

PERFORMANCE MONITORING OF GAS TURBINE SAVES TWO COMPRESSOR WASHES PER YEAR



In 2004 Neubrandenburger Stadtwerke GmbH installed an OPENpredictor™ system for online condition monitoring of two gas turbines, a steam turbine, two gas compressors and 13 pumps. The objective was to establish a cost efficient basis for the operation and maintenance of the power plant. In addition, the system monitors the performance of one of the GT-10B gas turbines in order to optimize its power output by evaluating and optimizing compressor wash cycles.

The plant has a time based maintenance strategy for its gas

turbines. In addition to annual gas turbine overhauls, the staff performed off-line compressor wash every 6 weeks during weekends. Each wash typically requires 8 hours downtime per gas turbine.

Online Performance Monitoring

OPENpredictor™ monitors gas turbine performance through continuous import and analysis of thermodynamic data from the power plant's control system: fuel flow; air ambient condition, compressor outlet and exhaust gas temperatures; input/output pressure, air filter pressure and outdoor air pressure.

Every 30 minutes the system automatically calculates the performance degradation (reduced capacity/efficiency) of the overall gas turbine as well as its main components (compressor, turbine and combustion chamber). Warnings are issued when the system detects changes in the relative performance over time. Based on the historic development OPENpredictor™ can also extrapolate a forecast of future performance degradation, enabling the staff to plan short term cyclic maintenance actions at the most economically feasible time. This minimizes production loss and avoids increased fuel consumption due to deteriorated performance.

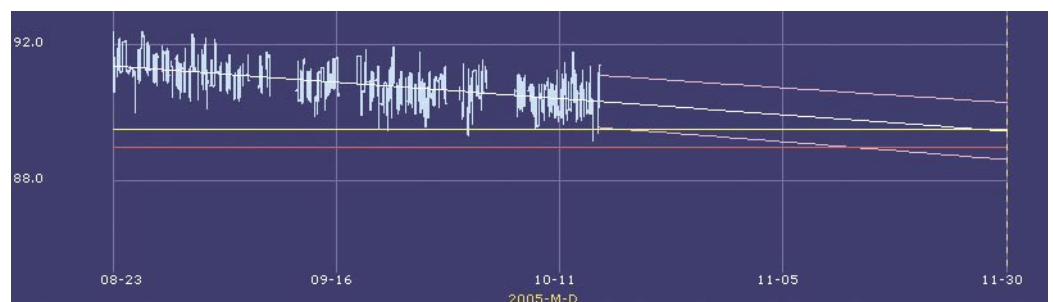
Condition based maintenance saves downtime and costs

Online condition and performance monitoring has enabled Neubrandenburger Stadtwerke GmbH to adopt a

condition based maintenance strategy for the compressor wash of its gas turbines. Today, the staff is able to schedule each compressor wash to the economically best moment, counterbalancing the degradation and efficiency level against production need and market price. According to the Plant Manager Helmut Beuster, performance monitoring has made it possible to extend the off-line compressor wash cycles from 6 to 8 weeks. This saves about 2 cycles with 8 hours downtime per year per gas turbine as well as the capital expenditure on maintenance (washing products and overtime payment for employees conducting compressor wash during weekends).

Contact info@rovsing-dynamics.com if you would like to receive the full case report or more information about performance monitoring of gas turbines.

OPENpredictor™ provides a forecast of future performance degradation, calculated on the basis of the gas turbines' degradation history and operational states.



Fluctuations in compressor efficiency over the 18 months period reflect the positive effect of 9 compressor washes conducted every 8 weeks, when the compressor's efficiency due to degradation had dropped below the acceptable level of 89.5%.

