

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**: *Hydro*FLOW P100 and *Hydro*FLOW 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:** *Hydro*FLOW West Inc.
- **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

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

Table 1 - Data collected from sump tank



Conductivity Meter



With minimal blow-down, conductivity was maintained under 1,600 $\mbox{$\muS}$ throughout the 12 month evaluation period.

BAC Condenser - Heat exchange tubes



With chemicals - 1/8'' of hard scale. which wipes off easily.

Without chemicals - 1/32" of 'soft scale'



EVAPCO Condenser - Fins



Installation date of P120 device - Scale

accumulation and bio growth is evident.

9/20/2012 (Chemically treated)

3 weeks later - Scale is gone and bio

growth is being eradicated.



Scum, bio growth and corrosion are evident.

Sump Tank

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