



# Hydronomic

The purity law for your water

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Hydronomic

 **KRONES**

# Water preparation for your product with character



Carbonated or non-carbonated, hot or chilled – regardless of how versatile our taste is for water, the demands for the basic elements of your product are just as versatile. With the Hydronomic water treatment systems, Krones provides an individual programme for careful treatment of your untreated water. Whether as brewing liquor, process water or a basic ingredient in 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

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- It operates with a water treatment process which is tailored exactly to your requirements
- It prepares between 5 and 120 m<sup>3</sup> of water per hour – optionally with a variable production quantity
- Minimised quantity of waste water thanks to its sophisticated technology
- Best possible access for operators and service personnel
- Minimised requirement for cleaning chemicals due to the stainless steel construction which can be sanitised completely with hot water
- It can be expanded thanks to modular design



# Our solutions for your water treatment



We adapt the equipment for your individual treatment steps exclusively to suit your economic and technological requirements. With our modular component system, we will always find the correct solution – from the high-end all the way to a cost-attractive basic version.

## Hydronic MF/GAC (Media Filtration)

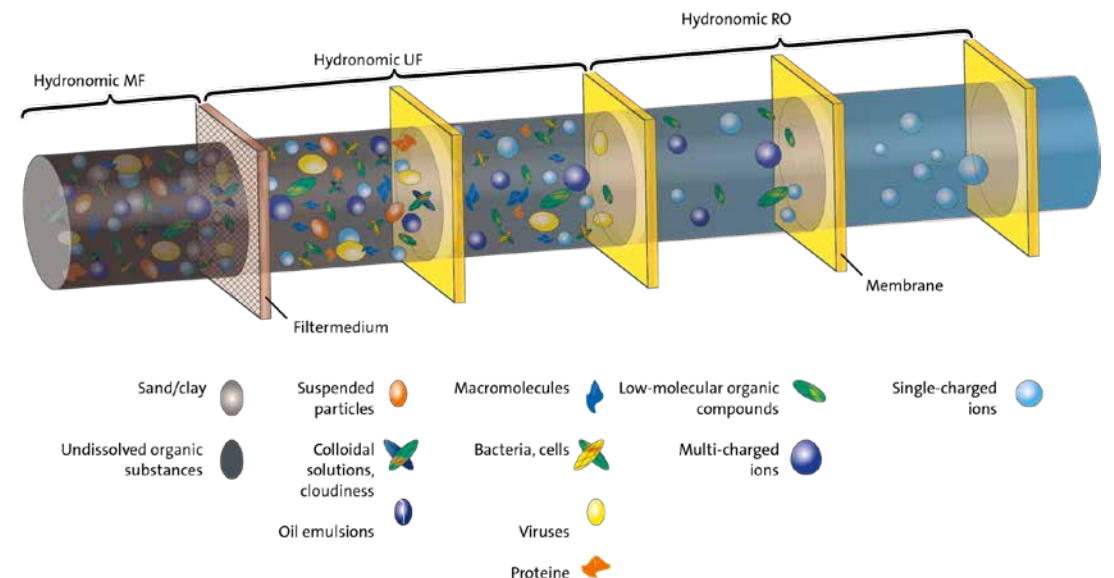
It filters and adsorbs any unwanted and undissolved water content (suspended solids, odorants, organics, chlorine, iron, manganese, etc.) with different filter media (e.g. silica sand, manganese oxide, basalt and activated carbon).

## Hydronic UF (Ultra Filtration)

Uses the most up-to-date membrane technology with hollow fibres (pore size of 0.02 µm) for the ultrafiltration of water in in/out operation

## Hydronic RO (Reverse Osmosis)

Desalinates water with membrane technology in a reverse osmosis technology where the wound membrane module is flushed tangentially

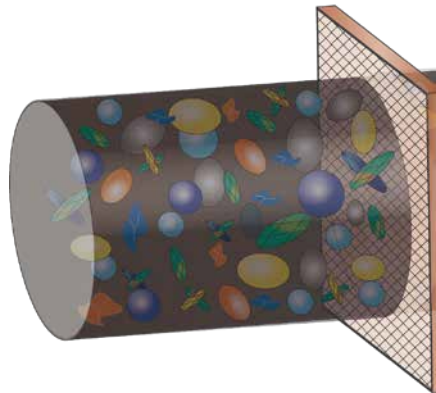


# The modules in detail

## Hydronomic MF/GAC



The module filters and adsorbs any unwanted and undissolved water content (suspended solids and odorants, organics, chlorine, iron, manganese, etc.) with different filter media (e.g. silica sand, manganese oxide, basalt and activated carbon).



MF: media filtration

UF: ultrafiltration

RO: reverse osmosis

EDI: Electro-deionisation

MDS: mineral dosing station



# Hydronic MF/GAC for the coarse job



Media filtration with individually defined filtration media is aimed at removing special substances or types of contamination from untreated water. This filtration method is used with a low amount of suspended solids (clay or sand) or for the traditional deferrisation or demanganisation for well or mineral water:

- Water flows through the filter media via the principle of deep filtration or adsorption from top to bottom
- Separation of undissolved particles in the filter bed
- Backwashing with filtrate or untreated water against the direction of the flow for the removal of filtered particles

## The components

- Hygienic design in stainless steel for sustainable cleaning and sanitisation (including the product paths)
- Perfected nozzle bases for flow-optimised filtration and backflushing
- Aerators and deaerators which can be fully sanitised

Standard module  
with seat valves



### Efficiency in figures

Filtration performance: up to 120 m<sup>3</sup>/h  
Yield: up to 99.5 %

# Hydronomic MF/GAC

## benefits to you



### High hygienic standard

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The filtration line is fully designed in stainless steel. This way, the entire system can be fully sanitised with hot water.

### Perfect filtration performance

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The so-called fill of the filter media is selected targeted and individually adjusted to the respective application. This leads to optimal filtration results.

### Gentle on the resources and the filter media

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Filter media that ideally harmonise with each other, prolong the filtration cycles and minimise the necessary frequency of back-flushing. This saves water and increases the life cycles of most filter media.

### Flexible line configuration

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The modular line construction enables an easy expansion of the Hydronomic.

### Requesting a new machine

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



# The modules in detail

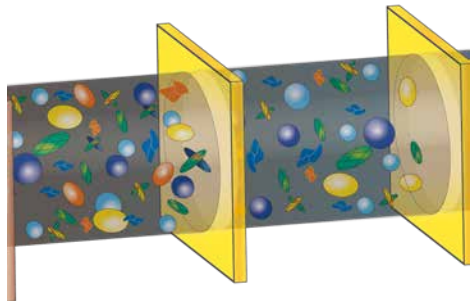
## Hydronomic UF



The Hydronomic UF uses the most up-to-date membrane technology with hollow fibres (pore size of 0.02 µm) for the ultrafiltration of water in in/out operation. Typically, ultrafiltration is also used to extend the production time of an (optional) downstream reverse osmosis system by additionally filtering the water.

### Highlight

The individual control of the filter modules in the Hydronomic UF guarantees uninterrupted production. Only ultrafiltrate is used during backflushing.



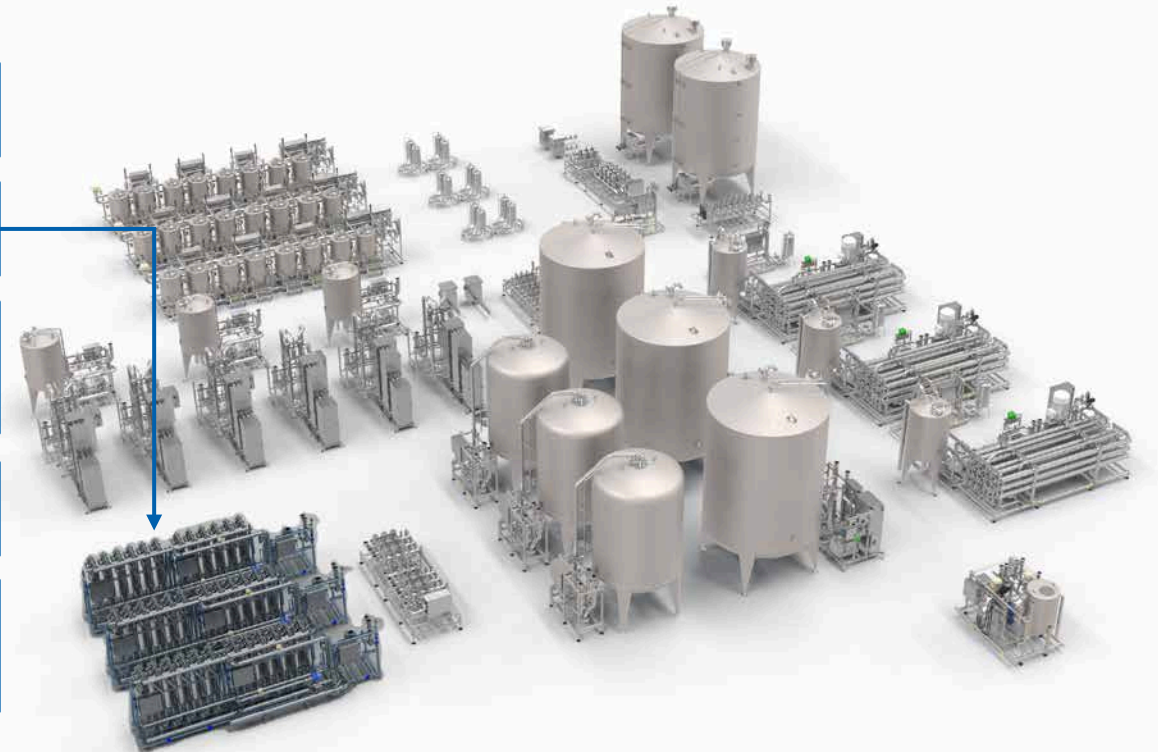
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# Hydronomic UF

## modern line technology

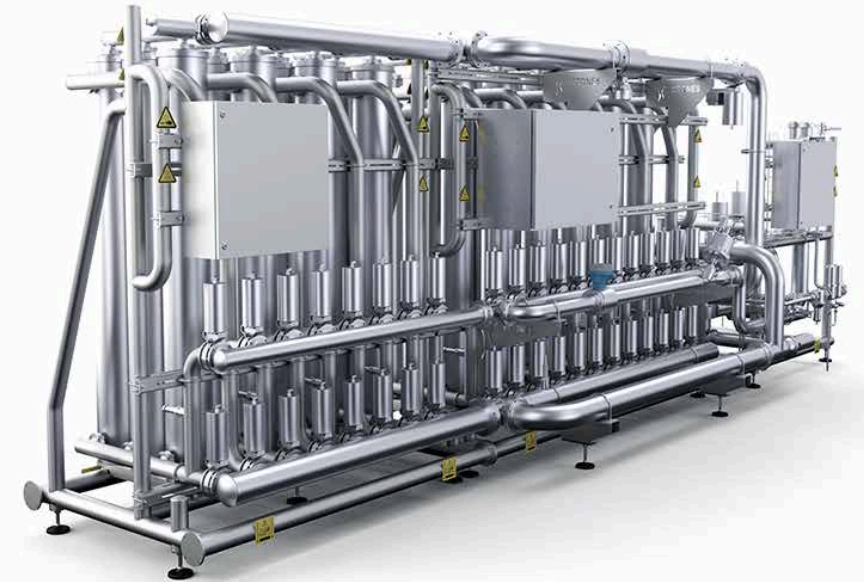


If the water hardness and dissolved substances such as salt are to be maintained, and only undissolved components are to be filtered, then the ultra filtration process will be employed. In doing so, the Hydronomic removes particles of a size of  $0.02\ \mu\text{m}$  from the raw water including microorganisms:

- In/out operation where the water to be cleaned is pressed into the hollow fibre and escapes laterally through the membrane pores with a size of  $0.02\ \mu\text{m}$
- Discharge of the ultra filtrate to a central collecting pipe
- Cleaning of the hollow fibre elements via periodic backwashing with an ultra filtrate against the direction of filtration

### The components

- Use of especially developed hollow fibre membranes with the dead-end-filtration method
- Parallel production and rinsing operation without rinsing water tank possible via filtration modules which can be switched separately



#### Efficiency in figures:

Filtration performance: up to  $150\ \text{m}^3/\text{h}$   
Rinsing water consumption: max.  $36\ \text{m}^3/\text{h}$   
Yield: Up to 99.9 %



# Hydronomic UF benefits to you



## Energy efficiency

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In order to reduce the energy consumption, hollow fibres are used for filtration. They require less pressure and offer a larger filter surface.

## Effective cleaning

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The In/out concept offers optimum conditions for the effective and safe cleaning of the hollow fibre membranes. The stainless steel option allows for sanitising the equipment with hot water and without the need of any cleaning agents.

## Non-interrupted operation – also during back washing

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Thanks to the bypass structure of the filtration elements, the individual modules can be cleaned during the operation by backwashing with the ultra filtrate. This way, the usually used decoupling tank and its belonging backflushing pump are not required.

## High-quality line concept

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The Hydronomic UF is equipped with high-quality components, both in its stainless steel design and in its basic version. This way, the line is especially designed for a long service life.

## Cleaning with filtrated media

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During the CIP process, the used chemicals are dosed prior to the ultra filtration into the untreated water flow and are therefore filtered before being used.

### Requesting a new machine

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# The modules in detail

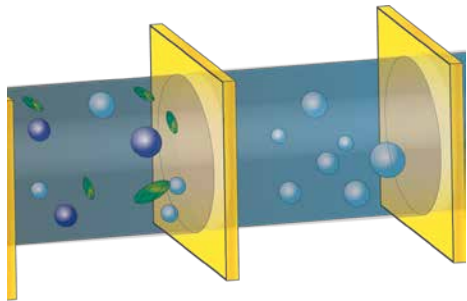
## Hydronomic RO



The Hydronomic RO module serves to desalinate water down to a usual residual content of less than three percent. The generated water is then especially treated/remineralised for the respective application.

### Highlight

Variable output regulation and automatic yield control ensure the highest possible flexibility and minimise scaling on the membranes. The membranes can also be flushed with permeate to minimise scaling and biofouling.



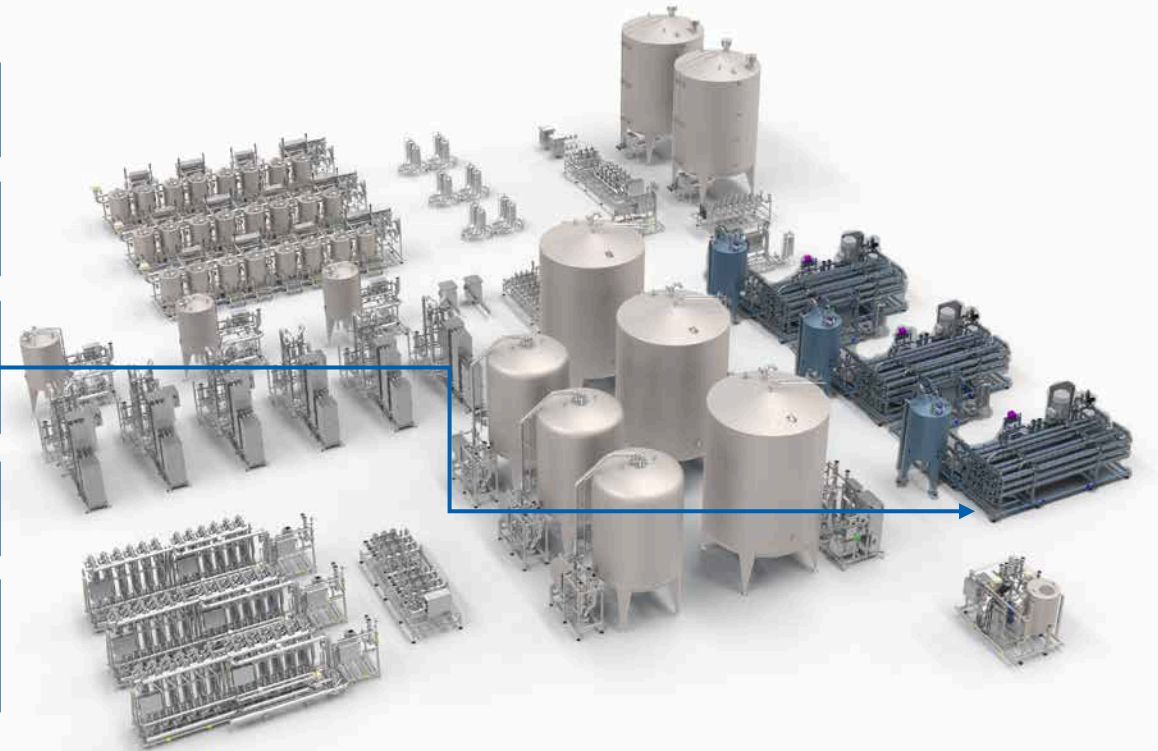
MF: media filtration

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RO: reverse osmosis

EDI: Electro-deionisation

MDS: mineral dosing station



# Hydronomic RO

## water, as pure as it gets



After desalination (up to a regular residual content of below three percent), the water is used as brewing liquor for the reconstitution of fruit juice or near-water beverages, for non-alcoholic soft drinks or as process or boiler feed water:

- Tangential flushing of a semi-permeable membrane with untreated water
- Discharge of the permeate to a central collecting pipe
- Flushing with permeate to prevent scaling and biofouling

## The components

- Consecutive switching of several spiral modules (stage configuration) for graduated concentrate treatment
- Separation of the spirally-wound membrane surface via mesh spacer
- Use of specially designed, storable and dry membranes: Spare parts storage on stock possible



### Efficiency in figures:

Permeate volume: up to 120 m<sup>3</sup>/h

Yield: up to 97 %

Sanitisable: up to 85 °C

# Hydronomic RO

## benefits to you



### Economic structure of the individual banks

If the conductance in the permeate is changed, the reverse osmosis elements can be tested inline and checked for malfunctions. Faulty elements can be traced and inexpensively replaced.

### Economic in the use of energy

Depending on the pre-pressure of the untreated water, the permeate performance is regulated. This ensures a low energy consumption and consistent yield.

### Long-term guarantee

The investment in a stainless steel version which can be sanitised with hot water pays off: The omission of chemical cleaning agents increases the service life of the membranes. The guarantee is prolonged optionally by up to five years.

### Modular structure with long service life

A long service life is achieved through the deliberate choice in favour of a modular system design and a high manufacturing quality. Thanks to their large overall size, there is only little stress on the membranes which therefore achieve long service lives.

### Suitable rinsing steps with permeate

In order to prevent scaling, the line contents will be rinsed with permeate when needed.

### Step-by-step CIP sequences

At the CIP process, the respective container can be filled with permeate and chemicals removed from it. The banks of the system are thus cleaned one after the other, or individually.

### Requesting a new machine

You can easily send a request for a non-binding quotation in our [Krones.shop](#).



# Hydronomic

## also available in the basic version



Our water treatment systems have always been equipped with high-end technology to date. Now the time has come to expand our product range to include a basic variant - and thus also offer an optimal and cost-effective solution for the low and medium performance/requirements range.



### Basic version

- The production and cleaning channels are connected with a manual coupling panel
- Membrane housings made of PVC (UF module) or glass-fibre-reinforced plastic (RO module)
- Pro-rata guarantee: Up to 5 years



### High-end variant

- Connection of the production and cleaning channels via valve manifold
- Stainless steel membrane housings
- Hot water sanitisation (85 °C) possible
- Pro-rata guarantee: Up to 5 years



# Simple operation thanks to Connected HMI



The platform ensures that operators can easily communicate with the system in split seconds.

- Individual dashboard: widgets for a quick overview and direct access to the daily tasks
- Finding instead of searching: efficient faceted navigation optimised for all user groups
- Fast learnability: uniform design and interaction principles throughout all views and for all machines

## Benefits to you

- **Connected:** maximum degree of networking between the machines and connection to superordinate IT systems
- **Secure:** Powerful against external threats and state-of-the-art IT security devices
- **User-friendly:** clear and innovative navigation structure for intuitive operation



# Other modules in detail

## EDI module



Electro-deionisation (EDI) allows you to produce ultra clean, deionised water which then merely requires the addition of the desired minerals. The use of this kind of additional EDI module is particularly recommended in cases where the untreated water quality fluctuates. This is particularly important in the manufacture of still table water where there must be no deviation in the mineral composition of the product.

MF: media filtration

UF: ultrafiltration

RO: reverse osmosis

**EDI: Electro-deionisation**

MDS: mineral dosing station



# Other modules in detail

## Hydronic MDS



Thanks to the use of a mineral dosing station – in brief MDS module – you can remineralise your water exactly in line with your own formulas – for the highest possible flexibility and individualisation of your product.

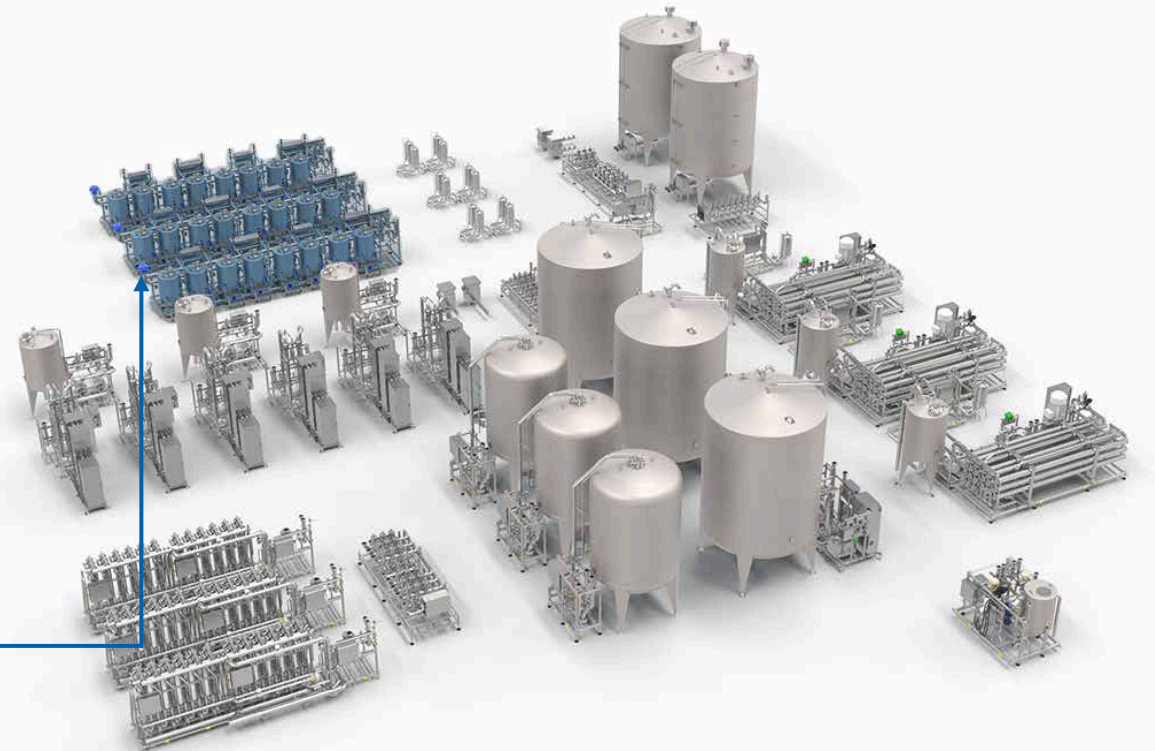
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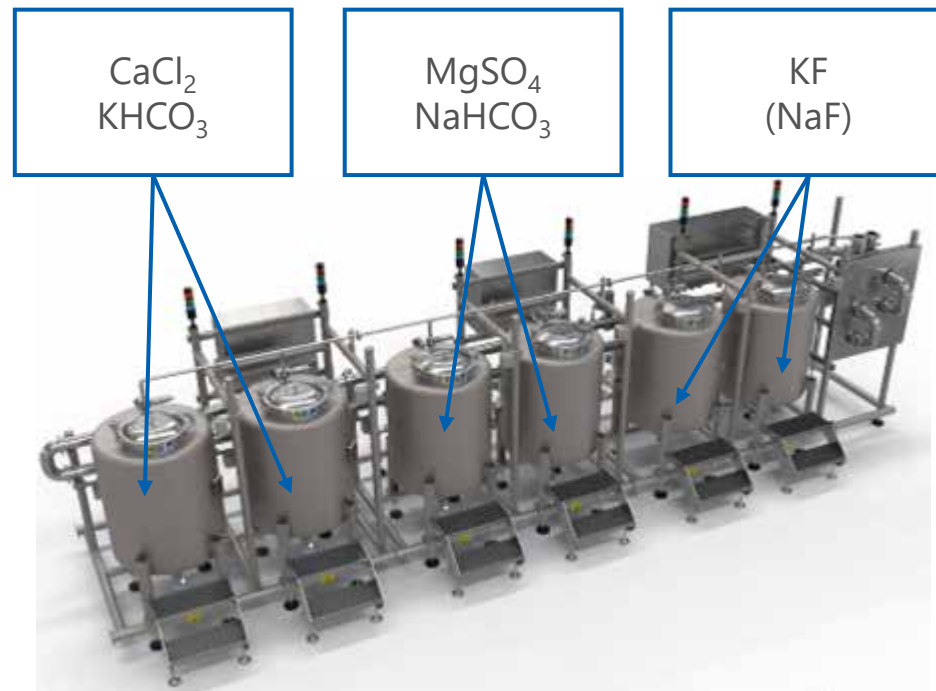
EDI: Electro-deionisation

MDS: mineral dosing station





# The Hydronic MDS in detail



Example of mineral dosing

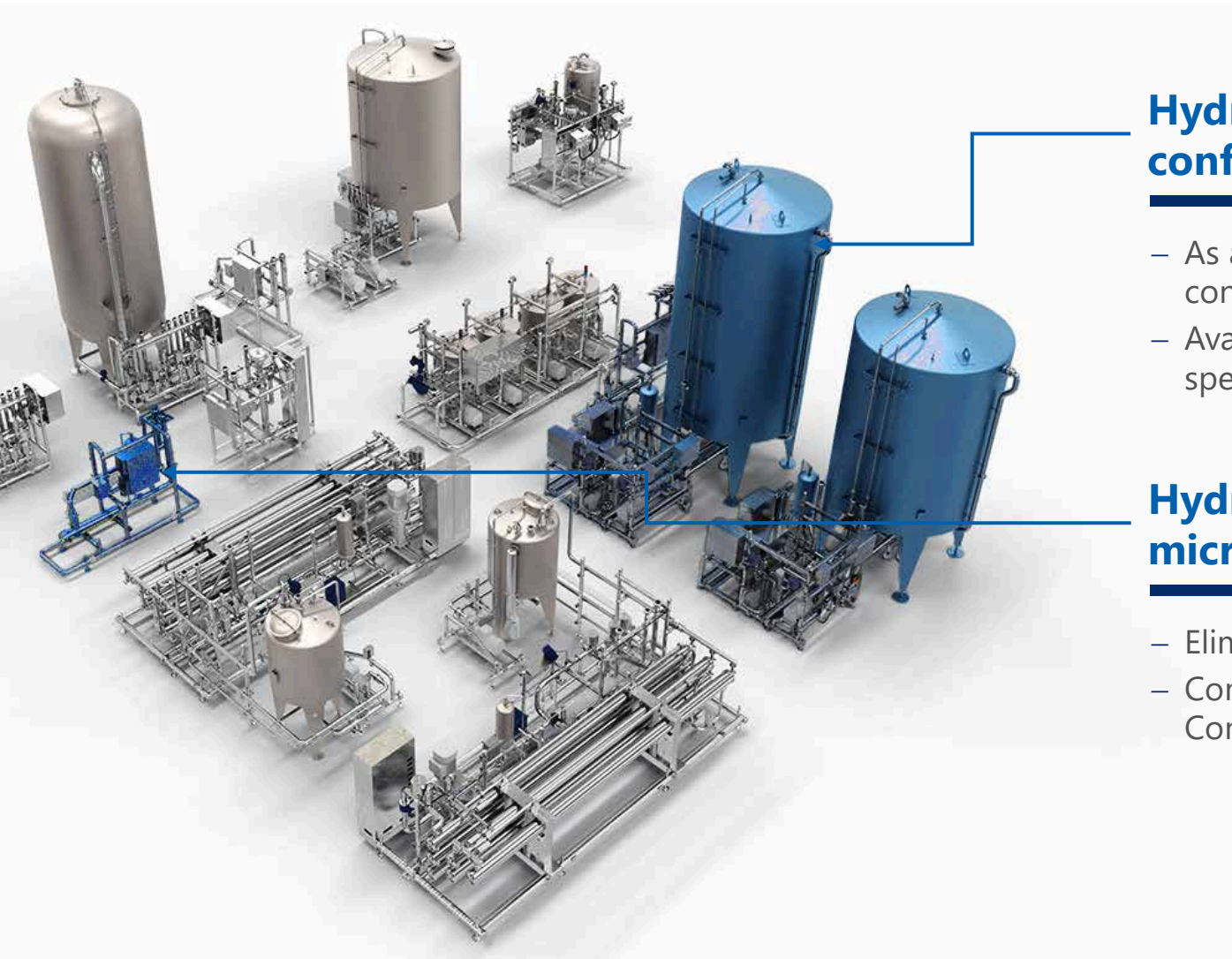
The mineral dosing station is the key module when it comes to creating water precisely according to your requirements and formulas. It enables the high-precision dosing of a variety of minerals.

## Highlights:

- **Mass flow meter for the highest dosing precision**  
Accurate dosing for TDS values of +/- 10 % in the end product
- **Can be adjusted to individual formulas**
- **Stainless-steel construction**  
Hot-water sanitisation of up to 85 °C
- **Two-tank layout for continuous operation**

**By the way: You can obtain the appropriate minerals directly from KIC Kronos.**

# Other modules in the Hydronomic series



## **Hydronomic ST (storage tanks) – flexibly configurable buffer tanks**

- As a buffer tank within the Hydronomic process or for the consistent supply to the downstream consumers
- Available in accordance with conventional pressure equipment specifications, such as: ASME, CML, Gost-R etc.

## **Hydronomic UV (ultraviolet radiation) – microbiological safety thanks to UV treatment**

- Eliminates ozone or chlorine from the water
- Combined with a storage tank (connected via a recirculation line): Consistent sterilisation of the treated water

# Other modules in the Hydronomic series

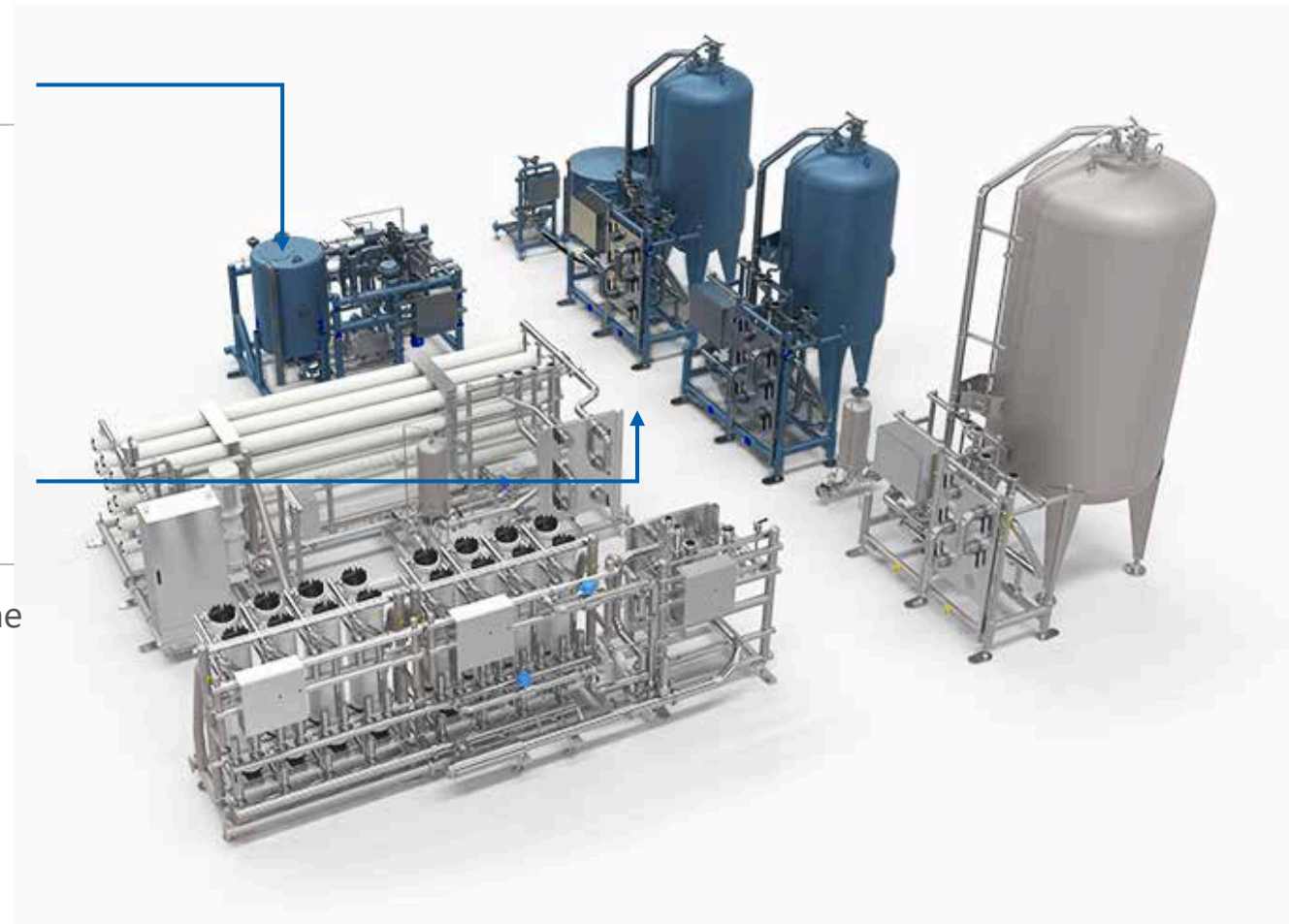


## CIP module for the Hydronomic

- Precisely tuned to suit Hydronomic systems
- Method of operation: Lost CIP
- Heating with steam or electrically
- With dosing station for cleaning media

## Hydronomic IX (ion exchanger) – For continuous soft water production

- Thanks to integrated conductivity measurement: Monitoring of the charging status of the resin and effective control of the regeneration system
- Hot-water sanitation of up to 85 °C
- Corrosion resistant stainless steel vessels with electropolished interior



# Certified ecological efficiency

## Machines with enviro seal



At Krones, the enviro label stands for excellent ecological efficiency. Products that bear the enviro label have proven in an objective test procedure that they efficiently use energy and media, and that they produce in an environmentally-friendly way. The requirements are defined by the EME standard that has been developed by TÜV SÜD (technical inspection authority) for assessing production plants. The enviro test procedure, too, has been certified by TÜV SÜD as an independent expert. Therefore, you can be sure that: an enviro label stands for ecological efficiency.

### Benefits of the enviro-classified Hydronomic

#### Energy efficiency

- Use of energy-efficient motors and optimally designed pumps and heat exchangers

#### Media efficiency

- Reduced waste water quantity via automatically controlled yield
- Loss of water is prevented thanks to the recovery of coolants

#### Environmental compatibility

- Economical use of environmentally sound cleaning media due to intelligent control queries
- No use of chlorine and polluting disinfectants

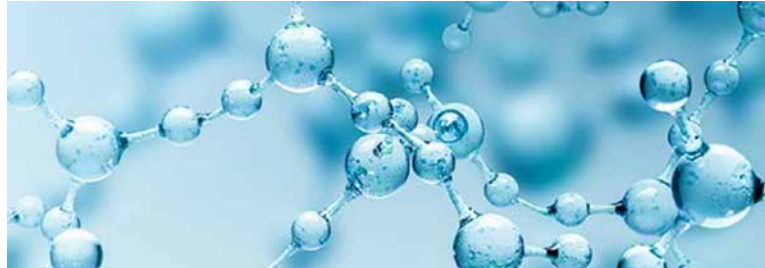


# More than just line technology

## Water design from Krones



As an all-round partner, you are used to getting more from us than just line technology: Krones water design starts right from the time of formula development and factory planning, and provides appropriate systems and consumables to cover the entire lifecycle of your production system – for a water that is precisely just as you want it.



### Formula development

We work with you to develop a formula that meets your requirements. In addition to our experienced experts, you are also supported by a certified water sommelier in order to fulfil your individual requirements when it comes to the water quality and required taste of the end product.

### Systems expertise

With the Hydronic series, Krones provides an individual programme for the careful treatment of your untreated water. This way, you can give your water precisely the character that suits your product and appeals to your customers.

### Minerals

You receive a complete package from us containing all of the necessary consumables and ingredients such as salts and minerals. The ingredients are, of course, perfectly adjusted to suit your formula.

For **details**, go to [krones.com](https://www.krones.com) and enter **“water design”**



# Perfectly matched

## Cleaning and water treatment agents from KIC Kronos



In the field, of course, the water treatment systems must be maintained, cleaned and disinfected. This task is taken over by the membrane cleaning agents developed by KIC Kronos especially for this purpose.

- Alkaline diaphragm cleaners are preferably used for cleaning diaphragms. The combination of high alkalinity with cleaning boosters, complexing agents and special wetting agents guarantee best cleaning results.
- Acidic diaphragm cleaners are cleaning concentrates based on inorganic acids for cleaning diaphragms cyclically.
- Cleaning boosters based on hydrogen peroxide increase the cleaning performance of alkaline and acidic solutions.

### The group of antiscalants ...

- are suitable for drinking water.
- are used exclusively for reverse osmosis lines.
- can be added to the untreated water directly and in an extremely low dose.
- prevent alkaline earth salts, silicates or phosphates from the untreated water from depositing on the diaphragms.



# Ozonomic as the perfect complement to the Hydronomic range



## Water treatment with Krones Hydronomic modules:

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- Media filtration (MF)
- Ultrafiltration (UF)
- Reverse osmosis (RO)
- Electro-deionisation (EDI)
- Mineral dosing station (MDS)



## Microbiological stabilisation before filling

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In conventional filling processes: **ozonisation with the Krones Ozonomic**



**You can discover more about ozonisation and the corresponding Krones technology** by visiting [krones.com](https://www.krones.com) and entering "Ozonomic".



# After using the Ozonomic

## Appropriate Krones filling technology



### Modulfill VFJ for still water in PET

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- Contactless free-jet filling for utmost microbiological safety
- Precise determination of the fill quantity via inductive flow meter or mass flow meter
- Perfect flow behaviour through infinitely adjustable flow speeds via the Proportional Flow Regulator (PFR)
- Highest hygiene level thanks to the Monotec design and servo drive technology
- Machine outputs of up to 81,000 bottles per hour
- Resource-saving and environmentally friendly thanks to enviro

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**The Krones portfolio also includes additional PET and glass fillers that specialise in the filling of water.**





# Everything from a single source



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

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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.

## High-quality components from Evoguard and Ampco

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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.

## 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.

**SOLUTIONS  
BEYOND  
TOMORROW**

