EXPERIMENTAL INVESTIGATION OF DISTRIBUTION TRANSFORMER SOLID INSULATION

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Abstract

Distribution transformers are built with tight insulation tolerances and are consequently subject to various severe aging stresses. Solid insulating materials are utilized to insulate not only primary and secondary windings but also the adjacent turns of the same winding in a dry type distribution transformer. During the operation of the transformer, aging factors contribute more to the deterioration of the insulation than when the transformer is not in service. While the gradual aging gets severe, the leakage current tends to increase and arcing discharge may occur. This can be interpreted as an indication of an incipient fault that will eventually lead to shorts between adjacent turns. Thus investigation of the insulation performance is a key issue to anticipate and detect transformer incipient faults. In this work, effect of thermal aging on the dielectric performance of the solid paper that is used as distribution transformer insulating material, has been investigated experimentally.