REV 0421

Desilicizers

The most common techniques used to remove silica from a water source are complete deionization or reverse osmosis. Another method that can be used, which is relatively inexpensive, is a hydroxide cycle strong base anion resin that follows a standard sodium cycle softener. This system costs much less than a full blown deionizer, yet removes hardness and enough silica to be suitable for the production of feedwater for medium pressure boilers.

The raw water first passes through the softener, and then through the desilicizer. The water that leaves the softener and enters the desilicizer is all-sodium water, since the hardness has been removed by the softener. The anion component of the sodium salts exchanges for an hydroxyl ion in the desilicizer unit and the resulting effluent is a water that contains a level of sodium hydroxide equal to the number of sodium ions present in the softener effluent. Consequently, the pH is relatively high and many need some slight adjustment to depress the pH to between 8 and 10.

ResinTech SBG1P, a type one porous gel anion exchange resin, is the resin of choice for desilicizers. The high porosity of this resin gives a good regeneration efficiency, effective removal of silica, and low silica leakage in the effluent.

The desilicizer is regenerated with 4 to 6% sodium hydroxide, ideally heated to a temperature of 120 degrees F. A minimum regeneration contact time of 60 minutes is recommended.

The silica leakage from a desilicizer unit depends on the level of regeneration, the contact time with the regenerant, the percent silica of total anions, and the TDS of influent water. The TDS of the influent water impacts the silica leakage because when the ions enter the desilicizer they are all sodium salts. The sodium salts get converted to sodium hydroxide during the anion exchange. This sodium hydroxide, although present in low concentrations, can act as a mild regenerant and push off silica that has been collected during the run. A high TDS means more sodium hydroxide is formed, which means a higher potential for silica leakage. Silica leakage is generally higher in a desilicizer than from a deionizer.

RESINTECH® INC.
INNOVATIONS IN ION EXCHANGE

CORPORATE HEADQUARTERS 1801 Federal Street Camden, NJ 08105 USA PHONE 856.768.9600 FAX 856.768.9601 EMAIL info@resintech.com WEB resintech.com