

Study of current transformer errors on a high-current test bench at «Mars-Energo Research and Production Enterprise» LLC.

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Cost-effective test bench for direct testing of high-power current transformers in transient conditions has developed. This bench involves discharging a pre-charged capacitor in oscillatory mode onto an inductor. This minimizes power consumption during testing. The coil consists of several series-connected sections. The inductor's magnetomotive force (MMF) is measured, and the amplitude of the measured MMF can reach 1000 kA. This article presents the results of measuring the errors of a commercially available current transformer. It is shown that the number of inductor sections affects the measured error of the transformer, which is explained by the dependence of the magnetic flux density in the magnetic circuit on the angular coordinate. The current transformer error at the rated accuracy limit primary current, measured on the bench, differs significantly from error measured at a steady-state sinusoidal current at the rated accuracy limit primary current. This result demonstrates the need for clarification of the existing standard methods for measuring the saturation state of current transformers for protection in transient conditions.

Key words: current transformer, capacitor oscillatory discharge, magnetic leakage field, magnetization curve.