



Case Study - Food Processing Cooling Tower - Scale, Bio and Corrosion (12 month evaluation)

- Location:** G & G Orchards Yakima, Washington 98908
- Application:** BAC Condenser and EVAPCO Condenser which feeding into a common sump tank.
- Unit:** *HydroFLOW P100 and HydroFLOW P120.*
- Purpose:** Reduce limescale accumulation, biological growth and corrosion while eliminating the need for descalant, biocide and anti-corrosive chemicals.
- Install date:** September 20, 2011 - P100 installed on BAC Condenser.
March 1, 2012 - P120 installed on EVAPCO Condenser.
- Installed by:** *HydroFLOW Northwest (MBI Water Solutions).*
- Monitoring:** Conductivity measurements, blow-down frequencies, chemical usage and photo documentation.



BAC Condenser

EVAPCO Condenser



Installation Location



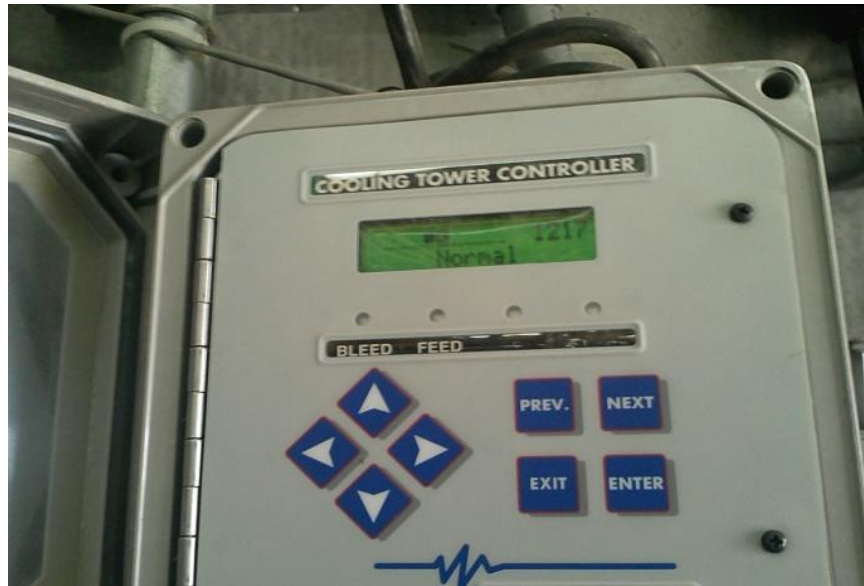
HydroFLOW P120 and P100 devices installed at the discharge from sump tank

Table 1 - Data collected from sump tank

Date	Conductivity	Chem. usage	Blow-down
9/20/11 (BAC Installation)	1,245 μS	Yes	Less than once a month
10/27/11	1,580 μS	Yes	Less than once a month
11/11/11	984 μS	No	Less than once a month
12/7/11	1,108 μS	No	Less than once a month
1/27/12	914 μS	No	Less than once a month
3/1/12 (EVAPCO Installation)	1,082 μS	No	Less than once a month
7/11/12	1,054 μS	No	Less than once a month
8/14/12	1,287 μS	No	Less than once a month
9/28/12	890 μS	No	Less than once a month



Conductivity Meter

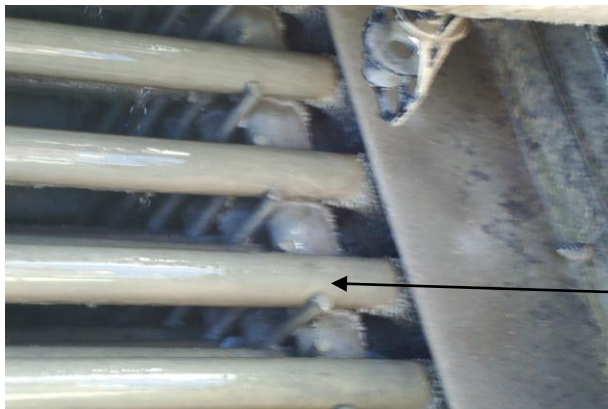


With minimal blow-down, conductivity was maintained under 1,600 μ S throughout the 12 month evaluation period.

BAC Condenser - Heat exchange tubes

9/21/2011

3/1/2012



With chemicals - 1/8" of hard scale.

Without chemicals - 1/32" of 'soft scale' which wipes off easily.



EVAPCO Condenser - Fins

3/1/2012



Installation date of P120 device - Scale accumulation and bio growth is evident.

3/20/2012



3 weeks later - Scale is gone and bio growth is being eradicated.

Sump Tank

9/20/2012 (Chemically treated)



Scum, bio growth and corrosion are evident.

8/14/2012 (9 months Chemical free).



Scum, bio growth and corrosion are no longer an issue. A protective layer of magnetite has formed in place of the corrosion.



Conclusion:

- The *HydroFLOW* devices performed as expected.
- Conductivity was held to a minimum without the use of chemicals.
- Blow-down was reduced to less than once a month.
- Pipes, tubes, fins and sump tank remain clear of limescale, bio-growth and corrosion.
- Cost savings associated with reduction in chemicals, reduction in water usage, reduction in maintenance and lessened wear-and-tear led to an ROI of roughly a year.

Owner's quote:

"My cooling towers were never this clean when they were on chemicals".

Contact Info for referral purposes (Mr. Rene Garcia):

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Video testimonial:

<http://www.youtube.com/watch?v=q8hGzKkUi8g&feature=relmfu>