PDGuard-S300

On-line PD Monitoring System for Metal-clad Switchgear

INNOVIT

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Metal-enclosed switchgear, which are widely used in the distribution of electrical energy, play an important role in power distribution networks. Their safe operation is directly related to the reliability of power system as well as the power quality on the consumer side. Partial discharge detection is an effective way to identify potential faults and can be utilized for insulation diagnosis of metal-enclosed switchgear.

Applications

- Utilities
- Town's utilities
- Power plant
- Test-laboratories
- Industry
  - Paper mills
  - Refineries
  - Chemical industries
  - Car industries
  - Steel, aluminum mills
  - On / Offshore platforms
  - Ships / Vessels
  - Data center

Why you need partial discharge monitoring?

Industry data shows that switchgear has one of the industry's highest failure rates, creating a need for inspection and continuous monitoring. Unlike insulation systems used in motors and generators, the insulation systems in switchgear are not resistant to insulation deterioration caused by partial discharges.

What can PDGuard-S300 do?

The PDGuard-S300 is a continuous partial discharge (PD) monitor which monitors, stores and correlates operating dynamics. The PDGuard-S300 will provide information as to the health of the medium voltage insulation systems of switchgear, cables, bus duct and unit substations.

Preventing outages

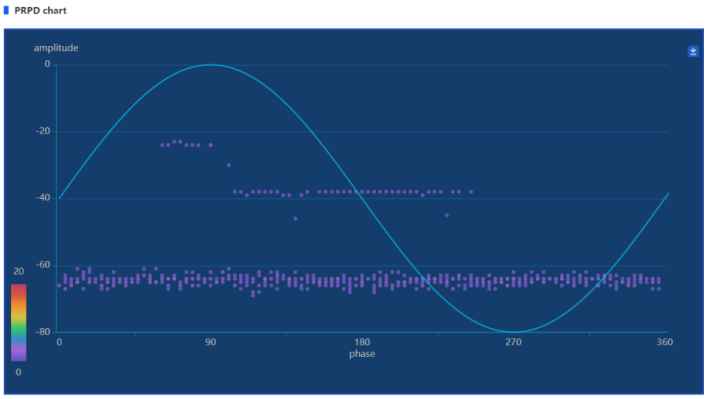
The PDGuard-S300 monitors switchgear. Switchgear failures are usually catastrophic. When switchgear fails, the outage is usually for an extended period. On older equipment, spare parts are limited and many times custom manufacturing is required, which adds to the outage time. Based on IEEE data, simple payback for a system is usually less than one year.

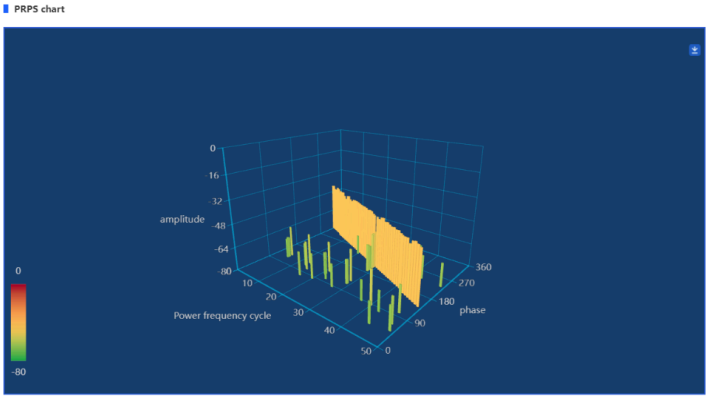
Features

- Performs continuous partial discharge measurements with advanced alert features, allowing minimal intervention by maintenance personnel.
- THREE types of PD sensor could be applied as your requirement.
- Superior noise separation technology based on filtering and pulse shape analysis, reliably distinguishing partial discharges from electrical interference (noise) and discharge from other equipment connected by long power cables, in order to suppress false indications (alarms).
- In response to an alert indication, users can review the pulse height analysis plots, and the 24-window phase resolved PD plots using basic interpretation skills to confirm the cause of the alert.
- Networking with an Ethernet port for remote diagnostics, downloading, configuration with PDGuard software.
- Modbus over Ethernet protocol included for interfacing to third party applications.

Benefits

- Prevent expensive failure of assets by detecting Partial discharge activity before it cause damage
- Excellent value for money and rapid return on investment
- Extent asset life cycles and maintain peak performance through improved understanding of asset condition
- Highly user friendly with little training requirement





System software

Data handling, display and interpretation

- All single-cycle event data gathered by the sensors is automatically classified by a range of sophisticated analytical and statistical techniques such as multiple artificial neural networks, genetic algorithms and fuzzy logic. A system of redundancy then assesses the analytical results and gives the probability that a particular type of defect is present, i.e. a floating particle, protrusion, insulator void, etc. At the same time, sources of interference such as lights, radar, mobile phones, motors, etc, are identified and rejected.
- In addition, trend analysis searches for any regular changes in the parameter levels defining the PD activity and alerts the operator should a defect start showing signs of insulation breakdown.
- The PDGuard system operates simultaneously in different modes and will capture isolated PD events even while displaying the current on-line data. The data can be viewed in a number of ways including point-on-wave (2D) or in single-cycle (3D) format to give an instant impression of the PD characteristics.
- For the remote operation of the system, a PC, and LAN interface can be installed off-site. This enables the PDGuard system to be operated, controlled and data received in a similar way to being present at the substation. In addition, the system can interface to IEC61850 network for alarms, status and data summary transfer.

Graphic results

Test results can be presented in all industry accepted formats:

- 2D, real time point-on-wave (PRPD) and PRPS data display and analysis
- 3D, real time single-cycle (PRPS) and PRPD display and analysis
- Time PRPD displays
- Periodic storage of point-on-wave displays for trend analysis
- Event Mode captures single events
- Data library of typical defects
- Data stored on cloud, no capacity limits
- Automatic continuous backup of data
- Automatic self-check with faults logged and alarmed
- Web-based user interface
- Etc.

Specification

PD Sensors & Monitoring Device				
Type		DAU-S4	DAU-S8	DAU-S16
Power Supply	Voltage Range	5 Vdc 2 A		
	Supply Power	10 W		
Number of Input Channels		4	8	16
Communications	Interface	Ethernet / RS-485		
	Protocol	Modbus-RTU		
Analog Module	Dynamic Range	0 dBmv ～ 60 dBmv		
Environmental	Operating Temperature	-32 ~ +60 ℃		
	Humidity	5 ～ 90% RH Non-condensing		
	Enclosure Rating	IP55		
Protective Enclosure	Dimension1	175 x 131 x 55(mm)		
	Dimension2	400 x 500 x 210 (mm)		
Note				
Dimension1 for the DAU installed in LV compartment				
Dimension2 for the DAU installed in a special case				

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 products above are compatible with industry sensors, including UHF sensors, HFCT sensors, TEV sensors. Visit our official website to have more about our PD sensors.

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