



OWTS HV 150

Partial Discharge Diagnosis System for HV Cables up to 150 kV

Benefits

- ▶ Non-destructive testing and diagnosis using damped AC voltages
- ▶ Advanced PD detection and PD site localisation
- ▶ Integrated dielectric losses - measurement
- ▶ Portable test system, compact design and low weight
- ▶ Real-time analysis and reporting using Explorer software office

Function description

The oscillating wave test system (OWTS) is used to identify, evaluate and locate partial discharge (PD) faults in cable insulation and accessories in all types of high voltage power cables.

The system consists of a notebook as a WLAN control unit and a HV unit. The HV unit contains a HV source and a resonance inductor with an integrated electronic switch to generate damped AC test voltage. The HV divider and the coupling capacitor are integrated in a separate unit together with the embedded controller for the digital data acquisition and PD signal processing.

The storage, analysis and evaluation of the PD signals takes place in the notebook and can be done either on site or in the office. The PD fault location is based on the time domain reflection method.

For the PD diagnosis the test object is charged to the pre-selected peak value by a HV source within a couple of seconds and afterwards shorted with an electronic 150kV switch via a resonance coil. Thus a sinusoidal damping AC voltage with low damping is created (DAC). Depending on the capacitance of the test object the AC frequency varies in the range from tens to hundreds of Hz.

Since the DAC frequency of the test voltage is close to nominal AC service conditions all measured PD activities can be effectively evaluated.

The PD inception voltage (PDIV), PD extinction voltage (PDEV) and the dielectric losses value can be easily determined due to the decaying amplitude of the test voltage. Critical PD levels responsible for the insulation degradation status of the cable insulation are important criteria in the evaluation.

The analysis and evaluation of the typical PD parameter as well as the PD fault location supports the Asset Management for reliable decision criteria for maintenance- or replacement activities.

Salient features

- ▶ PD diagnosis by means of damped AC voltage (DAC)
- ▶ PD level measurement according to IEC 60270
- ▶ Adjustment features to optimize detection sensitivity
- ▶ Automatic calibration mode with joint location feature
- ▶ PC with WIN XP and WLAN for system control
- ▶ Real-time data processing
- ▶ Menu-driven unit to operate the test sequence
- ▶ Portable design, low weight, easy set-up on-site



Technical Data

Max. DAC output-voltage	150 kV _{peak} / 106 kV _{eff}
DAC frequency range	20 Hz ... 500 Hz
Test object capacitance range	0,025 µF ... 13 µF
HV charging current	10 mA
PD measuring range	1 pC ... 100 nC
PD level detection	acc. to IEC 60270
Bandwidth for PD-localisation	150 kHz ... 45 MHz
Dissipation factor	0,1 % ... 10 %
Power supply	115 / 230 V 50 / 60 Hz
Operating temperature	-10 °C ... + 40 °C
Weight	app. 300 kg

Dimensions

Unit 1	HV source and LTT switch
Unit 2 (3 coils & basis)	Ø: 650 mm, H: 1400 mm
Unit 3	HV divider and DAQ
Unit 4	Laptop app. 2 kg

Scope of delivery

- ▶ HV unit with HV source, LTT switch and inductive coil with base unit and three additional modules
- ▶ HV divider with controller and coupling capacitor
- ▶ Laptop with WLAN connection to the HV unit
- ▶ Safety-Box with HV ON/OFF ; Emergency push button and key switch
- ▶ Accessory bag
- ▶ Operating manual
- ▶ HV connection: Metallic flexi tube
- ▶ Set of power supply- and grounding cables
- ▶ Control cables
- ▶ OWTS Explorer Package, 2 Dongle CD-ROM
- ▶ PD Calibrator