



MAINTENANCE+ ASSET PERFORMANCE MANAGEMENT FOR DRIVE SYSTEMS

Variable Frequency Drives (VFD) adjust rotating machines speed by varying the frequency and voltage, boosting efficiency and optimizing performance.

The health of the drive system is critical for continuous operations. When a drive suddenly stops, crews get mobilized to site to determine the root cause of the problem and resulting down time can be long.

How can we help?

As part of the **Maintenance+** offering, our **Asset Performance Management (APM) solution** helps to improve asset reliability, availability, schedule maintenance and reduce downtime.

In the case of the drive system health, continuous monitoring using Key Performance Indicators (KPI) trending along with other advanced algorithms allows to provide early warnings on potential failures that could result in downtime.

In addition, the VFD can be used as a sensor, collecting high fidelity power system waveforms to perform *Electrical Signature Analysis (ESA)* on the associated rotating machines.

- No additional sensors are required.

Support via Rotating Machine Diagnostics Module (RMDM), that captures the required data to execute the analytics, is available if no Power Conversion (a business of GE Vernova) VFD exists (or for DOL machines)

Already, more than 500 sites are benefiting from Power Conversion's digital solutions that help customers to optimize operations and performance, enable predictive maintenance and cyber-secure service solutions.

What is the value of the solution?

- Reduce emergency calls and reduce downtime resulting in lower maintenance cost.
- Identify issues before they can cause disruptive failures.
- Display health of your drive system.
- Real time drive monitoring, trending, historical data.
- Reduces troubleshooting time, identifying the drive failures and recommends inspections of affected areas
- Access to KPI data to perform analytics for early detection of mechanical and electrical degradation

In some cases, it may be necessary, to update the drive software to get the benefits of the solution. Please contact us for more details.

HIGHLIGHTS

With extensive expertise in variable frequency drives (VFDs) and more than 100 years of experience in engineering motors, generators and control equipment, our specialists put their software, data and domain expertise to work, providing value to many organizations



ASSET PERFORMANCE MAINTENANCE SUPPORTS MAINTENANCE MANAGEMENT & HELP REDUCING UNPLANNED DOWNTIME

Rotating machines predictive maintenance

Predictive maintenance through Electrical Signature Analysis (ESA)/ Motor Current Signature Analysis (MCSA), allows early detection of electrical and mechanical degradations.

- Bearing (inner/outer race defect, ball defect)
- Insulation (shorted turns)
- Rotor bar (broken rotor bar)
- Electrical (voltage/current THD, sequence voltage/current harmonics, energy usage)
- Temperature (bearing/stator temperature)



Drive system health monitoring

Power Conversion drives are fitted with a software module to access KPI data for trending and to perform analytics for the drive as well as high frequency measurements to perform electrical signature analysis on the machine

- Drive status – Ready/Running/Fault
- Cooling system pressure, flow, temperature
- Delta/IGBT temperatures
- Motor RMS current, voltage
- Motor winding, bearing temperatures
- Network side V/I/F for AFE drives
- Alarms/faults
- CPU temperatures

HIGHLIGHTS

Power Conversion collects, analyses and processes the data, providing early identification of potential failures.

On-demand report for key assets by site - across the entire installed base.





Analysis covered

Electrical signal monitoring Network	<ul style="list-style-type: none"> • Grid/Network Input voltage • Current and frequency before or after the input transformer
Load/Machine	<ul style="list-style-type: none"> • Machine voltage, machine current • Input and output filter currents and DC capacitor voltages
Thermal signal monitoring Machine	<ul style="list-style-type: none"> • Bearing temperature (NDE, DE) • Machine winding temperature
Drive	<ul style="list-style-type: none"> • IGBT heat sink temperature, cubicle internal temperature, CPU temperature • Input and output filter inductor temperature, pre-charge transformer temperature
Mechanical signal monitoring	<ul style="list-style-type: none"> • Machine Speed
Electrical Signature Analysis (ESA) for connected rotating machines	<ul style="list-style-type: none"> • Bearing (inner/outer race defect, ball defect) • Insulation (shorted turns) • Rotor bar (broken rotor bar) • Electrical (voltage/current THD, sequence voltage/current harmonics, energy usage)

Value Added

Asset performance

- Asset health view from anywhere through intuitive dashboards
- Profile charts indicate when your assets are nearing threshold or warning limits
- Out-of-box logic/algorithms transform high and low frequency KPI data into actionable insights

Asset maintenance

- Insights into a component or subsystem that is degrading enabling easier troubleshooting
- Early warnings of potential issues help to avail a longer window of time to carry out corrective maintenance
- Helps to identify sub-system faults before they can propagate the entire system

Data availability

- Asset performance metrics can be analyzed across different time data points for a better understanding of when assets are deviating from their optimum efficiency point
- Download KPI data for further analysis

Cloud or On-Prem solution available

CONTACT US
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