



Ultra-filtration and Partial Softening in Waterworks

Valve technology for drinking water treatment

The Niedernhall municipal water treatment plant in Germany, run by the Nordostwürttemberg water distribution management authority, is treating 300m³ of water per minute. For the water management processes of ultra-filtration and partial softening GEMÜ offers well suited and reliable valve solutions.

Process Description:

Ultra-filtration UF

After coarse filtration, the water is fed to the Ultrafiltration passing through porous membranes with a pressure drop of 0,1 up to 0,8 bar. The Ultrafiltration retains fine solids, turbidity and pollens, as well as germs. The water containing dissolved ingredients such as hardness components or minerals, and small molecules can still pass through the membrane.

Partial softening and regeneration

Using ion exchange, the concentrations of hardness components (calcium and magnesium carbonates), and undesirable substances – such as nitrates, sulphates and chlorides – are reduced from the sanitized water by approximately 50 %. Carbonic acid, generated as a by-product, dissolves into water and carbon dioxide (CO₂). The excess of CO₂ is removed in the following pure-water degasifier before the treated wa-

ter is transferred to a pure-water container and is fed into the municipal water supply sanitized by UV sterilization. During the process, the water hardness is reduced from 480 ppm CaCO₃ to a medium level of 240 ppm CaCO₃.

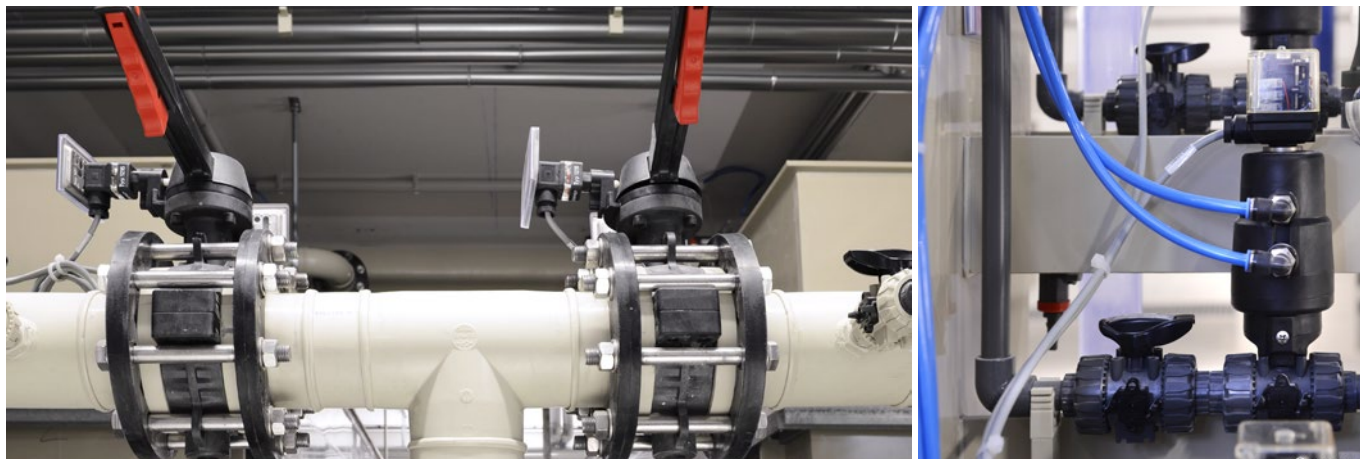
Raw water enriched with CO₂ is used as a regenerating agent for the mixed bed filter reversing the direction of the exchange process: CO₂ is dissolved in water with high pressure, creating carbonic acid. The carbonic acid is fed to the mixed-bed in counter current, regenerating the ion exchanger resin. Most of the CO₂ that is required for regeneration can be recovered (approximately 95%) and fed back into the process.

GEMÜ Products In Use:

- GEMÜ R480 Victoria metal butterfly valves - up to DN 400, manually or pneumatically operated
- GEMÜ D450 plastic butterfly valves
- GEMÜ 717 plastic ball valves
- GEMÜ LSC limit switch box for quarter turn actuators

Key Process Data:

- Media: Raw water, CO₂, acid/caustic/sodium hypochlorite as cleaning agent
- Operating Pressure: 6 bar



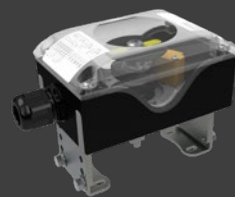
GEMÜ R481 Victoria
pneumatically operated



GEMÜ D457
manually operated



GEMÜ 717
manually operated



GEMÜ LSC
Limit switch box



Why GEMÜ:

GEMÜ offers technically sophisticated solutions for drinking water treatment. With a wide range of valves and accessories, the complete valve selection, as well as measurement and control instrumentation is supplied from a single source by GEMÜ.

The GEMÜ R480 Victoria metal butterfly valve offers an advanced seal design, even for larger diameters. This design allows low torques and savings through lower actuator costs. Further valve types like plastic butterfly valves and ball valves are available in various actuator and material versions.

All GEMÜ butterfly valves and ball valves are completely assembled in our own assembly center - even with the appropriate accessories on request. You will receive our pre-assembled solutions preset and tested.

Receiving all components from a single source profits you further by saving time and effort not only in logistics and installation but also with documentation.

For designing the ideal valve for your application, our specialists will be happy to support you directly in the sizing and selection of our valves.

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Straße 6-8 · 74653 Ingelfingen · Germany
Phone +49 (0)7940 123-0 · info@gemue.de