edgeSV
NTEK SYSTEM

USE CASE

Stormwater & Drainage Pumps

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

OVERVIEW

Stormwater and drainage pumps sit idle for long periods, then run at high load during heavy rain. SV500 builds up test-start voltage and current records using Electrical Signature Analysis (ESA) to screen for seizure, bearing wear and clogging candidates.

PROBLEM

Rarely run pumps often reveal problems only when actually started.

Key challenges:

- **Infrequent operation** — Long-idle equipment can look normal until started, so start-up and load response during periodic tests must be recorded repeatedly.
- **Failures during storms** — Faults surface during heavy rain, directly affecting operating reliability and maintenance scheduling.

EXPECTED OUTCOMES

Use pre-season test-start records to set inspection order and standby readiness.

Expected benefits:

- **Storm preparedness** — Use test-start results to set inspection order and standby placement.
- **Early fault detection** — Service units whose behavior changed in test starts first.
- **Data-based priorities** — Use condition grades and trends to send staff to the highest-risk units first.

TARGET EQUIPMENT

Stormwater pumps | Drainage pumps | Standby pumps | Gate-linked motors

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.