Modelling and Analysis of Power Transformer Using SFRA for Condition Monitoring

Humam Madara and Mr. Sachin Patel
Department of Electrical Engineering
Institute of Technology & Research Centre, Kalol, Gandhinagar

Abstract: *The (SFRA) is has become one of the most reliable non-invasive diagnostic techniques for assessing the mechanical integrity of power transformer winding's. SFRA is used to detect mechanical and some electrical faults in power transformer, like winding displacement, core movement, loosening of clamping structures, shorted turns or broken winding's, deformation due to transportation, short circuits, or seismic events. The model of power transformers is based on lumped parameter values with minimal cost and time. By interpreting the changes in frequency response, operators can gain valuable insights into the mechanical and electrical integrity of the transformer, leading to better maintenance strategies and enhanced reliability. MATLAB is an excellent choice for SFRA simulations and analysis due to its powerful signal processing and data visualization.*

Keywords*: Lumped parameter equivalent circuit, sweep frequency response analysis, power transformer, transformer winding.*

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560

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