Abstract

The generation of power is really a challenge now a days with the increase in demand for Electricity due to increase in industrialization. It is necessary to meet the energy needs by utilizing the renewable energy resources like wind, biomass, hydro co-generation, etc. Injection of the wind power into an electric grid affects the power quality. The main power quality issues are voltage sag, swell, flickers, harmonics etc. In this proposed scheme STATic COMpensator (STATCOM) is connected at the point of common coupling with a battery energy storage system (BESS) to mitigate the power quality issues. The battery energy storage is integrated to sustain the real power source under fluctuating wind power. Here two control schemes for STATCOM are compared: Bang-Bang current controller and control in d-q reference frame. Bang-Bang controller is a hysteresis current controlled technique. The operation of the two STATCOM control schemes for maintaining the power quality of the grid connected wind energy system is investigated using MATLAB/SIMULINK.
References

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Index Terms

Computer Science

Control Systems

Keywords

STATCOM, power quality, wind generating system, Battery Energy Storage System (BESS), Bang–Bang current controller