



SPR & Chlorin8or® *Cooling Water Treatment*

The new generation system delivers an affordable, reliable and safe alternative to chemical usage when dealing with water borne microorganisms in cooling water.

The new generation SPR & Chlorin8or® provides Calcium remover system (SPR) and chlorination system (Chlorin8or®) via an electrolysis

process.

The new generation SPR & Chlorin8or® consist reaction tank for calcium remover and Reactor for disinfection against Legionella and other Bacteria.

The system is fully controlled and monitored via a web application.

- Make up water is often reduced by at least 70%.
- The handling, storage, and discharge of chemicals is eliminated
- Biological growth is controlled
- Systems are scale and corrosion free to a greater extent than with conventional treatment.
- Lower operating costs.

Every SPR & Chlorin8or® system is specifically adjusted to the water quality and size of each installation by **E. ELGRESSY** Ltd that ensuring optimum protection for the site operating conditions.

Easy maintenance, installation and full control via RS232 or GSM
(see more in wireless communication)



Disinfection Chlorin8or®

The Chlorin8or® treatment system should produce biological counts that are better than typical cooling water treatment systems. Typical cooling water system bacteria counts range is within range of 10,000 to 100,000 cfu/ml.

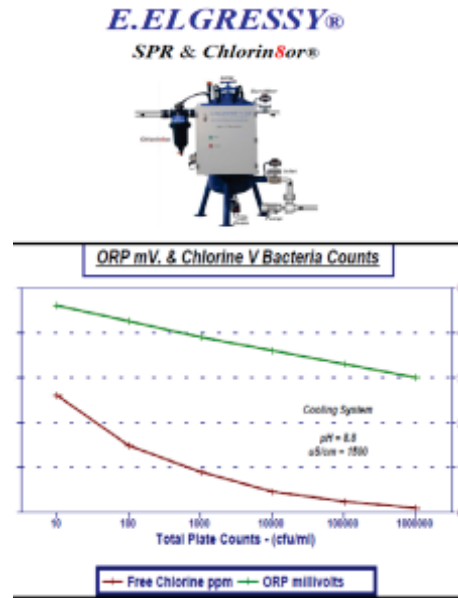
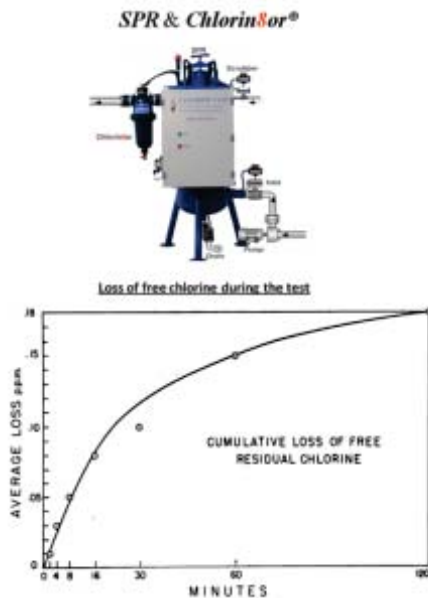
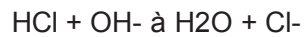
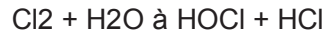
The Chlorin8or® system will maintain bacteria counts based on industry standards.

In rare cases, some cooling tower systems may require supplemental disinfection due to heavy loads of bacterial material consistently introduced into the cooling system.

Disinfection principally takes place due to the Chlorin8or® system's treatment which produces a high level of chlorine from the chlorides in the water as well as of Oxygen and low level of ozone as followed:



The free Cl_2 dissolves in the water to form Hypochlorous acid as follows:



ORP



Calcium remover SPR

The SPR system operates using electrolysis principles.

Electrical current (DC) flows between the Cathode (reaction tank's wall) and the Anodes that are installed in the reaction tank dissociates the salts in the water into ions.

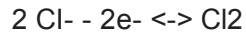
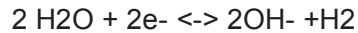
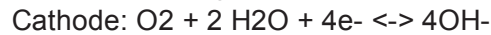
Cations are attracted to the tank's wall while anions are attracted to the anodes. The Cations include, among others, calcium, which is the scale builder in the water. This calcium combines with carbonates that are present in the water source.

Such "controlled scale" is produced at the cathode (the inner wall of the reaction tank). This controlled scale has qualities that prevent it from firmly adhering to the tank's wall and makes it possible to flush it through the drainage valve.

In addition, the benefit from high E-F (Electricity field) and H-F (Magnetic field) that changes the crystalline structure of calcium molecules (Calcite to Aragonite).

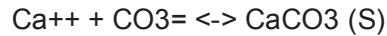
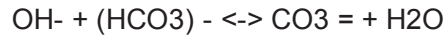
The SPR & Chlorin8or® system uses a combination of well known chemical reactions to treat the water in a cost Effective and environmentally friendly manner.

The reaction begins with the equations of electrolysis as follows:



At the cathode, these reactions produce hydroxide ions as well as OH⁻ ions, which will be used to precipitate calcium carbonate along the SPR reaction tank walls as a somewhat soft, loosely adherent deposit.

The following reactions take place near the Cathode (the tank's wall):



This loosely adherent material is removed from the tank by a water spraying system, and is flushed out from the tank through the drainage valve, using a minimal amount of water.

By concentrating the scale in this manner, much less water is discharged to the sewer than in the case of traditional chemical treatment and blow down.

Calculator Langelier

Calculator L.S.I		Langelier Saturation Index	
Temperature (°F)	50	Temp (°C)	10
Alkalinity (mg/L CaCO ₃)	100	Hardness (mg/L CaCO ₃)	100
Calcium hardness (mg/L CaCO ₃)	50		
Result: -0.19			
Recommended action: *** Your water is cooling down over pH. *** Your alkalinity and hardness suggests that your pH might be high, consider lowering the value. *** Your TDS is somewhat low.			

[Calculator Langelier](#)

[kld29l.xls](#)

Calcium Remover



Corrosion

The SPR & Chlorin8or® System is designed to remove only the minerals that can potentially cause harmful deposits in the cooling water system.

Though this system removes minerals, it is not defined nor functions as a water softener.

The SPR & Chlorin8or® System allows the minerals in the cooling water system to reach an equilibrium point. The equilibrium point is defined as the point at which the cooling water neither precipitates nor dissolves any minerals.

Any pre-existing mineral deposits will be dissolved by the SPR & Chlorin8or® System before reaching equilibrium.

The cooling water will not be aggressive toward metals as it will have a balanced mineral content.

Projects





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