

Digest Report of the Investigation Committee of Fundamental Process of Treeing Degradation

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The committee was established in April, 1994 with the term of three years in order to survey and discuss the fundamental processes of electrical and water trees in insulating materials for power cables. Although the preceding committees concerning treeing phenomena in IEEJ had activities in the period of 1967 to 1990, the fundamental processes of treeing degradation have not been fully understood. Furthermore, the recent development of measurement techniques has provided information about the details of microstructures and morphology of trees. Accordingly, it is timely to survey and discuss the recent data concerning the fundamental processes of treeing degradation.

The items of survey are:

- (1) Fundamental process of initiation and propagation of electrical tree under ac voltage
- (2) Fundamental process of initiation and propagation of electrical tree under dc or impulse voltage
- (3) Fundamental process of initiation and propagation of water tree
- (4) Propagation process of electrical tree originating in water tree

Since the start of this investigation committee in April, 1994, we have held 13 committee meetings and 5 secretary meetings. About 120 papers were presented and discussed in the committee. The three years activity of this committee will be published in Technical Report of IEEJ.

Digest Report of the Investigation Committee on Interfacial Phenomena in Composite Electrical Insulation

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The insulating systems for power cables and electrical machines are usually fabricated from a combination of different materials rather than a single material. Even in the case of XLPE cables there exist interfaces related to the morphological multiphases and the semiconducting layer. The overall behaviors in the combination of materials often deviate from those expected from the individual component material and are often governed by the interfaces.

The purpose of this committee is to survey and discuss the influence of interfaces on the electrical insulating properties of composite insulating systems. The committee started its three-year term activity in January 1995 by 28 members. We have held 8 committee meetings and 3 secretary meetings up to July 1996. The main subjects of the investigation and survey in the meetings are as follows.

- (1) Electrical insulation properties of external and internal interfaces in composite insulation systems.
- (2) Evaluation method of electrical insulation performance of interface.
- (3) International Round Robin Tests of electrical insulation at external and internal interfaces in composite insulation system and the analysis of the results in collaboration with CIGRE TF15-06-02 (Interfaces).
- (4) Study visit to the research institutes and industries in Japan related to the composite electrical