

TRANSIENT STUDIES IN A MODEL TRANSFORMER AND VALIDATION OF THE MODEL DEVELOPED USING OrCAD / PSpice WITH TURN RESOLUTION PART – II – SIMULATION STUDY

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Abstract

The paper presents an investigation on transient voltage distribution in transformers by simulation. Good and more realistic results can be obtained with good model with a better resolution which is possible with today's fast digital computers. This requires a more accurate model of the transformer. Therefore, in this paper, an attempt is made to develop the transformer model with turn resolution, which is supposed to be the best approach than lumped coils as is usually adopted. Thus using this information a more reliable and possibly economic insulation structure can be obtained which is the main issue affecting the cost of the transformer. Here, a network of distributed inductances, capacitances of individual turns, models the transformer. The transient response is studied on the model transformer with steep fronted pulses of different rise times and various possible types of surges including fast transients imitating exactly the pulses generated practically as explained already in the companion paper (experimental part). This modeling methodology can be extended to a real power transformer. The digital simulation is carried out using OrCAD / PSpice software.

Keywords : Transformer transients, Fast Transients, Turn resolution.