عنوان مقاله:

Novel Control Strategy for Standalone Wind Energy Conversion System Supplying Power to Isolated DC Load

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خلاصه مقاله:

The aim of this paper is to provide an insight on developing a control strategy for a standalone wind energy conversion system (SWECS) intended to power a dc load. The system mainly consist of wind turbine (WT), generator, power electronics devices, battery bank and its charging control circuit along with pitch angle control of wind turbine. Charging of battery is attained through tip-speed ratio (TSR) MPPT logic. Dc-dc converter acts as charge controller which charges the battery in controlled way. Pitch angle control mechanism generate appropriate pitch angle command to dampen the rotational speed of the wind turbine. It limits the turbine output power, generator speed and rectifier output voltage during high wind speed ensuring electrical and mechanical safety of the wind turbine. The three-phase self- excited induction generator (SEIG) coupled to a wind turbine is used to produce electrical power. It is connected to load via ac-dc-dc converter to obtain regulated voltage at the load side. The efficacy of control logic developed for proposed wind energy conversion system is tested in MATLAB/Simulink platform under varying wind .and load profile

کلمات کلیدی:

Wind energy conversion system (WECS), Pitch Control, Maximum Power Point Tracking (MPPT), Wind Turbine (WT), Charge controller