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NUMERICAL DETERMINATION OF TEMPERATURE DISTRIBUTION IN POWER TRANSFORMERS

ABSTRACT

Thermal simulations play an important role in the design of many engineering applications, including internal combustion engines, turbines, and heat exchangers, piping systems, electronic components and elements of electric power system. In many cases, engineers follow a thermal analysis with a stress analysis to calculate thermal stresses.

In this paper, for analysis of thermal processes in power transformer, is used ANSYS program package, which is based on finite element method,

The procedure for doing a typical thermal ANSYS analysis involves three main tasks:

-Building the model

-Apply loads and obtain the solution

-Review the results.

A thermal analysis calculates the temperature distribution and related thermal quantities in a system or component. Typical thermal quantities are:

-The temperature distribution,

-The amount of heat lost

-Thermal fluxes

-etc.

We analyze two dimensional and three dimensional transformer models, for power transformer with the following data:

-rated power 630 kVA,

-rated voltages 10/0,4 kV,

-frequency 50 Hz.