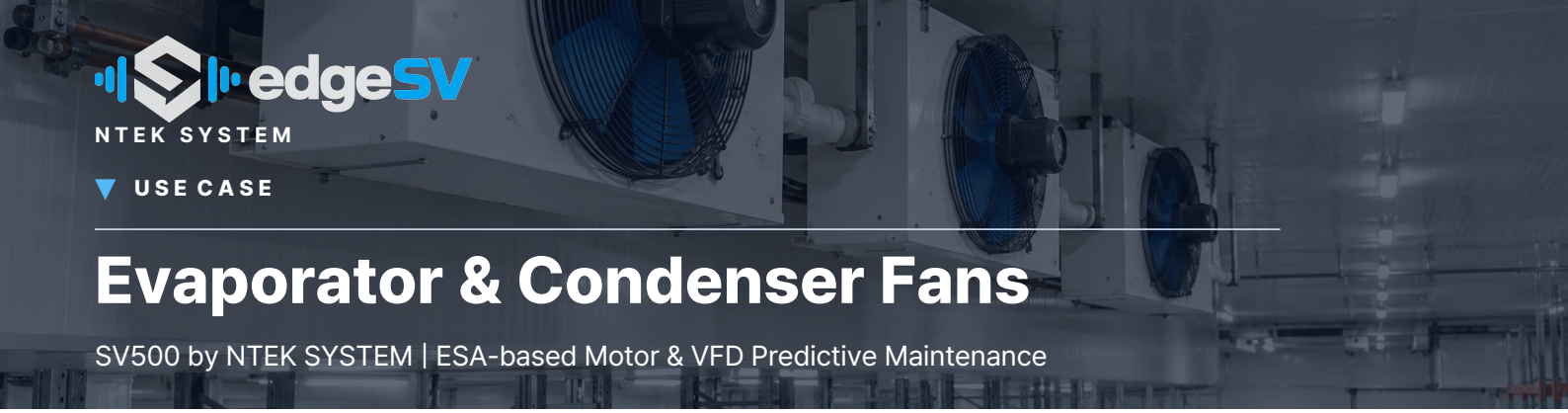


edgeSV
NTEK SYSTEM

USE CASE

Evaporator & Condenser Fans

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

OVERVIEW

Fan performance loss on evaporators and condensers reduces cooling capacity. SV500 uses Electrical Signature Analysis (ESA) with current and load trends to screen for bearing wear and imbalance before temperatures drift.

PROBLEM

Fan motor degradation quietly erodes cooling performance.

Key challenges:

- **Gradual fan degradation** — Wear builds up slowly, and early changes can show in current and load patterns before noise or temperature.
- **Found after drift** — Problems are often noticed only after temperatures deviate, so changes during operation need continuous logging.

EXPECTED OUTCOMES

Find fan drive trends early and set the inspection order.

Expected benefits:

- **Fan drive monitoring** — Separates abnormal trends from normal defrost and speed-change variation.
- **Sustain cooling performance** — Inspect first the units whose airflow may be dropping.
- **Data-driven priorities** — Compares status grades and trends on one scale so scarce maintenance staff go to the highest-risk assets first.

TARGET EQUIPMENT

Evaporator fan | Condenser fan | Fan motor / VFD

SOLUTION

01 VFD Status Diagnostics

Analyzes the VFD input/output voltage and current waveforms to identify faults in rectifier diodes, DC-link capacitors and switching devices (SCRs or IGBTs). Also monitors power-supply condition and power quality.

02 Motor Status Diagnostics

Analyzes motor voltage and current without additional equipment-mounted sensors. Screens mechanical issues (cavitation, soft foot, bearings and vibration), electrical issues (stator, connections, heat and noise), and load fluctuations.

03 Power Quality Status Diagnostics

Learns normal power-quality patterns and evaluates real-time deviations. Tracks voltage, current, interruptions, sags and harmonics to identify abnormal conditions.

04 Edge AI Server

Performs diagnostic analysis directly on SV500. Built-in storage (8GB eMMC and up to 256GB SD) retains waveforms and diagnostic data. Its web interface shows real-time values, equipment status, power quality, alarms, events and reports.

Operational Impact of edgeSV

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

20–40%	10–25%	5–15%	10–20%
Unplanned downtime	**Maintenance cost**	**Energy savings**	**Equipment life**

Illustrative ranges only; not verified SV500 performance. Actual results depend on equipment, site conditions and corrective actions.