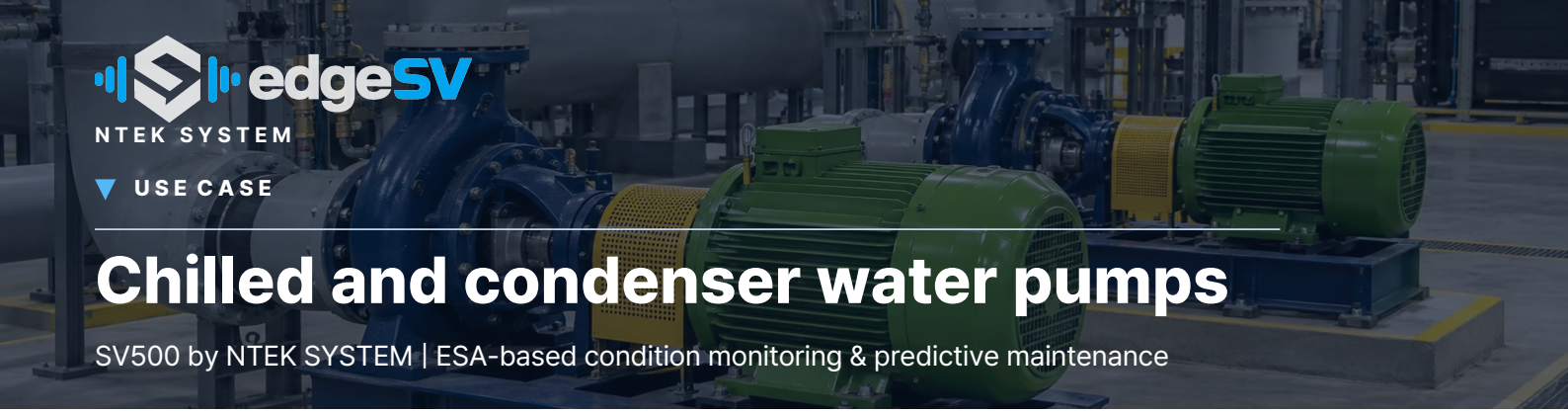


edgeSV
NTEK SYSTEM

USE CASE

Chilled and condenser water pumps

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

OVERVIEW

Chilled water pumps send chilled water from the chillers to air-conditioning equipment, and condenser water pumps circulate cooling water between the chillers and cooling towers. In this scenario SV500 measures and analyzes the three-phase voltage and current signals of the pump drive motors with PTs and CTs to diagnose pump and motor condition.

PROBLEM

If cooling stops in a data center, IT services can stop as well.

- **Service outage caused by a cooling failure** - In November 2025 a cooling equipment failure at a CyrusOne data center in Illinois, USA pushed room temperature above 38 °C, and futures trading at CME Group, which uses the facility, was halted for about 10 hours.
- **Rising outage cost** - According to Uptime Institute analysis, one in five data center outages in 2025 cost more than USD 1 million in total.

EXPECTED OUTCOMES

Abnormalities in cooling system pumps 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

Chilled water pumps | Pump drive motors | Condenser water pumps | 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.

NTEK SYSTEM © 2026 | www.nteksys.com | ntek@nteksys.com