

# BATTERY CHARGER USING EXERCISE BICYCLE

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## ABSTRACT

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Nowadays many people use exercise machines. As a part of renewable energy, this project's aim is to utilize the owner generated from a dynamo attached to a bicycle to charge 3 1.2 AA/AAA-size rechargeable batteries and any device that supports charging through a USB 2.0 port. A digital display is to be included to indicate the charging level of the AA/AAA-size rechargeable batteries and the charging circuit should auto disconnect form the input when the AA/AAA-size rechargeable batteries are fully charged.

The output of the dynamo is to be converted from an AC source to a DC power source by using a rectifier-filter-regulator circuit so as to power the battery charger circuit.

A constant current charging method is to be implemented as the charge method of the AA/AAA-size rechargeable batteries using the LM3647 charge controller IC and the LM317 DC-DC converter.

The method o be used for battery charge termination when full are negative delta voltage( $-\Delta V$ ) which will disconnect the batteries form the charger when the battery voltage is above a threshold value and delta temperature ( $\Delta T$ ) which senses the battery voltage and auto disconnect is the battery temperature rises beyond a specified limit.

The LM3914 bar-graph controller will be used together with a 10 green LED bar-graph display to digitally indicate the voltage level of the AA/AAA-size rechargeable battery pack.

The project was carried out successfully to design specifications. The devices can be used conveniently with a bicycle having a dynamo to charge AA/AAA-size rechargeable batteries and any device that supports charging through a USB 2.0 port.

**Keywords:** Renewable energy, Dynamo, Rechargeable batteries, USB port, Battery charger, LM3647, LM317, LM3914, Bar-graph display.