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Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
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Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06

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Киргизия (996)312-96-26-47

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<https://alaval.nt-rt.ru> || avb@nt-rt.ru

Alfa Laval SteriTank

Aseptic tanks for the food and beverage industries

Introduction

SteriTank aseptic tanks are designed to store liquids and viscous products, including dairy products, prior to aseptic filling.

Application

SteriTank aseptic tanks are suitable for a wide range of food and beverage products.

Benefits

- Designed to meet the most stringent hygienic requirements and fully compatible with cleaning-in-place (CIP) procedures.
- Available with different diameters and heights.
- Mixing equipment suitable for the specific product.
- Horizontal design for products that contain particulates.

Design

SteriTank aseptic tanks consist of stainless steel vessels with product inlet at the top or the bottom, depending on the products involved. The tanks have semi-spherical upper parts and a semi-spherical or conical bottom, and are designed and tested to perform at a maximum pressure of 4 bar (58 PSI) and under absolute vacuum. This means they can work safely even under difficult processing conditions.

Volume capacities range from 50 litres up to 20000 litres (13 - 5283 gallons).

All surfaces in contact with product are mirror polished while external surfaces are satin-finished. The tanks are self-supporting and mounted on a robust skid or on feet. Tanks up to 3000 litres (793 gallons) in capacity are delivered as a complete integrated tank unit with all components and electrical panel mounted on a skid.

Standard components

- Piping and assemblies for product and services connections
- DIN connections
- Steam control loop
- Level control system by electronic differential pressure
- Product discharge valve
- CIP pneumatic valve inlet and return
- CIP spray ball and CIP input valve
- Safety valve



- Aseptic valves for product inlet/return
- Air on-off valve inlet or modulating (optional)
- Parts in contact with product made of AISI 316 stainless steel
- Sterile filter for over-pressurized gas probe level
- De-oiling filter and absolute sterile filters (two in series for low-acid applications)
- Manhole on the top for inspection
- Pressure switch
- Inspection glass.

Working principle

Prior to production start the aseptic tank is sterilized with steam and then cooled. Tanks with capacities of under 3000 litres (793 gallons) are cooled by injecting sterile air or nitrogen, which is also suitable for preventing air suction, due to the vacuum effect.

Tanks with capacities of over 3000 litres (793 gallons) are refrigerated by circulating chilled water through the tank's coil. During the cooling operation, the tank is kept under a slight pressure. The air is kept sterile by a set of filters, and the pressure is monitored and controlled automatically.

A set of sterile pneumatic valves for product inlet and product outlet are included in the SteriTank system. These valves are protected by a steam barrier at a controlled temperature/pressure to prevent cross-contamination.

The units are managed by a PLC with a live digital feed that displays the different operating steps (CIP, SIP, Production) in different colours. It also shows the position of the valves and the critical factors such as temperatures and shows the volume of product inside the tank. As an optional feature, the processing data can be captured and stored via software and the mimic panel can be supplied with a colour digital feed.

Options

- Steam valve for in situ sterilization of the tank and product piping outlet.
- Mixer with a slow anchor stirrer for viscous products or a magnetic helix stirrer for liquid products containing pulps to avoid sedimentation and floating.
- ROCKWOOL insulation for safety protection and AISI 304 foil cover
- AISI 304 coil for water circulation is included for tanks with capacities of over 3000 litres (793 gallons)
- Load cells
- Aseptic valves outlet for more than one filler in connections
- Aseptic discharge lobe pump with steam barriers and inverter for remote flow control.

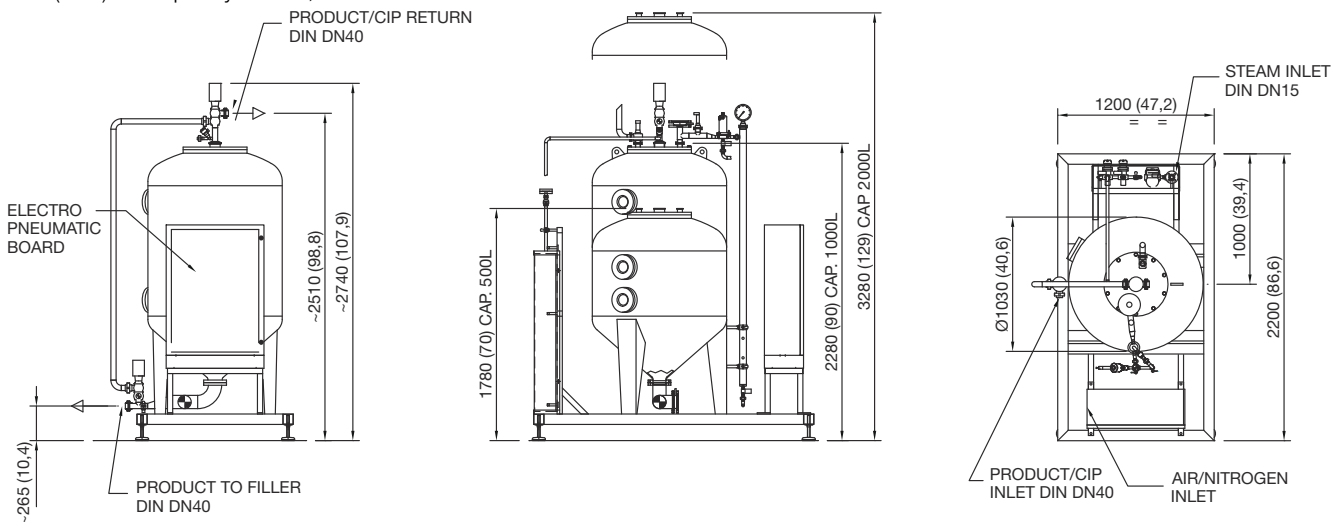
Technical data

The standard range of vertical SteriTank units includes the following capacities: 50 (pilot plant only), 200, 500, 1000, 2000 and 3000 liters (13, 53, 132, 264, 528 and 793 gallons). The SteriTank range can also be delivered as mixed horizontal tanks, with capacities of: 500 or 1000 liters (132 or 264 gallons).

- Tank made of AISI 316 or AISI 304 stainless steel
- Pressure check up to 4 bar (58 PSI) under PED regulations
- Stainless steel feet and stainless steel AISI 304 stainless steel frame to support all equipment in SteriTanks with capacities of up to 3000 litres (793 gallons)
- Pressure vessels comply with PED (ASME optional)
- Flange for cooling water inlet/outlet and modulating valve
- Flanges for product inlet and outlet
- Flange for sterile air inlet
- IP 55 electric panel made of AISI 304 stainless steel, including PLC and instruments for managing and controlling all operational steps (production, stand-by, CIP and SIP). The signals with sterilization and CIP plants are also included. The solenoid valves for the pneumatic valves and the power controls for the motors are also cabled in.

Dimensional drawing

mm (inch) for capacity of 500, 1000 and 2000 l



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