

QUALITROL[®]
Defining Reliability



IRIS POWER GUARDII+

Asset Monitoring Solution for
Generators and High Voltage Motors

Manage your risk

Qualitrol-Iris Power is the **world's largest provider** of asset monitoring and diagnostics solutions for high voltage motor and generator windings.

Customer value

>65k

Global sensor installs on rotating machines

#1

Online monitoring provider for motor and generator windings

>660k

Test results in Iris Power's Partial Discharge database



Why Use Asset Monitoring

More often than not, a machine failure is an economic disaster. By not actively monitoring your assets you could lose revenue, experience catastrophic failures, and have major safety and environmental impacts.



Extend Life of the Asset

Condition based maintenance detects the onset of problems and repairs can be carried out before major damage occurs.



Maximize Time Between Outages

Using condition based maintenance, equipment is removed from service less frequently (only if condition of machine is deteriorated) as compared to the other maintenance schemes.



Lower Repair Costs

Repair costs in detecting problems at an early stage are only a fraction of the cost incurred if failure occurs during normal operation of an asset.



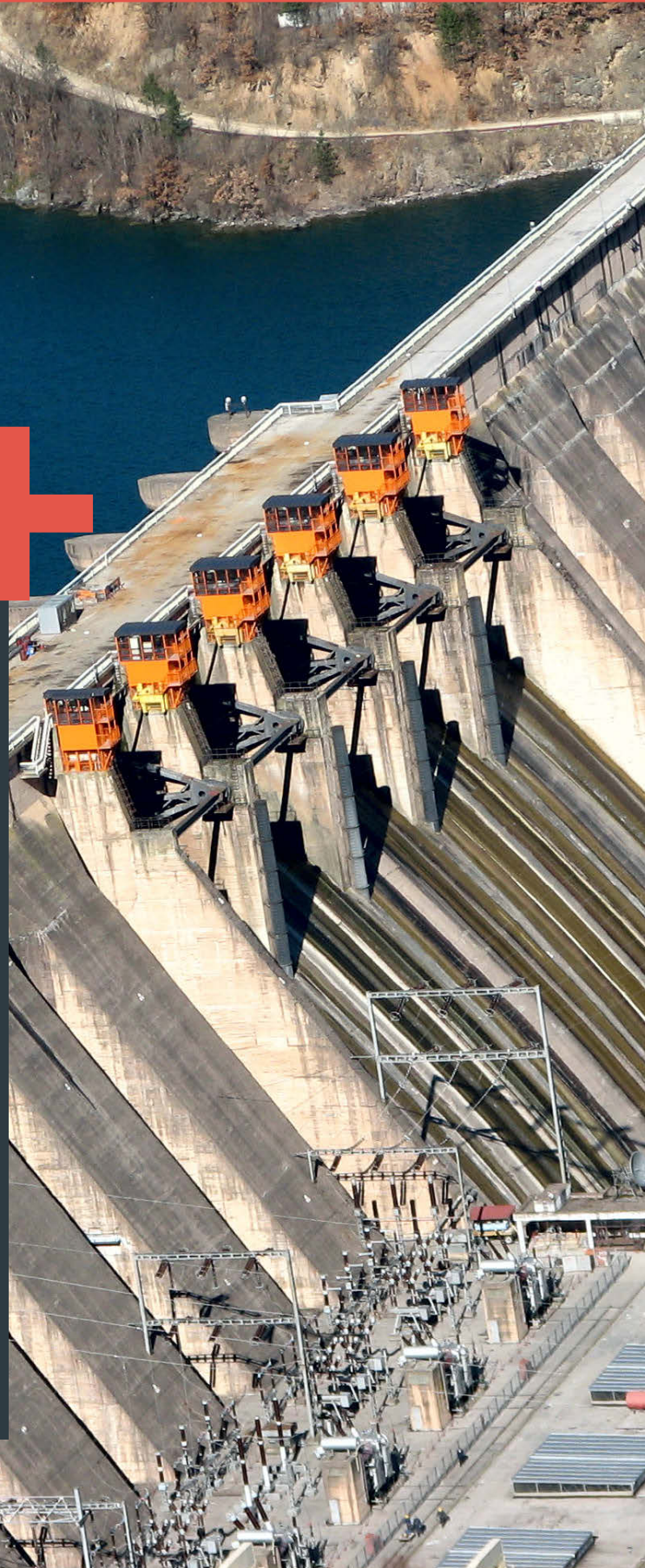
Reduce Failure Risks

Maximize revenue from the asset by reducing the risk of asset failures and schedule maintenance activities to minimize outage cost.



GuardII+ Product Summary

GuardII+ is a continuous online monitor for the stator and rotor windings of large generators and electric motors. The system is field upgradable and has the ability to combine multiple condition monitoring technologies in the same box. This gives the end user the option of including the **most critical monitoring technologies** needed by the asset. The information gained from the system is used for condition based maintenance decisions to optimize maintenance intervals and expenditures.



Single box monitoring solution for Partial Discharge, Rotor Magnetic Flux, Stator Endwinding Vibration and Shaft Current / Voltage



Multiple Monitoring In One Box

- One box system capable of monitoring multiple critical condition monitoring technologies
- Support for industry standard communication protocols and Modbus for data integration with third party systems
- LED indicators and relay output for alert notifications



Collects Data to Assess Asset Condition

- Need based reports are created automatically in a single document
- Internal data storage up to 2 years supports condition trending analysis
- Fast and easy data access for reports generation



Remote Monitoring and Configuration

- Client interface provides functionality to monitor and archive alerts and event information
- Multiple communication ports such as USB, RJ45 and fiber optic (optional)
- Built-in support for Modbus and other communication protocols



Flexible Installation and Configuration

- Options to meet all customer expectations
- Rapid and easy deployment
- Sensors can be retrofitted or installed by OEMs
- Fast and simple system configuration



Robust and Rugged Design

- Excellent interference immunity for measurements under difficult environmental conditions
- Rugged enclosure and connectors with IP66 rating
- Built-in LED indicators and remote client enables safe operation in all conditions



Qualitrol Xpert Services

- Highly experienced and industry renowned experts to analyse monitoring data and provide reports and recommendations
- Support available on system installation, testing, analysis and localization of potential faults

IAM Remote Client Software

The GuardII+ solution includes the Iris Application Manager (IAM) software platform for configuring the monitor's modules, downloading the archived data and viewing and trending the asset condition data collected by the data acquisition unit.

IAM Platform Features

Trend

At-a-glance status information for every asset in a database

Monitor

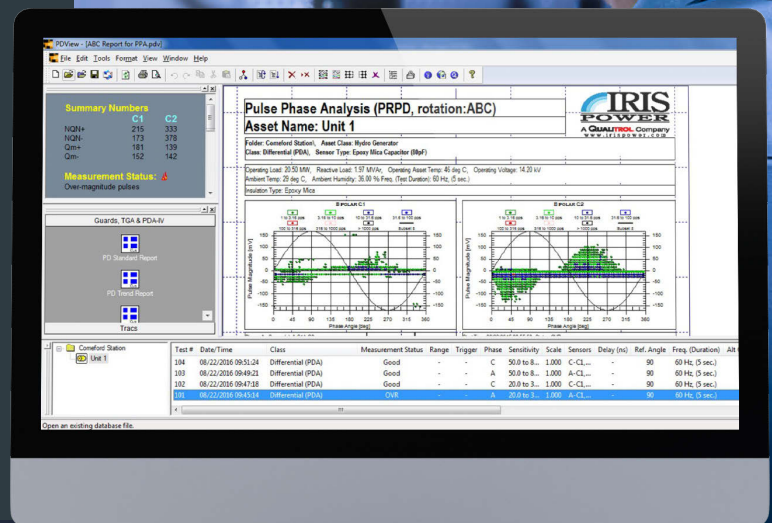
Ability to monitor multiple assets and multiple technologies

Diagnostics

Download diagnostics data from the GuardII+ monitor

Configure

Add and configure assets, sensors, continuous and portable monitors





Our sensors are the key components of the GuardII+ monitoring system. Specifically designed for capturing PD pulses, Rotor Flux changes, Endwinding Vibrations and Shaft Voltages, they send all signals to the data acquisition system for interpretation.”

PD Sensors



Epoxy Mica Capacitors (EMC) and Stator Slot Couplers (SSC) are high frequency sensors used to detect Partial Discharges (PD) occurring within stator windings of motors and generators. The number of installed PD sensors may vary on machine type and size and vary from 3 to 24 sensors per machine.

Endwinding Vibration Sensors



The Endwinding Vibration sensors are non-metallic fiber optic accelerometers used to measure vibration of the generator stator endwindings. The sensors are able to simultaneously measure vibration in the radial and tangential directions safely in high voltage and magnetic fields found in air-cooled as well as hydrogen cooled generators.

Rotor Flux Sensors



The Rotor Flux sensor detects shorted rotor windings in generators and synchronous motors by measuring air gap magnetic flux. It senses the magnetic field emanated from each rotor pole to determine the presence of shorted rotor turns.

Shaft Voltage and Current Brushes



Existing grounding brush(es) are equipped with shunt(s) to measure current on the motor or generator shaft. Additional voltage brushes might be installed to detect high shaft voltage. The monitor detects high voltage and current on the motor or generator from poor shaft grounding. Shaft voltage monitoring will also provide additional benefits like identifying the quality of asset repairs or maintenance on grounding brushes.

The Guard II+ monitor takes signals from these sensors and creates patterns of asset activity for the asset's condition analysis.



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Version 1.0