Commercial cooling Tower Case Study - 90 Day Evaluation

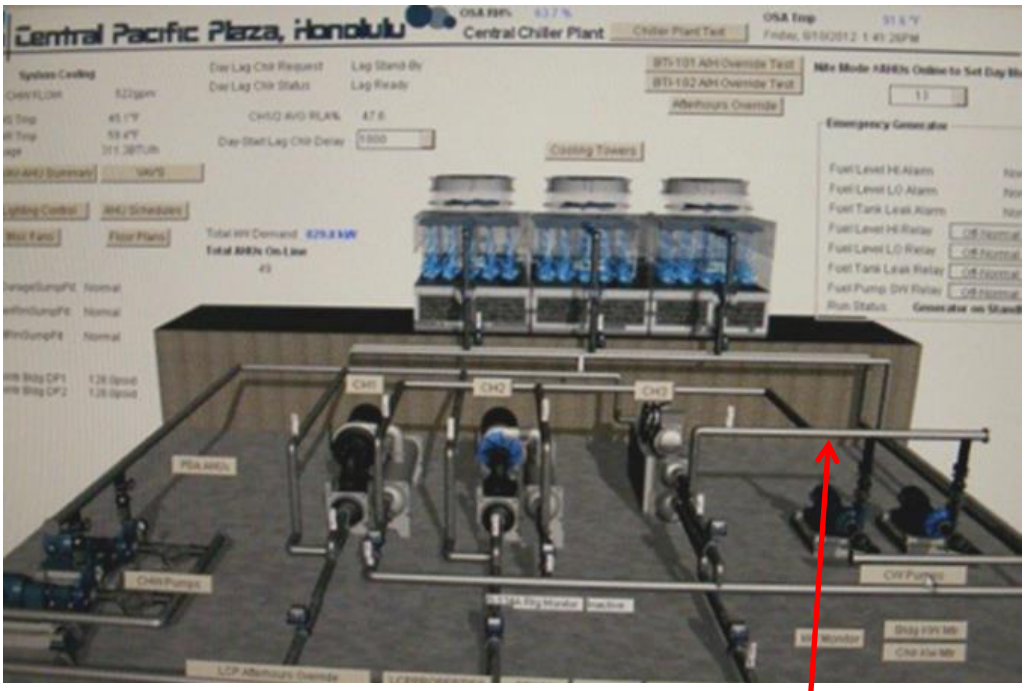
Case study updated on April 26, 2013

Installer: *Hydro*FLOW Master Distributor in Hawaii.
Customer: Central Pacific Plaza
Location: Honolulu, Hawai - USA
Application: Two 300 ton cells and one 75 ton cell - One 300 ton cell operates during the day, one 300 ton cell is on standby and the 75 ton cells operates during the night
Unit: *Hydro*FLOW 14" Custom on a 12.78" Outer Diameter Cast Iron Pipe
Goal: Keep biological growth, scale accumulation and corrosion rate under control while using minimal amounts of chemicals
Timeframe: Trial began on January 22, 2013 and ended on April 22, 2013
Evaluation Protocol:

- Weeks 1-2: No chemical reduction. Biological water tests to be compared to baseline data after 15 days. Scale and bio accumulation to be compared to baseline pictures.
- Weeks 3-5: Scale/corrosion inhibitors and biocide to be reduced to 75% (25% reduction). Biological water tests to be compared to baseline results after 5 weeks. Scale and bio accumulation to be compared to baseline pictures.
- Weeks 6-9: Scale/corrosion inhibitors and biocide to be reduced to 50%. Biological water tests to be compared to baseline results after 9 weeks. Scale and bio accumulation to be compared to baseline pictures.
- Weeks 10-12: Customer to decide if scale/corrosion inhibitor and biocide can be reduced to 25% (75% reduction). Biological water tests to be compared to baseline results after 12 weeks. Scale and bio accumulation to be compared to baseline pictures.

Cooling Tower Cells

Installation Location - After Sump Pumps (Before the Chillers)

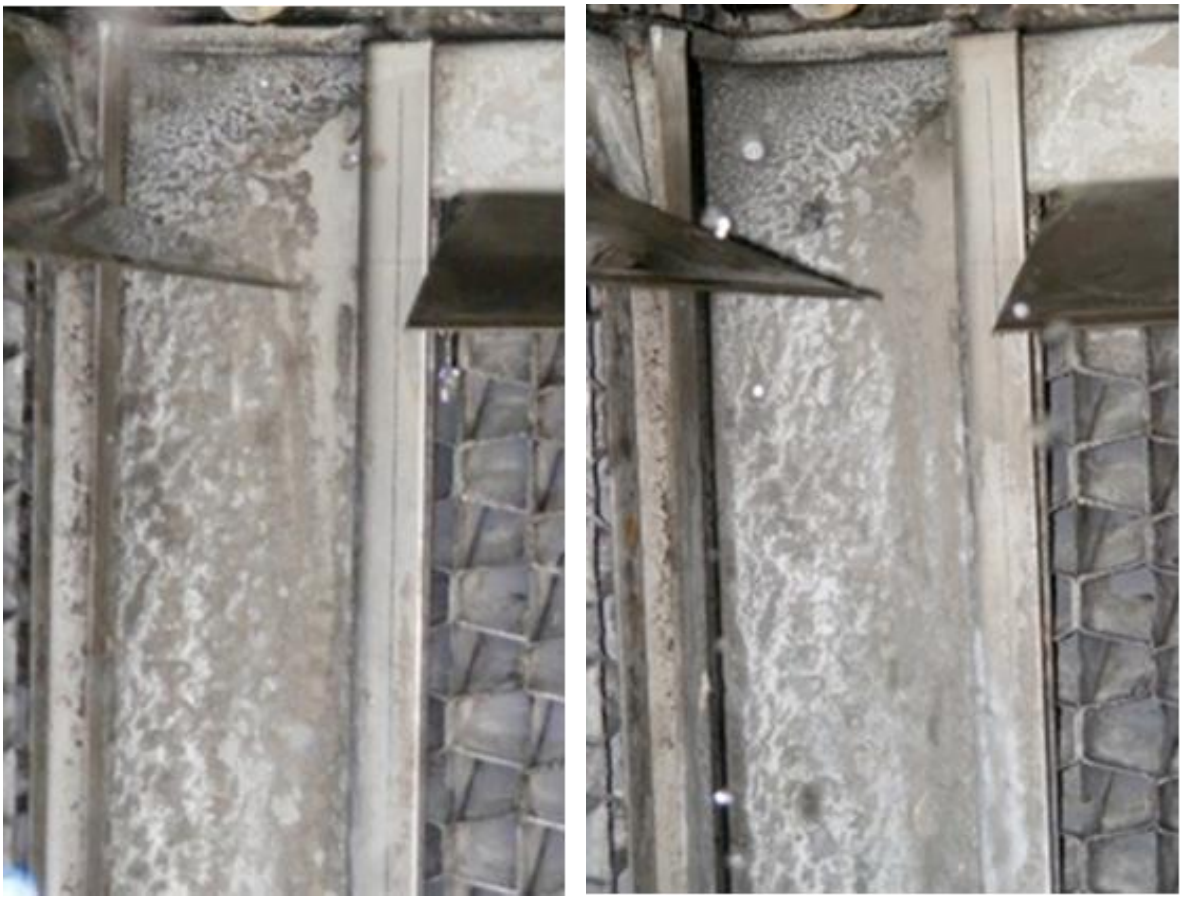


Results after 90 days

- Lime scale and corrosion buildup inside the cooling tower and chillers remained under control even though anti-scalant and anti-corrosive chemicals were discontinued
- Biocide chemical was reduced by 85% and bacteria levels reduced from 100,000 CFU to 1,000 CFU
- Blow-down reduced by 50%
- Conductivity remained stable at 1245 ~ 1295 Micro Siemens

Before and After Pictures

Before **After**



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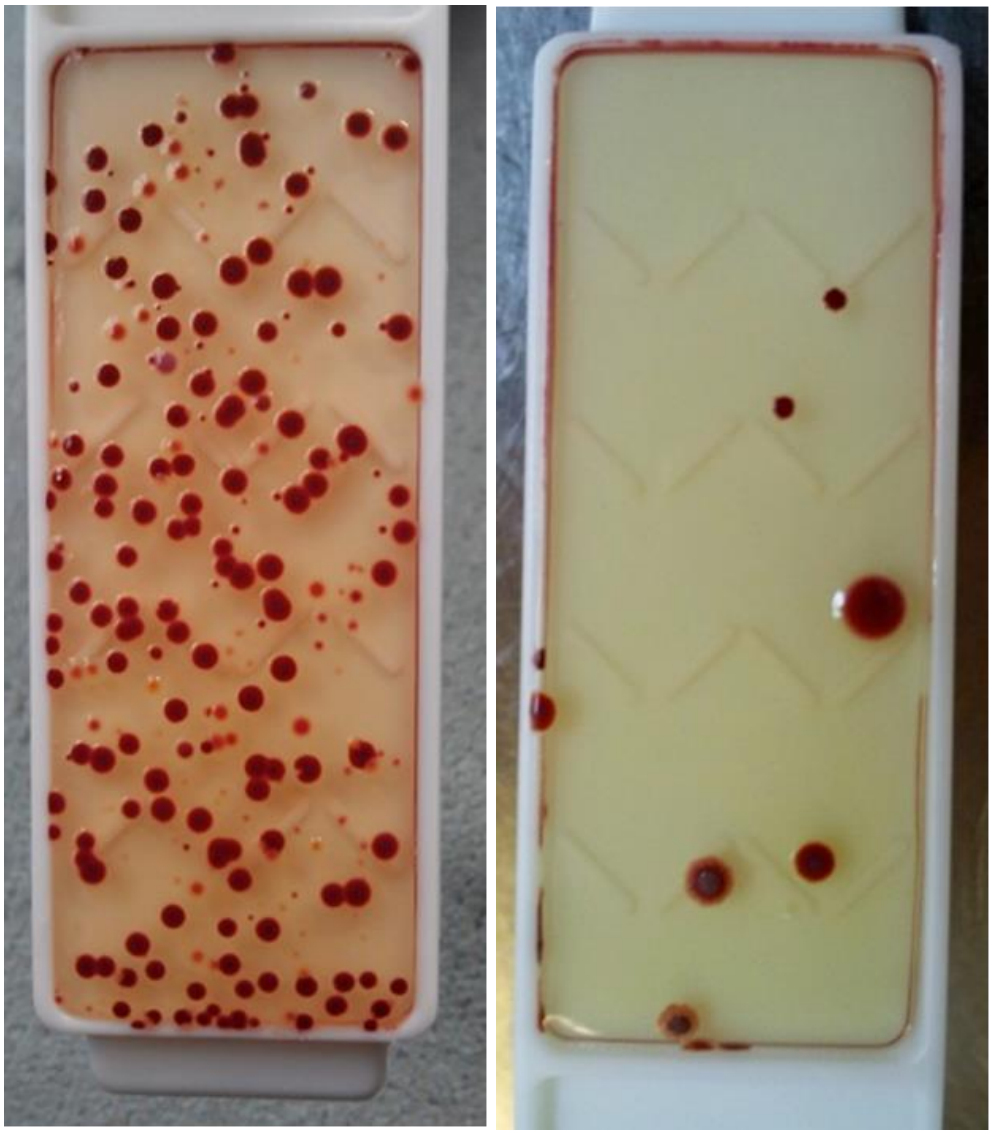
[Dip slides were used to monitor biological count]

Before **After**



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