



JICABLE'07

Rapporteur's Session Report

A.4 SESSION : DIAGNOSTICS (1)

Chairman : A. Rakowska, Poznan University of Technology, Poland

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During this session 5 papers have been presented, all dealing with partial discharges as measuring systems in order to control power cables and accessories.

The titles of these 5 papers are very clear about the operation conditions of the measuring devices and their applications.

This subject is of worldwide interest, if we have a look on the origins of the authors, they are from Netherlands, Switzerland, Germany, Austria, Italy, India and Australia.

These papers are dealing with practical applications, length of cable route, accessories...

The significant conclusion of all these papers is that now we are entered in a real phase of application on the field with application on power links with MV or HV cables and accessories.

Paper A4-1 : Permanent on-line monitoring of MV power cables based on partial discharge detection and localisation – an update.

This paper deals with on-line measurement which is much more interesting in most of situations than off line. A special attention is paid about the qualities of inductive detectors. In the Netherlands they are 70 systems on 70 circuits. Practical examples of evolution of PD after several days were given. In 2007 a MV pilot cable system has been installed and due to the first excellent results of this pilot unit many other measurement systems will be installed in a very next future.

Paper A4-2 : On-site VHF partial discharge detection on power cable accessories.

This method of measuring PD is a well known for GIS, Generators... but this paper is focused on cable and accessories applications.

VHF probes are used and the frequency range is typically 10 kHz to 500 kHz, but the method presented in this paper is an unconventional way because the Authors propose to use frequencies up to hundreds of MHz.

This method is a "non intrusive method" but probably one of the most attractive points of this method is the low level of PD detection because by selecting frequencies range of around 2-3 pC can be detected.

Paper A4-3 : Continuous on line monitoring of partial discharges in HV Distribution cables.

The presented results in this paper are very interesting these impressive results are essentially due to the software used here. This software is based differential technique which provides big advantage compared to the conventional balanced circuits. This method is particularly suitable for environment with a high level of background noise and for MV or longer lengths of power cables

Paper A4-4 : Partial Discharge Detection in power cables : practical limits as a function of cable length.

This paper attracts attention on fundamentals which have to not be forgotten. These fundamentals are perfectly demonstrated with mathematical modelling and the good consistence with practical measurements is shown.

The procedures developed by authors are very important to determine PD detection strategies.

This topic can be helpful during the preparation of new standards on cable system testing.

Paper A4-6 : New approach for High voltage cable on site testing.

Very low frequencies are well known as a method to approach some electrical properties of insulating materials and are most of the time used for laboratory investigations.

In this paper it is shown that they can be also used on large systems on the field and that for PD detection the results obtained are in good accordance with the one obtained with the "traditional " industrial power frequency of 50 Hz.

Very low frequency test systems of sinusoidal 0.1 Hz test voltage prove to be an alternative for High Voltage Cable testing on site.