

Pama

Product pasteurization, heating and cooling systems



Pama

High performances with no waste

PAMA PASTEURIZERS ARE A CUT ABOVE COMPETITORS' PRODUCTS THANKS TO THE INNOVATIVE AND EXCLUSIVE PHILOSOPHY FOR CONTROLLING THE ACCUMULATION OF PASTEURIZATION UNITS (PUs) CALLED PRINCE. THIS ALLOWS THE USER TO ACCUMULATE AT LEAST THE MINIMUM NUMBER OF PUs REQUIRED, CONTROL THE TEMPERATURE AT WHICH THE PUs ARE ACCUMULATED (BACTERICIDAL EFFECT) AS WELL AS THE MAXIMUM NUMBER OF PUS ACCUMULATED, AT THE SAME TIME MINIMIZING THE CONSUMPTION OF ENERGY AND COOLING WATER.

With more than 600 pasteurizers installed all over the world, Gebo manufactures and sells a vast range of pasteurizers: one of the most complete on the market today.

Simple operation, easy maintenance and top-quality treatment make Gebo Pama pasteurizers, including the innovative new Swing®, the ideal machine for pasteurizing, heating or cooling cycles in glass or plastic bottles and cans of all formats and sizes, with capacities of up to 150,000 containers /hour.



Process control

The industrial PC installed on the control panel controls and adjusts all processing parameters. The dynamic diagram allows users to monitor all stages in thermal treatment and provides a real time view of the pasteurization data for the outgoing product.

The mimic diagram shows the status of all of the pasteurizer's operating parts (pumps, valves, etc.) and allows water and steam consumption readings.

All pasteurizer operating data is automatically and constantly recorded in files for future reference.

The PC monitor can display the report of the main process parameters, which can also be printed out.

The diagram shows water consumption every hour.

MODEM LINK

Gebo offers a modem link system to provide customers with ever more efficient service.

The modem connection enables remote monitoring and troubleshooting on the machine, and working parameters may also be modified if required using control software.



Swing®

An innovative pasteurization system (Gebo patented)

SWING® IS A NEW PASTEURIZATION SYSTEM THAT CUTS ENERGY CONSUMPTION BY 25%. THE PATENTED PROJECT FROM THE COMPANY'S RESEARCH AND DEVELOPMENT LABORATORIES IN VERONA RESPONDS TO THE MARKET'S GROWING DEMAND FOR MORE SUSTAINABLE SOLUTIONS WHICH MINIMIZE CONSUMPTION IN THE PASTEURIZATION PROCESS WHILE OPTIMIZING FINAL PRODUCT QUALITY.

SUSTAINABILITY

25% less energy consumption thanks to:

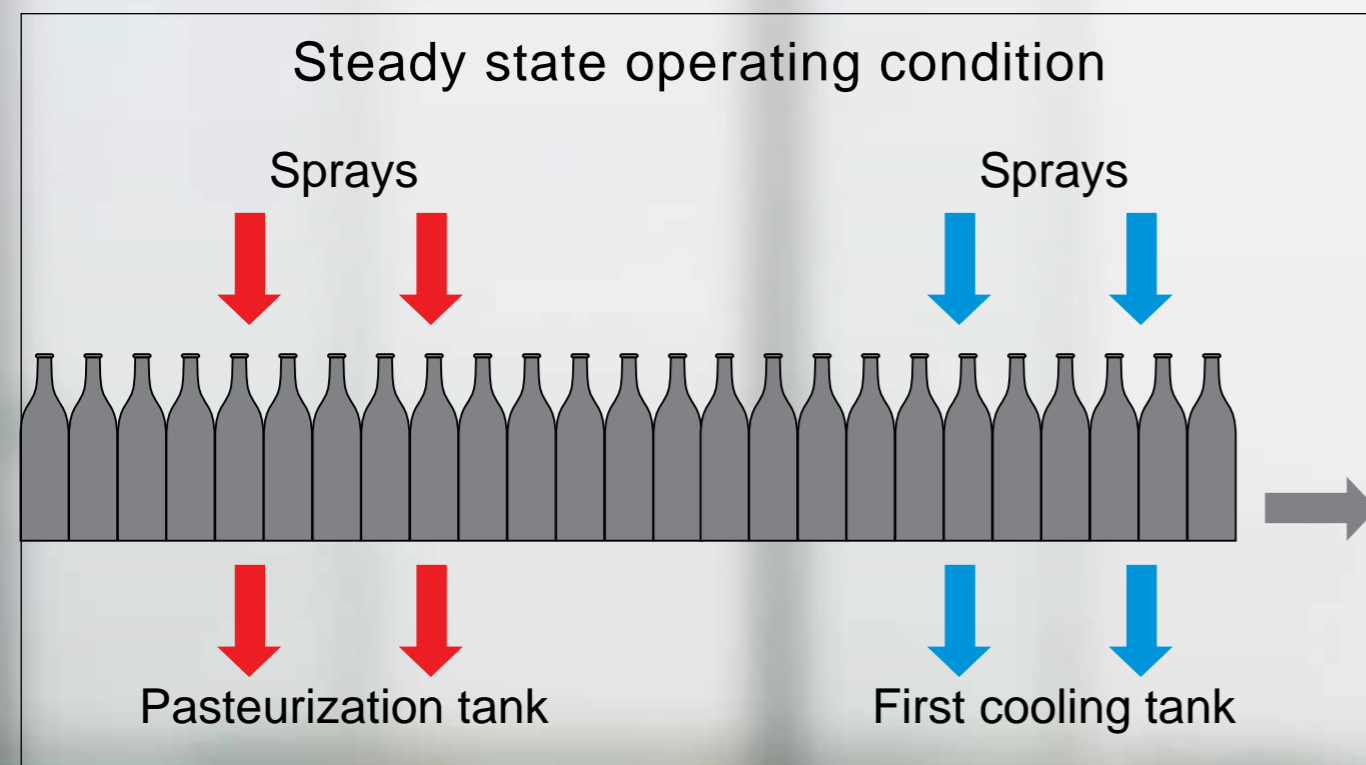
- A water spray deviation system in central areas to ensure that the thermal energy required by the entire pasteurization process is only the amount required to heat or cool the product (and not the water contained in the process tanks)
- A single ring circuit; water flows inside the circuit at a constant temperature thanks to a single heat exchanger (for all pasteurization areas), and is then distributed to different zones as required. This offers two benefits: no energy is wasted heating an additional auxiliary buffer tank which would be left to cool at the end of production; and it offers greater responsiveness, treating only the amounts required in different zones.

EFFICIENCY

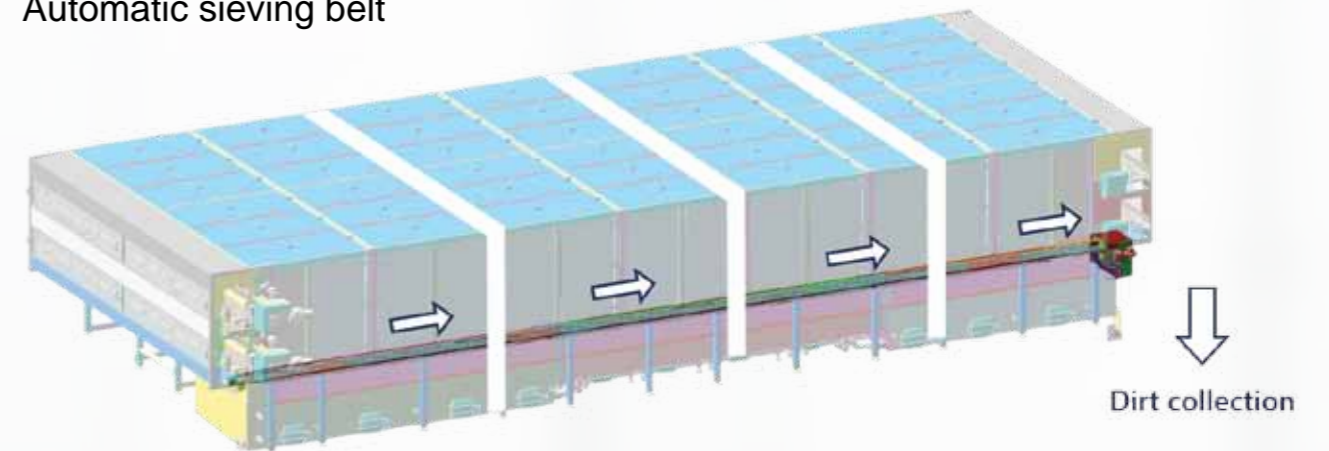
- Process optimization, cutting costs
- Greater reactivity thanks to elimination of the buffer
- Total control of the water collection process
- High quality thermal treatment of the product.

SERVICES

- Engineering and integration
- Operator and maintenance trainings
- Spare parts and technical assistance
- Options and upgrades



Automatic sieving belt

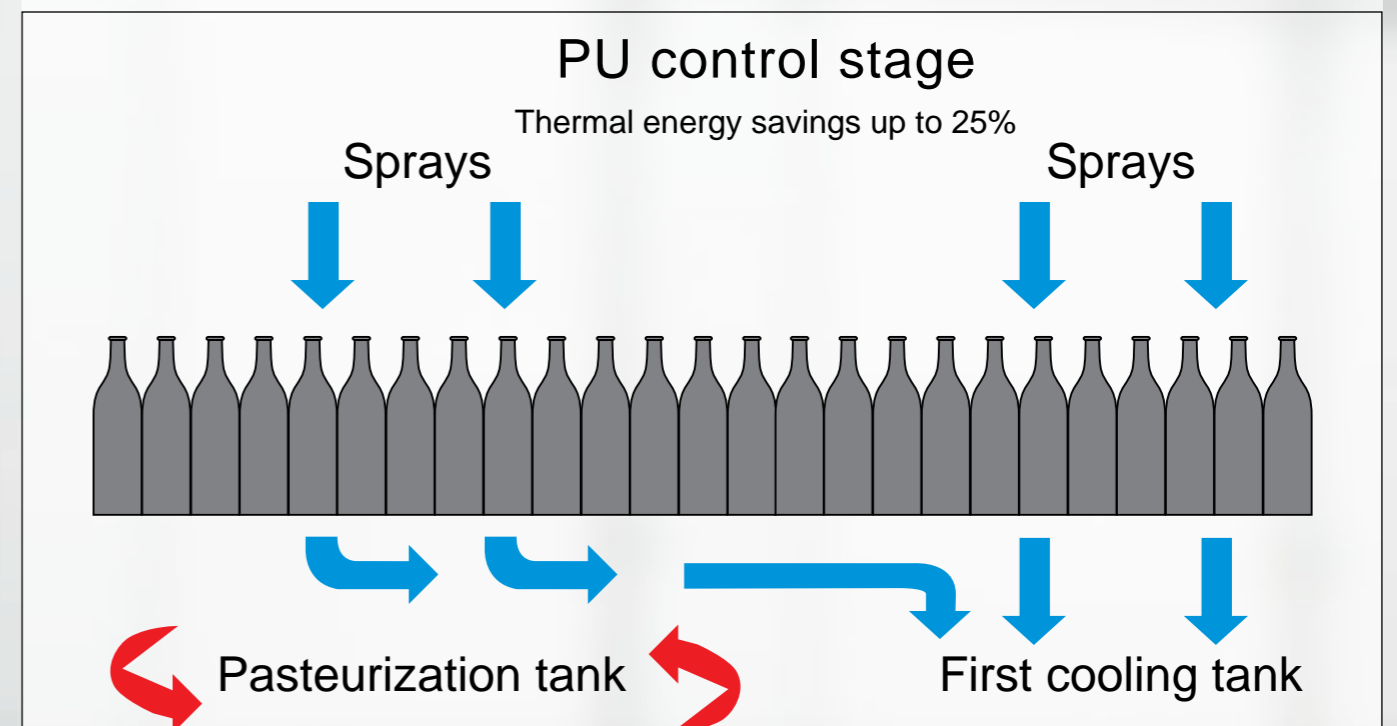


EASE OF USE

- The machine is equipped with the PRINCE system: Gebo's patented software for controlling Pasteurization Units (PUs) optimizing the process so that it is like steady state performance
- Easy maintenance.

*PU: Pasteurization Unit, equal to the effect of maintaining the product at a temperature of 60 °C for one minute.

Detail of the oscillating system permitting deviation of water to the correct collection tank.



Product quality

with PRINCE: PRediction IN Control Equations

PRINCE IS A NEW PROCESS CONTROL SYSTEM DESIGNED BY GEBO TO IMPROVE THE PERFORMANCE OF ITS PASTEURIZERS.

The new control philosophy is based on the concept of prediction. The system analyzes the current condition of the whole product, predicts possible developments and intervenes when necessary to obtain the best effect possible.

MAXIMIZED PRODUCT QUALITY

On the basis of the data collected in plants where the system has already been installed, PRINCE guarantees that under any operating conditions, i.e. with any sequence of machine starts and stops, all the product leaving the pasteurizer:

- Will pick up at least the minimum required number of PUs
- Will ensure that the number of PUs does not exceed the maximum permitted value, avoiding the "cooking effect"
- Will reach and maintain the temperature range required for pasteurization purposes for the set time ("killing effect").

ENERGY SAVING

The new control system also provides excellent performances in terms of energy saving.

The improved use of the heating and cooling functions of the thermally controlled zones of the pasteurizer considerably reduces water and steam consumption because:

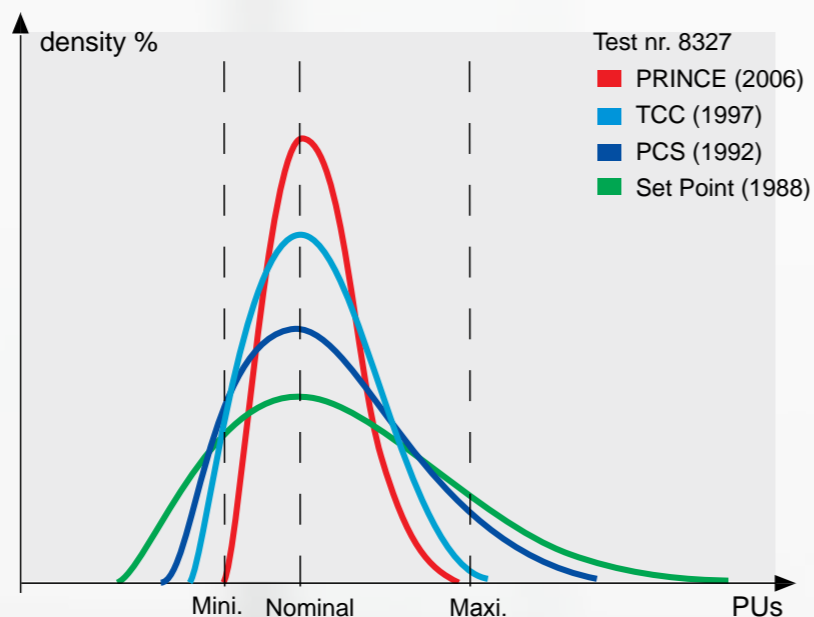
- Unnecessary changes of water spray temperatures are prevented
- The product is never warmed up more than necessary
- The product goes through only one heating phase and one cooling stage.

EASE OF USE

Another significant feature of the new control system is the ease of use:

- The system operates in a fully automatic and self-managing mode
- The system adapts itself automatically to every possible change in the thermal cycle
- The operator is not required to set any parameters that may affect the control functions of the system.

Evolution of PU control



PRINCE versus standard solutions

STANDARD SOLUTIONS

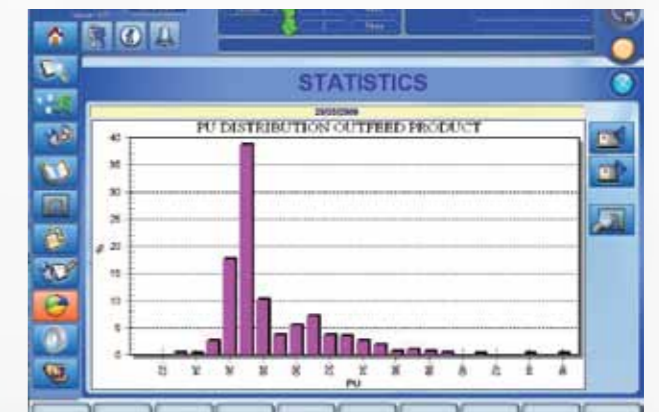
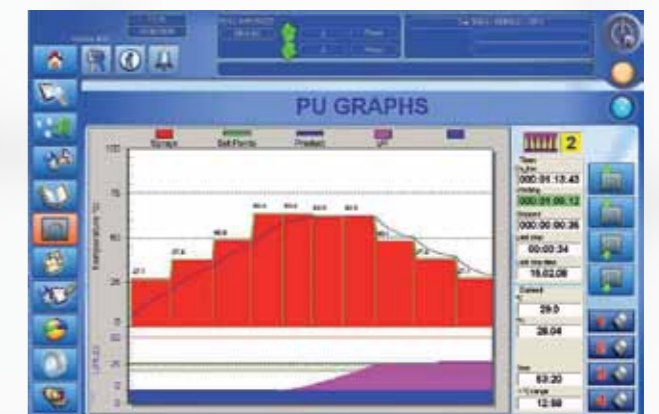
The temperature of the water spray in a zone is lowered only when the product in that zone exceeds a set pasteurization threshold. In this case the control system behaves passively and reacts to an existing situation.

PRINCE

The temperature of the water spray in a zone is lowered when the prediction indicates that the product currently in that zone will pick up a sufficient number of PUs and will in any case remain within the required temperature range for at least the set time. In this case the system behaves actively and intervenes on the basis of a future situation.



Water consumption per hour (M3)



Gebo care for product behaviour

In addition to taking great care in production of mechanics, Gebo focuses on the quality of thermal treatment.

Each sample bottle or can supplied by the customer is tested in the Gebo laboratory to determine the precise heat exchange coefficient.

This test permits complete thermal treatment of the packaged product.

The process parameters are controlled by a computer which records them and then used to plan thermal treatment cycles.

Gebo pasteurizers exactly reproduce the thermal treatments of the products previously tested in the lab.



To obtain the thermal heat exchange needed to modify the product's temperature profile, process water is sprayed on containers at different temperatures in each treatment zone and all along the tunnel.

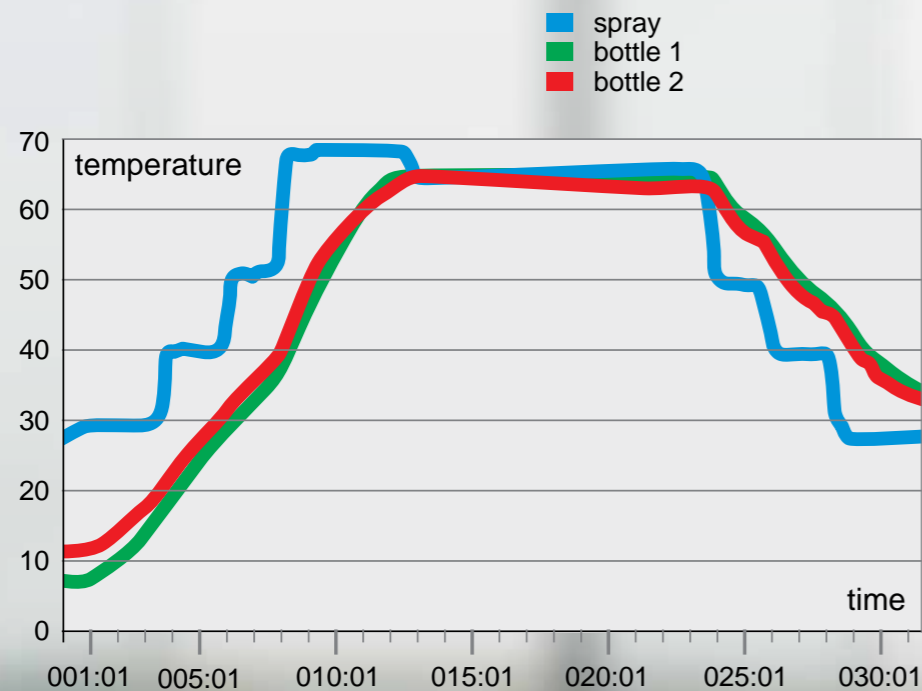
Process water is sent from the tanks in the lower part of the tunnel to the spraying system by means of centrifugal pumps.

Spraying is effected by spray nozzles fitted on groups of tubes, fed from central manifolds located along the whole length of the roof top.

Gebo's patented spray nozzles are made of stainless steel with a water inlet hole 10 mm in diameter; as they operate at a pressure of approximately 0.5 bar and are specially shaped to prevent powder from accumulating at the outlet, the nozzles are highly resistant to clogging. They are easily fitted and removed thanks to a fast unlock system.

Laboratory test

Test nr. 8327



Belt pasteurizer

ON PAMA CW, CWD, CL AND CLD, SWING® SW, SWD, SL AND SLD MODELS THE BELT PASTURIZER GUARANTEES CONSIDERABLE PRODUCT STABILITY FOR BOTH BOTTLES AND CANS.

The product is transported on one or two stacked decks inside a tunnel, split in two where required.

Each conveyor is driven by an independent geared motor and the system is perfectly balanced and highly flexible. Moreover, output can be varied by stopping one or several conveyors.

The geared motors (one, two or four, depending on the model) are swing fitted on the shafts, and have a reaction arm with a mechanical product overload safety system. The conveyor may be supplied or in polypropylene for both glass and cans, or in stainless steel solely for glass and for extremely heavy duty operating conditions.

The transfer of product from the external conveyors to the main conveyors is facilitated by a comb flow surface, ensuring extremely smooth, safe movements at the entrance and exit with either stainless steel or polypropylene conveyors.



Options

PAMA CW, CWD, CL, CLD AND SWING® SW, SWD, SL, SLD BELT PASTURIZER

Belt pasteurizers may have 1 tunnel or 2 tunnels together on one deck (Pama CW and CL and Swing® SW and SL models) or on two decks (Pama CWD and CLD and Swing® SWD and SLD models). The structure consists of modular elements in lengths and widths of up to 7 m, for up to 120,000 containers per hour to meet all production and layout requirements. Total tunnel length may vary from 8 to 40 m. The machine is made of 100% stainless steel.

The inside of the tunnel is easily accessible via side doors on both sides and openings on the roof permitting easy inspection of the process water distribution system. To limit heat dispersion, the side and roof doors are insulated with insulation inside the box-type stainless steel.

DYNAMIC TRANSFER

Dynamic product transfer from conveyor belts to the pasteurizer/cooler/warmer belt and vice versa is already well-established and used in numerous applications.

- The system is available for either glass bottles or tins
- It is applicable at the input or output of the pasteurization tunnel
- It replaces mechanical sweepers
- For similar thermal cycles "flying" changeovers can be done in less than 4 minutes
- For applications on hot filling lines, it prevents containers stopped on the dead plate from staying at a high temperature for too long before cooling.



Two independent decks

THE VAST GEBOPRODUCT PORTFOLIO ALSO INCLUDES A PASTEURIZER WITH TWO INDEPENDENT DECKS.

This kind of machine is very useful when two completely independent bottling lines have been installed close to each other and treat products which go through fairly similar pasteurization cycles, especially as regards the temperature of the pre-heating and cooling zones.

In the pasteurizer with independent decks the water in the pre-heating and cooling zones are shared by the two decks, while the water in the central zones – i.e. those in which pasteurization treatment takes place – are kept separate. The PU control system also works completely independently on the two decks. The two decks thus provide similar performances to the sum of two separate machines.

Compared to two separate machines, however, this technology provides considerable savings in terms of footprint and optimized performances, also from the point of view of saving thermal energy.



Walking beam system

THE WALKING BEAM SYSTEM IS APPLIED IN THE PAMA R, DR AND TR MODELS, AND THANKS TO ITS ROBUST AND SIMPLE DESIGN IT IS ALSO HIGHLY RELIABLE IN ALL HEAVY-DUTY WORKING CONDITIONS AND EVEN WHEN HANDLING VARY FRAGILE CONTAINERS OR WORKING AT HIGH TEMPERATURES. THE MECHANICAL PARTS WHICH DRIVE THE MOVEMENT ARE OUTSIDE THE TUNNEL, WHICH FACILITATES CHECKS AND MAINTENANCE.

The machine can be configured with 1 tunnel, or 2 or 3 stacked tunnels (models R, DR and TR).

The product is moved inside the tunnel by the "Walking Beam" system. This consists of two groups of interleaved blades, one stationary and the other mobile.

The mobile blades execute a cycle of four movements in sequence: up, forward, down and back.

At each cycle, the product mass is pushed forward to the distance corresponding to the length of the pitch (up to 130 mm).

The sequence of the four movements of the moving decks pushing the product forward by steps in the tunnel is generated by two pairs of cylinders driven by a hydraulic power unit.

Sealing between the spigots of the mobile beams and the tunnel walls is achieved by an ingenious system of stainless steel foils sliding over each other. This ensures that the beams move in respect to the wall and, at the same time, that the process water is contained.

The machine can be configured with 1 tunnel or 2 or 3 stacked tunnels (models R, DR and TR).

The pasteurizer frame consists of modular elements up to 6.5 m wide processing up to 180,000 containers/h so that it may be adapted to any production and floor space requirements. The total length of the tunnel varies from 10 to 40 m. The side walls are made of very thick steel sheets, shaped and welded onto the tanks underneath and onto the top frame. The beams supporting the loading surfaces are screwed to the walls. The number and size of the tanks depend on the thermal cycle. The tanks are designed to ensure easy inspection and cleaning through manholes on both sides.



Product cooling and heating systems



The range of Pama products also includes systems for cooling or heating containers, designed for hot filling lines and cold filling lines respectively.

Independently of the construction features of the various models, the thermal treatment is adapted to the type of product processed.

Specific devices can be used to reduce energy consumption, in particular water consumption, on hot filling lines.



- | | |
|---|--|
| 1 | 1. Spray nozzles |
| 2 | 2. The top of the machine is easily accessible |
| 3 | 3. In the swing model, all the piping is positioned below the machine |
| 4 | 4. The main chain in the stainless steel version with dynamic transfer |

First in line

In a complex industry where know-how is everything, Gebo Cermex is formed from the union of two strong brands: Gebo & Cermex, gathering packaging line engineering experience across a range of market segments from beverages and food to pharmaceuticals, via home and personal care.

For over half a century, our experts have improved the performance of production and packaging lines in some of the most demanding industries.

Today **more than 37,000 equipment & systems installations bear our signature**. We add value to our customers' business in four dimensions, from equipment design and manufacturing to line engineering, services and asset performance.

Gebo Cermex, headquartered in Strasbourg, France is a people-centric organization with **1800 employees and over 20 commercial & manufacturing sites** in all major regions around the world.

No-one knows packaging lines like we do. We are first in line.

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