Current Transformer Accuracy Improvement by Digital Compensation Technique

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Abstract: Measurement current transformers (CTs) are extensively used for measurement of energy by power distribution utilities. In this paper, current transformer error compensation unit (CTECU) is developed which is specially intended for providing compensation to all types of measurement CTs. The proposed CTECU is based on determination and application of correction coefficients, which are computed by the ratio and phase angle errors data. Analytical foundation is effectively expressed along with the development of CT error compensation algorithm. CTECU is implemented online in laboratory on 1.0 class and 0.5 class of CTs. The experimental performance is found satisfactory under various operating conditions. The novelty of the proposed algorithm is that it is possible to make conversion of CTs from one class to another class.

Keywords: Current transformer error compensation unit (CTECU); Ratio error; Phase angle error; Digital compensation technique