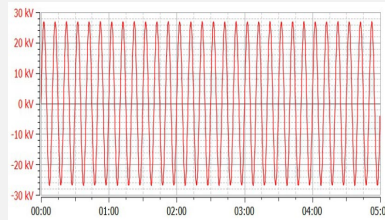


The scope

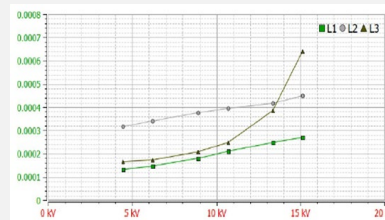
Off-line testing | VLF, Tan Delta and Partial Discharge process of various types of medium power cables and accessories of rating not exceeding 33kV. The processes must be implemented according to SANS 10198 specifications

VLF Test | This is an acceptance test done on-site before first energising an installed cable system that is intended to verify the integrity of the insulation and installation (eg. Cable laying and workmanship) of the cable system (i.e. cable, joints and terminations).



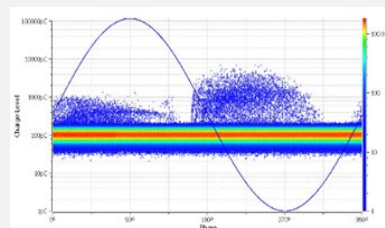
VLF Results

Tan delta provides an overall average condition assessment result. When looking at the results of a tan delta test, two characteristics are significant. A rising trend as test voltage rises indicates damage or ageing. Whenever possible, comparing to a baseline measurement done at commissioning can show deterioration by a shift in the leakage current amplitude.



Tan Delta Results

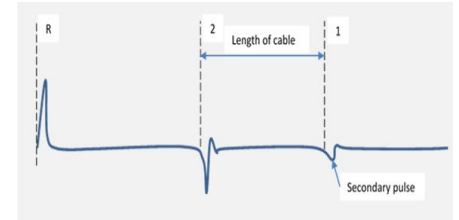
Partial discharge is best described as a failure on part of an insulation system to withstand the electrical field applied to it. The result of this failure is a high-frequency, unipolar discharge and accompanying current that flows through and on the insulation from the conductor to ground.



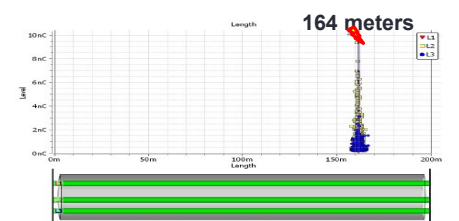
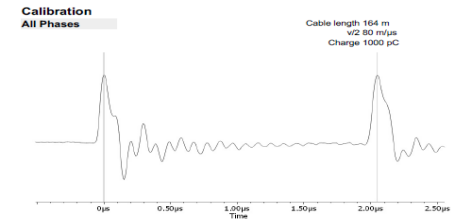
Partial Discharge Results

Test process overview

Before the test can start the unit and software must first be calibrated to ensure that the test values acquired are accurate and correct.

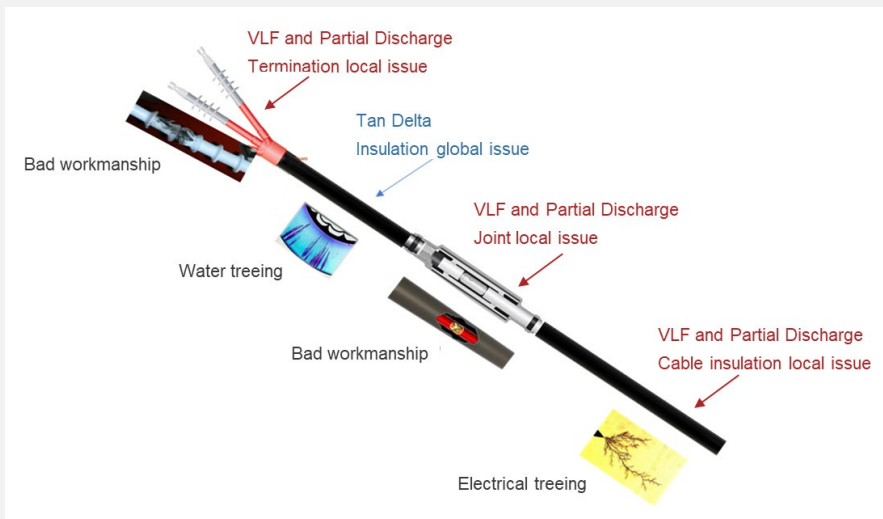


Record Length of cable



Partial Discharge Mapping Results

Assessment and measurements



It is considered good practice to make the following comparisons:

- Between the individual phase measurements
- Between the individual cable measurements
- Between previous and the latest test measurements (trending)

The following measurements can be achieved with this test:

- The background noise level at $0.1U_0$ for determining the measurement sensitivity and for filtering
- The PD inception voltage
- The U_0 PD measurement
- Up to a recommended maximum of $1.73U_0$ PD measurement
- The PD extinction voltage