

Product Application - Drinking Water

Boron Decontamination



The application

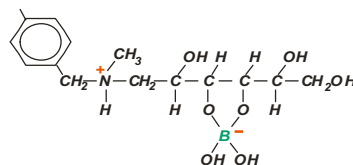
According to the World Health Organisation a boron content of >0.5 mg/l in drinking water is harmful. In addition, it has been shown that too high a boron content in water used for the irrigation of plants can also be harmful to humans and animals when these are eaten. Boron therefore presents a new challenge in the treatment of drinking water in addition to the previously known pollutants in drinking water. The application shown here presents a new and trend-setting process. The system is located in a region of the Eastern Mediterranean with little water. Brackish water from the coastal region is available as raw water. The amount of drinking water to be treated daily is 6,500 cubic metres. The boron content in the raw water is available as boric acid at an amount of 1.0 – 2.5 mg/ per litre.

The system technology

The brackish water first passes through various filtration stages to separate sand, plant and animal components. The filtered raw water is then passed on to an ion exchanger to which a stage for boron has been added. Then the water gained from this runs through reverse osmosis and is brought up to drinking water quality. The system is designed redundantly so that a second system guarantees continuous treatment during the regeneration of the ion exchanger and the filters. The additional ion exchange stage for the boron is based on a polystyrene resin, a methylclucamin compound (amino acid + sugar complex) serves as an anchor group. The boron is bound to the sugar complex. The resin is regenerated by sodium hydroxide.

The solution

The whole system is pneumatically automated and equipped with diaphragm valves of the GEMÜ 690 series made of polypropylene (PP) and GEMÜ 620 with PP-lined S.G. iron bodies. The valves are extremely robust, insensitive to untreated media and very suitable for increased cycle duties. Unlike butterfly valves, diaphragm valves do not need to be removed from the pipe for maintenance and repairs so that operation is guaranteed under difficult conditions in the long-term with a low service effort. GEMÜ diaphragm valves are also used in the control circuits. The modular GEMÜ principle means that it is easy to mount a GEMÜ 1435 ePos® positioner. Apart from the simple assembly, the device is also easy to operate and quickly ready for use thanks to its self-calibration. The robust, surface-coated alloy housing of the controller enables it to be used under even the harshest environment conditions. Another advantage of the GEMÜ 1435 ePos® positioner is that the valve position is transmitted by an electric sensor and the device has no external mechanical parts which may be sensitive to dirt or sand.



GEMÜ® VALVES, MEASUREMENT
AND CONTROL SYSTEMS

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