

On-Line Detection And Measurement Of Partial Discharge Signals In A Noisy Environment

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Summary

In extracting partial discharge (PD) signals embedded in excessive noise, the need for an online and automated tool becomes a crucial necessity. One of the recent approaches that have gained some acceptance within the research arena is the Wavelet multi-resolution analysis (WMRA). However selecting an accurate mother wavelet, defining dynamic threshold values and identifying the resolution levels to be considered in the PD extraction from the noise are still challenging tasks. This paper proposes a novel wavelet-based technique for extracting PD signals embedded in high noise levels. The proposed technique enhances the WMRA by decomposing the noisy data into different resolution levels while sliding it into Kaiser's window. Only the maximum expansion coefficients at each resolution level are used in de-noising and measuring the extracted PD signal. A small set of coefficients is used in the monitoring process without assigning threshold values or performing signal reconstruction. The proposed monitoring technique has been applied to a laboratory data as well as to a simulated PD pulses embedded in a collected laboratory noise.

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