Vortex CHC

MAKING CAVITATION WORK FOR YOU

Vortex CHC Case Study

Customer / Project:
Spoetzl Brewery

Website:
http://www.shiner.com

Location:
Shiner, TX

Industry:
Food and Beverage

Challenges:
Scaling of condenser tubes

Low cycles of concentration

Solution:
60 gpm CHC unit

50 gpm filter

Results:
Elimination of scale

Increase in cycles to 7

Water savings: 1.8 gal/yr

ROI: 12 months

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The Challenge:

The brewery operates a refrigeration system with anhydrous ammonia as the primary coolant. The recompressed ammonia is being cooled down in three evaporative condensers with a total cooling capacity of 1,500 tons. During chemical treatment, cycles of concentration were 2–2.5 during the summer months and below 2 for the rest of the year, resulting in an average of around 2. Despite these efforts, significant calcium carbonate deposit accumulated around the condenser tubes and inside the condensers.

The Solution:

A 60-GPM CHC unit and a 50-GPM filter were installed in August 2001. Both the VRTX unit and filter draw and return water to three separate sumps. Globe valves were installed on the intake lines to adjust flow rates for equal treatment of all three sumps.

Since the installation of the CHC system, old scale was gradually removed and no new scale has formed. Total bacteria counts in cooling water normally range from 400 to 2,500 CFU/ml. Three separate coupon tests show corrosion rates <2.5 mpy for galvanized steel and carbon steel and <0.25 mpy for copper alloy.

Since the CHC installation, the average cycles of concentration have been kept around 7.0. The blowdown has been reduced >80%. The annual water savings are over 1.8 million gallons. The internal return rate (IRR) is >75% and payback period is less than 12 months. As an added bonus, customer has been praised by the community for environmental stewardship.