



# Coldtech

Inspired by Innovations



**MIX PLANT & HTST PLANT**

# COLDTECH MIX BATCH - HTST

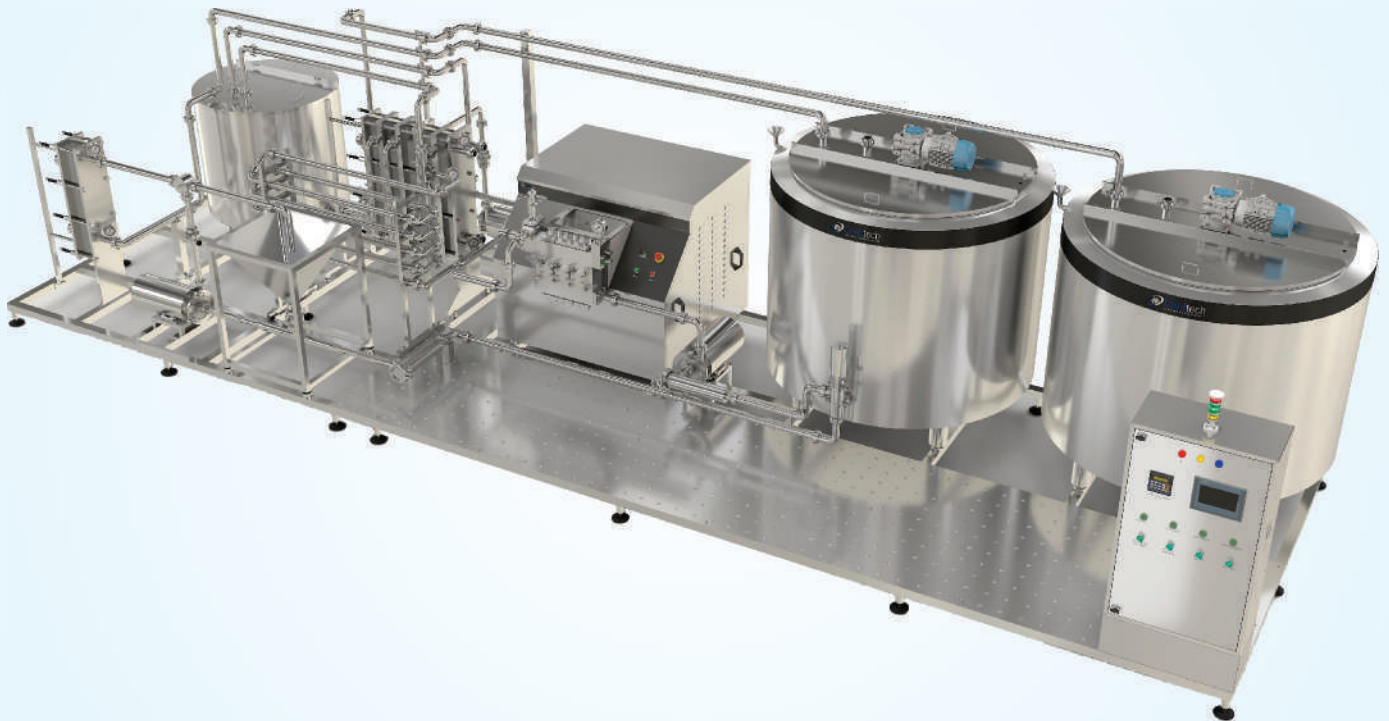
## PASTEURISATION LINE FOR CONTINUOUS CYCLE ICE-CREAM MIX

**USE :** The **COLDTECH BATCH** system is ideal for pasteurising small and medium ice-cream productions, while the **COLDTECH HTST** for medium /large scale ice-cream production.

The mix is prepared via consecutive stages which include mixing and dissolving the ingredients, pasteurisation, homogenization and cooling. The mix thus obtained is then transferred into ageing vats.

## FEATURES

- Energy saving of over 50% (Batch)
- Energy saving of over 70/75% (HTST)
- Absolute production consistency in terms of quality of the product mix and time (every liter of mix goes through the same process, for the same length of time and at the same temperature)
- Low investment
- Easy to use
- Simple installation - the system's components are mounted on stainless steel platforms and are ready for use, upon connection of the power, air and water systems, with clamp attachments, which are hygienic and easy to connect.
- An accurate design which has been devised in order to avoid unhygienic cavities or gaps.
- A compact system with very small overall dimensions.



## CONTROL PANEL

Constructed in 304 stainless steel, with PLC for controlling the different components of the pasteurisation system. The operator, via a touch-screen panel, can activate and control the stirrers, the mix or water pumps, the liter counter, the homogenizer, the temperature of mix pasteurisation, the temperature of output mix, the temperature of hot water and that of the tap or tower water, the temperature of chilled water, and monitoring all alarms and safety. It is also possible to store the time and temperature of pasteurisation on a "USB flash memory" and to download this data onto a computer. The remote assistance service "Teleservice" is available upon request.

## OPTIONAL EQUIPMENT

Once the line is completed COLDTECH can provide:

- chilled water tank for the exchanger and the ageing vats
- ageing vats
- powder feeder
- Liter counter for fresh milk
- Two-stage homogenizer





# COLDTECH MIX BATCH

## DESCRIPTION OF THE EQUIPMENT

The system's main components are:

- a stainless steel base with adjustable feet (one, two or three-sections, depending on the model)
- heating system with gas boiler excluded from supply. On request it is possible to supply a gas boiler or an electric one (for small capacities) or a hot water preparation group (made up of a water/steam heat exchanger), to be connected to the client's steam boiler. The system is equipped with a pump to circulate hot water and with a filling group with a pressure reducer for inlet water, a manometer/thermometer, a safety valve and an air-bubble separator.
- two tanks, insulated in order to avoid heat dispersion, to prepare and heat the mix, with a solenoid valve gap to circulate and intercept hot water. The following have been mounted on the tanks: stirrer motors, cleaning spheres, pipes to feed liquid ingredients and valves for mix output.
- a centrifugal pump with a system for filtering the mix, to power up the homogenizer.
- a homogenizer with pneumatic control of the homogenization pressure, safety valve, by-pass valve and manometer.
- a plate heat exchanger to cool the mix, with mains or tower water in the first section, and with chilled water in the second section. The valves for intercepting the pre-cooling and cooling water have been mounted on the exchanger.
- A liter counting unit to set the quantity of water necessary to prepare the mix
- set of sanitary pipe work

## WORKING PRINCIPLE

**Preparing the mix** - The ingredients, such as fresh or powdered milk, water, vegetable or animal fat, sugar, stabilisers and emulsifiers are introduced in the first pasteuriser/ mixer. The water necessary to prepare the mix is sent to the selected tank in the quantity set on the liter counter.

**Pasteurisation** - The heating system supplies the hot water which, via the circulation pump, is sent into the gap of the selected tank, in order to reach the pasteurisation temperature of 85°C.

**Homogenization** - Once the pre-set pasteurisation temperature has been reached the mix is sent, via a centrifugal pump, to the homogenizer which, thanks to the elevated pressure of 200 bar, breaks down and reduces the fat molecules in order to obtain a great ice-cream structure.

**Cooling** - From homogenization the mix goes directly to the first section of the heat exchanger where it is cooled by mains or tower water at 34°C; this then goes into the second section where it is further cooled with chilled water in order to obtain a final mix temperature of 4/6°C. The mix is automatically sent to the ageing vats where it will need to stay for approximately 6 hours before it can be used to produce ice-cream.

The time necessary to complete the pasteurisation cycle is approximately two hours, but as the system is equipped with two pasteurisers it is possible to produce every hour a volume of ice-cream mix equal to the capacity of one of the two pasteurisers; in fact as the first pasteuriser is filled and brought to temperature, the second is loaded, which will have already reached the pasteurisation temperature, initiating a continuous work cycle.



### CAPACITY

MIX PLANT is available in the following capacities:

MIX PLANT 300 300 liter/hour

MIX PLANT 500 500 liter/hour

MIX PLANT 1000 1000 liter/hour

Other capacities upon available upon request.

# COLDTECH MIX HTST

## DESCRIPTION OF THE EQUIPMENT

The system's main components are:

- A stainless steel base with adjustable feet (one, two or three-section feet, depending on the model)
- Heating system with either an electric/gas or steam boiler (comprising of a water/steam heat exchanger), with a hot water circulation pump and a filling group with a pressure reducer for inlet water, manometer/ thermometer, safety valve and air-bubble separator.
- Two tanks, insulated in order to avoid heat dispersion, to prepare and heat the mix, with a solenoid valve gap to circulate and intercept hot water. The following have been mounted on the tanks: stirrer motors, cleaning spheres, pipes to feed liquid ingredients and valves for mix output.
- Two centrifugal pumps, one for transferring the mix from the tanks to the holding tank via a system of mix filtering, and the second for powering the homogenizer and the plate exchanger.
- A balance holding tank
- A homogenizer with pneumatic control of the homogenization pressure, safety valve, by-pass valve and manometer.
- A plate heat exchanger in four sections: mix pasteurisation via circulation of hot water, recovery section with circulation of mix against the current, precooling of the mix with mains water, cooling of mix with chilled water.
- The following are mounted on the exchanger: valves for intercepting the precooling water and three-way valve for chilled water.
- A liter counting unit to set the quantity of water necessary to prepare the mix
- set of sanitary pipe work

## WORKING PRINCIPLE

**Preparing the mix** - The ingredients, such as fresh or powdered milk, water, vegetable or animal fat, sugar, stabilisers and emulsifiers are introduced in the first tank. The water necessary to prepare the mix is sent to the selected tank in the quantity set on the liter counter.

**Precooling** - The heating system supplies the hot water which, via the circulation pump, is sent into the gap of the selected tank, in order to heat the mix up to 55°C.

Once the temperature is reached the mix is transferred to the balance holding tank via a centrifugal pump.

**Heating** - From this tank a second feeding pump collects the mix and sends it to the exchanger in the recovery section. Here the mix is heated to 76°C thanks to the heat release of the already pasteurised mix which, in this way, starts to cool down.

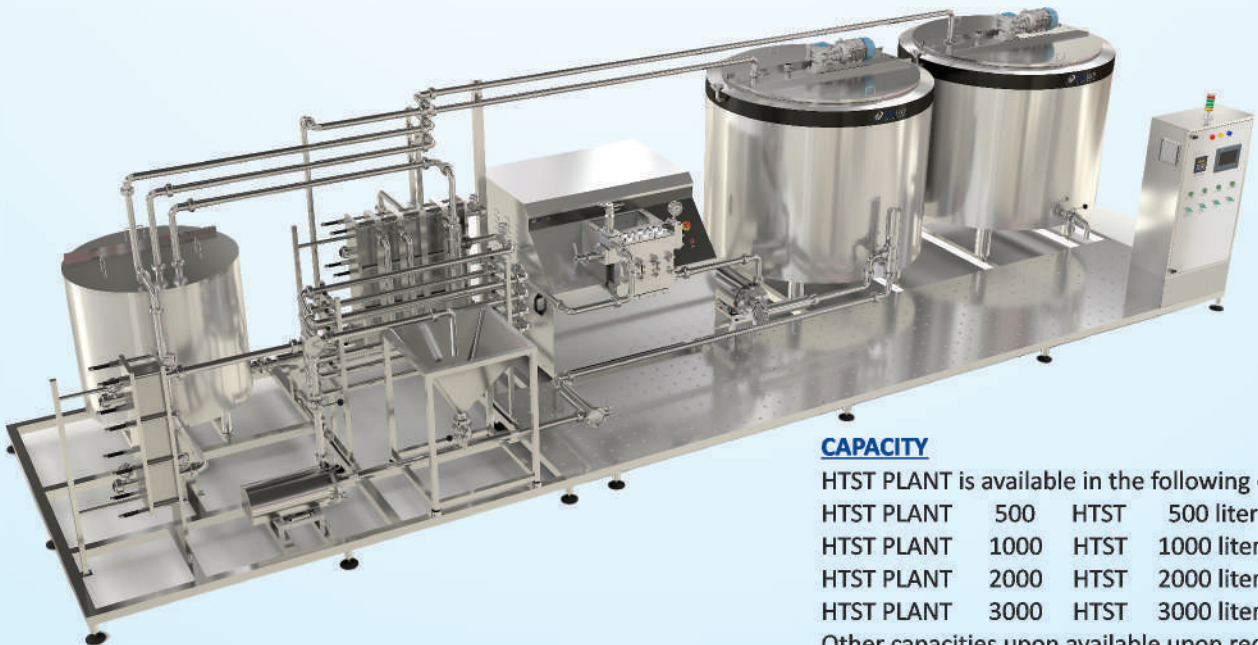
**Homogenization** - Once the pre-set heating temperature has been reached the mix is sent, via a centrifugal pump, to the homogenizer which, thanks to the elevated pressure of 200 bar, breaks down and reduces the fat molecules in order to obtain a great ice-cream structure.

**Pasteurisation and holding** - From the homogenizer the mix goes to the exchanger in the pasteurisation section, where it reaches a temperature of 85°C thanks to the action of the hot water coming from the heating group. The mix then goes to the tubular holding where it holds for 40 seconds without any changes in temperature. A probe detects the mix's temperature and, if this is lower than the pre-set pasteurisation level, the appropriate mix flow control valve makes it return to the balance tank to go through the heating and homogenization cycle again. Instead, if the temperature is level with or over the pre-set pasteurisation level, the mix continues its process, starting the cooling phase and entering the recovery section where it is cooled down to 64°C thanks to the heat release provided by the mix in the heating phase.

This process allows to significantly reduce energy consumption and it is one of the strong points of a plant of an HTST type.

**Cooling** - The mix goes directly to the heat exchanger's precooling section where it is brought down to 34°C via mains or towerwater, and subsequently it enters the final cooling section where it is brought down to 4/6°C via chilled water. The mix is automatically sent to the ageing vats where it will need to stay for approximately 6 hours before it can be used to produce ice-cream.

The time necessary to complete the pasteurisation cycle is of approximately two hours, but as the system is equipped with two pasteurisers it is possible to produce every hour a volume of ice-cream mix equal to the capacity of one of the two pasteurisers; in fact as the first pasteuriser is filled and brought to temperature, the second is loaded, which will have already reached the pasteurisation temperature, initiating a continuous work cycle.



### CAPACITY

HTST PLANT is available in the following capacities:

HTST PLANT 500 HTST 500 liters

HTST PLANT 1000 HTST 1000 liters

HTST PLANT 2000 HTST 2000 liters

HTST PLANT 3000 HTST 3000 liters

Other capacities upon available upon request.



# TECHNICAL SPECIFICATION

	BATCH 300	BATCH 500	BATCH 1000
CAPACITY (DIFFERENT CAPACITIES ON REQUEST) LITERS/HOUR	300	500	1000
INSTALLED POWER KW	16.5 kw	17.75 kw	26 kw
MAINS WATER CAPACITY LT/HR	120	120	250
TOWER WATER CAPACITY LT/HR	620	920	1850
CHILLED WATER CAPACITY LT/HR	1500	3000	4500
HEATING KW	10 kw	10 kw	10 kw
NET DIMENSIONS (LxWxH) mm	4305 x 1850 x 1645	4700 x 1900 x 1800	5000 x 2210 x 1920
NET WEIGHT	1254 kg	1530 kg	1820 kg

	HTST 500	HTST 1000	HTST 2000	HTST 3000
CAPACITY (DIFFERENT CAPACITIES ON REQUEST) LT/HR	500	1000	2000	3000
INSTALLED POWER KW	20 kw	30 kw	35 kw	35 kw
MAINS WATER CAPACITY LT/HR	520	1050	1400	2300
CHILLED WATER CAPACITY LT/HR	2000	4000	6500	10000
HEATING KW	10 kw	15 kw	15 kw	25 kw
NET DIMENSIONS (LxWxH) mm	6300 x 2120 x 1680	7380 x 2490 x 1785	7600 x 2700 x 2100	8200 x 2700 x 2200
NET WEIGHT	1800 kg	2830 kg	3400 kg	3800 kg





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MIX PLANT & HTST PLANT



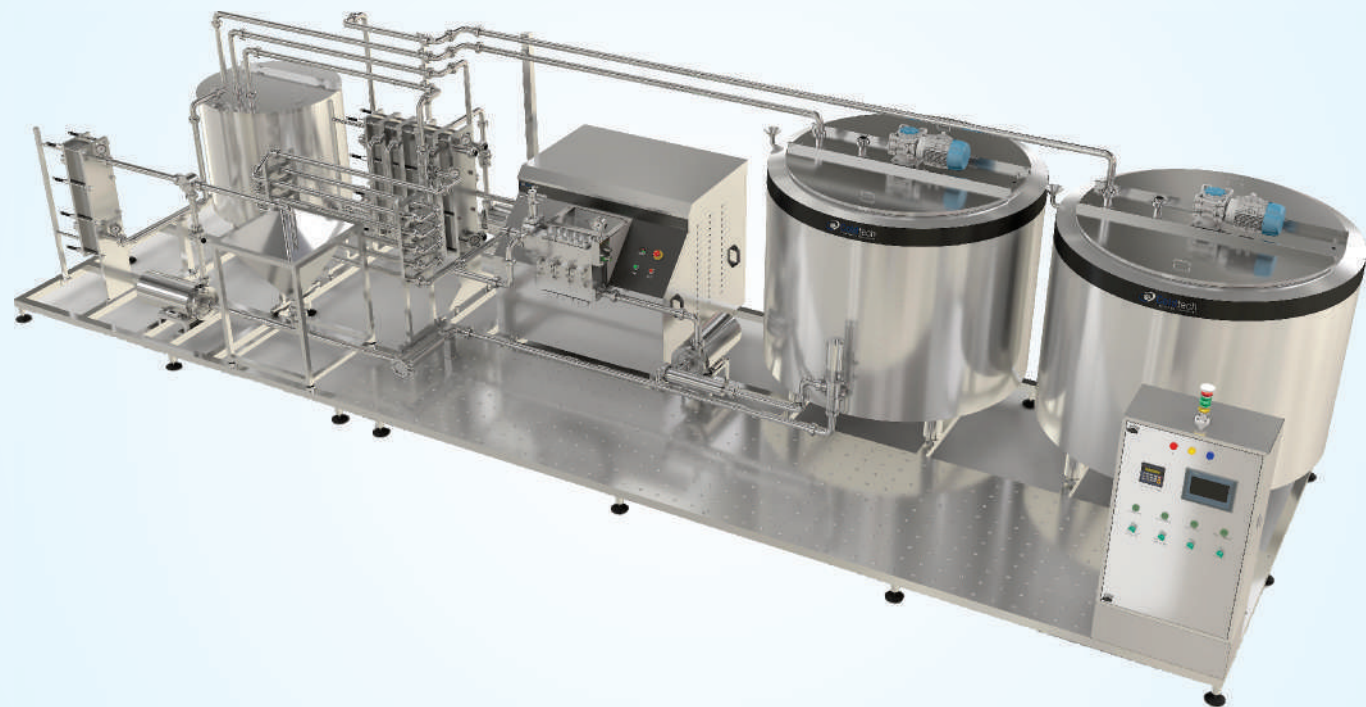
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CONTROL PANEL

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OPTIONAL EQUIPMENT

- Once the line is completed COLDTECH can provide:
- chilled water tank for the exchanger and the ageing vats
  - ageing vats
  - powder feeder
  - Liter counter for fresh milk
  - Two-stage homogenizer



DESCRIPTION OF THE EQUIPMENT

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- a centrifugal pump with a system for filtering the mix, to power up the homogenizer.
- a homogenizer with pneumatic control of the homogenization pressure, safety valve, by-pass valve and manometer.
- a plate heat exchanger to cool the mix, with mains or tower water in the first section, and with chilled water in the second section. The valves for intercepting the pre-cooling and cooling water have been mounted on the exchanger.
- A liter counting unit to set the quantity of water necessary to prepare the mix
- set of sanitary pipe work

WORKING PRINCIPLE

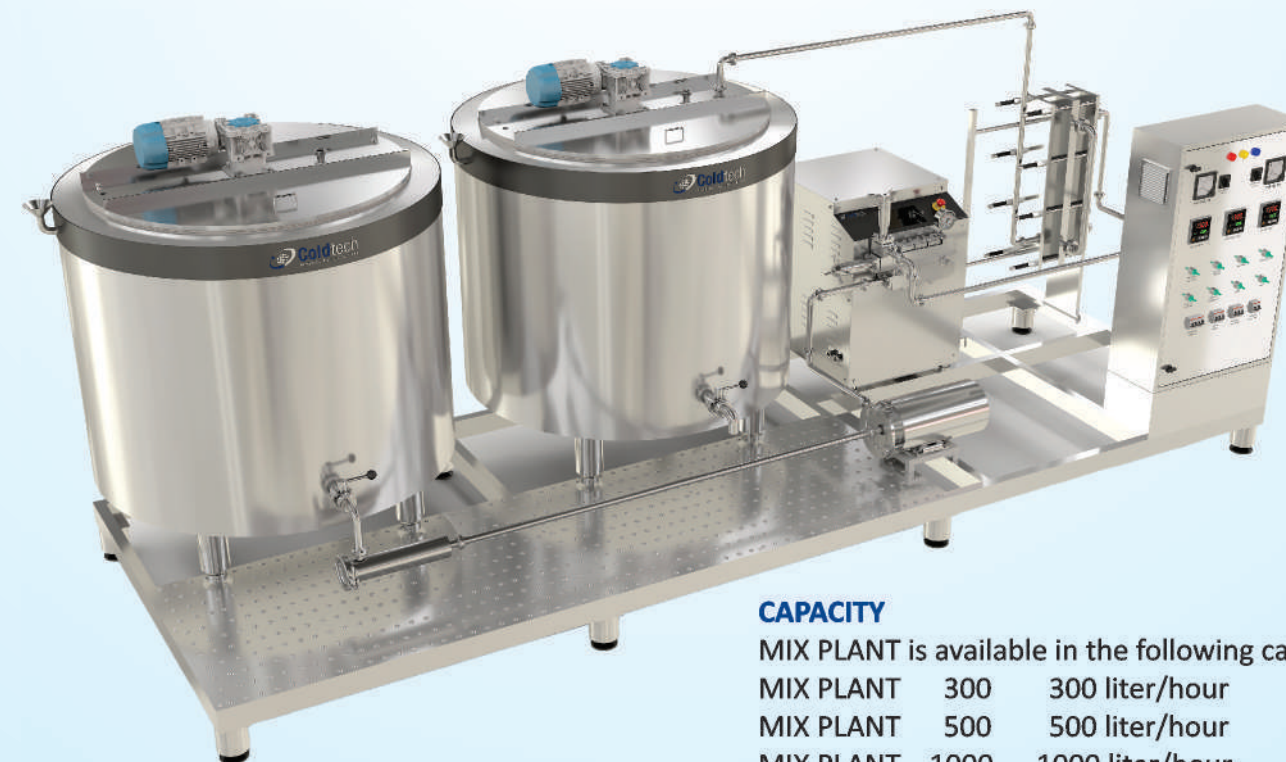
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**Pasteurisation** - The heating system supplies the hot water which, via the circulation pump, is sent into the gap of the selected tank, in order to reach the pasteurisation temperature of 85°C.

**Homogenization** - Once the pre-set pasteurisation temperature has been reached the mix is sent, via a centrifugal pump, to the homogenizer which, thanks to the elevated pressure of 200 bar, breaks down and reduces the fat molecules in order to obtain a great ice-cream structure.

**Cooling** - From homogenization the mix goes directly to the first section of the heat exchanger where it is cooled by mains or tower water at 34°C; this then goes into the second section where it is further cooled with chilled water in order to obtain a final mix temperature of 4/6°C. The mix is automatically sent to the ageing vats where it will need to stay for approximately 6 hours before it can be used to produce ice-cream.

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CAPACITY

MIX PLANT is available in the following capacities:

- MIX PLANT 300 300 liter/hour
- MIX PLANT 500 500 liter/hour
- MIX PLANT 1000 1000 liter/hour

Other capacities upon available upon request.

DESCRIPTION OF THE EQUIPMENT

The system's main components are:

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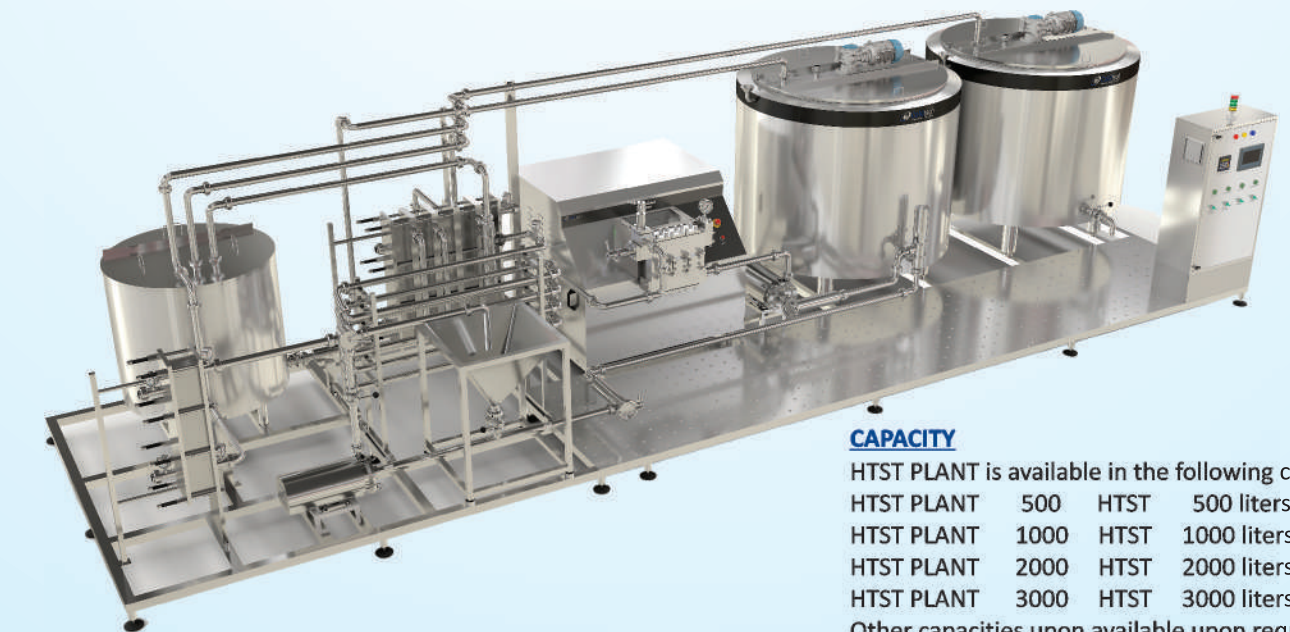
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**Pasteurisation and holding** - From the homogenizer the mix goes to the exchanger in the pasteurisation section, where it reaches a temperature of 85°C thanks to the action of the hot water coming from the heating group. The mix then goes to the tubular holding where it holds for 40 seconds without any changes in temperature. A probe detects the mix's temperature and, if this is lower than the pre-set pasteurisation level, the appropriate mix flow control valve makes it return to the balance tank to go through the heating and homogenization cycle again. Instead, if the temperature is level with or over the pre-set pasteurisation level, the mix continues its process, starting the cooling phase and entering the recovery section where it is cooled down to 64°C thanks to the heat release provided by the mix in the heating phase.

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CAPACITY

HTST PLANT is available in the following capacities:

- HTST PLANT 500 HTST 500 liters
- HTST PLANT 1000 HTST 1000 liters
- HTST PLANT 2000 HTST 2000 liters
- HTST PLANT 3000 HTST 3000 liters

Other capacities upon available upon request.