



JICABLE'07

Rapporteur's Session Report

A.7 SESSION : TESTING METHODS (1)

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This session, which included six papers, was dedicated to cable testing methods.

It is generally settled that the reliability of critical systems can be improved by the management of the maintenance operations. Of course the efficiency of these operations depends on the involved methods and on the way they are carried out. In this session the authors gave some advices to improve the PD methods and also, they discussed of very low frequency impedance measurements and of thermal method as well.

Paper A.7.1. dealt with the sensivity assessment for partial discharge measurements on solid dielectric transmission cables. The paper presented a framework for a model providing a sensitivity assessment and suggested that for reliable PD tests, distributed measurements were needed and sensors located at each joint along the cable.

Paper A.7.2. discussed of on-line location of partial discharges in an electrical accessory of an underground power distribution network. A new detection concept using a wideband magnetic sensor and some field results were presented. Emphases were made on the signal analysis. The preventive maintenance could be improved particularly for the cable joints.

Paper A.7.3. discussed the UHF-PD monitoring and on site commissioning tests of 400 kV XLPE insulated cable circuits at Jebel Ali in Dubai. New system using UHF-PD monitoring on HV power cable especially designed was used. Thanks to sophisticated computer aided analysis, an efficient noise discrimination was carried out making the method well suited for sensitive PD measurements.

Paper A.7.4. discussed experience with PD measurements combined with commissioning tests. Developments, advantages and limitations of on-site PD measurements based on a spectrum analyzer were described. The sensor is external, being a high frequency current transformer. However limiting conditions as bad weather has to be overcome.

Paper A.7.5. discussed practical issues regarding the use of dielectric measurements to diagnose the service health of MV cables. A Very Low Frequency impedance measurement was used. Thanks to many samples, the effect of ageing on the increase of the $\tan\delta$ was measured.

Paper A.7.6. discussed the test of the evolution of space charge and internal electric field distributions in HVDC cable under long term testing. The evolution of the space charge is considered as representative of the cable life expectancy and was studied by the authors following the Thermal Step Method. The experiment consisted in applying a DC Voltage to the dielectric and to create a thermal step at the location where the cable needed to be tested. As the phenomenon was responsible for a small current, a specific compensation configuration was established. Some specific materials were developed and showed a very promising behaviour as the space charge build-up was found to be limited.