Universal Mobile Battery Charger Using Coin Technology

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ABSTRACT: This paper describes the coin insertion mobile battery charger; Mobile phone's become a major source of business/personal communication. As technology becomes advance the battery using is also increases so all times we need a charger to charge a mobile phone. Students and many people use the public transportation that unaware of level of their battery is discharging are prospective customers for coin insertion mobile phone charger service. Recommended over in hotel, airports, conference canters, shopping malls, train terminals. This can be also placed in rural areas where the grid power is not available partially/full time source of revenue for site providers. This design based on the Arduino Atmega328P micro controller. The source for charging is obtained from solar energy and stores that power into rechargeable battery source.

KEYWORDS: Mobile Phone, Solar panel, Arduino Atmega328P, Mobile phones, Charging circuits, LCD display, Relay, Adapters.

I.   INTRODUCTION

Now a day's nearly equal to 70% people having the mobile phone. And charging is the need of the mobile phone. In many developing countries the grid power is not available for few hours to several hours on daily basis especially in urban and rural areas where the mobile phones are essential communication device. Also on the highway streets, many times battery becomes flat in the middle of conversation when access to a standard charger isn't possible.

The mobile phone market is a vast industry, and has spread into each and every area as an essential means of communication. Hence it is interesting to make device which cater for the growing number of mobile users worldwide. A suitable microcontroller is design for all the controlling applications. The charging is done by using solar energy and in case of non-availability of solar energy grid power is used. Coin detection and verification is based on the image processing. Coin is placed into the insertion slot properly. This coin will compare with database. In database, images of coin (like 5Rs, and 10Rs) are saved. If the database image and our input image are matched then charging of mobile will start. If anyone inserts the duplicate coin then MATLAB shows the black window and the coin will be refunded.

II.   LITERATURE OVERVIEW

The mobile phone charger based on currency is very useful for the that person to use currency to charge for that mobile. The IR(Infrared) transmitter is used to transmit the IR signal on transmitter side. The IR receiver is used to receive the IR signal on the receiver side. Between the IR transmit and the receiver, insert a coin to change the pulse polarity at the SCU input. The SCU is used to convert the low pulse into high pulse and in the pulse is inverted into the inverter.

III.   BASIC ASSUMPTIONS

The design of coin insertion mobile battery charger is based upon the following assumptions:

- Maximum solar energy is used for charging the lead acid battery inside the mobile battery charger to keep it complete charge all the time.
- The charging current is up to 1.5A@ 5vDC and this takes care of the mobiles manufactured by Nokia,

  Samsung, micromax, as us and others of first and second generation mobiles.
- A single solar panel of 11WP capable of supplying up to 0.63 amp is used.
- Provision to charge maximum 2 different types of mobiles is main aim.
- Insertion of a fixed coin (1, 2,5,10 rupees) is used for charging.

IV.   HARDWARE RESOURCES

The mobile battery is start charging when the amount of coin is inserted in coin insertion slot at the input stage. We have provided 3 charging ports for 3 persons can charge simultaneously. The amount of coin and battery voltage will be displayed on LCD so ensure correct coin will be inserted. For coin Detection we have provided Database of coin for fixed amount of coin which will be stored in the in processing device. If person insert defined value of coin in insertion slot then that time the camera will capture the image of the coin which place at particular height and fixed location. It will compare with store data base with help of MATLAB program. If coin is matched with compare data base the charging will start otherwise coin is not matched with database it will refund from refund box. A sensor attached to the coin insertion slot accepts the coin into the battery charging unit and start charging the mobile battery for a particular given time controlled by the software of the microcontroller.
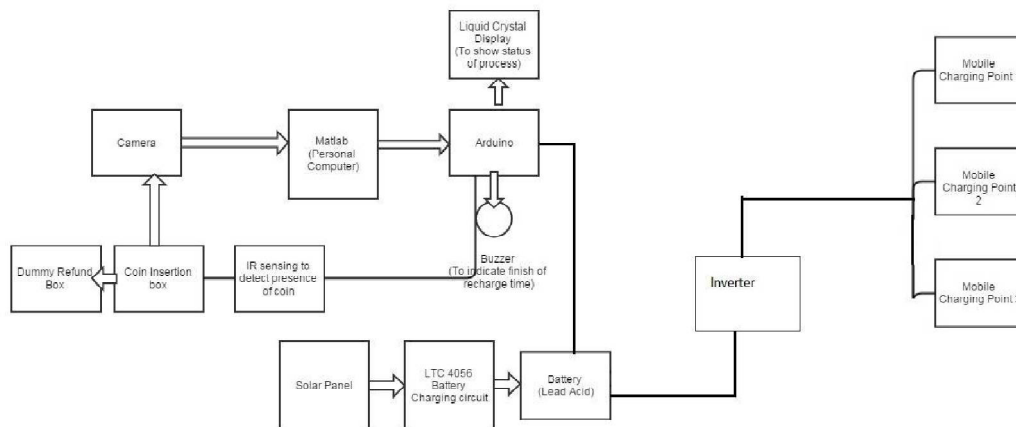
A. **Controller -**This section acts according to input. This section acts according to the input signal given from the MATLAB. Coin accepted or refunded back is done by using database matching of the coin. This invokes microcontroller along with LCD which displays the selection of mobile port if particular mobile is selected for charging, the corresponding sequence of action is activated and start charging the mobile for a particular duration of time .When the routine completes, it indicates charge complete message through LCD display. Similarly the same procedure is followed for charging more than two different mobiles at the same time. The simple process is indicated through flowchart as shown below in section D.

B. **Output and Display-** We are converting the constant DC voltage into AC voltage to charging port so we can provide charging to any mobile device .The LCD displays all the information to the customer. When the

mobile battery is connected, it shows on LCD" Insert Coin". During charging it displays "Charging" and at the end of charging it displays "Charge completed".

C. **Power-** The salient feature of the Coin insertion mobile battery charger is that it draws power from the solar energy during the day time and stores that power in the provided battery. The Power stores into the battery is given to the Charging circuit and others component present in the circuit.
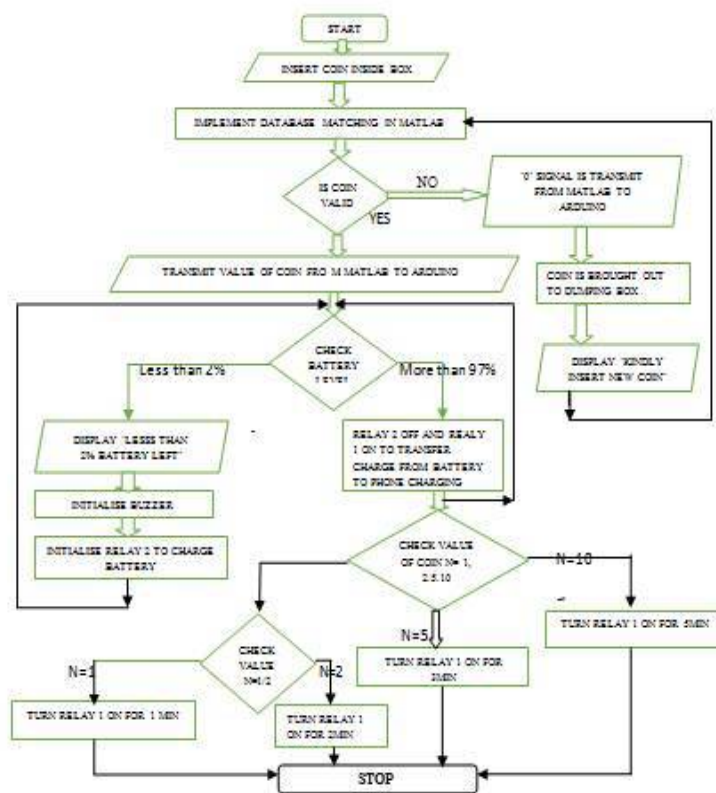
V. CONCLUSION

In this paper we represent solar power mobile battery charging for rural - remote areas where the Grid power supply is insufficient or inadequate. This paper is very useful in day to day life because now-a-days every person is having mobile phones and communication becomes essential part of life and every persons want to connect to each other. But every time we cannot carry charger with us or we may forget to carry mobile charger for long drive and sometimes battery get flattened in the middle of highway then this device is very useful.

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BIOGRAPHY

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