

Diagnosing Failed Distribution Transformers Using Neural Networks

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Power Delivery, IEEE Transactions on; Publication Date: Oct 2001; Vol: 16, Issue: 4
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Summary

An artificial neural networks (ANN) system was developed for distribution transformer's failure diagnosis. The diagnosis was based on the latest standards and expert experiences in this field. The ANN was trained utilizing backpropagation algorithm using a real (out of the field) data obtained from utilities distribution networks transformer's failures. The ANN consists of six individual ANN according to six important factors used to give certain outputs. These factors are: the age of the transformer, the weather condition, if there are any damaged bushings, if there are any damaged casing or enclosure, if there is oil leakage, and if there are any faults in the windings. The six ANNs are combined in one ANN to give all the outputs of the individual six ANNs. The developed ANN can be used to give recommended complete diagnosis for working transformers to avoid possible failures depending on their operating conditions. Good diagnosis accuracy is obtained with the proposed approach applied and with the analysis of the attainable results

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