

Audit of Refinery Water-related Utility Systems

A Midwest refinery lacked measurable benchmarks to evaluate the technical or financial performance of their water treatment chemical supplier. MarTech performed a systematic audit of the influent, boiler, cooling and wastewater systems to determine the conformance of the water treatment to industry standards, the capability of the operations staff and the quality of service of the chemical supplier. During the audit, several water-related systems failed, resulting in significant lost opportunity costs.

Refineries have complex utility water systems. (Figure 1)

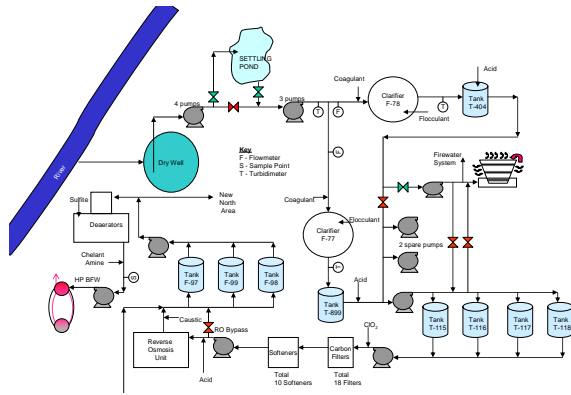


Figure 1 – Pretreatment System

This system audit identified a compromised pretreatment system as a significant risk. The failed carbon filters contaminated the downstream softener resin (Figure 2). The failure to maintain the multi-port valves on the sodium zeolite vessels compromised reliability of the downstream boilers.



Figure 2 – Strong Acid Cation Resin
Implementation of our preliminary recommendations resulted in an improvement of the conformance of the cooling water pH to specification limits. (Figure 3)

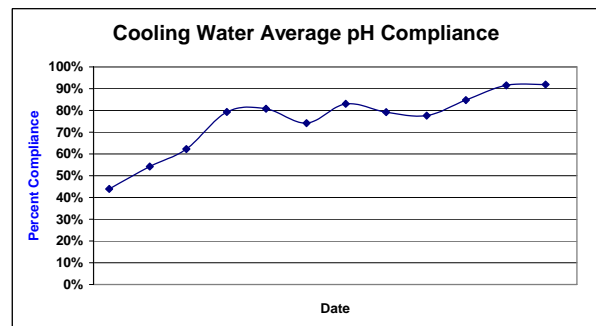


Figure 3 – Cooling Water pH Compliance

MarTech recommended that the refinery staff immediately implement risk management strategies to prevent additional system failures and that operators increase their responsibility to monitor and control conformance of water chemistry to the specification limits. Following this audit, the refinery engaged MarTech to provide technical oversight for all seven refineries.