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Reducing Cooling Tower Maintenance Costs at GSK Upper Merion

Annualised Environmental ROI (eROI)

 asset protection	Plant life expectancy improved by four times	\$37,500 per year saving
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A cooling tower on Building 20 at GSK Upper Merion had been suffering from excessive corrosion of the tower distribution decks due to a highly oxidizing environment caused by poor control of biocide dosing. After just one season of service the pans had rusted badly as can be seen in the pictures below. It was costing the plant \$100,000 every two years to replace these decks. Nalco Water 3D TRASAR™ Bio-Control was used to manage the oxidizing biocide based on the microbiological demand of the system. Corrosion rates were dramatically reduced improving plant life expectancy by four times. Under the new programme the decks last 8 years or longer, an annualized saving of \$37,500.

Spring 2002. Tower B hot pans



2003. Twr B hot pans (after 1 season service)

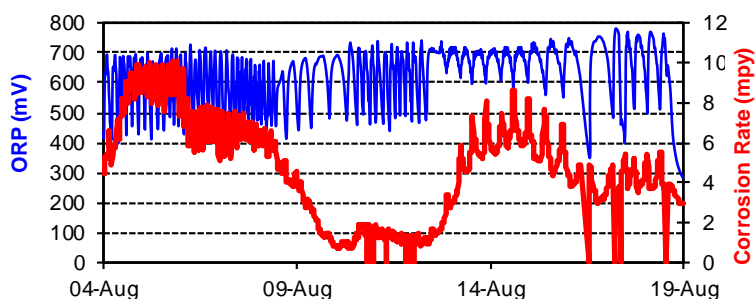


Background

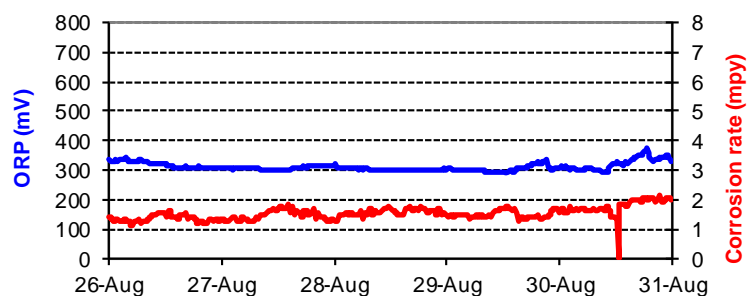
The use of oxidizing biocides such as chlorine and bromine to control micro-organisms is standard practice, but high use of these chemicals can also result in high corrosion rates. Nalco Water has developed 3D TRASAR™ Bio-Control technology to monitor the level of microbes in the system and dose the biocides only when needed. A fluorescent Bio-Reporter molecule is carefully monitored to calculate the Nalco Bio-Index reading that is used to control dosing.

Traditionally ORP mV (or redox potential as it is also called) has been used to control oxidizing biocide feed. But in some systems this technique struggles to control microbiology without running high ORP mV potentials and this can cause excessive corrosion.

The Nalco Water 3D TRASAR™ technology monitors corrosion on-line. In the charts below, the mild steel corrosion rate is being monitored on NCM1. On this cooling tower at the Upper Merion facility, the existing Aquatrac ORP control was resulting in mild steel corrosion rates of 4 – 8 mpy. But with 3D TRASAR™ technology it can clearly be seen that the corrosion rate has been reduced to 1 – 2 mpy, reducing the corrosion rates by a factor of four.



Before 3D TRASAR™ technology corrosion rates were frequently above the 3 mpy limit for good corrosion control.



With 3D TRASAR™ Bio-Control technology implemented the corrosion rate is reduced to 1-2 mpy.

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