Fuzzy Based Energy Management Strategy for Hybrid Micro Grid with Battery Storage System

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Abstract: *By connecting it to the hybrid micro grid system, this explains the combination of wind, solar, and fuel cell power. Renewable energy is frequently used today. Distributed energy sources like wind, solar, fuel cells, etc., can operate concurrently with a larger utility. The majority of people today want to use sustainable energy sources like solar, wind, tidal, geothermal, wave, etc. A tiny grid produces the necessary electricity. In this project, energy storage and utilisation with a micro grid are demonstrated. This project serves as an example of how a micro grid can be used to store and use power. We usually allow the Micro Grid to use us by producing this energy. The system is a composite that utilises renewable resources such fuel cell, a solar array, a wind generator, and an energy storage system (ESS) that uses a battery as one of its renewable energy sources. Power Electronics converters are crucial to the system since they enhance power management and control strategies for various sources. The single-input Fuzzy logic and speed controllers are utilised to track the maximum power point for the wind and PV subsystems, respectively (MPPT). A power management method based on battery state of charge (SOC) was created and put into use to maintain the hybrid system's energy balance. A proportional integrative (PI) controller was used to supply a resistive load with a constant amplitude and frequency in order to regulate the AC output voltage was obtained. The proposed solution is deemed to be very promising for possible applications in hybrid renewable energy management systems based on the received bids. MATLAB/SIMULINK is to be used to develop the simulation.*

Keywords: Solar Energy System, Wind Turbine System, MPPT Technique, Microgrid system

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