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Evaluation of 20 kV Cable Diagnostic Method in Field Condition

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Abstract

The increased use of cable systems in power distribution needs a diagnostic system that can assess the cable system in field conditions to ensure its reliability. Partial Discharge (PD) and Tan Delta (TD) are the two parameters that can be measured to diagnose the condition of cable system in the field. Based on the measurement of these parameters, the condition of cable system can be determined whether the cable is in good condition, needs attention or in bad condition.

In this paper the methods of PD and TD field measurement on 20 kV cable systems are described. Furthermore, the method of analysis using data obtained from the measurement of PD and TD is also described. PD measurement in this study is performed using damped AC voltage source (DAC), while TD measurement is carried out by using Very Low Frequency voltage source (VLF). In the end an assessment scheme is proposed for cable diagnostic combining the benefit of both measurements that can be served as a guideline for Condition Based Maintenance (CBM) of cable system. This scheme will increase not only the reliability of cable system but also the performance of power distribution network.