

Conveyor System Fault Detection

edgeRX™ by TDK SenseI | Predictive Maintenance using Edge AI

OVERVIEW

Conveyor systems are essential to manufacturing operations, enabling continuous material flow across production lines. As high-use, high-dependency assets, even minor faults can quickly disrupt throughput and impact production efficiency. TDK SenseI's edgeRX™ enables predictive maintenance and fault detection by combining continuous sensor monitoring, edge AI analytics, and real-time alerts to ensure conveyor systems operate reliably and efficiently.

PROBLEM

Conveyor systems consist of interconnected components—motors, gearboxes, rollers, belts, and bearings—that operate continuously under load. Over time, these components develop issues such as misalignment, belt wear, bearing degradation, and motor imbalance.

Key operational and financial challenges:

Unplanned downtime: Conveyor failures can halt entire production lines

Reduced throughput: Degraded performance leads to slower or inconsistent material flow

High maintenance costs: Reactive repairs and emergency interventions increase expenses

Energy inefficiency: Worn or misaligned components consume more power

Limited visibility: Lack of real-time insight into conveyor health across the plant

EXPECTED OUTCOMES

By deploying edgeRX™ for conveyor fault detection, manufacturers can move from reactive troubleshooting to proactive, data-driven maintenance.

Illustrative ROI outcomes:

20–40% reduction in unplanned downtime through early fault detection

10–25% reduction in maintenance costs via condition-based servicing

5–15% lower energy consumption from optimized conveyor operation

Increased throughput and productivity through consistent system performance

Extended equipment lifespan (10–20%) by addressing issues earlier

SOLUTION

TDK SenseI's edgeRX™ provides a complete machine health monitoring platform that transforms conveyor system data into actionable insights for both reliability and cost optimization.

How edgeRX™ drives fault detection and ROI:

Continuous monitoring: Sensors capture vibration and temperature data across motors, gearboxes, rollers, and belts in real time

Edge AI analytics: Processing at the machine level enables rapid identification of anomalies such as misalignment, imbalance, or bearing wear

Predictive insights: Machine learning models detect subtle performance changes that indicate early-stage faults

Actionable alerts: Real-time notifications allow maintenance teams to intervene before system disruption

Centralized visibility: Dashboards provide plant-wide monitoring, performance trends, and asset comparisons

Low-touch deployment: Out-of-the-box platform reduces integration time and accelerates time to value

SUMMARY

TDK SenseI's edgeRX™ transforms conveyor system maintenance into a proactive, ROI-driven strategy. By combining continuous monitoring, edge AI analytics, and actionable alerts, edgeRX™ helps manufacturers detect faults early, reduce downtime, optimize maintenance spend, and maintain consistent production flow—delivering measurable business value across operations.

