

Water Trees Diagnostic Of Extruded Underground Cables: A Case Study In Saudi Arabia Eastern Province

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Summary

In this paper, different electrical diagnostic techniques reported in the literature to predict the condition of extruded underground power cables are reviewed. Two of these techniques, namely the DC leakage current method and the DC conductivity method are applied to 14 underground cable samples rated between 15 kV and 69 kV collected from the Eastern Province of the Kingdom of Saudi Arabia. For this purpose, a setup has been constructed at the High Voltage Laboratory of King Fahd University of Petroleum & Minerals, Dhahran-Saudi Arabia. The results obtained show a correlation between the DC leakage current and the conductivity testing and the presence of water trees in the insulation material of cables. Samples suspected to have water trees are examined using the microscopic testing of the insulating material. The results obtained are in agreement with the electrical testing findings.

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