EFFECT OF ELECTRICAL AGEING ON ELECTRICAL PROPERTIES BY MIXING OF COCONUT OIL AND MINERAL OIL AS DIELECTRIC MATERIAL

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UNIVERSITI TEKNOLOGI MARA

MALAYSIA

AISYAH BINTI MOHD JAMIL

2011228902

Faculty of Electrical Engineering

UNIVERSITI TEKNOLOGI MARA

40450 SHAH ALAM, SELANGOR DARUL EHSAN

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ABSTRACT

Transformers are very important and costly apparatus in power system especially in high voltage. Without them, utility companies would not be able to transmit and distribute electricity generated at remote power stations. Great care to be exercised to see that the transformers are not damaged. Oil is used as an insulator and coolant in transformers and by monitoring its condition the transformer's overall health is determined. Temporary failures due to overvoltage are reinsulated quickly by liquid flow to the affected area. Since years ago, petroleum-based mineral oil has been used to serve the dual purpose of insulation and heat dissipation. However, this petroleum will be come to an end because it is a non-renewable source. Most importantly is the inability of mineral and petroleum oils to comply with environmental regulation laws. Therefore, mixture of RBD coconut oil and mineral oil will be used in this project as alternative liquid insulation. According to previous research, natural vegetable oils have been found to meet the specifications IEC 60296. Their biodegradability makes them safe for use in densely populated areas and close to waterways. This also makes them to be environmentally compliant and avoidance of sanctions from regulatory agencies. Since they are from renewable sources, their production and utilization is simple and cost effective. Overall, this can ensure sustainable development.

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CHAPTER 1

INTRODUCTION

1.1 Background Study

Word of Allah:

"Have you not considered how Allah presents an example, [making] a good word like a good tree, whose root is firmly fixed and its branches [high] in the sky? It produces its fruit all the time, by permission of its Lord. And Allah presents examples for the people that perhaps they will be reminded."

Surah Ibrahim: 24-25

According to the above verse, it refers to the interpretation of palm trees because it attributes that meet the criteria of evidence. This includes trees, palm oil and coconut.

Power transformers are the important components for electricity supply systems. Without them, utility companies cannot be function to supply the electricity to the consumers. Great care to be exercised to see that the transformers are not damaged. Transformer oil acts as an insulating and cooling medium in transformers. The insulating oil fills up pores in fibrous insulation and also the gaps between the coil conductors and the spacing between the windings and the tank, and thus increases the dielectric strength of the insulation. Transformer in operation generates heat in the winding, and that heat is transferred to the oil. Heated oil then flows to the radiators by convection. Oil supplied from the radiators, being relatively cool, cools the winding.