C.Q.M Cooling Quality Management

SR Technology
Water conditioning using electrolysis

The system's large cathode area creates an alkaline environment with a high pH value neutralizing corrosive elements. Salts and temporary hardness are deposited in the reactor, eliminated from the system. Free radicals and chlorine generated at the anode destroy organic matter.

The chemical reactions occurring at the cathode are as follows:

Hydroxide salts: $Mg(HCO_3)_2 + 4OH^- \rightarrow Mg(OH)_2\downarrow + 2H_2O + 2CO_3^{-2}$

Carbonates: $Ca(HCO_3)_2 + 2OH^- \rightarrow CaCO_3\downarrow + 2H_2O + CO_3^{-2}$

$Mg(HCO_3)_2 \rightarrow MgCO_3\downarrow + 2H_2O + CO_2\uparrow$

Others: $(SiO_2)aq \rightarrow SiO_2\downarrow$

It is important to note that the effect of electrolysis is not similar to a softener: As opposed to a softener which reduces the water hardness by exchanging all Calcium and magnesium by Sodium ions, CQM's SRCT ensures that only those ions that contribute to the temporary hardness, Calcium and Magnesium hydrogencarbonate ($Mg(HCO_3)_2$ and $Ca(HCO_3)_2$) are decomposed and deposited as Calcium Carbonate and Magnesium Carbonate.

Temporary hardness is the main reason for scale deposition and accumulation. By eliminating the temporary hardness, SRCT helps preventing scale formation

The chemical reactions occurring at the anode are as follows:

Formation of free radicals: $: OH^- - e \rightarrow OH°$

Formation of Hydrogen Peroxide $: 2OH° \rightarrow H_2O_2$

Formation of Ozone $: O_2 + O° \rightarrow O_3$

Chlore radicals $: Cl^- - e \rightarrow Cl°$

Free Chlorine $: 2Cl \rightarrow Cl_2$

Active Chlorine dioxide $: Cl_2 + O_2 \rightarrow ClO_2$

Hypochorite $: Cl_2 + H_2O \rightarrow HOCL + HCL$

The free radicals and other oxidants formed at the anode destroy all organic matter that are the cause for micro and macro fouling, health hazard bacteria such as Legionella, as well as bacteria which is hazardous to the system.

SRCT takes care of all of the needs of water conditioning for cooling towers, hot and cold closed circuit water systems, sanitary hot water systems and chlorination systems for drinking water, industrial water and large swimming pools, replacing in most cases all of the chemicals that are used in those systems.

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