

البحث رقم (3)

Effects of power transformer high-frequency equivalent circuit parameters non-uniformity on fault diagnosis using SFRA test		عنوان البحث :
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		ملخص البحث
<p>The electric power transformer is an essential component of an electrical power system because it regulates the voltage level to provide the best possible system operation. Thus, it is important to detect the transformer faults to maintain its reliability as high as possible. The sweep frequency response analysis (SFRA) test is one of the tests which, used to diagnose transformer faults. It determines the fault type by analyzing its response across a wide frequency range. The main advantage of the SFRA test is the detection of mechanical deformation faults since mechanical deformation faults cause the high-frequency equivalent circuit parameters to change which, could be detected easily using the SFRA test. Also, statistical features are defined for this SFRA response used in fault detection and classification. The transformer high-frequency equivalent circuit parameters are non-uniform distributed over discs due to normal leakages and aging. Thus, in the present paper, the non-uniform distribution of the transformer high-frequency equivalent circuit is studied in the SFRA test at different faults and various non-uniformity levels. Finally, when considering the non-uniform distribution of high-frequency equivalent circuit parameters, the results demonstrate that some features are greatly affected, and others are just minimally affected. Depending on how much each feature is affected by the uniformity of high-frequency equivalent circuit parameters, rules of fault diagnosis algorithms based on the SFRA test could be reweighted to improve their accuracy. Also, the obtained results could be compared to real measured data to estimate the actual non-uniformities of transformer parameters.</p>		