

edgeSV
NTEK SYSTEM

USE CASE

Booster Pumps

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

OVERVIEW

Booster station pumps repeatedly start, stop and change speed with demand. SV500 uses electrical signature analysis (ESA) to compare current and load patterns per pump and screen for cavitation, bearing wear and impeller clogging.

PROBLEM

Booster pumps often suffer cavitation and wear, and many stations are unmanned.

Key challenges:

- **Cavitation and wear** — Load and environment changes accumulate as gradual degradation, and early changes often show first in current and load patterns.
- **Unmanned stations** — Rounds alone easily miss continuous changes, so remote trends and event records are needed.

EXPECTED OUTCOMES

Operators see which pumps need attention before visiting and deploy crews by risk.

Expected benefits:

- **Pump issue screening** — Screens pumps whose problems could lead to low pressure.
- **Fewer site visits** — Remote trends narrow targets so fewer station rounds are needed.
- **Data-driven priorities** — Compares health grades on one basis to set inspection order.

TARGET EQUIPMENT

Booster pumps | Pump drive motors | VFDs, station panels

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.