

To:

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Offer no: 2017-152

SCOPE OF SUPPLY

We kindly thank you for your interest in our products and your well appreciated enquiry. As our feedback we send you our quotation for supply and assembly of:

Bottle cooling tunnel **BTT-3x1,4**. System is designed to handle 1500 bottles per hour (650ml), and 2000 bottles per hour (200ml),

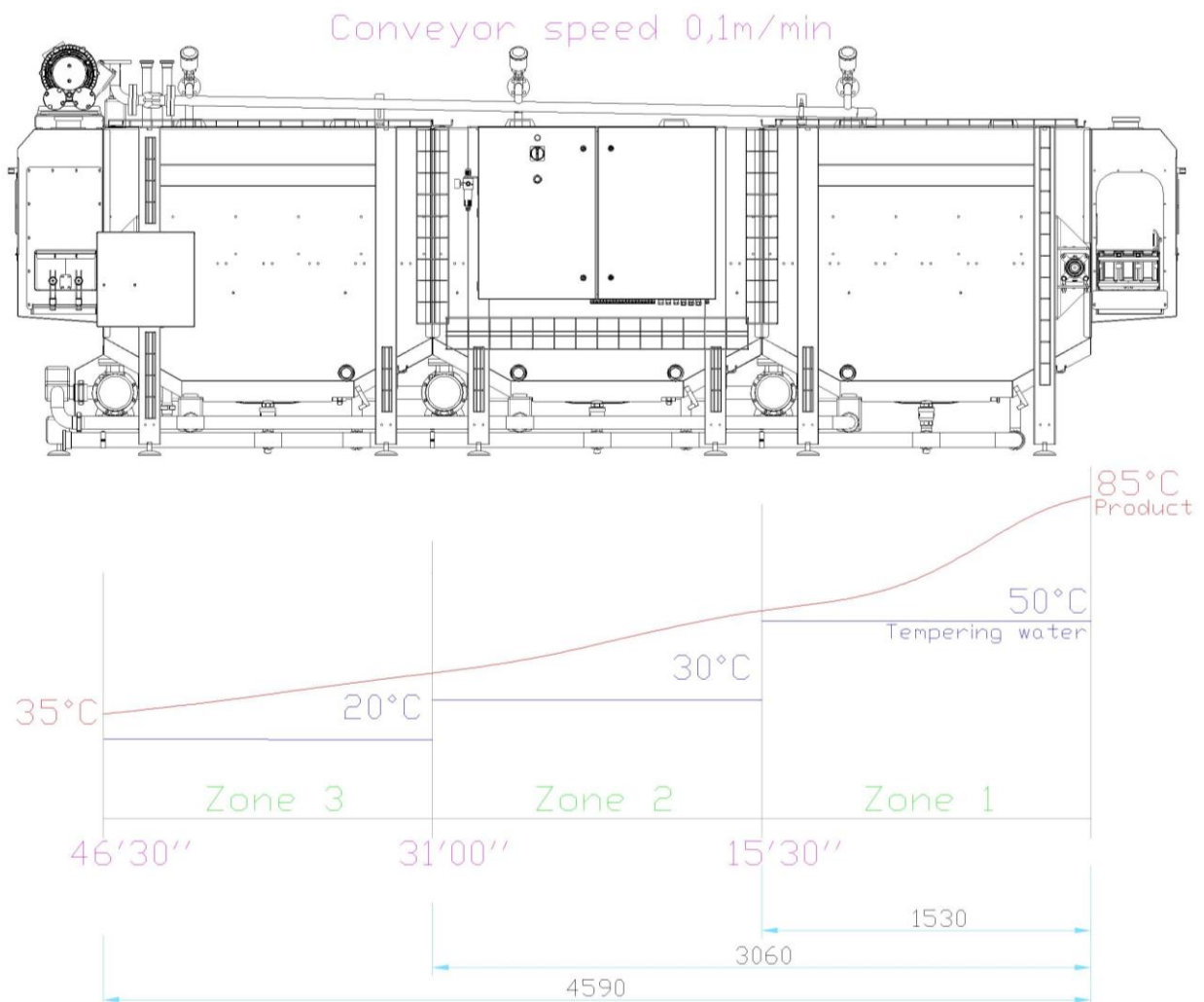


Photo is symbolic

DESIGN PARAMETERS:

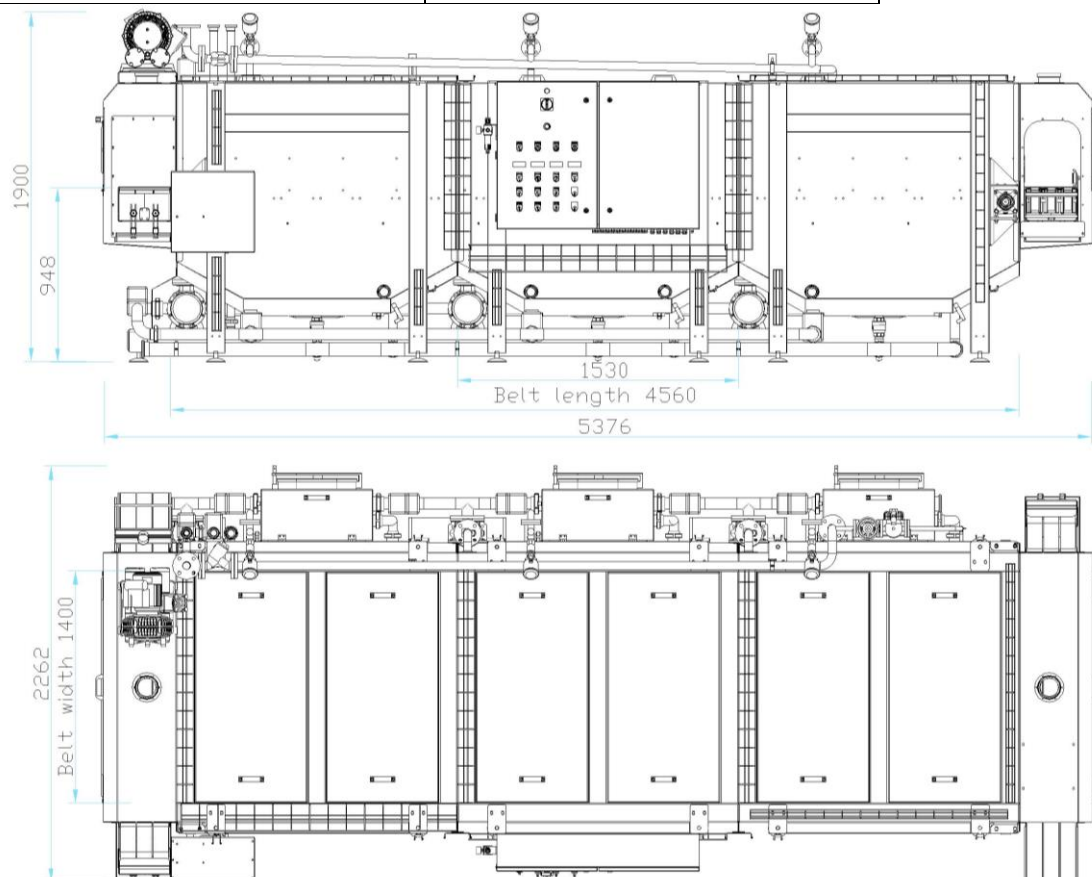
Product:	Smoothie
Product inlet temperature:	85°C
Product outlet temperature:	Approximately 35°C
Project goal:	To cool smoothie in glass bottles.
Capacity:	1500 bph(650ml), 2000bph (200ml)
Container:	Glass bottle diameter 57mm(650ml), 52mm(200ml).

TEMPERATURE REGIME:



TECHNICAL DATA:

Length:	5.380 mm
Width:	2.270 mm
Height:	1.900 mm
Weight:	3.200 kg
Belt width:	1.400 mm
Belt length:	4.560 mm
Treatment surface:	6,3 m ²
Number of modules:	3
Number of tempering zones:	3
Steam consumption at 3bar:	Starting: 300 kg/h (20min heating) <i>Given data is approximated</i> In operation: 0 kg/h
Water consumption in operation:	0,5 m ³ /h
Electric power supply:	20 kW
Supply voltage:	3/N/PE ~ 400/230 50 Hz
Compressed air	250 l/h, 6-8 bar



TECHNICAL DESCRIPTION:

Tunnel construction

Machine is fully constructed from stainless steel AISI 304, welded sheet plates. Tunnels is modular constructed, whole system is composed of assembled modules. Number of modules depends on required temperature regime and capacity. Construction is isolated in zones where product pasteurization is accrued, to minimize the energy loss.

Modular construction has following advantages:

- Simple handling when the modules are loaded, unloaded and carried in the production.
- Each module has 4 legs which enables simple and quick assembly and separation of whole structure, Low transport cost (special transport is not needed)
- In case of any refit works in production hall - separation and dislocation of modules is possible.



Photo: Tempering tunnel is composed more modules



Photo: Individual modules are screwed together and they can be disassembled.

Water basins

Tunnel is equipped with as many basins as there are treatment zones. Each zone have a centrifugal pumps, which are used for pumping the water from basins to the spraying nozzles. Pumps are protected from dry running with level sensors. Basins are designed, to hold minimum required water volume. With this feature, we save water consumption, and needed heating energy is lower. Each basin is equipped with:

- manhole for cleaning,
- fresh water inlet,
- temperature probe,
- discharging valve, which is connected to a central discharging outlet,
- filter sieve to prevent all debris, such as glass, entering in to the pump, which will result a pump breakdown.

Second, fine filtration, is done on the piping between pump and spraying nozzles, to prevent nozzle clogging.



Photo: Filter sieve protect pump from mechanical debris.

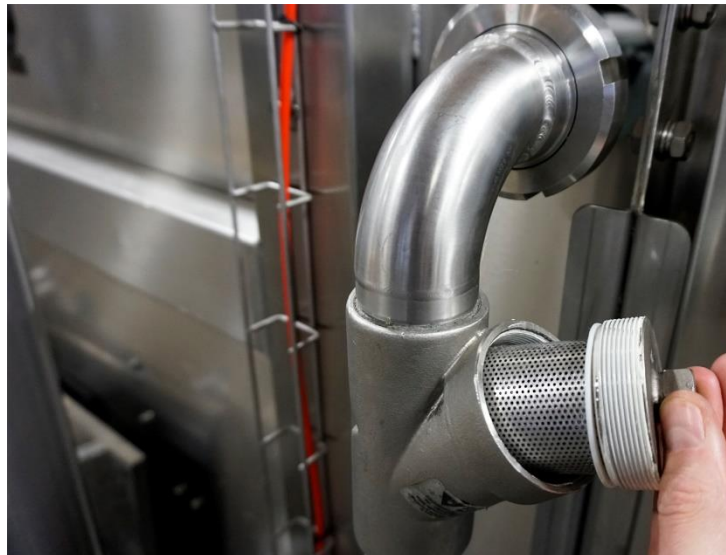


Photo: Second fine filtration before spray nozzles.

Water spraying

Process water spraying, inside cooler, is performed with series of spraying nozzles, which are mounted on top of the tunnel. Nozzles positions are precisely defined, to maximize the spraying effect and minimize water mixing between zones. Tunnel is covered with removable covers for inspection and maintenance reasons.



Photo: Spraying nozzles positions are precisely defined, and they are easy accessible.

Nozzles are spraying the water in a full cone shape, and are made from plastic material. They are tangential mounted on distribution pipe, and are quickly detachable, with “twist and pull” system, no tools needed. Result is easy cleaning and maintenance.



Photo: Easy detachable nozzle thanks to “twist and pull” system

Process water tempering

Tunnel includes an integrated systems for process water tempering. Water can be heated or cooler, regarding the desired process.

- **Heating** Process water heating is used, when we desire to heat the product. Standard heating system is performed with stem injection in to basins. Tunnel consist of a steam distribution and injection system. All the steam piping are insulated to prevent from burns, and minimize the energy loss.
- **Cooling** Process water cooling is used, when we desire to cool the product. Water cooling is preformed with help of integrated heat exchanger.



Photo: Heat exchanger and stem injection is used for process water tempering.

Control

Tunnel is controlled by PLC commander and touchscreen panel, with our own developed software. Software is designed to automatically control and overview of complete production process.

Software is consisting of next menus:

- **Tempering mode**, used for preparing the tunnel before operation, filling the basins with process water, and tempering it to desire temperature. Parameters can be saved in recipes.
- **Operation mode**, used in running operation. While operating, parameters can be changed such as product traveling time, process water temperatures. Parameters can be saved as in recipes.
- **Temperature history**, all temperature data logs are saved, and they can be exported to USB stick.
- **Manual mode**, used for testing individual process components functions.
- **Service menu**, access to system parameters, and PLC inputs and outputs, check tables. Menu is locked with password.

Process parameters are visualized and displayed on large user friendly interface. Software logs and visualizes all process alarms. Remote Access is a standard future to the PLC. Programmer can remotely access to the PLC, in case of software troubleshooting or software update.



Photo: Process parameters are visualized and displayed on large user friendly interface.