Alfa Laval FLEXITHERM™ MINI

Pasteurization

Introduction

FLEXITHERM™ MINI process module is designed for craft brewers for pasteurization of beer and other carbonated beverages.

Application

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

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% (on request).

Design

The Flexitherm Mini self-contained process module is preassembled and factory tested before delivery. With its hygienic design in compliance with food industry regulations, it guarantees an optimal CIP process and clean state before production. All components in contact with the product 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

The required heat treatment in the Flexitherm Mini module 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 degrees Celsius.

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 95% of heating (and cooling) demand. Final heating is performed by the use of hot water heated by steam through a separate brazed heat exchanger.

Depending on selected configuration the flow through the Flexitherm Mini module can be adjusted continuously 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 an outlet buffer tank. If the filling capacity decreases, the level in the tank will increase and the Flexitherm Mini flow rate will be reduced accordingly. In case of increasing the filling capacity, the level in tank will decrease and the Flexitherm Mini module will increase the flow rate accordingly.

As the holding time is a function of the flowrate, 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 Mini 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 color 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 reducing station (steam pressure > 4 bar(g)
- Cooling media circulation (cooling media temperature < -4 °C)
- Buffer tank system with pressure control and flow routing (directly to filling system)
- Digital valve control and indication.

Technical data

Maximum flow rate	up to 30 hl/h
Minimum flow rate	one third of the maximum required flow rate with a minimum of 5 hl/h
PU range	10-100 PU
Heat recovery	90-95%
Maximum working pressure	1.6 MPa (16 bar)

Dimensional drawing

Approximate dimensions and weight including routing and buffer tank option.

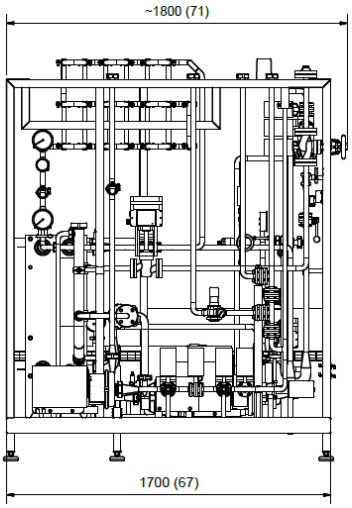
Length 2.5 m / 96 in

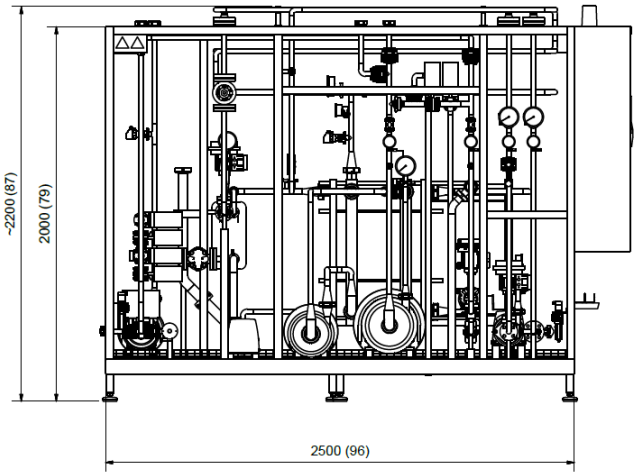
Width 1.8 m / 71 in

Height 2.2 m / 87 in

Weight 1500 kg / 3,306 lbs.

Request a proposal for FLEXITHERM™ MINI





How to contact Alfa Laval

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