

ABSTRACT

Solar power has made common to public nowadays and it was well known for its ability to convert sunlight into usable electrical current. This green technology is adopted in this project to charge the battery banks of the kiddy cars using only solar panel and the battery banks will be used to drive the motor of the kiddy car. A battery selector module will be implemented to select which battery bank is to be charged and at the same time the other battery bank will be used to drive the DC motor of the kiddy car automatically. The kiddy car should be able to move forward, reverse, left, and right. Two LED bar-graph displays will be used to display the battery voltage level of each battery bank.

The output of the solar panel will be regulated by 9V and 5V voltage regulator respectively to be used to charge battery banks and power up logic gates IC.

A lead-acid battery charger circuit will be built to charge the battery banks and LM317 DC-DC converter will be used to sense the feedback voltage of the battery bank to supply a suitable charging current and voltage to the corresponding battery bank.

Voltage divider rule and logic gates are utilized in battery selector circuit to determine with battery is to be charged and which battery is to be used to run the DC motor. The relays will be the switcher according to the output from the logic gates that will determine their destination.

The LM3914 bar-graph display driver will be used to drive the LED bar-graph to display the voltage level of each battery bank.

H-bridge DC motor controller circuit will be built using relays to control the rotation direction of the DC motor to change the moving direction of the kiddy car.

This project was carried out successfully accordingly to the design specification. The kiddy car can be charged by solar panel and it has 2 battery banks to prevent interrupted ride when the sole battery bank is exhausted. The battery level display is able to display the current battery voltage and let the user informed the status of the battery banks.

Keywords: Green Technology, Solar Panel, Lead-acid battery, LM317, H-bridge, battery selector