

edgeSV
NTEK SYSTEM

USE CASE

Compressed air systems

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

OVERVIEW

Compressed air is widely used in manufacturing as a power source for tools, controls and automation equipment. In this scenario SV500 analyzes the voltage and current signals of the compressor drive motor to diagnose abnormalities and also measures power and energy.

PROBLEM

Early faults in compressors and motors are sometimes found only after performance drops or the unit stops.

- **A large share of energy** - According to the US Department of Energy (DOE), about 10% of the electricity in a typical industrial facility goes to producing compressed air (over 30% at some facilities), and 76% of a compressor's 10-year cost is electricity.
- **Unexpected compressor stops** - When a compressor stops, the equipment that uses compressed air is affected.
- **Lack of operating data** - There is not enough data to see the compressor's real-time operating status and power use.

EXPECTED OUTCOMES

Abnormalities in the compressor motor 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

Compressors | Cooling fans | Compressor 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.

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