

In last decade the problem of energy management system (EMS) for electric network has received special attention from academic researchers and electricity companies. In this paper, a new algorithm for EMS of a photovoltaic (PV) grid connected system, combined to an storage system is proposed for reducing the character of intermittence of PVs power which infect the stability of electric grid. In simulation model, the PV system and the energy storage system are connected to the same DC bus, whereas EMS controls the power flow from the PV generator to the grid based on the predetermined level of PV power. In the case where the PV power is less than the predefined threshold, energy is stored in the batteries banc which will be employed in the peak energy demand (PED) times. Otherwise, it continues to feed the principal grid. The novelty of the proposed work lies in a new algorithm (smart algorithm) able to determine the most suitable (optimal) hours to switching between battery, Solar PVs, and principal grid based on historical consumption data and also determine the optimal amount of storage energy that be injected during the peak demand.