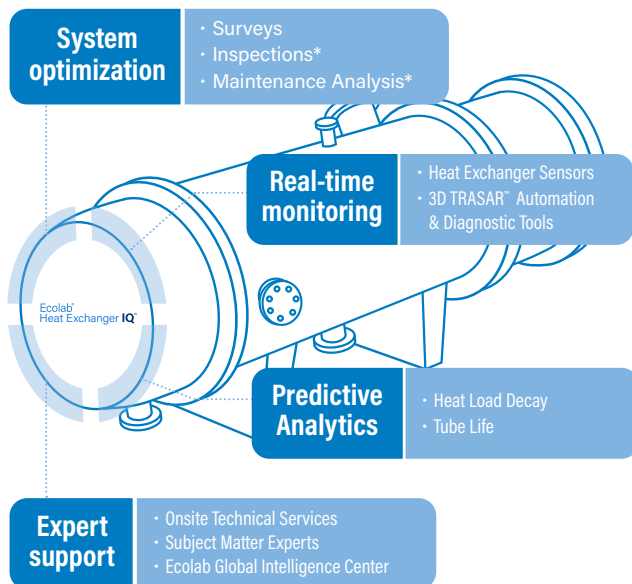


ECOLAB® HEAT EXCHANGER IQ™

MANAGE YOUR HEAT EXCHANGER CONDITION AND PERFORMANCE FOR OPTIMAL RESULTS

- » PREDICT heat exchanger performance and detect anomalies
- » PROLONG asset life and production runs
- » HELP mitigate the loss of production and avoid unscheduled downtime
- » INCREASE output by optimizing operation
- » REDUCE maintenance costs
- » CONTRIBUTE to net zero goals by reducing energy consumption

A COMPREHENSIVE APPROACH:



Learn more:
ecolab.com

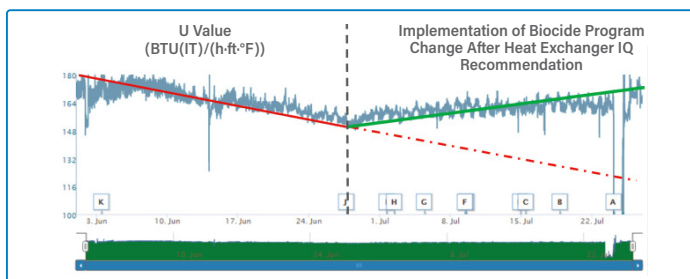
Proof of Performance Ecolab® Heat Exchanger IQ™

REAL-TIME MONITORING



NITROGEN FACILITY: 24/7 monitoring of a critical heat exchanger led to identifying microbiological fouling and a need to adjust the biocide program.

Four weeks after implementation of the Heat Exchanger IQ program, a slow, consistent decrease of the heat transfer coefficient, from 170Btu/(h-ft²°F) to 150Btu/(h-ft²°F), was detected through the program real-time monitoring.



Nalco Water determined microbiological fouling was the root cause, and adjusted the biocide program to restore heat transfer to 170Btu/(h-ft²°F). This helped the plant:



PRODUCTIVITY

PREVENT
potential one day
shutdown
saving \$150,000



ENERGY

OPTIMIZE
power consumption
on the compressors,
saving \$30,000/year



WATER

REDUCE
water usage
by 19 million gallons
and \$6,800/year

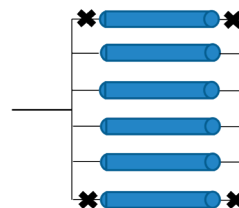
SYSTEM OPTIMIZATION



PETROCHEMICAL PLANT: Survey, inspection and analysis of historical data provided insight into critical heat exchangers — leading to root cause diagnostics and business impact analytics.

With no line of sight to the condition of the heat exchangers, the plant was facing higher maintenance costs and the risk of unplanned shutdown.

After reviewing insights from thermal-hydraulic surveys, inspections, and maintenance data analysis, low water velocities of 1.1-1.4fps were identified at a key heat exchanger bank.



Nalco Water recommended blocking two exchangers, which restored water velocity back to 3fps, prevented mineral depositions, and enabled in-spec heat transfer performance. This helped the plant:



PRODUCTIVITY

PREVENT
potential \$750,000
production loss



ASSET
PROTECTION

PROTECT
valuable equipment
from shortened life



COSTS

REDUCE
\$48,000 in
cleaning costs

**Predict and protect
performance with
unique insights**

✓ Risk Index
✓ Stress Indicator
Trends

✓ Corrosion Rates
✓ Heat Exchanger
Operating Life

✓ Cleaning Frequency
✓ Heat Exchanger
Cost Analysis