

In this paper, a power management and control strategy is developed for a hybrid energy system that is composed of a photovoltaic generator, a battery bank and a diesel generator. It supplies a water pump system in a remote area. A power management method is designed to manage the power between the mentioned energy systems in order to obtain the desired water flow and to reduce the using of diesel generator. In order to capture the maximum power from PV generator, a fuzzy logic maximum power point tracking controller is applied. On the other hand, a boost converter is controlled by a PI controller to adapt the voltage of the battery bank to the DC bus. A PI controller is used also to regulate the water flow of the pump. The obtained simulation results show that the developed power management and control strategy has high performances. Dynamic modeling and simulation are accomplished using SIMPOWER in Matlab simulink.