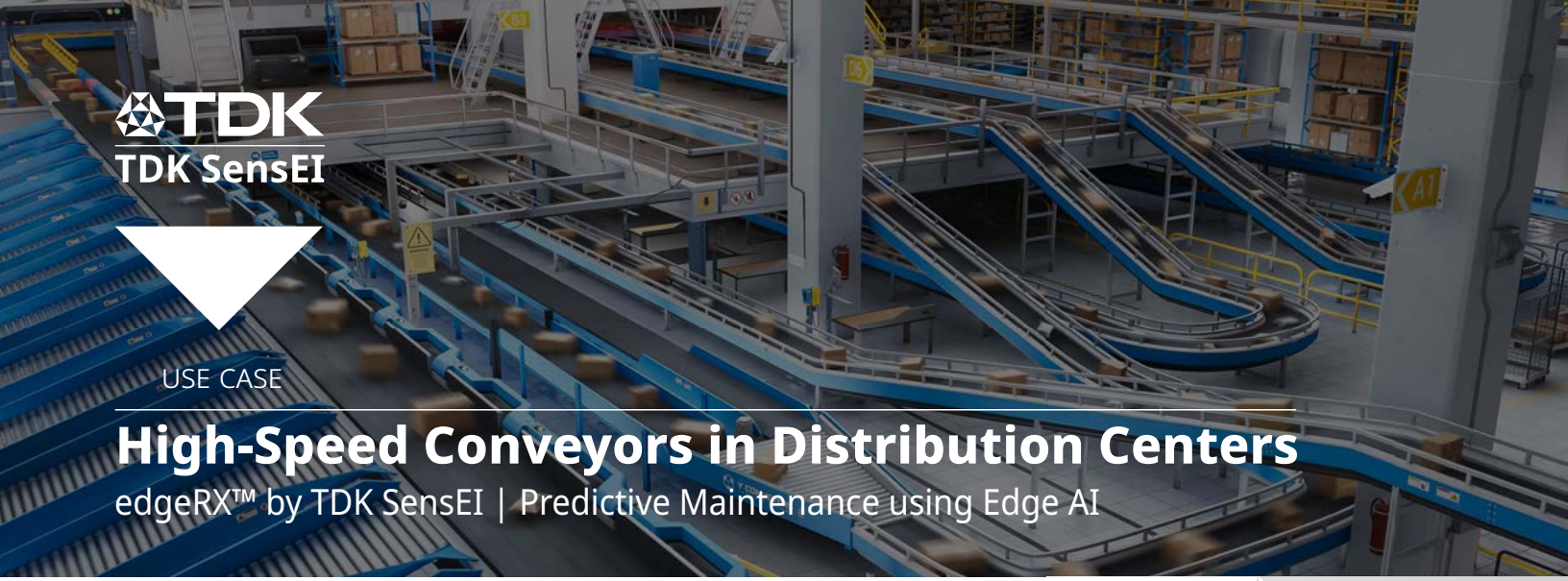

TDK SensEI

USE CASE

High-Speed Conveyors in Distribution Centers

edgeRX™ by TDK SensEI | Predictive Maintenance using Edge AI

OVERVIEW

High-speed conveyor systems are the backbone of modern distribution centers, enabling rapid movement of packages and supporting high-throughput logistics operations. Any disruption can quickly cascade into delays, missed SLAs, and operational inefficiencies. TDK SensEI's edgeRX™ provides predictive maintenance capabilities by continuously monitoring conveyor system health with edge sensors and AI-driven analytics, enabling early detection of faults and optimized system performance.

PROBLEM

Conveyor systems rely on multiple moving components such as motors, gearboxes, rollers, belts, and bearings that operate continuously under heavy loads and high speeds. Over time, wear, misalignment, and mechanical stress lead to gradual degradation that is often missed by routine inspections.

Key challenges include:

Unexpected conveyor breakdowns causing operational bottlenecks and downtime

Throughput losses due to reduced conveyor speed or system inefficiencies

High maintenance costs from reactive repairs and emergency interventions

Limited visibility into real-time performance of distributed conveyor assets

Difficulty detecting early-stage faults like vibration anomalies, imbalance, or overheating

EXPECTED OUTCOMES

By implementing edgeRX™, distribution centers can transition to proactive maintenance and improve overall operational performance.

Expected benefits include:

Reduced unplanned downtime through early detection of conveyor component failures

Increased throughput by maintaining optimal conveyor performance

Reduce maintenance expenses and improve asset reliability through condition-based servicing

Extended equipment lifespan by addressing issues before they escalate

Improved operational visibility across all conveyor assets

SOLUTION

TDK SensEI's edgeRX delivers an integrated machine health monitoring platform combining smart sensors, edge computing, connectivity, and AI analytics to monitor conveyor systems in real time.

How edgeRX™ optimizes conveyor system reliability:

Continuous monitoring: Sensors capture vibration and temperature data from motors, gearboxes, and rollers

Edge AI analytics: Local processing enables rapid detection of anomalies directly at the equipment

Predictive insights: Machine learning models identify patterns indicating wear, misalignment, or mechanical degradation

Actionable alerts: Maintenance teams receive real-time notifications to intervene before system failure

Centralized visibility: Dashboards provide system-wide monitoring and trend analysis across conveyor networks

Scalable deployment: Flexible connectivity (4G, Wi-Fi, BLE) supports monitoring across large distribution facilities

SUMMARY

TDK SensEI's edgeRX™ enables predictive maintenance for high-speed conveyor systems in distribution centers by combining continuous monitoring, edge AI analytics, and real-time alerts. By identifying early signs of wear and inefficiency, edgeRX™ helps operators reduce downtime, increase throughput, and ensure reliable, high-performance logistics operations.

edgeRX™