Wavelet based Power Quality Monitoring in Grid Connected Wind Energy Conversion System

Abstract

Recently renewable energy resources especially wind power integration has been far increased in the electric power distribution system. To utilize wind power more effectively, wind energy conversion system is interfaced to grid through power electronics interfaces. In this paper, monitoring of various power quality disturbances at the point of common coupling in grid connected wind energy conversion system have been done. Discrete wavelet transform and wavelet energy function are used for detection of power quality disturbances. The grid connected wind energy conversion system is simulated in MATLAB environment. Power quality disturbances such as voltage sag, voltage swell, interruption and harmonics are investigated. A new diagnostic method in which signal is processed using discrete wavelet transform and wavelet energy function is proposed. Simulation results show the usefulness of the proposed method to find out the power quality disturbances in grid-connected wind energy conversion system accurately and quickly. Voltage signal extracted directly at the point of common coupling is used for detection of power quality disturbances.
References

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Index Terms

Computer Science

Applied Sciences

Keywords

Discrete wavelet transforms (DWT)  power quality (PQ)  total harmonic distortion (THD)  wavelet energy  wind energy conversion system (WECS).