

INSTRUMENTS



Guard Systems

HydroGuard , BusGuard and TurboGuard Systems

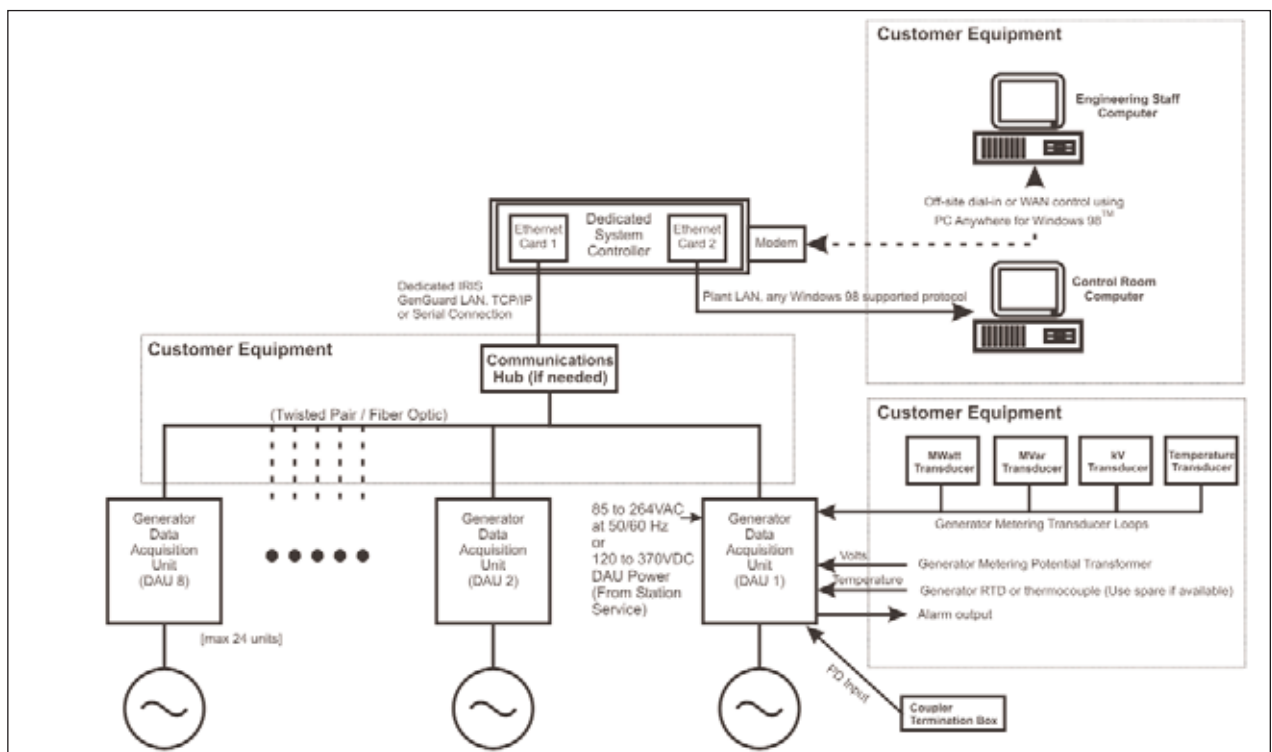


**CONTINUOUS ON-LINE PARTIAL DISCHARGE MONITOR
FOR MOTOR & GENERATOR STATOR WINDINGS**

The Guard system is a proven alternative to using the PDA-IV™ or TGA™ portable instrument for continuously measuring partial discharge activity.

The Guard system enables maintenance professionals to:

- Reliably monitor rotating equipment in remote locations
- Continuously monitor and automatically record the condition of stator winding insulation while in service
- Automatically forward data to a plant data acquisition system
- Independently monitor, from remote offices, individual motors or generators under closely defined operating conditions
- Detect rapidly developing insulation problems such as winding looseness or endwinding contamination
- Better interpretation of test results and trending of data under similar operating conditions



The HydroGuard™, BusGuard™, and TurboGuard™ products collectively referred to as Guard systems, can be programmed to continuously measure partial discharge (PD) activity on motors and generators rated 6kV and above. The system is sensitive to the most common stator winding failure mechanisms such as over heating, contamination and loose windings. This allows plant personnel to plan corrective action if the Guard detects problems.

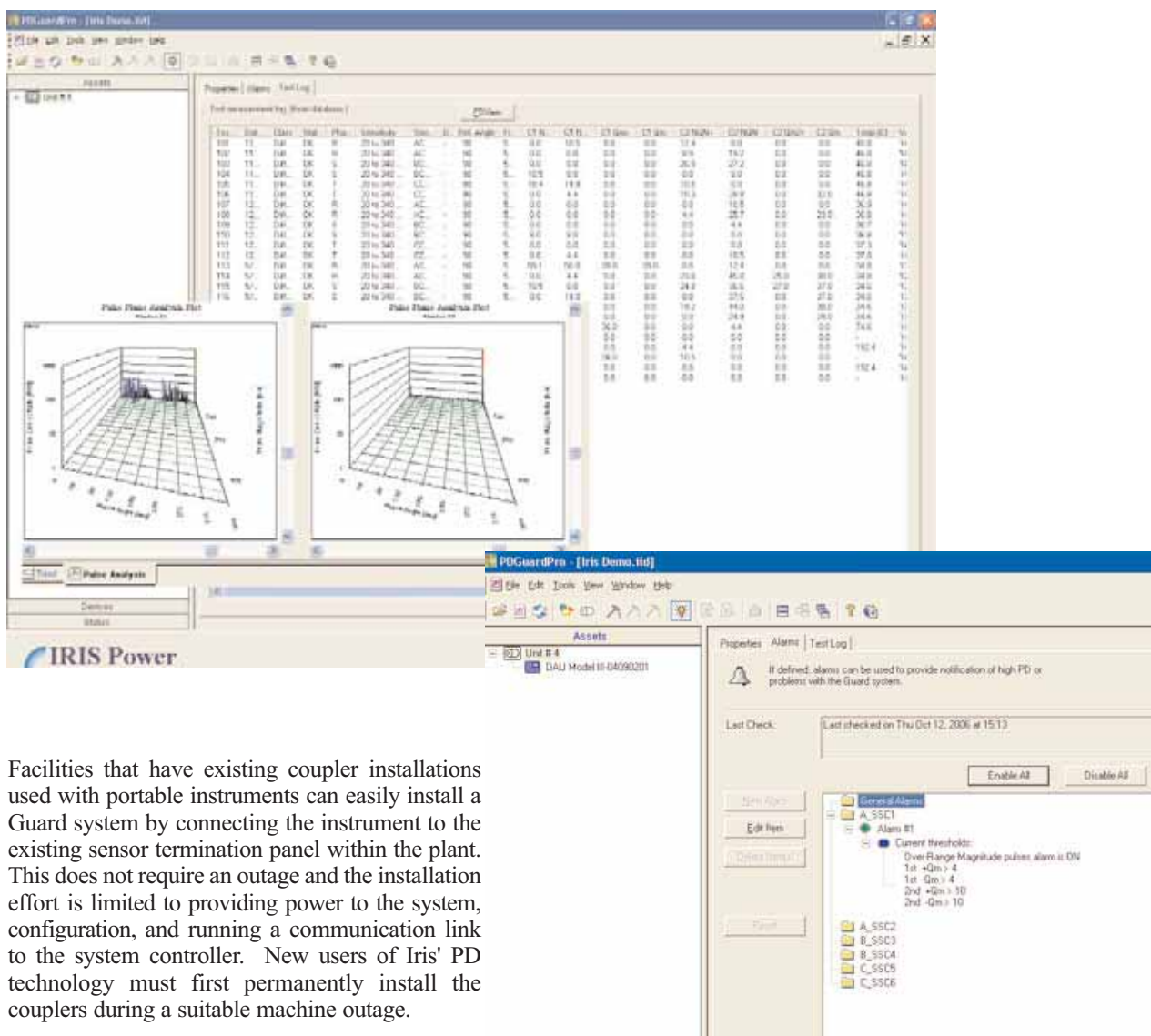
The Guard system was designed with these main goals in mind:

- Continuous and automated measurement of partial discharges, with the data being accessible from a remote location.
- PD data can be collected at specific machine conditions providing a reliable trend.
- Separation of noise to ensure operating a low risk of false indication of stator problems.
- Elimination of the need for an on-site expert tester when monitoring the motor and generators.

The Guard system uses the EMCs (epoxy mica couplers) or SSCs (stator slot couplers) that are permanently installed on motors and generators (6 kV or higher). Each motor or generator monitored requires one Data Acquisition Unit (DAU) to be installed near the machine. The DAU is mounted outside of the generator or motor near the sensors. Coaxial cables connect the sensors to the DAU.

One system controller can control multiple DAUs, usually over a dedicated LAN. The system controller comes with PDGuardPro™ software, which instructs each DAU under what conditions to measure and store the PD activity. Through the system controller, the user defines the generator operating conditions and frequencies (i.e. triggers) for each DAU, for which a PD measurement should be made. The DAU can be configured to continuously measuring the PD activity at each DAU in order to raise an alarm if the PD activity is above a defined threshold. The system controller also comes with PDView™, program for displaying or trending any saved PD data. The system controller can be remotely accessed via a remote computer connected to the same wide area network (WAN) or modem. This allows personnel in distant offices to define or change trigger conditions and alarm levels, as well as download test results for display on a secondary computer.

The Guard system continuously collects PD data (summary numbers [NQN, Qm], 2D, and 3D data) that are used for trending and comparison with similar machines. The data is collected using our Windows™ based PDGuardPro™ software.



Facilities that have existing coupler installations used with portable instruments can easily install a Guard system by connecting the instrument to the existing sensor termination panel within the plant. This does not require an outage and the installation effort is limited to providing power to the system, configuration, and running a communication link to the system controller. New users of Iris' PD technology must first permanently install the couplers during a suitable machine outage.

The Guard system includes our unique and rigorously researched methods to overcome the electrical interference (noise) typical in most plant environments. This ensures reliable and repeatable measurements with a low probability of false alarms. The collected data can be easily interpreted by a maintenance professional that has participated in a 2-day training seminar offered by our experienced engineering staff. The user's assessment of insulation system condition using on-line PD testing is greatly enhanced by their access to Iris' extensive PD database of over 60,000 test results. The collective experience and results of our clients are summarized annually in statistical tables, available to all Iris users. This is a service unique to Iris and its clients and ensures objective interpretation of insulation condition.

FEATURES:

- Superior noise separation technology based on 40MHz high pass filter, time-of-arrival, and pulse characteristics.
- Data collected is compatible with the existing patented TGA/PDA technology.
- Remote data collection - 2D, 3D and Summary Numbers.
- Remote modes of communication allow diagnostics, control and configuration from a distance.
- Guard Systems perform continuous PD measurements with advanced alarm features, requiring minimal intervention by maintenance professionals. Alarms are preset based on the Iris database of over 85,000 test results.
- Input sensors for such operating conditions as active power, reactive power, stator voltage, winding temperature and hydrogen pressure.

*Iris Power is the world's largest provider
of on-line partial discharge measurement systems.*



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