

Water Treatment Technology



## **System Stability**Maximizing Cooling System Performance

Cooling Systems use a significant amount of water, which requires treatment in order to prevent scale, corrosion, bacteria growth and fouling. Wave 3.1 chemical-free, water treatment supports stable system operation, as these common problems are under consistent control.

Additionally, since nothing replaces the human touch, routine service by competent water treatment professionals — is a key component to a smoothly operating cooling system.



Optimal heat transfer efficiency is maintained: systems are free from scale and bio-film, manual cleanings are minimized, run-time is preserved.



AutoSeek software allows for field correction if the Wave 3.1 signal is compromised.



Advanced system features such as UL approval of all sizes, NEMA 4 ratings, shop-durable construction, power efficiency, and more, contribute to long-term, cost-effective performance.

# Wave 3.1 Water Treatment Technology

**Beyond Pulsed Power** 

General Water Systems uses electrodynamic field generation to create uniquely effective electric fields in the flowing water of a cooling system. This digital technology far surpasses the voltage pulses created by yesterday's circuitry. Our innovative, micro-processor-based Wave 3.1 produces electric fields that are significantly more stable and reliable than previously created using pulsed power. Wave 3.1 induced signal:



Creates stable electric fields that are orders of magnitude more potent than those of other technologies



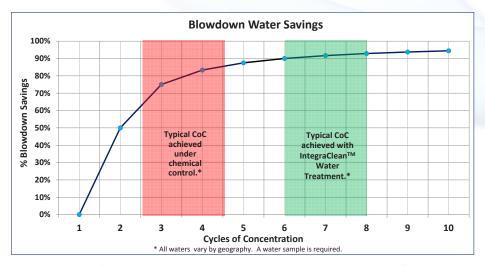
Allows for routine Wave 3.1 application as a low cost sidestream; excellent for retrofit applications



Produces never-before-seen excellence in biological control



Enables GWS to build a full range of sizes, 2" - 24"



Improving C of C while reducing system upsets supports significant water savings. Blowdown discharge expenses are also cut dramatically.





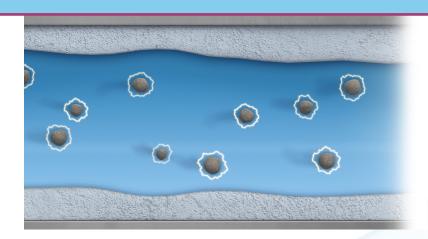
### Water Savings

#### Improving the bottom line

Both make-up and discharge water costs are dramatically reduced when Wave 3.1 is engineered with GWS solids management as part of IntegraClean™. Higher Cycles of Concentration are routinely possible, chemical-free discharge can bypass costly sanitary sewer, and onsite reuse of discharge further enhances ROI. If these measures are put into use, dramatic operational economies are possible.

### **An Elegant Process**

#### Controlling Scale Through Electrodynamic Fields



- Evaporation causes minerals in the water to reach the point of saturation, and a driving force is created.
- CaCO<sub>3</sub> comes out of solution and forms hard limestone scale on the equipment surfaces



- The numerous suspended particles (dirt), present in the system water, would be acceptable sites for this CaCO<sub>3</sub> precipitation.
- A naturally occurring surface charge prevents the CaCO<sub>2</sub> from doing this.
- Minerals are forced to find a surface on the equipment.
- Wave 3.1 uses digital processors to create powerful electrodynamic fields.
- The alternating polarity of the fields removes the surface charge on these suspended particles, rendering them electrically neutral.





Without the surface charge, CaCO<sub>3</sub> will plate out around the particles rather than scale on the equipment surfaces. Two reasons it does this:

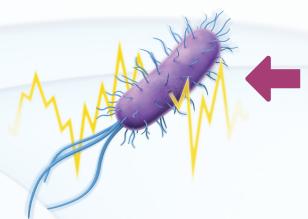
- Proximity Particles closer than the equipment surface
- Relative Velocity Particles flowing at the same rate as the CaCO<sub>3</sub> dissolved in the water.
- This creates a harmless, non-sticky limestone powder
- The powder particles keep growing in size over time until they reach 50-70 microns in size, and settle in the basin, or are removed by filtration (centrifugal separators are best)



**A Green Solution** 

Eliminating Hazardous Biocides

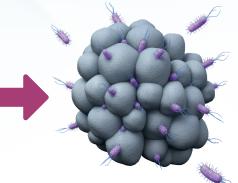
Wave 3.1 provides reliable, consistent Biological Control, often to drinking water standards. This dramatic performance, which exceeds that of toxic biocides, uses these two methods:



Electroporation occurs when the extremely strong Wave 3.1 electric signal strikes a bacterium, damaging its ability to reproduce.

Bacteria are subject to

Encapsulation as they are
drawn into the forming
powder. Access to nutrients
is limited and their
reproduction is prevented.





Wave 3.1 chemical-free water treatment eliminates the use of millions of gallons of hazardous biocides each year.



Wave3 .1use removes the risk of employee exposure to dangerous chemicals.



Chemicals cannot become entrained in cooling tower drift nor contaminate discharge water.



The absence of any chemicals allows the discharge water to be re-used for other purposes, such as landscaping.

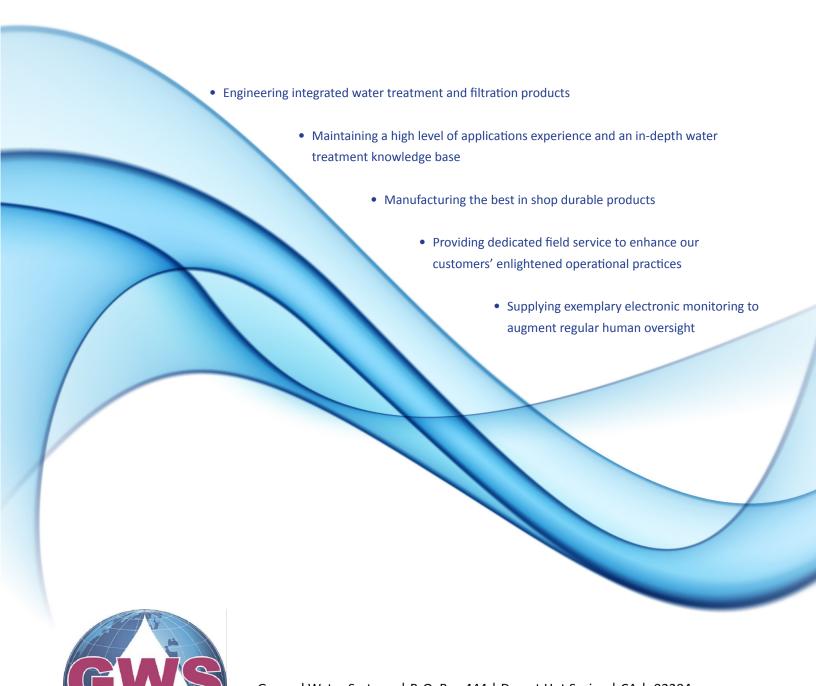


Substantial savings in water purchase and discharge costs accompany the knowledge that a facility is contributing to overall sustainability practices.



Eligible for LEED points in several ways.

Our mission is to provide our customers with chemical-free water treatment that will allow their cooling systems to enjoy long term stability and operate in a consistent and reliable way. GWS pledges to guarantee customer satisfaction by:



General Water Systems | P. O. Box 444 | Desert Hot Spring | CA | 92204 <u>www.gwslp.com</u> | <u>info@gwslp.com</u> | 951.213.9506 | 386.255.3909