

## Original Paper

# High Accuracy On-Line Calibration System for Current Transformers Based on Clamp-Shape Rogowski Coil and Improved Digital Integrator

Z Li , S Yan, W Hu, Z Li and Y Xu

College of Electrical Engineering and New Energy, China Three Gorges University, Yichang 443002, China

 Z. Li  
Email: [304266863@qq.com](mailto:304266863@qq.com)

**Received:** 08 October 2015 / **Accepted:** 17 December 2015 / **Published online:** 13 January 2016

## Abstract

To solve the problems of the existing on-site calibration methods, for instance, the methods need power off, and the standard transformers have large volume, heavy weight and small dynamic range, this paper proposes a high accuracy on-line calibration method for current transformers. By using a clamp-shape Rogowski coil as the standard current transformer, instead of traditional electromagnetic transformer, the volume and weight are reduced greatly, and the power of the line needn't to be interrupted. The output signal of the clamp-shape Rogowski coil needs to be integrated, and to overcome the problems of analog integrator, which have temperature and zero drift, a high accuracy digital integrator is proposed in the paper to improve the accuracy and stability of the signal processing circuit. Test results indicate that the accuracy of the whole calibration system can reach up to 0.05 accuracy class. The on-line calibration system can calibrate the traditional and electronic current transformers when the line is energized.

## Keywords

Clamp-shape Rogowski coil; Digital integrator; Current transformer; Without power outage; On-line calibration