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NTEK SYSTEM

USE CASE

Excitation Transformers

SV500 by NTEK SYSTEM | Transformer Health & Power Quality Monitoring

OVERVIEW

The excitation transformer powers the generator's excitation system, and its failure can stop the generator. SV500 keeps voltage and current events and waveforms so they can be aligned in time with generator protection records.

PROBLEM

An excitation transformer failure can lead to a generator trip.

Key challenges:

- **Risk of generator trip** — Faults affect connected processes, so it is better to find intervals where health indicators change than to recover after failure.
- **Hard to see steady load** — Without visibility of steady load, condition changes and events need to be recorded continuously during operation.

EXPECTED OUTCOMES

Running trends help adjust inspection scope and choose what to check in planned outages.

Expected benefits:

- **Lower trip risk** — Excitation-side trends put items that could cause a trip on the check list.
- **Condition-based work** — Running trends added to scheduled checks help adjust timing.
- **Data-driven priorities** — Compares health grades on one basis to set inspection order.

TARGET EQUIPMENT

Excitation transformer | Excitation input | Transformer secondary

SOLUTION

SV500 tracks changes in voltage and current signals on the transformer secondary.

How SV500 diagnoses:

- **Winding-related signs** — Compares secondary imbalance and harmonics across periods with the same excitation conditions. Insulation tests confirm; SV500 helps decide when to test.
- **Load swings and transients** — Records voltage and current events from excitation changes and rectifier load, and keeps transient waveforms at load switching.
- **Harmonic stress** — Rectifier loads create constant harmonics, so SV500 watches the trend at the same excitation current. Actual temperature needs a temperature sensor.
- **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.

SUMMARY

SV500 records voltage and current events tied to excitation conditions and rectifier load. Confirming diagnosis of exciter semiconductors, field circuits and insulation requires dedicated excitation and protection measurements.

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