GEMÜ M-Block Solutions for optimised processes in the generation of ultrapure water

Multi-port valve blocks for water treatment

The combination of ion exchange, reverse osmosis and electrodeionisation is considered today as established process for the generation of pure and ultrapure water. BWT Pharma & Biotech GmbH uses GEMÜ M-Blocks in ultrapure water treatment plants to optimise media flows.

Process Description:

At first, the feed water is softened through ion exchange. Here the feed water flows through filter containers from top to bottom with the hardness components (calcium and magnesium ions) being replaced by sodium ions. At the end of this process step, however the salt content remains virtually unchanged.
Through reverse osmosis the soft water from ion exchange is desalinated. In this membrane separation process the soft water is fed under high pressure to the membrane modules, which remove salts and organic substances from the water. After reverse osmosis, the residual salt content is less than 2 % of the feed water salt content.
For residual desalination, the generated permeate then goes to the electrodeionisation modules, which combines the membrane separation process and ion exchange. The resulting ultrapure water is almost salt-free.

Use of multi-port valve blocks:

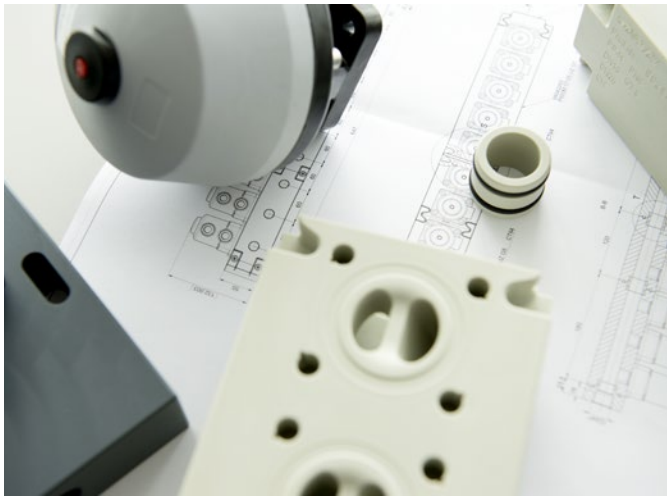
Through the multi-port block valve solutions, GEMÜ encompasses virtually all the diaphragm valves to one unit, which constitutes the main part of the plant. The GEMÜ M-Block offers the advantage of being individually constructed per customer needs. In case of BWT, all the media, namely the feed water, the pure water and the regeneration agents are routed via the M-Block. Focus in construction was to always keep the feed water and pure water currents separate from one another. This is a reliable way to prevent a short-circuit current, i.e. non-softened water from getting to reverse osmosis.

GEMÜ Products In Use:

- GEMÜ M-Block – plastic diaphragm valve block, resistant to aggressive media
- GEMÜ 687 – metal diaphragm valve with high surface quality
- GEMÜ 1434 µPos – intelligent electro-pneumatic positioner

Key process data:

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



Advantages at a glance:

Fewer components
The use of GEMÜ multi-port valve blocks allows the number of pumps, tubes and fittings to be kept to a minimum.

Improved plant reliability
Fewer joints and fittings result in an improved plant reliability and a reduced risk of leaks.

Simple installation
Quick and easy assembly of the customised units also reduces the assembly time required and saves installation costs.

Expand existing plants
Existing units can be extended by the required number of valves with just a few simple modifications without the need for additional piping, solvent cemented joints or welds.

GEMÜ M-Block with electro-pneumatic positioner GEMÜ 1434 µPos

Why GEMÜ:

GEMÜ offers technically sophisticated solutions for the generation of ultrapure water. With a wide range of GEMÜ valves and accessories, the complete valve selection, as well as measurement and control instrumentation are supplied from a single source.
With the GEMÜ M-Block Solutions, not only a compact plant design is achieved, but also the plant reliability is increased with reduced potential leakage points. At the planning phase we support our customers with ideas and initial drafts. The drafts are laid out for design purposes in the 3D CAD system, agreed in close cooperation with the customer and finally processed in a state of the art efficient machining centre. Every day, our Design Centre brings forth new customised block designs. Your valve technology requirements become reality at GEMÜ.

extendable GEMÜ M-Block

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