edgeSV
NTEK SYSTEM

USE CASE

Building Transformers

SV500 by NTEK SYSTEM | Transformer Condition & Power Quality Monitoring

OVERVIEW

Building transformers carry power to HVAC, elevators, IT and lighting. SV500 records load ratio and harmonic trends from secondary-side voltage and current to screen for signs of transformer stress.

PROBLEM

Transformer degradation can lead to a building-wide outage.

Key challenges:

- **Degradation and outage risk** — Aging of the transformer that powers the whole building raises the risk of a blackout.
- **Harmonics and rising load** — Non-linear loads and added equipment can stress transformers, so long-term trends matter.

EXPECTED OUTCOMES

Decide when to inspect transformers from data and reduce outage risk.

Expected benefits:

- **Inspection/renewal timing** — Read load ratio and harmonic trends alongside maintenance history.
- **Lower outage risk** — Event records before protection trips let you check recurring periods first.
- **Maintenance priorities** — Compare health grades across equipment on one common basis.

TARGET EQUIPMENT

Distribution units | Secondary feeders | Tap-changer units

SOLUTION

SV500 analyzes secondary-side voltage and current of the transformer.

How SV500 diagnoses:

- **Winding-related signs** — Tracks secondary imbalance, harmonics and load ratio trends. Confirmation uses insulation resistance and dissolved gas tests.
- **Harmonics (THD), load ratio** — Records voltage/current THD with load ratio and matches high-harmonic periods to running loads to narrow the source circuit.
- **Leakage current** — Trends leakage only on circuits fitted with a ZCT. Insulation condition is confirmed by periodic insulation tests.
- **Adaptive thresholds** — Machine learning learns each asset's normal condition and judges its status with load-dependent adaptive thresholds, rather than fixed limits.
- **Web dashboard and integration** — Check diagnostic status in real time on the device's built-in web dashboard without a site visit, and connect to higher-level systems such as BMS or SCADA over Modbus TCP/RTU. Additional interfaces such as MQTT depend on the project configuration.

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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