SEPTRON® Electrodeionization

The Best Method for Ecological Water Treatment

For You and Planet Blue.

BWT
BEST WATER TECHNOLOGY

SEPTRON® – Highest Water Qualities for Every Application

For the demineralization of water with a low ion content, the EDI module SEPTRON® developed and patented by BWT Pharma & Biotech offers the ideal solution. It is based on modern technologies and produces highly purified water by electrochemical demineralization without the use of chemicals for regeneration. With SEPTRON®, you therefore invest in a very ecological form of water treatment.

SEPTRON® EDI schematic

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-exchange 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-exchange resin in the main chamber without the use of chemicals. The system produces a water quality in the product stream of up to 0.055 µS/cm (18 MΩ*cm) at 25°C.

The SEPTRON® module is available in 6 different sizes, from 100 l/h to 5,000 l/h. Thus allowing optimum configuration and efficiency in the production of highly purified water for use in different applications. The SEPTRON® module is the core component and final polishing technology of the high-quality compact systems offered by BWT Pharma & Biotech for the production of purified and highly purified water.

SEPTRON® modules have only 2 module chambers. This guarantees virtually deadspace-free flow through the module and thus meets highest requirements in terms of microbiological quality.

Due to the geometry of BWT Pharma & Biotech's spiral-wound module design, the concentric electric field results in very thorough regeneration of the ion-exchange resin used in the system, and this offers, in addition to excellent water quality, further advantages over standard EDI modules with plate and frame construction:

- CO_2 reduction without the use of chemicals (up to max. 35 mg/l CO_2 in the feedwater)
- Excellent TOC and SiO_2 reduction
- Very high water recovery up to 99%
- Effifiency by low power consumption (> 0.15 kWh/m³ diluate)
- Safety by low voltage (DC 60 V or DC 100 V)
- No seals in the module (material casting with 316L stainless steel housings with epoxy casting)
- Very good hydrodynamics due to a dual chamber system that results in maximum microbiological purity

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:

Pharma & Biotech

In the pharmaceutical industry, product qualities far below the limits for conductivity and TOC required by USP and EP are achieved. Materials that come into contact with product water are FDA compliant for all SEPTRON® modules. This also includes a type 3.1 material certificate according to EN-10204 for the stainless steel housing (316L).

For the hot water sanitization of water treatment systems, BWT Pharma & Biotech offers various SEPTRON® module sizes. The benefits of hot-water sanitization are:

- No need for disinfection chemicals
- Simple process monitoring by calibrated temperature recording
- Reliable prevention of biofilms
- Thermal sanitization generally recognized by the pharmaceutical industry
- Higher system availability

The SEPTRON® modules suitable for hot water sanitization are heated during the sanitization step to > 80°C at 75% of the nominal flow. The high flow velocity ensures uniform temperature distribution in the EDI module and increasing sanitization effectivity.

With the SEPTRON® BioSafe, BWT Pharma & Biotech offers an attractive alternative to the conventional combination of EDI + ultrafiltration for production of Highly Purified Water (HPW). The unique, patented integration of the BioSafe ultrafiltration stage into the SEPTRON® EDI module offers the following advantages over a separate ultrafiltration unit:

- No extra space required
- High efficiency without additional pumping
- Low investment costs
- 100% yield by dead end process
- Maximum microbiological purity
- Long service life
- Easy to upgrade from PW to HPW quality

Semiconductor industry

The semiconductor industry has extremely high requirements for the quality of highly purified water. These are fulfilled by combining SEPTRON® with other system components. High separation rates (>98%) for boron, SiO_2 and CO_2 achieved by SEPTRON® offer this industry further advantages over traditional process technologies:

- 95% reduction in the amount of chemicals used
- 90% reduction in water consumption
- Massive reductions in power consumption
- Extended life time of cost intensive nuclear grade polishing resins

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SEPTRON® modules are operated in parallel with individual DC power supplier for maximum reliability and control.

SEPTRON® can be used in many industrial sectors.

- Life Science
- Chemical industry
- Cosmetics industry
- Foodstuffs industry
- Laboratories
- Hospital applications in accordance with EN 285
- Power generation
- Plastics industry and many more

Quality thanks to in-house manufacture

The quality of SEPTRON® modules is continuously monitored in our production facility in accordance with ISO 9001. Key components such as ion-exchange resin and membranes are subjected to initial inspection before use. Samples are retained to ensure seamless traceability of the materials used.

The traceability concept also applies to the stainless steel module housing (316L) that is provided with a 3.1 factory test certificate. In addition to complete production logging, the function of each manufactured module is checked in accordance with the strictest regulations. Each operational status is checked using the purpose-built water treatment system and the SEPTRON® test rig, and is documented in detail by a process control system. Upon successful completion of testing, each module leaves the Swiss SEPTRON® factory with a test certificate meaning that you can rely on a tried and tested product.

SEPTRON® test rig

Contact:

BWT 140508DK