



Tetra Pak® Ice Cream Mix unit M2

Batch



Application

Tetra Pak® Ice Cream Mix unit M2 is a mix and pasteurisation unit for processing and batch pasteurisation of ice cream mix manufactured in the EU. The unit is as standard equipped with a water boiler unit to provide the hot water and as an option a water chiller unit to provide the ice water.

Capacity

The unit is available in 3 standard models with the following capacities:

- 300, 600 and 1200 litres per hour

Working principle

Tetra Pak® Ice Cream Mix unit M2 batch is as standard equipped with manual controls. From the control panel (relay), the operator initiates the required functions and controls, such as starting the boiler and the agitators.

On the control panel, a paper loose event recorder continuously records the hot water temperature, mixing and pasteurisation temperature.

Main process sequences can be divided into the following main steps:

- Pre-sterilisation
- Production
- Cleaning-In-Place (CIP)

Before production can commence, it is necessary to sterilize the unit by circulation of hot water (min 80° C) for 20 minutes.

After pre-sterilisation, the unit is cooled down and stabilised to the selected processing temperature.

The liquid (water or milk) is fed automatically into one of the mixing tank, while the solids ingredients are added separately.

The two tanks guarantee continuous production of the mix, the pasteurised mix in the first tank is being continuously homogenised, the next batch of mix is being prepared and pasteurised in the other tank.

The pasteurising temperature is read by a temperature transmitter located in each tank and is displayed on the control panel and are continuously recorded.

If the temperature gets too low, an automatic alarm on the control panels starts.

A centrifugal pump transfers the mix from the pasteurising tank to the homogeniser, where the ice cream mix is homogenised at the selected pressure.

After homogenising, the mix enters the pre-cooling section in the Tetra Term plate heat exchanger.

Cooling takes place in two stages:

1. In the first stage, the ice cream mix is cooled from 84°C to approximately 34°C by the incoming water or milk for the next batch in the regenerative section of the plate heat exchanger. This ensures optimal heat recovery.
 2. In the last stage the ice cream mix is finally cooled down to 5°C using ice water as cooling media and feed into the ageing tanks.
- After the production the unit is cleaned with the internal CIP system.

Standard design

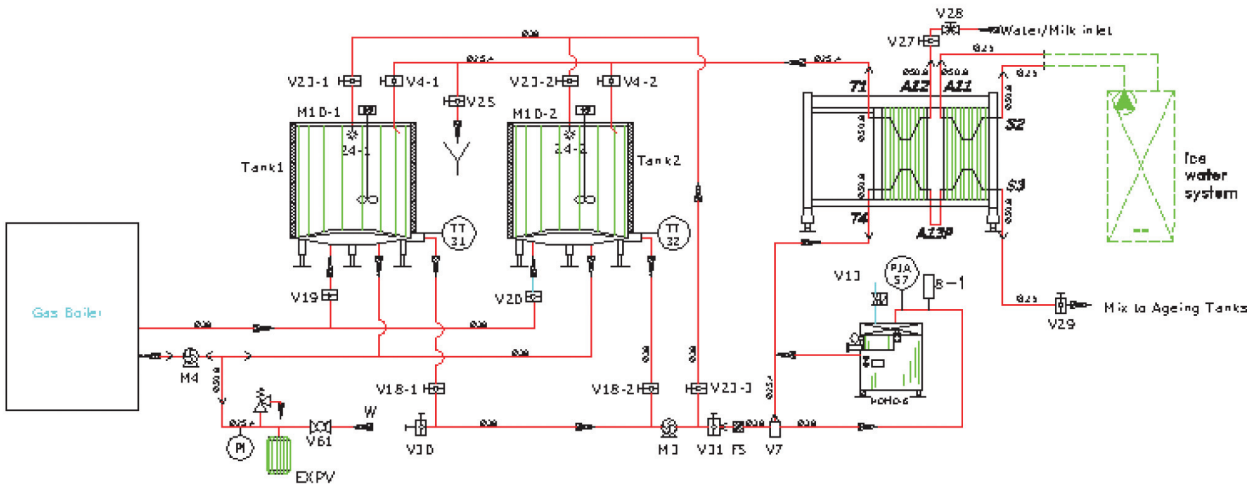
Main module components and equipment:

- Two double walled stainless steel (AISI304) mixing and pasteurization tanks with high shear agitators.
- One centrifugal feed pumps, type Solid C.
- One strainer.
- One balance tank (100 ltr) with floater. Low level switch in the balance tank included.
- Plate heat exchanger, type Tetra Plex M, with one heat recovery system consisting of two sections: Pre-heating with full heat recovery and final cooling by ice water.
- One single stage homogenizer – max working pressure 180 bar. Pulsation dampers included.
- Sight glass at outlet pipe.
- Alarms: Lamp on top of the control panel.
- Paper less colour screen event recorder for acquisition and display of recorded data. The recorded data is stored on standard compact flash memory card. MS Windows based program for visualization and evaluation is included.
- Internal CIP. CIP detergents are manually added into the balance tank.
- Hot Water Unit for preparation of hot water by means of steam (to be connected to a steam source) , a gas or electrical boiler.
- Control panel in stainless steel (relay) for centralized control of the whole plant.
- Technical documentation (CD) in English.
- Water test in our factory before delivery.

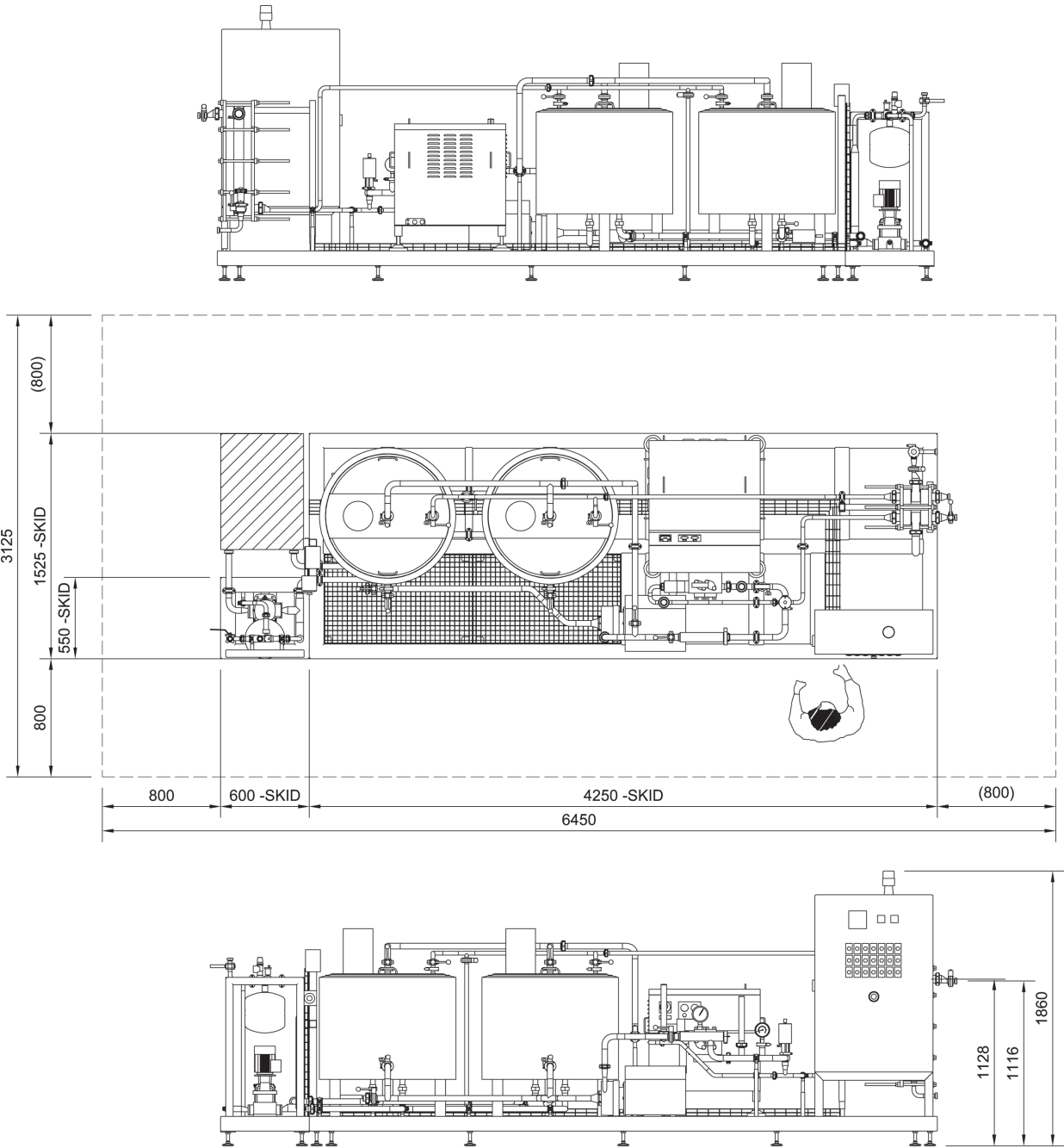
Optional equipment

- Other voltage than standard 380 V – 50 hertz
- High viscosity recipe
- 2 stage homogenizer 250 bar
- Spare part kit
- CE marking
- Additional units: Water chiller, ageing tanks

Simplified flow chart

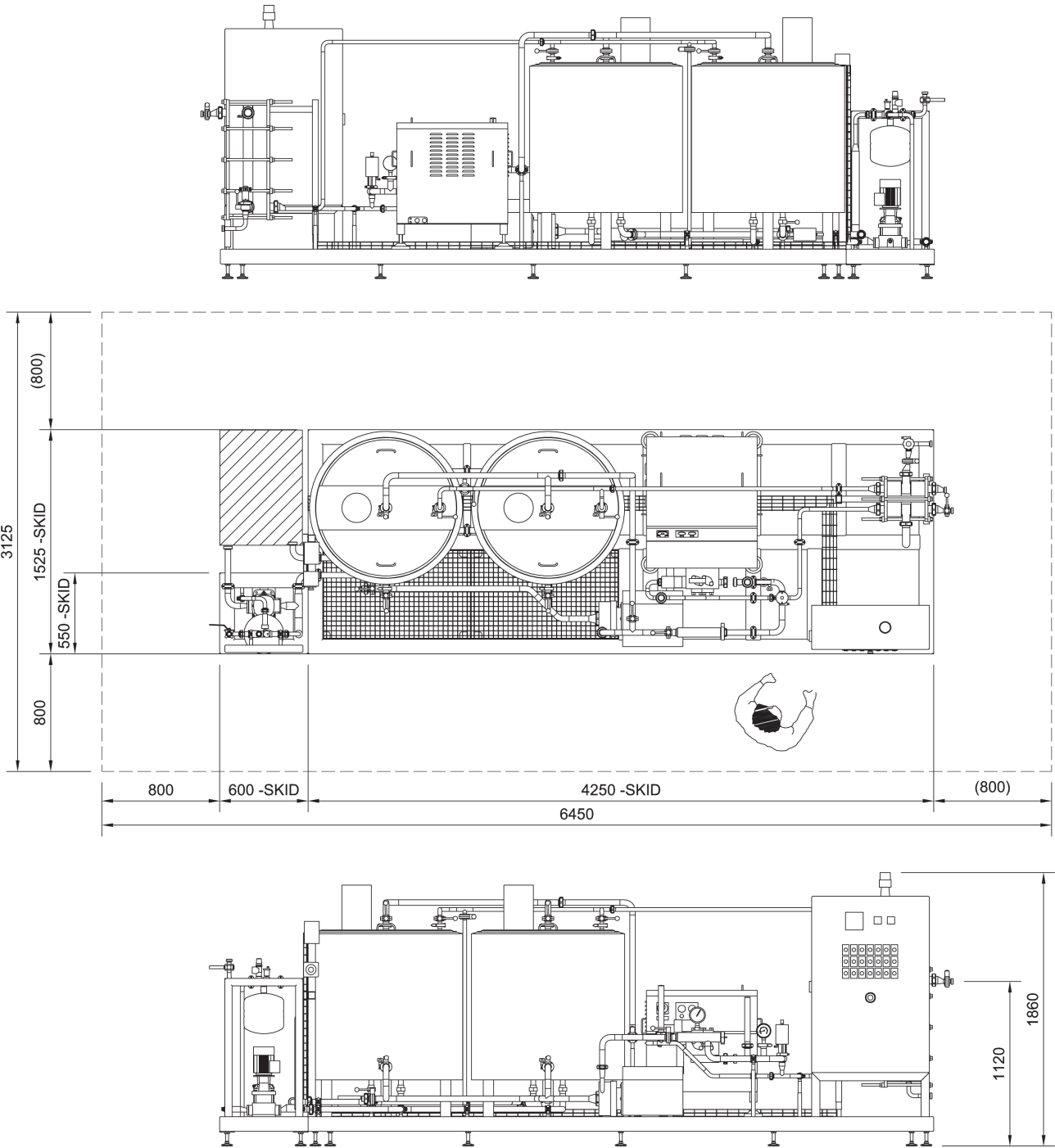


Main dimensions - Tetra Pak® Ice Cream Mix unit 300 M2

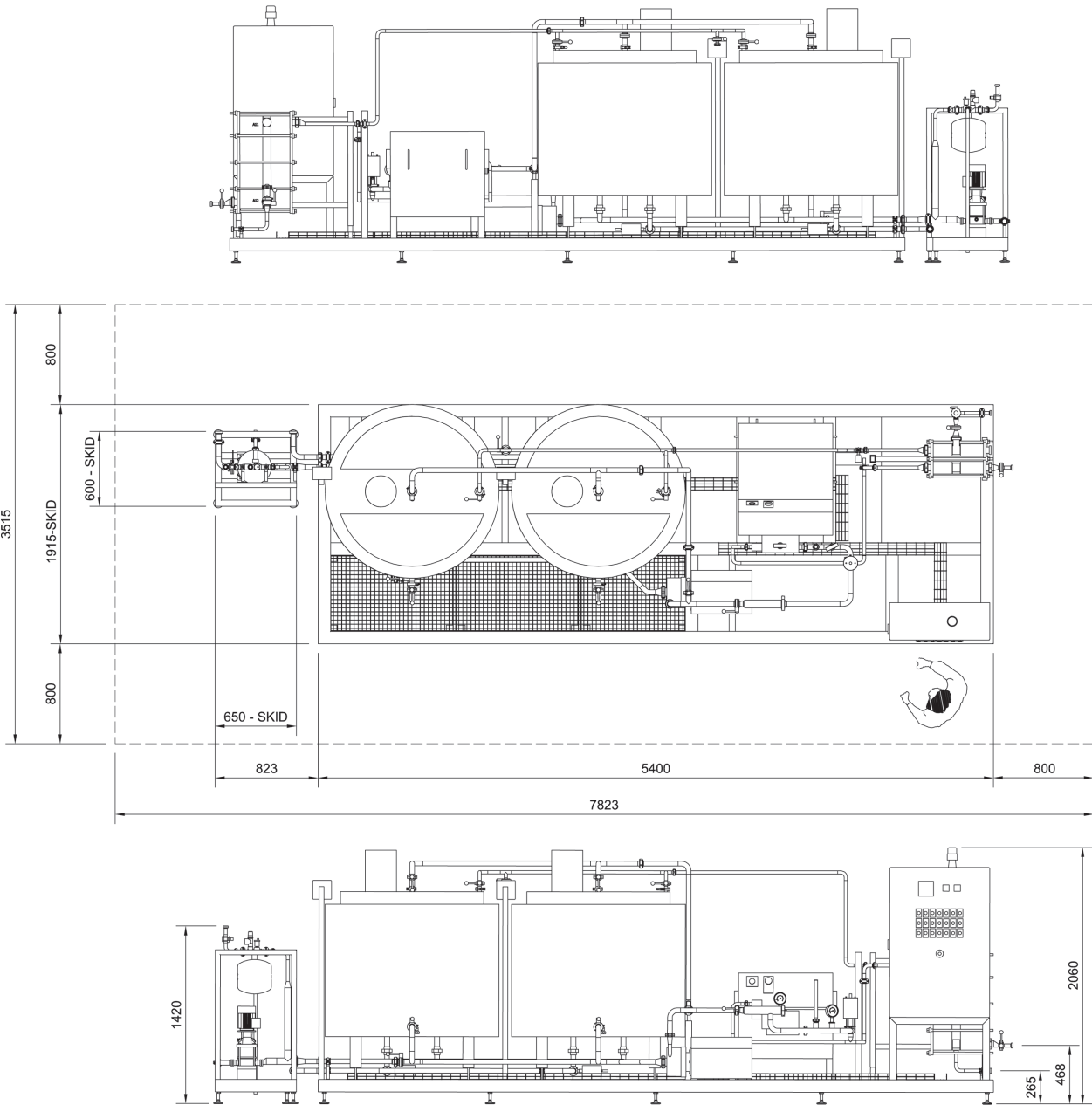


Measurements in mm

Main dimensions - Tetra Pak® Ice Cream Mix unit 600 M2




Main dimensions - Tetra Pak® Ice Cream Mix unit 1200 M2



Measurements in mm

Technical data

Tetra Pak® Ice Cream Mix unit 1200 M2	Units	300	600	1200	Note
Capacity:	lt/h	300	600	1200	
Overall dimensions: (*) Length (<i>incl gas boiler</i>) Width	mm mm	4.850 1.525	4.850 1.525	6.300 1.920	(*) Approximate values excl recommended maintenance and working area
Preparation mixture Water consumption Minimum pressure inlet	ltr/hour bar	215 1.5	424 1.5	850 1.5	
Heating capacities: <u>First batch from cold condition:</u> Heating capacity at start-up while using water 18 °C Heating capacity at start-up while using water 30°C Heating capacity at start-up while using milk 5°C (*) Hot water inlet temperature (**) Heating capacity during cycle <u>Pasteurization</u> Pasteurization temperature (**)	kW °C kW °C	23 19 24 8 84	46 38 48 15 84	92 76 96 30 84	(*) The average heating time is app 60 minutes. (**) Temperature automatic set by the system.
Heating by steam: Max steam consumption (*) Minimum inlet pressure (gauge) Maximum inlet pressure (gauge) Condensate drain connection Water connection	kg/h bar bar clamp ? clamp ?	40 1 5 ½" ½"	80 1 5 ½" ½"	160 1 5 ½" ½"	(*) Saturated steam at 1 bar gauge for the first heating from cold
Heating by natural gas: Maximum consumption of methane Max consumption of GPL Minimum inlet pressure Exhaust diameter to the chimney Water connection	m³/h kg/h mbar mm ½"	3,6 2,6 20 180 ½"	6,4 4,7 20 200 ½"	14,4 10,8 20 250 ½"	
Electrical heating: Installed power	kW	36	55	NA	
Cooling by chilled water: Maximum temperature inlet Average temperature outlet (*) Required minimum flow rate Pressure drop Maximum cooling capacity Recommended minimum chiller capacity (**)	°C °C lt/h bar kW kW	2 7 1.615 0,5 15 6	2 6 3.500 0,5 27 11	2 8 7.500 0,5 44 22	(*) Depending on the inlet temperature of the water/milk. (**) Compressor power
CIP: Required minimum flow rate (*)	lt/h	2.100	2.500	3.400	(*) 2,0 -3,0 bar
Electrical data (380 volt 3 phase 50 hertz) (*): Homogenizer total Mix pump number xx Agitator (each) Hot water circulation pump Controls Total installed power app (excl boiler)	kW kW kW kW kW kW	4 4 1 2 10	6 4 1 2 12	11 6 1 2 19	(**) Other voltages available on request
Compressed air: Consumption Pressure	NI/min bar	100 6,0-6,5	100 6,0-6,5	100 6,0-6,5	
Cooling water homogenizer: Tap water consumption	lt/h	70	100	100	

We reserve the right to introduce design modifications without prior notice. Tetra Pak, , PROTECTS WHAT'S GOOD and Tetra Hoyer Promix are trademarks belonging to the Tetra Pak Group.

www.tetrapak.com

