

Indoor Air Quality

edgeRX™ by TDK SenseI | Predictive Maintenance using Edge AI

OVERVIEW

Indoor air quality (IAQ) is critical for occupant comfort, health, and regulatory compliance in smart buildings. HVAC systems, ventilation units, and air handling equipment must operate efficiently to maintain optimal air conditions. TDK SenseI's edgeRX™ enables predictive maintenance by continuously monitoring equipment health, using edge AI to detect issues early, and ensuring consistent air quality performance across the building.

PROBLEM

Maintaining high air quality depends on the proper functioning of HVAC components such as fans, filters, dampers, and air handling units. Over time, these systems can degrade due to wear, contamination, or inefficiencies, leading to poor ventilation and increased energy usage.

Key challenges include:

Degraded air quality due to underperforming fans, clogged filters, or airflow issues

Higher energy costs caused by inefficient HVAC operation

Lack of real-time visibility into system performance and air movement

Reactive maintenance that misses early warning signs of equipment degradation

Difficulty detecting early faults in rotating components like fans and motors

EXPECTED OUTCOMES

Implementing edgeRX™ for air quality-related HVAC systems helps building operators maintain healthier indoor environments while improving efficiency and reliability.

Expected benefits include:

Improved indoor air quality through consistent HVAC performance

Reduced downtime by identifying equipment issues early

Lower energy consumption by detecting inefficiencies in airflow and system operation

Reduced maintenance costs via condition-based servicing

Enhanced visibility and control over air handling systems across the building

SOLUTION

TDK SenseI's edgeRX™ provides a complete machine health monitoring platform designed to support air quality reliability by ensuring HVAC components operate efficiently. It integrates smart sensors, edge computing, gateway connectivity, and AI analytics into a unified solution.

How edgeRX™ improves air quality system reliability:

Continuous monitoring: Tracks vibration and temperature in fans, motors, and air handling systems

Edge AI analytics: Processes data locally for rapid detection of abnormal system behavior

Predictive insights: Identifies early signs of airflow inefficiencies, imbalance, and mechanical wear

Actionable alerts: Notifies maintenance teams to address issues before air quality is impacted

Centralized visibility: Dashboards provide building-wide monitoring and trend analysis of HVAC performance

SUMMARY

TDK SenseI's edgeRX™ enables predictive maintenance for smart building air quality by ensuring HVAC systems operate reliably and efficiently. Through continuous monitoring, edge AI analytics, and real-time alerts, edgeRX™ helps detect issues early, optimize system performance, and maintain healthy indoor environments for occupants.

