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A vibration measurement system for health monitoring of power transformers

Kaixing Hong^{a,b}, Hai Huang^a, Yaqiong Fu^b, Jianping Zhou^c

^a Department of Instrumentation Science and Engineering, Zhejiang University, Hangzhou, China

^b College of Mechanical and Electrical Engineering, China Jiliang University, Hangzhou, China

^c State Grid Zhejiang Electric Power Company, Hangzhou, China

Correspondent Author: Kaixing Hong

Present Address: College of Mechanical and Electrical Engineering, China Jiliang University,

Xueyuan Street, Xiasha Higher Education District, Hangzhou, 310018, China

Email: hongkaixing@zju.edu.cn

Abstract

Health and usage monitoring (HUM) systems are critical for power transformers, and should provide accurate diagnostic information without delay. Diagnostic methodologies are the core of HUM systems. In this paper, we propose four complementary diagnostic techniques for power transformers based on vibrations that provide health metrics from different perspectives. During the field experiment, the vibrations of several in-service transformers under different conditions are collected, and the corresponding diagnostic results are obtained. Next, a health grade system is defined, and the suggested thresholds for each technique are also presented. The effectiveness of the health grade system is illustrated experimentally on three representative transformers. The consistency between the results of the proposed techniques and the actual condition of the test transformers show that the proposed techniques can distinguish transformers under different conditions.

Keywords

Power transformer; Vibration method; Fault diagnosis; Condition monitoring

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