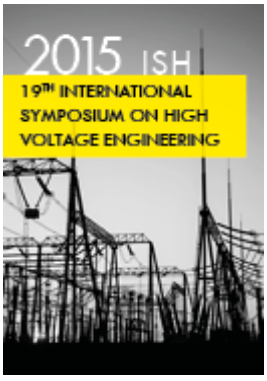
Reference: **ISH2015_201**



Type:

ISH Collection

Title:

Influence of thermal stress on the dielectric properties of oil paper insulation

Abstracts

The oil impregnated insulation paper is one of the oldest insulation systems used in the electrical power equipment. The mineral oils have been used for decades as transformer fluids because of their excellent dielectric properties and availability. However the performance of the mineral oil starts to be limited due to the environmental consideration. The natural or synthetic ester (as transformers liquids) is one of the alternatives that can replace the mineral oils in transformers. The aim of this paper is a study of the thermal stress on the insulation system oil-paper. There were used three types of oil; the inhibited mineral oil ITOX, the synthetic ester Midel 7131 and the natural food rapeseed ester. They were combined with a transformer paper. The samples of a combination paper and the oil have been placed into the vessel with a piece of cooper for better simulation of a real transformer insulation system. The cycle of measurements was consisted of a breakdown voltage measurement as well as a frequency domain spectroscopy - FDS and a time domain spectroscopy - TDS. Last two methods were realized at an elevated temperature 60 °C. The temperature of the accelerated ageing test was 90 °C and two different intervals of ageing were chosen. The first cycle of the measurement was realized with the new samples, the second after 500 hours ageing and the third cycle of measurement was realized after 750 hours ageing. The results from measurements were compared and conclusions are presented in the article.