mounting with capacities in excess of 40,000 cfm and now all available with soaker sheets in sizes 250mm to 800mm. The mixed flow fibreglass roof unit is capable of handling duties at 500 N/m². Also new to the range is the UDC upward discharge roof unit and the DDC downward discharge roof unit. The popular GP propeller fan is also available ex stock in sizes 250mm to 800mm diameter in four pole and six pole speeds suitable for manual or electronic regulation.

In pride of place is the Wwoods Varfoil fan which can perform the function required of a variable air volume (VAV) airconditioning system, where there is a constant pressure requirement for the terminal units and a varying pressure following a square law function is imposed by the distribution ducting and air handling equipment, and also ensures maximum energy conservation.

Keith Blackman Ltd, offer a large selection of quality centrifugal fans, dust collection units and Xpelair offer a whole range of controlled ventilation and heating equipment that makes living and working a fresher, cleaner business.

The range consists of 6", 9" and 12" diameter window wall and roof units together with ceiling fans, cooker hoods, humidifiers, oscillating fans and toilet duct fans. Most of the range is suitable for both individual and group control. The delay units are also available. New to the range is the Xpelair roof mounting plate available in 9", 12" 9" and 12" roof models.

For further information contact GEC Distributors (Ireland) Ltd, 15/19 Hendrick St, Dublin 7, (Tel: 775413; Telex: 5656).

GKN AUTOPARTS

GKN Autoparts Ireland Ltd offer a free design service to architects, consulting engineers and specifiers for ventilation problems. They also carry a very comprehensive range of ventilation units and accessories. These accessories complete the range of products and provide even greater flexibility in solving all kinds of ventilation problems.

Accessories ex-stock include: Roof plate assemblies (for flat or pitched roofs), corrugated soaker flange sheets to suit most profiles, ceiling housings (for ceiling void or concealed ventilation), egg crate grilles, non vision door grilles and external weather louvres, PVC flexible ducting in sizes 100mm, 175mm, 229mm, 254mm, 355mm and 406mm and the corresponding worm drive clips.

Adapter kits for splitting Vent-Axia fans to accommodate a large fixing thickness between the two are also available. Four core white PVC cable is also supplied.

A comprehensive ventilation manual can be obtained from Vent-Axia Division, GKN Autoparts (Ire) Ltd, Camden Close, Emmet Road, Inchicore, Dublin 8, (Tel: 781700, Telex: 30830).

SERMET

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

Further information: Jim McCadden Sermet (NI) Limited, (Tel: 0846 68233) or Reggie Kidd Sermet (Dublin) Limited, (Tel: 01 801964).

EURENCO SALES

Eurenco Sales Ltd is a comparatively new company in the heating and ventilating equipment sales.

They have a complete range of ventilation equipment from J.J. Ventilation Ltd., Bristol. On the powered ventilation side a range of fans is available from Beltair Ltd., Exeter.

SERMET (NI) LTD

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Tel: Hillsborough 68231

SERMET (DUBLIN) LTD

70 Lower Mount Mount, Mount Town Road, Dundalk, Co Dublin.
Tel: Dublin 801964

Available ex-stock

- Propellor Fans
- Axial Fans
- Roof Units
- Wall Fans
- Grilles
- Centrifugal Fans
- Fire Dampers
- Window Fans
- Toilet Fans

DAN CHAMBERS LTD.

57/58 North Brunswick St, Dublin 7.
Tel: 72048728071/720555
FINHEAT

‘Cirrus’ unit heaters are a development of S & P’s successful FT range, with re-styled fan and guard and a new colour scheme, but retaining all the other well proved structural and trouble-free performance characteristics. The range of ‘Cirrus’ types, sizes and heat exchanger arrangements is so comprehensive that, where unit heaters are the preferred equipment, practically any heating requirement can be satisfied efficiently and economical-ly. There are horizontal and vertical types each of which is available in five sizes, offering outputs of up to 120kW (40,000 Btu/h), and with a choice of three different types of heat exchanger, a choice of fan speeds.

S & P Coll’s SPM range of fan convectors is a logical development of their very successful FBM range which, with the available variations and options, has become standard equipment in many schools, hospitals and other local authority establishments. This SPM range has the same quality and strength characteristics, but being simpler and offering fewer options, it is more competitively priced. Choice of heating duties ranging from 4.8 to 13.0kW (16,400 to 44,000 Btu/h) at standard conditions on a quiet running speed setting.

Further information from Finheat, 34 Watling St, Dublin 8 (Tel: 778120).

**PRODUCT REVIEW: FILTERS, FANS, BLOWMERS AND AIR HEATERS**

**COMPLETE FILTRATION FROM GLOWTHERM**

Guaranteed Irish Panel, Washable, Grease and Bag Filters

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- Carbon Filters
- High Efficiency Bag Filters
- Stainless Steel Grease Filters
- Turkay Dust Collectors.

Luwa

Ultrafilters, Fine Dust Filters, Safe Change Housings, Filtrascept Terminal Units, Positive Shut-off Valves.

LANCASTER GLASS — Complete range of replacement auto roll refills for all models.

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Further information available from the sole all Ireland agents: Penrystown House, Whitehall Cross, Terenure, Dublin 12.

Tel: 513867/516537/516644.

Telex: 30941

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

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

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

The installation featured here is typical of many: a series of four lavatory cubicles are ventilated by a single Vent-Axia unit fitted through the roof of the building.

In each cubicle, stale air is drawn through a grille in the suspended ceiling, passing through flexible ducting connected to a four-branch spigot plate mounted under a housing directly below the Vent-Axia unit. The result is effective ventilation at relatively low capital cost, with minimum disruption during installation.

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

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

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

Multi-duct ventilation. Just one of the many applications that add up to Vent-Axia: versatility in ventilation, with Universal and Standard units in four impeller sizes: 6" (152 mm), 7¾" (191 mm), 9" (229 mm) and 12" (305 mm).

**FINANCIAL DATA**

- **Company:** GKN Autoparts (Ireland) Ltd.
- **Address:** Camac Close, Emmet Road, Inchicore, Dublin 8.
- **Phone:** 01-781700.
- **Telex:** 30930.
- **Branches:** Ashbourne, Cork, Galway, Kilkenny and Limerick.

**DESIGN SERVICE AVAILABLE**

For further technical information and advice, write or phone: Vent-Axia Division (01) 781700.
Utilization of Heat from High Pressure Side of Refrigeration Systems

In principle, a refrigeration system is a system in which heat is moved from a lower to a higher temperature by means of mechanical work. Since the energy crisis, a great interest has been taken in utilizing this heat which is available at a relatively high temperature level. It can be done by heat recovery or by the use of heat pumps.

The designations are often used at random which is not very expedient. We have, therefore, found it suitable to use the following definitions:

Heat pumps: Systems where the primary aim is optimum utilisation of the condenser heat. Utilisation of the cooling effect is, normally, of little or no importance at all, at any rate in winter.

Heat recovery systems: Systems where the primary aim is optimum utilisation of the cooling effect, and where it is tried, at the same time, to utilise part of, or all, the condenser heat for heating purposes.

At times, it can incidentally be hard to make a sharp distinction between the two concepts. By way of example, refrigeration systems can be mentioned in which the cooling effect is used for freezing an ice-crink and the condenser output is used for heating a swimming pool.

In a refrigeration system it is preferred that the ε-value should be as high as possible since the energy will then be utilized in the best possible way. To this end, the following steps among others can be taken:

1. Correctly sized evaporator system with good transmission coefficients.
2. Modern compressors with good efficiency.
3. The pressure ratio \( P_0 \) should be as low as possible, which again means that it is advantageous to work with an evaporating temperature as high as possible and with a condensing temperature as low as possible.
4. A well-sized fan in the cold store; if required, air baffle plates can be fitted.
5. Removal of any air and moisture from the refrigeration system.
6. Preventing the oil entering the refrigeration system in too large quantities. For example, by the use of an oil separator.
7. A correctly automated system.

Looking at a refrigeration system with heat recovery, it is possible to derive a special \( \varepsilon \)-value, which is called \( \varepsilon_{VG} \) for this system.

\[ \varepsilon_{VG} = \frac{Q_0 + Q_{X}}{Q_{X}} \]

where \( Q_0 \) stands for the condenser output. When the designations from the Mollier diagram are used, the following equation results:

\[ \varepsilon_{VG} = \frac{(h_C - h_A) + (h_D - h_B) \times \eta}{h_D - h_C} \]

The above formulas are used in the following section dealing with selection of condensing temperature.
I will be seen that the energy supplied is utilized less efficiently, the higher the condensing temperature becomes. The increased power at the high condensing temperature is used only for increasing the condensing pressure. Since the efficiency is reduced at the same time, and it will be necessary to reckon with an increased operating time for the system, it can be established, generally, that if the system is to be used primarily as a refrigeration system, the condensing temperature should be as low as possible, but a sufficient pressure must, however, be maintained before the expansion valve.

If temperatures higher than the condensing temperature are required, it should be tried to utilize the superheating instead which is, normally, 8% to 16% of the total condenser output. It can also be illustrated in the following example.

### 3.1 Examples

A refrigeration system for a fruit and vegetable store is reckoned with. The system has a cooling requirement of 100,000 kcal/24 hours at an evaporating temperature of -5°C. The system is designed for refrigerant R12 and has the following data:

- **Condensing temperature** $t_k = 35°C$
- **Cold output** $Q_0 = 9,300$ kcal/h (see fig. 6)
- **Power input** $N = 3.3$ kW (see fig. 7)
- **Condenser output** $Q_k = 12,140$ kcal/h

### Part 2 next month

#### THERMWISE STEAM BOILERS

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**LPG, PUMPS AND VAPOURISATION**

The following article was supplied by the Blackmer Pump Corporation.

Butane, propane and anhydrous ammonia are gases in their natural state, but they are compressed into a liquid for transport and storage. When liquefied, propane and ammonia are always at their boiling point at normal temperatures. The slightest drop in pressure or the least addition of heat will cause them to boil and give off vapor or gas. This characteristic becomes critical when considering the transfer of liquefied gases from one tank to another.

When you compress vapor or gas, you raise its temperature. (That's why the bottom of a bicycle tire pump heats up.) Conversely when you release this pressure, the temperature drops as the gas expands. Compressed vapours condense into liquids much more readily if the heat of compression can be dissipated rapidly.

When liquid is pumped into the bottom of a receiving tank, the rising liquid compresses the gas above it, raising its pressure and also its temperature. On a hot summer's day when the normal vapour pressure of liquefied gas is quite high, this increasing pressure of the compressed vapour could approach the popoff pressure of the safety valve and could prevent filling the container to its normal liquid level. That's why many of today's tanks utilize a strav-fill loading valve. This valve sprays the incoming liquid through the vapour, helping to keep its temperature down, even though it is being compressed by the rising liquid.

When filling an older type tank with a fill connection at the bottom or with a top connection which has a dip tube carrying the liquid to the bottom, a vapour return line is desirable. This reduces the pressure buildup in the receiving tank, thus reducing the pressure on the pump and allowing the receiving tank to be filled to the proper level. Without a vapour return line, the pressure in the receiving tank on a hot day could cause the safety relief valve to open.

When you transfer liquefied gas from one tank to another, as the liquid level drops, the vapour above expands, and its temperature and pressure drop. Immediately, the liquid begins to boil, creating vapour bubbles. The velocity of liquid entering the intake pipe carries some of these gas bubbles with it. Each restriction in the intake pipe drops the pressure of the liquid-vapor mixture causing the vapour bubbles to expand and causing more boiling and more vapour bubbles to form. That's why the pumping system almost never delivers as much actual liquid as its rated delivery would seem to promise. A globe valve increases the amount of vapourisation. We recommend ball or gate type valves for minimum vapourising effect.

The vapours entering the pump cause noise and vibration in most types of pumps. Blackmer pumps incorporate a hydraulic "cavitation suppression" which minimizes the effect of vapourisation, resulting in smoother operation under adverse conditions. Excessive vapourisation in the intake line also shortens the life of the pump vanes. However, there is always some vapourisation and cavitation whenever liquefied gases are pumped. If the amount of vapourisation is moderate, the pump vanes will have a reasonably long life.

The vapour return line from the top of the receiving tank to the supply tank helps to keep the pressure up in the supply tank and thus reduces the amount, of boiling.
This in turn increases the flow of liquid through the system.

The effect of this vaporisation can be demonstrated on a bobtail delivery truck by attaching the delivery hose to the supply tank and recirculating the liquid. The GPM, when recirculating, is always more than when delivering to another tank because the pressure in the supply tank does not drop.

The sloping effect of vaporisation in the intake line actually imposes a rather rigid limit on the maximum delivery rate, where no vapour return line is used. This limit is about 2½% of the tank’s capacity per minute, but will vary somewhat with temperatures of liquid and atmosphere and resistance in the intake line. For example, it is practically impossible to withdraw more than 50 GPM from a 2000-gallon tank that has no vapour return line. Over-speeding the pump or using a larger pump will have little or no effect, once this barrier has been reached. That’s why a 3-inch pump on small bobtails often will not deliver any faster than a 2-inch pump.

Quite often, vapour return lines are too small to be effective. To check the efficiency of existing vapour return lines, observe the pressure gauge on the supply tank during a delivery. If it shows a drop of more than two or three pounds, vapourisation can be seriously affecting the delivery rate. A more exact check would be to time the delivery rate during the first minute of pumping with a stop watch, then wait several minutes and time the rate again. The second reading will always be less than the first. But the amount of the reduction will indicate how much vaporisation has occurred in the tank and supply line.

Long intake lines should be avoided, even when they are so large that they have practically no friction loss. Here’s why. At night or in cold weather, the liquid will cool off. Then, on a warm day (especially when a hot sun is shining on the pipes), the flow of heat through the walls of the pipe causes the cool liquid to rapidly rise in temperature, which in turn causes the liquid to boil, with resultant cavitation in the pump. To minimize this problem, intake lines should be sloped upward toward the supply tank so vapours can flow back into the tank. Avoid up-and-down pipe loops where vapours can accumulate.

UK agents for Blackmore are
George Meller Ltd and Irish agents are Pump Services Ltd.

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

**A H CULLEN**

A H Cullen & Co Ltd sole distributor in Ireland for Culligan water treatment plant offer a large range of package systems, water softeners, filters, reverse osmosis, deioniser, dealkalisers, potabilisation systems and chemical dosing pumps.

Backed by Culligan International’s wide experience in water treatment systems in almost 100 different countries throughout the world, the Irish Company can provide the necessary expertise to cope with the most demanding water quality requirements.

Standard automatic equipment includes:

- Water softeners: Flow rates from 0.8M³/hr to 225M³/hr.
- Water filters: Flow rates from 1.0M³/hr to 175M³/hr.
- Reverse osmosis: Flow rates from 3 litres/hr to 24M³/hr.
- Deionisers: Flow rates from 0.2M³/hr to 20M³/hr.
- Alkalisers: Flow rates from 3M³/hr to 20M³/hr.
- Potabilisation systems: Flow rates from 2M³/hr to 90M³/hr.

Culligan water treatment plant installed in Ireland over the past 15 years provides quality water to industrial users in pharmaceuticals, airports, soft drink manufacture, hospitals, hotels, poultry farms, meat factories, electronic component factories, car washes, and dairies.

In addition there are many thousands of Culligan domestic units installed throughout the country providing soft, filtered and conditioned water to the household.

The latest addition to the Culligan range is the Omnipurification system incorporating granule activation. An Omnipurification system consists of two filtering tanks. Each tank contains three layers of filtering minerals having different granule size and bulk density.

Eight diaphragm valves control the water flow and are in turn controlled by a hydraulic pilot valve which, either at set times or activating due to a differential pressure sensor, opens and closes them activating the several service and rinse steps in an automatic sequence.

Each tank is conditioned by oxidizing and coagulating solutions. Automatic dosing pumps, ahead of the first filter tank, inject chlorine solution at the rate indicated by the raw water chlorine demand and alum solution at the maximum rate of 10 ppm. Ahead of the second tank, a third pump injects either alum at the maximum rate of 4 ppm or a polymer at the rate 0.02ppm.

The Omnipurification system is ideal for treatment of river or lake water with suspended solids up to 300 mg/l without the necessity of pre-settling. In average conditions it will deliver...
H R Holfeld (Hydraulics) has been associated with water supply and water treatment for over thirty years. From its original product the Waterpak piston pump, of which many thousands are still operating satisfactorily around the country, the company has expanded to the stage where today it can offer a wide range of products to the water treatment industry.

The company has now settled into its new manufacturing facilities in the Sandymount Industrial Estate outside Dublin where it assembles the Grundfos range of stainless steel multi-stage pumps and submersible borehole pumps, together with the Holpak range of packaged booster systems. These products carry the Guaranteed Irish label.

Although the company does not itself become directly involved in water treatment it supplies all the leading water treatment specialists and a few of the products are detailed below.

Holpak Booster Sets

The company has for a long time been the leader in Ireland in the production of packaged booster systems, incorporating a number of pumps which operate in response to increased demand with an integral pressure tank and electrical control system. These booster sets are used in addition to their normal duty as a water supply unit for washdown purposes in water treatment works. The standard range uses the Grundfos' vertical multi-stage pumps which are described in the next paragraph.

Grundfos CP & CR Range

These pumps are typical multi-stage pumps incorporating stainless steel impellers, guide vanes and shafts in contrast to cheaper pumps using plastic inter­

als and are renowned for their high quality and advanced engineering. They are assembled under licence from Grundfos of Denmark and one use of particular interest to water treatment is the incorporation of a small flow pump together with a venturi to withdraw chlorine from a reservoir and inject it into a main pipeline. These pumps are available ex stock.

AMF Cuno Filters

The company markets the well known range of AMF Cuno filters which are inline filters of advanced design. They can be used with a variety of liquids and come with either disposable or washable cartridges. Again, these filters are available ex stock.

Lev Metering Pumps

The company sells the Lev range of high quality metering pumps which find application particularly in the pharmaceutical and chemical industry.

Sulzer Static Mixers

Holfeld Hydraulics also sell the Sulzer static mixer which when inserted in a pipeline immediately downstream of a dosing pipe will in a matter of five pipe diameters or so give a homogenous solution. This treatment is easy, economical and may require only one chemical injection point. Sulzer static mixers have no moving parts, gives a statistically guaranteed degree of homogeneity and can be used for both gas/liquid and liquid/liquid mixing. It finds particular application in pH neutralisation, ensuring the homogeneity of a solution prior to sampling and in the neutralisation of chemical waste.

Penstocks

The company sells the full range of Simon-Hartley penstocks, flap valves and other fluid control equipment, manufactured both from traditional cast iron and from light weight Coplastic.

Simon-Hartley

In addition to the penstocks mentioned above, the company sells the full range of Simon-Hartley equipment including Ten-Ten sand filters, both to end users and to water and waste treatment contractors.

Further details of the above products can be obtained from H & R Holfeld (Hydraulics) Ltd, 2-4 Mervue Road, Sandyford Industrial Estate, Dublin 18.

Holfeld Hydraulics also markets the Grundfos vertical multistage pumps, isolate liquids, gases and extremely aggressive products. These pumps are available ex stock.

AMF Cuno Filters

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Penstocks

The company sells the full range of Simon-Hartley penstocks, flap valves and other fluid control equipment, manufactured both from traditional cast iron and division plates. For the rare occasions when an external flanged tank cannot provide a required capacity at a particular site, a tank with externally flanged side plates and internally flanged base plates or with internally flanged plates throughout can be supplied. Depths of tanks so constructed should not exceed three plates.

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

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

Site painting is not always necessary for galvanised tanks.

Further information from Finheal Ltd, 34 Wating Street, Dublin 8, Tel: 778109.

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ISTS

Irish Specialist Treatment Systems Ltd, are a relatively new Irish company, based in Ardee, Co Louth, and operating in the field of water and waste water treatment. Whilst the company has been fully operational for only one year, its personnel have a long and successful record of involvement in this area of work. ISTS have directed their attention to two main areas, efficient pre-treatment and sludge treatment. A high incidence of treatment plant problems are caused by inadequate pre-treatment and sludge removal. Sludge removal, has been governed, in most cases, not by the needs of the treatment system, but by the economics and availability of disposal methods. Whereas most of the practical problems of sludge disposal can be solved by dewatering, the equipment available in the view of ISTS has been too expensive to buy, too complex to operate and too costly to run. Especially for the small and medium sized works prevalent in Ireland. Equipment development has only meant increased complexity and cost. ISTS believe that cost effectiveness comes from increased simplicity not increased complexity.

The company's aim is to produce inexpensive, reliable, low running cost equipment, which is readily available to local industry.
Hydro-Press sludge dewatering system. The Hydro-Press module is based on the continuous belt press principle and is remarkable, its from stainless steel and power requirement 0.37 kW. In fact the whole system, including chemical dosing, flocculation, dewatering and sludge conveying can operate at a power requirement equip to that of a normal domestic electric fire.

In the same stable as the Hydro-Press, ISTS have developed a new floatation system, for use in effluent treatment called the Hydro-Float system.

Again its characteristics are low capital cost, low running cost and simplicity. The company claims that major advantages over dissolved air flotation are the automatic removal of fat and grease and the flotation of solids and chemical floc. By use of a unique low bubble aerator the Hydro-Float produces effective flotation without the need for air compressors, pressure vessels or recirculation pumps and can operate at one tenth the power required of a DAF system.

The process has an impressive track record, for instance, with the treatment of dairy wastes, operating at flow rates in excess of 1000/h. ISTS claim that the introduction of this equipment at a pre-treatment stage will result in a substantial increase in secondary plant efficiency, without the problems of blocking, often associated with DAF. When used for the treatment of tannery wastes the Hydro-Float can produce higher sulphide oxidation, together with the automatic removal of floatable solids. ISTS are convinced that the relatively low capital and running costs of their Hydro-systems result in economic sense even in these difficult times. For instance, the greatly reduced sludge transport costs and manual involvement associated with their Hydro-Press system can often completely offset the cost of the capital equipment.

For further information contact Irish Speciality Treatment Systems Ltd, Greenville Mill, Ardee, Co Louth, (Tel: 041 53772)

HOUSEMAN

The Standard Plant Division of Houseman (Burnham) Limited, part of the Portals Water Treatment Group, have recently been awarded a substantial contract with ITT Semiconductors for the provision of reverse osmosis and demineralisation plant at the company's Sidcup factory. The contract is for the installation of equipment adding to the existing system installed by Houseman, commissioned in the latter part of 1977, providing a daily flow of 30,000 gallons of purified water. The initial system was designed to accept the addition of further equipment to make the total capacity 60,000 gallons a day. The contract, which also includes point-of-use polishing, is worth approximately £120,000 and will be completed during the first quarter of this year.

The production of semiconductor chips is a highly complex and precise process which requires rinsing of the chips to remove any surface deposits. Any trace of dissolved solids or bacteriological contamination will cause bridging of the conductive mediums, resulting in an unacceptable rejection rate. The treatment, therefore, of both natural and mains water is essential. The reverse osmosis process has been selected by the firm and encompasses water softening, reverse osmosis demineralisation and was designed, using standard plant equipment selected from Houseman's Standard Plant Range, in conjunction with ITT design engineers. The ultimate quality of water used in the washing process is 18 megohms.

The first stage consists of pre-treatment to reverse osmosis using a duplex of softening plant utilising standard A2-1000 models. These are fully automatic in operation and prevent fouling of the reverse osmosis membranes by precipitated hardness salts. The regeneration sequence in the A2A is initiated by sensor probes to ensure that no carryover occurs above the set limits into the reverse osmosis units, because of any possible varia-
sions in the water supply which would not normally be allowed for under volumetric control.

Following base exchange softening, the water is passed through reverse osmosis plant using two 3133 standard Houseman reverse osmosis plants which remove up to 90% of dissolved solids originally present in the water. The Reverse Osmosis units use the Dupont 199 aromatic polyamide membrane which has a wide pH tolerance combined with a long membrane life.

The process uses high pressure pumps (400 psi) to provide the driving energy which separates the feed water into two streams, a pure water stream and a concentrated stream which carries away the dissolved salts. The rejected water is re-used within the ITT complex for cooling applications, providing further economies in the operation.

The financial savings brought about by the introduction of the Reverse Osmosis plant are the increased period between regeneration of the existing demineralisation units and, ultimately, prolonged life of the .22 micron filters at the point-of-use. The main advantages of the Reverse Osmosis plant could be listed as follows:

1. Up to 90% saving in cost of chemical regeneration.
2. Elimination of contamination in toxic liquor discharge.
3. Increased period between regeneration, increasing the capacity of the units to the hydraulic plant equipment.
5. Extension of resin life.
6. Decreased labour intensity.
7. Increase in final point-of-use filter life.
8. The additional unit to increase capacity to 60,000/80,000 gallons daily is a Houseman 1A-25-5 unit, handling the wastewater from the plant.

The treated water is now processed through three automatic two-stage de-ionisers using ITT 500 units, the most advanced of Houseman's two bed packaged de-ionisers. The treated water from the TSA 500 units is extended by the reverse osmosis system to the final point-of-use.

The final state of production before the treated water is used for the actual rinsing of the devices is a point-of-use treatment based on the individual production distribution loops, where the regeneration is automatically initiated through Houseman's automatic de-ioniser, model MBA 500.

From the circulation loop, water is taken to the clean room areas where the water is recirculated through a 46c cartridge mixed bed ioniser prior to 22 micron filtration at the point-of-use.

The special features of the 46c are that for the first time in a unit of this sort (capacities producing up to 10,000 litres per hour) the precise quality of the water can be automatically controlled by the unit without visual checks. Twenty-two units are utilised for the ITT process and are hooked up in parallel operation on a basis of 1,000 litres per hour.

The final result is an installation that will provide 60,000 gallons of highly purified water every day. Houseman (Burnham) LTD.

WATER HAS BECOME VERY EXPENSIVE

With costs rising daily it seem ridiculous to throw away water that is costing you money, when it is not necessary. In fact, water used for cooling in production need not cost you very much at all – by simply cooling it with 'Cooltech' Cooling Towers, costs can be cut dramatically. Over 90 per cent saving can easily be made and capital costs can be saved in less than twelve months in most cases.

So, when it's a question of cooling towers for industries large or small, involving widely varying processes and applications, available on dependable delivery, the answers come from Cool Technology Ltd. Ranking high among leading manufacturers, Cool Technology's range of cooling towers starts with 'Cooltech' packaged units of approx. BTR (30,000 Kcal) through to large, single capacity up to 200,000 g.p.h. Custom-built units, too, in materials to suit special requirements.

And Cool Technology are not merely manufacturers of cooling towers, heat exchangers and pressure vessels but style themselves as 'problem solvers' – and would welcome your cooling problems to solve.

So, for a design-to-delivery service of the highest order; for computer-assisted calculations; advanced techniques and high-quality workmanship – turn to Cool Technology.

For further information or technical details please contact:

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MYSON

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Fluid Dynamics was founded in 1973 for the purpose of manufacturing and exporting water treatment equipment which it now does to ten countries. They have recently moved into a new factory on the Sandyford Industrial Estate in South County Dublin and extending the range it offers from the original Colloid-A-Tron hard water treatment equipment to include Lewis Water Filters (manufacturing rights acquired in 1979) and also a full range of Domestic and Industrial water filters and water softeners as well as the contract manufacture of effluent treatment plants for the food processing industry. Fluid Dynamics have also concluded a technical co-operation agreement with one of the leading sewage effluent treatment plan manufacturing companies in France. Under the agreement, Fluid Dynamics will manu

PRODUCT REVIEW: WATER TREATMENT AND CONDITIONING

FLUID DYNAMICS

A small compact sewage treatment scheme manufactured by Fluid Dynamics.

Fluent Dynamics was founded in 1973 for the purpose of manufacturing and exporting water treatment equipment which it now does to ten countries. They have recently moved into a new factory on the Sandyford Industrial Estate in South County Dublin and extending the range it offers from the original Colloid-A-Tron hard water treatment equipment to include Lewis Water Filters (manufacturing rights acquired in 1979) and also a full range of Domestic and Industrial water filters and water softeners as well as the contract manufacture of effluent treatment plants for the food processing industry. Fluid Dynamics have also concluded a technical co-operation agreement with one of the leading sewage effluent treatment plan manufacturing companies in France. Under the agreement, Fluid Dynamics will manu

Permutit
Standard plant division of Houseman

present an advanced range of automatic water softeners

Years of experience in the water treatment industry, plus very advanced technology, have enabled Permutit to offer a completely new and competitive range of automatic water softeners.

Available in 8 standard sizes with outputs of up to 13m³/ hour (3,300 gallons/hour) the water softeners prevent the formation of scale deposits in boilers, cooling systems, heating systems, laundries, hospitals and many industrial processes where water softening is required.

The range offers many features, including:

- Mechanical valve operation allowing low operating pressure during service flow.
- Construction that uses only corrosion resistant materials.
- Time clock, water meter or manually initiated regeneration.
- Duplex plants available in all sizes where storage is limited.
- Tested to a maximum pressure of 12 bar 175 psi.
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For full details send for our catalogue. You won’t get softer water at better prices.

For further information or technical details please contact:

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The Crescent, Donnybrook,
Dublin 4. Phone: (01) 693144 Telex: 33301
WATER TREATMENT & FILTRATION SPECIALISTS.
New Danfoss Motor-Operated Valve

As a supplement to the existing range of motor-operated valves, Danfoss has introduced a new version type GEV4 so that the series now includes four different types. The GEV motor units are then obtainable in the following versions:

GEV1 with a single opening and closing sequence
GEV2 with an adjustable starting load position in the opening sequence
GEV3 with an adjustable part load position in both opening and closing sequences
GEV4 with a adjustable starting load position and part load position in the opening and closing sequences

For further information, please contact J. J. Sampson & Son Ltd., Cherry Orchard Industrial Estate, Dublin 18, (Tel: 268111 (4 lines)).

* The new Danfoss GEV4 motor operated valve.

New Addition to Jøtul Range

A new and versatile stove has been added to the range of Jøtul stoves in Ireland. The system 17 is different from the existing range; the newly designed stove is mounted on a plinth and then enclosed by firebricks. Specialized air vents mean that cold air is drawn either from inside the room or outdoors and circulates around the stove before re-entering the room as warm air. Like other Jøtuls the construction of the system 17 ensures a long period of heat retention with the minimum of heat being lost up the chimney. It will burn wood/turf and can be used either as an open fire or as a slow combustion stove for overnight burning when the doors are closed. However, a basket can also be supplied for coal or coke. As with all Jøtul, there is a ten year guarantee with the new model.

One of the advantages of this new system is the variety of finishes available. For instance, the design of the fireplace can be adapted to suit the surroundings in which it will be situated, e.g. corner or conventional chimneys. This makes it ideal for use in both new and the older type of house.

A water heating kit is also available, consisting of a copper boiler installed in the stoves' firebricks which will provide domestic hot water for an average sized family.

Further information on this new and adaptable design of woodstove may be obtained from David Cooper of Tyrellpass, Co. Westmeath, (Tel: 044 23114).

Beverly-Contro Starved Air Incinerator

As fuel oil prices will continue to rise and with the uncertainty of supply there is a very real advantage in utilizing waste as an additional heat source and a way of saving fuel costs. The Beverly-Contro Incinerator complies with all the relevant requirements on incinerator emissions and "Clean Air Act". The unit operates on the principle of "Starved Air Incineration" giving a controlled combustion rate, whereby controlled combustible gases generated in the primary chamber pass to the secondary chamber to be burnt. Under these conditions, most of the heat required to destroy any potential pollutants is provided by the waste itself. The gases passing to the secondary chamber are completely burnt by the flame from the secondary burner and additional combustion air. The resultant sellable heat source may be utilized for the production of either steam, hot water, hot air or thermal fluid. This is achieved by drawing the hot gases through a boiler or heat exchanger by use of an induced draught fan. Efficiencies of 60 per cent and over can be achieved, which would give a quick pay-back on capital spent on this application. Anderson & Martin Ltd. are Beverly's distributors and representatives in Ireland who offer a complete technical advisory service to industry and major energy users. Anderson & Martin Ltd., Anglesey House, 23 Crofton Road, Dun Laoghaire, Co. Dublin, (Tel: 080508).

* Unusual siting for Jøtul 17 solid fuel stove with specially designed air vents for quick heating, using conventional chimney Jøtul stoves are distributed in Granstall Limited.

https://arrow.tudublin.ie/bsn/vol20/iss1/1

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NEW PRODUCTS

Walker Drier Range Extended
The Walkair range of condense driers, manufactured in Denmark and distributed by Walker Air Conditioning Limited, has been extended to include a new model, designated the CD2500. This new model is a further development of the tried and tested portable models CDT2000, CDT3000 and the stationary models CDS.

The CD2500 incorporates the same heat pump principle of operation and electronic control as the other models in the range, giving optimum efficiency under all conditions and protection against the harsh treatment meted out on building sites and similar places. The condense drier operates by cooling down the humid air drawn into the unit, to a temperature below the dew point, so that the water moisture is condensed into water drops which are drained. Then the air is re-heated by the heat released during the cooling process. The discharge air is then re-heated and is able to absorb moisture again. The basic dimensions of the new unit are 60 x 60 cm by 115 cm high, making it easy to move around. However, in spite of its compact size, the CD2200 has a capacity of 84 litres per 24 hours. This model, like all others in the Walkair range, is controlled by a mini computer to provide for continuous running as defrosting takes place only when required. Delivery is ex stock.

NEW AND IMPROVED MODELS TO OVERCOME OIL PROBLEMS.

50,000 - 100,000 BTUHR
Type FC2F. The new domestic burner with a built-in preheater has the following advantages.

Complete atomisation of oil through the nozzle from 4cSt/36 sec Redwood up to a viscosity of 8 cSt or 46 sec. Redwood No. 1 at 100°F.
Pump pressure as low as 100 P.S.I. (max is 130 P.S.I.) reduces noise and saves wear. At the moment many burners operate at 180 psi. This is necessary to atomise some of the gas oil now on the market.
Total reliability with cold oil provided the oil reaches burner.
Longer running periods and shorter off periods at lower or capacity gives optimum efficiency due to lower flue gas temperature and higher CO2.
Modification kit available for all FC4 EC4 and DC4 burners i.e. back to about 1973. No change of control box normally required.

200 SEC AND 950 SEC OIL.
These heavier oils can now be of higher viscosity. It is possible to have 265 and 1250 sec. Bentone burners can now fire the 1250 sec. grade.

Features available include:
Larger preheaters - up to 9 KW with an increase in volume of 5%.
Fuel pumps with built in heating elements, circulation relays which circulate heavy oil through the internal burner system at set intervals when the burner is not operating to forestall any build up or blockage in the lines, new type solenoid valves and nozzle assembly.
Bentone pumping units with filters, heating elements and automatic changeover pumps to ensure correct temperature and pressure delivery of oil to the burner.

These items will not be ex stock as they must be sized for each installation.

Bentone OIL BURNERS

PHE

NEW PRODUCTS

New Danfoss Oil Preheater
The principle of preheating fuel oil for large industrial burners can also be applied with advantage to small domestic burners - especially to-day where the trend is towards oils of higher viscosity and at the same time an even increasing demand for burners of lower capacity. Generally, if the viscosity is lowered by preheating the oil, the capacity of the oil nozzle will be reduced. A thin oil has a lower atomisation limit. The pump pressure can be lowered and this reduces the nozzle capacity further. To meet these demands, Danfoss is now introducing an oil preheater - type PHE, for installation in both existing and new domestic burners for light fuel oil. The preheater is soldered onto the nozzle tube. As a heat emitter, it uses a PTC semiconductor element which has the characteristic that when a certain temperature is reached it increases its own resistance. This ensures that the temperature of the trapped oil, in the event of operational disturbance, will not exceed this limit value. Another characteristic feature is that the wattage consumption of this preheater adapts itself to both the initial oil temperature and the flow volume, instead of being constant as normal.

Technical data: Capacity, 2.5 litres/h to 70°C, pressure max. 15 bar (217.5 P.S.I.), power consumption max. 79 W and heating time from cold plant approximately 30 sec.

For further information contact Danfoss Irish agents and distributors, J. J. Sampson & Son Ltd., Unit 71, Cherry Orchard Industrial Estate, Ballyfermot Road, Dublin 10, (Tel: 268111).

AN ENERGY BONUS FROM BEVERLEY COMTRO

Pollution free combustion of waste with heat recovery

From the 'starved air' combustion of 600 lbs/hr of general packing waste, including cellophane and plastic, the plant illustrated will generate 4000 lbs/hr of steam. A further 6000 lbs/hr of steam may be generated alternatively or simultaneously using the Composite Boiler principle.

Savings on conventional fuels being such that capital payback will be achieved in 2 years.

Anderson and Martin Limited, Anglesey House, 23 Crofton Road, Don Loughbor, Co. Dublin.
Tel: 808508 Telex: 34489.
Sole Agent in Ireland for Beverley Chemical Eng. Ltd.
SALE OF GOODS AND SUPPLY OF SERVICES ACT, 1980

The Sale of Goods and Supply of Services Act, 1980 which was given effect into force on the 1st January, 1981. The Act, in the main, deals with amendments to the law relating to the sale of goods and hire purchase agreements. However, as the name of the Act implies, it also deals with the supply of services; for the first time terms are implied into contracts for the supply of services.

Section 38, Implied Undertakings as to Quality of Service, sets out the terms which are to be implied in every contract for the supply of a service where the supplier is acting in the course of a business. These terms are:

(a) that the supplier has the necessary skill to render the service,
(b) that he will supply the service with due skill, care and diligence,
(c) that, where materials are used, they will be sound and reasonably fit for the purpose for which they are required, and
(d) that, where goods are supplied under the contract, they will be of merchantable quality.

Section 40 sets out the circumstances in which these terms may be “negatived or varied”, being

(a) by an express term of the contract, or
(b) by the course of dealings between the parties, or
(c) by usage, if the usage be such as to bind both parties to the contract.

The section does provide the further qualification that where the recipient of the service “deals as consumer” it must be shown that express term is fair and reasonable and has been specifically brought to his attention. Section 3 of the Act provides a definition of the words “deals as consumer”.

A party to a contract is said to deal as a consumer in relation to another party if:

(a) he neither makes the contract in the course of a business nor holds himself out as doing so, and
(b) the other party does not make the contract in the course of a business, and
(c) the goods and services supplied under or in pursuance of the contract are of a type ordinarily supplied for private use or consumption.

In the case of sale by competitive tender or in relation to auctions of a type to be defined by the Minister by order, the buyer is not regarded as dealing as consumer. It follows that the Act does not affect the freedom of parties to agree their own terms and to exclude and restrict the terms implied by the Act where neither deals as co-operator.

At least in so far as consumer transactions are concerned, the impact of these provisions will be largely moderate. They will act as a brake in those cases where the seller is not in a position to do so.
A Total Capability in Residential, Commercial and Industrial Heating Plant. Representing exclusively in Ireland the following:

**CHAPPEE**

*Domestic: Dual fuel boilers 55,000 to 250,000 btu/h*
*Industrial: 300,000 to 5 million btu/h*
*Also full range of Francia Hoval steel panel radiators.*

**Allen Ygnis**

*Hot water boilers 400,000 - 24 million btu/h*
*Steam Boilers 250 - 2,400 lbs/h*
*Combination boilers 250,000 - 2 million btu/h*

**Sime**

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

**Radiant Superjet**

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

**Schwank**

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

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

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

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