

HVPD Longshot™ PD Diagnostic System



The new HVPD Longshot™ PD Diagnostic System is the most versatile partial discharge (PD) test unit available and can be used to carry out PD testing on all types of medium voltage (MV: 3.3 kV – 45 kV) and high voltage (HV: 66 kV+) plant.

Our core technology for over ten years, the HVPD Longshot™ is designed for testing both on-line (in-service) and off-line (on factory/laboratory commissioning or after repair). It is recommended for use in Phase 2 of the *HVPD 4-Phase PD Test and Monitoring Solution*, diagnostic PD testing of ~20% of the network.

Applications

- Power cables, joints and terminations
- Motors and generators
- Switchgear (air, solid & gas-insulated)
- Power transformers and bushings
- Instrument transformers (current/voltage)

Compatible Sensors

- High Frequency Current Transformers (HFCT)
- Transient Earth Voltage (TEV) Sensors
- Airborne Acoustic Probe
- HV Coupling Capacitors (HVCC)
- Rogowski Coil Sensors



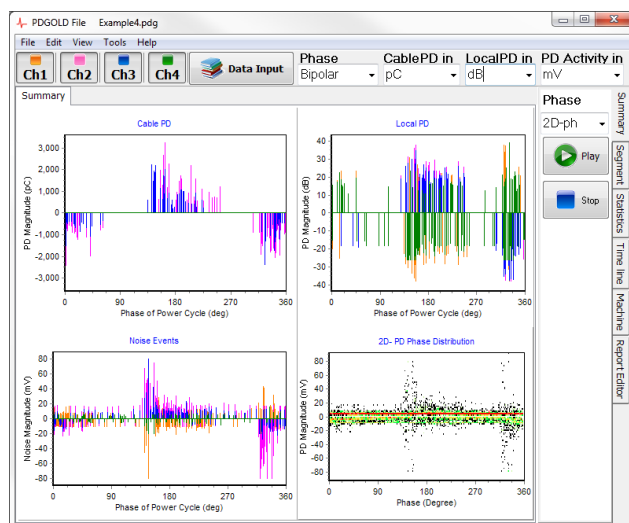
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Features

- Wideband (200 MHz) data acquisition to accurately measure PD magnitude and wave-shapes.
- Synchronous acquisition (within 2 ns) on all 4 channels.
- Typical spot-test time of 5 to 10 minutes per plant item with short-term PD monitoring possible (up to 48 hours).
- Suitable for off-line PD testing with resonant test sets (10 - 400 Hz).
- Streamlined PDGold® v7 software acquires data on-site, PDReader® v7 software performs analysis for efficient diagnosis and report generation.
- *EventRecogniser*® software module for automatic identification and classification of cable PD, local PD and RF noise.
- Optional PDMAP® expansion software for on-line cable mapping (PD site location) on cables of up to 10 km with the Portable Transponder system.



PDGold® v7 Data Acquisition Software



PDReader® v7 Data Analysis and Report Generation Software

Technical Specification

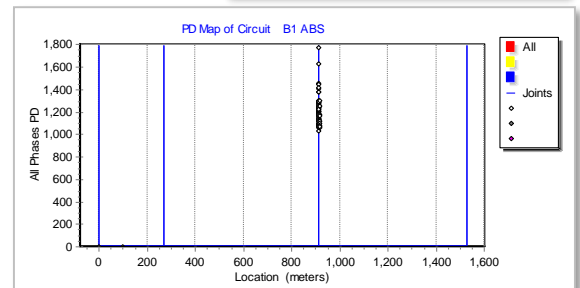
Released	2013
Vertical Resolution (Non-Repetitive Sampling Mode)	12 bits
Maximum Sample Rate for 20 ms Waveform	500 MS/s
Detection Frequency Range	0 - 200 MHz
Display Size (Diagonal)	12.1"
Display Resolution	1280 x 800 pixels
RAM	4 GB
Software Version	PDGold® v7
Operating System	Windows 7 (64-bit)

Dimensions (without case)	H: 291.7 mm
	W: 399.4 mm
	D: 131.31 mm
Weight (without case)	5.9 kg
Power Supply	90 - 264 VAC 45 - 66 Hz
Operating Humidity	80% RH, +31°C 50% RH, +40°C
Non-Operating Humidity	95% RH
Operating Temperature	5°C - 40°C
Non-operating Temperature	-20°C - 60°C

Case Studies from Past Projects using HVPD Longshot™

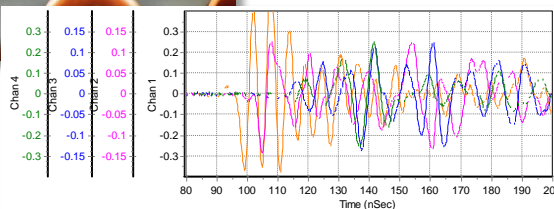
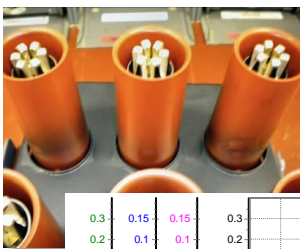
On-line PD Cable Testing and Mapping for Light Rail Operator, Middle East

- 33 kV cable system, in-service for 12 months before faults began to occur at cable joints.
- Network tested for PD using the HVPD Longshot™ and Portable Transponder PD mapping system.
- High-magnitude cable PD activity detected on multiple circuits.
- Of the 50+ circuits tested, major PD detected within cable accessories on three (6%), HVPD's RED category: 'Major concern, locate PD and then repair or replace'.
- Sources of PD mapped and located to specific joints using PDMaP© software and the HVPD Portable Transponder system.
- Faulty cable joints then replaced and re-tested to verify the repair was successful and the circuit was free of PD.



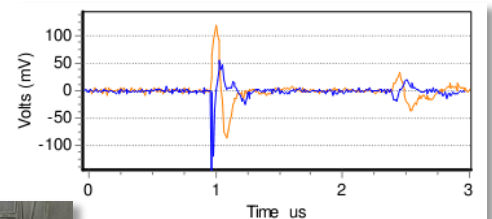
On-line PD Testing of Switchgear for Distribution Utility Customer, UK

- HVPD Mini™ Monitor network identified rising levels of PD in part of a switchgear line-up.
- Diagnostic PD testing with HVPD Longshot™ then located and identified this significant PD activity.
- TEV sensors, attached to the metal-clad switchgear, identified the PD as surface discharge on the VMX spouts of a single panel's trolley (shown below).
- After repair the plant was recommended for a scheduled outage for inspection and servicing. No further surface tracking was identified.



On-line PD Testing of Motors for Oil & Gas Operator, Philippines

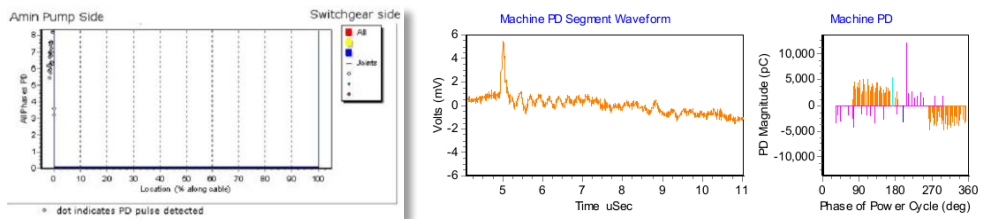
- Diagnostic PD testing of 2x 6.6 kV motor HV insulation.
- HVPD engineers supervised the installation of 15 kV, 500 pF High Voltage Coupling Capacitor sensors.
- Low to medium overall PD activity was detected on all three phases of the motors.
- Monitoring of PD levels is recommended in this situation to trend future increases.



HVPD Longshot™ - Case Studies from Past Projects

On-line PD Testing of Motors for Oil & Gas Network, North Africa

- The facility has 4x amine circulation pumps, utilising 10 kV induction motors.
- After an in-service failure related to PD, one of these motors had to be removed.
- All remaining motors were then tested on-line for the same issue, using pre-installed permanent PD sensors on each bushing of the MV cable phase terminations.
- PD activity was measured using the HVPD Longshot™ on all three pumps with these PD levels diagnosed as being within acceptable limits, reassuring the plant owner that no remedial action against insulation degradation was required.
- The PD events detected were located using the PDMAP© software to the amine pump itself, regular monitoring can assess the insulation condition over time.



On-line PD Testing of Motors for Power Generation Company, United Kingdom

- On-line PD testing was performed on 3x Manufacturer A 2.1 MW feed water pump motors, and 3x Manufacturer B 2.25 MW circulating water pump motors.
- Baseline PD spot-test results allow assessment of the present insulation condition of the rotating plant, while acting as a basis for future PD trending.
- On-line PD test results using the HVPD Longshot™ indicated the Manufacturer B motors to all be in the 'Unreliable' condition category.
- HVPD's client filed a warranty claim with the motor manufacturer, based on inadequate design of the stator winding – as indicated by HVPD's on-line PD test results.
- Two separate third party off-line PD tests backed up HVPD's findings. Motors were rewound and repaired under warranty.

