عنوان مقاله:

Analyzing the Stability of Three Port Bidirectional Converter for Renewable Energy Application using State Space Average Modeling Method and LQR Controller

محل انتشار:

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خلاصه مقاله:

The use of renewable energy is increased due to continuous growth in energy consumption and the continuously decaying fossil fuels. When the whole power of the renewable energy systems cannot be used completely by the load, the surplus energy can be used to charge the battery pack. When the storage elements are directly connected to a DC bus without a converter, efficiency of the system was reduced. Also, the storage element life is degraded without proper control of charging and discharging of the battery. In this paper in order to transfer energy between PV cells, battery pack and load for solar electric vehicles (SEVs), three port bidirectional DC-DC converter was used, then, the dynamic behavior of the converter during different operational modes is studied trough averaging modeling method and for balancing the system error and minimizing control effort, the linear quadratic regulator (LQR) controller is developed for increasing the stability of the converter

کلمات کلیدی:

(Linear quadratic regulator (LQR), Renewable energy, Converter, Solar electric vehicle (SEV