
Industrial news

Nouvelles de l'industrie

Air conditioning on every floor

Multi-storey buildings have small roof areas relative to their total volumes. This creates problems when installing air conditioning. A system, designed by Lennox Industries, deals with this problem by installing compact condensers on every floor. This solution also reduces the duct work necessary for the system.

The condensers, containing two hermetically sealed compressors, have removable heads for mechanical cleaning. In some applications a closed circuit cooling tower is used to remove waste heat.

Air distribution is performed by fancoil units or by fanpowered mixing boxes, with balanced dampers to vary the proportions of supplied and re-circulated air. Either system can produce heating by electric resistance elements or by hot water coils.

Zoned control is possible by using individual supply units.

Lennox claim that the main advantage of the system is that while it is highly flexible and can provide a high standard of zoned conditioning, the components are relatively easy to instal.

Lennox Industries Inc., PO Box 250, Marshalltown, Iowa, USA

Cold store for Venezuela

The components of a cold storage system have been shipped to Venezuela by Collis Cold Containers of the UK. The store is a modular system designed to store up to 100 tons of food at a temperature of -18°C in an ambient temperature of 37°C . Prefabricated module panels are used, to minimize the

on-site installation and commissioning times.

The units were shipped in three non-returnable 10m containers to Port La Guaira. The use of containers was at the client's request, since they result in less damage in transit and in less handling prior to erection. However, the port does not have facilities for handling containers. This problem was circumvented by using a ship with its own lifting gear.

The shipment was completed on schedule and Collis feel that the entire undertaking has been most successful.

Collis Cold Containers Ltd, Fort Wallington, Fareham, Hampshire, UK

Cling film protects freeze-dryer flasks

Freeze-dryer flasks rarely implode under vacuum. However, protection has to be provided for this unlikely occurrence, as flying glass can cause a great deal of damage. Conventionally, flasks have been protected with guards which make a significant contribution to the cost of the equipment.

Laboratory tests performed at Edwards High Vacuum have now shown that the use of PVC-based cling film provides protection which meets the requirements of the Health and Safety Act for operator safety.

The flasks are wrapped in cling film which costs considerably less than the traditional guards. During the freeze-drying process the flasks can be removed and replaced as often as necessary, with the film still in place.

Edwards have found that ordinary cling-film performs satisfactorily at temperatures

down to -40°C , so there is no need to use freezer-grade film. They found that the film allows an unimpeded view of the product and that, with careful application, the conductivity of the flask walls is virtually unaltered and the air circulation is unaffected.

The tests were all performed on an Edwards' Modulyo freeze-dryer using cling-film manufactured by Goodyear. Edwards, however, feel that there is no reason why any other film should perform less well, provided it had adequate and long lasting 'clinging' properties.

Edwards High Vacuum, Manor Royal, Crawley, West Sussex RH10 2LW, UK

Cold store for famine relief surplus

A famine relief project in West Africa has proved so successful that a cold store has now been provided to house the surplus food produced. The project, run by Oxfam, is assisting farmers in Upper Volta to grow more vegetables. A cold store, order by Hall Thermotank Products Ltd from C. Hemmings & Co. is to be erected on site.

The store is a two compartment 232 m^3 Hemsec coldroom with a steel frame building and an airlock. The panels are 100 mm thick urethane, clad with white PVC coated galvanized steel, and are designed to ensure an



Cold store panels being finished, prior to sending them to Upper Volta

operating temperature of 0°C in ambient conditions of around 27°C.

All panels are numbered at the Merseyside factory and will be despatched together with working drawings and installation instructions.

C. Hemmings & Co. Ltd, Stoney Lane, Rainhill, Prescot, Merseyside, UK

Home freezers transport hearts for transplant

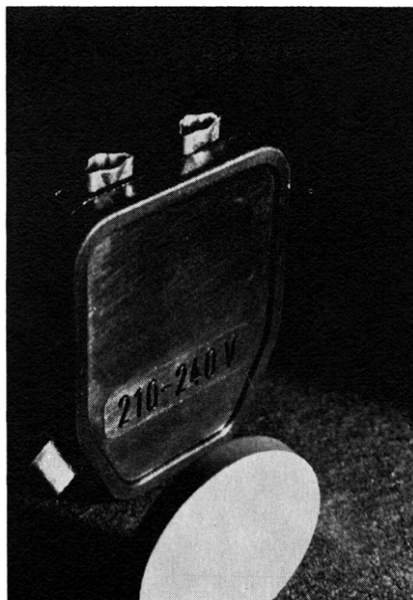
Commercial deep freezers are being used in equipment cars to transport hearts for transplant. The heart is stored in a liquid known as an 'organ bath', which consists of blood components and artificial nutrients and is cooled to 4°C. Electronic, hydraulic measuring, controlling and monitoring apparatus is grouped around the heart and is arranged so that it can be operated without impairing the sterility. Cardiac data are conveyed outside through wires attached to tiny electrodes and can be recorded and read off using standard hospital equipment.

Tests by Dr. Nikolaus Mandler of the German Cardiac Centre have been performed, first on rats and then on dogs. With each modification to the design, the survival span of the transplants increased. Further improvements are being sought in the plan to minimize the cold storage damage to transplant organs.

Forschungsdienst GmbH, Ahrstrasse 45 (Wissenschaftszentrum) D 5300 Bonn-Bad Godesborg 1, Federal Republic of Germany

Resistor switches motor off

A resistor has been designed to disconnect the auxiliary windings of a refrigerator once the start-up period has elapsed. The resistor, manufactured by Siemens, is a PRC resistor with a resistance which rises from 25 Ω at 2.5°C to 60 Ω at 120°C and then up to



Resistor for use in the drive circuit of refrigerators to switch off auxiliary winding

500 k Ω at 175°C. This jump in resistance causes the auxiliary winding to be disconnected so that the motor runs on the main winding only.

The resistor has a maximum operating voltage of 320V. It is supplied either with or without a flame-retarding plastic case.

Siemens AG, Zentralstelle für Information, Postfach 102, D-8000 München 1, Federal Republic of Germany

Road units go to sea

Packaged refrigeration units, originally designed for use in road transport, have been adapted for seagoing containers. Frozen fish are being transported from the Canary Islands to the United Kingdom on vessels not originally designed for carrying containers. This means that clip-on refrigeration units were not available so it was necessary to install integral refrigeration equipment.

The units are in Transfrig's DEL 90 series and are mounted through a hole in the bulkheads at the front of the containers, which each carry 500 cartons (about twelve tons) of fish. The condenser section of each unit is on the inner side, in the refrigerated space. To comply with ISO regulations, the

bulkheads are recessed so that the equipment does not extend beyond the container frames.

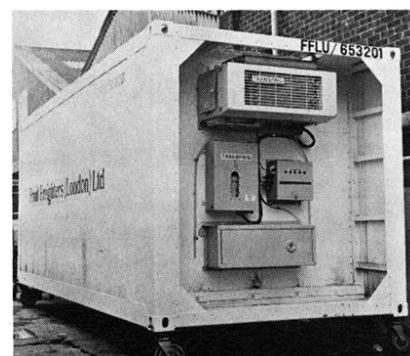
When the units are used for road transport, the compressor is driven by a diesel engine, with a standby electric motor for emergency use and to provide quiet overnight running at the depot. For marine use, the electric motor is used as the principle drive and it is rated for plugging into the ship's refrigeration system. The diesel engine becomes the standby motor and is also used when the container is moved by road.

Fish in the containers are deep frozen to -20°C, using R502 refrigerant, and this temperature is maintained throughout the voyage. At an ambient temperature of 27°C, this results in a power consumption of 410 kJh⁻¹.

The units are all protected against salt corrosion as the containers sit on the upper deck of the ship. Some of the components, such as the fan shafts, are made from stainless steel. The condensing coils are made from a corrosion-resistant steel and receive an additional protective treatment. The electric motors are enclosed in waterproof containers which are protected against salt water corrosion and all the electrical wiring and control components are housed in separate watertight compartments. All exposed metal surfaces are finished with marine quality paint.

So far, Transfrig have supplied two of these units for marine use.

Transfrig Ltd, Cranbourne Road, Gosport, Hants PO12 1RJ, UK



Refrigeration unit installed in a container used for marine transport of frozen fish. The bulkhead can be seen, recessed to comply with ISO legislation.

Water system cools sauces

A water cooling system has been installed at a sauce and pickle works. In the manufacture of these products, the liquor in the acetifiers must be maintained at a constant temperature.

To do this, the system, installed by Acalor at Smedleys-HP Foods in Birmingham, UK, pumps cooling water through coils in the acetifiers, and recycles it through two glass fibre cooling towers, 155 000 l h⁻¹ of water go through the cooling towers, at an inlet temperature of 28°C and an outlet temperature of 21°C.

The cooling towers are mechanical draught heat exchangers with air and water operating in counterflow. Hot water enters the top of the tower and trickles through thermo-plastic packing, designed to offer the maximum exposure to rising air, to a water basin at the bottom. Cooling air is taken in from the atmosphere and is passed up through the tower by an axial flow fan. At the top it is discharged to the atmosphere by a moisture eliminator above the water inlet.

The use of glassfibre reinforced plastic (grp) for the towers means that they can be used in areas where the atmosphere would corrode steel or timber towers. Acalor calculate that, although the initial cost of grp towers is higher

than for other materials, this is offset by reduced maintenance costs and a longer service life.

Acalor International Limited, 6-10 Crompton Way, Crawley, Sussex RH10 2QR, UK

Ready-made transport

'Off the shelf' refrigerated box-van bodies are now being manufactured by Wadham Stringer in addition to their custom-built vans. The vans (range Victory 1 and 2) are aluminium framed and insulated with foamed polyurethane which is sealed with a bituminous compound to prevent moisture absorption. The floors are 12 mm thick plywood overlaid with resin-bonded glass fibre, and are turned up at the sides to facilitate washing out. They have a non-slip centre strip.

Victory 1 is the retail distribution series and Victory 2 is the range of bulk transport box-vans. A large number of options is available on both types - for example, there are ten different door configurations provided. Both designs can be fitted to an existing range of chassis-cabs.

Wadham Stringer claim that by introducing these 'off the shelf' ranges, they are giving their customers the benefit of lower prices and shorter delivery times. They also say that it is easier to replace standard optional



A van in Wadham Stringer's Victory 1 series. This van is fitted with a Storcold refrigeration system. It has a standard plug rear door and a full width combined bumper and step. The van is mounted on a Dodge KC40 chassis-cab.

fittings and that customers find the system makes it easier for them to select what they want.

Wadham Stringer Commercial (Coachbuilders) Ltd, Burrfields Road, Portsmouth PO3 5NN, UK

Showroom

A showroom and training school have been opened by a company distributing air conditioning equipment in the UK. The company, Welltemp, are the sole UK distributors for Technibel air conditioners. They have a subsidiary company which specialises in the export and re-export of products to the middle east, northern Europe and Africa.

Welltemp Limited, Wells House, Upper Teddington Road, Hampton Wick, Kingston upon Thames, Surrey KT1 4BW, UK

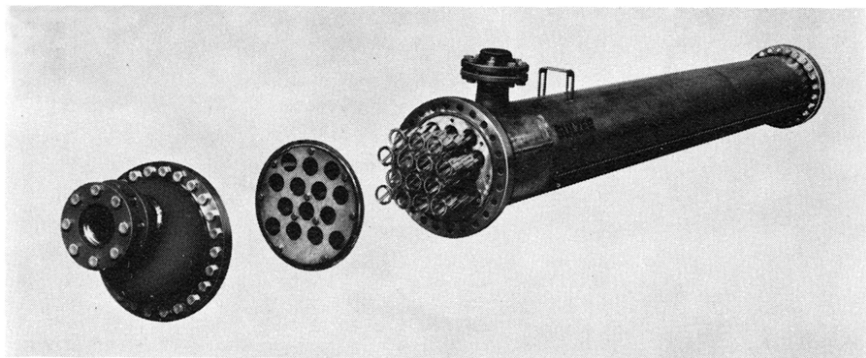
Heat exchanger copes with viscous liquids

Heat exchangers with internals have been introduced by Sulzer for the heating and cooling of viscous liquids. By varying these internals, the process engineering characteristics can be altered and it is intended that the applications will be to foodstuffs and also to the glue, plastic, chemical and petrochemical industries.

Sulzer claim that these internal tubes prevent the formation of laminar temperature boundary



The erection of a grp cooling tower at a pickle works



A heat exchanger with internals for use with viscous liquids

layers on the pipe wall and lead to a continuous homogenization of temperature over the flow cross-section. This results in higher internal heat transfer coefficients than for a comparable empty tube heat exchanger. They also claim a shorter residence time for the product flow and that smaller units can be used for the same pressure drop. The smaller amount of material thus required leads to savings in costs.

These heat exchangers are available in a large number of materials and are designed for a wide range of operating temperatures and pressures.

**Gebrüder Sulzer, Aktien-
gesellschaft, CH 8401
Winterthur, Switzerland**

Audible signal leak detector

The current produced in a corona discharge is reduced by the presence of halogenated gases. This principle was used in

the design of AI Industrial's Halotek portable gas leak detector. Any leak, of refrigerant or other halogenated hydrocarbons, which is detected will result in an increase in frequency of an audible siren. The higher the frequency, the greater the concentration of halogen is.

The unit is battery operated. A check leak is supplied with the detector, to check its sensitivity.

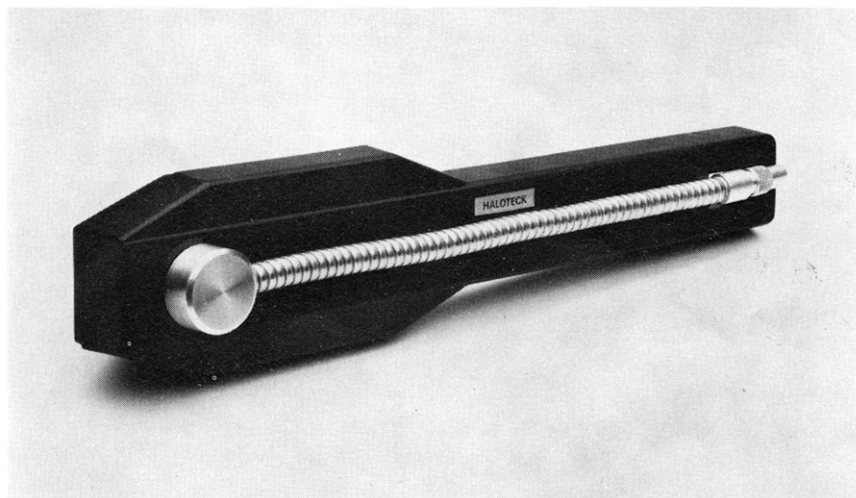
The unit weighs 325g, has an operating temperature range of 0 to 40°C and has a flexible probe which is 24 cm long.

AI claim that their new design of sensor tip provides an almost instantaneous response (0.1s) which is faster than that of any other detector. They also claim a detector sensitivity equivalent to less than 3g a year, and that the problem of draughts, which has caused problems previously, has been eliminated.

An earphone attachment is available for use if the detector is operated in very noisy surroundings.

AI intend this detector for use by all refrigeration and heating and ventilating engineers.

**AI Industrial, London Road,
Pampisford, Cambridge CB2 4EF,
UK**



Refrigerant leak detector designed by AI Industrial

Publications *Bibliographie*

Frozen and quick frozen foods

(New agricultural production and marketing aspects),
Pergamon Press for the United Nations 1977 148 pp £12.95

This volume is the proceedings of a symposium entitled 'Frozen

and quick frozen foods – new aspects for agricultural production and marketing aspects' held in Budapest in April 1977. It was organized by the working party on Standardization of Perishable Produce (a subsidiary body of the Committee of Agricultural Problems of the ECE) in collaboration with FAO,

and with the Hungarian Government acting as host. 130 delegates from 21 countries, as well as delegates from international bodies like ISO and IIR, discussed the thirteen papers (nine in English and four in French with English summaries) contained in this volume, which fall into two topics: the principal trends of market development for frozen foods in Europe and the quality requirements for raw materials destined for freezing. The emphasis is on fruits and vegetables with only one paper each on meat and ready meals.

Sturre Astrom gives an up-to-date picture of the growth trends in frozen food production in the