

ABSTRACT

The battery is one of the essential tools for energy conversion and storage that works based on electrochemical principle. Problems that often occur in the battery is overcharging or overdischarging experience which can affects the performance of the battery itself. Research on measuring instrument designed this state of charge surveillance system to be able to know the status of the charging of the battery so that it can keep the performance of the battery. The system was created in the form of prototypes using the sensor voltage divider and a microcontroller as the data processor. Testing dilakukan with battery 12 volt lead acid with a capacity of 12 Ah uses LED light 10 Watts as the load for testing. The design of the Open method of menggunakan system voltage circuit voltage sampling data by performing a battery of up to reach the rest period to get the derivative constant algorithm (Kv). From testing can note that the battery voltage can be used as parameters of the State of charge because it has a linear relationship. From the results of sampling data to get the value of Kv obtained battery will reach a rest period after 3-4 hours after the load is removed from the terminal voltage changes, and the fastest in the first 30 minutes. The results of the prediction method using SoC Open circuit voltage when battery is overburdened to cut-off voltage indicates the status of 30% so that it can be a reference to a warning the use of batteries. The average relative error of method validation results obtained by $Ocv \pm 0.14\%$ these results indicate that the methods used in this study are quite nice and can be used for the development of the analysis of the State of Health of the battery.

Key Words: Battery Management System, State of Charge, Open circuit voltage, rest period.