Cairo University

ANALYSIS OF INRUSH CURRENTS IN TRANSFORMERS AND THEIR IMPACT ON ELECTROMAGNETIC FORCES

By

Eng. Essam Mohammed Abdo Ali

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:

Analysis of Inrush Currents in Transformers and Their Impact on Electromagnetic Forces

Key Words:

Inrush current; radial forces; axial forces; short circuit currents

Summary:

Power transformers are critical links within a power network and therefore any failure can potentially lead to long interruptions and costly repairs. So transformers must be protected well from any kind of overcurrent or overvoltage that could occur during their operation. The transient current that occurs as a result of any sudden change in the voltage on transformers winding is usually known as inrush current.

Radial and axial forces due to inrush and short circuit currents are calculated. Power transformer in the start-up mode has been studied and simulated using MATLAB/SIMULINK tool.

Acknowledgment

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