ADI OtoSense™

SMART MOTOR SENSOR

otosense.analog.com/predictive-maintenance

Energy Industry Power Producers

Powering the energy industry
with end-to-end, predictive maintenance

Background

In energy plants across the globe, millions of critical, low voltage motors operate unmonitored. This can lead to numerous inefficiencies and result in costly, unplanned downtime and energy production interruption.

In addition, these plants are often spread across a massive footprint with extreme environmental conditions and temperature fluctuations. As a result, energy plants represent some of the most imperfect places to measure a motor's sound and vibration to determine its level of functionality and fault potential, making continuous monitoring impractical to achieve.

ADI OtoSense™ Smart Motor Sensor solves this problem with a continuous health monitoring solution for critical induction motors. It is designed to provide real-time, continuous monitoring of motor health and deliver actionable insights.

OtoSense Smart Motor Sensor provides an unprecedented predictive maintenance solution for energy plants with enhanced cost savings through in-depth motor health analysis. OtoSense SMS does not replace domain experts, rather it leverages their years of expertise and insight into mechanical motors to assist OtoSense in recognizing problems early on, enhancing motor efficiency and productivity and positively impacting a company's bottom line.

At a glance

GOAL

Proactively monitor an entire power plant's motors to enhance productivity and efficiency.

CHALLENGES

- Large, hot, noisy, and not always safe plants—a major challenge since sound/vibration are key indicators of wear/faults.
- Experienced technicians cannot waste valuable time walking an entire plant, 24/7, to detect minute issues with machines.
- Monitor complex, large machines with limited redundancy.
- Turbines and generators are normally monitored, but secondary machines like pumps and fans are not. A fault in those machines could shut down the power plant.

APPLICATION

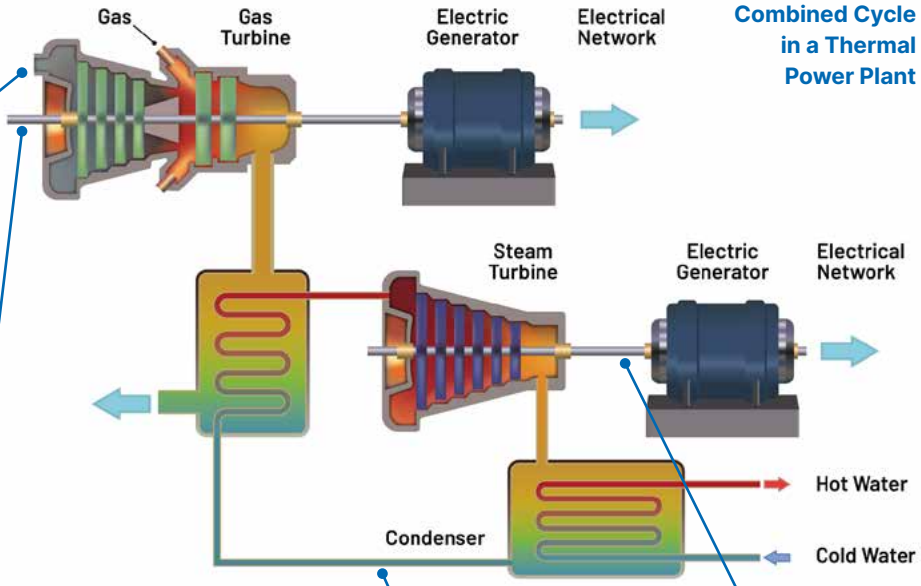
Proactive, predictive maintenance
from continuous monitoring of key assets: cooling water pump, soot blower, gear box, vacuum pump, gas turbine frame, and bearings cooling fans.

RESULTS

- Improved operational reliability
- Optimized allocation of maintenance resources
- Decreased unplanned maintenance
- Reduced costly downtime
- Removes number of operators in the field

OtoSense Smart Motor Sensor Areas of Use in Energy Plants (Combined Cycle)

Turbine Enclosure Cooling Fans 88TK



Turbine Bearing Cooling Fans 88BN

Closed Cooling Circuit Pumps PGB

Hydraulic System Pump HPU

Benefits of ADI OtoSense Smart Motor Sensing:

1. Advanced diagnostics for prioritized action items

- Electrical and mechanical faults are diagnosed
- Level of severity helps prioritize required maintenance
- Recommendation on required actions

2. Sensing technologies for high quality, data analysis

- Multi-axis, wide bandwidth vibration sensors
- Magnetic field sensors monitor electrical health
- Temperature sensors monitor ambient and motor skin temperature

3. Machine learning creates motor models during operation

- Combines and interprets high quality, sensing data for higher reliability diagnostics
- Automated model creation agnostic to motor brand
- Customized model learns motor operation and interaction with load

Trusted by Experts

Gonzalo Gracia De La Rosa,
Maintenance Plant Manager,
Naturgy

> *The SMS device from ADI OtoSense allows us to efficiently monitor the motors of important machines in our power generation process, such as gas turbine cooling fans, hydraulic oil control pumps, or closed-circuit refrigeration pumps. In this way, we eliminate preventive work and optimize the measurement of manual vibrations, saving man-hours of maintenance and preventing operators from accessing dangerous places or high elevations.*

OtoSense Smart Motor Sensor reduces overall costs:

- Reduces unforeseen downtimes and avoids catastrophic failures
- Extends period between overhauls
- Reduces route-based activities and optimizes maintenance resource allocation
- Manages spare parts and stock more efficiently
- Increases lifetime of your equipment
- Optimizes motor efficiency
- Improves OEE (Overall Equipment Efficiency)

$30k–$50k/hr
typical cost of unplanned downtime in industrial setting

5–10%
reduction in overall maintenance costs

71%
of organizations don't know when assets should be scheduled for maintenance

75%
of organizations don't know when assets should be replaced

80%
reduction in unplanned downtime with Smart Motor Sensor predictive maintenance

SOURCE: Cost of Industrial Downtime: 20 Mind-Boggling Stats | BehrTech Blog

OtoSense Smart Motor Sensor Advantages:

Single platform monitors all the main assets of the power plant.

Sample signals at 6.2 kHz every 20 minutes that enables and covers several mechanical and electrical faults with high reliability.

Learns over time, detects and tags anomalies leading the path to a more predictive maintenance.

Monitors mechanical and electrical signals and enables you to detect mechanical and electrical faults.

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To learn how ADI OtoSense Smart Motor Sensor can improve your productivity and cost effectiveness, visit:

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