

Water reuse and Cost Savings at Large Resort and Casino Complex

- ✓ **Industry:** Asian Resort Hotel and Casino Facility
- ✓ **Application:** Evaporative cooling water system (500 m³/day makeup)
- ✓ **Problem:** High freshwater water usage and costs. On-site treated wastewater available to use as cooling tower makeup water, but with significantly increased risk for biofouling and associated problems.
- ✓ **Solution:** Chem-Aqua's 'Get Clean, Keep Clean' program was implemented which involved filtration, improved chemical feed and monitoring with aquaDART® Automation Control, bioDART® Biofouling Monitor and patented bioeXile® biofilm removal technology.
- ✓ **Result:** 180,000 m³/year reduced freshwater savings resulted in \$330,000 USD/year annual cost savings.

Problem

Due to the hot climate, a large volume of water was required to operate the cooling tower system. No additional water savings were available from increasing the cycles of concentration. An alternative was needed to reduce freshwater usage and overall operating costs.

Chem-Aqua Solution

The facility generates a large volume of wastewater daily which processed in a biological treatment plant prior to discharge. As compared to freshwater, the treated wastewater presents several challenges for use as cooling tower makeup water:

- 14x TSS (Total Suspended Solids)
- 6x Turbidity
- 5x Bacteria count
- 2.5x Conductivity



To address the significantly increased risk of biofouling, Chem-Aqua designed a comprehensive, multi-step 'Get Clean, Keep Clean' program for enhanced treatment, monitoring, and program management. Key elements include:

- aquaDART Automation Control System
- bioDART Biofouling Monitor
- bioeXile biofilm removal chemistry
- Multi-stage filtration
- Structured sampling, monitoring and chemical program
- Expert chemical treatment program management



bioDART Biofouling Monitor and aquaDART Controller

Results

The filtration and chemical dosing approach successfully allowed the continued use of the recycled water for an on-going 2 years of operation to date.

- bioDART monitor shows consistent biofilm and biofouling control.
- Chiller approach temperatures maintained at 1.5 - 2.0 °C.
- Sustainability was increased by reusing 500 m³/day of wastewater.
- Project saved nearly \$330,000 annually

NCH House

Bilston, West Midlands
 England
 +44(0)1902 510342
 www.ncheurope.com
 CAtechmarketing@ncheurope.com



Regional Headquarters

United States • Irving, Texas
 Canada • Brampton, Ontario
 Europe • Birmingham, UK
 Latin America • Mexico City, Mexico
 South America • Sao Paulo, Brazil
 Asia Pacific • Shanghai, China