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Proposition of an Engineering Equivalent Circuit for Distribution Transformers Wideband Modelling

Abstracts

This paper deals with the determination of typical parameters and equivalent circuit modelling for single and three phases medium voltage distribution transformers, with voltage classes of 15 and 25 kV, from 10 to 75 kVA. The present study is based on the results of several tests. The aim of the present proposal is to obtain a electrical equivalent circuit based on standard test parameters, usually used to explain the transformer behaviour, keeping the engineering meaning of the elements and to represent the transformer behaviour in more realistically way. The model parameters are also presented in a statistical way by their most probable values and respective uncertainty limits. By simulation, the frequency behaviour of the proposed model is compared with the frequency behaviour of the models proposed by CIGRE. Therefore, the relevance of each of these models was verified aiming at the correspondence of representative elements. Finally, the attachment of the proposed electrical circuit is verified by comparing the results of a frequency scan of the model and the frequency response of real transformers, obtained by a FRAnalyzer®.

More Informations :

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