Enhancement of the Differential Relay Performance on Two Parallel Transformers Connected to the Unified Grid

By

Ahmed Maged Ismail Hassan

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
In
Electrical Power and Machines Engineering

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Title of Thesis: Enhancement of The Differential Relay Performance on Two Parallel Transformers Connected to The Unified Grid

Key words: Differential protection, power transformers, zero sequence current, sympathetic inrush.

Summary: Power Grid is growing larger and larger. Power transformer is one of the main components in power grid that has new types of faults and problems that was rarely discussed before. This thesis is concerned about enhancing the behavior of the differential protection relays on power transformers to correctly deal with such relatively new faults and maintain selectivity of protection system against two types of faults. The first case is zero sequence current affecting power transformers in case of external fault occurrence. The second case is sympathetic inrush between two parallel transformers during energization of one of them.

Disclaimer

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.

I further declare that I have appropriately acknowledged all sources used and have cited them in the references section.

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