

Hoyer MP-HTST

Mix Processing Plants

Application

Continuous production of ice cream mixes including mixing, homogenization and HTST pasteurization. HTST pasteurization means that the mix is held at a high temperature (85°C/185°F) for a short time (40 seconds).

Capacity

The Hoyer MP-HTST mix processing plant is available in three standard models having the following capacities:

- 600 ltr/h (160 US gals)
- 1200 ltr/h (320 US gals)
- 2000 ltr/h (530 US gals)

In addition a special 3000 ltr/h (800 US gals) model is available.

Operating principles

Ice cream mix is processed on the Hoyer MP-HTST mix plant in the following stages:

1. Ingredients are mixed in two separate tanks - one at a time so that continuous production is achieved.
2. Mix is heated up to 50°C (122°F).
3. Mix is homogenized at a pressure of 150 bars.
4. Mix is pasteurized in a plate heat exchanger (PHE) at 85°C (185°F).
5. Mix is held in tubes for 40 seconds at 85°C (185°F).
6. Mix is cooled down to 25°C (77°F) in a PHE using liquid ingredients (milk or water) as the cooling medium and then down to 5°C (41°F) using chilled water.
7. Mix is delivered to ageing tanks.

Standard design

Hoyer MP is characterized by its compact and hygienic stainless steel design. All components are positioned on a basic frame which facilitates installation and takes up a minimum of space. The plant is also designed for easy operation. The standard plant consists of:

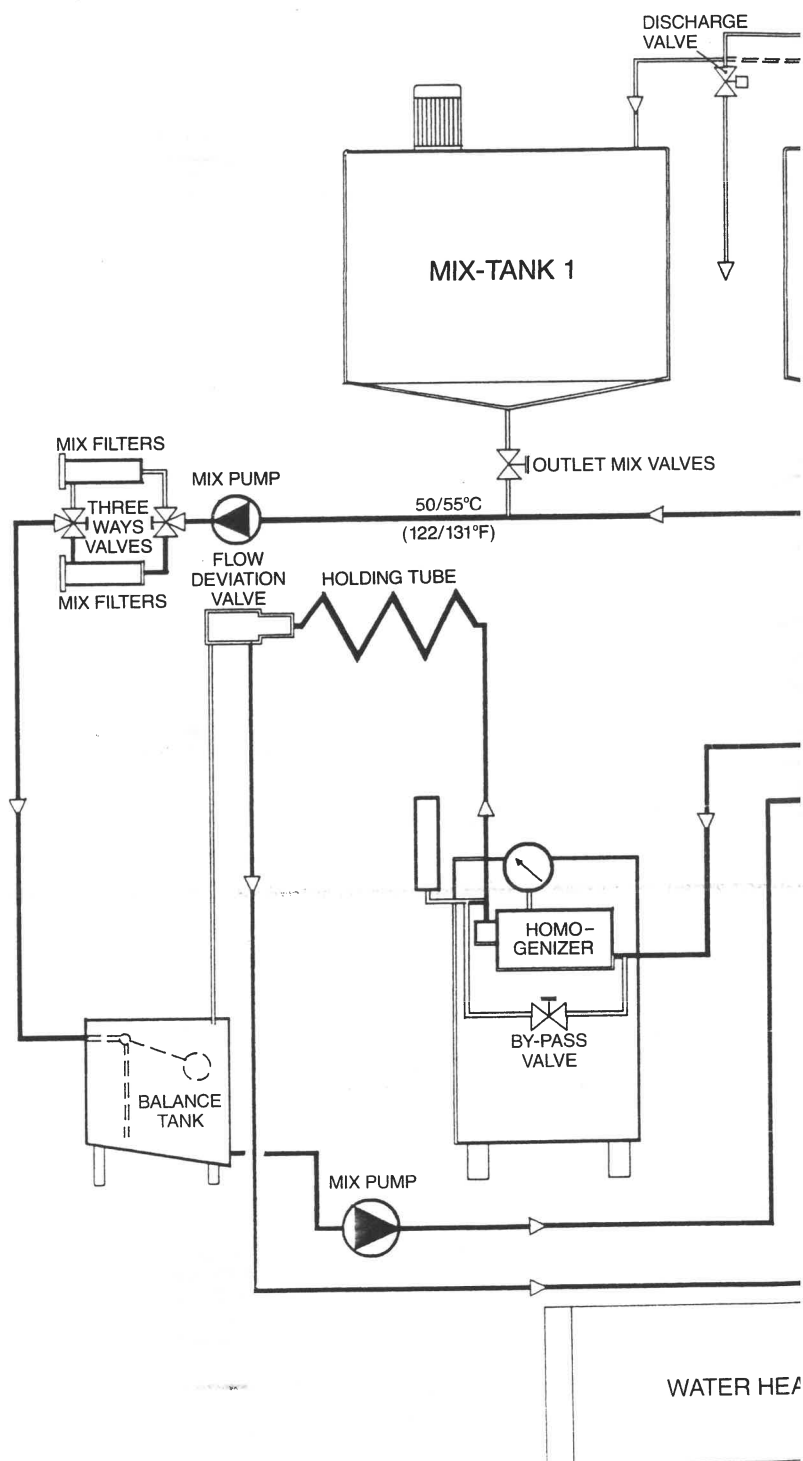
- Two mix tanks with quick stirrer in which liquid ingredients are pumped, while dry ingredients can be added either by hand or via a powder feeder (available as an optional unit)
- One centrifugal pump to deliver mix to balance tank
- One balance tank with floater, complete with two filters and by-pass system
- One centrifugal pump to deliver mix to heat exchanger
- One plate pasteurizing unit consisting of three sections, one for pasteurization, one for pre-cooling, one for final cooling
- One homogenizer
- One tubular holding section to retain the mix for 40 seconds
- One control unit for time/ temperature, with print-recorder, sound alarm and by-pass valve
- One litre counter unit for water or milk
- One steam water heater to supply hot water (steam source to be supplied by buyer - if steam is not available, the unit can be replaced by a gas boiler)

Suitability of Product Recipes and Ingredients

Samples of product recipes and ingredients for use with this equipment must be sent to Tetra Laval Food Hoyer in the agreed quantity and by the agreed date. Tetra Laval Food Hoyer will evaluate the suitability of the samples and make recommendations based on previous experience or agreed laboratory tests. Since it is, however, not always possible to foresee or simulate actual production conditions these recommendations shall, unless otherwise agreed, be regarded as a guide only and shall in no way be considered as a warranty or legal obligation of any kind.

Description of process

The liquid ingredients which may be either milk or water are automatically pumped to the mix tanks while dry ingredients are added separately by hand or via ingredient feeder. Two mix tanks make it possible to produce continually since while the pre-



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pared mix is being used, the next batch of mix can be prepared in the second tank. When the first tank is empty the two-way valve is turned to close for the supply from the first tank and open for the second tank.

Start-up of the mix line is very simple. The operator starts the pumps, stirrers, homogenizer

and counter by pressing the necessary buttons on the control panel. The counter is pre-programmed to supply the correct amount of water or milk to the mix tank.

From the mix tank the mix is pumped to the balancing tank before passing to the pasteurization section of the heat exchanger. The mix is heated to a pasteurization temperature of 85°C (185°F). It is then homogenized and subsequently held at 85°C (185°F) for 40 seconds to ensure that pasteurization is effective.

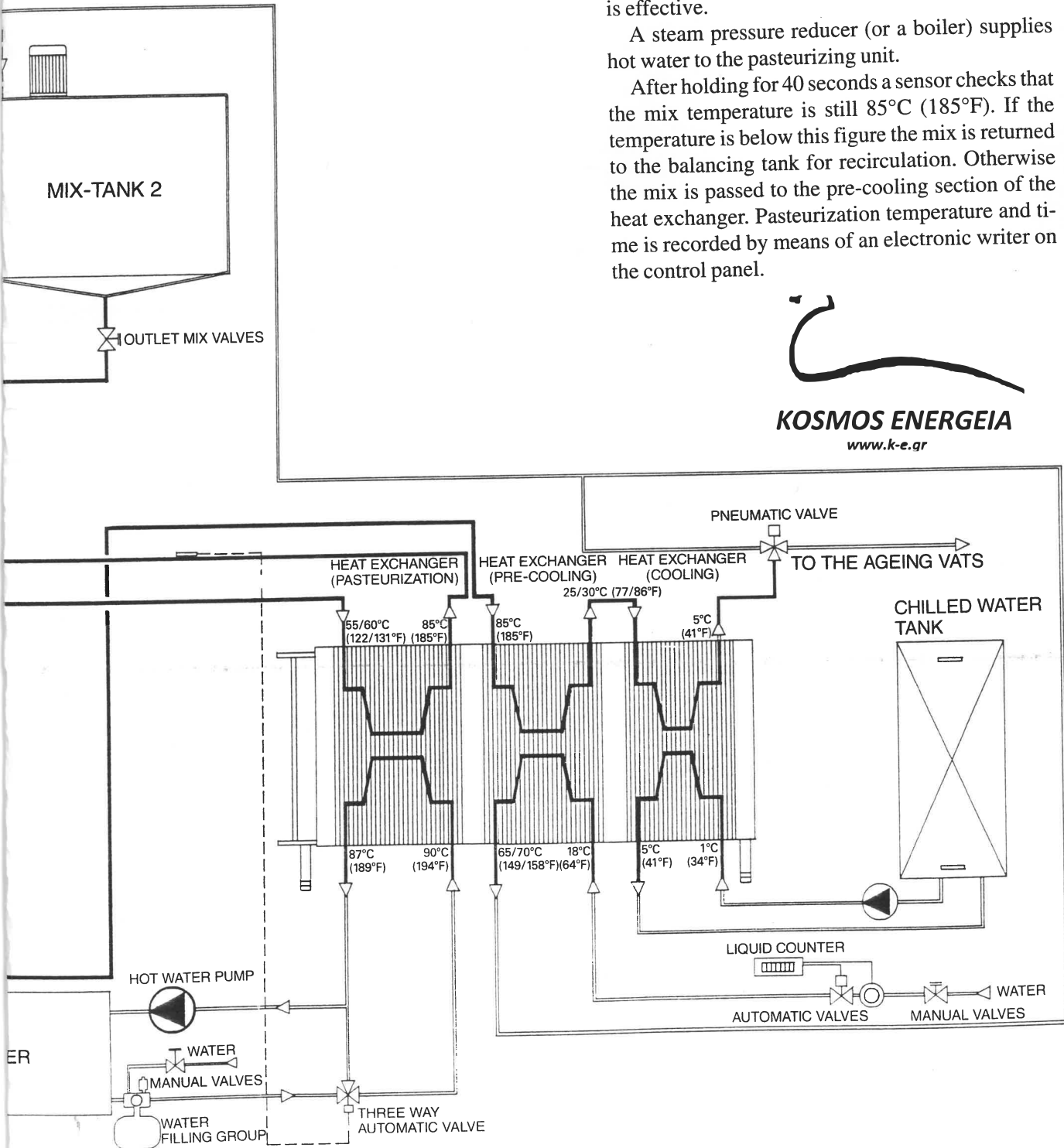
A steam pressure reducer (or a boiler) supplies hot water to the pasteurizing unit.

After holding for 40 seconds a sensor checks that the mix temperature is still 85°C (185°F). If the temperature is below this figure the mix is returned to the balancing tank for recirculation. Otherwise the mix is passed to the pre-cooling section of the heat exchanger. Pasteurization temperature and time is recorded by means of an electronic writer on the control panel.



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Standard accessories

It is advisable to consider the acquisition of the following equipment along with the mix processing plant:

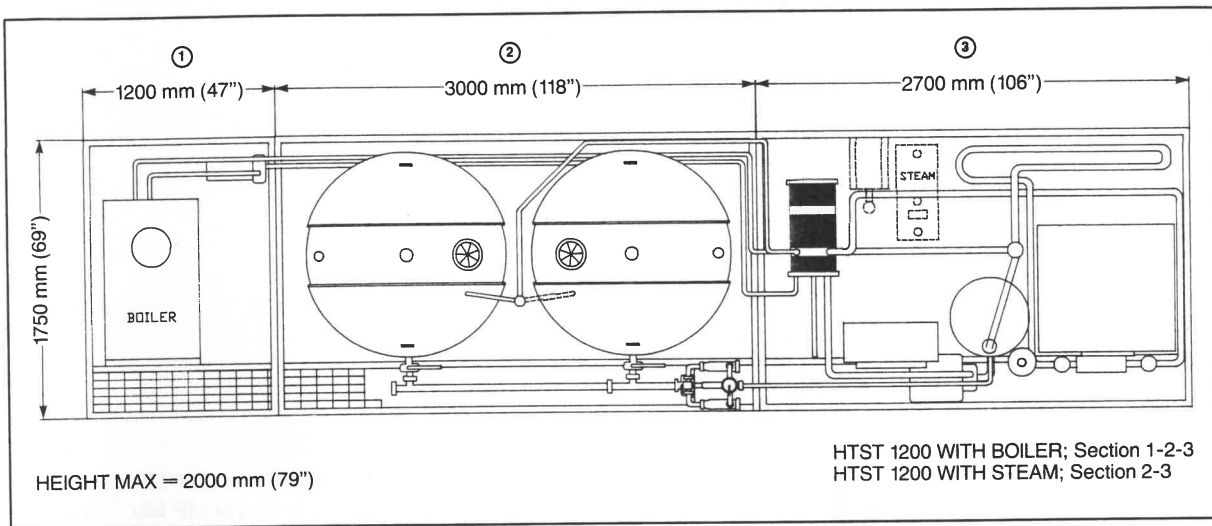
- Fat melting tank (capacity depending on plant size)
- Water chiller for plate pasteuriser (capacity depending on plant size)

Optional accessories

The optional accessories listed below are also available to complete the plant:

- Water chiller for ageing tanks
- Ageing tanks to be connected to water chiller
- Ageing tanks with built-in refrigeration system
- Powder feeder for dry ingredients
- Two stage homogenizer
- Spare parts kit

Technical data



All capacities, data, illustrations, photographs, drawings and statements in this publication are for general information only and subject to change without notice. They should not be considered as a warranty or legal obligation of any kind. Any drawing or data contained herein shall remain the property of Tetra Laval Food Hoyer and unauthorized use thereof is prohibited.

The mix is homogenized at a pressure of 150 bars. The pressure can be controlled via the pressure gauge. Efficient homogenization is important for the consistency and quality of the finished ice cream. During homogenization the fat content of the mix is broken down into smaller particles to obtain a better distribution throughout the mix.

After pasteurization and homogenization the mix is cooled down in two stages. The mix enters the heat exchanger at the pasteurization temperature of 85°C (185°F) and in the first stage it is cooled to about 25°C (77°F). The cooling medium used in this first stage is the milk or water that is being used to prepare the mix in one of the mix tanks. The milk

or water enters the heat exchanger at about 18°C (65°F) and is heated by the pasteurized mix to 65°C (149°) which is the temperature required for mixing. With this very economic heat exchange system energy costs are reduced considerably.

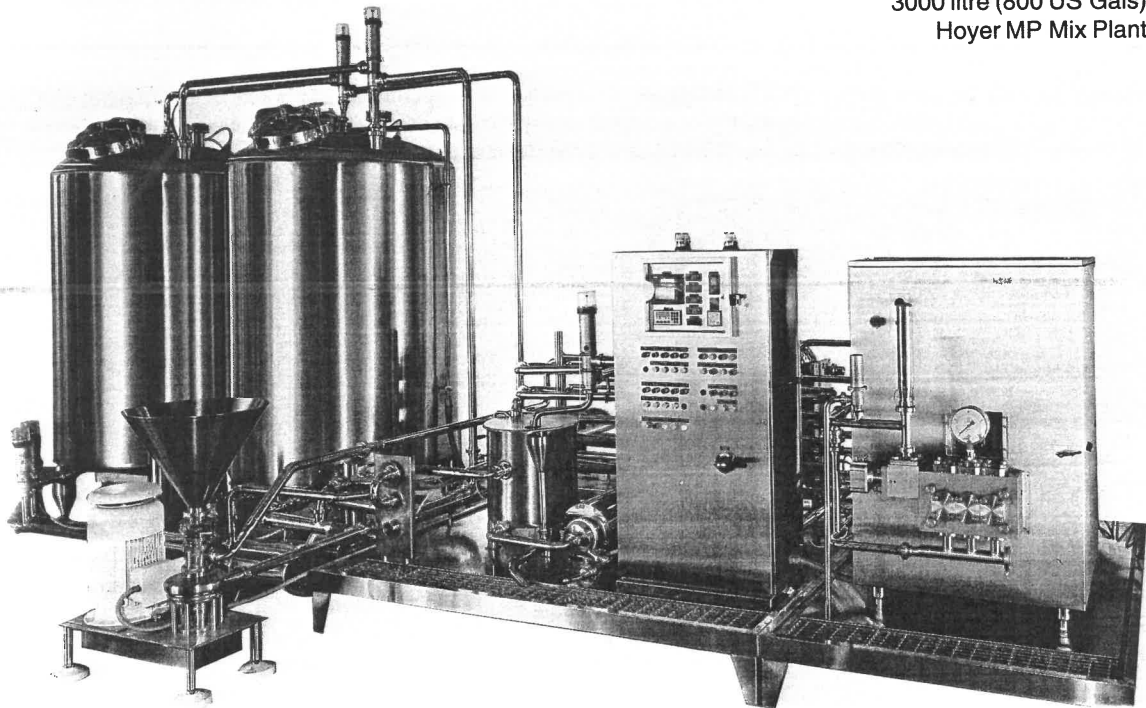
In the second stage the mix is cooled down further to a temperature of 5°C (41°F) and here the cooling medium is chilled water from a water chiller unit (optional extra). From the heat exchanger the mix is pumped to an ageing vat which is cooled by means of chilling water from a second chilling unit (optional extra). The mix is kept at a temperature of 3 - 4°C (37 - 39°F) for a period of 8 to 24 hours.



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3000 litre (800 US Gals)
Hoyer MP Mix Plant





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