

USE CASE

Automated Sortation Systems

edgeRX™ by TDK SenseI | Predictive Maintenance using Edge AI

OVERVIEW

Automated sortation systems are critical to high-throughput distribution warehouses, enabling rapid routing, sorting, and delivery of packages. These systems rely on tightly synchronized components such as motors, conveyors, rollers, and diverters. Any failure can quickly disrupt operations and impact fulfillment speed. TDK SenseI's edgeRX™ enables predictive maintenance by continuously monitoring system health using edge sensors and AI analytics to ensure reliability and operational efficiency.

PROBLEM

Sortation systems operate at high speeds with constant motion, making components susceptible to wear, misalignment, vibration-related issues, and thermal stress.

Key challenges include:

Unexpected system failures causing downtime and disrupted order fulfillment

Throughput inefficiencies due to degraded component performance or misalignment

High maintenance costs driven by emergency repairs and unplanned service

Limited real-time visibility into the health of distributed system components

Difficulty detecting early-stage faults such as abnormal vibration or overheating

EXPECTED OUTCOMES

With edgeRX™ deployed across automated sortation systems, warehouses can improve reliability and optimize throughput.

Expected benefits include:

Reduced unplanned downtime by identifying failures before they occur

Increased throughput and efficiency through consistent system performance

Lower maintenance costs via condition-based servicing instead of reactive repairs

Extended equipment lifespan by addressing issues early

Enhanced operational visibility across all sortation assets

SOLUTION

TDK SenseI's edgeRX provides an integrated machine health monitoring platform that combines smart sensors, edge computing, connectivity, and AI-driven analytics. It enables real-time monitoring of automated sortation systems and their critical components.

How edgeRX™ supports sortation system optimization:

Continuous monitoring: Sensors capture vibration and temperature data across motors, rollers, and conveyors.

Edge AI analytics: Local processing enables immediate detection of anomalies at the equipment level

Predictive insights: AI/ML models identify patterns linked to wear, imbalance, or component degradation

Actionable alerts: Real-time notifications allow maintenance teams to intervene before failures occur

Centralized visibility: Dashboards provide system-wide monitoring, performance tracking, and trend analysis

Scalable deployment: Flexible connectivity (4G, Wi-Fi, BLE) supports large-scale warehouse environments

SUMMARY

TDK SenseI's edgeRX™ enables predictive maintenance for automated sortation systems by combining continuous sensing, edge AI analytics, and real-time alerts. By detecting early signs of wear and inefficiency, edgeRX™ helps distribution centers reduce downtime, improve throughput, and ensure reliable, high-speed sorting operations.

