

Osmotic Solutions

Engineered Water Treatment Systems

Also known as base exchange, water softening by ion exchange is now accepted as the most reliable and efficient method of ensuring Total Hardness removal for your water using application.

Raw water as supplied to your premises contains Calcium and Magnesium, contributing to what is termed "Hardness" in the water. Temporary hardness in particular, Calcium and magnesium Bicarbonate, decomposes on heating to form Calcium and Magnesium Carbonate (with the egress of Carbon Dioxide), these are insoluble and are the primary constituents of common scale.

Further scale components are present in water as permanent hardness, these do not decompose on heating however will precipitate if sufficient evaporation of the water occurs.

Scale can be an issue throughout domestic and industrial applications, the most common issues arising in boiler applications whereby scale will contribute quickly to blockages, reduced heat transfer and increased fuel consumption.

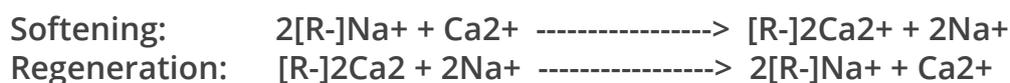
Softening works using a strong acid cation ion exchange resin in the Sodium form. This is a Polystyrene bead, cross-linked using Divinylbenzene to maintain integrity.

For softening applications, these beads have a negatively charged exchange site (such as SO₃⁻) which is charged during regeneration with Sodium Chloride, leaving an exchangeable Sodium ion at each exchange site.



On contact with water, this sodium (which is non scale forming) exchanges with the calcium and magnesium in the water.

When all the sodium has been utilised, the system will regenerate using a brine solution made by adding salt to water, this then recharges the ion exchange resin, back to the sodium form, ready for further treatment of incoming water.



Systems can be setup in simplex where the system can regenerate in times of low demand, or a duplex setup, ensuring there is no period of loss of soft water supply.

We work with a range of manufacturers using off the shelf and custom built components meaning we can offer anything from undercounter simplex softeners, to industrial full premises double duty standby systems incorporating online hardness controlled regeneration for maximum efficiency and minimal salt and water consumption.

This is offered as a supply only or supply, build and commission/train package, with our engineers undertaking a range of pipework options as required from your particular site.

Below are some pictures of in progress installations:

