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Power Distortion Issues in Wind Turbine Power Systems Under Transient States

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**Abstract:** In this paper time-frequency methods have been investigated for complex investigations of transient states in wind power plants. Application of parallel processing in time and frequency domain brought new findings in description of wind power plants working under transient conditions. Proposed algorithms represents standard Short-Time Fourier Transform (STFT) as well as alternative methods associated with Cohen's class: Choi-Williams Distribution (CWD) and Zhao-Atlas-Marks Distribution (ZAMD). In order to explore advantages and disadvantages of the method several experiments were performed using model of squirrel-cage induction machine connected directly to the grid. Investigated phenomena concerned power distortion caused by switching-on capacitor banks and faults as well as influence of wind speed on instantaneous character of the transient states.

[Scientific Journals Home Page](#) **Key Words:** Power quality, power system harmonics, time-frequency analysis, wind power plants

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