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Analysis on Multiple Acoustic and Electrical Emission of PD Signal Based on Signal to Noise Ratio (SNR) on Power Cable

Abstract

Acoustic Emission (AE) and Electrical Emission (EE) partial discharge (PD) monitoring are effective methods in detection of the insulation failure in power cables. However, the unwanted noise from the surrounding environment can influence the effectiveness and accuracy of the PD measurement on the PD signal. Therefore, Discrete Wavelet Transform (DWT) denoising technique is introduced in order to suppress the disrupted noise. In this study, a different type of mother wavelet, level decomposition and its frequency spectrum on multiple AE and EE PD signals were performed via MATLAB software in order to analyze the performance of denoising technique. These PD signals were deal with white noise and Discrete spectral interference (DWT). The better performance of denoising technique is based on evaluating the maximum value of Signal to Noise Ratio (SNR) in order to find the optimum mother wavelet. In this case, the most optimum mother wavelets are rbio3.3 for AE and EE PD signals respectively with the highest value of SNR.