edgeSV
NTEK SYSTEM

USE CASE

Main Transformers

SV500 by NTEK SYSTEM | Transformer Condition & Power Quality Monitoring

OVERVIEW

The main transformer is the common point of the data center's power path. SV500 tracks secondary-side loading, harmonics and imbalance, providing data to judge thermal stress and capacity headroom.

PROBLEM

A main transformer issue affects the entire power path.

Key challenges:

- **Core of the power path** — A fault affects the whole power path, so trends rather than single-point readings need to be recorded.
- **Rising harmonic heating** — Nonlinear IT loads and expansion shift phase loading and harmonics, which can increase heating.

EXPECTED OUTCOMES

Event and load history supports power-path checks and expansion reviews.

Expected benefits:

- **Power path protection** — Records events that precede protective trips so recurring periods are inspected first.
- **Capacity headroom data** — Peak load, peak time and phase skew support expansion reviews.
- **Data-driven priorities** — Compares status grades and trends on one scale so scarce maintenance staff go to the highest-risk assets first.

TARGET EQUIPMENT

Main incoming TR | Secondary main feeder | UPS/cooling circuits

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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