

UptimeAI Expert's early detection & root cause identification of increased bearing temperature in an FD Fan saves \$120,000.

Background: The Challenge

High bearing temperature in a Forced Draft (FD) fans can occur due to various reasons and its frequency depends on multiple factors. Early detection and root cause analysis of the same remains a challenge.



Solution with UptimeAI Expert:

- Unlike Distributed Control System (DCS), which uses a threshold-based alarm, UptimeAI's 'AI Expert' uses deep learning models and built-in failure modes to detect operational issues early before causing any losses. UptimeAI also seamlessly integrates with your current Operational Technology (OT) stack including maintenance systems such as SAP PM to assess the issues holistically and identify root cause.
- Many times, changes in operating parameters are not too significant to be picked by a DCS. It is also challenging to manually determine the correlations between many process parameters. In this case, after a scheduled maintenance activity, the bearing temperature in the FD Fan was gradually increasing from 40°C to 51°C without any change in the operating conditions. To identify the root cause of this temperature anomaly, UptimeAI's 'AI Expert,' with its system-level modelling analysed over 30 tags, including parameters such as oil flow, oil pressure, oil tank level, ambient temperature, filter differential pressure (DP), and more.
- Through its machine-learning led analysis which comes with built-in domain knowledge, AI Expert correlated the data and determined that the issue was attributed to contaminants in the oil. The analysis revealed that both the oil flow and control oil pressure were lower than the previously observed values and predicted estimates, indicating a problem with the oil system.
- Further investigation confirmed the customer's acknowledgment that an oil top-up had taken place during the scheduled downtime, inadvertently introducing contaminants into the oil tank. Left unchecked, this issue could have resulted in more severe damage to the bearing, potentially leading to turbine tripping and significant disruptions.
- To address the problem, the maintenance team took corrective action. They adjusted the Pressure Relief Valve (PRV) to restore the required oil pressure and planned an inspection and rectification of the oil pump to ensure optimal performance and eliminate any potential sources of contamination.
- By leveraging the AI-based predictive maintenance solution, the facility was able to promptly identify the root cause of the increasing bearing temperature and take appropriate corrective measures. This proactive approach prevented further damage, downtime, and potential turbine tripping, ultimately saving the facility from costly repairs and operational disruptions.

Summary

Savings

\$ 120,000 in repair costs, lost production, and associated expenses.

Systems Models

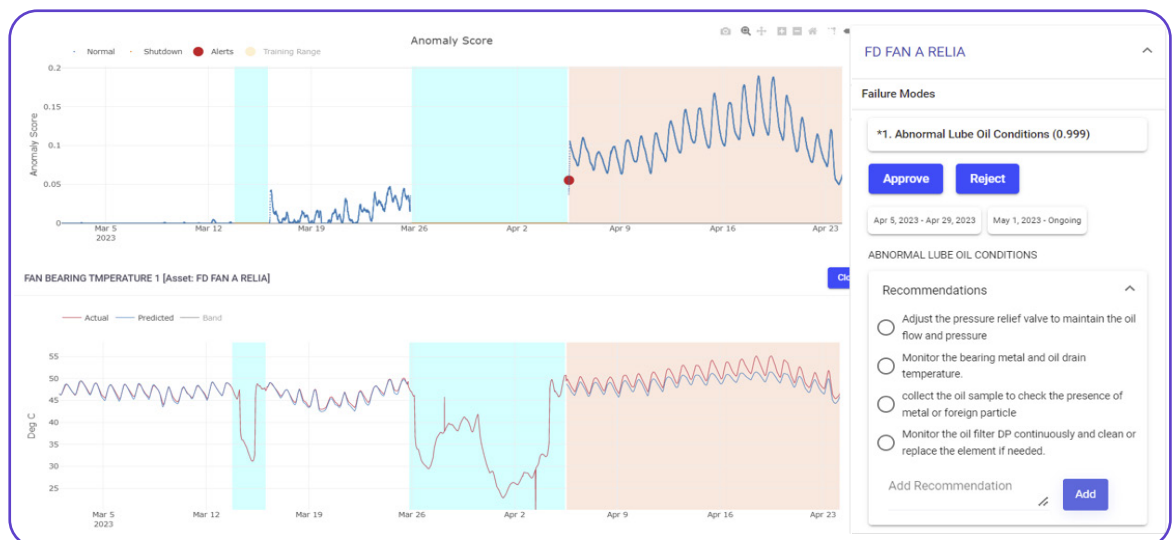
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Deployment Time

2 Hours

Number of Tags

31



About UptimeAI:

UptimeAI uniquely combines Artificial Intelligence with Subject Matter Knowledge from 200+ years of cumulative experience to explain interrelations across upstream/downstream equipment, adapt to changes, identify problems, and give prescriptive diagnosis like a human expert would.

The UptimeAI Expert OEx Platform serves as a trusted Subject Matter Expert, empowering plant engineers to achieve operational excellence with minimal dependency.