

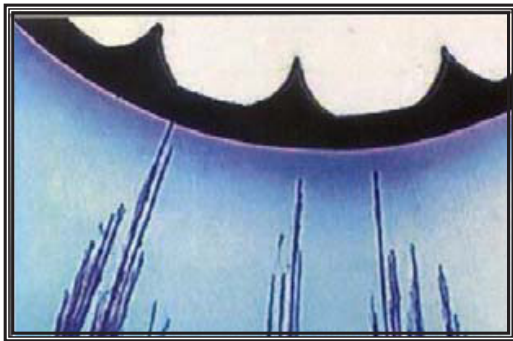


R&D Fund Project

Investigation of the growth of water trees in XLPE cables



Dielectric Spectroscopy Measurement Equipment



Water Treeing Phenomena on XLPE Cable

Project Overview

XLPE cables have been extensively used in TNBD network since its introduction in the 1980's. One of the potential problems of XLPE cables is water treeing. This is considered a serious problem because studies conducted have indicated that water treeing can lead to electrical treeing which will eventually cause damage to cables. TNBD Engineering, in its continuing effort to improve supply quality, is looking into this problem as a means to reduce outages.

In this project, the condition of various cable circuits with respect to water tree degradation within TNB's distribution network were assessed using dielectric spectroscopy measurement equipment. Apart from the on-site measurement, a general visual inspection laboratory was also developed successfully. Furthermore, a database was developed to store all the testing data for future reference.

Deliverables

- Setting up of a local visual inspection laboratory for water tree testing.
- A cable database that stores all the testing data gathered throughout the project; including water tree, partial discharge, general visual inspection and VLF pressure test results.
- A total of 95 cable circuits were tested using dielectric spectroscopy equipment and Partial Discharge Test.

Benefits

- Successfully pioneered the general visual inspection laboratory for water tree which is among the first in Malaysia.
- Able to determine the condition of the cable insulation, which is useful for maintenance purposes.
- The web-enabled database allows sharing of the cable test database throughout TNB for reference and decision making.