Evaluation of Models for Predicting Hottest-Spot Temperature in Substation Distribution Transformers

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Abstract
To achieve the objectives of dynamic loading of a transformer, it is essential to be able to accurately predict hottest spot temperature (HST) in the transformer winding. The prediction of the HST in transformers can be achieved by using a thermal model developed for such purpose. An investigation is presented on the acceptability of select thermal models developed for predicting HST in transformers when the parameters of the models are to be determined from measured field data. The investigation uses numerical and statistical methods to examine the thermal models by fitting them to measured field data obtained from in-service substation distribution transformers. Metrics to evaluate the models accuracy, adequacy and consistency in predicting HST are developed. These metrics are used to measure the reliability and acceptability of the models both quantitatively and graphically. The results of the metrics evaluations serve as a measure of confidence in the models for practical application purposes.

Biography of Speaker

Oluwaseun A. Amoda received his B.S. (summa cum laude) in electrical engineering from The University of Memphis and his M.S. in electrical engineering from Mississippi State University. He is currently pursuing a Ph.D. degree in electrical engineering at Arizona State University. His research interests include the application of computational and mathematical techniques in power engineering, and protection and control of power systems. He received the Outstanding Senior Award and Dean’s Award for best graduating student when he graduated from The University of Memphis. He was a University Graduate Fellowship recipient for the 2007/2008 academic year at Arizona State University. He participated in two summer research intern programs at Fermi National Accelerator Laboratory. He is a member of Tau Beta Pi, Eta Kappa Nu, Phi Kappa Phi and Golden Key Honor’s Society.