

# Grid Connected Wind Energy System Power Quality Improvement Using STATCOM

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**Abstract:** *The wind energy generation, utilization and its grid penetration in electrical grid are increasing worldwide. Injection of the wind power into an electric grid affects the power quality. The wind generated power is always fluctuating due to its time varying nature and causing stability problems. This weak interconnection of wind generating source in the electrical network affects the power quality and reliability. This paper demonstrates the power quality problem due to installation of wind turbine with the grid. In this proposed scheme Static Compensator (STATCOM) is connected at a point of common coupling with a battery energy storage system to mitigate the power quality issues. The STATCOM gives reactive power support to wind generator and also load. The battery energy storage is integrated to sustain the real power source under fluctuating wind power. The STATCOM control scheme is simulated using MATLAB/SIMULINK in power system block set.*

**Keywords:** P-STATCOM, UPFC, MATLAB, WTG, PMSG, EESG

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