

Process / Potable Water Treatment

Softening Technology



Product Applications

Water Softening process is the process of removing the calcium (Ca^{++}) and magnesium (Mg^{++}) salts that cause hardness in water, the main industrial purposes of water softening is to eliminate hardness scaling calcium (Ca^{++}) and magnesium (Mg^{++}) salts and prevent scale & Sludge formation. Hardness removal is required for wide range of industrial applications; mainly boiler & cooling tower makeup water, injection water & beverage.

Hardness in brackish and seawater can be removed by different technologies such as:

- Ion Exchange Resin
- Chemical Softening using Lime and Sodium bicarbonate (Clark's process)
- Softening Membrane

Process Description:

- **For ion exchange**, typically, a Strong Acid Cation (SAC) resin is used and regenerated with sodium chloride (brine). In cases of high TDS water or high hardness levels (seawater), Weak Acid Cation (WAC) resin shall be used for water softening.
- **For Chemical Softening using Lime and Sodium bicarbonate**, addition of lime water to remove hardness (calcium and magnesium) ions by precipitation, commonly used with high TDS water or high hardness levels.

- **For Softening Membrane**, using a special membrane type (Nano Membrane) with the purpose of softening and mainly remove (polyvalent cation removal) including Hardness.

Product Benefits:

- Depend in feed water quality, Hardness can be removed up to 99.9%
- Durable and well-approved technologies
- Using commodity chemicals for ion exchange resin regeneration & lime precipitation
- Ion exchange & softening membrane can be delivered in Containers
- Modular design, easy to expand and to maintain

Service and Features:

- Supply customized design
- Configured in custom configuration to meet the requirements
- Fast track delivery
- Retrofit for existing plants
- Installation & supervision commissioning
- Operation & maintenance services

