

Industrial Gearbox Monitoring

edgeRX™ by TDK SenseI | Predictive Maintenance using Edge AI

OVERVIEW

Industrial gearboxes are critical components in a wide range of rotating equipment, including conveyors, pumps, compressors, and heavy machinery. Operating under high loads and continuous stress, gearboxes are susceptible to wear, misalignment, lubrication issues, and mechanical faults that can lead to catastrophic failure if not detected early.

TDK SenseI's edgeRX™ platform enables predictive maintenance by continuously monitoring gearbox health at the asset level, using edge-based AI to identify early fault indicators and support proactive maintenance strategies.

PROBLEM

Gearboxes operate under constant load and stress, making them susceptible to gradual wear and degradation. Common issues such as bearing wear, gear damage, lubrication breakdown, and overheating often develop over time and may not be detected through periodic inspections or time-based maintenance.

Unplanned downtime due to sudden gearbox failure impacting production lines

High maintenance costs from reactive repairs and emergency part replacement

Limited visibility into real-time gearbox health between inspections

Reduced equipment lifespan from undetected wear and inefficient operation

Difficulty detecting early faults such as abnormal vibration or temperature changes

EXPECTED OUTCOMES

Implementing edgeRX™ for gearbox monitoring delivers significant operational benefits:

Reduced unplanned downtime: Early detection of faults prevents unexpected gearbox failures

Lower maintenance costs: Enables planned interventions instead of costly emergency repairs

Extended asset life: Minimizes wear progression through early corrective action

Improved equipment reliability: Ensures consistent performance of critical rotating assets

Enhanced operational efficiency: Reduces production disruptions and improves overall system uptime

SOLUTION

TDK SenseI's edgeRX™ delivers a complete machine health monitoring platform with integrated sensors, edge computing, connectivity, and AI analytics. It enables real-time monitoring of gearbox performance and condition across manufacturing operations.

TDK SenseI's edgeRX™ platform delivers predictive maintenance for industrial gearboxes through:

Continuous multi-sensor monitoring capturing vibration, temperature, and motor current to establish a baseline and detect early signs of abnormal behavior

Faster anomaly detection at the machine: edge computing enables data to be processed locally, reducing latency and accelerating response to emerging issues.

Actionable maintenance insights generating component-level alerts and trend analysis to support condition-based maintenance and proactive intervention

SUMMARY

TDK SenseI's edgeRX™ platform transforms gearbox maintenance into a predictive, data-driven process. By combining continuous sensing, edge AI analytics, and actionable diagnostics, organizations can detect faults earlier, reduce downtime, and maintain reliable operation of critical industrial equipment.

