Tetra Pak® Pasteurizer BC

Highlights

- Low investment cost
- Low operating cost
- Flexible and future-proof
- Faster time to market
- Ensures food safety

Application

Tetra Pak® Pasteurizer BC is a processing unit that combines smarter and smoother temperature treatment of beverage products with uncompromising hygiene and safety. The unit comes in aseptic or hot fill designs and contains a plate heat exchanger that indirectly heats a product to enable ambient temperature storage. Models are available for processing beverages such as fruit juices, still drinks and nectars for filling in aseptic cartons and aseptic or hot-filled PET bottles.

Tetra Pak Pasteurizer is an affordable version of our premium pasteurizer that is designed to meet our customers' needs today and easily upgradable to meet the needs for tomorrow.

Working principle

The module is fully automated to safeguard aseptic status while in production. The operation is divided into four steps:

- Pre-disinfection
- Production
- Intermediate cleaning (IC)
- Cleaning-in-place (CIP)

Before production can start, it is necessary to disinfect the aseptic area by circulating pressurized hot water. In the tube version, a pressurized pre-disinfection loop bypasses the balance tank, minimizing energy consumption and start-up time. After disinfection, the unit is cooled to production temperature. Lastly, disinfected water is circulated through the production unit. Production can begin when an aseptic tank or filling machine is ready.

The process starts by filling the unit with product via the balance tank. The product displaces the water/product mix to the drain or reject tank. A specially designed balance tank with bottom filling minimizes product loss. The balance tank includes level control and a CIP device, which safeguards the gentle treatment of the product and enables high cleanability.

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The product is regeneratively pre-heated in a Tetra Pak® Tubular Heat Exchanger or, alternatively, in a Tetra Pak® Plate Heat Exchanger. Final heating takes place by means of an indirect hot water circuit. The product is held in a holding tube for the required period of time. Regenerative cooling to packaging temperature occurs in the heat exchanger. If required, the product is further cooled by ice or tower water in the final cooling section. The tube version uses either heat-efficient product-to product regeneration or product-to-water regeneration (normal in hot fill applications). In the latter case, a secondary water circuit is used for regeneration, which prolongs production time for specific products.

Intermediate cleaning (IC) can be performed to extend the production period between CIP cycles. When IC is selected, disinfected water displaces the product before cleaning starts. During IC sequences, the holding tube is kept at pasteurization temperature. IC can be performed with lye or with a lye/acid flush. After each production run, the unit undergoes CIP with both lye and acid. These can be supplied by a central CIP system or the chemicals may be automatically dosed directly into the balance tank by an internal cleaning system. The CIP sequences can be configured for optimized cleaning results. In the event of a product supply failure, the unit goes into disinfection water circulation. The operator interface is used for process monitoring and the selection of required functions. The process controller controls and supervises both the basic process and optional units for deaeration and homogenization. A data logging system in the unit keeps track of date of production, processed volumes, processing times, type of CIP performed and related parameters. Using a serial protocol, or optional I/O connections, the process controller can communicate with objects like aseptic tanks and filling machines.

Processing parameters

The temperature program is specifically designed for each product, for example:

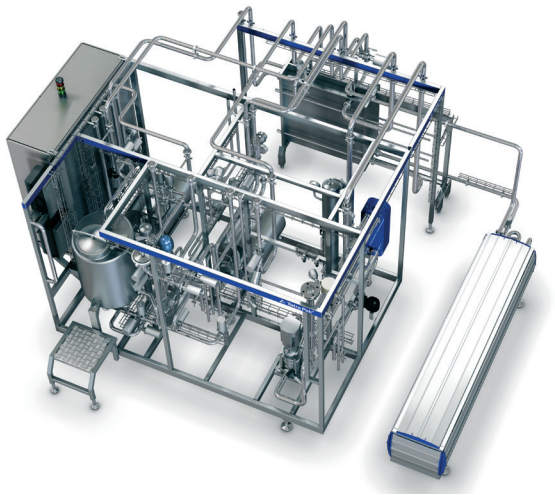
- Aseptic filling: Juice: 15°C – 80-95°C – 25°C, holding time 15s
- Hot filling: Juice: 15°C – 95°C – 85°C, holding time 15s

Capacities

The Tetra Pak® Pasteurizer BC is available with variable capacity and can run capacities from 3 000 l/h up to 30 000 l/h.

Scope of supply

- Product balance tank (BT) with level control
- Frequency controlled centrifugal product feed pump
- Frequency controlled centrifugal pump for water
- Product flow controlled by electronic flow meter
- Flow transmitters in the water circuits
- Centrifugal booster pump
- Free-standing Tetra Pak Tubular Heat Exchanger (THE) with floating concept
- Hot water circuit, including brazed PHE, pump, steam valve and trap, expansion vessel, shut-off valves, etc.
- Control panel in stainless steel including process controller (PLC), solenoid valves and motor starters
- Automated PLC operated sequences
- Automated process interaction with downstream equipment
- Automated fault supervision and action for pumps and temperatures
- Registration of disinfection and outlet temperatures
- Frequency converters, mounted on the frame
- Pre-wired, signal/power cables
- Pneumatic, remote-controlled sanitary valves
- Product piping in AISI 316
- Set of pipes, bends, valves, internal signal wiring, pipes for signal wiring and fittings required for pre-erection of UHT system
- Factory pre-assembled and tested before delivery
- Engineering
- Technical documentation in European Economic Area (EEA) languages



Optional features

Automation and control

- PLC control system: Siemens
- 21" industrial PC operator panel mounted in control cabinet
- Free-standing PC as operator interface (HMI)
- Tetra Pak® PlantMaster integration
- Uninterrupted power supply (UPS)
- Control panel air cooling
- Digital paperless recorder

Production efficiency

- Reduced steam consumption with Eco-Heating
- Insulation of Tetra Pak Tubular Heat Exchanger
- Energy hibernation (EH) for reduced energy consumption
- Different levels of heat recovery

Production flexibility

- Variable capacity 1:3 max.
- Automatic media control

Special food treatment

- High temperature program
- Deaerator for product quality and long running time
- Multiple holding tubes
- TetraPak® Homogenizer for product quality

Production safety and convenience

- SMO254 material in tube heat exchanger and titanium in plate heat exchanger for corrosive products
- Supervision of differential pressure
- PU control
- Coarse strainer after product feed pump

Deaerator

- Deaerator on separate skid
- Closed water loop for cooling of deaerator condenser
- Closed water loop on deaerator vacuum pump

Homogenizer

- Automatic air refill and cleaning of homogenizer dampers for increasing overall equipment effectiveness

Cleaning

- CIP from CIP station or from internal CIP system
- Internal CIP system with automated addition of CIP detergent into the balance tank via ratio dosing or header batch system
- CIP recipe editor with possibility to design unique cleaning recipes
- Conductivity switch for supervision of CIP media change
- Back-flush cleaning of heat exchanger for products containing particles or fibres

Technical documentation

- Non-EEA languages
- CE marking for countries outside European Economic Area

Please note that most of the above options are also available as upgrades.

Technical data

Approximate consumption data for plate heat exchanger-based module with product-to-product heat regeneration up to 95% with a temperature program of 15°C – 95°C – 25°C, holding time 15 s

- Steam (300/600 kPa):
  26-35 kg/1 000 L/ product
- Cooling water (300 kPa, 15°C):
  1-4 kW/ 1 000 L/ product
- Low consumption during pre-disinfection or hibernation mode

Environment

- Tetra Pak Pasteurizer BC is built in a modular design, which makes it easy to rebuild and adopt for new duties
- The unit consists of parts that can be separated for recycling purposes.
- Instrument air (600 kPa):
- Electricity (380V/50Hz):

Dimensions

- Approximate measurements including required service are in mm.
- Dimensional drawing shows optional sub-units for homogenizer, automatic homogenizer dampers, deaerator and PHE cooler
- Specific measurements will vary depending on capacity and configuration

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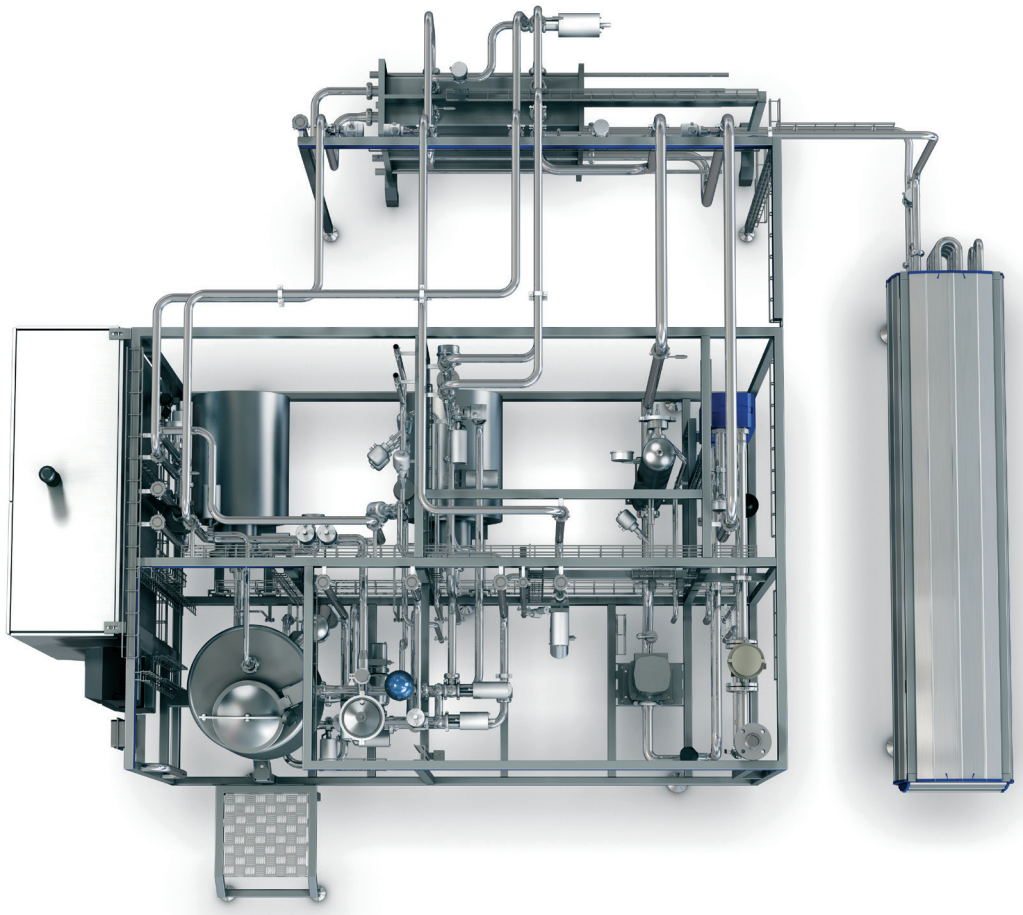
Model specifications

All models feature P2P heat recovery

Model	Floating Pulp/ fibres length	Sinking/ suspended pulp/ fibres	Heat exchanger	Type of filling	Option
M	-	-	Tetra Pak® Plate Heat Exchanger M	Hot, aspetic	
MAD	-	-	Tetra Pak® Plate Heat Exchanger M	Hot, aspetic	Deaerator
W	<15mm, max 3%	<30% w/w	Tetra Pak® Plate Heat Exchanger CW	Hot, aspetic	
WAD-	-	-	Tetra Pak® Plate Heat Exchanger CW	Hot, aspetic	Deaerator



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