Abstract

This paper focuses on the development of the model for optimal management and operation of hybrid stand-alone wind-solar energy generation system. The proposed hybrid system consists of wind turbine with variable speed permanent-magnet synchronous generator, solar system with mechanical tracker and a system for storing energy during wind speed, solar output and load variations. This system is used to regulate the fluctuations in the power output and to meet the power demand in conditions of blackout. The Mechanical MPPT tracker is used to get the maximum power output from the PV solar subsystem. The off-grid operation is demonstrated and the bus voltage is maintained constant by using the merging pattern of the DC bus. The
load demand is always met because both the subsystems are complementing each other without any interruption. The experimental results are demonstrated through the MATLAB simulink. A prototype was developed to verify the performance of the proposed system.

References


Index Terms

Computer Science Applied Sciences

Keywords

Mppt Pv Panel