

edgeSV
NTEK SYSTEM

USE CASE

Aeration blowers

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

OVERVIEW

Aeration blowers blow air into the bioreactor so that microorganisms can treat the sewage. In this scenario SV500 analyzes the voltage and current signals of the motors and VFDs that drive the blowers to detect abnormalities in the blowers and motors, and also measures power and energy.

PROBLEM

Blowers are essential to the treatment process and also consume a lot of power.

- **A large share of power use** - According to the Seoul Water Reclamation Facilities Corporation, sewage inflow pumps and blowers account for about 60% of the total power use of a wastewater treatment plant.
- **Mechanical faults in aeration equipment** - In an aeration rotor case at Anglian Water in the UK, electrical signal analysis detected signs of mechanical unbalance and looseness, and inspection found a damaged coupling between the motor and the gearbox.

EXPECTED OUTCOMES

Abnormalities in blowers can be identified early, and the power use of each machine can be checked at the same time.

- **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

Aeration blowers | Blower drive motors | VFD

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.