

Total Water Management

Conserve Water with Data Monitoring and Improved Cooling Tower Cycles



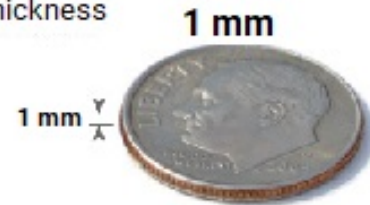
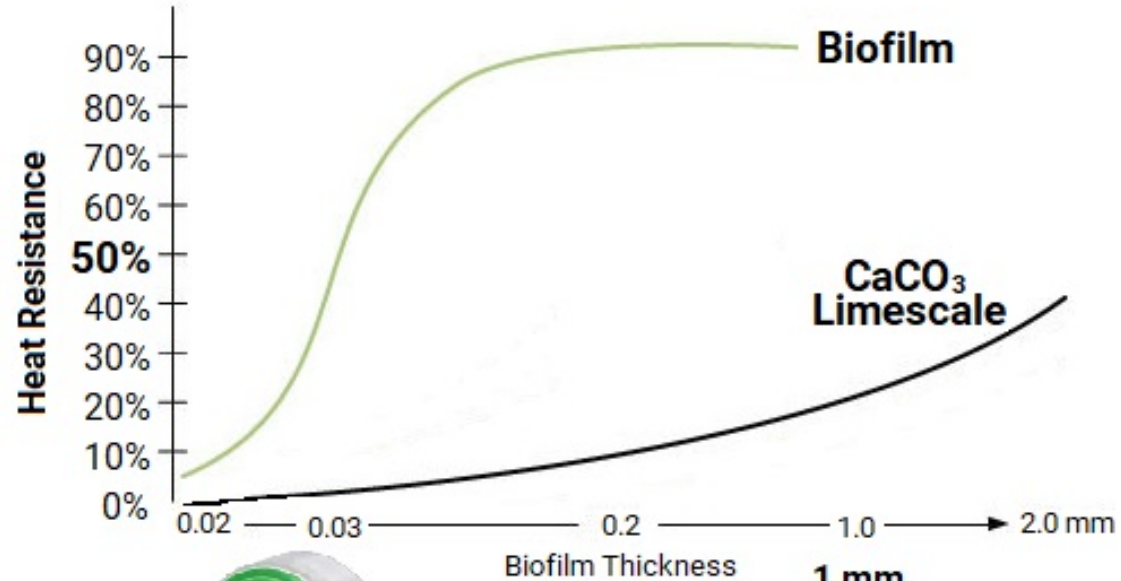
Presented to:



Scale and Biofilm Reduce Energy Efficiency

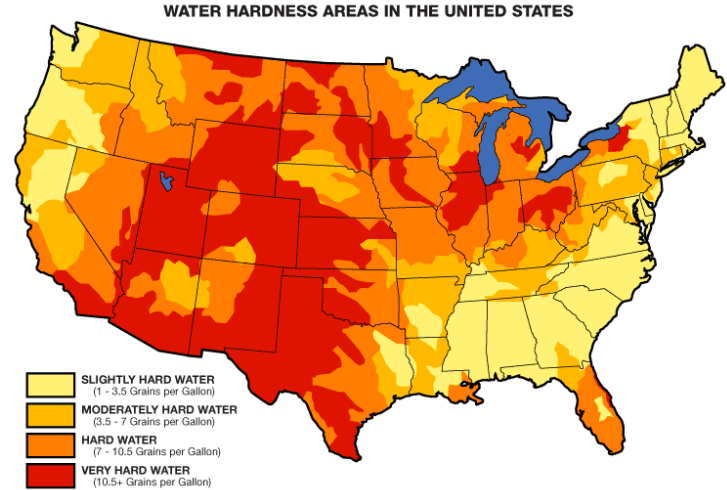


Reduction of Heat Transfer



Water Hardness in Texas

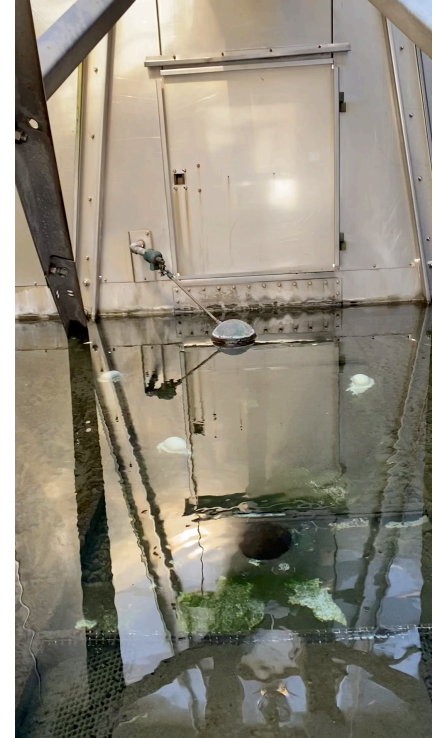
- **Austin Water has High Calcium Hardness**
- **Austin Water/Sewer Costs are High**
- **Limited Water and Energy Resources (Increasing water and energy costs)**
- **5 Cycles of Concentration Mandatory for Cooling Tower Efficiency Program**
- **High Cycles of Concentration = Increased Risk of Scale and Biofilm issues**



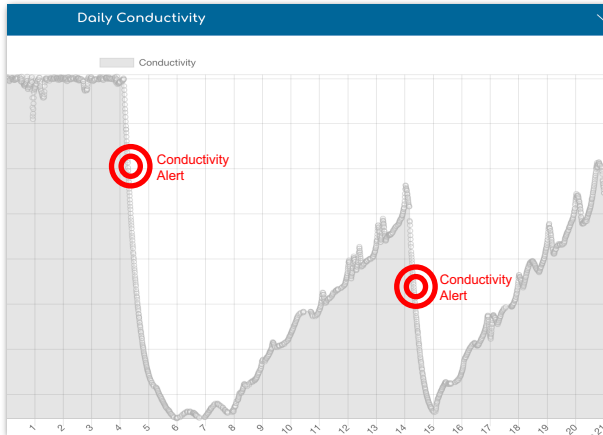
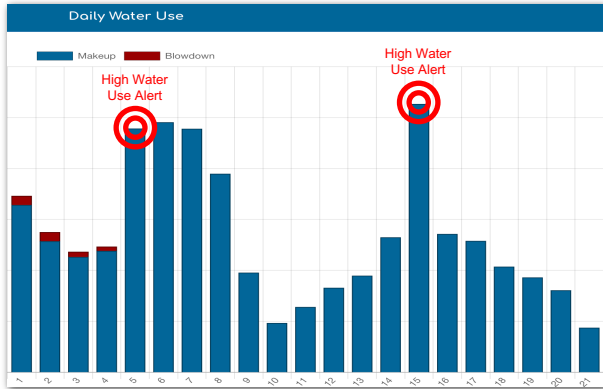
Water Loss Happens

Common Causes of Water Loss Include:

- **Blowdown Valve Failure**
- **Makeup Float Failure**
- **Gasket Failures**
- **Clogged Suction Strainers**
- **Imbalanced Cooling Towers**



Data Monitoring Identifies Water Loss Issues



September 5:
Gasket Failure



September 14:
Suction Strainer
clogged by debris



Increasing Cycles Reduces Water and Sewer Costs

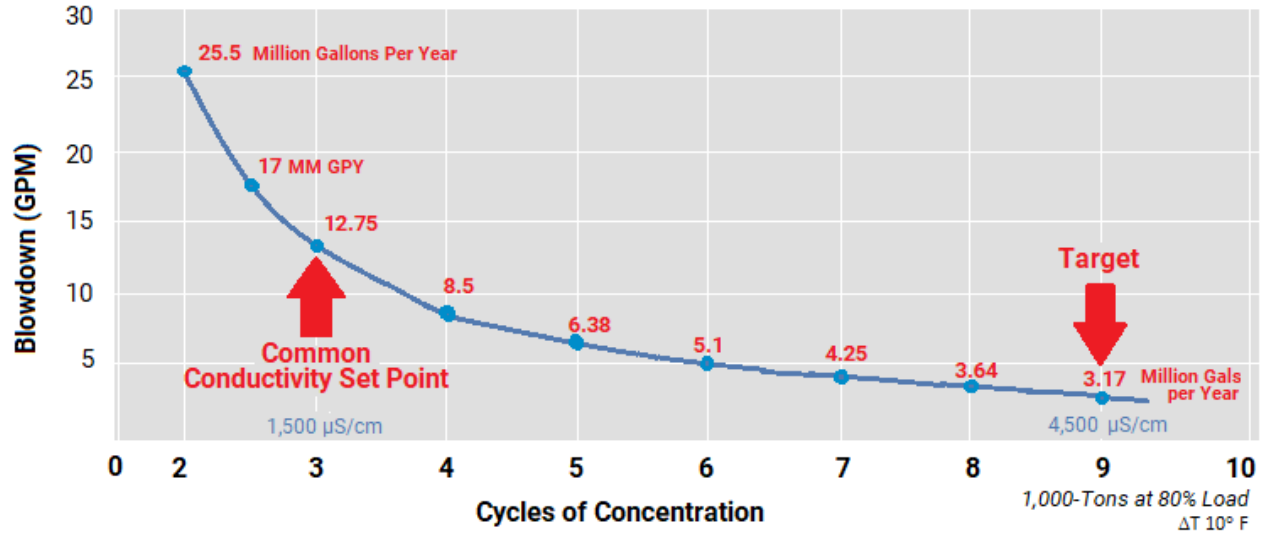
3 Cycles of Concentration



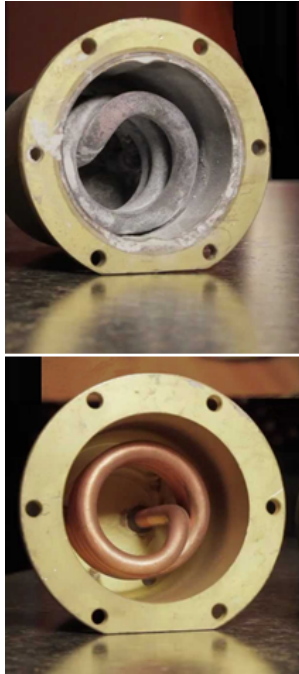
9 Cycles of Concentration



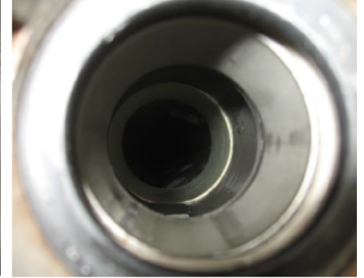
Cycles of Concentration and Water Conservation



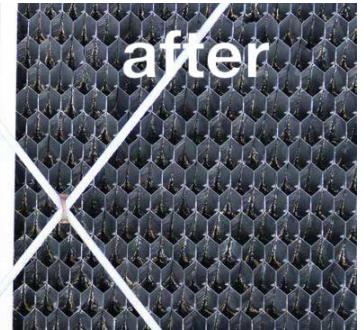
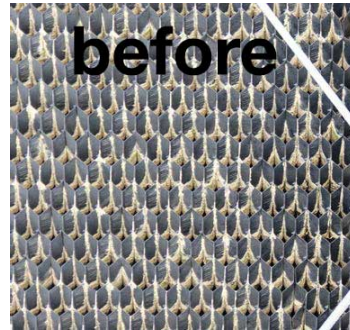
Preventing Scale with Electronic Water Conditioning



Scale Accumulation
Before HydroFLOW

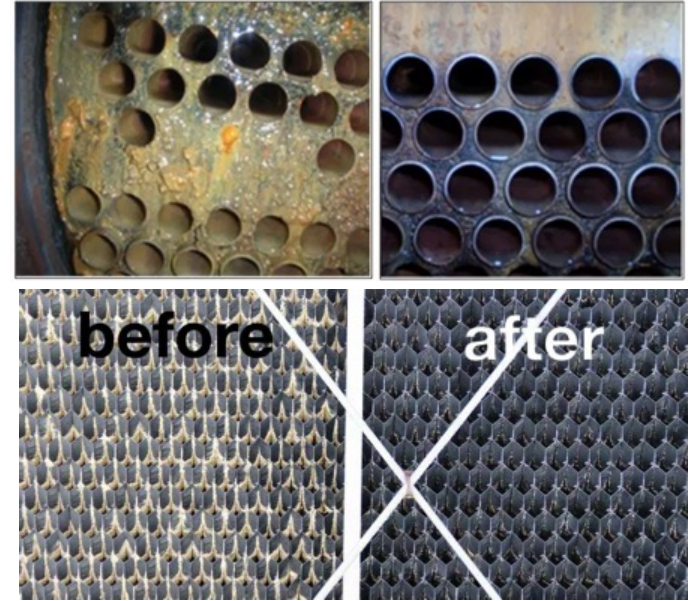


100 Days After
Installing HydroFLOW



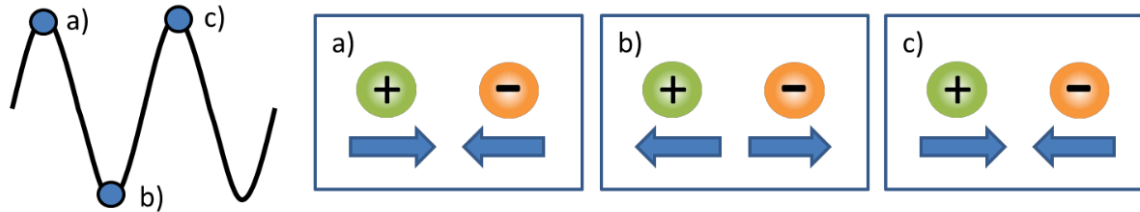
HydroFLOW Scale Removal

Preventing Scale with Electronic Water Conditioning

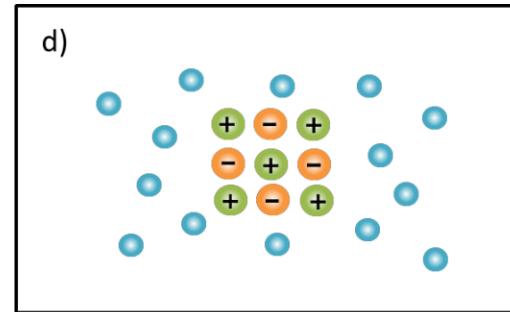
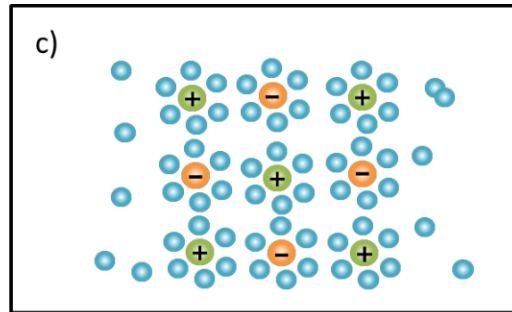
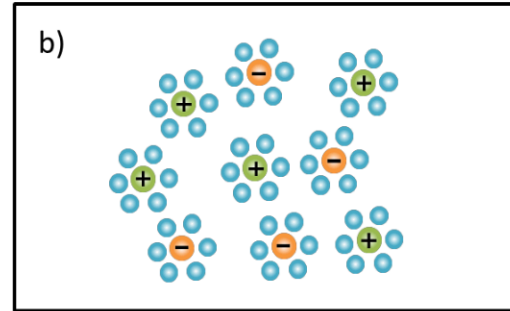
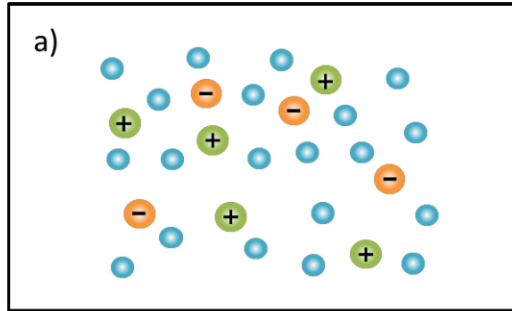


Electronic Water Conditioning – Principles

Positive	Negative
Ca ⁺⁺ Calcium Mg ⁺⁺ Magnesium Na ⁺ Sodium	Cl ⁻ Chloride SO ^{- -} ₄ Sulphate (HCO ⁻ ₃) ₂ Bicarbonate

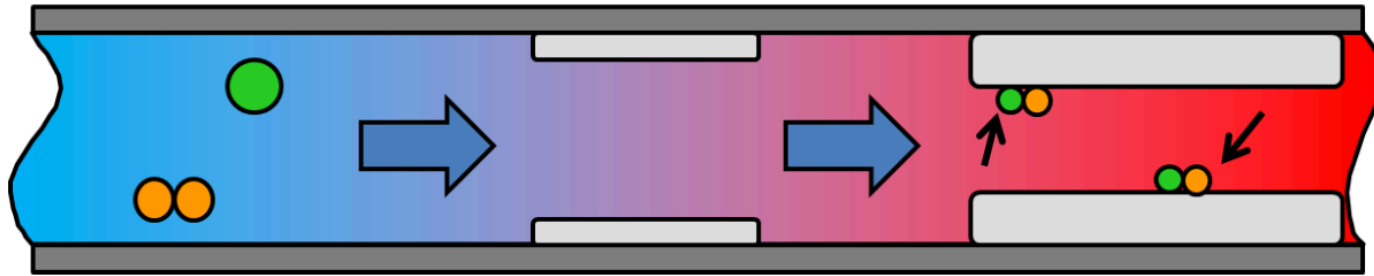


Electronic Water Conditioning – Principles



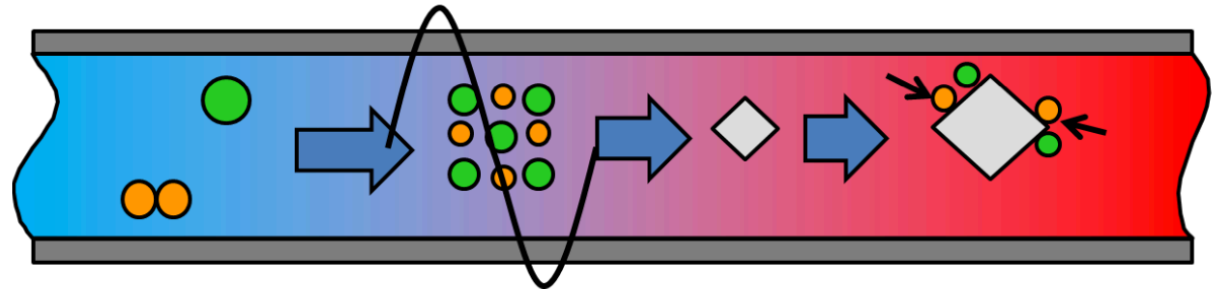
The formation of clusters and crystals. Ions are initially dissolved in the water (a) form loose clusters (b,c) which, when the water is heated expel the water molecules to become crystals (d).

Electronic Water Conditioning – Principles



Without HydroFLOW

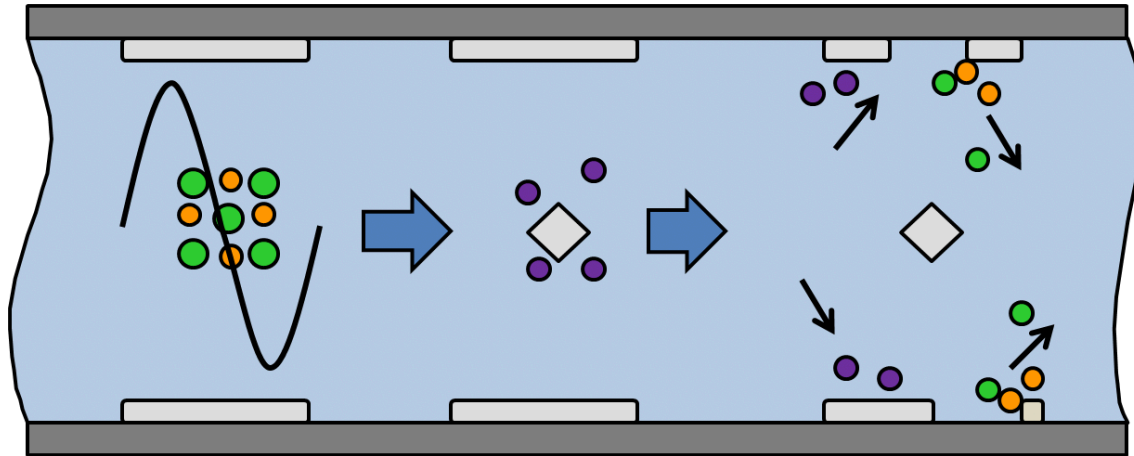
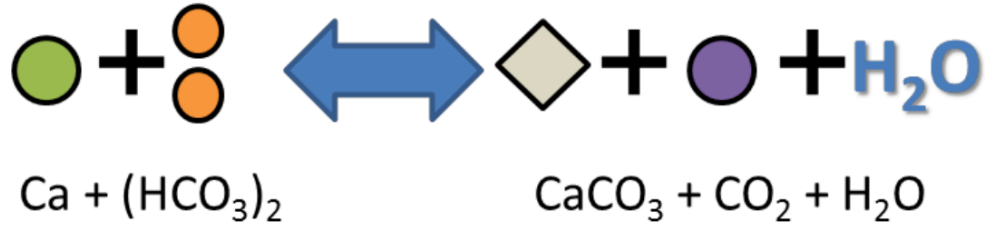
Scale forming on the surface of a pipe. When the water is heated, the ions form crystals on the only nucleation point present - the pipe surface. Any further crystallisation will cause this layer of scale to grow.



With HydroFLOW

With the Hydropath signal applied, tiny crystals form in suspension in the water. Any further crystallisation will occur on these seed crystals, and the pipe will remain clear.

How HydroFLOW Removes Existing Scale

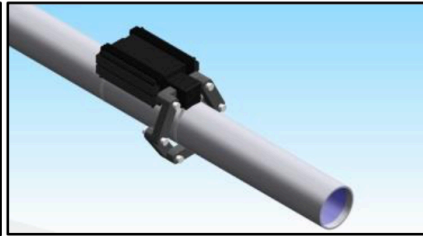
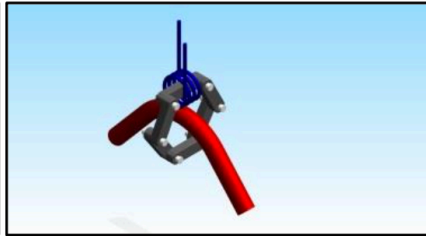
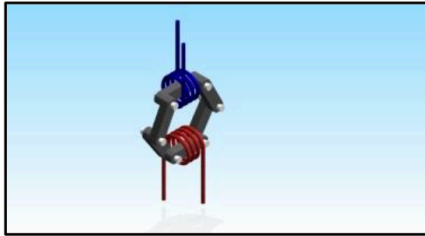


Magnetic Water Conditioners VS HydroFLOW



Magnetic Water Conditioners

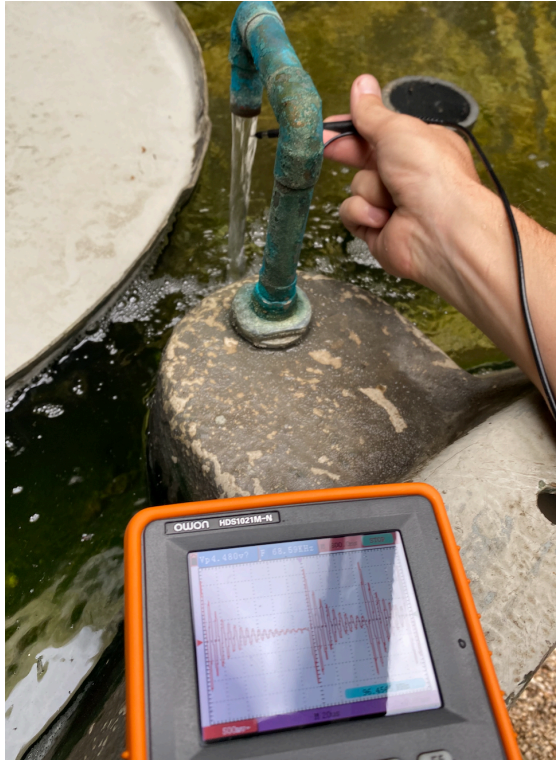
- Very weak signal
- Magnetic fields only affect the ions when the water is moving
- The fields are local, so the water is only treated at a single point
- The effect starts to decay as soon the water passes the unit
- Magnetic particles can build up, reducing effectiveness and causing blockages



HydroFLOW

- Patented design and Process
- 30,000 times more efficient than other physical water conditioners
- Propagates the signal along the entire water system using water to carry the pulsed frequency
- Works whether water is flowing or idle
- Gives constant, 24-hour protection

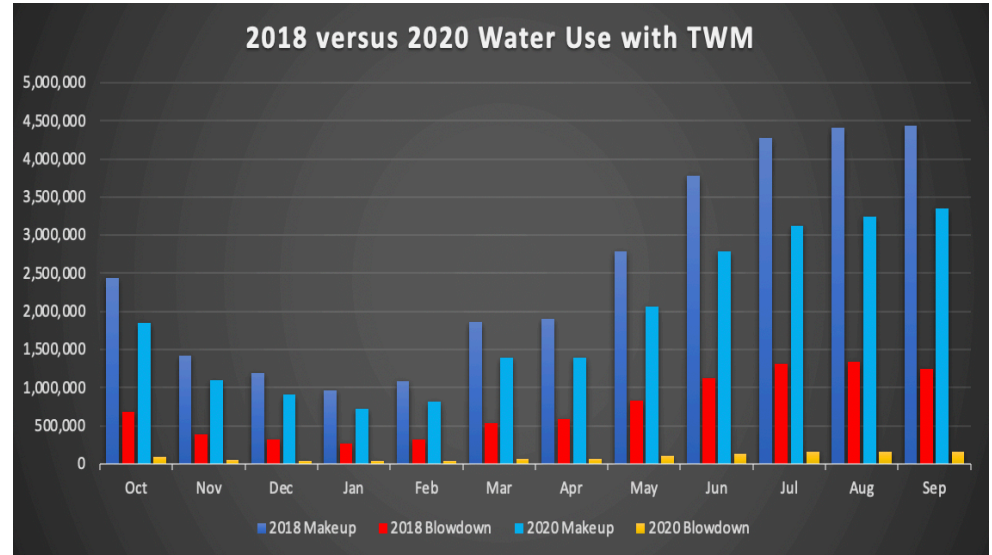
HydroFLOW signal propagates within Cooling Systems



150kHz signal travels through the circulating water reaching all portions of the cooling system, therefore ensuring scale does not form on vital heat transfer surfaces



Fortune 500 Manufacturing Facility - 7000 Ton System Austin, Texas



7.8 Million Gallons Saved in Makeup and Blowdown - \$112,799 Total Water Savings

Data Monitoring and Higher Cycles Improves Efficiency

- **Maximize water and energy efficiency**
- **Effectively Control Scale and Biofilm**
- **Significantly less chemistry required**
- **Reduce Cooling Tower and Chiller Maintenance Costs**
- **Track water use and savings with reporting**

Total Water Management

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