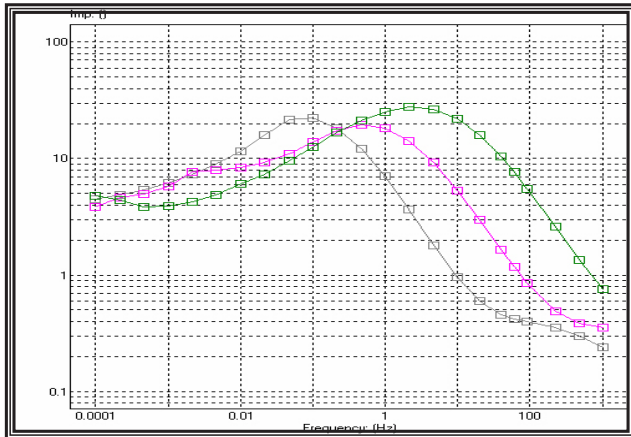


## Seeding Fund Project

### The Application Of Frequency Dielectric Spectroscopy (FDS) Technique In Accessing The Dryness And Ageing State Of Transformer Insulation Systems



Dielectric response of insulation system



Frequency Dielectric Spectroscopy (FDS)  
Measuring Equipment

#### Project Overview

The dryness and ageing state of oil-paper insulation is a key factor in both the short and long term reliability of a power transformer, since moisture has deleterious effects on dielectric integrity and insulation ageing rate. In complementing the use of traditional measurement of power loss angle or dielectric dissipation factor and Recovery Voltage Measurement technique, a project on studying the dryness and ageing state of the transformer insulation system based on the polarization of insulation system using the non-destructive Frequency Dielectric Spectroscopy (FDS) technique is proposed.

#### Deliverables

A report on the analysis of the Frequency Dielectric Spectroscopy, Dielectric Dissipation Factor and Recovery Voltage Measurement on assessing the dryness and ageing state of transformer insulation condition.

#### Benefits

- The ageing of the insulation and the physical properties of mineral oil and cellulose paper in the power transformers can be determined through Frequency Dielectric Spectroscopy measurement.
- The response of Frequency Dielectric Spectroscopy can be used as fingerprint to evaluate the insulation ageing rate for transformer in-service. This information can be used to assess the condition of the transformer so that action can be taken to enhance its long term reliability and to prevent failure.