


Remote Monitoring and Diagnostic Reporting for FT8® and FT4000® Gas Turbine Products

LEVERAGE OEM EXPERTISE TO IMPROVE YOUR GAS TURBINE ASSET PERFORMANCE

Mitsubishi Power Aero enhances Remote Monitoring and Diagnostic Reporting (RM&DR) to expand customer access to our expert gas turbine engineers. Experienced personnel analyze plant operating data and report performance, critical parameter trends, alarms, predictive analysis, and technical observations to improve plant operation reliability and offer recommendations for preventive maintenance. Our customized solutions offer scalable services to meet the needs of both peak and baseload operations. We provide hardware and software that are capable of high-speed, secure data communication to enable real time data analysis and to facilitate troubleshooting in today's NERC-compliant environment.

CUSTOMER VALUE

Mitsubishi Power Aero offers valuable, flexible solutions with RM&DR so all customers can realize the benefit of OEM gas turbine expertise.

- OEM Engineering Talent – Our engineers apply fleet-wide knowledge when reviewing site data and are able to trend key parameters, troubleshoot, and provide additional expert recommendations.
 - Real Time Data – Real time data acquisition includes daily monitoring, systematic event (alarm and trip) notifications, analysis and trending, and on-line troubleshooting by our engineers.
 - Predictive Analysis – We are developing analytical tools based on fleet experience and OEM engineering expertise beginning with critical monitoring parameters.
 - Vibration Monitoring – optional vibration monitoring hardware and specialized processing software allows us to collect and analyze highspeed vibration data for bearing degradation and fault analysis. Data is synchronized with site operating data from the plant controller.
 - Data Access – Operating data is warehoused in a secure, centralized data repository which allows for efficient data mining capabilities, standard reporting, and analysis of the historian database.
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- The image shows two pieces of Fortinet network hardware. On the left is a white and orange Fortinet FortiGate firewall. On the right is a white Fortinet FortiSwitch network switch with multiple ports and cables connected.
- Web Portal – RM&DR reports are posted in a web-based library (MyPortal) for convenient storage; easy, secure access to other OEM support services, including spare parts, service bulletins, fleet statistics, overhaul reports, and borescope reports, is also located here.
 - Network Interface – All hardware and software is designed to ensure security, compliance, and optimal performance. Key network components include: secure VPN, firewall with active antivirus and intrusion protection, and on-site, view-only, client access with secure authentication.
 - NERC Compliance – All hardware and software provided for secure data acquisition and storage models are designed to fulfill both government and customer-specific cyber security policies.



SCOPE OF SERVICE IS CUSTOMIZED

Customer needs vary, and Mitsubishi Power Aero will customize RM&DR solutions to meet the specific requirements of peaking and base load operators. Examples of service scope deliverables are summarized below:

- Active Review/Monitoring – Our engineers will provide various levels of review, immediate or periodic, as customers require.
- Troubleshooting – Real time access to plant data and archived historical data allows for quicker troubleshooting and reduced downtime.
- Performance Analysis – Actual data will be reduced and analyzed with recommendations provided by our engineers.
- Reports – Reports with trends and comprehensive comments from PWPS engineers may be provided monthly or quarterly; a more frequent review of data by our experts is also available.
- Maintenance Recommendations – Detailed maintenance recommendations will be reported based on data reviewed by our engineers.
- Historian Database – A historian database facilitates the collection of customer data that is compared with the larger OEM fleet operating data.

SYSTEM DESCRIPTION AND SPECIFICATIONS

- Main On-site Monitor computer with HMI requiring login credentials
- Firewall, VPN, anti-virus, and secure authentication provided by us at customer's site
- Modbus data collection at one-second scan rate with 100 Hz trip event logging
- Vibration monitoring hardware installed at customer site
- Data is stored on-site at our facility where it is redundantly backed up, and firewall protected

Mitsubishi Power Aero will customize a remote monitoring and diagnostic reporting system to accommodate your specific requirements.

