



Ferroresonance Phenomenon in Electrical Power Transformers: Ferroresonance Phenomenon in Electrical Power Transformers

By Radwan Taha AL- Bouthigy, Ahmed Sayed, Mazen Abdel- Salam

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One of the most serious problems in measurements electrical power systems is the possibility of over-voltages resulting from ferroresonance phenomenon. This can result in high overvoltages that can cause insulation failures in transformers, cables, and arresters. Ferroresonance is a general term applied to a wide variety of interactions between capacitors and iron-core inductors that result in unusual voltages and/or currents. This work is aimed at proposing a simplified model of ferroresonance phenomenon in single – phase power transformers and analyzing the instantaneous wave shapes of voltage and current being distorted by the ferroresonance phenomenon by solving the Doffing equation. The transformer is modeled and the non – linear equivalent resistance and inductance of the magnetizing branch are determined from open – circuit test. The ferroresonance resulting from energizing the transformer through a series capacitor is assessed and the calculated primary voltage, input current, active power, reactive power and power factor values are compared with those measured experimentally.

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About the Author

Eng Radwan mohamed taha has obtained his master degree in Electrical Engineering (Power & Machine) in 2009. Since then he has worked in his project of PhD degree in the field of wind energy.

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