



## Cooling Tower Water Conservation



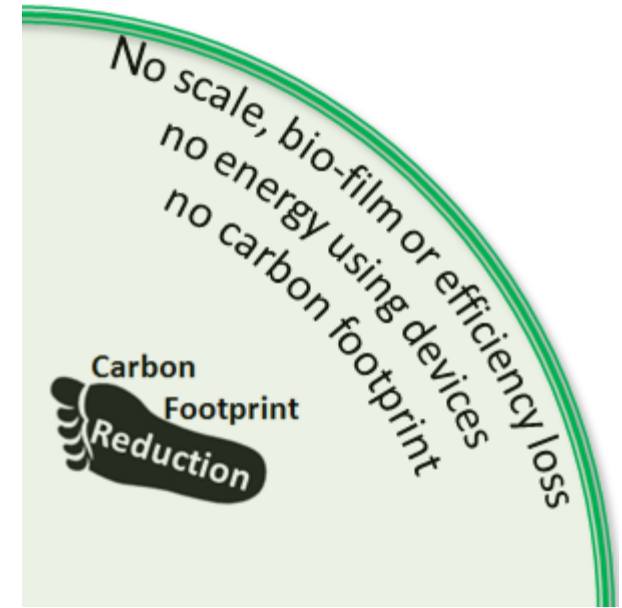
## New Green Technology to Sustain Water and Energy Resources



This process removes scale forming hardness that causes traditional tower treatments to waste water. This permits towers to operate with zero blowdown, and the greatest possible *water footprint* reduction.

Zero blowdown saves typical water wastage of 20% to 40%, and reduced water and sewer cost savings provide rapid ROI for the technology user. The process typically reduces water and treatment costs by 50 to 75%, so saving water means saving money for the customer.

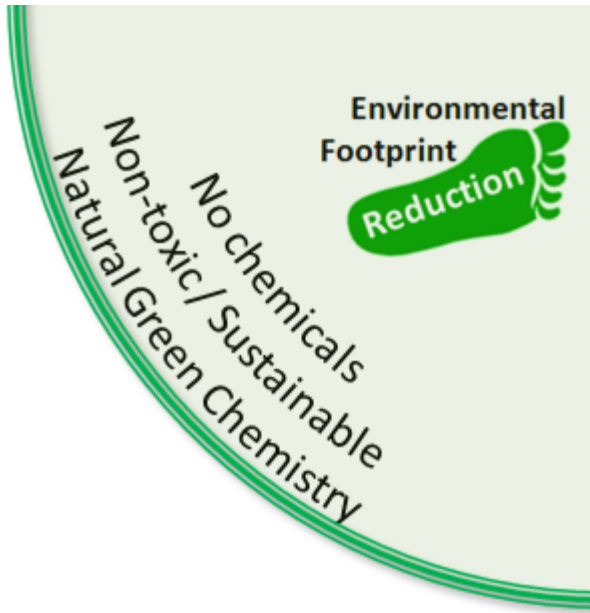
The zero tower blowdown process only discharges about 1% of tower water use due to a high efficiency makeup water softening process that permits more than 95% waste volume reduction and comparable TDS load reduction. It also becomes very cost economic to totally eliminate sewer discharge and TDS loading with the reduced waste volume.



Operating with very soft water and zero tower water blowdown provides many “natural green chemistry” benefits that produce optimum energy efficiency.

- First, there is no potential to form scale on heat transfer surfaces. Soft water has been used to treat low pressure boilers for decades.
- Second, silica no longer forms heat transfer limiting deposits with this patented process.
- Third, the combination of high TDS and higher pH tower water that naturally result from concentrating minerals in makeup water are bio-static, completely limiting bio-growth. There are no bio-films to inhibit heat transfer efficiency or support pathogens.

Eliminating energy consuming devices and chemical supply chains further reduce the *carbon footprint*.

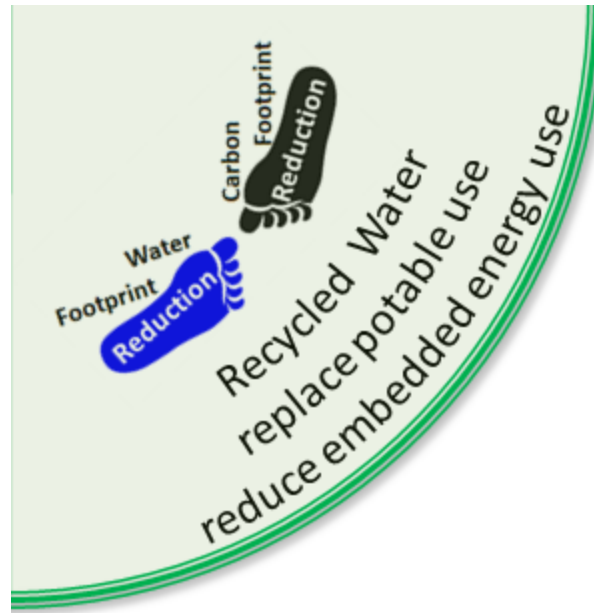


No chemicals are required to control scale, corrosion or biological growth at control conditions. And tower water is not discharged, even if small amounts of chemicals were used. So water use reduction, eliminating tower discharge and eliminating toxic chemical use all provide a reduced **environmental footprint**.

Natural silica, alkalinity and TDS contained in most water are the feed stocks used to provide tower water treatment performance. So this means no hazardous chemical storage or handling on site, and no chemical supply and transport chain **carbon footprint** as well.

Common innocuous salt is the only material used for softening, and is naturally produced with solar energy and seawater, very sustainable resources.

WCTI also creates multiple **LEED** opportunities.



Natural biostatic chemistry and outstanding corrosion inhibition by silica permit recycled water (municipal), storm water, boiler blowdown and pre-softened RO reject to be easily used as tower makeup. High efficiency filtration and softening are all that's required.

Most recycled waters contain significant ammonia, phosphates and organics that promote severe biological growth, bio-fouling and aggressive corrosion of copper and copper alloys.

Higher mineral content also requires more blowdown and chemical use. All these scale, corrosion and bio-growth consequences for recycled water are removed with this natural green chemistry process, at no more cost than potable water.

Replacing potable water and embedded **water-energy** consumed will reduce both the **water footprint** and **carbon footprint**.

This would not be possible without discovery of "Mother Nature's" plan for utilizing natural silica in water, and converting it to a **natural green** corrosion inhibitor that almost eliminates corrosion of any metal used in tower systems. The silica inhibiting film is not affected by high TDS, high pH or soft water. This makes zero blowdown chemistry and water conservation possible without any threat of corrosion damage to equipment that has limited past water treatment.

WCTI is continuing to research and develop new chemistries that will further expand scale and corrosion control performance, while conserving **water**, **energy** and **environment**. US patents 6/929,749; 6/949,193; 6/998,092; 7/122,148; 7/517,493 apply.



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