

# FLASHPOINTS

DATA-DRIVEN SOLUTIONS THAT IGNITE CUSTOMER SUCCESS.

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## Cat® ASSET INTELLIGENCE DETECTS A FOULED HEAT EXCHANGER

### What Happened?

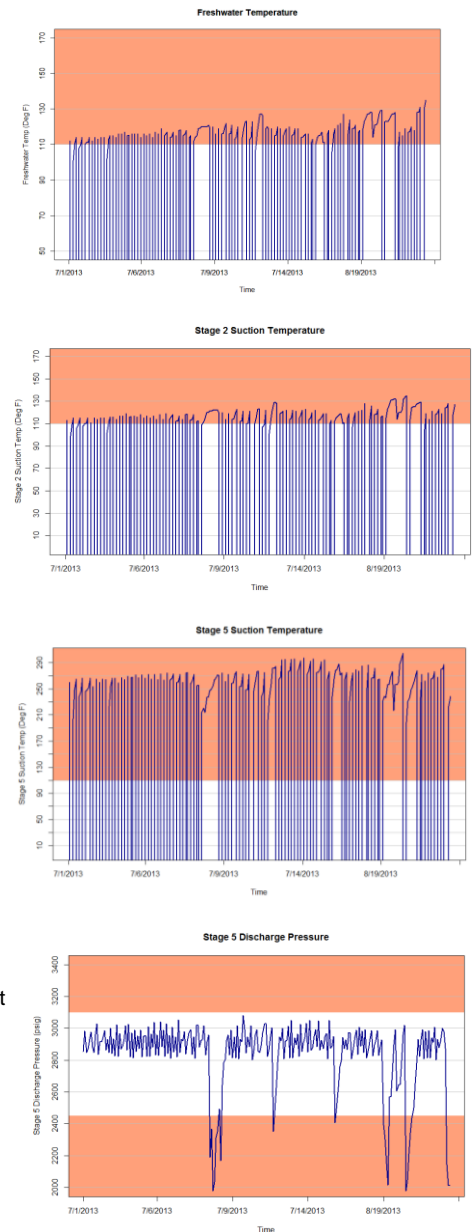
Cat Asset Intelligence uses advanced analytics to qualify raw data into actionable information. Hundreds of thousands of raw data values for each asset are evaluated against a tailored set of rules and intelligently converted into much smaller representative sets of data. Algorithms then determine whether the criteria is met for a fault condition to exist, all without a human in the loop. A Cat Asset Intelligence Fleet Advisor was notified by the system of a number of similar alarming faults, leading to the discovery of a faulted heat exchanger in a high pressure air compressor (HPAC) unit.

### What Was the Underlying Cause?

The automated analytics revealed high fresh water temperatures and high suction temperatures at each stage. The rise in fresh water temperature suggests a dirty or fouled heat exchanger in the HPAC unit. A fouled heat exchanger decreases the rate of heat transfer which then results in a rise in fresh water temperature. A rise in freshwater temperature would explain the increase in suction (inlet) air temperatures at each stage. The rise in inlet air temperatures causes a decrease in pressure across the compressor, requiring more energy and time to fill the receiver.

### What Was the Value to the Customer?

A fouled heat exchanger costs approximately \$3975.10 per year in excess energy. Assuming a simple, linear fouling rate and energy consumption over time, this fouled heat exchanger cost the customer approximately \$631.66. Exploring the fleet-wide data, Asset Intelligence discovered this issue is likely present on at least three other vessels. Assuming it takes a similar amount of time to identify and correct the fouled heat exchanger on each of these vessel, it would cost the customer approximately \$2526.64. A clean unit runs more efficiently. Using automated analytics to identify a fouled heat exchanger will mitigate these costs of excess energy and lower the required effort from the overall system.



CAT CONNECT



EQUIPMENT  
MANAGEMENT

PRODUCTIVITY

SAFETY

SUSTAINABILITY

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