

NEW PRODUCT



PD Monitor GIS™

24/7 Partial Discharge (PD) monitoring system for Gas Insulated Switchgear

For automatic, continuous monitoring of mission critical GIS assets

Benefits

- The most cost effective AND multi-featured GIS condition monitor available
- Continuous monitoring identifies faults BEFORE they lead to failures
- 24/7 assurance that critical GIS assets are performing correctly
- Automatic operation without human intervention
- Instantly alerts operators if PD faults are present
- Provides detailed information on PD fault location, severity and frequency
- Dramatically reduces the need for expensive technician call-outs
- New design based on 30+ years experience of PD detection and measurement
- Unique daisy chain configuration requires minimal wiring in

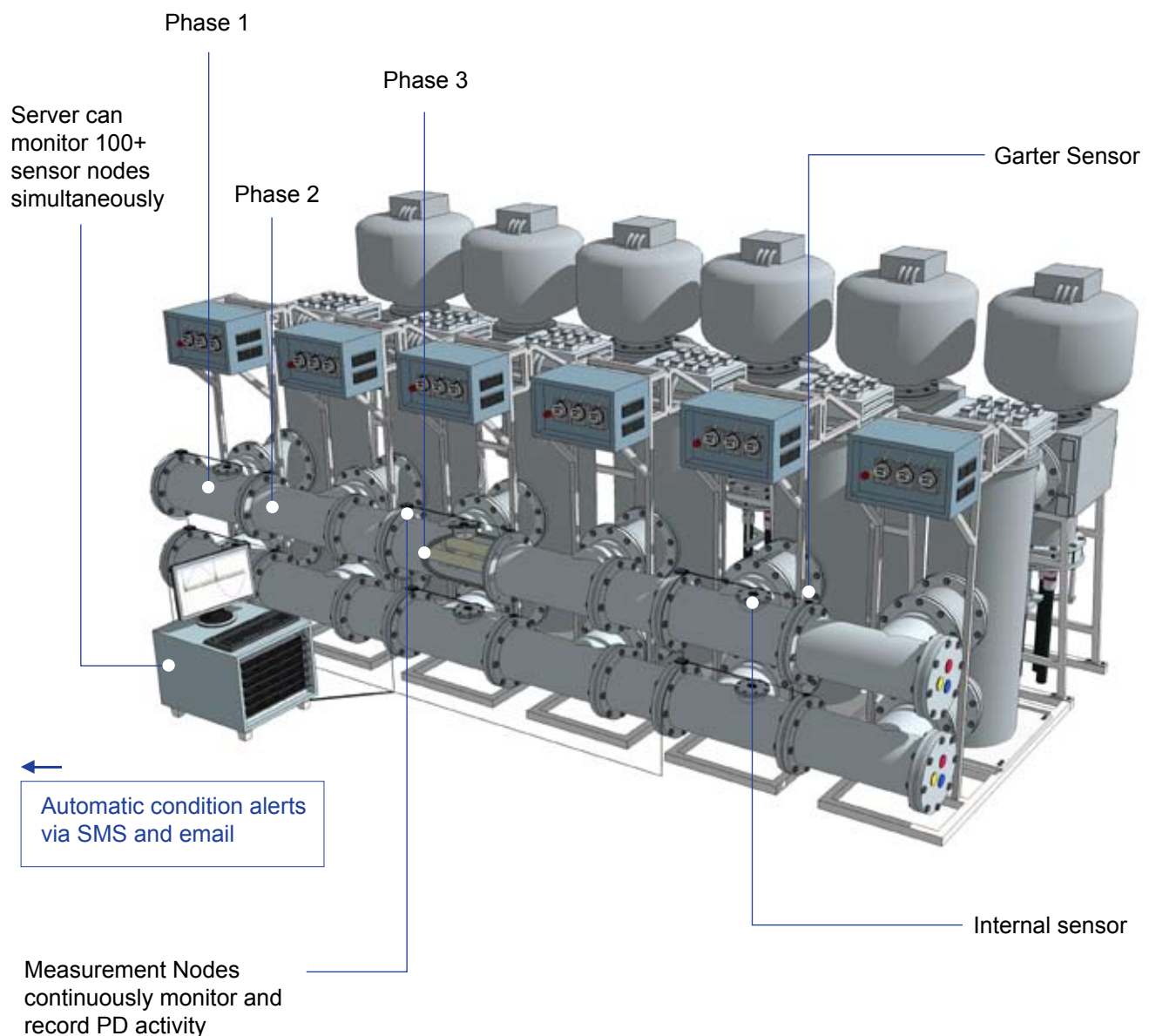
Fact: 85% of disruptive substation failures are PD-related

Fact: The PD Monitor GIS™ automatically alerts operators to faults BEFORE they develop into failures



PD Monitor GIS™

Gas Insulated Switchgear monitoring system



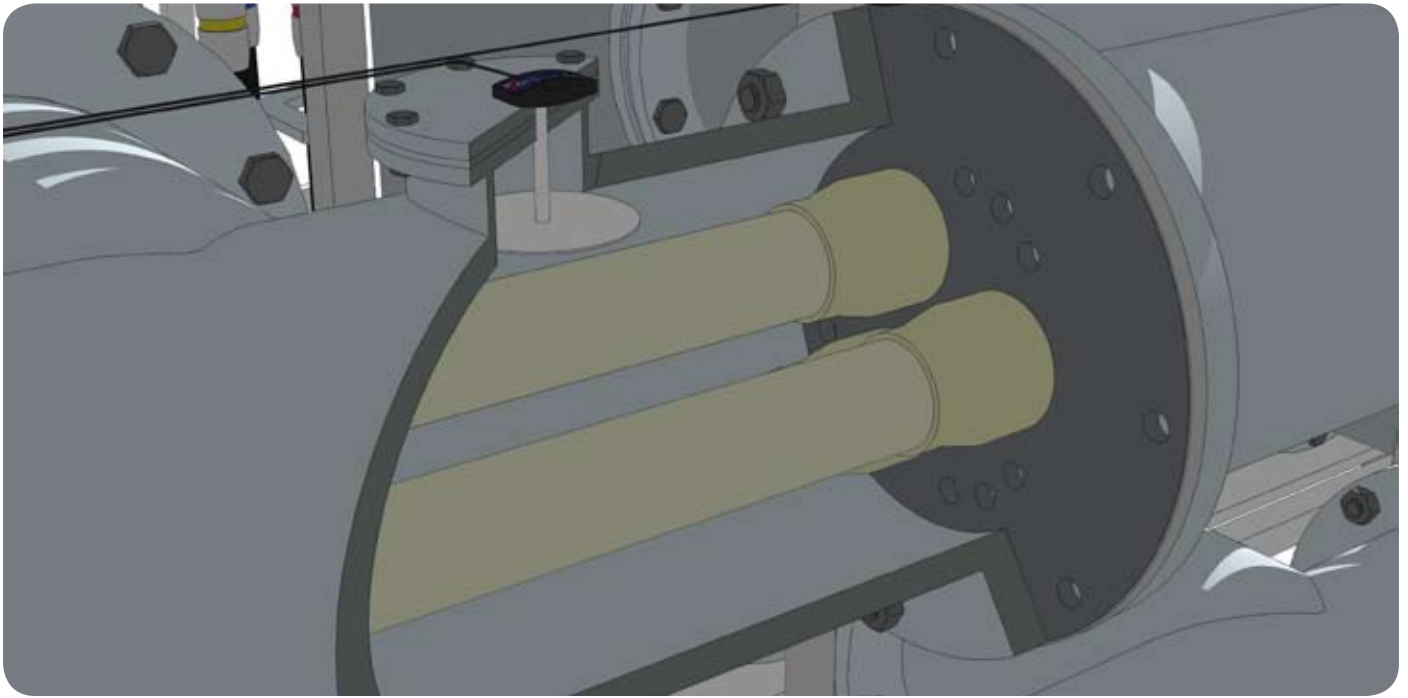
Suitability

The PD Monitor GIS™ is purpose designed as a retrofit system for all commonly used pressurised Gas Insulated Switchgear (GIS) equipment, up to and in excess of 300kV.

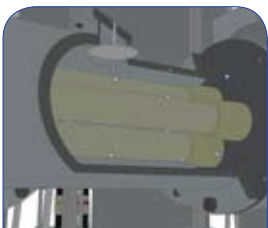
Each system can support from between a few sensor points to well over 200, making it effective for a wide range of GIS assets.

Its unique 24/7 monitoring and diagnostic capabilities make it particularly suitable for ensuring 100% uptime for mission critical substations on transmission networks.

Sources of PD activity in Gas Insulated Switchgear



Cross Section of 3 Phase encapsulated Gas Insulated Switchgear



Free moving metallic particles (contamination residue from manufacture/ installation becomes mobile in the presence of an electrical charge)



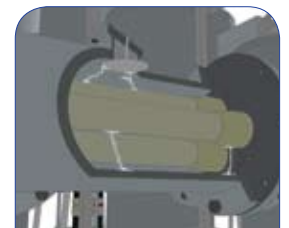
Voids in insulator cast resin



Corona activity emanating from sharp points



Conducting particles on insulator surface



Contact noise from support brackets

Why PD monitoring is essential



Partial discharge activity is a principal factor in around 85% of GIS switchgear failures. The PD Monitor GIS™ alerts operators to critical PD activity, enabling them to locate, diagnose and rectify faults BEFORE they lead to failure.

Monitoring of GIS switchgear is particularly important, as faults can very quickly escalate into sudden failures,

causing protection systems to trip out and resulting in large scale outages.

In the worst cases, failure can be catastrophic, resulting in widespread damage and even death. The presence of SF6 gas increases the environmental and financial costs of failure.

PD Monitor GIS™

Components

SENSORS



Garter Sensors



Original Equipment Sensors (if fitted)

'Garter' sensors are retro-fitted around the resin insulators, creating a capacitor in relation to the busbar. The sensors measure PD activity in the UHF range and transmit the data to the server.

MEASUREMENT NODES

Measurement nodes enable the sensors to be daisy chained. This simplifies installation, minimises wiring requirements and allows several hundred sensors to be linked to a single server.



EXPERT SYSTEM SERVER

The PD Monitor GIS™ server collects and analyses data from the sensor nodes. Expert system software automatically converts evidence of PD activity into graphs and management reports, showing its location, type and severity.

The server also functions as an alarm system, automatically transmitting alerts of critical PD activity to operators in the form of text messages and emails.



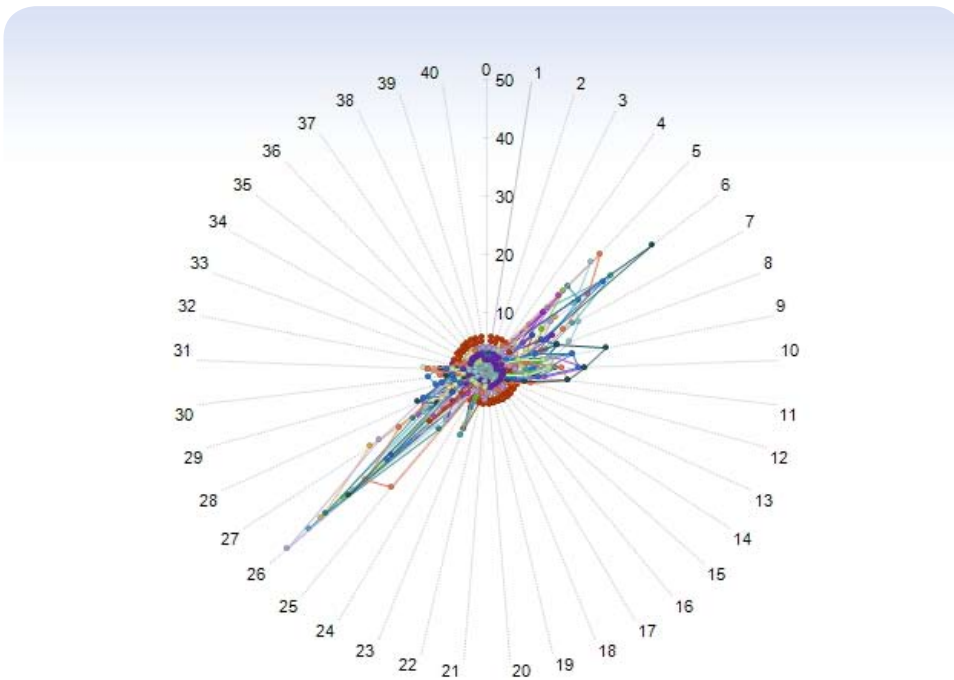
PD Monitor GIS™

Features

OUTSTANDING FUNCTIONS

- Accurately LOCATES the source of PD activity
- Expert system software automatically provides DETAILED FAULT INFORMATION without the need for analysis by experts
- Daisychain configuration minimises wiring and makes installation simple

VALUABLE PD ACTIVITY DATA

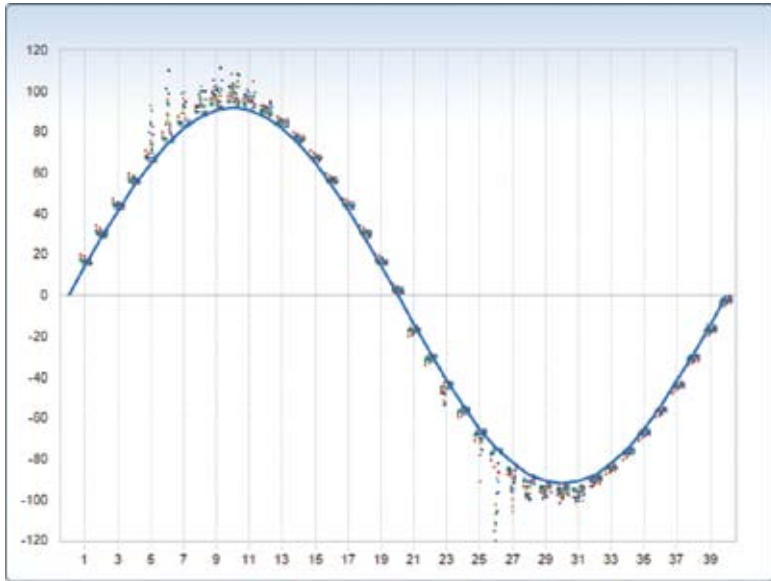


Example: Plot of PD activity against phase of the busbar voltage

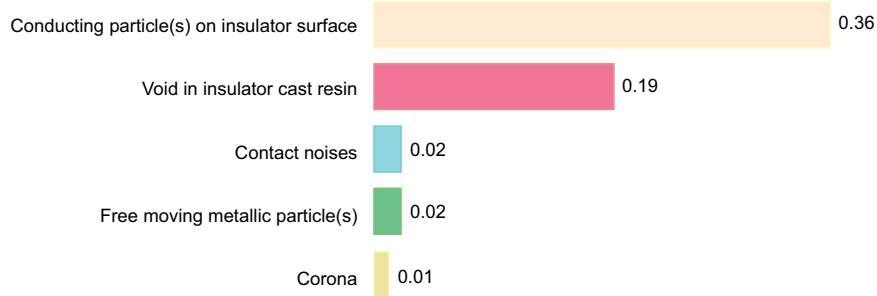
- Shows PD activity by location, type, rate, magnitude and severity (magnitude + rate) – and records the temperature and humidity in the substation
- Plots PD activity as easy-to-read graphs
- PD activity alert thresholds are user-configurable for different types of discharge

The PD Monitor GIS™ presents switchgear condition data in REAL TIME, which can also be accessed remotely.

EXPERT SYSTEM SOFTWARE

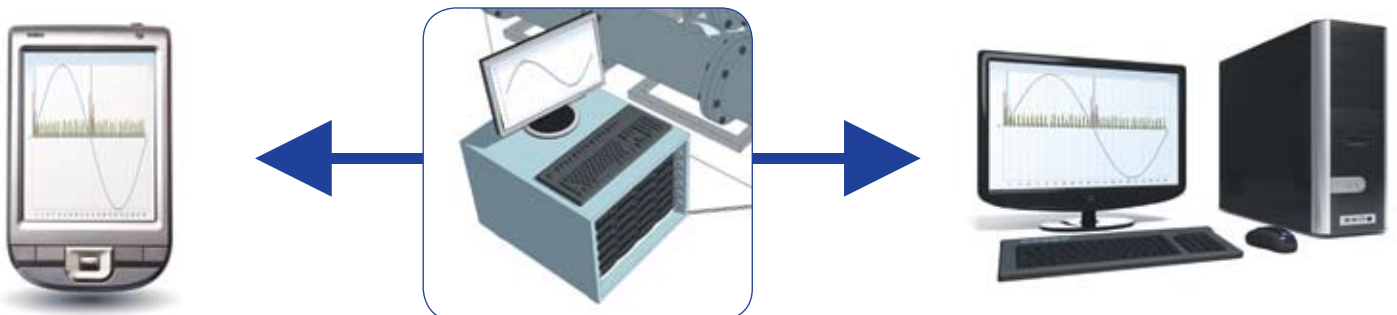


PD Classification



Example: Plot and interpretation of differing sources of PD activity

AUTOMATIC COMMUNICATIONS



The server automatically transmits alerts of critical PD activity via SMS text message and/or email. Trigger levels can be configured to suit the user.

from the **WORLD MARKET LEADERS** in **PD MONITORING**

EA Technology is the world's leading expert in Partial Discharge detection, location, measurement, recording and interpretation.

We have been at the forefront of the PD field for more than 30 years and are continuously developing groundbreaking new instruments and systems which push the boundaries of condition assessment.

Our PD Monitor GIS™ system is built upon a track record which includes:

- Identification of Transient Earth Voltage (TEV) effects – and their significance for asset condition - by EA Technology scientists in the 1970s.
- An exclusive PD database, with records of performance and patterns of deterioration in a vast range of switchgear and cable assets.
- Unique abilities to predict failures, based on live condition data.
- Development of the UltraTEV Detector™ - the world's first dual sensor handheld PD detector. It won the Queen's Award for Innovation 2007, Britain's top industrial award.
- The world's most comprehensive portfolio of PD condition assessment Instruments – handheld, transportable and fixed.

The EA Technology Instruments **PARTIAL DISCHARGE PORTFOLIO**

The PD Monitor GIS™ system is the latest addition to an Instruments portfolio which includes:

- UltraTEV Detector™ – the ideal 'first pass' PD fault detection tool
- UltraTEV Plus+™ – quantifies PD activity in detail
- UltraMet Plus+™ - ultrasonic only version of the UltraTEV Plus+
- UltraDish™ – waveform concentrator for measuring PD activity in overhead assets
- UltraTEV Alarm™ – monitors PD in multiple switchgear assets
- UltraTEV Monitor Plus+™ - 24/7 monitoring and fault alerts for all HV substation assets
- PD Locator™ – accurately locates the source of PD activity
- PD Monitor™ – monitors, quantifies, records and analyses PD activity in multiple assets over time

PD USER GROUP

All owners of EA Technology's PD Instruments are entitled to join the PD User Global Forum. The group is an extremely valuable forum of like-minded engineers, who share their experiences internationally.

Technical Data

Specifications

SIGNAL INPUT

Measurement Range:	-60 to 0 dBm
Maximum Pulse Rate:	2000 Hz
Bandwidth:	2 GHz
Time of flight Resolution:	2 ns
UHF Input Channels:	3 Per Node
Phase Reference:	Combined With Channel 1
Sensor Options:	OEM Internal Plate Type, Garter, OEM Window, External Plate Type

DATA LOGGING

Measurement Period:	2 seconds
Logged Data:	Mean Magnitude Mean Pulse Count Numbers of counts on each channel (Location) Total number of counts in period

NODE CONNECTIONS

RJ45 Connector:	2 x Power & Communications
UHF TNC Connector:	3 x UHF Input
Voltage Input:	48VDC

SERVER

Specifications :	Windows Based Server Web Interface / Local & Remote Multi User Secure Login Optional UPS User Configurable Alerts Via SMS or E-mail User Configurable Web Pages EA Technology Discharge Classification System
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DIMENSIONS

Size:	160 x 160 x 35 mm
Weight:	1 kg
Construction:	Extruded Aluminium

ENVIRONMENTAL

Operating Temperature:	0 - 55 °C
Humidity:	0 – 90% RH non-condensing
IP Rating:	54

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