

KANADEVIA ADVANCED PREDICTIVE MAINTENANCE STRATEGY WITH ADI OTOSENSE™ SMS : CASE STUDY FOR A WASTE-TO-ENERGY PLANT



BACKGROUND

In its decades-long pursuit of a sustainable society through their environmental, plant and decarbonization businesses, Kanadevia Corporation, formerly Hitachi Zosen Corp, has successfully completed a proof-of-concept project using ADI OtoSense Smart Motor Sensor (SMS) on critical equipment in a waste-to-energy(WtE) plant. WtE plants require 24hours stable operation, however the lack of redundancy on the specific critical assets, such as Induced Draft Fans(IDFs), poses a risk of unscheduled downtime. Kanadevia has confirmed that monitoring the performance degradation of the assets with SMS can help address this issue.



Deployed SMS Sensor Device on the IDF Motor

CHALLENGE

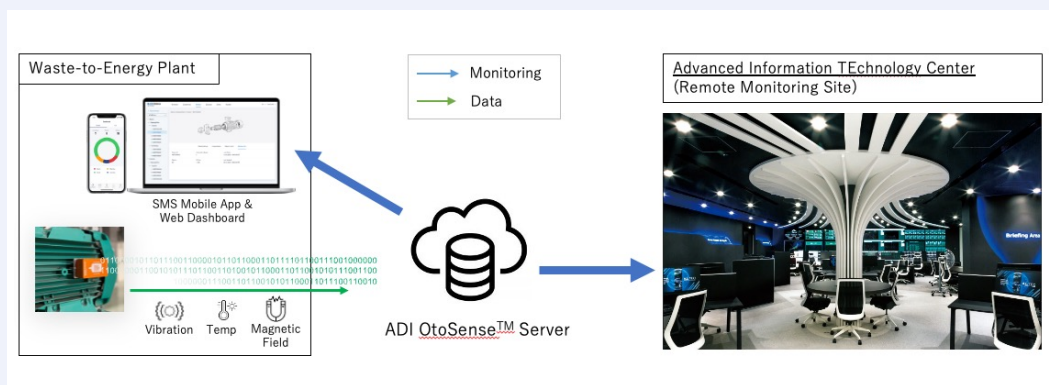
- Increasingly aging facilities
- High Cost of unscheduled downtime which adversely impacts community relations
- Barriers to system redundancy (IDF Motors)
- Insufficient insights to determine the location and cause of operation stoppage from existing vibration-only measurements

SOLUTION BENEFIT

- Strong decision support for operations continuity from SMS Health Index and diagnostics
- Improved maintenance times supported by SMS actionable insights.

DEPLOYMENT

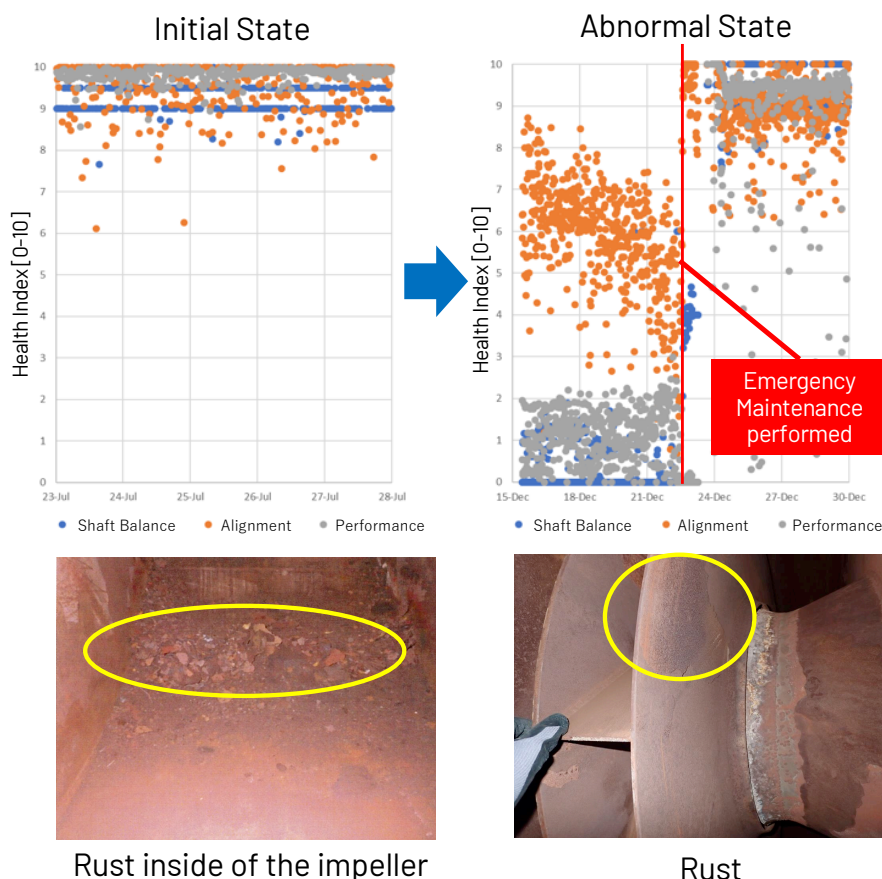
Kanadevia utilized the SMS solution as a part of their plant monitoring system. Any notifications generated by the solution are sent to Kanadevia's Advanced Information TEchnology Center(A.I./TEC) that provides 24hours plant monitoring services. For the pilot, Kanadevia deployed the SMS sensors to the IDFs at Clean Park Orii (Kyoto, Japan), a facility it manages , and monitored them through SMS dashboards.



DETECTED FAILURES

"Shaft Balance," "Alignment," and "Performance" index degradation were detected in two IDFs. The quantitative Health Index score from SMS allowed prioritization and the decision to perform emergency maintenance on only Unit 1.

The Kanadevia maintenance team confirmed the performance degradation was caused by partial exfoliation and shedding of rust on the impeller surface.



This proof of concept demonstrates the effectiveness of ADI OtoSense SMS-based maintenance methodology, which facilitated rapid guidance on anomaly sources and targeted maintenance tasks.

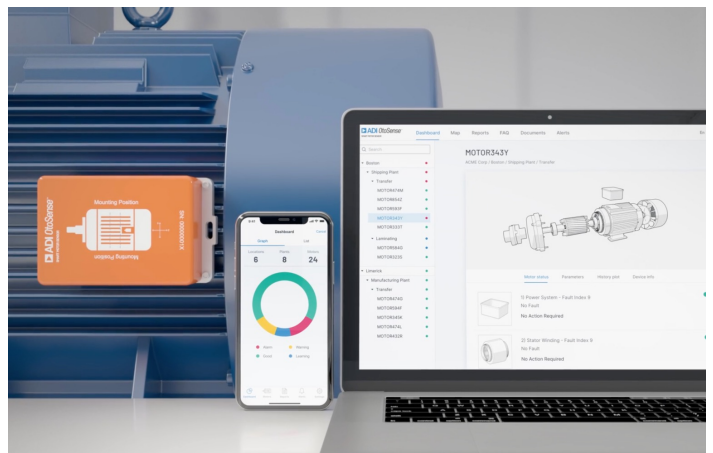


Shota Akatsuka
Advanced Information TEchnology Center
Kanadevia Corporation

"Although the site had detected signs of abnormality due to increased vibration, it was difficult to determine whether the operation should be stopped immediately or wait until the next maintenance, given that the cause of the abnormality was not yet clear. SMS gave us insights into deciding the next action to prevent unplanned downtime."

ADI OtoSense Smart Motor Sensor reduces overall costs:

- Reduces unforeseen downtimes and avoids catastrophic failures
- Extends period between overhauls
- Reduces route-based activities & optimizes maintenance resource allocation
- Supports more efficient spare parts management and stocking
- Facilitates extended equipment service life
- Optimizes motor efficiency
- Improves OEE (Overall Equipment Efficiency)



Benefits of ADI OtoSense Smart Motor Sensor:

1. Advanced diagnostics for prioritized action

- Identifies electrical and mechanical performance degradation
- Supports maintenance prioritization via assessment of severity levels
- Provides repair insights and recommendations

2. Sensing technologies for high quality

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

3. Machine learning creates individualized motor models during operation

- Combines and interprets high quality, sensing data for higher reliability diagnostics
- Creates automated, brand agnostic motor models.
- Customized model for individual motor & the processes in which it is used