



# Modulfil HES

Filling of beer into glass in a sustainable and flexible way



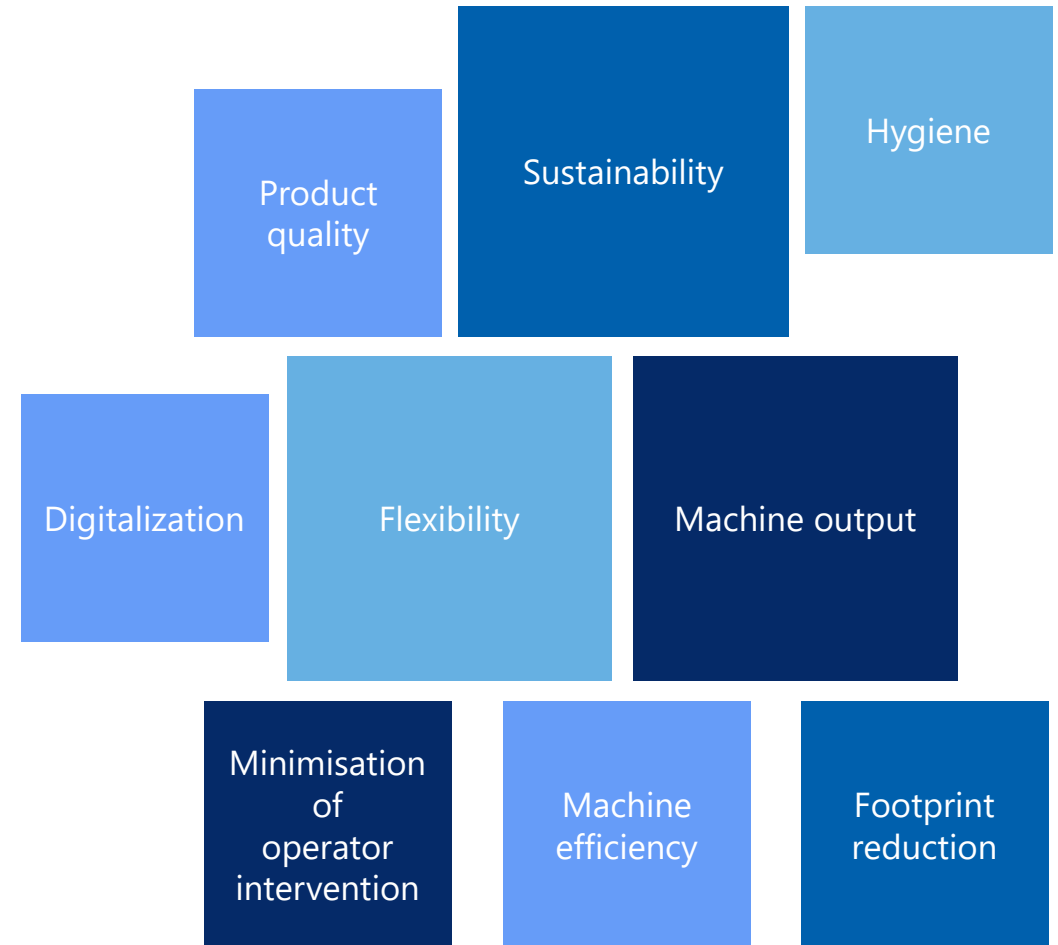
# Further developments for filling beer



We at Krones have been continuously working on further developing our solutions for a wide range of beverage producers. Inspired by the challenges of the future in terms of sustainability and Krones' corporate goals, we have been working on taking our Modulfill HES for beer filling to the next level in terms of **flexibility, sustainability and machine output**.

## At a glance

- Optimisation and automation of operator interventions for more flexible production
- Innovations to save media for more sustainable production
- Revisions to realise more compact machine sizes with automatic CIP cups at the same output



# The new features at a glance



Sorter with automatic dust extraction

Modulcrown in flushable design

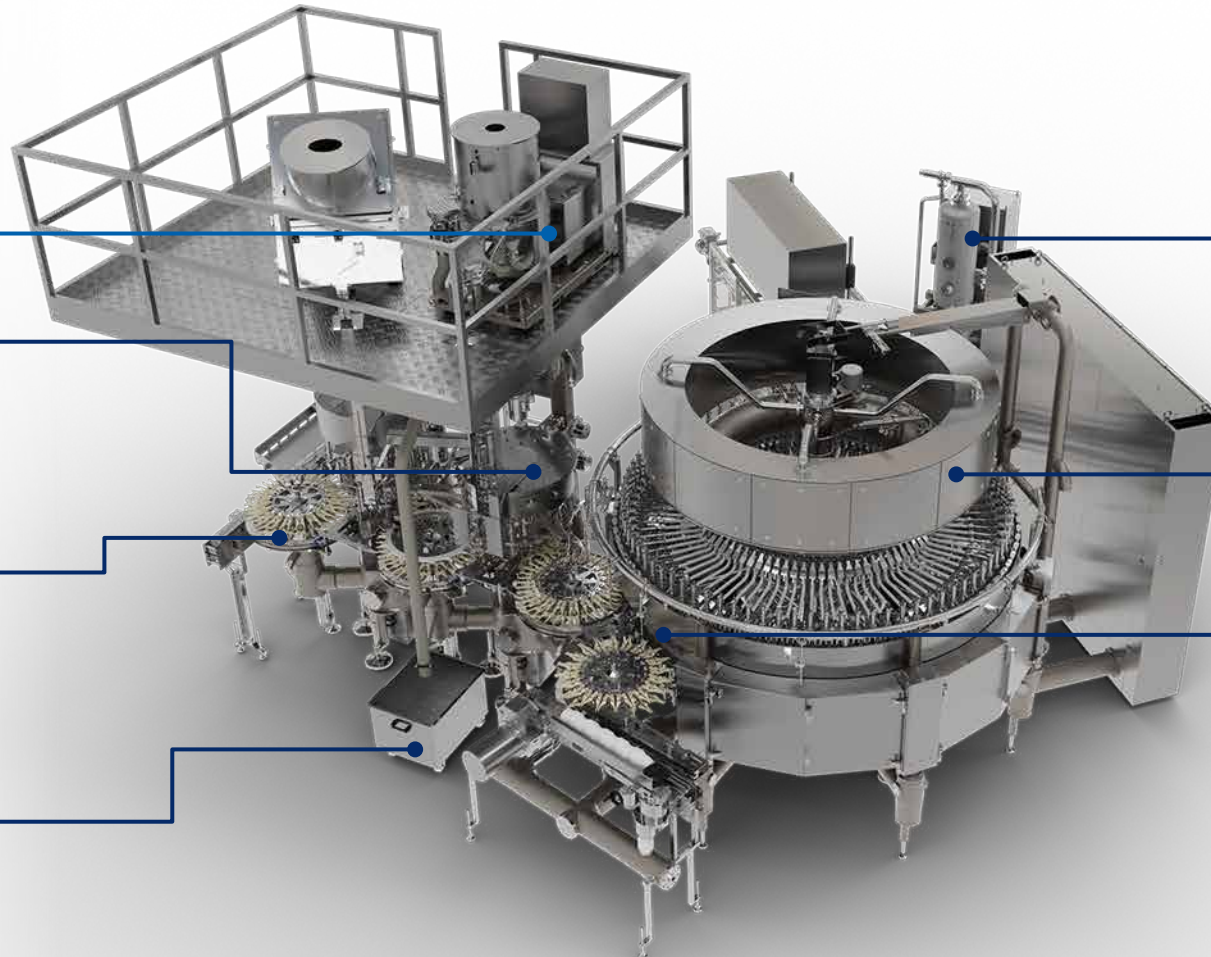
Krones clamping starwheels – MultiGuide Base

Automatic emptying of the crowner sorter

Pump unit with dry-running vacuum pump

Oxygen measurement with automatic process gas control

Revised filling valve without centring bell lifting cam



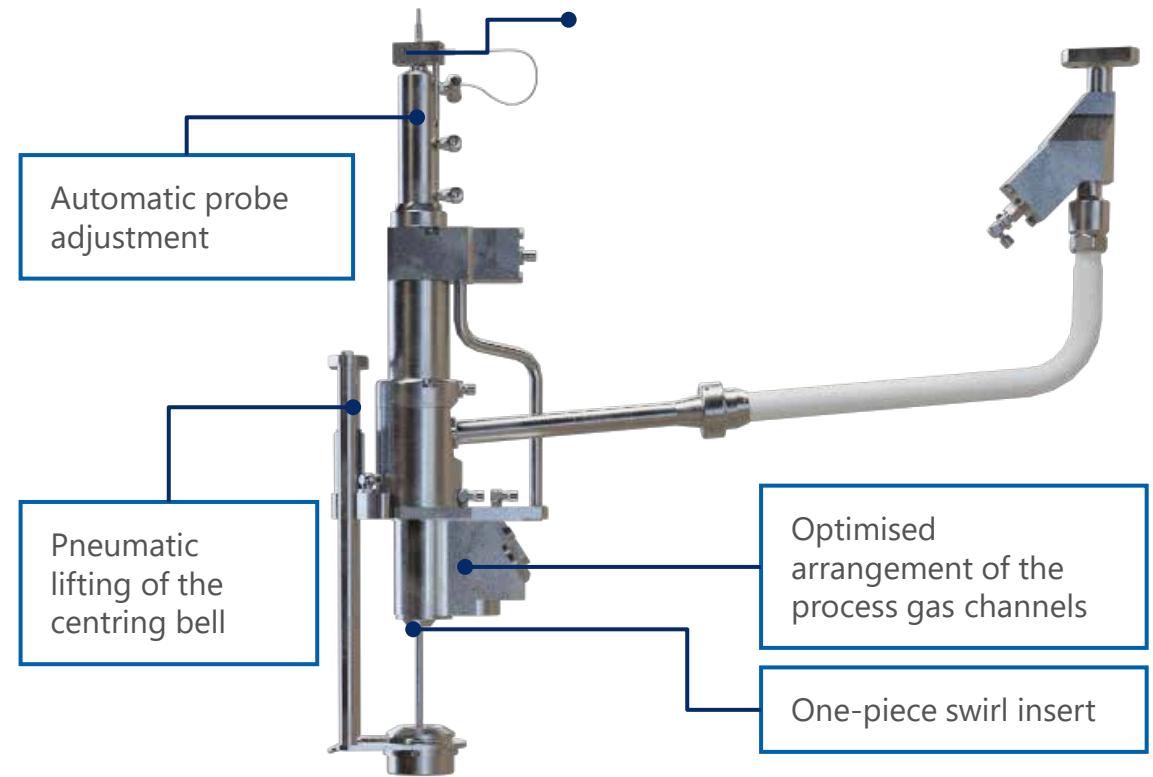
# "Facelift" for the HES filling valve



As the central element of the machine, the filling valve is an important component that is continuously being developed and optimised. In order to improve the filling process, the arrangement and cross-sections of the gas channels have been rethought - which not only improves the cleaning result, but also reduces the CO<sub>2</sub> consumption during bottle flushing.

## Benefits to you

- More sustainable production and improved machine hygiene by eliminating water lubrication for the centring bell lifting cam
- Optimisation of product safety by eliminating wear parts above the filling valve (e.g. rollers of the centring bell lifting unit)
- Optimal cleaning thanks to the hygienic one-piece swirl insert
- CO<sub>2</sub> savings through flow optimisation



# Pump unit with dry-running vacuum pump

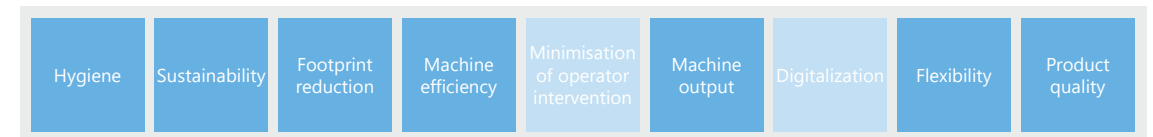
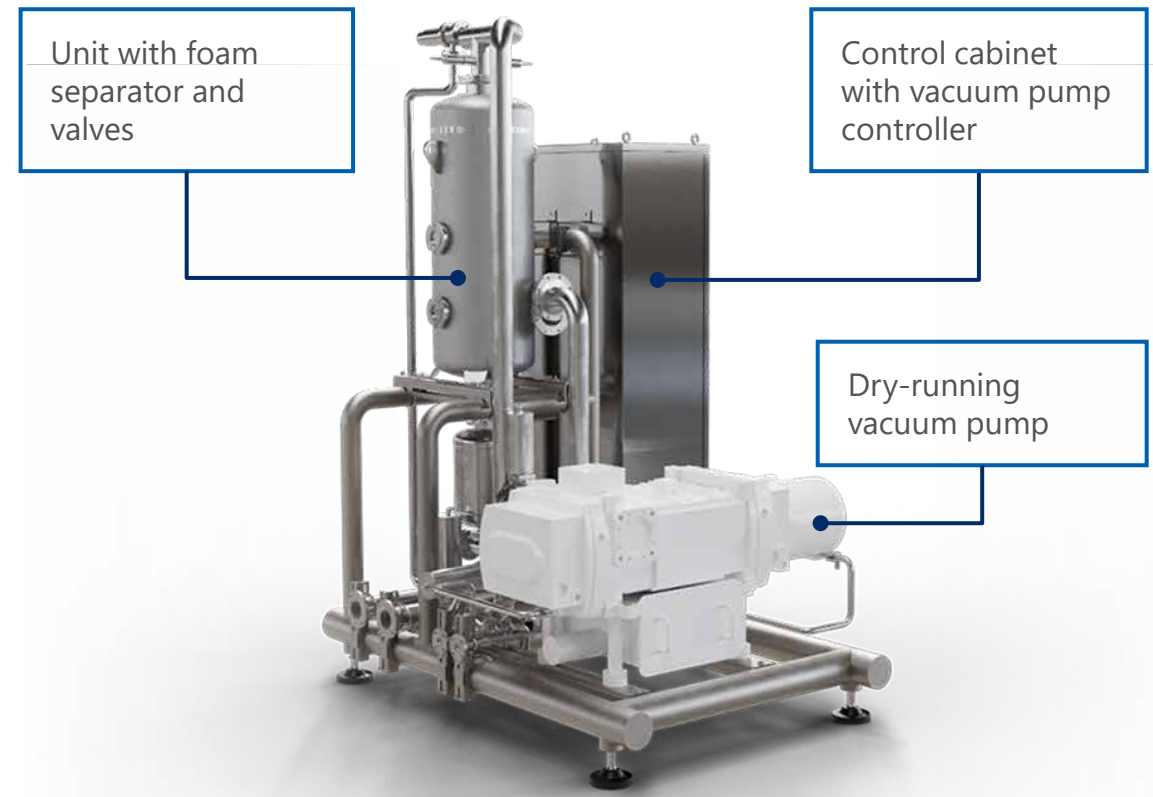


The unit has been designed in the usual Krones quality, so that it is as an integral part of the machine. By using a dry-running vacuum pump, not only the production can be more sustainable, but also a higher product quality can be achieved when filling beer.

## Benefits to you

- Realisation of lower vacuum values during filling
- Optimum hygiene conditions in the machine, since the piping and foam separator are integrated into the CIP circuit as usual
- Significant minimisation of the water consumption during production
- Reduced energy consumption by up to 25 percent\*

\*during the production, compared to a conventional liquid ring vacuum pump with the same suction capacity



# Benefits to you

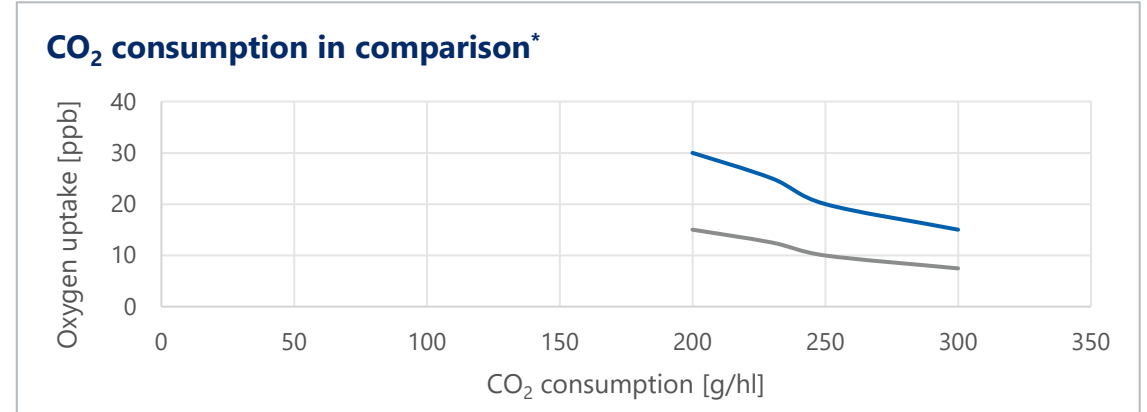
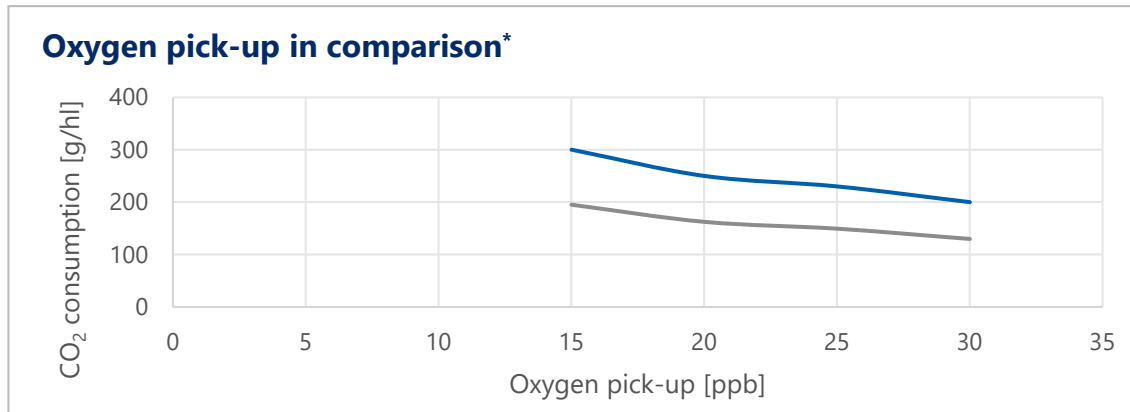
## Reduction of CO<sub>2</sub> and pick-up of oxygen



For the first time, Krones is combining the redesigned HES filling valve with a dry-running vacuum pump in order to maximise the advantages of both systems. A newly designed arrangement of the individual functions in the filling valve leads to optimised flows. Combined with the "lower" vacuum values, the Modulfill HES manages to set completely new standards in conventional beer filling in terms of oxygen pick-up and CO<sub>2</sub> consumption.

## Benefits to you

- Less oxygen pick-up and therefore a longer shelf life for the beer
- Lower CO<sub>2</sub> consumption, which leads to resource savings during production



■ Conventional HES filling valve ■ New HES filling valve

\*Exemplary values: Saturation pressure ≤ 1.7 bar, filling of conventional beer (5.6 g/l CO<sub>2</sub> 12 °C) into a 660 millilitres bottle; at 99,998 % CO<sub>2</sub> purity; DO pick up

Hygiene	Sustainability	Footprint reduction	Machine efficiency	Minimisation of operator intervention	Machine output	Digitalization	Flexibility	Product quality
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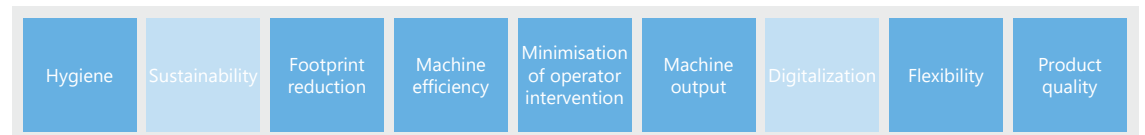
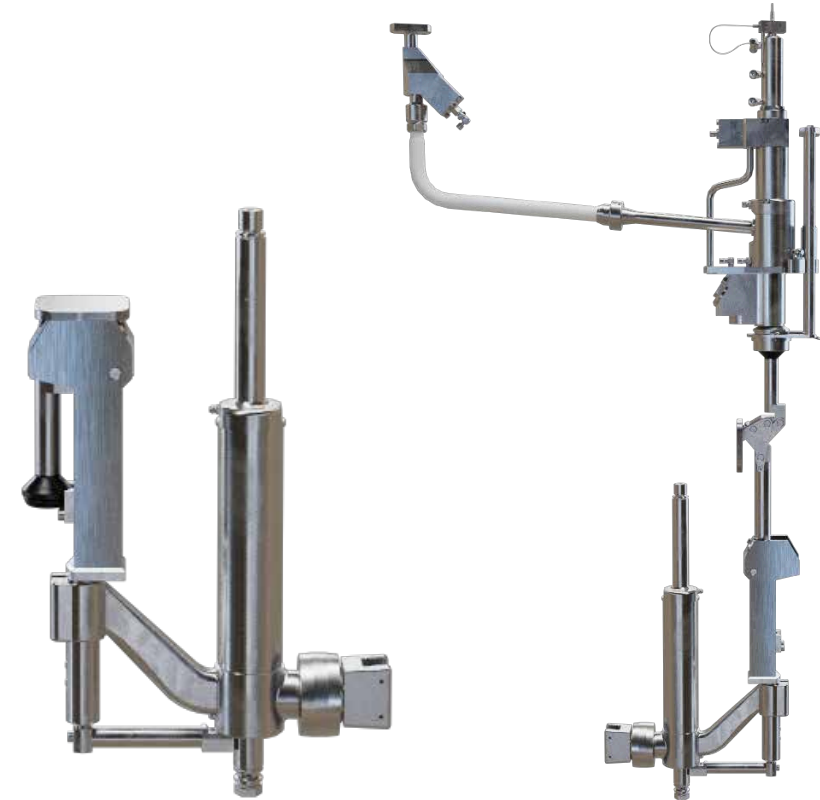
# Automatic probe adjustment and automatically positioned CIP cups



Automated probe adjustment and CIP cups complement each other perfectly, meaning that manual operator intervention at the filling valve is no longer necessary for both type change-overs and cleaning. The new version of the automatic CIP cups for the small filler pitches (87 and 94 millimetres) is installed as part of the lifting cylinder. A pneumatic swivel mechanism swivels the container plate backwards and moves the CIP cup against the centring bell and the filling valve, creating a closed cleaning cycle.

## Benefits to you

- More compact machine size possible with the same output
- Automatic and reproducible change-over when changing types with a different fill level
- Cleaning and change-over times reduced to a minimum
- Improved machine hygiene and product quality: No risk of recontamination of the filling valve and probe when the operator removes the CIP cups



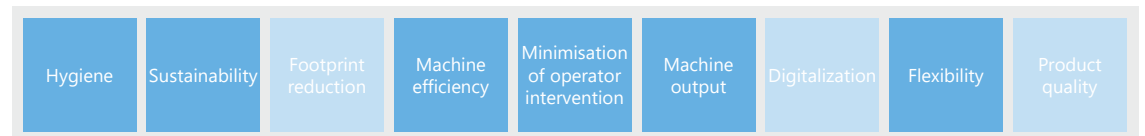
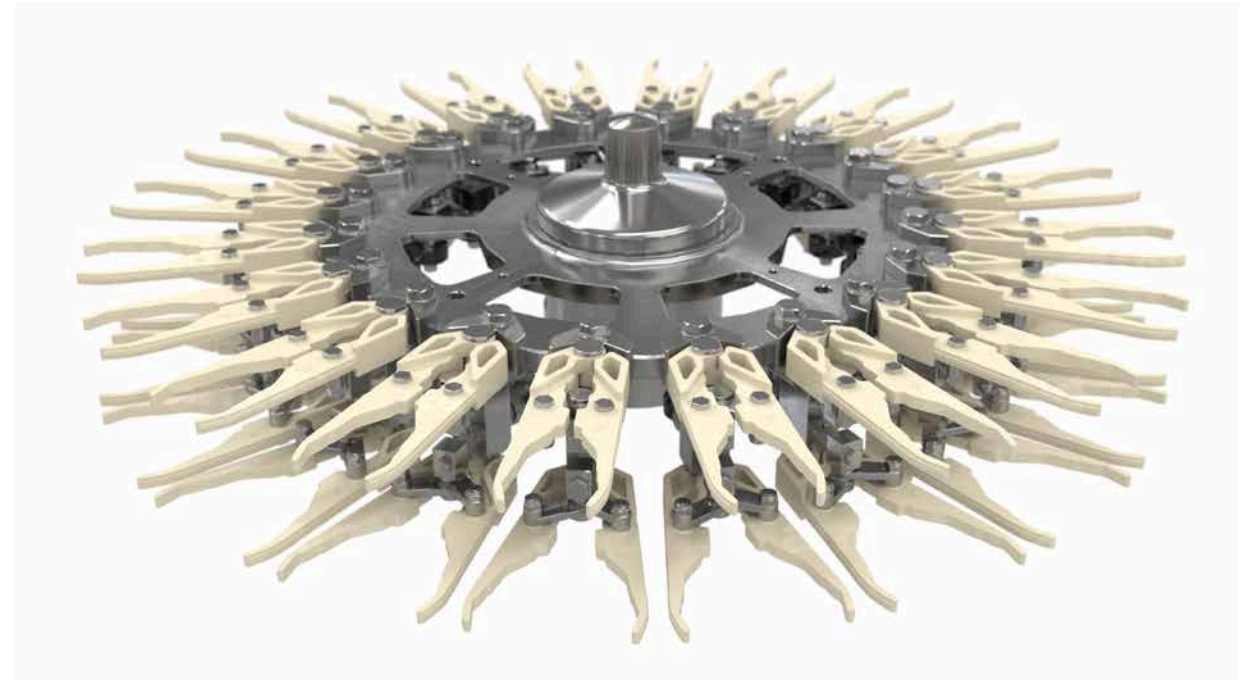
# MultiGuide Base clamping starwheels



Not only for the HES filling system, but for bottle handling in general, Kronos will be relying on the MultiGuide Base multifunctional clamping starwheels in future. Unlike the handling parts used so far which are designed for just one container format and size, the clamping starwheels can handle the entire range with all conventional bottle formats.

## Benefits to you

- Change-over times are reduced to a minimum
- Less space required as the handling parts sets needed so far can be omitted
- No risk of contamination as operator intervention is no longer required in the filling and capping area
- Should a gripper need replacing: Extremely simple and reproducible assembly in just one minute; no fine adjustment necessary

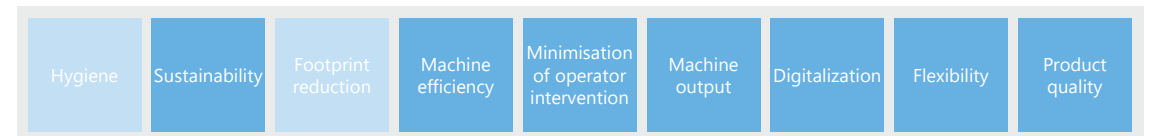
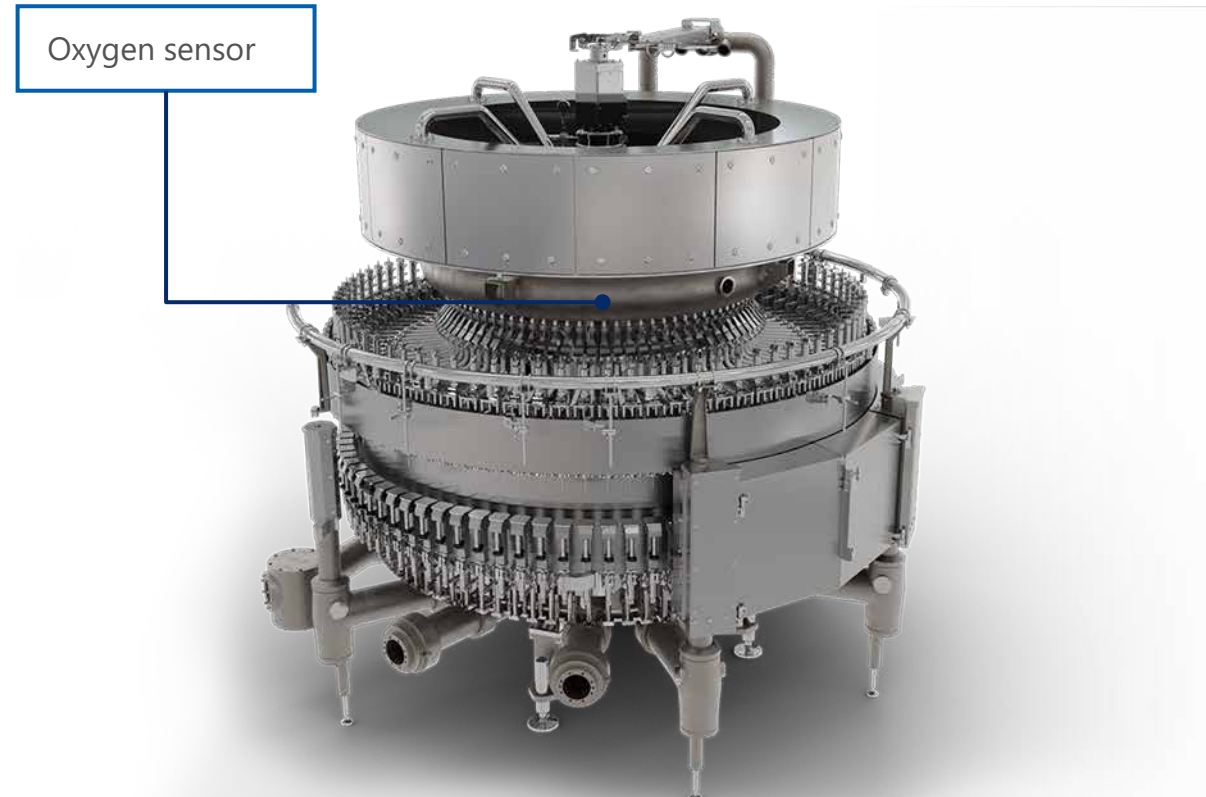




# Intelligent process gas control system via an oxygen sensor

The highest product quality with the lowest media consumption - a balancing act when filling oxygen-sensitive products, which can be actively influenced in future.

This is because the residual oxygen in the gas chamber of the filler bowl is continuously measured and analysed. This allows the filling quality to be monitored with regard to oxygen pick-up during the filling process and regulated to the desired level. Goal is to achieve the lowest possible oxygen pick-up in the filled bottle with the lowest possible CO<sub>2</sub> consumption.

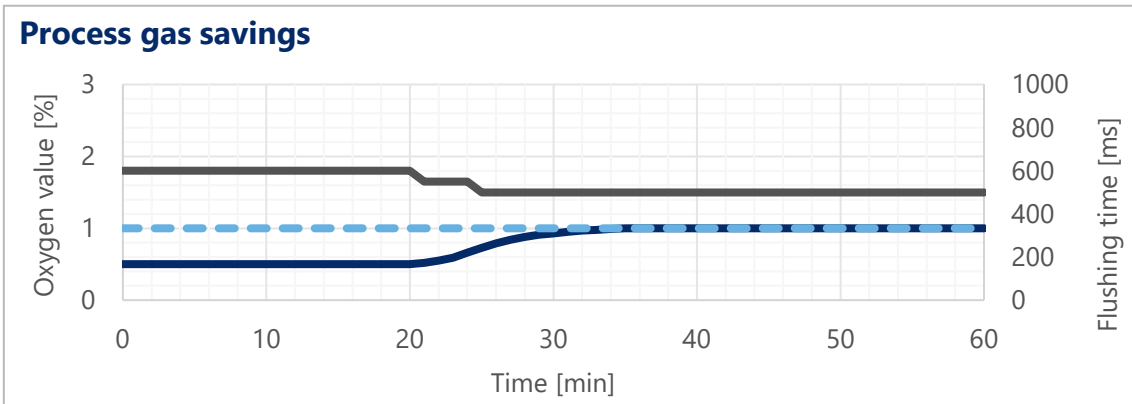


# Intelligent process gas control system via an oxygen sensor

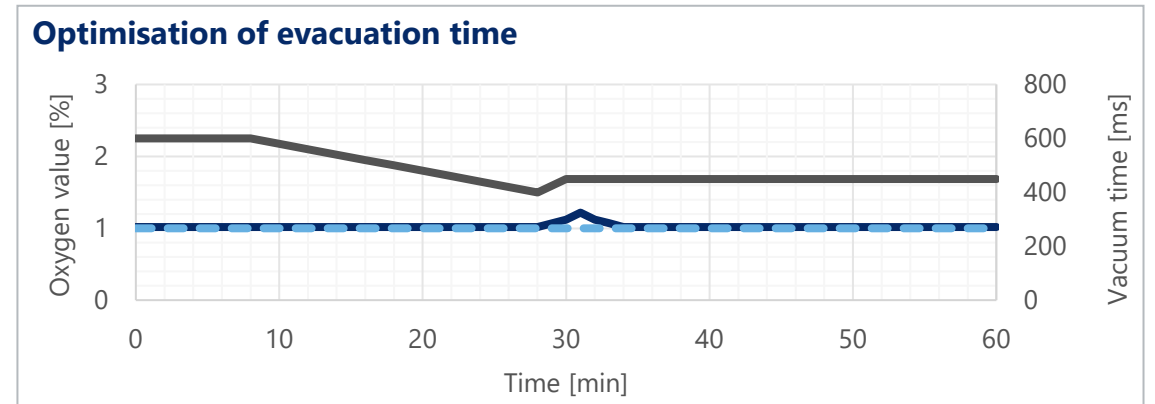


## Benefits to you

- Revealing CO<sub>2</sub> savings potential
- Automatic quality control
- Detection of process faults
- Automatic optimisation of flushing and vacuum times



■ Oxygen value ■ Target value ■ Flushing time



# Automatic filling pressure control



A smoothly functioning system is the ideal situation for every system operator. However, external influences and the associated downtimes stand in the way of this - because these lead to changes in influencing variables (e.g. temperature and filling pressure) that are assumed to be constant in a classic machine design.

Krones provides a remedy through the use of digital features: Measuring the product temperature in the filler tank inline and using the CO<sub>2</sub> content (filler recipe or measuring device) makes it possible to calculate the real saturation pressure and regulate the filling pressure accordingly.

## Benefits to you

- Reduced operator intervention when restarting the filler
- Avoidance of rejects and underfilled bottles due to overfoaming



# Broken bottle simulation and expanded broken bottle detection

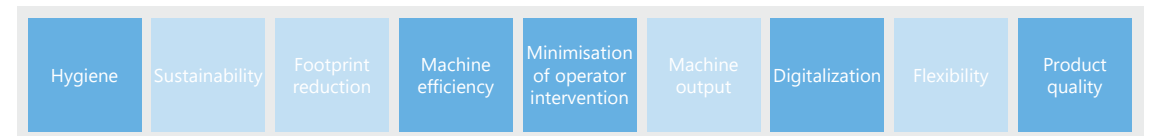


A broken bottle is simulated at a selected filling valve via the touch-screen at the filler. Once the program has been started, the filler will implement the saved broken bottle simulation.

In the Modulfill HES filler discharge, the signal of the level probe is queried once again. This makes it possible to detect whether the bottle has been damaged during the filling process. If this is detected, the broken bottle simulation for the filling valve concerned starts automatically.

## Benefits to you

Additional monitoring function during production for increased process safety



# Filler control and visualisation system



The machine will be equipped with the new Krones Connected HMI touch-screen to make it future-proof for all upcoming requirements in terms of automation and digitalization. The touch-screen design in combination with the new VisiWin visualisation system environment makes the machine operation easy as ever. The filler controller in TIA makes sure the filler PLC is also well-prepared in the future.

## Benefits to you

- Easy and intuitive filler operation via a central interface
- Filler control system equipped for future tasks



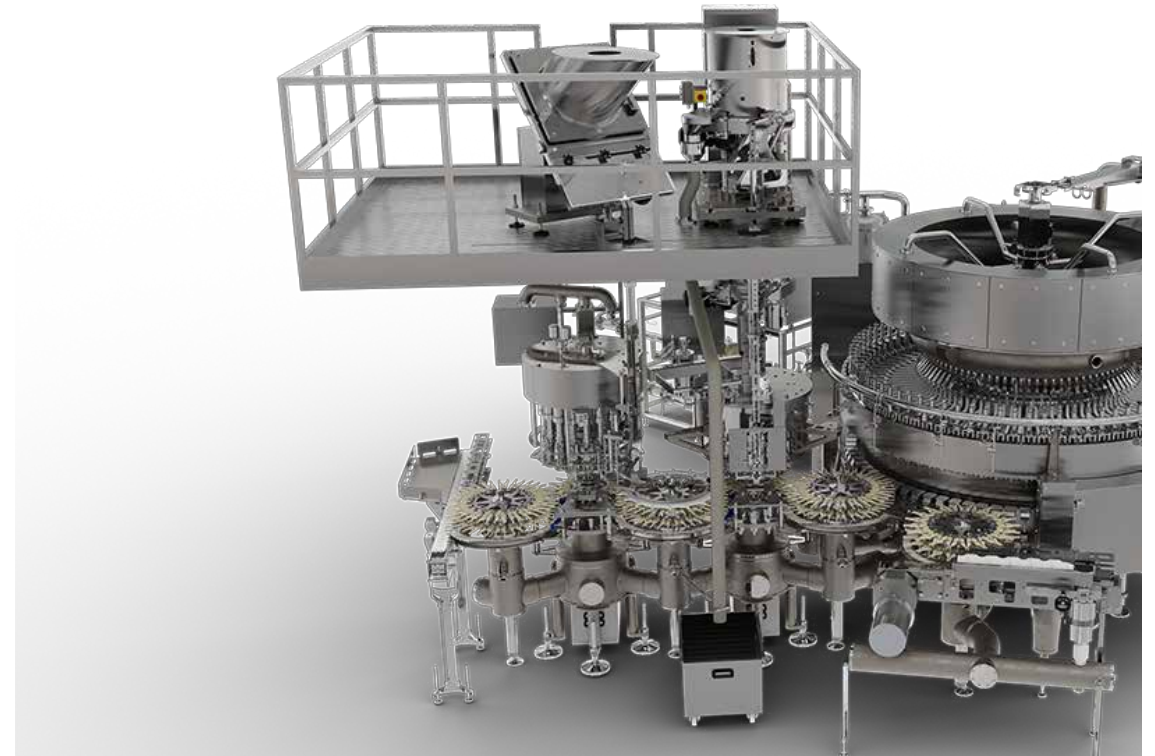
# Automatic crowns emptying



In the event of a type change-over, where the crown is to be replaced (same type, but different colour/different motive), the chute of the Modulcrown capper will be emptied automatically. The crown corks remaining in the sorter are automatically emptied into a central collecting container in the operating area of the machine and removed centrally.

## Benefits to you

- Reduction of the operator intervention
- No risk of contamination, since direct intervention in the capping area is avoided



Hygiene

Sustainability

Footprint  
reduction

Machine  
efficiency

Minimisation  
of operator  
intervention

Machine  
output

Digitalization

Flexibility

Product  
quality

# Sorting system

## A tidy affair

In the upgrade, Kronos is not only scrutinising the filler itself, but also the connected cappers and sorters for crowns. In the sorter, the cap abrasion residue is automatically extracted at the neuralgic positions.

### Benefits to you

- Automatic extraction of the cap abrasion residue in the sorter
- Structure in hygienic design:
  - Twist tube in fully cleanable stainless steel design
  - Cap chute available with slide: Therefore, the sorter can be positioned outside of the filling area, on a platform or a clean room roof



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# Crowner

## A clean solution



The crowner can now offer a higher performance: After the upgrade it can operate approximately 20 percent faster. But the main focus here was still on the subject of hygiene. The capping head and container plates are easy to clean thanks to flushing windows. Lubrication is reduced to a minimum with lifetime-lubricated rollers and an automatic single-point lubrication system for the cams.

### Benefits to you

- Capping head and container plates with flushing window for optimum cleaning
- Lifetime-lubricated rollers
- Cam lubrication with automatic single-point lubrication system for optimal running conditions
- Mechanical separation between the process and drive area
- A 20 percent higher output





# Aluminium roll-on capper

## No time loss during change-over

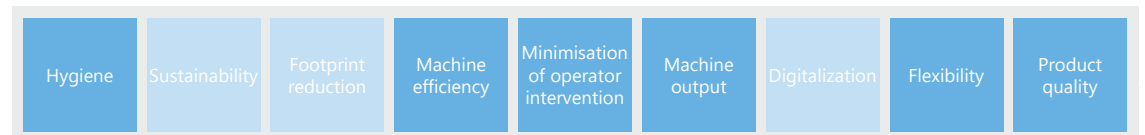


It is now possible to save a considerable amount of time when changing over aluminium capping heads. For instead of the screw connection used so far, a quick-release fastening is now integrated.

### Benefits to you

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- Shortened change-over times thanks to quick-change heads
- Hygiene benefit thanks to improved energy chains



# The benefits



## Numerous plus points for more sustainability

Krones has tinkered around with scores of regulating screws in order to improve the Modulfill even further when it comes to sustainability. The most significant innovation is the reduction of resource consumption (CO<sub>2</sub>, water, energy) in the filling process: The optimised filling valve has been combined with a more efficient type of vacuum pump.

## Automation and digitalization in the filling process

Product safety is the be-all and end-all when it comes to filling. In order to live up to this credo, Krones is committed to providing our customers with maximum transparency and safety in their production processes. This is made possible by oxygen monitoring, including process gas control and extended broken bottle detection. This way, the bottler knows at all times what is happening in the filling process and can leave the readjustment of any deviations entirely to the filler.

## Improvements in flexibility and machine output

Time is money - and manual activities in particular are system downtimes that are planned but can easily be avoided completely. For example, the probes on the Modulfill HES can be adjusted automatically, CIP cups can be moved into position automatically, handling parts change-overs can be reduced to a minimum and emptying can be fully automated.

## Improved product quality and machine hygiene

The lower oxygen pick-up with the revised HES filling valve enables our customers to achieve a longer shelf life for their products. Not only is the consumption of resources reduced, but also machine hygiene is significantly improved by eliminating wear parts and dispensing with water lubrication above the filling valve.

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

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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

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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

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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

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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.

## Evoguard – excellent valve technology throughout the line

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The Evoguard valve series comprises a modular system with hygienic and aseptic components which contributes to an increased performance at every point of the production line and has the perfect solution for every process step.

## Evoguard – pumps for absolute process reliability

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In addition to separation and shutting off, one thing is particularly important for a plant: the reliable feeding of your product. This is why Evoguard also offers innovative centrifugal pumps in addition to high-quality valves.

**SOLUTIONS  
BEYOND  
TOMORROW**

