



Ion Exchange

For use in the brewing and beverage industry EUWA offers both cation and anion exchangers in various designs. These ion exchangers can specifically change the ionic composition of the treated water.

Strongly acidic cation exchanger

A strongly acidic cation exchanger exchanges all cations present in water against H^+ ions during regeneration with HCl and H_2SO_4 or against Na^+ ions in the regeneration with NaCl. In the latter case the exchanger is called softener and is applied for instance for the treatment of service water or boiler feed water. When regenerated in counter current mode savings up to 50% on regeneration chemical over conventional systems are possible. It is recommended to use food grade lined steel vessels equipped with a nozzle plate for an even distribution of water and regeneration chemicals as well as manholes for easy access during maintenance. Softeners are operated in Na cycle and are therefore not suitable for

brew water treatment. For this application strongly acidic cation exchanger operated in the H cycle is the better choice.

Its key benefits are consistent water quality and its monitoring capability via differential conductivity measurement. This system measures the conductivity at two measuring points, before and after a safety zone and thus determines the exact time of exhaustion. The regeneration should be done in counter current mode, to achieve a constant effluent quality with low chemical usage and low wastewater volume.

Ideally this can be ensured with the EUGEMAT system developed by EUWA, which has the quality control with integrated differential conductivity measurement and allows the backwashing within the exchanger vessel (as the only single counter current system in the market), as it does not require an upper nozzle plate.

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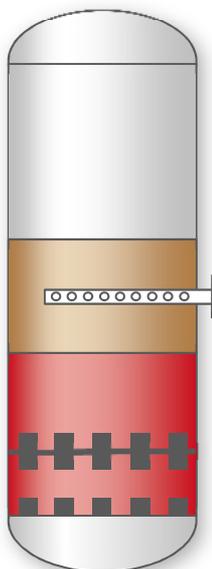
weakly acidic

- high capacity
- good chemical exploitation
- co flow regeneration



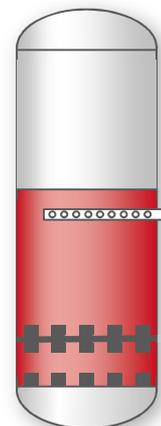
strongly/weakly acidic

- layer bed exchanger
- perfect combination



strongly acidic

- constant quality
- quality controlled supervision
- counter current regeneration



If the water contains carbonate and non-carbonate hardness, the use of a layer bed exchanger is particularly advantageous. In this case, the strongly and weakly acidic exchange material is placed in one vessel. Thus, the advantages of weakly and strongly acidic exchangers are combined without any of the disadvantages when each is used on its own.

Weakly acidic cation exchanger

A weakly acidic cation exchanger removes the Ca^{2+} and Mg^{2+} ions bounded to HCO_3^- (decarbonisation). Its key advantages are high capacity and the effective utilisation of chemicals. Regeneration is carried out with HCl or H_2SO_4 in co-current, backwash is possible within the vessel. Its poor monitoring capabilities and the risk of over or under regeneration need to be considered.

Strongly basic anion exchanger

A strongly basic anion exchanger removes anions of both strong and weak acids from water. Regeneration is carried out analogously to the strongly acidic cation exchangers in counter current but with NaOH.

Furthermore, EUWA offers specific nitrate exchangers, which remove most nitrate selectively from water. This type is regenerated in association with strongly acidic cation exchangers. In this case, the anion of the regeneration acid is used for the regeneration of the anion exchanger. When using HCl and H_2SO_4 for regeneration, the Cl / SO_4 ratio in the treated water can be adjusted. After the ion exchange process the calcium content of the water is too low for the brewing process. To increase it several process variants are possible. For more information, please refer to the separate CALMIX® flyer.

Weakly basic anion exchanger

A weakly basic anion exchanger exchanges the anions of strong acids against OH^- ions. A weakly basic anion exchanger must always be combined with a strongly acidic cation exchanger or layer bed exchanger installed upstream. In this combination a demineralisation is achieved. The main advantages of this exchanger type are its high capacity and the effective utilisation of chemicals. Regeneration takes place with NaOH and the quality monitoring by conductivity measurement.

THE WORLD OF WATER TREATMENT



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