edgeSV
NTEK SYSTEM

USE CASE

Packaging and labeling machines

SV500 by NTEK SYSTEM | ESA-based condition monitoring & predictive maintenance

OVERVIEW

Packaging and labeling machines handle order processing and dispatch preparation in distribution centers. In this scenario SV500 analyzes the voltage and current signals of the motors and VFDs that drive the machines to detect abnormalities in the motors and drive equipment early.

PROBLEM

Packaging and labeling machines run continuously, so wear and misalignment in the drives can lead to failure.

- **Downtime cost in consumer goods production** - According to a Siemens report, one hour of downtime in fast-moving consumer goods (FMCG) manufacturing costs USD 36,000, and FMCG was the only sector where downtime has increased since 2019.
- **Unplanned stops** - Equipment failure can stop the packaging line and affect dispatch schedules.
- **High maintenance cost** - Reactive repairs and manual inspection add cost.

EXPECTED OUTCOMES

Abnormalities in the drive motors can be identified early so maintenance can be planned.

- **Early detection of potential failures** - Detects potential failures early to minimize unexpected incidents and risk.
- **Optimized maintenance schedules** - Diagnostic data helps predict and optimize maintenance schedules.
- **Lower cost and downtime** - Higher operating efficiency helps reduce energy consumption, maintenance cost and downtime.

TARGET EQUIPMENT

Packaging machine drive motors

Transfer conveyor drive motors

Labeler drive motors

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.