

Assetguard PDM



Partial Discharge Monitoring
(for high voltage substations)

Introduction

The majority of failures at Gas Insulated Switchgear (GIS) evolve in coincidence with partial discharge from an early stage of the particular failure. Detecting and analyzing those partial discharges via emitted UHF signals is the method of choice for failure detection.

Siemens Assetguard PDM (Partial Discharge Monitoring) bases on this detection method.

Assetguard PDM is a highly accurate online condition monitoring system that analyzes UHF signals regarding severity and error type. Thereby deviations can be identified timely to initiate intervening measures. Siemens Assetguard PDM as comprehensive early warning system helps operators to avoid major failures at GIS.

Features

Assetguard PDM is a modular system for all sizes of GIS substation, vendor neutral.

Assetguard PDM delivers the following features:

- Internal and external UHF sensors with superior qualities regarding environmental, electro-magnetic and ingress protection (perfect for retrofit and new switchgear, indoor and outdoor installation)
- UHF signal analysis:
 - observes the intensity

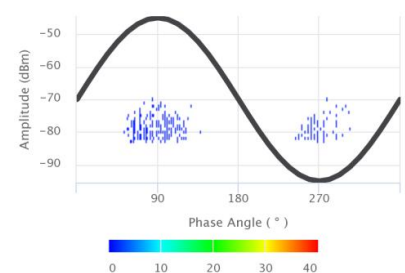
- provides diagnostic results regarding the source of partial discharge (using the built-in neural network for pattern recognition)
- Alarming based on state-of-the-art communication protocols
- Individual and interactive single-line diagram allows to quickly localize and qualify alarms (via the web based user interface)
- Alarms are easily forwarded to Siemens Customer Support Center for expert involvement.
- Web-based user interface provides:
 - e.g. live data and diagnostic results (simultaneously for various users on different locations even on mobile devices)
 - Access to historical data (for expert users)
 - data export (for remote experts a valuable base for asset condition reports or on-site condition assessments.)

Benefits

- Early warning in case of evolving dielectric failure
- Expert system that gives diagnostic of reason for partial discharge sources
- Avoidance of unplanned outages and support of maintenance planning
- Easy integration (e.g. in SCADA Systems or Asset Management Platforms) and usability in current utility networks;
- Easy access to Siemens experts
- Seamless combination with Assetguard products for gas density and circuit breaker monitoring

Scope of Work / Deliverable

- External UHF sensors for retrofit installations (optional)
- Assetguard PDM field devices for signal acquisition
- Assetguard gateway to concentrate the data from the field devices, being the single point for communication
- Web based user interface
- Central cubicle containing Assetguard Gateway and further needed network and communication components



Technical Details

In case of partial discharge within the GIS, the UHF amplitudes and event counts are observed for their absolute values and trends. Furthermore the clustering of UHF intensity relative to the primary voltage sine wave allows the specification of the underlying failure.

Measurement Characteristics		
UHF detection sensitivity	-90 dBm	
Dynamic Range	60dBm typical	
Frequency response	145MHz to 1700 MHz, selectable Gain	
Acquisition	12 bit A/D resolution @ 5kS/s	
PD event type analysis	Neural Network with pattern recognition	
Noise Management	Noise cancellation and Noise pattern recognition	
Self-Test	End-to-end signal chain self test and cable detection	
Field device Properties		
Input Channels	3 or 6 and 1 noise detection input	
Enclosure Dimensions	2U 19" rack enclosure / 88x444x310mm	
Environmental Conditions	Operating temperature	-25°C to +55°C
	Storage Temperature	-40°C to +70°C
	Humidity	<=95%RH, non condensing
Shock resistance	Vibration, Shock and Semic tested	
EMC Standards	Immunity for usage in power station or substation environment	
	IEC 61000-6-5, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5 IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11, IEC 61000-4-18, BS EN 55022	
Ingress Protection Rating	IP 65	
Selected Gateway Features		
Communication Protocol	IEC 61850	
Historical Data Storage	Min. 2 Years	
PD analysis Features	Web based user interface: PRPD heatmap & 3D view, trend analysis, channel comparison	

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