



VarioAsept J

Microbiological safety for your products



 **KRONES**

Natural, tasty and durable



As little as possible, as much as necessary – this is the declared goal of the product heating process in terms of the parameters time and temperature. The VarioAsept UHT system masters this challenge with flying colours.

At a glance

- Thermal product treatment for aseptic filling processes
- Used for juice products, soft drinks, teas, mixed coffee and tea drinks (VarioAsept J) and for dairy products (VarioAsept M)
- Comprises tubular or plate heat exchanger, optional deaeration module and homogeniser, buffer tank and media supply



Product treatment

Krones VarioAsept J UHT system



Components of the modular component system

Service module

- Energy supply for product heat exchanger
- Electrical and pneumatic controller with MCC and Krones HMI

Module for media supply

Decoupling of the downstream process for stable production conditions

Krones VarioSpin product deaerator

- Deaeration with patented swirl infeed nozzle:
- Ensures that gas bubbles will quickly escape from the product
 - Reduces oxidative impact such as loss of vitamins or discolouration of juices

Evoguard valves and pumps

VarioStore tank system for aseptic lines

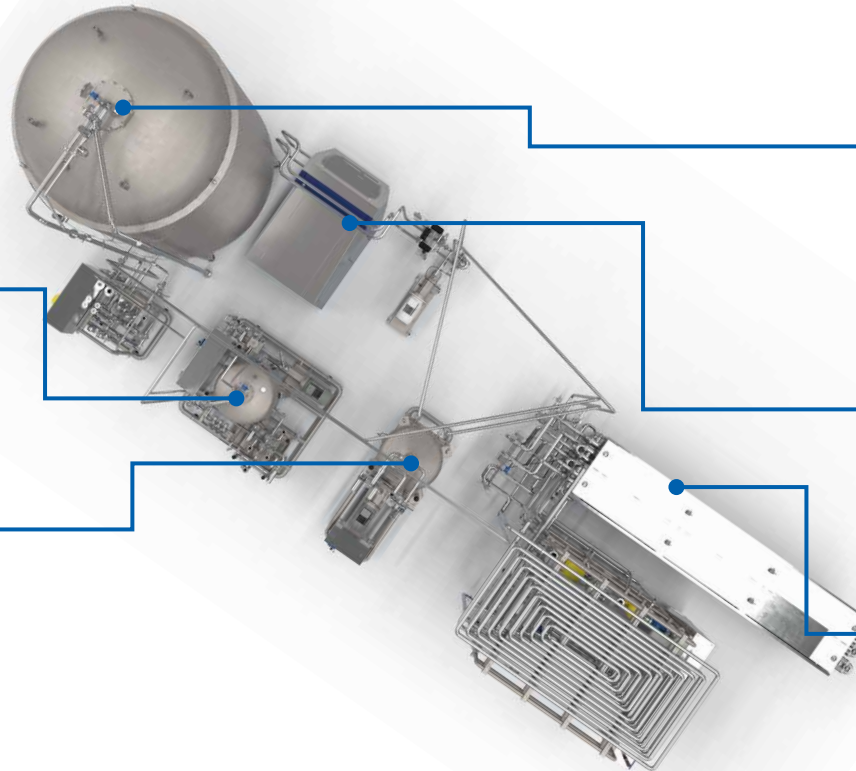
- Vacuum-sealed and pressurised up to 6 bar
- Fully aseptic, automatic valve manifold between UHT system and buffer tank
- With integrated system for sterile gas filtration

Homogeniser by HST

Heat exchanger

- Depending on product requirements:
- Plate heat exchanger
 - Tubular heat exchanger with cross-corrugated tubes for less thermal impact

Alternatively: Direct heating



The components in detail

HST homogenizer



The HST homogenizer of the HL/HLI series is a high-pressure reciprocating pump. It comprises 2, 3, 5 or 6 pistons as well as a downstream homogenizing valve.

Benefits to you

- Large range of outputs: 10 to 60,000 litres per hour
- Operates with a pressure up to 800 bar on production machines and up to 1,500 bar on laboratory machines (depending on configuration)
- Cylinder block of high-alloy, forged and corrosion-resistant stainless steel with very little wear parts
- Excellent results during the CIP process thanks to high finish quality and avoidance of dead spaces
- Robust and wear-resistant drive technology
- Integrated PLC controller for monitoring and control of the homogenizer via the product UHT system



The components in detail

The efficient product deaerator



You have invested a great deal in order to develop a fruit juice beverage of top quality? You want to be sure that this quality is preserved in the manufacturing and filling processes? Then integrate the Krones product deaerator VarioSpin in your manufacturing process. With VarioSpin you make use of a compact vacuum-assisted deaerator which permits highly effective filling processes without the formation of foam at the filling valve.

At a glance

- Deaeration tanks with patented swirl inlet
- Output: 7.5 to 60 m³/h
- Recovery and return of flavouring through a Venturi nozzle
- Internal recirculation for a multi-stage deaeration
- Reduced mixing phases for short change-over times and low product losses



Components



Simplicity, innovation and function – the factors for the most effective product deaerator on the market

- 1 Efficient flavouring condensation**
 - High product quality without the loss of flavouring sensation
- 2 Compact design**
 - Minimum of mixing phases
 - No moving parts in the vacuum area
 - Short product dwell time in the system
 - Smallest space requirement on the market
- 3 Venturi nozzle**
 - Just-in-time return of flavouring with reliable homogenisation via the product pump

- 4 Water saving**
 - Reduced water consumption thanks to intelligent sealing water utilisation in the vacuum pump circuit
 - Only 10 l/h* of water instead of 1,000 l/h
- 5 Innovation: patented swirl infeed nozzle**
 - Gentle distribution
 - Reduced foaming
 - Product feed independent from the volume flow rate
 - Entire tank as a material exchange surface
 - High gas reduction



* Depending on the pump size

The swirl nozzle in the VarioSpin



- Formation of a uniform product film upon entry of the product into the container
- Efficient use of the tank surface with reduced foam generation
- High material exchange and significant gas reduction
- Variably adjustable volume flow rate of up to 50 percent of the nominal amount without movable, high-maintenance parts
- Generation of a large and turbulent product surface with slight layer thickness
- Improved partial pressure conditions during deaeration due to higher speeds in the nozzle channels
- Hygienic design with low product quantities in the tank and minimum mixing phases



Five reasons for product deaeration

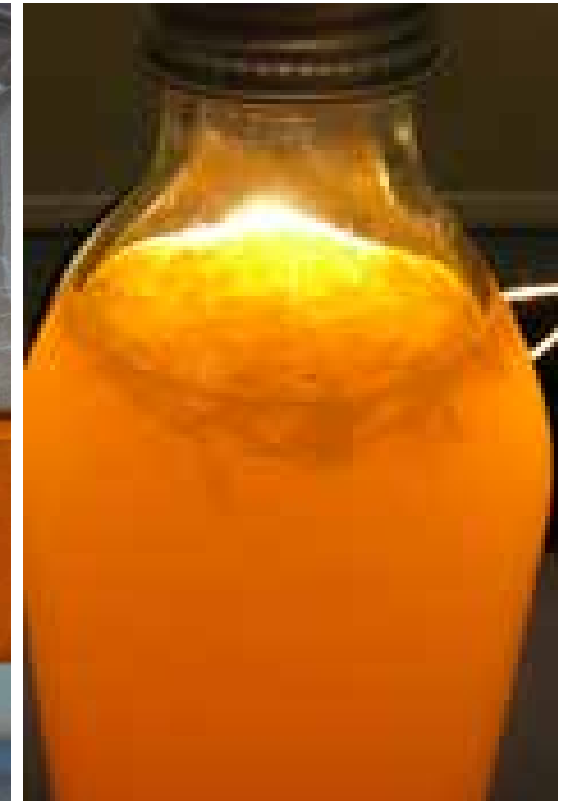


Why should you integrate the VarioSpin in your production line

- Reduced solute oxygen to avoid oxidation
- Minimisation of unwanted flavours (e. g. milk)
- Prevention of problems during filling (especially with hot fill processes) thanks to reduced free gasses
- Avoiding pulp and fibres floating up inside the bottle
- Increased shelf time at UHT milk



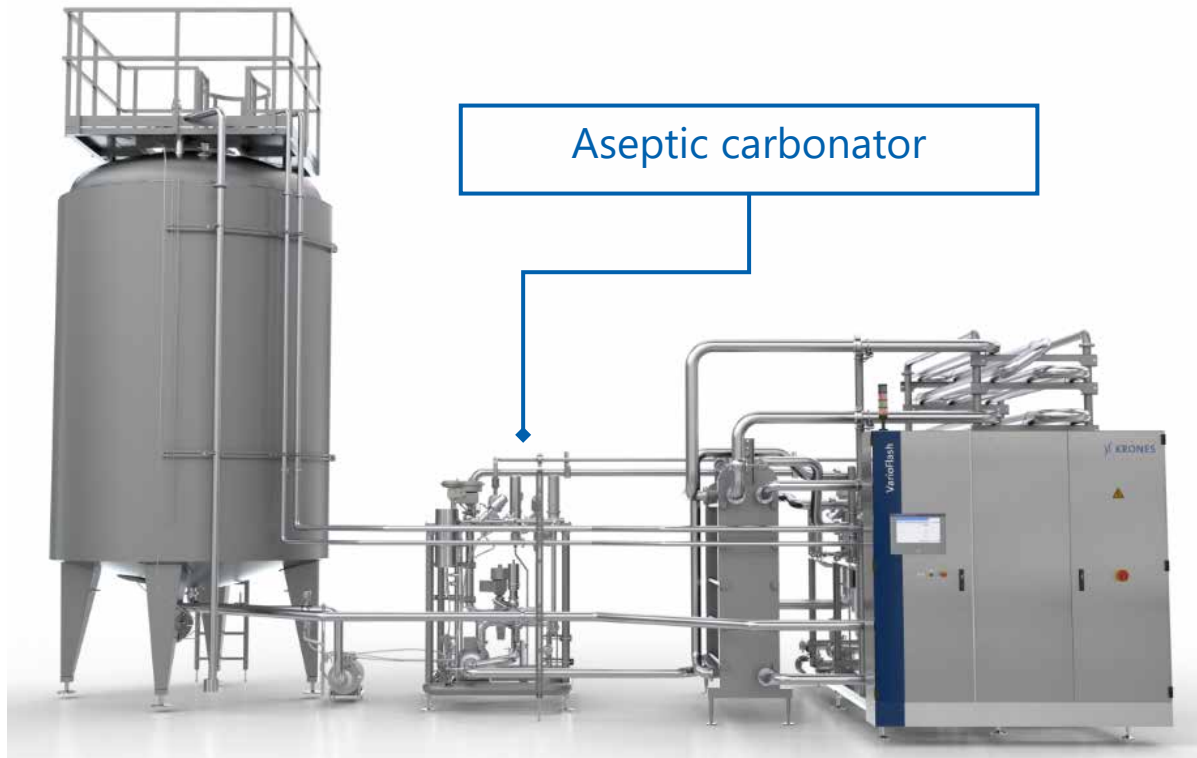
Deaerated apple juice (left) and non-deaerated apple juice (right)



Orange cells floated up in the juice which has not been completely deaerated

The components in detail

Optional: aseptic inline carbonator



* As of: April 2022

With more than 1,500 Contiflow systems* sold, Krones can prove its many years of experience in the field of product carbonation. In addition to the Contiflow, we can also offer a carbonation unit specifically for aseptic applications that is directly integrated in the heating system

Benefits to you

High CO₂ dosing precision and product quality with low operating costs

- CO₂ dosing precision ≤ 0.08 g/l (temperature-dependent at production conditions, described as sigma 1)
- Inline position of the module: No need for the additional decoupling tank normally required for aseptic carbonation applications.

Significantly reduced investment costs

- No separate buffer tank and no control system dedicated to carbonation required
- Unit completely integrated in the VarioAsept

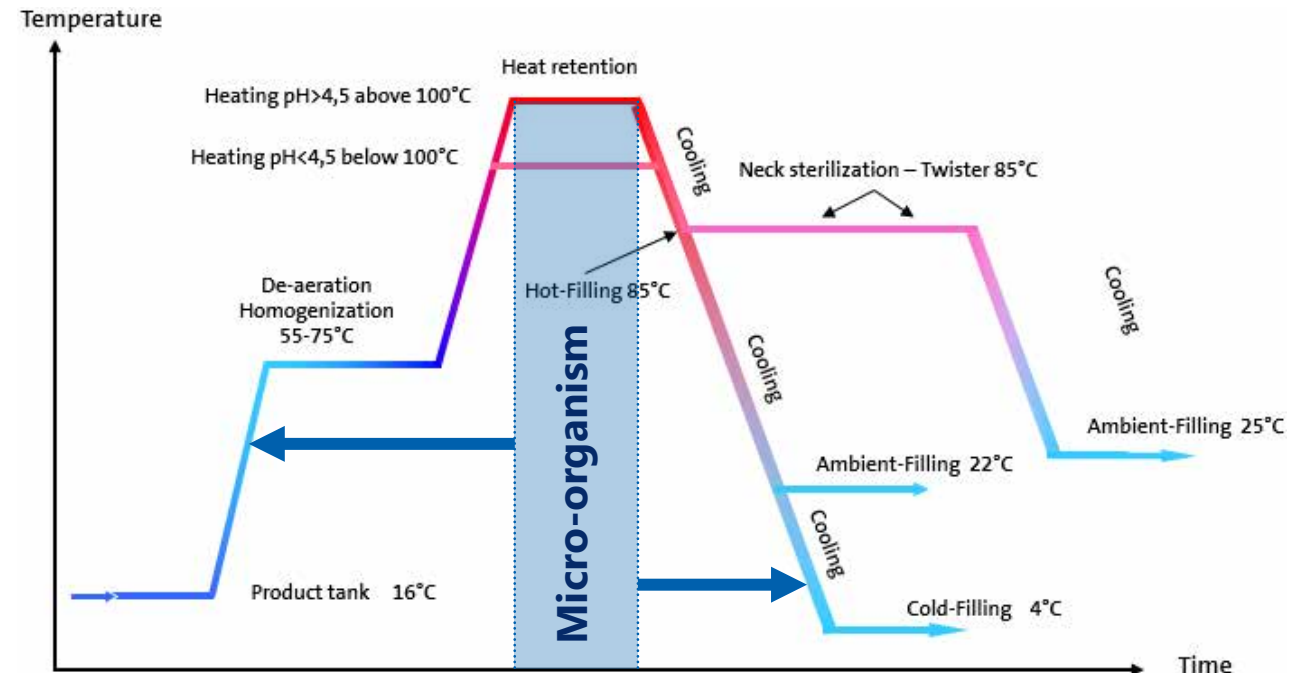
Thermal product treatment



Optimal planning of the thermal product treatment will result in a reduced ...

- thermal impact acting on the product due to the short dwell times.
- requirement for thermal and pump energy.
- portion of product loss due to reduced line volumes.
- oxidation rate if a VarioSpin product deaerator is used.

The heating temperatures and periods are defined by the killing kinetics of the various micro-organisms. An optimum design of the heat exchanger surfaces can reduce the dwell time in the heating and cooling zones. It is essential to find the correct balance between the least possible number of tubular modules (optimisation of the heat exchanger surface) and gentle product heating.



The components in detail

Plate or tubular heat exchanger – a comparison



Plate heat exchanger



- Low investment costs
- Low line volume
- High energy recovery rates
- Low space requirements
- Wide variety of plate sections



- Higher maintenance costs (e.g. for seals)
- Reduced service life of the plates (susceptible to damage due to pressure peaks)
- Limited application for products with particles and/or fibres



Design according to Krones specifications

Tubular heat exchanger



- Less susceptible to damage due to pressure peaks
- Wide range of tube sheets available
- Suitable for a wide variety of products with different flow characteristics (even for products containing particles/fibres)
- No seals in the product area
- Almost unlimited service life of the modules
- Low maintenance costs



- Lower energy recovery rates
- Higher investment costs
- More space required



Design and manufacture by Krones

The tubular heat exchanger in detail

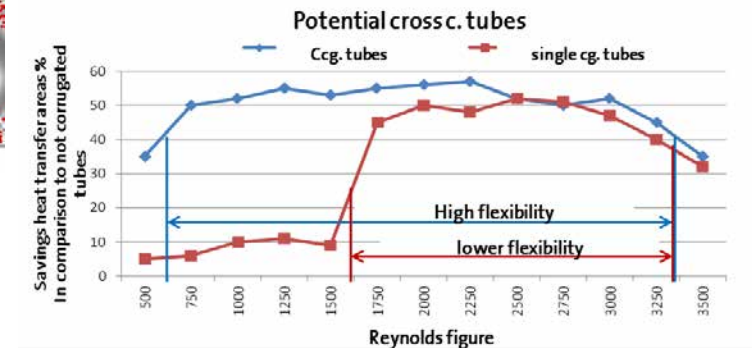
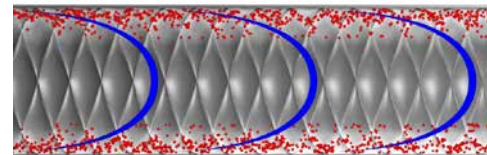
Thermal product treatment with cross-corrugated tubes



The use of cross-corrugated tubes increases the flexibility of product treatment with regard to output range and product variety. Due to their surface structure, cross-corrugated tubes can break up the laminar boundary layer which results in a high turbulence and positively affects the further output and/or viscosity. This can reduce the required surface of the heat exchanger by up to 30 %.

At a glance

- Low thermal load
- Short heating and cooling phases
- Low loss of flavour and vitamins
- Minimum colour change (e.g., for tea)
- Preservation of the natural product quality



Verification of your product data as basis for calculating the heat exchanger



Krones would like to make sure that you get the heat exchanger ideally suited for your product. In the Krones technical centre, we first check your products for typical characteristics:

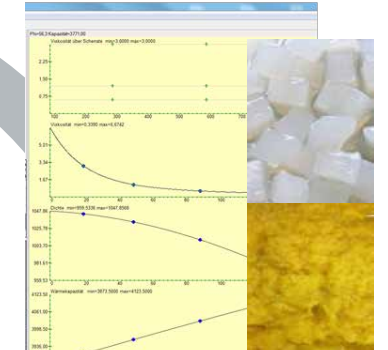
- Viscosity (depending on temperature and shearing rate)
- Heat conductivity
- Flow properties
- Heating requirements
- Oxygen and nitrogen content
- Portion of and size of solids (e.g., fibres, pulp or fruit pieces)
- Foaming tendency

If no product samples are available, a reference product from our considerable product database (more than 2000 product data from all over the world) can be selected.

Product features

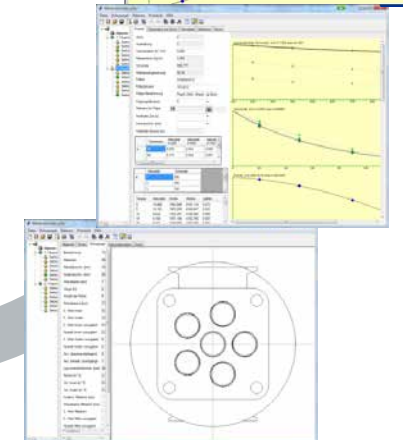


Product data base



Revalidation

Heat exchanger



Calculation

Benefits to you



Temperature control by choice

The heating process can be optionally controlled with a precise F-value or temperature control system, or through flexible PU regulation.

Low product losses

A rework tank for mixing phases, the integrated buffer tank and automatic output regulation in the event of production fluctuations in upstream and downstream systems contribute to high cost effectiveness.

Long production times

Aseptic intermediate cleaning with caustic at the product treatment temperature of the heat exchanger can be carried out without interrupting the aseptic filler production as the filler is supplied by the aseptic buffer tank.

Aseptic product change-over

Water flushing within 35 minutes between the last and the first bottle (for Krones standard layout) provides high flexibility for production.

Gentle product treatment

The thermal and oxidative stress on your product will be reduced because specially designed inner tubes in the selective heater and chiller sections can be heated and chilled again very quickly.

Requesting a new machine

You can easily send a request for a non-binding quotation in our [Krones.shop](https://www.krones.com/shop).



Holistic expertise at Kronos

Aseptic filling systems



- 10 year sterility guarantee available
- Automatic adjustment of the handling parts at speeds of up to 36,000 containers per hour
- Output: up to 72,000 containers per hour

Especially for slightly acidic and pH-neutral products: Contipure AseptBloc

- FDA and 3A certificate available for the entire aseptic block arrangement
- All of the components in the clean room housing block can be completely sterilised: The sterile preform or sterile container never leaves the sterile zone until it reaches the capper
- Up to 168 hours of continuous production in one go



For sensitive carbonated and cold chain products: Contipure Bloc P

- Fastest CIP/SIP process on the market
- Only requires 1.5 hours for cleaning and sterilisation (from the first to the last bottle)
- Sterilisation time of only 30 minutes after user intervention



Because every minute counts ...

Efficient product change-over with CIP/SIP

Improvements in the machine design and process sequence have considerably accelerated the CIP and SIP cleaning processes in the UHT system and sterile tank, meaning that product change-overs now take just as long here as in Krones filling systems.

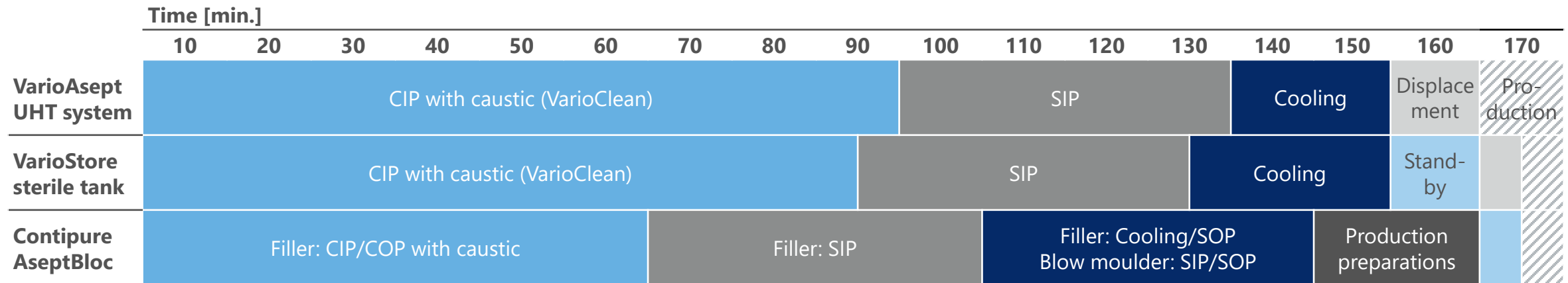


Benefits to you

- **Change-over time reduced:** Now only 165 minutes (instead of 210 minutes previously)
- **Connected loads for steam reduced during SIP:** Only 2,700 kg/h* (instead of 5,900 kg/h previously)

Example** “Product provided” signal to the filler = 0

“Product provided” signal to the filler = 1



* Based on: Model type TPB30 | ** Based on a VarioAsept type TPB30 with indirect heating (incl. deaerator and aseptic homogenizer); Product: Non-carbonated, without fruit pieces; pH value = High Acid; values dependent on product data, line layout and machine equipment

Holistic expertise at Krones

Process components from Evoguard



Valves and valve manifolds

From the simple shut-off function up to the most advanced aseptic processes and complex valve manifolds: The Evoguard valve range combines hygienic and aseptic designs with all the requirements to meet demands on process stability, reliability, and maintainability.

Hygienic pumps

Gentle feed combined with the highest efficiencies, robust design and high maintainability underline the advantages of the Evoguard centrifugal pump series as well as the pumps of Ampco.

Vessel dome fittings

Thanks to the modular approach, individual solutions for tank cleaning and safety can be configured based on the customer's specific requirements.

Evotube tubular heat exchanger

Maintenance-free modules with cross-corrugated tubes ensure an efficient heat transfer combined with gentle product handling. They are developed and manufactured by Krones.



Everything from a single source



Training sessions at the Krones Academy – trained personnel for an increased efficiency of your line

The multifaceted offer by the Krones Academy ranges from operation, servicing and maintenance courses through to management training. We will gladly also create your individual training programme.

KIC Krones cleaning agents make your machine shine

An immaculate production environment is essential if your product is to shine. KIC Krones provides you with the optimum cleaning agents and disinfectants for each individual production step.

Krones Lifecycle Service – Partner for Performance

It goes without saying that also after the purchase of new machines, Krones takes care of your lines: The Krones LCS experts are always there to help you reaching your goals and turn your wishes into optimal LCS solutions.

**SOLUTIONS
BEYOND
TOMORROW**

