



Krones filling systems for water

Filling into PET and glass



New technology for a refreshing thirst quencher



Carbonated or non-carbonated? Pure or with flavour? Mineral water or table water? The selection shows: Not all waters are the same; it's a multifaceted and mutable product. Thus, it also places special demands on its production process which, in turn, resulted in the Krones water fillers to be equipped with different features. Each water is provided with exactly the process it requires.

At a glance

Both for PET and glass bottles

- PET: also lightweight containers
- Output: up to 100,000 PET or 78,000 glass containers per hour
- Available as stand-alone solution or synchronized as a filler-rinser block, Contiform Bloc or ErgoBloc L
- Consistent hygienic design
- Closed CIP circuit

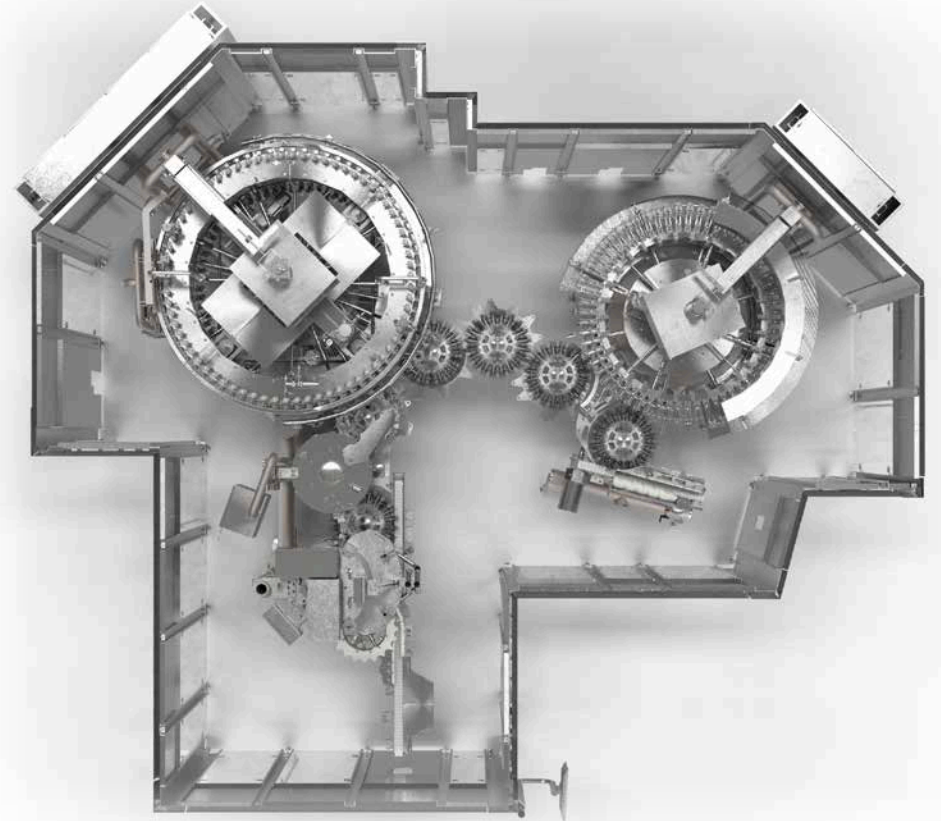


The Krones Modulfill family



Design features

- Design without table top thanks to the Monotec starwheel columns
 - Use from one side and with slanted table top possible if required
- Consistent use of servo motors
- Monitoring of the servo drives
- No lubrication of the drives required
- Stand-alone glass guard
- Main bearing in an oil bath
- High-precision pneumatic components with long service life
- Clean room enclosure as an option
- Modular design for easy expandability
- As a block with stretch blow moulder Contiform (PET: Possible as Contiform Bloc and ErgoBloc L) or with the Moduljet rinser (glass and PET: Modulfill Bloc)



Modulfill VFJ free-jet filler

For filling non-carbonated water in PET



Free-jet filling

- Electronic filling system with inductive flow meter or mass flow meter
- Free-jet filling for utmost microbiological safety
- Infinitely variable control of the filling speed by the Krones Proportional Flow Regulator (PFR)
- End of filling after signal from flow meter

Field of applications

Filling of non-carbonated water into PET containers, both with and without conductivity

Output

Up to 100,000 bottles per hour



Modulfill VFJ free-jet filler

For filling non-carbonated water in PET



Functional principle of the valve

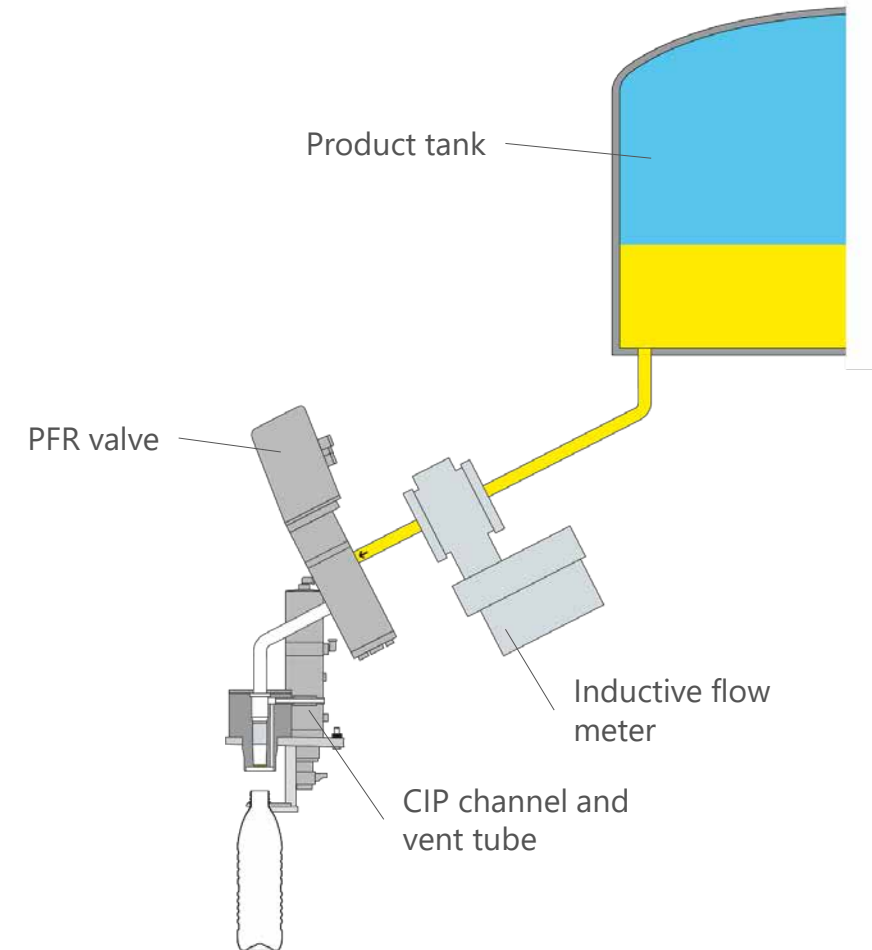
- Neck-handling grippers position the PET container beneath the filling valve. Once the container has been centred, the filling process starts: Thereby, the PFR valve (Proportional Flow Regulator) is opened and the product flows into the bottle with infinitely variable speed. Once the required fill volume has been reached, the flow meter provides a signal to the PFR valve. The valve is now closed and the filling process completed. Dripping of the filling valve is prevented by a sieve in the product discharge.

Optional:

Additional channel for CIP cleaning

Conductivity > 20 $\mu\text{S}/\text{cm}$

Viscosity < 10 $\text{mPa}\cdot\text{s}$



Modulfill VFJ free-jet filler

Benefits to you



Microbiological safety

Contact-free filling and optimised machine design

High filling accuracy

Use of flow meters and infinitely variable flow speeds

High availability

Top efficiency thanks to the combination with Krones cap feed systems

Ease of maintenance

Simple maintenance and assembly of the PFR valve

Reduced standstill times

High degree of automation by using automatically positioned CIP cups

Low consumption of media

When using PFR valves: significant reduction of the energy demand of the machine by about 90 percent

Requesting a new machine

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

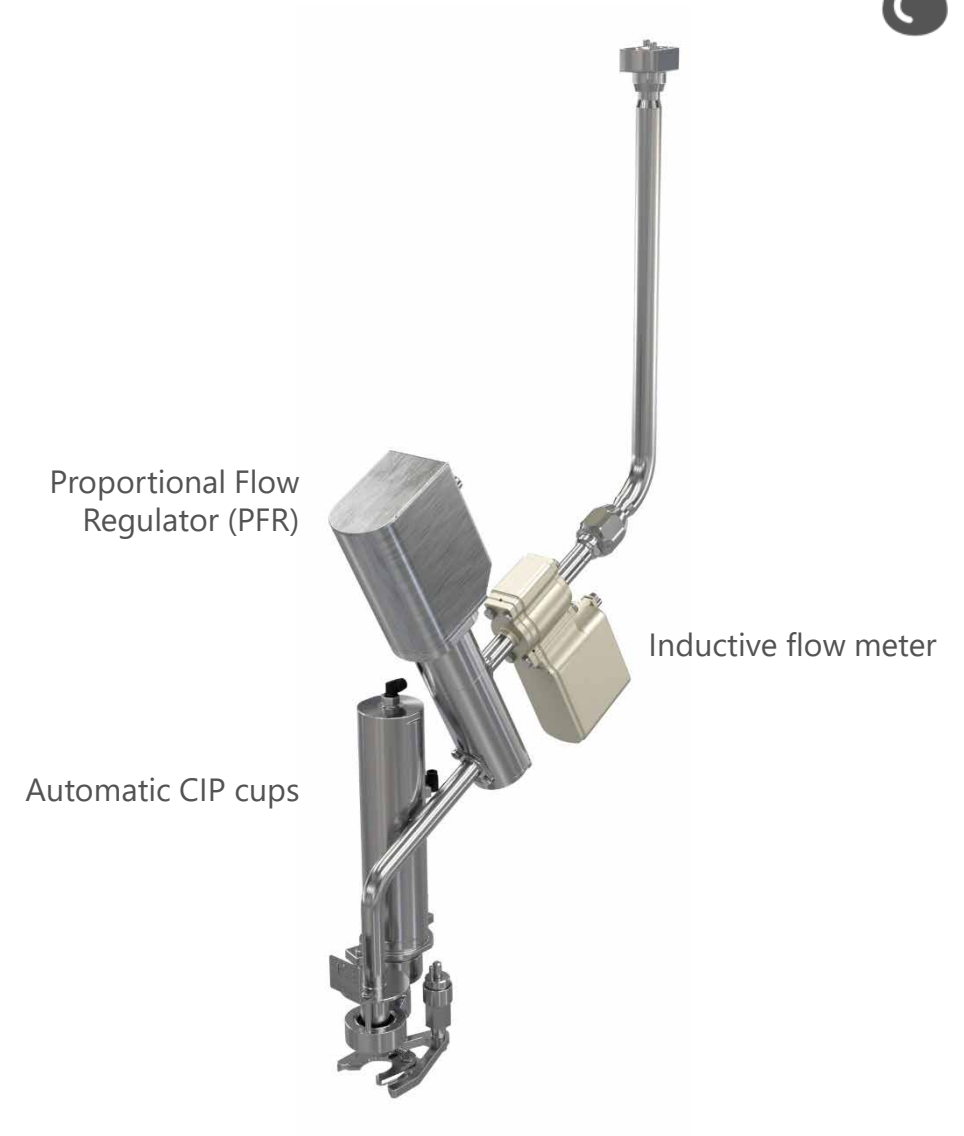


The PFR valve

The PFR valve (Proportional Flow Regulator) is a clever solution to control the product flow by means of an electronic controller and an integrated stepper motor. By regulating the product flow in front of the filling valve, a large number of different products can optimally be filled on one filling system.

The concept

- Use of the PFR principle for a large number of filling valves
- Integration into the product channel: regulation of the product flow
- Alternative to components installed within the product channel in order to throttle the product flow (e. g. diaphragm valves)
- Possible integration in different filling systems such as, for example, systems with an inductive flow meter or load cells
- Operation of the filling valve without compressed-air supply, as the PFR valve is electronically controlled
- Decentralised electronic controller, directly integrated in the PFR valve; electric cascading of valves



The PFR valve

Technical details



Method of operation of the PFR valve

- The liquid flows into the PFR valve.
- The flow speed can be individually adjusted to suit the bottle shape and product characteristics.
- The speed is infinitely adjusted during the filling process.
- The valve piston is controlled electronically by a stepper motor.
- After filling, the valve piston closes the PFR valve and the filling process is completed.
- To change over the PFR valve, all you have to do is remove the cables and undo the screw connection on the feed line.



Faster filling and improved result:

The PFR valve (left) continuously adjusts the speed and thus regulates the product flow for an optimal filling result. In the same time, it thereby fills faster and more gently compared to a pneumatic valve (right).

The PFR valve

Benefits to you

Microbiological safety

Contact-free filling and optimised machine design

High filling accuracy

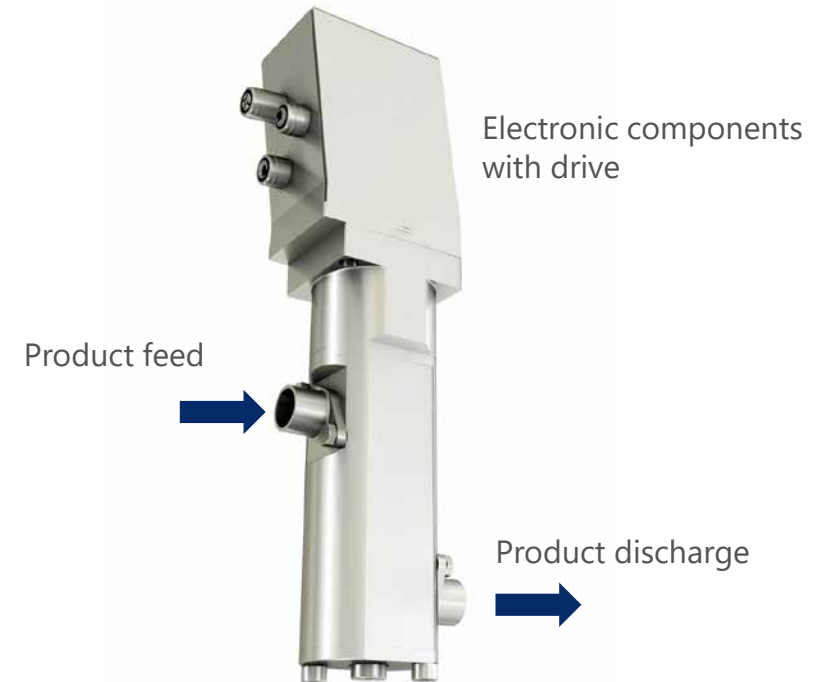
Use of flow meters and infinitely variable flow speeds

High availability

Top efficiency thanks to the combination with Krones cap feed systems

High availability

The entire block is in production for 168 hours non-stop. Depending on the product, it is cleaned and sterilised after 90 minutes or two and a half hours and can be used again. Intermediate cleaning after manual interventions also only takes 30 minutes.



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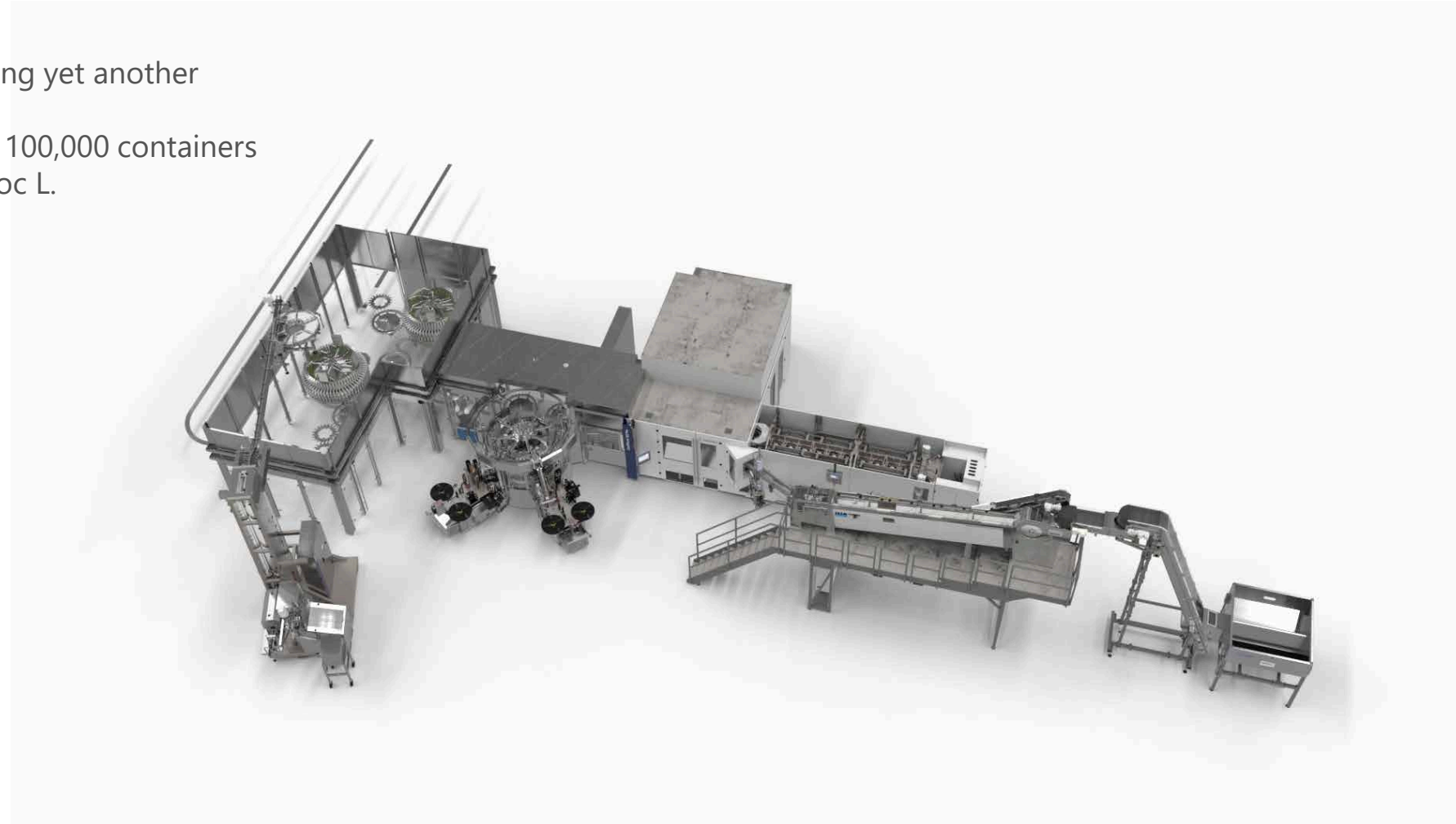


Modulfill Dual

Fills 100,000 containers per hour



With the Modulfill Dual, Krones is reaching yet another magic mark for the first time ever: its special line configuration means that 100,000 containers per hour can now be filled on an ErgoBloc L.



Modulfill VFS volumetric filler with PFR valves

Filling of carbonated and non-carbonated water in PET



Volumetric filler

- Electronic filling system with inductive flow meter or mass flow meter
- Pressing-on process without curves
- Infinitely adjustable flow speed
- End of filling after signal from flow meter
- Product feed from top via adjacent product tank

Field of applications

Filling of both carbonated and non-carbonated water into PET containers, with and without conductivity

Output

Up to 86,000 bottles per hour



Modulfill VFS volumetric filler with PFR valves

Filling of carbonated and non-carbonated water in PET



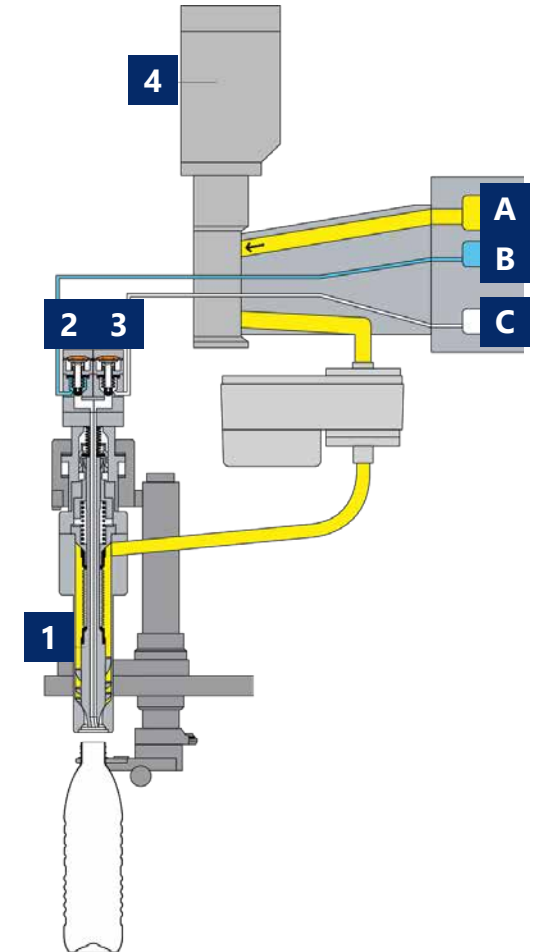
Functional principle of the valve

The filling valve moves electropneumatically onto the PET container without a stroke control cam. Afterwards, the container is pressurised. Once the same pressure is in the product tank and the PET container, the filling valve will be opened and the filling process starts. The liquid is gently fed via a swirl insert into the bottle. With the PFR valve, the speeds are infinitely adjustable, guaranteeing optimum flow behaviour. A flow meter monitors the fed liquid quantity. Once the exact filling volume has been reached, the flow meter provides a signal and the valve closes electropneumatically. After a settling phase, the pressure in the head space of the PET container is reduced via a snifting valve and the filled product exits the machine.

Conductivity	> 20 $\mu\text{S}/\text{cm}$
Viscosity	< 10 mPa·s
Pulp	≤ 0.4 mm/proportional < 10 %
Fibres	1 x 5 mm/proportional < 5 %

Basic position

- 1** Product stem
- 2** Pressurisation and return gas valve
- 3** Snifting valve (CIP relief valve)
- 4** PFR control valve
- A** Product channel
- B** Pressurising and return gas channel
- C** Snifting channel (CIP return channel)

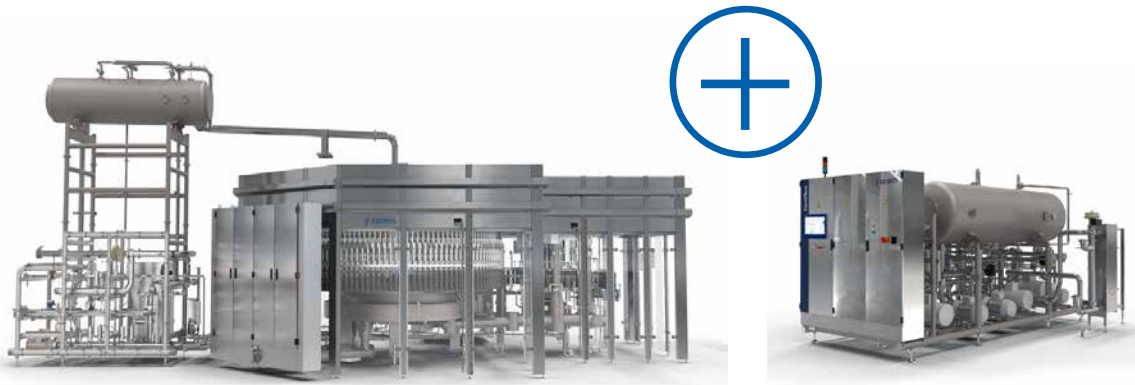


Modulfill VFS volumetric filler with PFR valves

Variants



Modulfill VFS with PFR valves plus Kronos Contiflow



The Modulfill VFS with PFR valves can be optimally combined with the Contiflow mixer. In addition to the advantages of the PFR valve, beverage producers benefit from the optimised communication between the two machines.

Modulfill VFS-M – integrated filler-mixer block



With the Modulfill VFS-M, the "M" stands for "Mixer" – which is directly connected to the filler. The product is directly fed via the raised carbonation tank into the manifold. The conventional filler bowl is no longer required. Thanks to optimised interfaces, the number of components is also reduced - and thus not only the footprint is reduced, but also the running operating costs.

Modulfill VFS volumetric filler with PFR valves

Benefits to you



Saved energy and raw materials

The PFR valve operates electronically. This saves 30 percent compressed air as compared to electropneumatic filling.

Improved cleaning

The CIP cups automatically swing into place by means of a magnet. This contact-free process without pneumatic components optimises the hygienic conditions and enables the installation of more filling valves on a pitch diameter.

Increased output

The filler operates without lifting cam, which increases the filling angle: This in turn increases the output, and that for the same line size. Filling water with a PFR valve, for instance, increases the annual output by up to 25 per cent, i.e. 72 million bottles (based on 0.5 litre bottles and a pitch diameter of 4,320 mm).

Enhanced product quality

The new PFR valve enables optimum adjustment of the filling speed to suit the particular product properties. Products which tend to foam excessively can be processed as well.

Reduced product loss

Thanks to the adjacent product tank, the product can be fed to the filler from above, reducing product loss to a minimum (optional: Modulfill VFS-M with integrated mixer and raised carbonation tank).

Maximised flexibility

Non-carbonated and carbonated products can be filled on one system.

Requesting a new machine

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Modulfill HES probe filler

For filling carbonated and non-carbonated water into glass



The intelligent probe system

- Precise determination of fill quantity with a probe
- Perfect flow characteristics through two filling speeds
- Turbulence-free switching between speeds thanks to diaphragm valve technology
- Low-foam filling via swirl insert in the valve
- Closed CIP circuit
- Hygienic design
- Electropneumatically controlled filling valve functions

Field of applications

Filling of both carbonated and non-carbonated water into glass containers, with and without conductivity

Output

Up to 78,000 containers per hour



Modulfill VFS volumetric filler with PFR valves

Filling of carbonated and non-carbonated water in PET



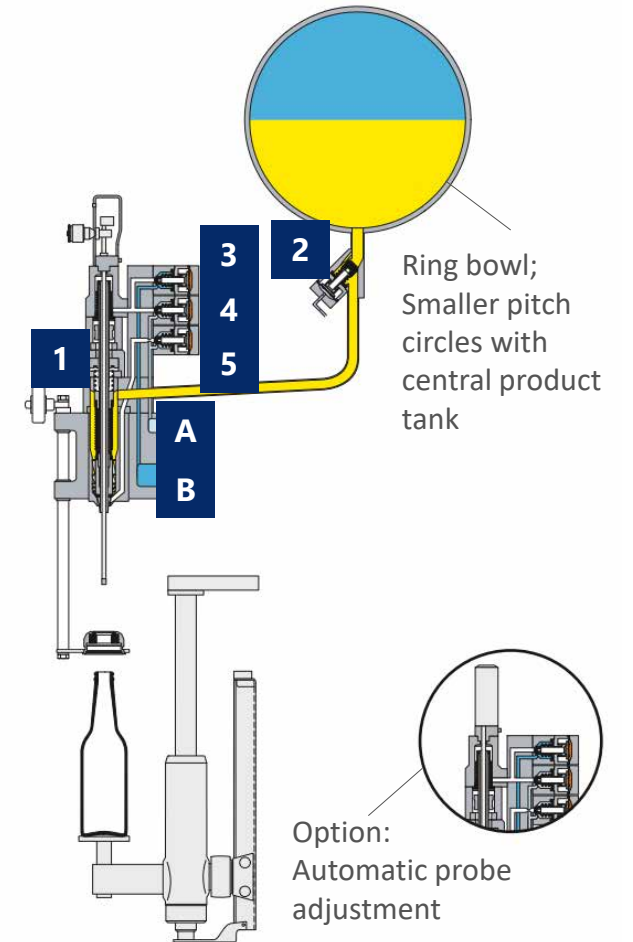
Functional principle of the valve

The glass bottle is pressed on first. The filling process will start as soon as the same pressure prevails in the ring bowl and the bottle. Two different filling speeds guarantee optimum flow. The valve closes if the liquid flowing in touches the probe mounted on the filling tube. After a settling phase, the pressure in the head space of the glass bottle is reduced via a snifling valve and the filled product exits the machine.

Conductivity	> 50 $\mu\text{S}/\text{cm}$
Viscosity	< 10 mPa·s
Pulp	≤ 0.4 mm/proportional < 10 %
Fibres	1 x 5 mm/proportional < 5 %

Basic position

- 1 Liquid valve
- 2 Switching valve fast/slow
- 3 Pressurisation and return gas valve
- 4 Return gas and snifling valve (multi-chamber operation)
- 5 Snifling valve
- A Snifling channel
- B Pressurisation channel



Modulfill HES probe filler

For filling carbonated and non-carbonated water into glass



Functional principle of the valve

Optional: Automatic probe adjustment

- The system can be equipped with an automatic probe adjustment function
- For each filling valve: Changeover to other sizes without manual probe adjustment
- Probe adjustment to the filling valves via the operator panel (for each bottle type)

Optional: Automatic CIP cup system

- Automatically positioned CIP cups
- Positioning of the CIP cups below the filling valve by means of mechanically actuated pivoting movement
- Automatic pressing-on of the CIP cups

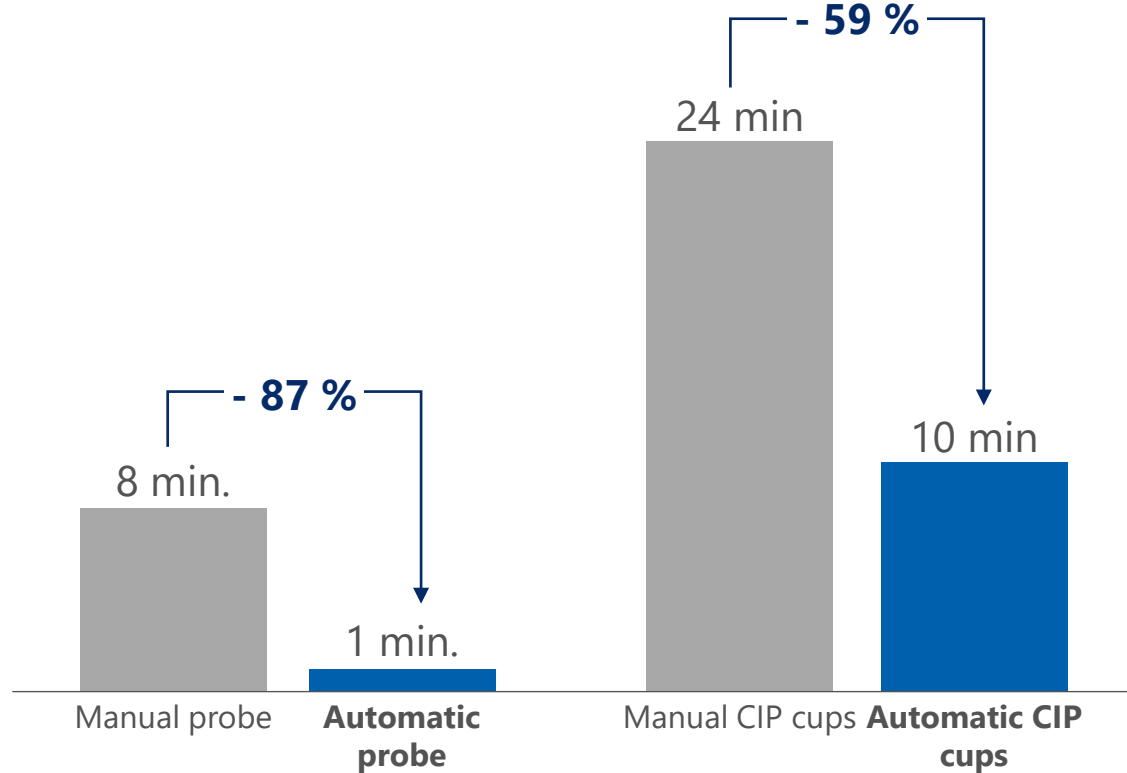


Modulfill HES probe filler

Optional with automatic probe adjustment and automatic CIP cup adjustment



Time saving during change-over:



Modulfill HES probe filler

Benefits to you



Foam-free filling

Use of swirl inserts at the filling valve outlet

Maximum filling accuracy

- Krones probe technology
- Turbulence-free change between two filling speeds through the use of membrane technology

Hygienic design

- No installed parts in the tubular ring bowl
- Press-on cam in drip-proof design
- Vacuum pump integrated in the CIP circuit
- Height-adjustable splinter washout system
- Oil-free lift cylinders
- Self-draining surfaces
- Clean pneumatic components hosing and electrical wiring

High filling stability

- Separation of the pressurisation channel and the snifting channel
- Absolutely dry pressurisation without any aerosol carry-over

Precision and long service life

Use of special pneumatic components with a significantly higher life cycle than the one of conventional switching valves

Perfect harmony between the pneumatic components and the electronic components

All processes 100 percent reproducible: No additional installations (e.g. pressure transducer with corresponding electronics) required

Requesting a new machine

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Hydronomic water treatment system



With the Hydronomic water treatment systems, Krones provides an individual programme for careful treatment of your untreated water. Whether as mineral water, brewing or process water, or as a basic ingredient for soft drinks, juice or tea: With Krones process technology you will give your water exactly the character that will meet the requirements of your product and your customers.

At a glance

- A water treatment process which is tailored individually to your requirements: Media filtration, UF and RO membrane technology, mineral dosing, UV treatment
- It prepares between five and 120 m³ of water per hour – optionally with a variable production quantity
- Minimised quantity of waste water thanks to its sophisticated technology
- Minimised requirement for cleaning chemicals due to the stainless steel construction which can be sanitised completely with hot water
- When combined with the Krones HydroCircle, it offers a high-performance concept to recycle waste water to create process water
- Especially developed for filling still water: Krones Ozonomic



Krones in-house solution for ozonisation



Ozone is one of the strongest oxidising agents and is used for disinfection. Its benefits: when dissolved in water, it reliably removes bacteria and viruses – and, after just a short time, breaks down without leaving any residue. It is for this reason that an ozone system is often connected upstream from conventional fillers when filling non-carbonated water. If you fill still water and a high product quality is your utmost priority, then the Krones Ozonomic is precisely the right choice.

At a glance

- Reliably kills viruses and bacteria
- Thanks to the integrated oxygen generator: a compressed-air supply is sufficient, no separate oxygen connection is needed
- Ideally designed to suit adjacent Krones technologies: water treatment systems from the Hydronomic series and fillers from the Modulfill range
- Various outputs: 15, 30, 45 and 60 m³/h



Everything from a single source



Training courses at the Krones Academy – trained personnel will increase your line efficiency

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.

KIC Krones lubricants – for each production step

Whether for gears, chains or central lubrication systems – our greases and oils are true all-round talents. They can reach every lubrication point, protect your line and ensure gentle treatment for your products thanks to their food-grade quality.

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**

