

ANN Based MPPT for Electric Vehicle Charging Station

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Abstract: Power is the crucial key for the commercial growth of any developing country. In recent years, environmental concerns and rising oil prices have contributed to the development and commercialization of Electric Vehicle (EV) and Hybrid Electric Vehicles (HEV). Electric Vehicle is emerging in the market with rapid pace and their supporting equipment has become inevitable. The charging station is one such module, where this work has been attempted. In this proposed work, Artificial Neural Network (ANN) based MPPT is applied to track the maximum power from the solar panel which is employed in the EV charging station. In ANN, Levenberg-Marquardt algorithm is used for tracking maximum power. This algorithm trains the neural network which is used for controlling the duty cycle of the DC-DC converter. Here electric vehicle charging station integrates solar photovoltaic (PV), energy storage system. The output and efficiency is compared between the Bayesian Regularization and Levenberg-Marquardt algorithm. Based on the results obtained, the performance of the proposed method is evaluated using MATLAB/ Simulink software and the advantage of this type of method is that it has greater accuracy.

Keywords: Electric Vehicles, Solar PV Generation, Battery Energy Storage System, Grid EV Charge..

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