

edgeSV
NTEK SYSTEM

USE CASE

Dock Equipment

SV500 by NTEK SYSTEM | ESA-based Motor Load Predictive Maintenance

OVERVIEW

Dock levelers and doors run intensively during loading windows. SV500 applies Electrical Signature Analysis (ESA) to drive-motor signals and logs load changes, screening for jamming or rising friction before an emergency stop.

PROBLEM

One stalled dock unit can back up loading and slow the whole logistics flow.

Key challenges:

- **Loading delays** — Dock equipment faults delay loading and unloading, directly affecting uptime and maintenance scheduling.
- **Hard-to-see motor condition** — Leveler and door motor condition is difficult to check routinely, so changes during operation need continuous logging.

EXPECTED OUTCOMES

Schedule maintenance in low-volume periods and inspect the riskiest units first.

Expected benefits:

- **Fewer loading delays** — Spot docks with lengthening cycle times and inspect them before work piles up.
- **Pre-failure checks** — Use start-up behavior trends to shift from repair to planned inspection.
- **Data-driven priorities** — Compares status grades and trends on one scale so scarce maintenance staff go to the highest-risk assets first.

TARGET EQUIPMENT

Leveler pump motor | Door motor | Dock seal/lift drive

SOLUTION

01 VFD Status Diagnostics

Analyzes the VFD input/output voltage and current waveforms to identify faults in rectifier diodes, DC-link capacitors and switching devices (SCRs or IGBTs). Also monitors power-supply condition and power quality.

02 Motor Status Diagnostics

Analyzes motor voltage and current without additional equipment-mounted sensors. Screens mechanical issues (cavitation, soft foot, bearings and vibration), electrical issues (stator, connections, heat and noise), and load fluctuations.

03 Power Quality Status Diagnostics

Learns normal power-quality patterns and evaluates real-time deviations. Tracks voltage, current, interruptions, sags and harmonics to identify abnormal conditions.

04 Edge AI Server

Performs diagnostic analysis directly on SV500. Built-in storage (8GB eMMC and up to 256GB SD) retains waveforms and diagnostic data. Its web interface shows real-time values, equipment status, power quality, alarms, 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%
Unplanned downtime	**Maintenance cost**	**Energy savings**	**Equipment life**

Illustrative ranges only; not verified SV500 performance. Actual results depend on equipment, site conditions and corrective actions.