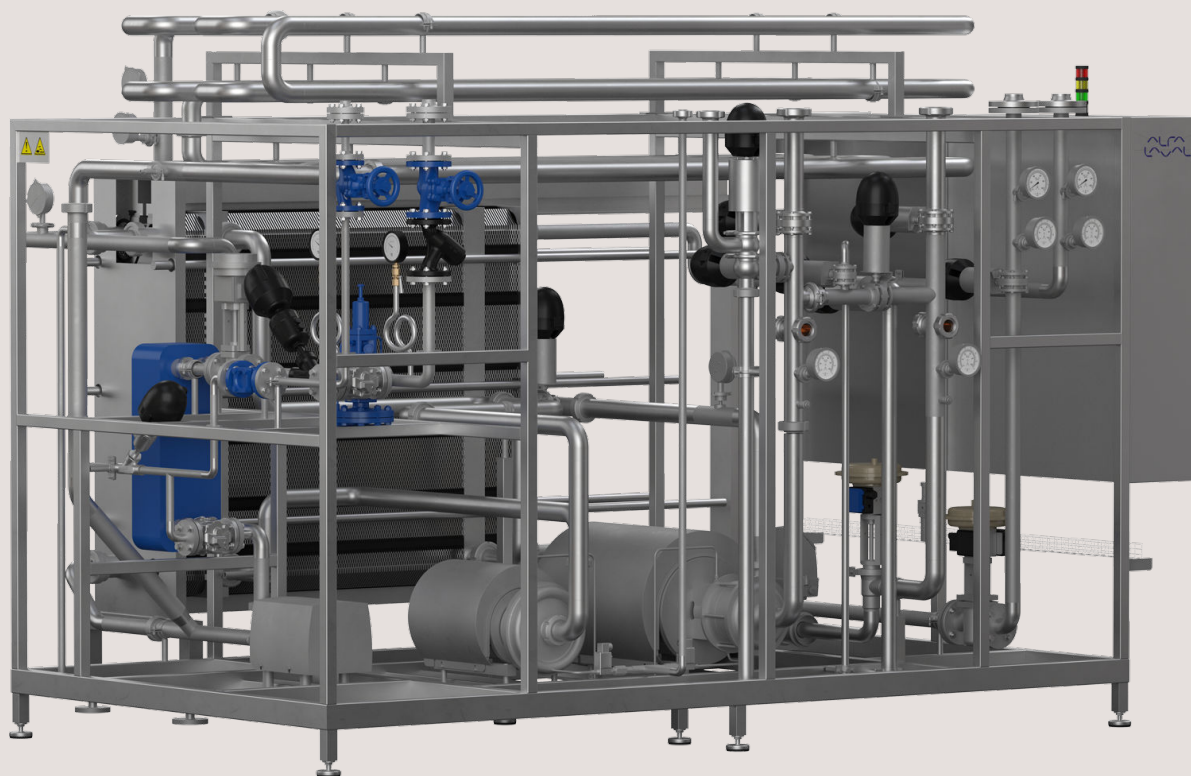




Alfa Laval FLEXITHERM™

Pasteurization



Introduction

FLEXITHERM™ is a process module designed for pasteurization of beer and other carbonated beverages.

Application

Beer production.

Benefits

- Reliable pasteurization units (PU) control system for stable product treatment (PU variations within +/- 10% of target level during constant operation)
- Minimum site work as the module is self-contained and pre-assembled with automatic control
- Designed for CIP, the sanitary and compact module requires low maintenance, minimizing downtime
- Effective energy recovery up to 95%
- Green mode – adaptive pressure set point. Saves energy.

Design

FLEXITHERM is a self-contained process module, pre-assembled and factory tested before delivery. It is designed for CIP and in compliance with food industry regulations, all components in contact with the process liquids are made of stainless steel with heat resistant seals. The system design provides sufficient pressure levels as to avoid gas breakout at all times during the pasteurization process.

Working principles

FLEXITHERM is a plate heat exchanger (PHE) pasteurizer system used for eliminating or reducing the number of live micro-organisms in the product with the aim of improving microbiological stability and to increase shelf life of the product.

The required heat treatment is achieved through a combination of temperature and holding time. This level of pasteurization is quantified as Pasteurization Units (PU) and calculated as follows:

$$PU = t/60 * 1.393^{(T-60)}$$

t is the holding time in seconds and T is the pasteurization temperature in °C.

In the PHE, the cold, unpasteurized beer is heated to the pasteurization temperature in two steps. The first regenerative zone can account for as much as 94% of heating (and cooling) demand. Final heating is performed by the use of hot water which in turn is heated by steam through a separate brazed heat exchanger (BHE). The difference in temperature (delta T) between the hot water and product is less than 4 °C.

Depending on selected configuration, the flow through the FLEXITHERM can continuously be adjusted in order to cater for variation in filling machine demand. As changes in flow will result in changes in the holding time, the pasteurization temperature must be adjusted to maintain a constant PU effect.

Recirculation of the product can largely be avoided by utilizing a Pasteurized Beer Tank (PBT). If the filling capacity decreases, the level in the tank will increase and the FLEXITHERM flow rate will be reduced accordingly. In case of increasing the filling capacity, the level in tank will decrease and FLEXITHERM will increase the flow rate accordingly.

As the holding time is a function of the flow rate, which in turn is proportional to the PU level, it is necessary to adjust the pasteurization temperature, in order to maintain a constant PU effect.

The FLEXITHERM module is fully automated with a PLC system controlling the plant operation. Selection of functions is done through easy and logical operator interaction via a colour touch panel / display.

Relevant process data displayed:

- Plant status
- Actual and set-point temperatures
- Alarm status
- Controller settings.

The PLC system monitors and logs one year of operations and process values.

Options

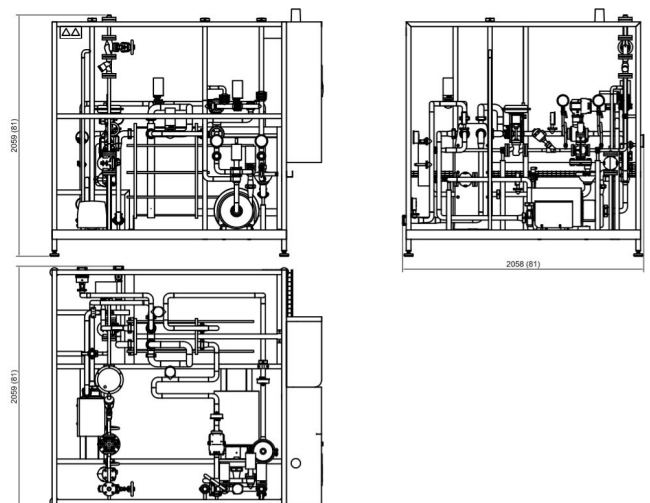
- Specific heat recovery demands
- Steam pressure reducer
- Cooling media circulation
- Automatic media shut-off valves
- Condensate recovery
- Incorporation of pasteurized beer and buffer tank system with pressure control and flow routing
- Conductivity measurement
- Sterile gas filtering
- Air flushing arrangement
- Extended data communication and network separation over Profibus DP
- Network separation over Ethernet
- Digital valve control & indication
- Process data recording.

Technical data

Standard capacity ranges, hl/h	40, 70, 100, 130, 160, 200, 250, 300, 350, 400, 500
PU range	10-150 PU
Heat recovery	90-94%
Max working pressure	1.6 MPa (16 bar)
Utility data	Depending on capacity range

Dimensional drawing

Approximate dimensions and weight depending on capacity range, e.g. 120hl/h L = 5.0m W = 3.0m H = 2.0m 500hl/h L = 8.0m W = 3.0m H = 2.0m.



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