Plugged Gas Recirculation Fan Air Filter Found at a Coal Plant

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What did the SmartSignal software find?

On April 26th, the Proficy SmartSignal solution identified a sudden rise in the motor outboard bearing temperature and the motor stator temperature of a gas recirculation fan in a coal plant. The motor outboard bearing temperature was expected to operate between 120 and 140 degrees Fahrenheit, but values were detected as high as 180 degrees Fahrenheit. Values for the motor stator temperature were expected to operate around 80 degrees Celsius, but actual values were detected as high as 120 degrees Celsius. In addition, the motor inboard bearing temperature was beginning to show early signs of overheating, with actual values 5 to 10 degrees above expected values.

Combustion health is monitored using exhaust thermocouples and a swirl pattern that will vary with airflow changes that are associated with load changes. Since the deviations in the thermocouples were changing, as the load of the machine was changed, the Availability & Performance Center performed a swirl analysis to assist in narrowing down a possible combustion issue. It was suggested to the client that there was a possible combustion system issue associated with cans 11, 12, or 13.

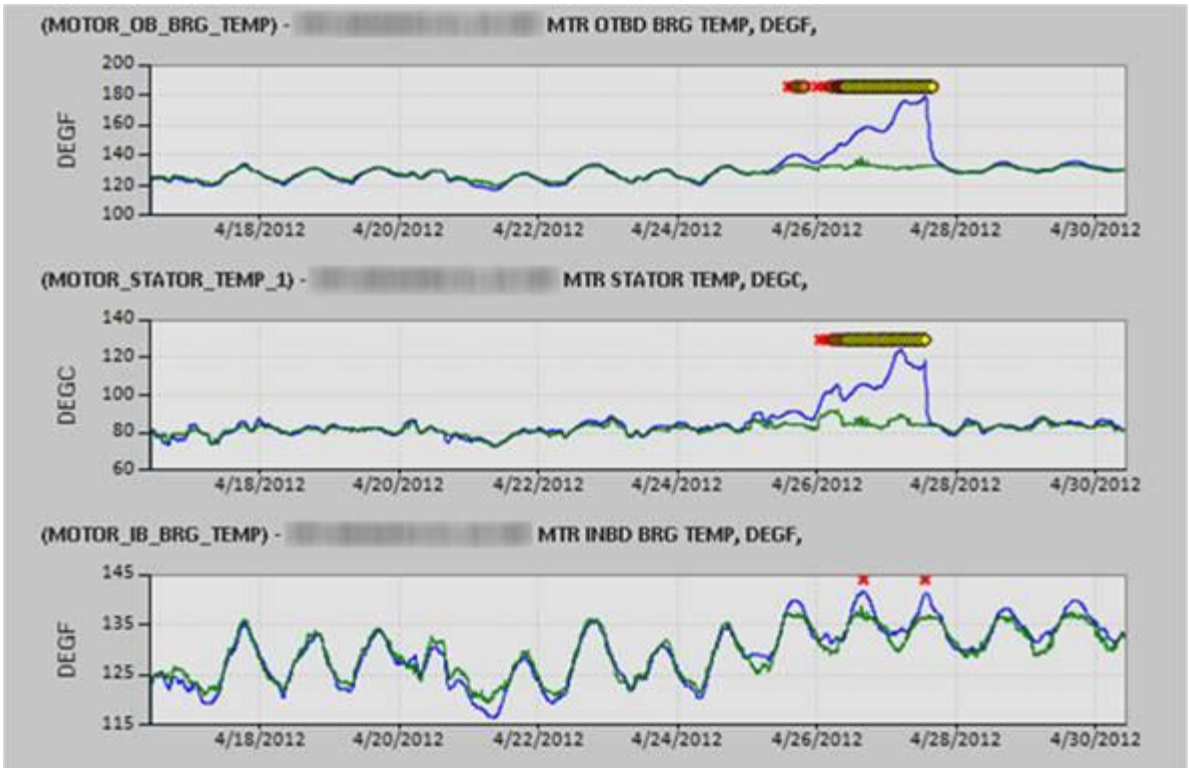
What was the underlying cause?

After the Availability & Performance Center notified the plant of the issue, the plant operators wrote a work order and immediately inspected the fan. This fan is air cooled and the operators found that an air filter had plugged with debris, starving the fan of necessary cooling air. The plant installed a new air filter. The Availability & Performance Center was able to subsequently help verify that their maintenance action was successful with a follow up notification on March 27th showing that actual values had returned to expected levels.

What was the value to the client?

The early warning provided by the SmartSignal solution and the Availability & Performance Center allowed the client to react to a situation before the gas recirculation fan could trip off due to a high alarm limit, potentially impacting power production. The early warning also allowed the client to minimize possible damage or reduction in life of the motor and bearings due to high thermal loading.

Who found it? Vanessa O'Malley and Mike Reed



Screenshot depicting increases in actual temperatures (blue) versus expected values (green).