



Tetra Therm[®] Aseptic Drink

Tetra Vertenso[™] Beverage production solutions - pasteurization



The cutting edge

The latest generation of Tetra Therm Aseptic Drink beverage processing units comes equipped with advanced automation – the key to intelligent performance.

Application

Tetra Therm Aseptic Drink is designed for highly efficient aseptic beverage pasteurization. The unit can be customized to give great application flexibility and to meet the specific needs of a wide variety of beverages: fruit juices, fruit juice concentrate, still drinks, nectars, tomato juice, sport and isotonic drinks and beverages based on tea and coffee.

Highlights

- 70% less energy consumption at pre-sterilization with closed and pressurized hygienic circuit
- Optimized sequences and quicker pre-sterilization mean more available production time
- More effective vessel management reduces mix-phase at change-over and maximizes yield
- Deaerator cooling system - major water reduction, no risk of contamination
- Double hot water circuits cut energy consumption and environmental impact
- Product return recovery system enables recovery of up to 70% of all product in return line
- Vacuum pump with further cuts in water consumption
- Balance tank - no introduction of air, reduced product loss

Tetra Therm Aseptic Drink for beverage pasteurization

Working principle

Tetra Therm Aseptic Drink is automated to safeguard production under aseptic conditions. Production is strictly controlled by production recipes with processing parameters. This prevents operator errors and ensures consistent product quality.

Recipes can easily be edited and modified by authorized personnel using the operator interface panel. The operator interface is structured to give the operator the necessary process information and to ensure easy operation.

The machine has the following process operations:

- Production set-up
- Pre-sterilization
- Production
- Aseptic Water Circulation
- Aseptic Energy Hibernation (AEH, optional)
- Aseptic Intermediate Cleaning (AIC)

Production set-up

The operator defines the recipe and machine parts to be used. This maximizes the product yield for each production run.

Production

Prior to production, it is necessary to pre-sterilize the unit. If there is a time gap between pre-sterilization and production, the unit can be set to Aseptic Energy Hibernation (AEH) mode, i.e. water stand-by mode. This mode cuts the energy consumption by up to 90% compared to the aseptic water circulation mode.

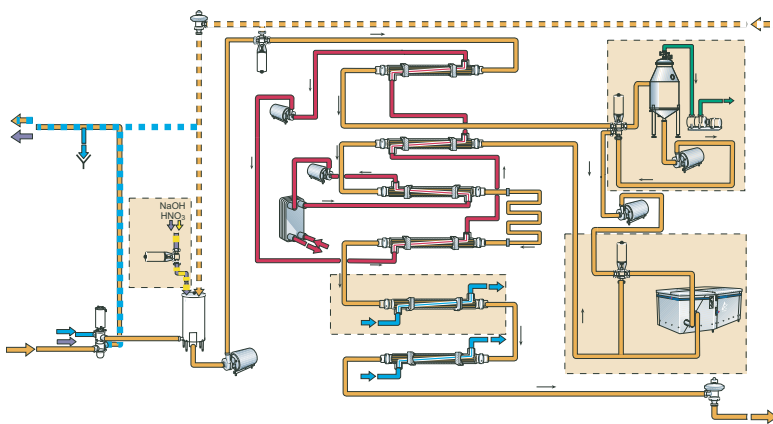
The product is first regeneratively pre-heated in a heat exchanger, then the product is fed either to optional deaeration and/or homogenization. Alternatively the product is fed directly to the final heating section of the heat exchanger. In this section, the product is heated to pasteurization temperature by means of circulating hot water.

The product is kept at pasteurization temperature for the required time in a holding tube. Product is then cooled to a controlled filling temperature. This occurs in the pre-cooler, where the energy is regenerated, either into the internal hot water circuit (product-to-water heat recovery) or into the incoming product (product-to-product heat recovery) and subsequently further cooled in a final cooler by cold water (not applicable for hot filling).

Model specifications

Model	Floating pulp lengths	Sinking/suspended pulp	Heat exchanger	Type of filling	Options	Heat recovery
SA	<15 mm, max 10%	<30% w/w	Tetra Spiraflo	Aseptic		Product-to-water
SAD			Tetra Spiraflo	Aseptic	Deaerator	Product-to-water
WA	<5 mm, max 3%	<30% w/w	Tetra Plex CW	Aseptic		Product-to-product
WAD			Tetra Plex CW	Aseptic	Deaerator	Product-to-product
CA	<1 mm, max 2%	<10% w/w	Tetra Plex C	Aseptic		Product-to-product
CAD			Tetra Plex C	Aseptic	Deaerator	Product-to-product
XA			Tetra Spiraflo	Aseptic		Product-to-product
XAD			Tetra Spiraflo	Aseptic	Deaerator	Product-to-product
SH			Tetra Spiraflo	Hot		
SHD			Tetra Spiraflo	Hot	Deaerator	

Flow chart



Tetra Therm Aseptic Drink with tubular heat exchanger with two water circuits.

Basic version

Scope of delivery

- Balance tank for incoming product with level control with new design
- Product feed pump, frequency controlled
- Flowmeter, electromagnetic
- Heat exchanger (see table)
- Double hot water circuit (THE)
- Cooling control valve for controlled filling temperature
- Holding tube
- Data collection tool
- Control panel in stainless steel comprising:
 - Process controller (PLC), type Allen-Bradley CompactLogix
 - Operator interface (HMI), type TPOP-E
 - Paperless colour screen recorder
- Motor starters
- Set of valves, pipes and fittings comprising:
 - Sanitary remote controlled process valves
 - Process pipes
 - Steam and cooling water valves
- Skid mounting, comprising:
 - Frame in stainless steel
 - Motor and control cables, except for optional homogenizer
- Factory tested with water
- Commissioning kit
- Technical documentation
- Performance guarantee

Optional equipment

Performance package including

- Aseptic energy Hibernation (AEH)
- Quick presterilization at high temperature
- CIP flex
- Intellimaintenance

Performance add-ons

- Product Brix supervision
- External balance tank
- Low re-circulation
- Additional cooling section
- Sorting of water and product at balance tank
- Control of mix phases

Capacity package

- Step-variable capacities
- Adjustable holding tube
- Automatic hot water flow rate control (only for SA and SAD models)

Capacity add-on

Pasteurization Unit (PU) control

Food safety

- Differential pressure measurement
- Coarse strainer

Operational efficiency and costs

- Additional cooling section
- Pre-sterilization cooler

Special product treatment

- Deaeration unit type Tetra Alrox Drink
- Ultra-care by product pump in rotary lobe design
- Homogenization
- Gas injection unit
- Agitator in balance tank
- Deaerator-condensor: closed water loop
- Deaerator-vacuum pump: closed water loop
- Enhanced product return recovery
- Monitoring of utility consumption
- ECO-mode feature
- Performance deviation alarm

Cleaning-In-Place

- Central cleaning
- CIP backflush
- Inlet and reject line cleaned during CIP of the unit
- Conductivity switch

Automation and control

- Control system Siemens PLC, S7-300
- Chart recorder with five pens, replacing the paperless colour screen recorder
- Circular chart recorder with five pens, replacing the paperless colour screen recorder
- Air cooler with compressor
- UPS, uninterrupted power supply for control panel
- Prepared for Ethernet communication to plant automation system such as Tetra PlantMaster
- HMI type TPOP based on Siemens MP377 hardware

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Production parameters

	Fruit juices, fruit drinks and high-acid ice tea	Fruit juices, fruit drinks and high-acid ice tea	Fruit juices, fruit drinks and high-acid ice tea	Nectar	Tomato juice	Isotonic sport drink	Tea (low acid)
	Aseptic filling	Cold filling	Hot filling				
Inlet temp. °C	15	15	15	15	15	15	30
Pasteurization temp. °C	95	95	95	95	123	95	138
Pasteurizer outlet temp. °C	25	4	85	25	25	25	130
Deaeration temp. °C	57	optional	optional	optional	optional	optional	optional
Holding time s	15	15	15	15	15	15	4
Pre-sterilization temp. °C	95	95	95	95	123	95	138

Heat recovery

The heat exchangers are very efficient and allow very high heat recovery, up to more than 90%.

Media consumption

SA model

Production, consumption per 1000 l produced product (typical values)

Steam, 6 bar, kg	29-34	30-32	141	43-48	54-58	26-34	39-46
Cooling effect, kW	6-9	30-31	0	14-18	20-22	4-9	23-28

CA, WA and XA models

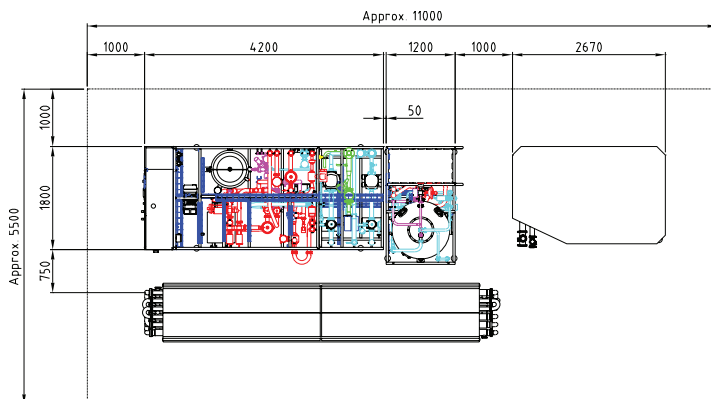
Production, consumption per 1000 l produced product (typical values)

Steam, 6 bar, kg	25-34	18-20	-	38-55	53-68	18-24	-
Cooling effect, kW	1-4	22-24	-	9-16	16-23	15-17	-


Capacities

Capacity, l/h 1 000-50 000 Others on request

Dimensions



Approx. measurements including required service area in mm.

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