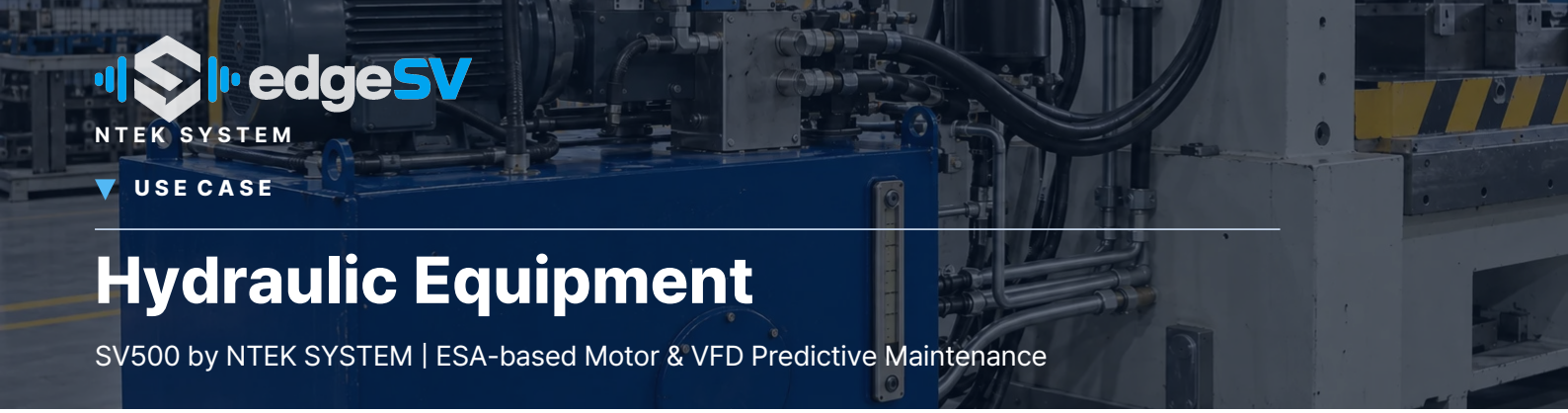


edgeSV
NTEK SYSTEM

USE CASE

Hydraulic Equipment

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

OVERVIEW

In hydraulic equipment, the pump drive motor generates the pressure and flow. SV500 uses Electrical Signature Analysis (ESA) to screen pump motors and variable frequency drives (VFDs) for early load-pattern changes.

PROBLEM

Pump wear and load changes are invisible from outside.

Key challenges:

- **Hidden pump wear** — Pump wear or cavitation symptoms are hard to notice until pressure starts to drop.
- **Idle-running losses** — Pumps may keep running and consuming power when no pressurization is needed.

EXPECTED OUTCOMES

Spot pump condition changes early and find wasted energy.

Expected benefits:

- **Early warning signs** — Screens load changes in pump motors early.
- **Planned maintenance** — Oil, filter and pump checks can be scheduled ahead.
- **Energy waste visibility** — Shows power use during idle-running periods.

TARGET EQUIPMENT

Hydraulic pump | Pump drive motor | Power unit | VFD

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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