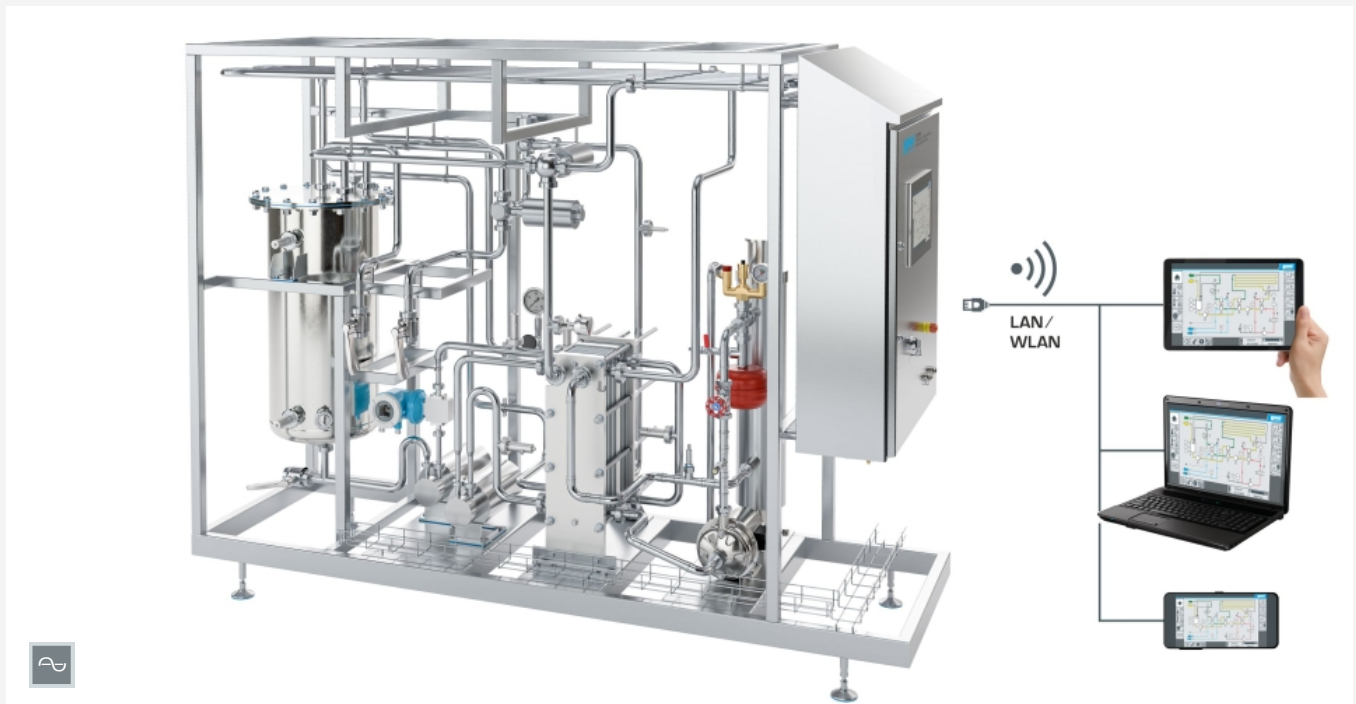


CE 750

Pasteurisation process



screen mirroring is possible on up to 10 end devices

Description

- **Industrial Application Project of the TVET programme**
- **plate heat exchanger with 3 compartments**
- **EHEDG components**
- **extensive operating functions and maintenance work**
- **controlled via integrated PLC with touch screen**

Pasteurisation is a process used to preserve foods such as milk, beer and fruit juices in which the product is heated to a defined temperature and held at this temperature for a defined period of time. The ET 750 experimental plant has been specially developed for education in food technology and practical work. In addition to operating and monitoring the plant, it can be used to carry out various maintenance tasks such as calibration, replacement and cleaning of plant components.

The experimental plant consists of a storage tank, two hygienic pumps, a plate heat exchanger with three compartments, a heat retention section and a heating water circuit.

The cold product is pumped from the storage tank to the first section of the heat exchanger (recuperation) for preheating. After the pressure is increased again, the product is heated to the desired pasteurisation temperature in the second section and passes through the registered

temperature measurement. If the temperature falls below this value, the quick-closing bypass is activated and the plant is operated as a circuit, which prevents contamination of downstream plant components. Once the pasteurisation temperature has been reached, the product is kept hot and thus pasteurised in the heat retaining section, the pasteurised product preheats the cold product. This is followed by cooling to storage temperature in the cooling section of the plate heat exchanger. The process is cooled either via a cooling unit (not included in the scope of delivery) or via the ET 195 trainer.

All main components comply with industrial standards and allow maintenance tasks to be carried out and documented in a practical manner. This includes replacing seals and calibrating the measuring instruments.

The plant is controlled via an integrated PLC with touch screen. The experimental plant can alternatively be operated and controlled via a terminal device by means of an integrated router. The user interface can also be displayed on other terminals (screen mirroring). The measured values can be stored internally via the PLC. Students learn how to operate the PLC, including setting and monitoring process variables.

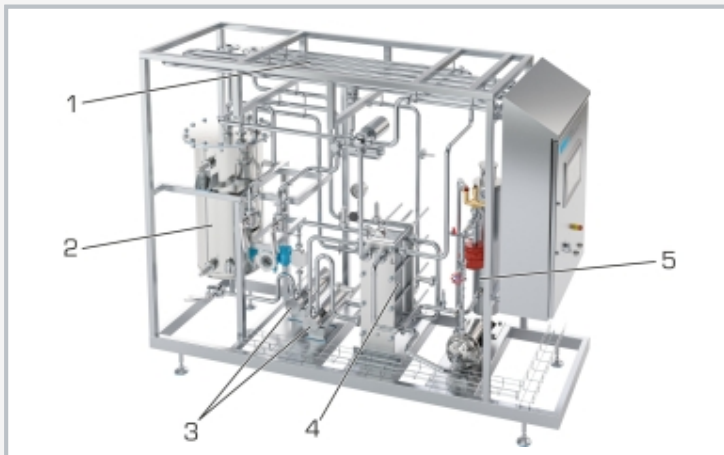
Learning objectives/experiments

Learning in an industrial-like environment for training in food technology

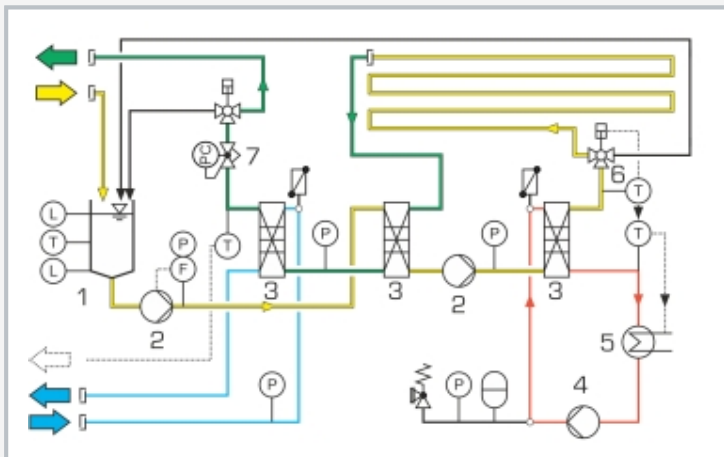
- operation and maintenance tasks on an industrial pasteuriser
- learn how the process works so that it runs smoothly at all times
- learn how the plant is set up and how it works
- operate a flash pasteuriser
 - ▶ sterilisation
 - ▶ plant start-up
 - ▶ operate the plant
- typical maintenance work
 - ▶ on the plate heat exchanger, e.g. replacing seals
 - ▶ on the measuring instruments, e.g. calibration
 - ▶ on the pumps, e.g. replacing mechanical seals
- GUNT Media Center, develop digital skills
 - ▶ retrieve information from digital networks
 - ▶ utilise digital learning media, e.g. web-based training (WBT)

CE 750

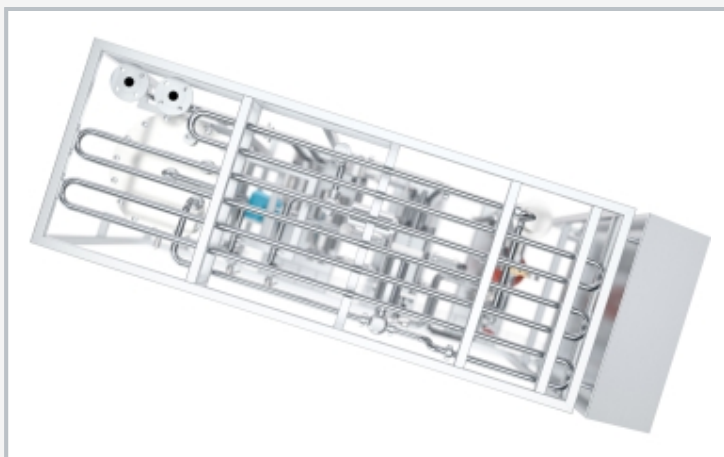
Pasteurisation process



1 heat retention section, 2 storage tank, 3 hygiene pumps, 4 plate heat exchanger with 3 compartments, 5 heating water circuit



1 storage tank, 2 hygiene pumps, 3 plate heat exchanger with 3 compartments, 4 heating water pump, 5 electrical heater, 6 temperature measurement with quick-acting bypass, 7 pressure keeping valve; yellow: pre-product, green: product, blue: cooling medium, red: heating medium



Heat retention section

Specification

- [1] continuous operation and maintenance of an industrial pasteuriser for education and practice (TVET)
- [2] flash pasteuriser with EHEDG components
- [3] plate heat exchanger with 3 compartments: cooling, recuperation, heating
- [4] internal heating water circuit, electrically heated
- [5] pressurising valve for higher product-side pressure level, to prevent product contamination in the event of malfunction
- [6] flow control with speed-controlled pumps
- [7] monitoring of pressure differences
- [8] registered pasteurisation temperature with quick-closing bypass
- [9] circuit operation for sterilisation and in case of malfunction
- [10] process cooling via cooling unit (not included in the scope of delivery) or via ET 195
- [11] controlled with a PLC via touch screen
- [12] data acquisition via PLC on internal USB memory, access to stored measured values via WLAN/LAN with integrated router/LAN connection to customer's own network or direct LAN connection without customer network
- [13] screen mirroring: possible to mirror the user interface on up to 10 end devices
- [14] multimedia instructional materials online in GUNT Media Center

Technical data

PLC: Weintek cMT-FHDX-820

Storage tank: 100L

Plate heat exchanger, 3 compartments

- number of plates (cooling): 8
- number of plates (recuperation): 37
- number of plates (heating): 18

2 hygiene pumps

- max. flow rate: 1000L/h
 - max. pump pressure: 10bar
- Heating water pump:
- max. flow rate: 6000L/h
 - max. pump pressure: 3,5bar

Measuring ranges

- temperature: 4x 0...110°C
- pressure: 5x 0...10bar
- manometer: 2x 0...10bar
- power: 0...13kW (heater)
- flow rate: 50...1000L/h

400V, 50Hz, 3 phases; 400V, 60Hz, 3 phases

230V, 60Hz, 3 phases; UL/CSA optional

LxWxH: 2540x810x1975mm, Weight: approx. 500kg

Required for operation

Cooling unit, with 12kW cooling capacity at a temperature difference of 2°C, recommended ET 195; compressed air

Scope of delivery

trainer, online access to the GUNT Media Center, set of instructional material

CE 750

Pasteurisation process

Optional accessories

ET 195

Process cooling