CASE STUDY

Technology Stabilizes Multiple Makeup Sources in Cooling Towers at Multi-National Data Technology Company

Background

A Western U.S. data technology company uses multiple makeup water sources for redundancy and environmental sustainability. ChemTreat faced two main challenges with this type of variable makeup to a cooling tower:

1. Variable chemical makeup of the two sources, outlined in the water analysis.
2. Variable incoming water volume from each source.

WATER ANALYSIS							
SYSTEM IDENTIFICATION	Cond.	pH	P Alk	M Alk.	Cl	TH	PO_4
Raw Water	**806**	**7.9**	**0**	**90**	**80**	**160**	
Reclaimed Water	**1449**	**8.0**	**0**	**80**	**190**	**210**	**5**

Goal

Maximize reclaim water use and minimize chemical usage without compromising heat exchange surfaces to help prevent downtime & minimize the plant PUE. Other specific goals included:

- Maintain the ability to subsidize reclaimed water with city water at all times
- Maintain cooling tower conductivity at a level that:
  - Will not cause system fouling
  - Reduces cooling tower bleed
- Reduce cooling tower bleed to minimize WUE

Solution

To meet the customer's needs, we used programmed non-proprietary water treatment equipment. Set points for reducing water use were safeguarded by select water treatment chemistry. The setup is outlined below and shown in the schematic on the following page.

- Water meters placed on all incoming and outgoing water to maintain proper mineral balances
- pH control with variable speed pumps to prevent scaling from high-hardness reclaimed water
- Controllers placed on each cooling tower system. Benefits include:
  - Volume regulation of differing makeup water
  - Remote accessibility with alarming feature reports
  - Chemical feed based on makeup flow rate
  - Non-proprietary technology

Results are examples only. They are not guaranteed. Actual results may vary.

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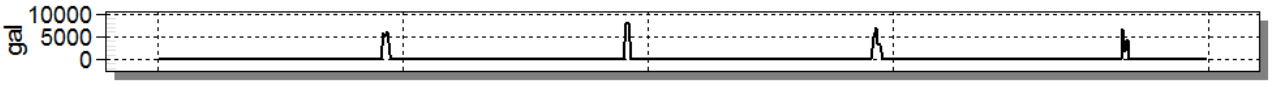
RESULTS

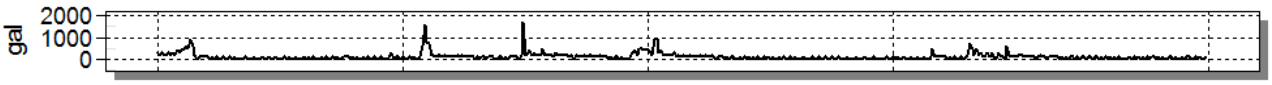
Programming the controller with input from meters allowed the system to automatically maintain stability.

- 97 percent reclaimed water used for tower makeup
- 8 percent tower conductivity variance
- Alarms recognized and adjusted remotely
- Weekly water usage/savings reports

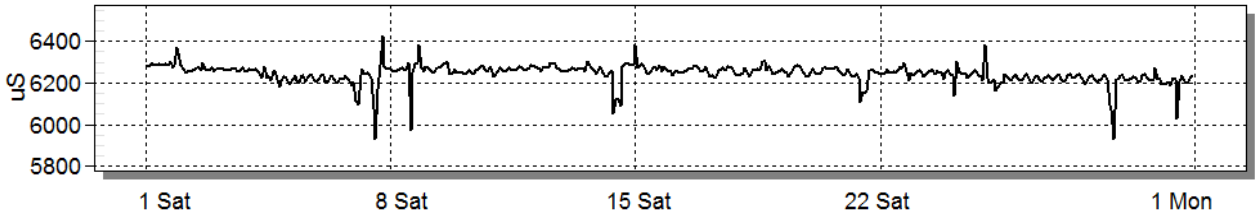
Cooling Towers, City Makeup - Min: 100 / Max 8,200 / Avg. 136.93 / Total: 66,000

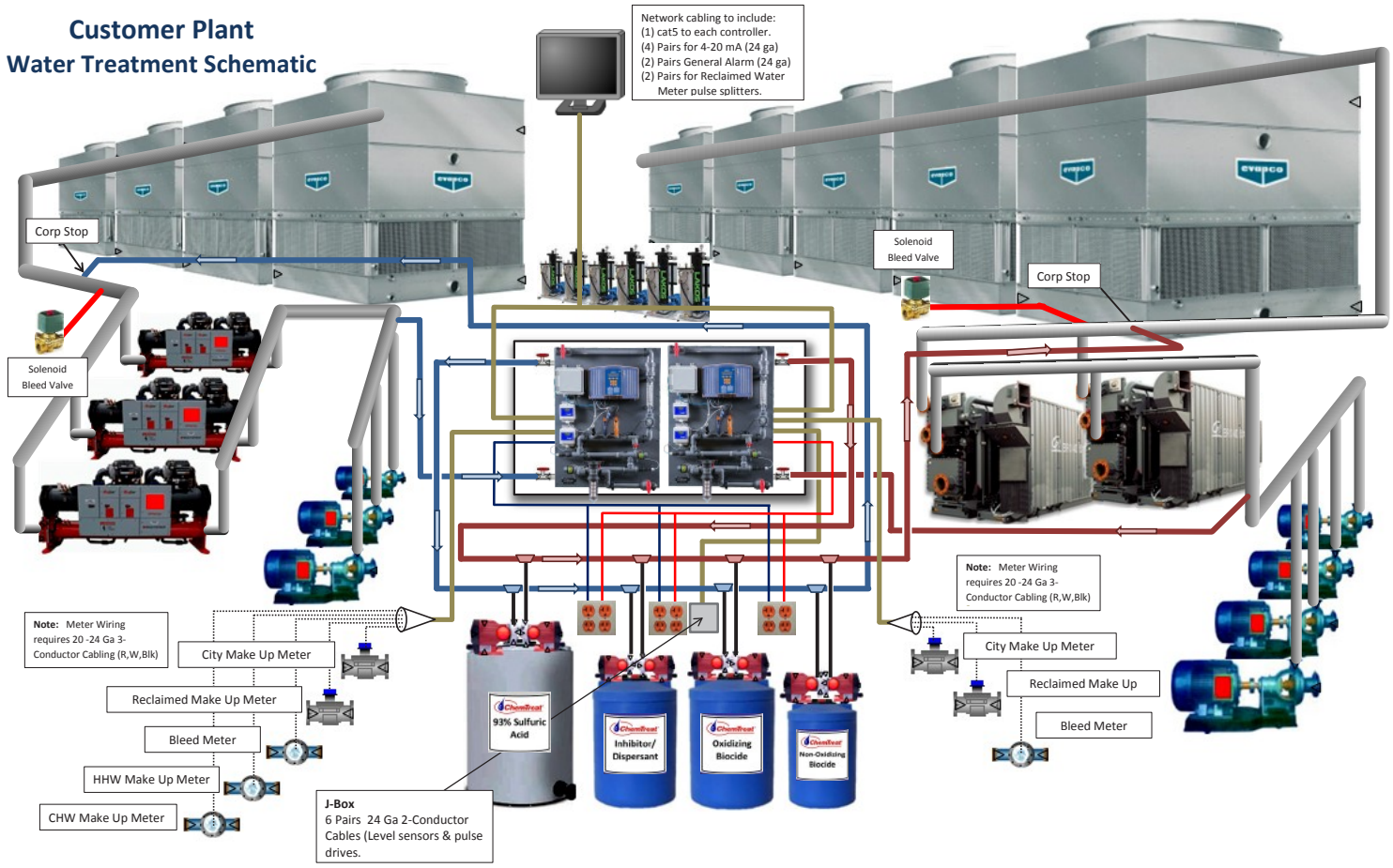


Cooling Towers, Reclaimed Makeup - Min: 100 / Max 1,700 / Avg. 112.66 / Total: 54,300



Cooling Towers, Conductivity - *(Average)* Min: 5,928.935 / Max 6,426.607 / Avg. 6,244.340





Drawn by: Jeff Modelin 01-07-15

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