Abstract

Battery Modeling is required to improve the efficiency and reliability of the battery. The Lithium-ion batteries are widely used as a power source for several applications. An accurate battery model and model parameters help in the estimation of the state of charge and state of health. However, battery parameters are variable and depend on several factors such as Temperature, cycle lifetime, the state of charge and depth of discharge and age. By taking account of the characteristics of battery the paper includes circuit oriented model approach of lithium-ion battery. The model characteristics are dependent and linear with respect to the battery’s state of charge. This paper presents a state of charge estimation of lithium ion battery using Kalman filter. Rather than other methods, Kalman filter provides weighted average between the measured value and predicted value. Thus the battery modeling helps to improve the performance of Photovoltaic module and other applications.

Index Terms
Computer Science Circuits and Systems

Keywords
Battery Performance Monitoring and Optimal Observation

Battery Modeling, Lithium-ion battery, Kalman filter, State Of charge (SOC), Sum Square Error (SSE).