DEVELOPMENT OF A MODEL FOR TRACKING CAUSES OF FAILURE IN DISTRIBUTION TRANSFOMERS: A case of Kinondoni North- Tanesco Region- Dar Es- salaam.

BY Mwanamkuu Selemani.(2015)

ABSTRACT

Distribution transformers are static machines whose failures rates in a normal operation are supposed to be low. If the machines are well maintained their useful life span are approximated to be 40 years and above. According to TANESCO distribution reports, the rate of failure of distribution transformers below their expected useful life span is high. More of the failed transformers, were normally connected to the 11 or 33kV distribution lines, have been in service for the periods of one(1) to fifteen(15) years.

This study investigated the possible technical causes of failures of distribution transformers In Dar es Salaam Tanesco regions. The study also formulate possible mitigation strategies on the causes of the distribution transformer failures were proposed. Finally , a model for tracking the the cause of failure, for a particular selected failure cause has been developed.

The study revealed that the causes of transformer failures are Transformer overloading (high currents), Transient over voltages, normal loading at low oil level, and presence of impurities and humidity in the transformer oil. However, overloading of distribution transformers contributed high percentage to the failure of distribution transformers; hence it should be monitored throughout distribution transformer operating time. In this regard, the study recommends Transformer load measurements to be conducted frequent so as to monitor any increment that may cause damage to the equipment. Also temperature monitoring through the set thermometers on transformer tanks to be given priority. More over, this study uses one method of controlling and tracking transformer overload by monitoring load current, future studies may look on other models of tracking transformer overloading by using temperature parameter.

M. Eng.(Maintence Management) Dissertation.