

# Abstract

In this dissertation, the researcher considers a Hybrid energy storage system (HESS) which is the combination of the battery and super-capacitor. Energy produce by renewable sources for backward areas has various benefits over regular supply. The combination of these two devices provide energy for a longer period and rapidly changing power regulation. The working of a passive connected HESS was investigated in both theoretical form and numerical by using Matlab/Simulink. To stabilize the current of the battery researcher introduces an inductor( filtering effect) in the circuit. Three different electrical circuits were developed by the researcher by using Matlab/Simulink. By analyzing the three different profiles of the current the researcher concludes that the third waveform(48 voltage) of the current is much better as compared to the two waveforms due to its smoothness. By examining the three different profiles of voltage the researcher conclude that the first waveform of voltage (12 voltage) is best. It was shown that HESS can sustain energy, for both renewable energy and fluctuating load.