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Abstract

This manuscript proposes a hybrid method for optimum sizing and energy management (EM) of hybrid energy storage systems (HESSs) in Electric vehicle (EV). The proposed hybrid method is combined performance of Honey Badger Algorithm (HBA) and recalling-enhanced recurrent neural network (RERNN), commonly called HBA-RERNN method. The major objective of proposed system is reducing the vehicle life time cost. The HESSs are incorporated with battery and super capacitor (SC). The proposed method is utilized to solve combined energy management and optimization size. Based on the variables, such as size of battery pack and super capacitor pack, HESS size is reflected. Depend on various sensitivity factors, optimum hybrid energy storage systems size and financial costs are analyzed. At last, the performance of proposed system is implemented on MATLAB site and compared with several existing systems. From this simulation outcome, it concludes that the proposed system diminishes the overall cost and battery degradation cost as 66625 USD than the existing systems. The efficiency of the proposed system achieves 94.8763%.

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