

edgeSV
NTEK SYSTEM

USE CASE

# Transformers & Power Quality

SV500 by NTEK SYSTEM | Transformer Condition & Power Quality Monitoring

## OVERVIEW

Automation, refrigeration and charging loads can create imbalance, harmonics and momentary events on the transformer and distribution network. SV500 records long-term secondary-side trends and event waveforms to narrow down the causing loads.

## PROBLEM

A transformer problem can affect operation of the entire center.

**Key challenges:**

- **Site-wide operating impact** — Transformer problems affect the whole logistics center, and a single-point measurement cannot separate their causes.
- **Load growth from expansion** — Added equipment raises transformer load and harmonics, so trends in normal operation and events must be recorded.

## EXPECTED OUTCOMES

Use event and load history to review protection settings and expansion headroom.

**Expected benefits:**

- **Early power issue detection** — Find recurring event periods to review protection settings and load allocation.
- **Expansion headroom** — Peak load, peak time and phase skew show remaining margin against rating.
- **Data-driven priorities** — Compares status grades and trends on one scale so scarce maintenance staff go to the highest-risk assets first.

## TARGET EQUIPMENT

Distribution TR | Equipment feeders | Cold storage/charging

## 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.