

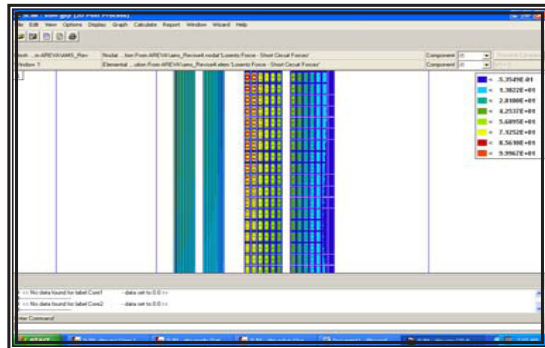


R&D Fund Project

The Technical Evaluation of Different Core Laminar Design To Optimise 1000 KVA Distribution Transformer Design



A Distribution Transformer by MTM



Short circuit force simulation of a 1000kVA transformer using Finite Element Analysis

Project Overview

Over the years, Malaysia Transformer Manufacturer Sdn. Bhd. (MTM) has manufactured 1000 kVA oval-shaped top view geometry design transformers as compared to other main manufacturers in the local market who uses different core design such as rectangular-shaped for Ranhill Wilson Transformer (RWT) and round-shaped for Arab Malaysian-SGB (AMSGB). Different designs entail different quantities and types of material used in the transformer which

invariably influence the total cost to the manufacturers. The objective of this study is to compare these three different transformer core geometrical designs via physical inspection and simulation works to identify the most optimised design in terms of cost and performance and also to recommend further potential optimisation.

Deliverables

- A model of 1000 kVA transformer based on MTM transformer core design using the AREVA SLIM Finite Element Software for simulation work
- Cost benefit analysis of the different transformer core designs through quantification of the transformer material cost via inspection, manufacturing cost as well as the cost of technical losses
- Recommendation on the most optimized transformer core design and further optimisation that could be potentially adopted

Benefits

- The comparative study enabled the most optimised design to be identified and provided hypothetical recommendations for further cost minimization.
- The enhancement of proficiency of TNB Research Sdn. Bhd. in the area of transformer design using the Finite Element Analysis method which can be further developed for more advanced application and also to be applied to other primary equipments.
- The project has created a platform for collaboration work between TNBR, UNITEN and MTM, thus making it possible for the forging of R&D with academic and industrial aspects.