



## OWTS HV 250

### Partial Discharge Diagnosis System for HV Cables up to 250 kV

#### Benefits

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

#### 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 OWTS system can both be used for commissioning testing of newly installed cables and diagnostic testing on aged cables.

The system consists of a notebook as a control unit and the HV part. The HV part contains of a HV source, an electronic switch and a resonance inductor to generate a 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.

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 150 kV 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 and are comparable with the power frequency.

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.

#### 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
- ▶ 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	250 kV <sub>peak</sub> / 177 kV <sub>rms</sub>
DAC frequency range	20 Hz ... 350 Hz
Capacitance range	0.035 $\mu$ F ... 8 $\mu$ F
HV charging current	8 mA
PD measuring range	1 pC ... 100 nC
PD level detection	acc. to IEC 60270
Bandwidth	150 kHz ... 20 MHz
PD-localisation	
Dissipation factor $\tan \delta$	0.1 % ... 5 %
Power supply	198 ... 264 V 50/60 Hz, 3000 VA
Operating temperature	-10 °C ... +40 °C
Weight	app. 950 kg

#### Components

Unit 1	HV source unit
Unit 2	HV switch unit
Unit 3 (4 Modules)	HV coil unit
Unit 4	HV divider and PD-analyzer
Unit 5	Accessory box/ Notebook

#### 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
- ▶ Notebook with WLAN connection to the HV unit
- ▶ Safety-Box with HV ON/OFF ; Emergency OFF push button and key switch
- ▶ Operating manual
- ▶ HV connection: Metallic corrugated flexi tube
- ▶ Set of connection cables
- ▶ Control cables
- ▶ OWTS Explorer Package, 3 Dongles, CD-ROM
- ▶ PD Calibrator
- ▶ Implementation Package