



Tetra Pak® Pasteurizer BF



Highlights

- Flexible
- Low total cost of ownership
- Faster time to market
- Ensures food safety
- Line integration ready

Application

Tetra Pak® Pasteurizer BF is a processing unit for highly efficient, continuous temperature treatment of beverage products. The unit is of aseptic or hot-fill design and uses a tubular or plate heat exchanger for indirect heating to obtain a product that can be stored at ambient temperatures. Tetra Pak Pasteurizer BF is suitable for beverage products such as juices, nectars, still drinks or juice drinks, isotonic beverages, tomato juice, smoothies, energy drinks, milk-juice beverages, and sensitive carbonated soft drinks with or without fibres and particles.

Tetra Pak Pasteurizer BF is available as a standalone unit or as part of a complete line solution.

Working principle

The module is fully automated to safeguard aseptic condition 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 tubular 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.

Finally, disinfected water is circulated through the production unit. When an aseptic tank or filling machine is ready, production can start. Production 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 the amount of product loss. The balance tank includes level control and a CIP device, which safeguards the gentle treatment of the product and ensures a high degree of cleanability.

Tetra Pak® Pasteurizer BF

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 tubular 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 cleaning-in-place (CIP). 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 chemicals can be dispensed by a central CIP system or automatically dosed directly into the balance tank by an internal cleaning system. The CIP sequences can be configured for optimized cleaning result. In the event of a product supply failure, the unit goes into disinfected water circulation.

The operator interface is used for process monitoring and 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, etc. Using a serial protocol, or optional I/O connections, the process controller can communicate with objects like aseptic tanks and filling machines.

Maximizing efficiency

Tetra Pak® Pasteurizer BF combines the best possible scope of supply with the possibility to run different products in the same machine. The heating unit optimizes efficiency and environmental load by reducing operational costs related to energy and water consumption. Tetra Pak Pasteurizer BF ensures maximum operating efficiency with a closed pre-disinfection loop that enables a quick start-up and minimal energy consumption during pre-disinfection. If there is a time gap between pre-disinfection and production, up to 85% of energy can be saved during water circulation by using hibernation mode. Product-to-product heat regeneration, which minimizes steam consumption during production, guarantees efficient performance. Tetra Pak Pasteurizer BF is designed to meet the desired running time of up to 72 hours. A bottom-filling balance tank reduces losses at product change, and quick heating and cooling ensure consistent product quality.

The graphical user interface effectively displays information for everything from layout to symbols, making the interaction between operator and computer a seamless synergy. Operators of every experience level can easily control the machine, and more experienced users can utilize the advanced functions to gain even greater efficiency.

Tetra Pak Pasteurizer BF is designed to grow in step with your capabilities throughout the product lifecycle.

A wide selection of powerful features is available when you need them. Every aspect is produced with efficient, world-class manufacturing and always tested before delivery to offer the fastest speed to operation

Processing parameters

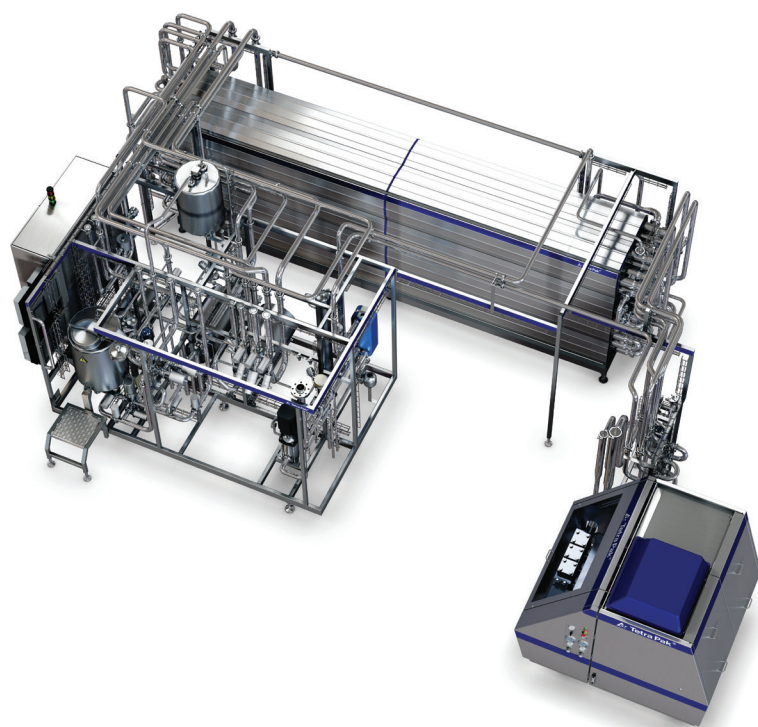
The temperature program is specifically designed for each product, for example:

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

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

Capacities

The Tetra Pak Pasteurizer BF is available with variable capacity and can run capacities from 3 000 l/h up to 55 000 l/h.



Scope of supply

- Product balance tank (BT) with level control
- Frequency-controlled centrifugal product feed pump
- Frequency-controlled centrifugal pump for water
- Centrifugal booster pump
- Product flow controlled by electronic flow meter
- Flow transmitters in the water circuits
- Free-standing Tetra Pak Tubular Heat Exchanger (THE) with floating concept; or Tetra Pak Plate Heat Exchanger (PHE) with cooling, regenerative and heating sections, including protection panels/sheets
- Hot water circuit, incl. 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, 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 the pre-erection of the UHT system
- Factory pre-assembled and tested before delivery
- Engineering
- Technical documentation in 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 flexibility

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

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

Special food treatment

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

Production safety and convenience

- SMO254 material in tubular 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-European Economic Area (EEA) languages
- CE marking for countries outside EEA

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

Technical data

Approx. consumption data for tubular heat exchanger-based module with product-to-product heat regeneration up to 85% with a temperature program of 15°C - 95°C - 25°C, holding time 15s.

- Steam (300/600 kPa)
52-55 kg/1 000 litres product
20-34 kg/1 000 litres product with Eco-Heating option
- Cooling water (300 kPa, 15°C):
20-21 kW/1 000 litres product
6-9 kW/1 000 litres product with Eco-Heating option
- Low consumption during pre-disinfection or hibernation mode

Environment

- Tetra Pak® Pasteurizer BF 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

Model specifications

All models feature P2P heat recovery

Model	Floating Pulp/ fibres length	Sinking/ suspended pulp/ fibres	Heat exchanger	Type of filling	Option
W	<15 mm, max 3%	<30% w/w	Tetra Pak® Plate Heat Exchanger CW	Hot, aseptic	
WAD	-	-	Tetra Pak® Plate Heat Exchanger CW	Hot, aseptic	Deaerator
X	<15mm, max 10%	<30% w/w	Tetra Pak® Tubular Heat Exchanger	Hot, aseptic	
XAD	-	-	Tetra Pak® Tubular Heat Exchanger	Hot, aseptic	Deaerator
SH	<15mm, max 10%	<30% w/w	Tetra Pak® Tubular Heat Exchanger	Hot, aseptic	
SHD	-	-	Tetra Pak® Tubular Heat Exchanger	Hot, aseptic	Deaerator

