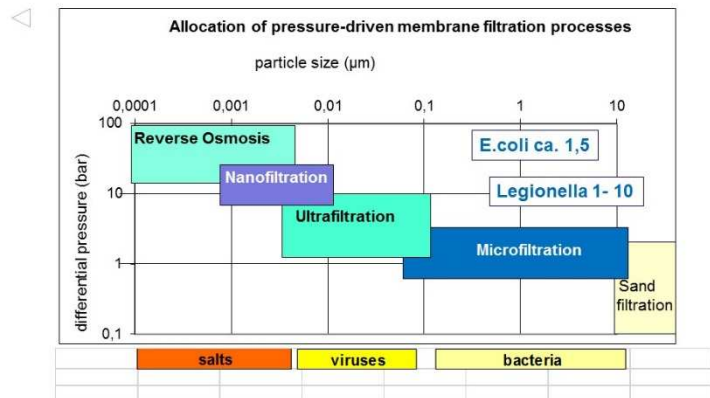


BREMAG ultrafiltration Type BWD, according DIN 19643 – Part 4

Unlike multi-layer filter systems, the ultrafiltration offers a defined mechanical barrier that ensures a secure retention of pathogens. Due to the resulting high quality of permeate less processing power is required when using an ultrafiltration for pool water treatment. In contrast to conventional filter systems the treatment capacity can be reduced by up to 50%. Especially for highly loaded pool water circuits small compact systems can be installed that just need a ceiling height of 2.0 m.



Main components of the BREMAG ultrafiltration

- Frequency-controlled raw water pump
- Pre-filtration with automatic backwashing activated carbon filter
- Modular steel frame, galvanized
- Flocculant dosing
- Ultrafiltration modules, individually piped
- Automatic cleaning unit incl. Cleaning tank
- Internal chlorination
- Control with Siemens CPU and Touch Panel
- Modem for remote monitoring
- Optional: backflush water recycling with 2nd ultrafiltration module or according to DIN 19645 - type 1



Process description

The frequency-controlled raw water pump takes raw water from the flood water storage. Before being fed into the pre-filtration flocculant dosing is done. In the pre-filter flocculated ingredients and other coarse impurities are retained. After pre-filtration, the water is fed to the ultrafiltration. The permeate is chlorinated before the inflow into the pool.

The pre-filter is automatically flushed, depending on the differential pressure. Therefore the raw water from the flood tank is used. The backwash of the ultrafiltration is time-controlled using the permeate. For hygiene assurance chlorine is dosed additionally.

Optionally, the backflush water can be treated by an additional ultrafiltration module or a backflush water treatment plant according to DIN 19645 so it can be reused in the pool water circuit.

Control

The operating data can be viewed via a touch panel on the cabinet. The individual modules are summarized in overview images where the current control and measurement values are displayed. When installing a visualization software, the operating data can also be viewed on a PC in the control room. Levels, pressures, flow rates and quality parameters can be evaluated, recorded and graphed, parameters can be changed. Manual changes to the controller via TeleService are possible and protected by different password levels.

Optimal applications for ultrafiltration

- Highly loaded pool water circuits / Hot tubs

The water of a hot tub must be processed 20 times an hour with conventional processing technology. When using ultrafiltration, the treatment capacity can be halved. Advantages of ultrafiltration:

- Small footprint for installation and water storage
- Backwashing during operation with a small flush volume, that means minimal temperature fluctuations caused in fresh water replenishment
- Reduced cleaning costs of the pool by the high separation efficiency of the ultrafiltration



- Paddling pool

When designing the treatment capacity for a paddling pool the high quality preparation of ultrafiltration is not taken into account. Regardless of the type of processing technology of the pool contents must be processed twice every hour. This results for the use of ultrafiltration for paddling-circuits a higher investment than for a conventional filtration technology.

On the other hand, especially these pools are at increased risk of fecal contamination. At the same time we have a special responsibility for our youngest swimmers.

In addition to the small amount of space for installation of the plant and the raw water tank, the main advantage of ultrafiltration for paddling pools is located in the membrane barrier. Impurities are securely held back and not able to "settle" in the filter bed. After an incident, the pool can be used again after a very short time.



- Therapy pool

The processing capacity with the use of ultrafiltration is the same as that of a conventional filter system. Nevertheless, the following advantages result in using ultrafiltration:

- Compact design, thus less need of space for plant and raw water tank
- Pathogens are retained by the ultrafiltration. This eliminates the need of ozone technology
- Also no need for regular monitoring of the ozone technology by experts

- Renovation / expansion of existing pools

Because of the low need of space existing equipment rooms can be used again. The construction costs can be minimized.

Features of a BREMAG ultrafiltration plant:

- When using UF-Racks, all modules are connected parallel and flushed simultaneously. With a varying degree of contamination of the modules, especially the modules with low pollution and low differential pressure are cleaned.

In BREMAG systems all modules are individually flushed with the optimal flow.

- For parallel connection of several modules, less polluted modules work above their capacity to compensate for the reduced performance of the more polluted modules. Permanent overload, at the expense of life. Through the ability to control the pressure conditions of each module, all the modules can be set for the optimum operating range. Modules with higher differential pressure can be backwashed intensively, thus bringing the permanent contemporary design rata filtration performance of the total current.
- BREMAG ultrafiltration units are designed for a **comfortable and safe monitoring and gentle operation.**