

GRAM

NR. 3 MAJ 1980

NEWS



Lately a lot of new products have appeared in the extensive production programme of Brødrene Gram and consequently we find it suitable to issue a new number of GRAM NEWS.

We hope that this Gram News may contribute to giving our customers some information about the development within the range of activities covered by our firm.

EVAPORATIVE CONDENSER TYPE EC

The evaporative condensers type VB/VBO, which have been manufactured for about 15 years, are now being replaced by a new type called EC.

The EC condensers will be available in nine standard sizes with capacities ranging from 50,000 kcal/h (58 kW) to 1,334,000 kcal/h (1551 kW).

Fan Section

The fans are installed on top of the condenser so that the air is drawn through the condensers. With this arrangement there is a lower air pressure inside the casing which prevents water escape from leaky joints. The three smallest condenser sizes are equipped with 1300 rpm propeller fans.

The medium and big size condensers are equipped with large low-speed (920 rpm), silent-running propeller fans with a low power consumption. The fans are direct driven.

Alternatively, the EC condensers can be delivered with **two-speed fan motors** to provide better possibilities of automatic regulation of the condensing pressure. At the lower speed, the power consumption and the sound level are reduced.

For installation in populated areas with more severe noise level regulations, the condenser can be equipped with silencer on the air intake side.

Corrosion-resistant Finish

Pipe section, casing, fan-section, fan arms, fittings, bottom tank and water distributing system are **hot-dip galvanized** to give maximum resistance against corrosion.

We are sure that this new condenser will be attractive due to its many advanced constructional details, low sound level and the water saving design.

HEAT RECUPERATION SYSTEMS

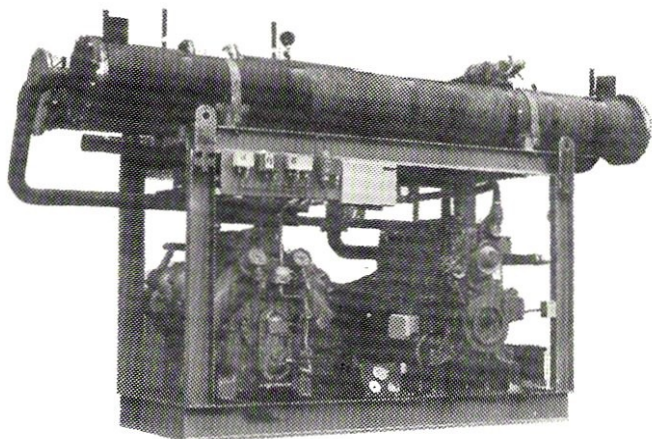
In many premises where refrigeration plants are operating, **the heat removed from the condenser can be used to advantage.**

E.g. for slaughterhouses Gram has supplied heat recuperating systems for the pre-heating of the large quantities of water employed in the working processes.

A heat recuperating plant of this nature consists mainly of a shell and tube condenser type VM installed over e.g. an evaporative condenser and connected in series with the condenser.

Through the shell and tube condenser and a corresponding plate type heat exchanger, water is circulated in a closed circuit, and the process water is now heated by passing through the heat exchanger. It is a "must" to employ both a shell and tube condenser and a plate heat exchanger as for safety reasons the process water must not be heated direct in the shell and tube condenser.

The abovementioned system makes it possible to obtain process water with a temperature considerably higher than the condensing temperature.

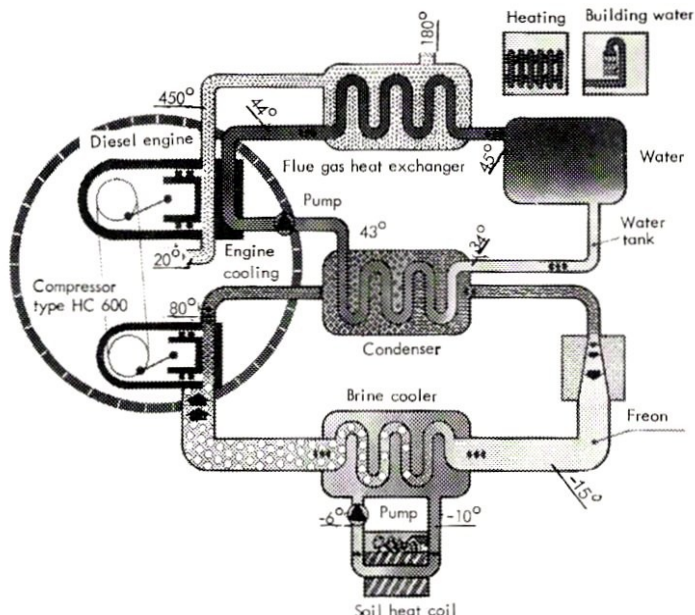


GRAM HEAT PUMP UNIT

The energy crisis and the complex problems caused by the rising oil prices have resulted in an increase and widespread research in this field. A number of new innovations have been made, but also principles known for several years have been taken up for renewal evaluation.

An example of this is the heat pump principle which has been known for many years, but until recently only put into practice to a limited extent.

The use of a heat pump system will allow the production of an amount of heat far larger than the energy supplied. If a diesel engine is employed for the operation of the heat pump, the waste heat of the diesel engine can also be utilized. The principle is illustrated in the sketch below.



The industrial division of Brødrene Gram A/S has developed a heat pump unit for medium and high capacities. The unit is constructed from standard components.

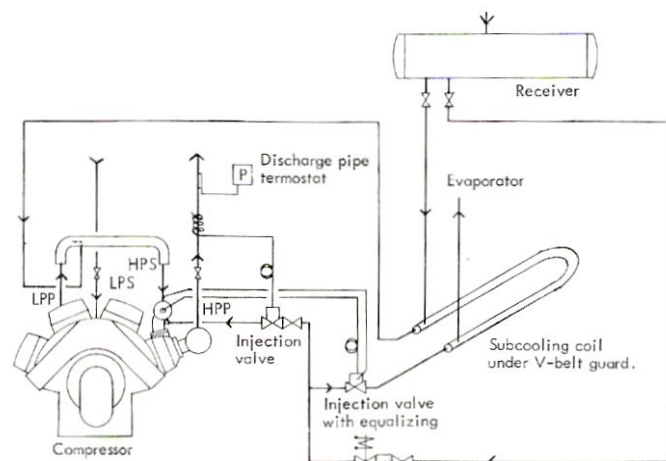
For the new county senior school in Sønderborg, Gram has supplied two heat pump units. The heart of the plant shown is a refrigeration compressor driven by a diesel engine. The heat is extracted from the soil through imbedded plastic tubes and delivered together with the compression heat and the excess heat from the diesel engine to the water in the heating system of the school.

The total capacity of the two heat pump units is 408 kW (350,000 kcal/h).

The plant will give a reduction in the oil consumption of about 70 tons/year, corresponding to a yearly saving of about Dkr. 140,000.-. The heating system introduced in the Sønderborg school is energy saving. The oil consumption has been practically halved, and at the same time an opening for national products has been obtained contributing to remedy unemployment.

TWO-STAGE COMPRESSOR WITHOUT INTERCOOLER

For a considerable number of years we have successfully been using a so-called injection type intercooler for our HCT-8-75 compressor. After several months of satisfactory trials we are now introducing a similar principle for our remaining HCT (two-stage) compressors.



As will be seen from the sketch the previous pressure vessel containing the functions of intercooling and liquid subcooling has now been replaced by a heat exchanger which is located beneath the V belt guard. The injection pipe is thus reduced to an interconnecting valve between low-stage discharge connection and high-stage suction connection where the liquid is injected in counterflow. As far as the economical aspects are concerned, the result is a saving of 4-8% of the price of the unit, **saving of space**, and **less refrigerant charge**.

LIQUID-COOLED OIL COOLER FOR SCREW COMPRESSOR

Gram screw compressors can now be provided with a liquid-cooled oil cooler with resulting savings in water and power consumption (it goes without saying that the water pump can be deleted). No automatic controls are required (such as thermostats, throttle valves or level controls). In principle, the refrigerant side of the oil cooler is inserted in parallel over receiver and condenser. The receiver is installed at a higher level than the oil cooler so that the oil cooler is filled with liquid. The oil cooler shell is located slightly tilted so that the ammonia gas which is formed by evaporation leaves the oil cooler through the pipe going up to the condenser.

VERTICAL PLATE FREEZER KVB-25

A new plate freezer, the Gram Vertical Plate Freezer KVB-25, is now being introduced. It is a **semi-automatic plate freezer** for the bulk freezing of e.g. whole fish, fish products, meat, mink feed, dog food, etc.

The plate freezer is arranged for top loading and unloading. The unloading is semi-automatic as the bottom frames are pressed up, lifting the frozen blocks out. The blocks can now be readily palletized as they are pushed on to a pallet held by a fork lift at the end of the plate freezer.

The blocks are of regular size and have a uniform thickness so that they can be stacked without complications.

The freezer plates are made from extruded aluminium sheet, which is extremely suitable for this purpose, combining good heat conductivity properties with high strength.

As an optional extra, an insulated tray with inbuilt electric heaters preventing frost heave is available.

An outstanding feature is the very low overall height of the plate freezer - only about 1 metre - which makes loading and unloading easy.

The standard model has 25 stations. A twin model with 50 stations can also be supplied.

Block size: 1070 x 535 x 75 mm.

CONTINUOUS ICE CREAM FREEZER FH-156

During the last two years Gram has developed a new continuous ice cream freezer, type FH-156, which in any respect is keeping up with the ever increasing demands within ice cream production. FH-156 incorporates the following important features:

Protection against overload and freezing up

The capacity regulator is equipped with a current limiting unit which provides security against overload of the main motor.

Automatic starting-up

The freezer is equipped with an automatic starting-up system delaying the start of the pumps when the freezer is put into operation.

Instant stop/start

The freezer is equipped with instant stop/start and pausing systems.

Control of overrun

By means of the newly developed equipment for control of the suction temperature based upon the power absorbed by the scraper shaft, fluctuations in mix temperature are compensated for. Thus you will have a homogeneous ice cream with constant outlet temperature and constant overrun.

Standard design

The standard FH-156 is supplied with the following equipment:

- Eddy-current coupling for *infinitely variable*, electrical control of the pumps.
- Mix pump and emulsion pump in CIP design.
- Chain drive of pumps, permitting installation of up to four pumps.
- Digital read out equipment in control panel.

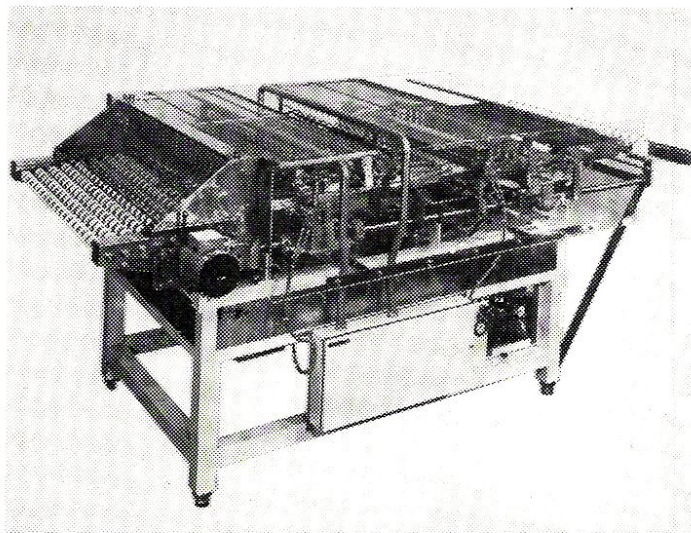
FH-156 is one of the best and most modern freezers on the market. It lives up to the demands made by advanced ice cream factories and fully automatic processing lines.

MICRO-PROCESSOR CONTROL OF REFRIGERATION PLANTS

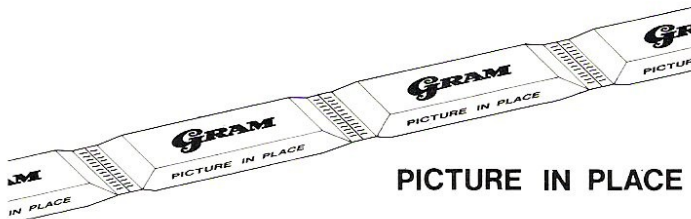
Brødrene Gram A/S is in a position to deliver fully automatic logical control systems for more or less complex control arrangements. The introduction of these systems does not call for any knowledge of computer programming. You just enter the key diagram in the memory, thus obtaining the inputs and outputs required.

The system is built up from semi-conductors and will replace all conventional relay type automatic controls, timers, counters, and memory function. As a consequence you will have a switch panel entirely free from mechanical components so that an essentially longer life is assured. This system has been used for the control of Gram cooling tunnels supplied to a modern Danish slaughterhouse.

GRAM MULTI-LINE HEAT-SEAL WRAPPER HSW-M



The Gram HSW-M heat-seal wrapper is suitable for the wrapping of products coming from a multiline production system, e.g. chocolate bars, marzipan loaves, biscuits, cakes, hamburgers, etc. The HSW-M is intended for wrapping the products in heat-sealable film or paper.



PICTURE IN PLACE

The HSW-M is equipped with a photo-electric system for individual control of the transport of the paper webs so that printed text on paper or film is always positioned correctly in relation to the product being wrapped.

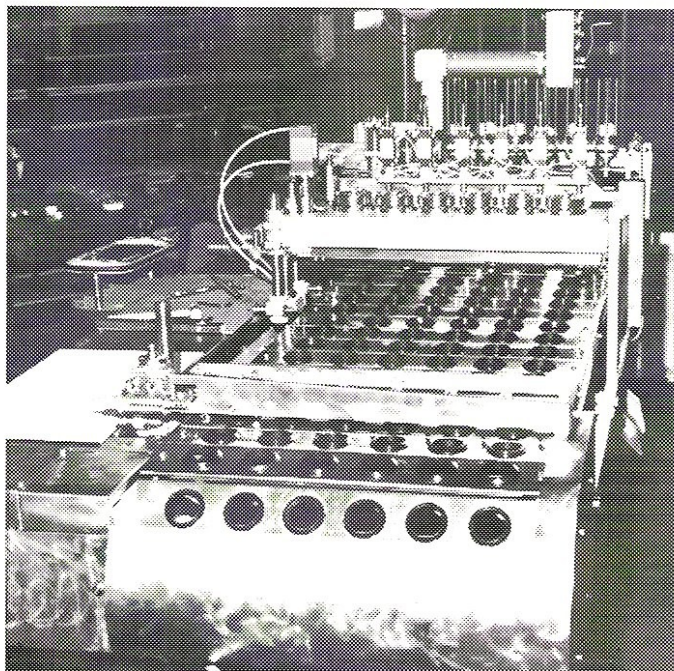
The HSW-M is available for the wrapping of up to 25 parallel product lines, depending on product sizes - that means a capacity of up to 75,000 products wrapped/h by only one machine with:

- **High capacity at low working speed.**
- **Extraordinary operating reliability.**
- **Careful product handling.**
- **The wrapping length is easily adjustable.**
- **Precise positioning of the film or paper webs in relation to the products being wrapped.**
- **Adaptation to fully automatic production lines - either direct or by means of transfer systems.**
- **Rational wrapping procedure where products are placed direct in wrapping material, untouched by human hands.**
- **Economical in wrapping material consumption.**
- **Easy operation and maintenance.**
- **Rational cartoning - HSW-M can be delivered with outfeed conveyor with automatic delivery to one or more cartoning stations.**

IN-LINE FILLERS ILF-15 AND ILF-16

The Gram In-Line Filler for the automatic filling of cups and cones is now available in two basic versions. Beyond the version marketed so far, a machine for **6-wide production** in the basic version can be supplied.

In the basic versions, both machines are capable of filling cups with diameter up to 90 mm and cones with diameter up to 70 mm.

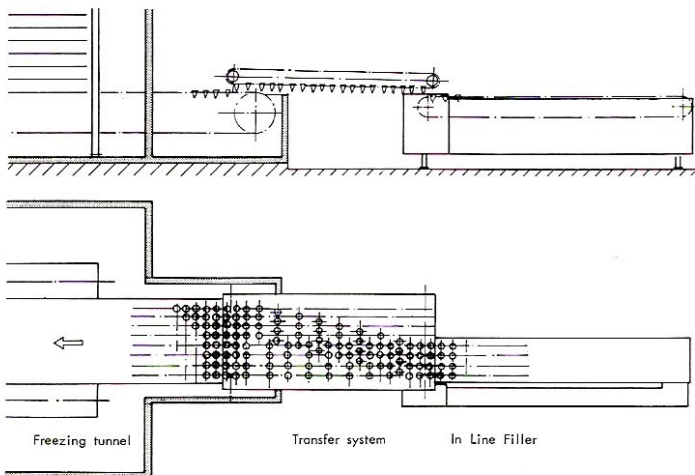


It is a matter of the following machines:

- ILF-15, 4-wide basic version
- ILF-16, 6-wide basic version

Both models can be supplied with other row numbers, depending on the sizes of the cups and cones which are to be produced:

Thus, the Gram In-Line Filler can be supplied for capacities between 2000 and 30,000 products/h.



If a Gram In-Line Filler is to enter as part of an automatic production line, it can be supplied with a **special transfer system to the tunnel** so that e.g. ice cream cones are transferred to and placed in an upright position in a GFC tunnel with slatted conveyor arranged correspondingly.

At the same time the transfer system will distribute the products on the tunnel conveyor so that the freezing tunnel is utilized efficiently.

CONTINUOUS COOLING/ FREEZING TUNNEL GFC-MEDIUM

Gram has in 1979 marketed a new, automatic, longitudinal freezing tunnel, GFC-Medium. It is intended for small and medium-GFC capacities.

The tunnel is equipped with a conveyor with stainless steel slats or with wire conveyor, and it is suitable for the freezing of **unwrapped goods direct on to the conveyor** (for instance fillets of fish, hamburgers) and for **individual quick freezing** of for instance peas or beans. The tunnel is also perfect for the hardening of ice cream in different packings (cones, cups, cartons).

The tunnel is specially characterized by a **very careful treatment of the product, a minor loss of weight** thanks to a very efficient air circulation system and a large versatility with respect to the choice of products.

The tunnel is marketed in 8 standard sizes, which are delivered with alternative air circulation systems, suited for the choice of products and design of the conveyor in the tunnel.

The tunnel requires only little floor space, as the products are elevated through the freezing zone.

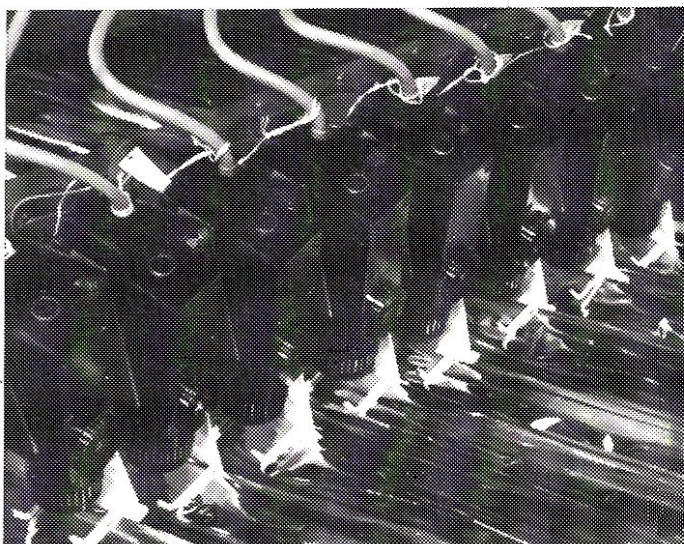
The tunnel operates continuously and is **very suited to form part of the automatic production lines.**

Specification for the GFC-Medium Tunnel

Standard sizes:	42 - 50 - 63 - 94 - 126 m ²
	126 - 188 - 256 m ² (Double tunnels)
Width of conveyor:	1 m
Product height:	110 mm
Load:	20 and 25 kg/m ²

"PICTURE IN PLACE", ICE BAR WRAPPING

In the same way as the arrangement for the HSW-M it is now possible to install "picture in place" equipment on our wrappers for RIA machines.



This system has been based on a special photo-electric system scanning a colour mark on the lengthwise sealing. It means that a more attractive ice bar wrapping can be made as it is no longer necessary to make patterns by the metre - **patterns can now be designed so as to be suitable for the length of an ice bar wrapping.** Also for existing wrapping machines we can provide equipment for "picture-in-place" wrapping.



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