



SEPTRON® Electrodeionisation

The Ecologically Best Method of Water Treatment

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 **BWT GROUP**

SEPTRON® – Highest Water Qualities for Every Application

For the demineralisation of water with a low ion content, BWT Pharma & Biotech offers the self-developed and patented EDI module SEPTRON®. This is based on the most modern technologies and produces ultrapure water by electrochemical demineralisation, without the use of chemicals for regeneration. With BWT SEPTRON®, you therefore invest in a very ecological form of water treatment.

SEPTRON® is a patented spiral-wound EDI module. The electric field applied to this module transports the ions in the incoming water through the ion-exchanger membranes into the concentrate chamber, from where they are flushed out of the module. The energy applied to the module dissociates the water into hydrogen and hydroxide ions which continuously regenerate the ion-exchanger resin in the main chamber without the use of chemicals. The system produces a water quality in the product stream of more than 16 MΩ-cm.

SEPTRON® is available in 4 different module sizes, thus ensuring a wide range of uses in the production of pure and ultrapure water. The compactly designed BWT OSMOTRON® contains a water softener, a reverse osmosis and a SEPTRON® stage, all fully qualified in the factory. Due to the concentric electric field which BWT was able to achieve on the basis of the geometry of the spiral-wound module, the ion-exchanger resin used in the system is regenerated very thoroughly, and this results, in addition to the excellent water quality, in further advantages over standard EDI modules with plate and frame construction:

- CO₂ reduction without the use of chemicals (up to max. 20 mg/l CO₂ in the feedwater)
- Very good TOC and SiO₂ reduction
- Very high water recovery up to 99%
- Low power consumption



Optimum results with high cost-efficiency

The required pure water quality is achieved continuously and reliably without the use of chemicals. In addition, SEPTRON® can be used in many applications in several business areas of the BWT – Best Water Technology Group:

Semiconductor industry

The semiconductor industry has extremely high requirements for the quality of the ultrapure water. These are fulfilled by the combination of SEPTRON® with further BWT system components. The high removal figures (>98 %) for boron, SiO₂ and CO₂ achieved by SEPTRON® offer this industry further advantages over traditional process technologies:

- 95 % reduction in the amount of chemicals used
- 90 % reduction in the water consumption
- Massive reductions in power consumption

Pharma & Biotech

In the pharmaceutical industry, we lie far below the limits for conductivity and TOC required by USP and EP. For the hotwater sanitisation of water treatment systems, BWT Pharma & Biotech offers various sizes of SEPTRON® modules. The benefits of hot-water sanitisation are:

- No need for disinfection chemicals
- Simple process monitoring by temperature recording
- Reliable prevention of biofilms
- The process is generally recognised by the pharmaceutical industry

The SEPTRON® modules suitable for hot water sanitisation are heated to more than 80 °C in the disinfection step, and the water flows through them at up to 75 % nominal volumeflow rate, resulting in high flow velocities. This ensures a more uniform temperature distribution in the EDI module and thus makes sanitisation more effective.

With the SEPTRON® BIO-SAFE, BWT offers an alternative to the conventional combination of EDI + ultrafiltration for

production of Highly Purified Water (HPW). This unique integration of a membrane stage into an EDI module offers the following advantages over the use of a separate ultrafiltration unit:

- Less space required
- Lower energy costs since no pressure booster pump is needed before the UF stage
- Lower investment costs

Power stations

SEPTRON® also delivers a very safe water quality for use in power stations. It easily complies with the common limit values for treatment of turbine feedwater ($<0.1 \mu\text{S}/\text{cm}$, 10 ppb Na^+ , 10 ppb SiO_2). It also provides high water recovery and process efficiency without loss of the important factors of continuous operation and continuous ultrapure water quality. In BWT water treatment systems, the SEPTRON® modules are connected in parallel, which means that any the desired amount of ultrapure water can be generated.





It goes without saying that SEPTRON® can also be used in many other sectors of industry. For example, the required pure water quality is achieved just as reliably in the following sectors as in the Pharma & Biotech, Semiconductor and Power station sectors:

- Biotechnology
- Chemistry
- Cosmetics
- Foodstuffs
- Laboratories
- Plastics and many more

Quality thanks to in-house manufacture

The quality of the SEPTRON® modules is continuously monitored in accordance with ISO 9001 in our production facility. In addition to complete logging of all production steps, the function of each manufactured module is checked in accordance with the strictest regulations. In the water treatment system specially built for this, the operational status is documented in detail with the aid of a process control system. At the end of the tests, each module leaves the factory complete with an inspection certificate, which means that you can rely on receiving a proven and tested product.

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