

Nalco Water Ecolab® Heat Exchanger IQ™ Saves Customer Over \$645K by Optimizing Cleaning Schedules and Prolonging Heat Exchanger Life

CASE STUDY

► INTRODUCTION

Reliable heat exchanger operations are critical to ensuring a plant's profitability, minimizing downtime, and better planning for turnarounds. Ecolab Heat Exchanger IQ is a comprehensive program for the monitoring,

visualization, and analysis of heat exchanger performance.

Heat Exchanger IQ provides unparalleled visibility into the process exchanger network, enabling improved asset reliability.

► BACKGROUND

A Gulf Coast petrochemical plant was faced with significant cooling water heat exchanger fouling concerns during a previous turnaround. Due to a lack of visibility into heat exchanger performance, the customer had an arbitrary maintenance plan in place. As such, heat exchangers were being cleaned when they didn't need to, or being cleaned too late, causing an interference in cooling water

operations; leading to production losses, increased labor costs and unnecessary exposure to hazardous operations. Multiple heat exchangers saw significant pitting corrosion due to low water flow-rates caused by fouling. The customer previously did not have a baseline for flow and temperature performance to understand degradation over time.

► SOLUTION

There was an opportunity post-turnaround to begin building a database of heat exchanger survey data. Quarterly surveys enabled the customer to trend heat exchanger stress and performance metrics like water velocity, heat flux, and skin temperature and to see the effects of chip scale and other foulants over time. By utilizing this survey data and Nalco Water recommendations, the customer made informed decisions to optimize upcoming maintenance operations.

With the introduction of Heat Exchanger IQ, the customer was able to create a historic survey database, quickly trend data, display high-level summaries for management and identify problem exchangers. It also provided users the capability to sort the data by sub-unit, promoting accountability for each of the processing areas. Now managers, supervisors, and engineers can quickly view all exchangers within each unit to assess and understand the most at-risk pieces of equipment.



ANNUAL SAVINGS



ASSET PROTECTION

Extended heat exchanger life by 2 years to save approximately

\$520,000



COSTS

Reduced number of cleanings to save more than

\$120,000



PRODUCTIVITY

Saved approximately

30

manual hours of hazardous labor



TOTAL VALUE DELIVERED

\$640,000
Annually

► RESULTS

During the winter cleanings, the survey data allowed operations to prioritize the most at-risk exchangers. By doing this, six exchangers were removed from the cleaning list after showing good performance, thereby preventing unnecessary cleanings that would have cost approximately \$120,000. It also helped identify six other exchangers for cleaning that were not previously on the list. The plant determined that three exchanger bundle replacements could be postponed given that they didn't show a decline in performance, translating to \$520,000 in additional savings. In total, prioritization stemming from Heat Exchanger IQ™ saved the site \$640,000 in unnecessary cleaning and bundle replacement costs. Additionally, the intuitive user interface of Heat Exchanger IQ on ECOLAB3D.com facilitated performance transparency throughout the site, raising awareness and facilitating proactive solutions.

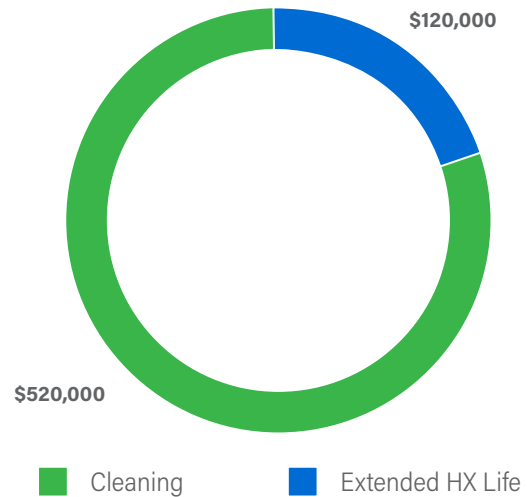


FIGURE 1: HEAT EXCHANGER (HX) MAINTENANCE SAVINGS

► CONCLUSION

After seeing a sharp decline in heat exchanger performance and reliability during a previous turnaround, Nalco Water representatives proposed the implementation of Heat Exchanger IQ which provided better visibility into the system's performance. The survey data, along with Nalco Water expertise, enabled the customer to increase system performance and reliability, while decreasing overall maintenance costs. This technology has delivered more than \$640,000 in annual savings by avoiding unnecessary asset replacements and optimizing cleaning schedules. The Nalco Water Heat Exchanger IQ is now an established service at the site, and the plant expects to continue realizing yearly savings through Heat Exchanger IQ as Nalco Water further optimizes heat exchanger reliability and maintenance operations.