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Experimental Partial Discharge Localization for Internal Short Circuits of Transformers Windings

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Abstract : This paper presents experimental studies carried out on a three phase transformer to investigate and develop the transformer models, which help in testing procedures, describing and evaluating the transformer dielectric conditions process and methods such as: the partial discharge (PD) localization in windings. The measurements are based on the transfer function methods in transformer windings by frequency response analysis (FRA). Numbers of tests conditions were applied to obtain the sensitivity frequency responses of a transformer for different type of faults simulated in a particular phase. The frequency responses were analyzed for the sensitivity of different test conditions to detect and identify the starting of small faults, which are sources of PD. In more detail, the aim is to explain applicability and sensitivity of advanced PD measurements for small short circuits and its localization. The experimental results presented in the paper will help in understanding the sensitivity of FRA measurements in detecting various types of internal winding short circuits in the transformer.

Keywords : frequency response analysis (FRA), measurements, transfer function, transformer
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