



VarioSpin

Foam-free filling of juice products



 **KRONES**

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



Method of operation



1 Gentle product feed

- Patented swirl inlet nozzle, which creates an immediate and even product layer on the inner container wall as soon as the product is coming in
- Turbulent flowing film enables short diffusion paths for the gas bubbles coming from the product
- The entire tank surface can be used for the deaeration process

2 Individual adjustment of the vacuum pressure

- Vacuum pressure adjusted to the infeed temperature and product properties
- Gentle feed prevents uncontrolled foaming
- Vacuum pressure can be reduced to the point required for high deaeration performance

3 Recovery of flavouring losses

- Recovery of flavouring carry-over in a (multi-stage) condensation step
- Flavouring return via the Venturi nozzle in the discharging product flow with reliable homogenisation via the product pump
- Avoidance of flavouring concentrate carry-over during the change-over to other beverages via intelligent back-flushing processes
- Obtaining important flavouring in the beverage at the respective cooling temperature of the condenser

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 inlet 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



Components



Swirl nozzle

- 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



Components



Deaeration tank

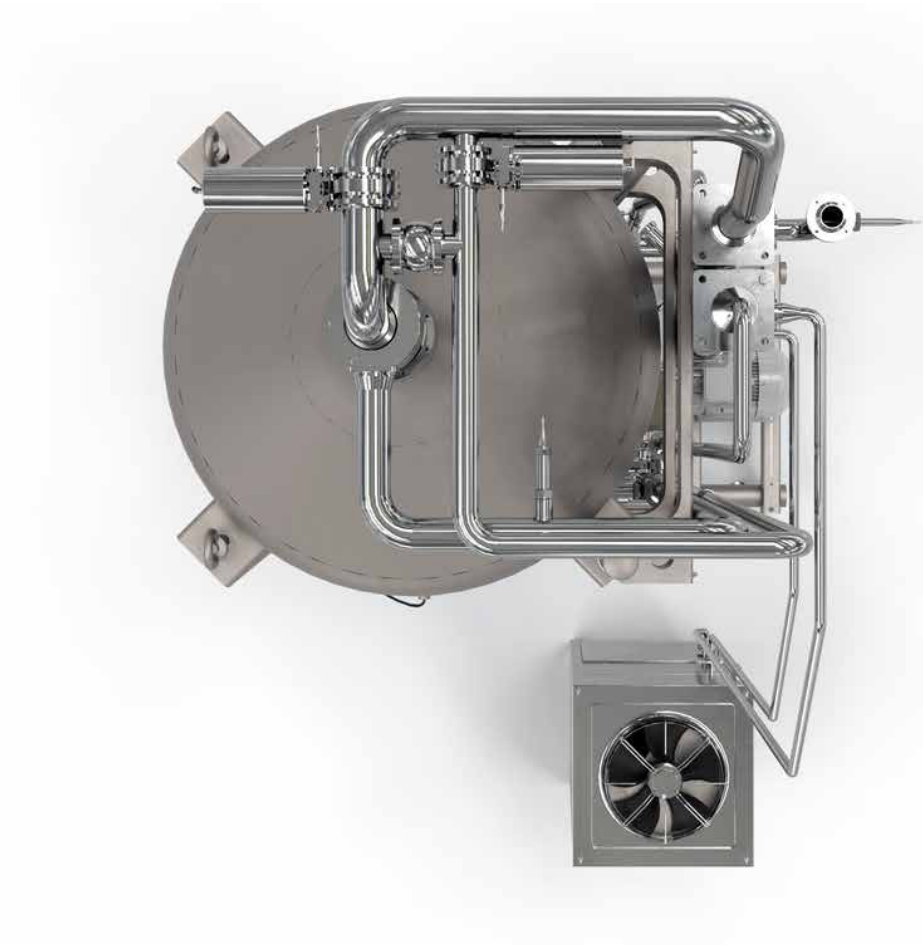
- Conical design of the tank outlet to avoid the presence of deep gas bubbles in the filling level
- Design of the tank adapted to the respective volume flow rate rates

Flavouring recovery

- Condensation phase for volatile flavouring and steam
- Recovery of the flavouring in the draining product flow by means of a reduced cross-section according to the Venturi principle
- Targeted adjustment of the cooling agent temperature to below 10 °C possible thanks to optional cooling unit and multi-stage condensation
- Integrated bypass for the separation of undesirable flavouring

Internal recirculation

- Multi-stage deaeration for increased gas reduction rates
- Use with products which are difficult to deaerate with respect to surface tension, viscosity, etc.
- Recirculation volume adjustable within the system



Facts and figures



Compact systems with swirl inlet require...

- up to 50 percent less space
- up to 60 percent less mixing phases

Deaerator sizes with minimised volume

Production output/size (m ³ /h)	7.5 – 15	15 – 30	30 – 45	45 – 60
Production volumes (litres)	87	200	305	420
Feed and discharge volumes (litres)	48	88	168	290

- Performance spread of up to 50 percent
- Constantly high deaeration performances: up to 95 percent* exchange efficiency
- High flavouring recovery rate of up to 95 percent*

* Depending on the product and initial concentration



Five reasons for product deaeration

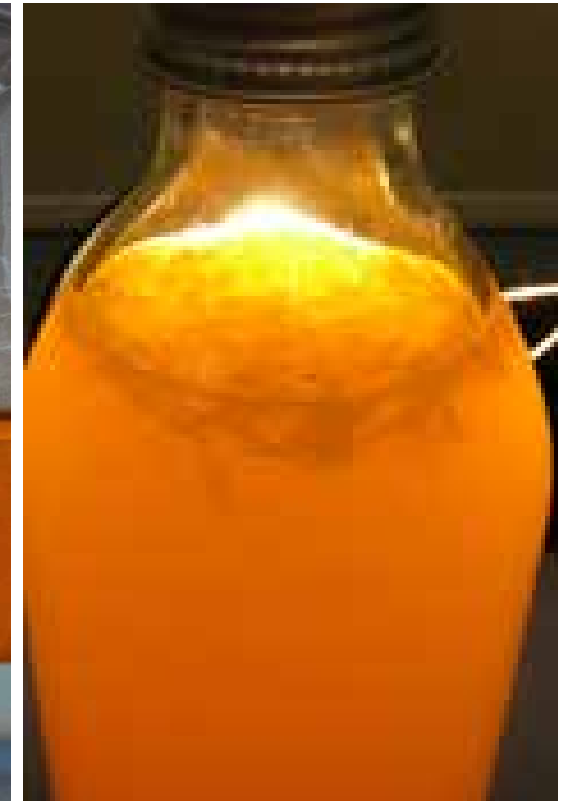


Why should you integrate the VarioSpin in your production line

- 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

Benefits to you



Comfortable operation and maintenance

During the operation of the VarioSpin deaeration module, your employees profit from the ergonomically arranged measurement devices and sensors. Furthermore, the small number of seals and components is a clear advantage in daily operation.

Foam-reduced filling

The deaeration performance benefits from product which is fed in gently and a turbulent surface. Without foaming, the product can be deaerated highly efficiently.

The right swirl

The dissolved gas can be quickly eliminated from the product with the thin product film upon entry into the deaeration container. And the performance of your filling line remains continually at a high level.

Efficient product change-over conditions

Due to the smaller tank volume resulting from the efficient product infeed technology, you can achieve up to 50 percent fewer mixing phases during product change-overs.

Flexible during operational changes

If changes are carried out in your plant, the VarioSpin product deaerator adjusts to them. Since it is modular in design and software concept, the product deaerator can be quickly integrated in new lines or it can be supplemented as a stand-alone solution.

Variable product flow

The technology of the swirl inlet guarantees flexibility in the deaeration performance. You can adjust the product flow at constant deaeration rates by up to 50 percent without any dynamic components and high maintenance effort.

Requesting a new machine

You can easily send a request for a non-binding quotation in our Krones.shop.



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.

High-quality components from Evoguard and Ampco

Are you looking for shut-off, separation or control valves? For hygienic or aseptic applications? Would you like to have pump technology that perfectly fits into your machines? You will find exactly what you are looking for at Evoguard and Ampco Pumps. The two Krones subsidiaries cover the entire spectrum of process technology components that you need for high-quality production.

**SOLUTIONS
BEYOND
TOMORROW**

