

Coin Based Mobile Charging using Solar Panel (CBMCUSP)

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Abstract— As communication with world is becoming one of the essential parts of our life, handy electronics devices like mobile phones are one of the crucial devices everyone carries across the world. Use of such devices requires electricity supply for charging the device, which is not abundantly available in rural India. Hence, a vending machine like system for charging the cell phone has been proposed which works on solar power system. The solar panel tracking system that charges the battery will drive the microcontroller. The microcontroller will control the amount of charging available to user. The proposed system shall provide electronic charging for the cell phones in the areas that are facing power crisis.

Keywords— Battery, Solar panel, Vending machine, Mobile charger.

I. INTRODUCTION

Mobile phone's become a major source of business/personal communication; the mobile phone business is currently worth billions of dollars, and supports millions of phones. The need to provide a public charging service is essential. The coin-based mobile battery charger develop in this project is providing a unique service to the rural public where grid power is not available for partial/full daytime and a source of revenue for site providers. The coin-based mobile battery charger can be quickly and easily installed outside any business premises. The mobile phone market is a vast industry, and has spread into rural areas as an essential means of communication.. Usually ordinary solar panel is always faces only in one direction because of this reason the solar panel may not get sufficient sun rays to work. In this synopsis, solar panel controller and power optimization is proposed in order to overcome this defect. Here the panel will rotate according to the readings read by the LDR. So it will utilize the full sun light to work & power optimization is also done by using the LDR. This work mainly designed to control the Solar panel automatically, maintains face of the solar panel towards the sun. This is done by controlling the mechanical movement of the solar panel. Usually sun rises at east and sets at west [1].

In ordinary system, if it faces towards east then it cannot change the direction towards sun during sunset. Because of this reasons solar panel may not get sufficient sun rays to work. The growth of mobile phone market is phenomenal in recent years and the need for charging the mobile battery is required anytime and anywhere. In many developing countries the grid power is not available for few hours to several hours on daily basis especially in semi urban and rural areas where the mobile phones are the essential communication device. While the urban population use more

sophisticated mobiles with good power batteries lasting for few days, the rural population buy the pre-owned mobile phones that require charging frequently even two or three times a day. In the event of unpredictable grid power and availability of abundant solar power a coin based universal mobile battery chargers is designed and develop in this project.

This project is very useful to people who are using mobile phone without charging condition in public places. It is also useful for the area where electricity is present for few hours. The main aim of the project is to provide the benefit of charging their mobile in emergency conditions and giving the best to the people in less cost.

II. BLOCK DIAGRAM

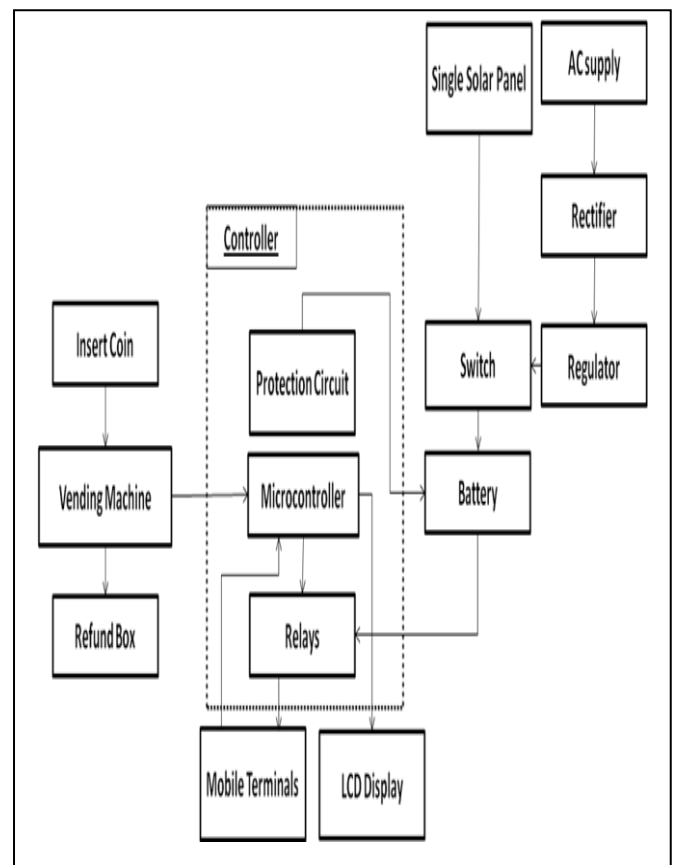


Fig. 1. Block diagram of CBMCUSP.

III. METHODOLOGY

IV. FLOWCHARTS

A. Input stage

First the LCD will display the type and size of the coin for the user so as to make sure that user enters the correct coin insertion. If any other coin, is inserted in the coin insertion slot will be returned to refund box. The coin is inserted in a vending machine and the output of the vending machine will give high pulse to microcontroller.

B. Controller

This section acts according to the input signal from the vending machine. Coin accepted or rejected is based on the diameter, shape and weight of the coin. This invokes to microcontroller along with LCD interface displays the selection of mobile option if particular mobile is selected for charging the corresponding routine is activated and charge the mobile for a particular duration of time .When the routine completes, it indicates charge complete message through LCD display. User want to continue the charging for same duration user has to again enter the coin of same type. If user get a call on that time than he can safely remove the mobile from the charger and continue attending a call. Charging time which is fixed is not over than user can again connect the mobile to the respective charger. Similarly the same procedure is followed for charging more than four different mobiles.

C. Output & Display

The LCD displays all the information to the user as when required. When the mobile battery is connected, it displays "Insert Coin". While charging it displays "Charging" and at the end of charging cycle it displays "Charge completed". For charging continuously the coin has to be inserted when the display shows "Charge Completed".

D. Power Supply

In this project two power system is used solar power system and ac supply system but main power is solar power through which 12v battery is charged .For switching the two power system switch is used. In AC supply system AC power converted into dc power by using rectifier and it is controlled by regulator the op of regulator is connected to battery.

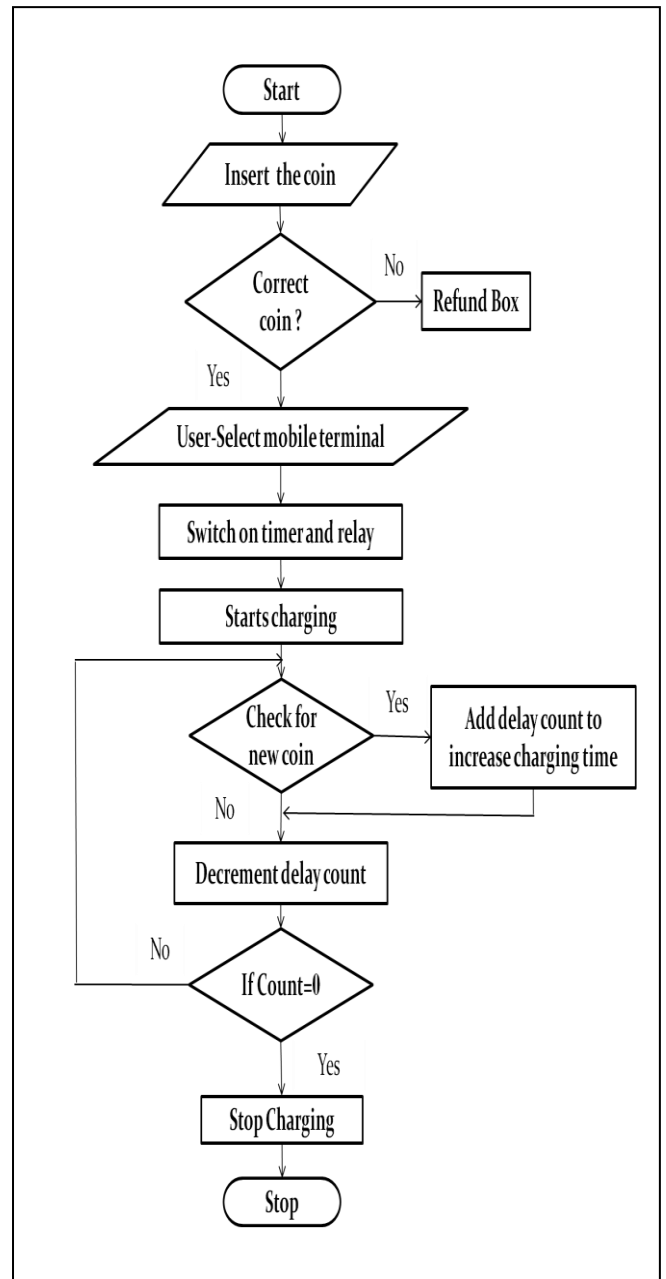


Fig. 2. Flow chart of mobile charging.

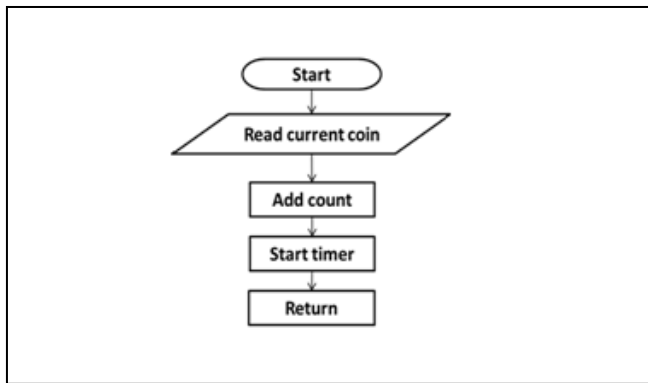


Fig. 3. Flow chart of delay program.

First LCD will display to insert the type of coin then user will insert the coin. When a coin is detected by a vending machine, it has two possible cases coin is valid or invalid. If coin is valid then lever switch is open and the coin goes to collection box. If it is invalid then it is collected in refund box. After this LCD will display select port terminal. The user will have to connect his mobile for charging to respective port. Then microcontroller will close the respective relay switch and it also switch on the timer. Microcontroller will check for new coin if new coin is detected then it will add delay count. If no coin is detected then it will just decrement the counter and the counter will be decrement until count becomes zero. When count is equal to zero the charging stops. Same procedure will be repeated when user will again enter new coin.

V. EXPECTED RESULT

The expected result of this is to charge a mobile battery with the help of solar panel. If a user enters a 1 rupee coin at that time the mobile battery will be charged up to 30 to 40 percent.

VI. CONCLUSION

A system for charging mobile batteries of different manufacturer using solar power is proposed. The system is proposed for rural and remote areas where the current supply is not available all the time or for sufficient time. This project is very useful at such locations where people are facing power crisis. Since, necessity of communication is very important now days, cell phone charging is one of the problem faced by

users. The proposed system shall provide a source of charging the cell phone in emergency conditions without the electric supply.

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