

edgeSV
NTEK SYSTEM

USE CASE

Escalators

SV500 by NTEK SYSTEM | ESA-based Motor & VFD Predictive Maintenance

OVERVIEW

Escalators run continuously on a motor, gearbox and chain, so even a small fault during service hours can halt operation. SV500 uses Electrical Signature Analysis (ESA) to screen drive motors and variable frequency drives (VFDs).

PROBLEM

Even small faults in service hours can interrupt operation.

Key challenges:

- **Unplanned stops** — A sudden stop directly affects passenger convenience and safety.
- **Limited access** — Drive parts sit inside the unit, so rounds alone easily miss gradual changes.

EXPECTED OUTCOMES

Pick out the unit to watch and move work into planned maintenance.

Expected benefits:

- **Fewer unplanned stops** — Schedule checks in low-traffic hours.
- **Condition evidence** — Keep alarms, waveforms and trends with inspection records.
- **Data-based priority** — Compare many units on the same basis.

TARGET EQUIPMENT

Escalator | Drive motor | Gearbox / chain | VFD

SOLUTION

01 VFD Status Diagnostics

Analyzes the VFD's voltage output and current waveforms to diagnose faults in rectifier diodes, DC-link capacitors, and switching semiconductors (SCRs or IGBTs). Also analyzes the condition of power supply and power quality of the VFD.

02 Motor Status Diagnostics

Without installing additional sensors on the equipment, analyzes the voltage and current waveforms supplied to the motor to diagnose mechanical faults (Cavitation, Soft Foot, Bearing, Vibration, etc.), electrical faults (Stator, Cable connection, Heat, Noise, etc.) and Load fluctuation fault.

03 Power Quality Status Diagnostics

For power quality diagnosis, saves power quality indicators such as voltage, current, interruptions, sags, harmonics, etc. in trend data.

04 Edge AI Server

Performs all diagnostic analysis directly on the edge device. Built-in memory and storage—2GB DDR, 8GB eMMC, and SD card support up to 256GB—enable long-term storage of diagnostic data and waveforms without transmitting them to a server. The built-in web-based UI/UX provides access to real-time data, diagnostic result of the equipment, diagnostic data of the power quality, alarm events, reports and etc. without a separate server.

Operational Impact of edgeSV

Continuous monitoring and early detection support availability, maintenance and energy efficiency.

20~40%	10~25%	5~15%	10~20%
Reduction in unplanned downtime	**Maintenance cost savings**	**Energy savings**	**Longer equipment life**

Illustrative ranges, not verified SV500 results. Actual outcomes depend on site conditions and corrective actions; PoC validation is required.

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