

KRONES Variojet

The rinser for cleaning the inside of the containers



Optimum bottle pre-treatment

KRONES Variojet

In the Variojet rinsers, the bottles are rinsed, blown out, or treated with a disinfectant before the filling process is started. Regardless of whether glass or plastic bottles are being used, the range of media which can be used in the Variojet is large. Included here are air, ionised air, ozonised water, saturated steam, sterile air, disinfection solutions, as well as the fill product. Available in different versions with one, two or three channels through which the respective medium is fed, the Variojet makes a rinsing process possible which exactly meets the requirements for the product to be filled.



*Mechanical single-channel rinser
Variojet for glass bottles*

Method of operation

When glass containers are being used, these are transferred over an infeed worm and infeed starwheel to plastic jaw grippers. The plastic clamps developed especially for the rinser, firmly hold the bottles at the bottle neck and at the body. Unlike this, plastic containers are picked up from the air conveyor by a spacing starwheel for transfer to the clamp where they are then held firmly at the neck ring. There is no need to replace the spacing starwheel when changing container sizes.

Following bottle inversion where the containers are swung upwards through 180°, the actual cleaning process starts. The spraying nozzle is positioned directly underneath the neck finish for injecting the particular rinsing medium into the bottle. The spraying nozzles are supplied with medium from the rotary media manifold. Following these treatment phases, the bottle is returned to the upright position and transferred to the discharge starwheel.

For versions with an electro-pneumatic control unit, a user-adjustable rinsing angle is available for the cleaning steps. The respective treatment times can be defined individually.

Application

Cleaning the inside of glass or plastic containers

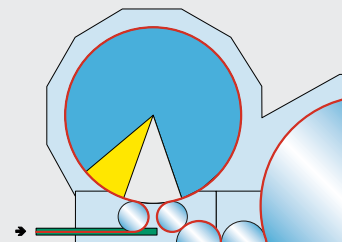
Performance range

Depending on the application case, the Variojet can clean up to 78,000 containers per hour.

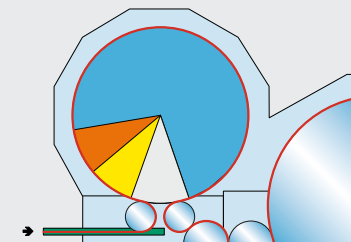
Steps when single and two-channel rinsers are used

Caroussel ø mm	Machine pitch in mm									
	87	94	103	113	126	141	188	226	283	
Number of jaw grippers										
1,440	52	48	44	40	36	32	24	-	16	
1,800	65	60	55	50	45	40	30	25	-	
2,160	78	72	66	60	54	48	36	30	-	
2,520	91	84	77	70	63	56	42	35	-	
2,880	104	96	88	80	72	64	48	40	-	
3,600	130	120	110	100	90	80	60	50	-	
4,320	156	144	132	120	108	96	72	60	-	
5,040	182	168	154	140	126	112	84	70	-	

Single-channel Variojet rinser



Two-channel Variojet rinser



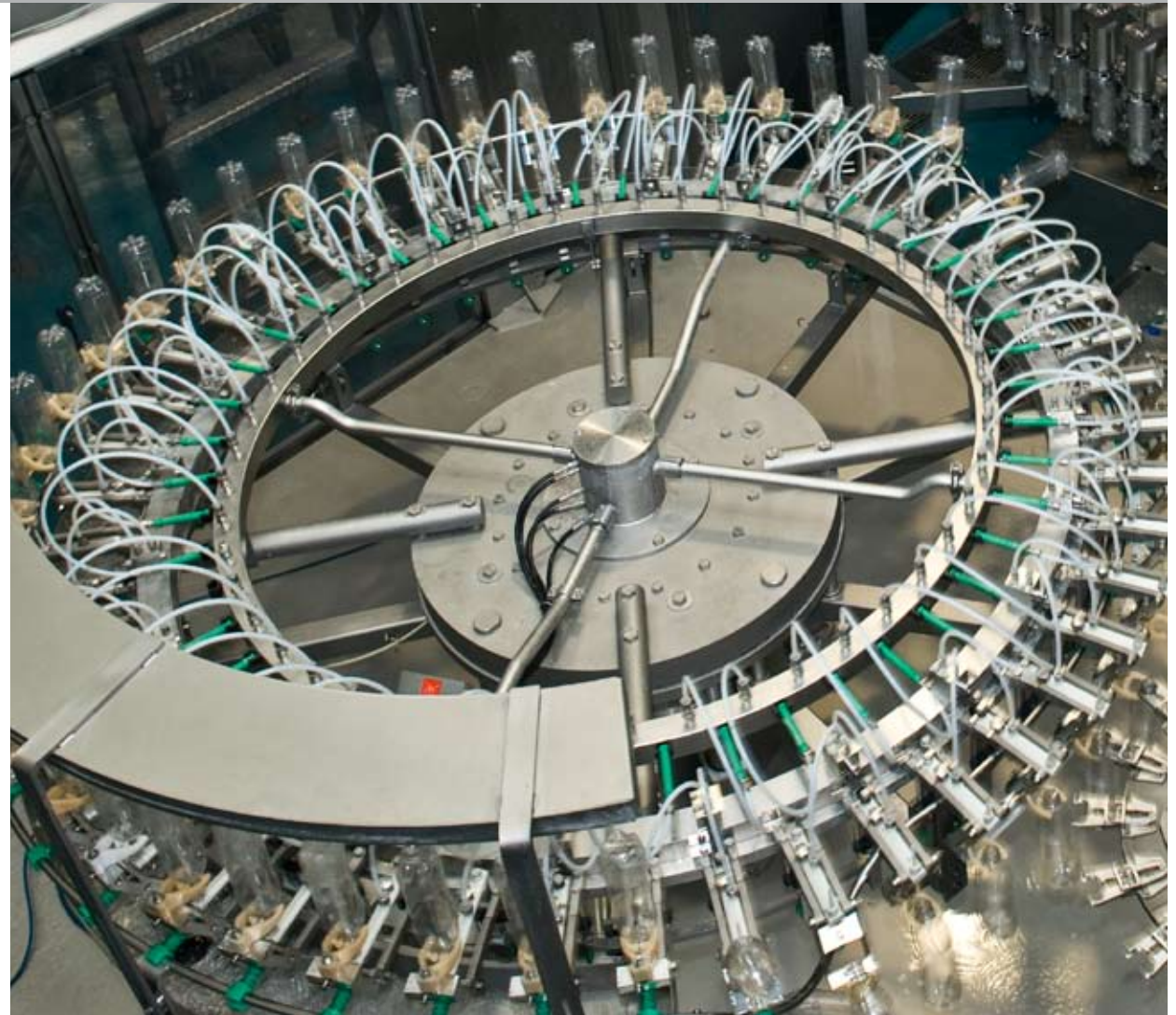
- Cleaning with sterile water
- Blowing out with sterile air
- Drip-off step

Design features

- Rinser carousel of robust stainless steel design
- Manifold as well as all parts in contact with the product or gas made of high-grade tool steel AISI 304 or better
- Collecting pan for liquid media
- Quick-change Raptec handling parts of hygienic design or neck-handling parts
- Automatic adjustment of the rinser carousel height (not necessary for neck handling)
- Bloc arrangement with filler possible
- Rinser Variojet also available with free-standing Monotec starwheel column



Rinser with free-standing Monotec starwheel column



Variojet two-channel rinser for PET bottles

System variants

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The Variojet rinser is available in three designs:

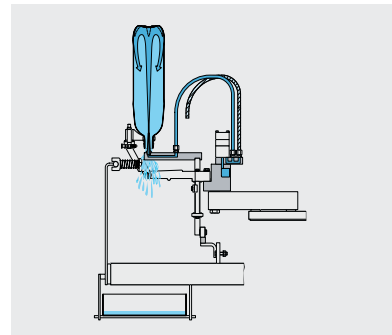
- Single-channel rinser
- Two-channel rinser
- Three-channel rinser

The controlled spraying nozzle ensures that the rinsing medium reaches the whole inside area of the bottle and that the cleaning medium is used as efficiently as possible.

The single-channel and double-channel rinsers are available both as mechanical and as electro-pneumatic versions. In the mechanical version, the rinsing process is cam-controlled. In the variant with electro-pneumatic valves, this process is controlled by a central control unit. The three-channel rinser is only available with an electro-pneumatic control unit because of the greater complexity of the processes involved.

Single-channel rinser

The single-channel rinser is ideal for straightforward applications, where water for example, is distributed in the bottle from the spraying nozzles. Fitted with a rigid or optionally available controlled spraying nozzle, the single-chamber rinser can be accordingly adjusted for the particular application case.



Rinsing process by the single-channel rinser with rigid spraying nozzle



Variojet two-channel rinser for PET bottles

System variants

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Two-channel rinser

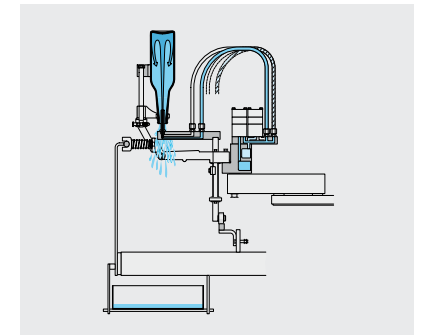
The two-channel rinser is the ideal system for those applications where two different media shall be used for rinsing the containers. The media selected beforehand can be used in succession from two separate channels. There is also the possibility with this method to use water and air, or disinfectant and air, at the same time during the rinsing operation.

Rinsing using ionised air

In a special variant of the two-channel rinser with eletropneumatic control, ionised air can also be used as rinsing medium for PET bottles. Precipitating particles of dust are sucked from the second channel. Using air as the rinsing medium makes CIP and foam cleaning superfluous.

Closed rinsing system

This rinser developed especially for the liquor industry cleans the bottles with product or with a product-water mixture. The machine collects the rinsing medium through a funnel directly at the neck finish for return to the stock. A drip removal device next to the funnel ensures the bottle is completely dry on leaving the rinser. Other components include monitoring of the rinsing spray, a filter insert in the collection funnel and a bottle detection system ("no bottle no rinsing").



Rinsing process by the two-channel rinser



Nozzle unit of the single-channel rinser for ionised air (picture top left)

Closed rinsing system – swing phase (picture bottom left)

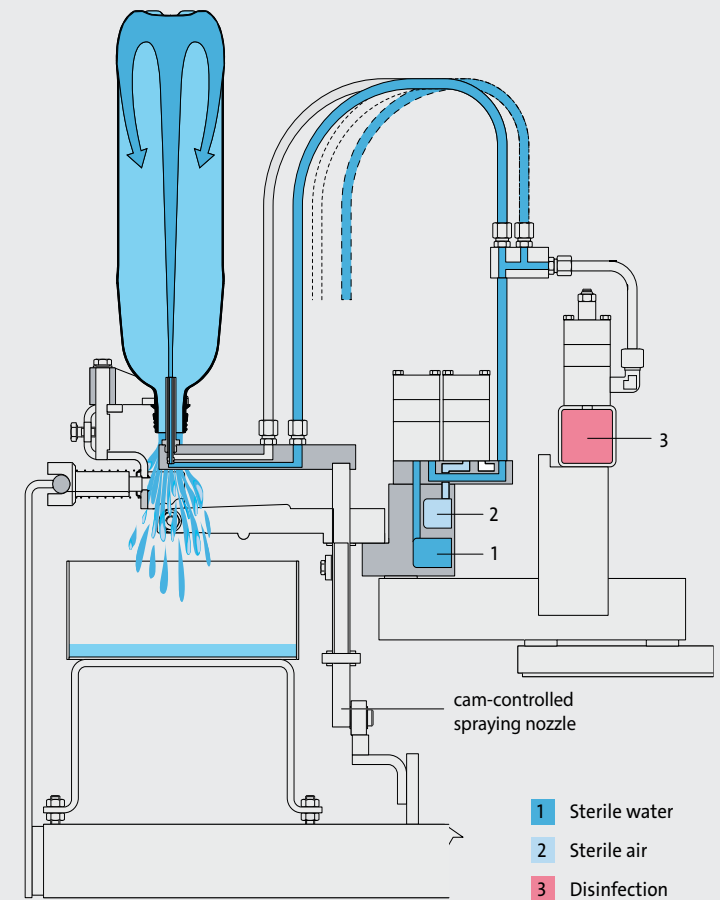
System variants

Three-channel rinser

In the three-channel rinser, different media are used in succession for the containers. Thus water, sterile air and steam for example can be used. The supply of water and sterile air is through the channels integrated in the gripper support whereas the channel for the steam has been designed as a separate channel to allow for thermal expansion. It is possible with this method to first use disinfectant and air together and then to repeat the process with water and air.



*Variojet three-channel rinser
for PET bottles*



*Spraying with the
three-channel rinser*

Control – cleaning – change-over

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Control

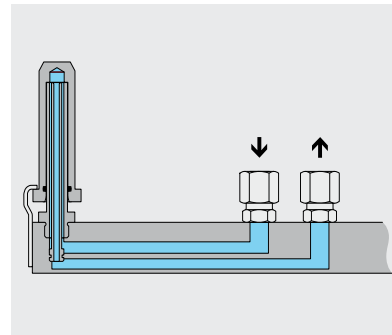
The mechanical variant of the Variojet is controlled via a curve and the rinsing angles defined for bottle treatment are thus fixed. In the case of the electronic design, different treatment times or cleaning procedures can be entered at the rinsing operator panel for the different container variants. During operation, it is possible to optimise the treatment times so that the particular requirements will be exactly met.

CIP / SIP

With all variants, a closed CIP / SIP circuit can be formed for optimum cleaning of the system. This is realised by fitting the optionally available CIP cups to the spraying nozzles. With all single-channel rinsers as well as for the mechanical two-channel rinser, an additional channel is needed for returning the CIP / SIP to stock.

Change-over

The height of the entire rinsing carousel can be adjusted by a motorised mechanism when the container height is changed. The adjustment to the new container height is made automatically. When changing over to a different container, it takes only a few steps to exchange the handling parts and no tools are needed to do this. There is no need to adjust the height of the rinsing carousel for the Variojet when neck-handling fixtures for plastic containers are used.



Spaying nozzle fitted with a CIP cup



Variojet rinser – swing phase

Additional equipment

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- Gable-type table top version for all sizes
- Rinsing medium return and collection
- Monitoring the spray for rinsing
- Bottle detection: Rinsing only when there is a bottle (“no bottle no rinsing”)
- Flushing down the outside and neck finish
- Extraction of disinfection vapours
- Manifold as well as all parts in contact with the product or gas made of high-grade tool steel AISI 316
- Manifold with seals, the reverse side of which can be rinsed



Bloc with the Variojet rinsing station and the Mecafill VKP filler in a gable-type table top arrangement

Your benefits

KRONES Variojet

■ Flexibility

For the variants with electro-pneumatic control unit, the treatment times and rinsing operations can be individually programmed.

■ Reliable bottle handling

Even heavy glass bottles can be transported safely through the machine when the fixture for supporting the body is used.

■ Short change-over times

When changing container formats, the Variojet can be changed over by straightforward ex-change of the grippers and no tools are needed to do this.

■ Effective cleaning

The system has been optimised for cleaning by the closed CIP / SIP circuit with optionally available CIP cups.

■ Simple maintenance

This machine is well accessible so that all maintenance and service jobs can be performed easily.

