BATTERY MODEL FOR SOLAR CAR SIMULATION

[1]PASIKA TEMEEPRASERTKIJ, [2]YUKI SHIMIZU, [3]HIDEKI KIMURA, [4]KOUHEI SAGAWA

[1]Graduate School Of Engineering, Tokai University,Kanagawa, Japan
[2]School Of Information Science And Technology, Tokai University, Kanagawa, Japan
[3]Graduate School of Engineering, Tokai University, Kanagawa, Japan
[4]School of Engineering, Tokai University, Kanagawa, Japan
E-mail - jangjinching_nongtoy@hotmail.com

Abstract - Recently, since the use of natural resources, especially fossil fuels such as oils and natural gases, drastically increase, so that the energy supply to automotive will not become sufficient. A solar car is ultimate electric vehicle which can run by using solar energy. However, it is difficult to realize the long-range cruising distance, because the energy areal density of solar is not so high. In order to solve this problem, model-based development of solar cars is effective manner. To improve the performance of solar car, this study has been carried out to build a battery model as one step. Firstly, discharge and charge characteristics of Li-ion battery have been measured and some parameters for its model have been obtained. Next, new model of Li-ion battery has built by using the parameters. In this paper, the battery performance related with charge and discharge has been studied by using the Matlab and the Simulink. The state of charge, SOC, have been compared between the simulated results and the actual data under the transient state.

Keywords - Solar car, electrical power supply, simulation model, lithium-ion battery, energy storage