

PD-SGS On-line PD Detection of HV Assets



PD Detection

Switchgear – Air Insulated (AIS)

Partial Discharge activity inside metal clad high voltage plant induces small voltage impulses called Transient Earth Voltages on the surface of the metal panels. TEVs travel around the surface to the outside of the switchgear, where they can be picked up externally using the PD Detector.

Defects on the surface of high voltage insulators are prone to a phenomenon known as surface tracking. Tracking causes carbon deposits that build up over time, ultimately leading to flashover and insulation failure. The PD Detector is highly sensitive to the ultrasonic emissions produced by tracking and enable the onset to be detected before insulation failure.



Switchgear – Gas Insulated (GIS)

IPEC's UHF (Ultra High Frequency) sensor is used to detect PD in EHV cable terminations, GIS (Gas Insulated Switchgear), GIL (Gas Insulated transmission Lines) & GIT (Gas Insulated Transformers). The sensors pick up signals in the UHF range (200MHz-2.0GHz) and are mounted against the insulating barrier spacers that separate components of the HV asset.

Compatible Sensors & Asset Types

Sensors



CC-TEV

AA

HFCT

UHF

Assets



AIS

GIS

Cable

Cable

Partial discharge activity in solid high voltage insulation induces small high frequency currents in the earth conductor of the electrical system. These impulses travel along the equipment earth to the substation earth. Using a high frequency current transformer, they can be detected as they pass through the CT.

The Benefits

- **Advanced Noise Rejection** – System detects PD in higher noise environments, reducing the possibility false positives
- **PRPD** – PRPD display allows user to distinguish between PD and Noise
- **Rapidly survey whole substation** – detects MV and HV problems before developing into tangible failure risks

Technical Specification

PD-SGS

TEV Measurements	
Measurement Range	0 to 80dBmV
Measurement Bandwidth	3 to 200MHz (with FM Bandstop)
Resolution	1dB (Accuracy ± 1 dB)
Noise Rejection	Yes, with PRPD
Ultrasonic Measurements	
Measurement Range	-6dB μ V to + 68dB μ V
Resolution	1 dB (Accuracy ± 1 dB)
Transducer Sensitivity	-65dB (0dB = 1volt/ μ bar RMS SPL)
Transducer Centre Frequency	40 kHz
HFCT Measurements	
Measurement Range	0 to 50,000pC
Measurement Bandwidth	100kHz to 70MHz
Resolution	5pC (Accuracy ± 5 pC)
UHF Measurements	
Measurement Range	0dB-75dB
Resolution	1dB (Accuracy ± 1 dB)
Bandwidth	200MHz – 2.0GHz
Hardware	
Enclosure	Injection moulded plastic case
Control	Membrane keypad
Connectors	Power, Headphones and optional sensors
Display	OLED with level LEDs, dB, PRPD, Noise
Operating Environment	
Operating Temperature	0°C to 60°C
Humidity	0 - 95% RH non-condensing
IP Rating	54
Dimensions	
Unit Size	190 x 90 x 55 mm
Unit Weight	210 g
Kit Size	295 x 340 x 145 mm
Kit Weight	2.9 kg
Power	
Internal Battery	Lithium Ion, 3.75V, 2.2Ah, 8.25Wh
Operating Time Approx.	8 hours
Battery Charger	
Charging Temperature	0°C to 45°C
Rated Voltage	100 to 250 VAC, 5V, 3A
Frequency	47 to 63Hz
Country Adapters	UK, EU, Australia, USA
Charge time	3 hours
Compliance	CE-compliant in accordance with EMC Directive (2014/30/EU)
Designed and manufactured in the United Kingdom	

www.ipec.co.uk



PD-SGS kit contains

PD-SGS
Headphones
Function Tester
Mains Charger
USB Charger
Hard wearing PELI™ case

Optional Accessories

HFCT Sensor
UHF Sensor



Level mode - HFCT



PRPD mode - TEV