

edgeSV
NTEK SYSTEM

USE CASE

Reservoir Pumping Stations

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

OVERVIEW

Reservoir pumping stations send treated water to storage reservoirs to keep supply continuous. SV500 applies Electrical Signature Analysis (ESA) to the control-panel voltage and current to screen individual pumps for degradation and inefficient operation.

PROBLEM

Unmanned pumping stations make it easy for rounds alone to miss gradual changes.

Key challenges:

- **Supply continuity at stake** — Pump condition is directly tied to supply continuity, so changes and events during operation need continuous recording.
- **Many dispersed sites** — With sites spread out, remote trends and event logs are needed to send limited staff to abnormal units first.

EXPECTED OUTCOMES

Check abnormal pumps and trend direction before a site visit, and plan maintenance.

Expected benefits:

- **Supply continuity** — Compare unit condition to set rotation plans and maintenance timing together.
- **Remote monitoring** — View many stations on one basis and order inspection rounds by condition.
- **Data-based priorities** — Use condition grades and trends to send staff to the highest-risk units first.

TARGET EQUIPMENT

Pumping units | Drive motors | VFDs | Distribution xfmr

SOLUTION

01 VFD Status Diagnostics

Analyzes VFD input/output voltage and current waveforms to assess rectifier diodes, DC-link capacitors, IGBTs, and the condition of the power supply and power quality.

02 Motor Status Diagnostics

Analyzes motor voltage and current signals without additional equipment-mounted sensors, screening mechanical faults (cavitation, bearings, vibration), electrical faults (stator, cable connections, heat), and load fluctuations.

03 Power Quality Diagnostics

Records and analyzes voltage, current, interruptions, sags, swells, harmonics, and trends to identify power quality abnormalities.

04 Edge AI Device

Performs diagnostic analysis and stores waveforms and results locally. The built-in web interface provides real-time measurements, equipment diagnostics, power quality, 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%
Less unplanned downtime	Maintenance cost savings	Energy savings	Longer equipment life

Indicative ranges only; actual results depend on site conditions and corrective actions.