PDGuard-G5000

Online PD Monitoring System for GIS/GIL

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GIS (Gas Insulated Switchgear) degradation might lead to complete GIS breakdowns. PDGuard-G5000 detects and alerts various defects inside of GIS by analyzing UHF signals generated by partial discharge . It's easy to deploy for permanent or shorter term monitoring and highly cost-effective .

PDGuard-G5000 at a glance

- PDGuard-G5000 is a system that monitors and diagnoses any problems in GIS online by detecting partial-discharge signals stemming from insulation defects in the Gas Insulating Switchgear (GIS) with Ultra-High Frequency (UHF).

- It analyses and categories PD signal continuously and alerts the condition of GIS to users via email and SMS.

- Helps utility maintenance teams make accurate decisions about asset life management based on comparable and reliable data.

Applications

- Power utilities
- Power plants
- Large industrial consumers

Why partial discharge monitoring?

Partial discharge (PD) phenomena are a consequence of local electrical stress concentration in electrical insulation.

PD activity can lead to failure and serious consequent damage as well as to faults in critical elements of the power network.

Therefore it is mandatory to identify the presence of PD activities and to monitor PD tendencies.

PD is a widely-accepted measuring parameter for insulation diagnosis. PD measurements are specified for type, routine and on-site tests for most HV assets.

The large variety of PD signals makes PD measurement and detection a challenging task. INNOVIT monitoring systems employ advanced UHF and noise suppression techniques for reliable PD source recognition.

Early detection prevents failures

The continuous monitoring of the dielectric state of GIS insulation is therefore essential for managing GIS health. It allows you to obtain continuous information about insulation condition status, to detect negative trends, and to plan corrective action early .

Such online assessments ensure safe , reliable operation during the intended GIS service life .

What can PDGuard-G5000 do?

Continuous PD detection in GIS

Our PDGuard-G5000 permanent on-line PD monitoring system combines advanced hardware and software technologies for continuous condition assessment of electrical insulation in GIS.

Intuitive web-based user interface

The PDGuard-G5000 software web-based user interface allows you to remotely configure the monitoring system, view real-time PD data and historical trends, and to analyze the collected raw data.

Complete monitoring project support

We have extensive experience in the field of PD monitoring on HV cable systems. Our dedicated team of service engineers provides you with complete guidance and support during the design, installation and commissioning of the PDGuard-G5000 PD monitoring system.

Suitable after-installation testing

PDGuard-G5000 can also be used to perform simultaneous PD measurements at each cable accessory during the AC voltage after-installation test of the GIS. Potential defects are quickly detected.

PD data evaluation

Automated features are available via the same web interface to make PD data evaluation and report generation more convenient for users. Multiple PD sources are automatically separated from each other and from external noise through

PDGuard-G5000 at a glance

System Components

① PDU-G series UHF Sensor

- Designed and manufactured for GIS installation

- Internal and external sensors are available

- High-precision and high-sensitivity measurement

## ② DAU-G5000 PD Data Acquisition Unit

- 3, 6, 9 synchronous channels, IEC 60270 certified PD data acquisition

- Fully digital bandpass filter with adjustable bandwidth and center frequency

- Robust enclosure (IP66) protects data acquisition unit from dust, moisture and unauthorized access

③ Fiber optic communications

- Single-mode and multi-mode fiber can be used simultaneously

- Enables uninterrupted data transmission over long distances

- Ensures the synchronicity of PD data acquisition

④ Central computer with monitoring software

- State-of-the art database system for long-term data CLOUD storage and retrieval

- Web-based data access & visualization

- Customizable integration of third-party sensors and export to SCADA systems
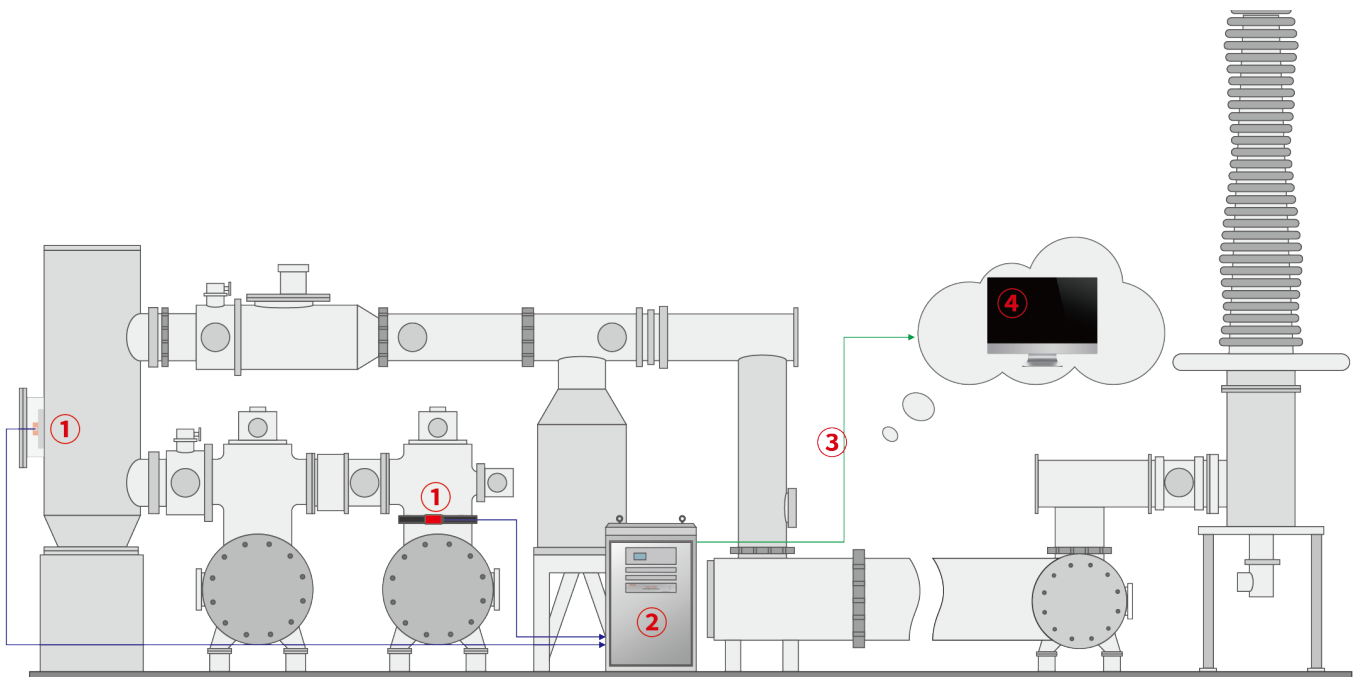
Main Features

+ Superior Reliability an Accuracy

  · Capturing and analysing PD data continuously

  · Super-diagnosis function

  · Precise data analysing and recording

+ Intelligent Remote Access Management

  · Upgrading firmware and Neural Network

  · Fully integrated access control system

  · Comply with smart substation standard IEC 61850

+ User-friendly Operation

  · Analysing and displaying PRPD/PRPS simultaneously

+ Enhanced Noise Control

  · Unmatched noise elimination with 36 combinable filter matrix

· Noise Gating with broadband noise sensor

· Differentiating PD signal from noise with advanced Neural Network

+ Complete expert support & advice

  Our dedicated team of professional engineers provides you complete guidance and support. This includes onsite consultations to evaluate your monitoring needs; system installation, setup and training; as well as data evaluation support.

Main Technical Data of Data Acquisition Unit

Full Detection Bandwidth		300MHz ～ 1500 MHz
Supply Voltage		220 ～ 240 Vac / 50-60 Hz
Input Channel		8, 16, 32 Channel / Unit
Communication	Interface	Ethernet / RS-485
	Protocol	TCP/IP / Modbus-RTU
Analog Module	Dynamic Range	-80 dBmv～ -15 dBmv
EMC & Vibration Compliance		IEC61000-4, IEC68-2
Environmental	Ambient Temp	-30 ~ +60 ℃
	Humidity	5 ～ 90% RH Non-condensing
Enclosure for Outdoor Type	Dimension (W*H*D)	600 mm x 1200 mm x 500 mm
	Weight	40 kg
	Protection Degree	IP65
	Maker	Rittal
Enclosure for indoor Type	Dimension (W*H*D)	400 mm x 500 mm x 210 mm
	Weight	15 kg
	Protection Degree	IP55

PD Monitoring Software Package

The supplied application software is intended to run on PC's with Microsoft WindowsTM software. Our application software is a versatile product supporting PDGuard continuous insulation monitoring systems that may be found on switchgear, cables, and transformers. The software allows the user to configure the instrumentation, download and store the data and provides tools for data presentation and analysis.
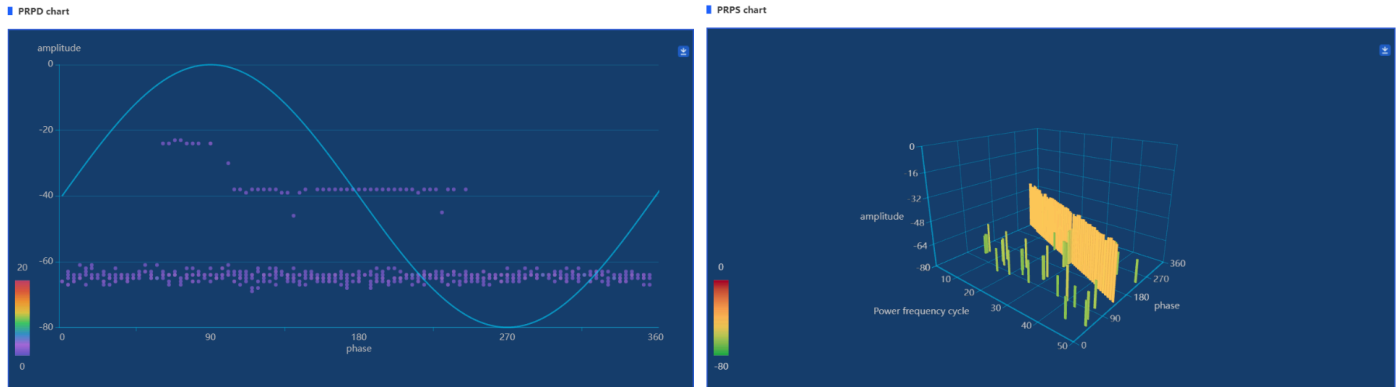
Central Computer & System Software

PC (optional)	OS	Microsoft Windows
	Specification	Regular
PD Monitoring System Software	Measuring Mode	Real time, event, trend
	Display	Real time data display (PRPD / PRPS / 2D / 3D)
		Event data display (PRPD / PRPS / 2D /3D)
		Trend data graph（daily / weekly / monthly)
	Expert PD Analysis	Programmable alarm criteria
		Warning of PD activity
		Automatic communication of warning / alarm condition
		Report generation (daily / weekly / monthly)
		Data stored on could

Sensors and Accessories

The sensor used in this system is an advanced PDU series ultra high-frequency PD sensor independently developed by Innovit Electric. Please refer to our website for more information and parameters.

About Us

For more than 8 years, INNOVIT has been successful as the leader in current limitation and PD monitoring field in China and become a most powerful competitor of global market. In partnership with our customers it is our object to provide solutions for even the most demanding challenges for electrical short-circuit protection.

Our slogan, put your safety first, underwritten by many years of practical experience encompassing a wide range of industries, aptly describes our goal. The safety of our customers' systems and the people who rely on them is the focus of our endeavours.

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