



How to Analyze Partial Discharge

There are several well-known approaches of partial discharge (PD) analysis. The most common ones are:

- The use of Phase-Resolved Partial Discharge (PRPD), with the PD charge over the phase angle
- The PD trend over time
- The PD charge dependency of the high voltage (Q(U))
- Statistical TDR (sTDR) for localization, where the travelling times in a cable are used to determine the PD position

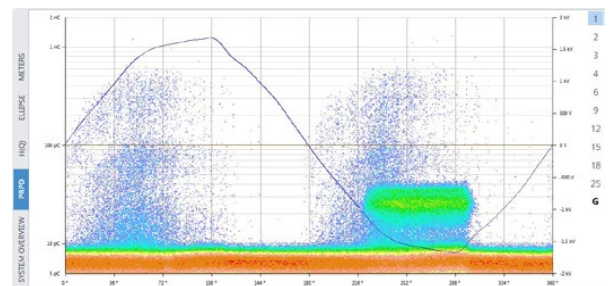
The reliable methods 3PARD and 3CFRD introduced by OMICRON for PD analysis are based on either time synchronous measurements with three MPD measurement channels or multi-band measurements with one MPD measurement channel for single-phase applications. Both methods help you to discriminate PD sources from noise and simplify measurement analysis in environments with heavy interference.

The Phase-Resolved Partial Discharge (PRPD) diagram is a well-known tool that provides the possibility to analyze the faults with respect to the phase of the applied voltage. Additional information can be obtained by taking into account the position of the PD pulses in reference to the phase of the voltage.

Changes in the PD behavior over time may indicate changes to the PD fault. Some international standards limit the allowed rise of charge during a test to a certain limit.

Different PD or test related values over the test time

Figure 1



Phase-Resolved Partial Discharge (PRPD) diagram of an instrument transformer with void superposed with discharges of a sharp edge in the HV setup (corona needle)

Charge and applied voltage vs. time

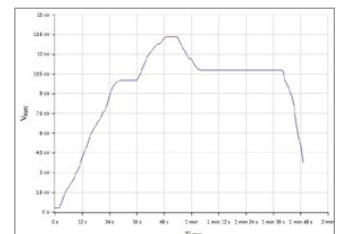
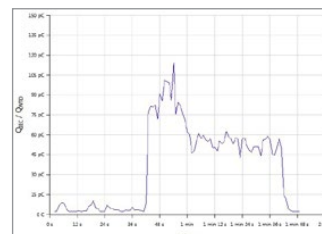


Figure 2

PD repetition rate and RIV value vs. time

