



Kalman Filter and Wavelets Transform Based Three-Phase Power Quality Disturbances Detection, Classification and Diagnosis Tool Implementation - Hardware and Software

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Abstract - The aim of this work is the development of a three-phase power quality disturbances detection, classification and diagnosis tool. The tool senses the electrical grid, and as a disturbance is detected, the voltage signals are acquired and analyzed. The result of the analysis is the classification of the disturbance and the diagnostic of its probable causes. The detection is done using Kalman Filter, while the classification and diagnosis are done using wavelets and fast Fourier transforms. The implementation involves hardware and software. The hardware is composed by voltage sensors, signal conditioning circuit, DSP320C6713 DSP board and an acquisition board. The software is responsible for the classification and diagnosis. Three cases of typical disturbances that affect electrical systems are presented. The results are consistent showing the feasibility of the proposed tool.

Key words

Three phase power quality disturbances, signal processing, classification, diagnosis

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