



Hydronomic

The Purity Law for your water

Hydronomic



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 Hydronic water treatment systems, KRONES provides an individual programme for careful treatment of your untreated water. Regardless if handling brewing or process water or raw material for soft drinks, juice or tea: With the KRONES process technology, you will give your water exactly the character which will meet the requirements of your product and customers.

At a glance

- It operates with a water treatment process which is tailored exactly to your requirements
- It prepares between 5 and 120 m³ of water per hour – optionally with a variable production quantity
- Minimised waste water thanks to its sophisticated technology
- Best possible access for operators and service personnel
- Minimised 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 will adapt the equipment of your individual treatment steps individually to 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)

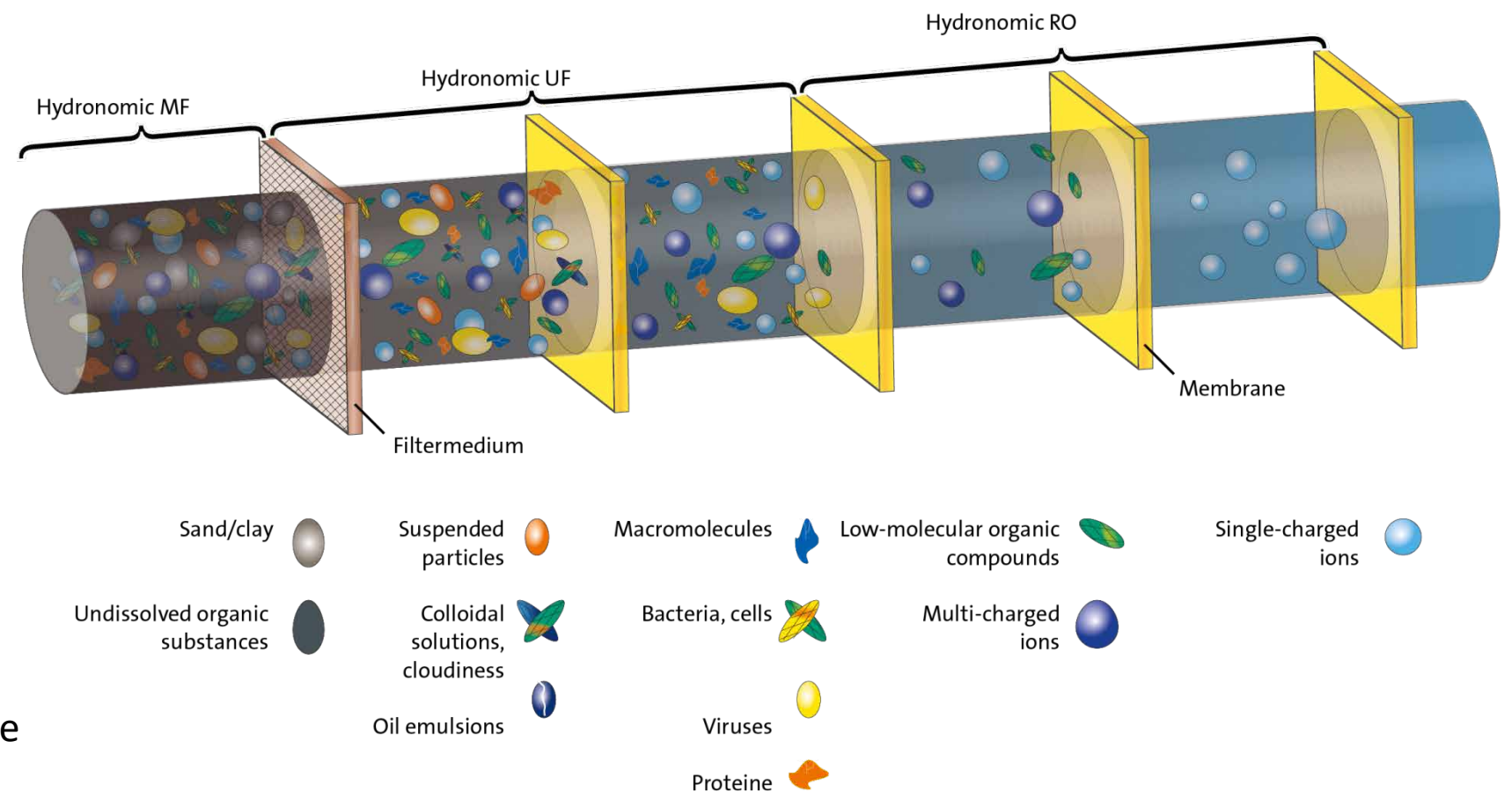
It filters and adsorbs unwanted and undissolved suspended solids, odorants, organics, chlorine, iron, manganese, etc.) with different filter media (e.g. silica sand, manganese oxide, basalt and activated carbon).

Hydronic UF (Ultra Filtration)

It uses membrane technology with hollow fibres (pore size of 0.02 µm) for ultra filtration of water in the in/out operation

Hydronic RO (Reverse Osmosis)

It desalinates water with membrane technology in a reverse osmosis technology where the membrane spiral wound modules is flushed tangentially





Hydronomic 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 operation

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 that can be fully sanitised

Efficiency in figures

- Filtration performance: up to 120 m³/h
- Yield: up to 99.5 %



Basic version with swing bend technology



High-end solution with double seal valves



Hydronomic MF/GAC – benefits to you

High hygienic standard

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

Perfect filtration performance

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

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

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



Hydronomic UF – modern line technology

If dissolved substances such as salt or water hardness are to be maintained and only undissolved components should 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 requirement: max. $36 \text{ m}^3/\text{h}$
- Yield: up to 99.9 %
- Can be sanitised up to $85 \text{ }^\circ\text{C}$





Hydronomic UF – benefits to you

Energy-efficient

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

Non-interrupted operation – also during back washing

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.

Cleaning with filtrated media

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.

High-quality line concept

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 designed especially for a long service life.

Effective cleaning

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.



Hydronomic RO: water – as pure as it gets

The Hydronomic RO module serves to desalinate water until a residual content of below three percent is normally reached. The water produced is used as brewing water, for redilution for fruit juices or near-water beverages, for alcohol-free refreshment drinks or as process water or boiler feed water:

- Tangential flushing with of 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 (bank configuration) for graduated concentrate treatment
- Separation of spiral-wound membrane surface via mesh spacer
- The use of specially designed, storable and dry membranes enables spare parts storing in reserve

Efficiency in figures

- Permeate performance: up to 120 m³/h
- Yield: up to 97 %
- Can be sanitised 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 replaced targeted and cost-saving.

Suitable rinsing steps with permeate

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

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.

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.

Economic in the use of energy

Depending on the pre-pressure of the untreated water, the permeate performance is regulated. This provides a low energy consumption and a constant recovery rate.

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.



Design differences at a glance

Up to now, our water treatment lines have always been established in the high-end field technology. However, now it was time to expand the product range by a basic variant in order to provide an optimal and cost-efficient solution also to the small and medium output range.

High-end variant

Features for high-end technology:

- Stainless steel membrane pressure vessels
- Membranes can be sanitised with hot water
- Connection via automated double seal valves
- Fully-automatic water treatment
- CIP and SIP cleaning



Basic variant

Features of the basic technology:

- GRP pressure vessels
- Membranes cannot be sanitised
- Robust swing bend connection with manual butterfly valves
- Semi-automatic water treatment
- CIP cleaning



Basic variant Hydronic UF



You can save money here:

- Replacement of the complex, automated double seal valve through connection via swing bends with manual butterfly valve and limit switches.
- Omission of stainless steel constructions and hot-water sanitisation of the UF membranes
- Use of a time-optimised integrity test

Optional additional service:

- Prolongation of the membrane guarantee by three years



Basic variant Hydronomic RO



You can save money here:

- Replacement of the complex, automated double seal valve through connection via swing bends with manual butterfly valve and limit switches.
- Omission of the intermediate tank and permeate feed pump as well as the stainless steel membrane pressure vessel construction

Optional additional service:

- Prolongation of the membrane guarantee by three years
- Version which can be sanitised with hot water



Basic variant Simple cleaning unit RWA type S



You can save money here:

- Sanitisation with the help of a cleaning module without active chilling
- Omission of an own chemical cleaning module for the water treatment system using an existing CIP system

Optional additional service:

- Can be expanded by the chemical dosing station (CDS) for chemical cleaning of the Hydronic UF and RO



Certified ecological efficiency: Machines with enviro certification



At KRONES, the blue enviro certification 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 the TÜV SÜD (technical inspection authority) for assessing production plants. The enviro test procedure has also 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 Hydronic

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



Perfect coordination: Cleaning and water treatment agents from KIC KRONES



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 KRONES 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.





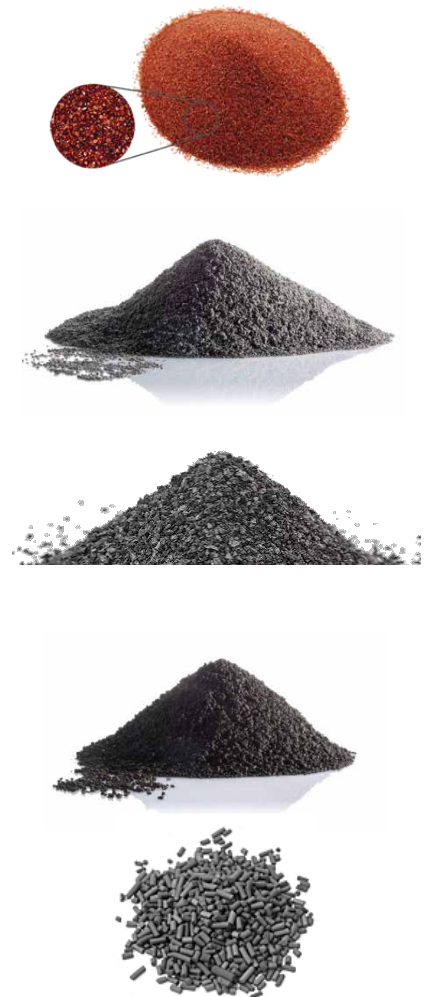
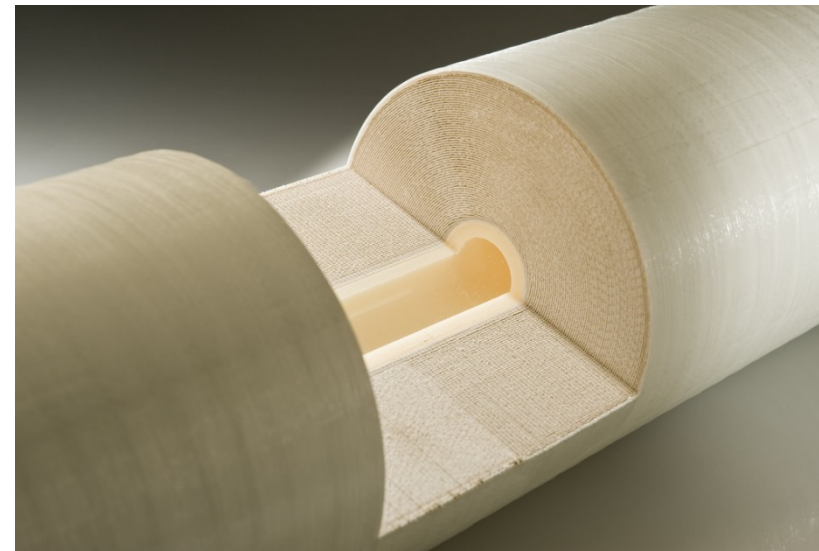
Membranes and filter media from KIC KRONES

In addition to chemical products for water processing, from the start of 2018 KIC Krones will also sell special membranes for Krones systems along with the necessary filter media.

All products that are required for reliable operation of the Hydronic will be available under the name Hydrocare.

These include (among others):

- Membranes for ultrafiltration
- Membranes for reverse osmosis
- Garnet sand
- Basalt
- Anthracite N
- Manganese dioxide
- Activated carbon





Everything from a single source

Training sessions at the KRONES Academy – trained personnel increases your line efficiency

The versatile training offer ranges from operation, servicing and maintenance to management training. We will gladly also establish your individual training programme.

KRONES Lifecycle Service – partner for performance

Also after having purchased a new machine, KRONES will take care of your line; the LCS experts are always ready to consult you and translate your goals and wishes into optimal LCS solutions.

EVOGUARD – excellent valve technology all along the line

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

EVOGUARD – pumps for absolute process safety

In addition to the separation and locking of a line, one thing is particularly important - and that is the reliable conveyance of your product. This is why EVOGUARD also offers innovative centrifugal pumps in addition to high-quality valves.



Digitalisation



Process
technology



Bottling and
packaging equipment



Intralogistics



Lifecycle
Service

We do more.

 **KRONES**