

SOLAR OPERATED RFID BASED MOBILE CHARGER

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ABSTRACT

Mobile phone play's an important role in present communication world. The growth of mobile phone market increase day by day and the need of charging the mobile battery is required anytime and anywhere. This paper describes mobile charger using solar panel system based on RFID module. Many times on public places such as railway station and bus stand, unfortunately battery gets discharge during conversation. To overcome this problem the universal mobile battery charger is design.

The idea of this smart power system RFID based mobile charger using solar panel helps us in the emergency posture by the way of charging our mobile.

In this generation and the future generation the mobile are playing very important role in our day to day life. Due to continuous work load we face low battery problems and at time of emergency we can't find any solution at rural place, colleges, roads side, hospitals etc.

To deal with this disappointment we found solution for mobile charging by suddenly plugging charger of mobile after scanning RFID card. When there is no grid power then by using solar energy we can charge laptop and mobile etc.

Keyword: - solar panel, RFID card, RFID reader, mobile charging system, microcontroller....

1. INTRODUCTION

In this developing society we know that mobile phones are ruling the most part of our human life. The life of mobile phone is decided by the battery from charging capacity the battery is slow down by often usage of application in the mobile phone. (like Whatsapp, facebook, twitter, social network, games, calls, etc.)

The main aim of the project is to build a RFID based mobile charger which provides a unique service to both urban/rural public where grid power is not available for partial/ full time and source of revenue for site provider for establishment.

The RFID based mobile battery charger can be quickly and easily installed outside any business premises and solar energy is one of the abundant source of energy which is freely available in the nature. In this solar panel system is mainly used harness that energy in order to use it as power supply for charging the mobil In the event of unpredictable grid power and availability and developed.

Solar charger convert light energy into DC current for a range of voltage that can be used for charging the battery. They are generally portable but can also be mounted. In this design of RFID based mobile charger, a fixed solar panel is used.

2. OBJECTIVES

- The main purpose of this project is to reactive a low or dead battery once your phone's battery has been drained somewhere in public. RFID based mobile charger will be very useful to public due to its technical machinery that recharges the mobile phone and bring it back to life once it died in public places.
- To implement the simple and hand efficient mobile charger which helps the user, to charge their phone during urgent needs.
- To reduce the wastage of electrical power which often arises due to negligence of the user.
- To provide a unique services where grid power is not available, so we can use RFID based mobile charger using radio frequency identification (RFID) or solar energy.
- Different type of mobile can be charged.

3. LITERATURE SURVEY

A new type of mobile charger designed for public utilities. This type charger will be very useful for the public people; many times the battery become flat in the middle of conversation in particularly at inconvenient times when access to a standard is not possible. Therefore solar operated RFID base mobile charger is determined from solar power and current supply.

[1]. According to S.B. SHRIDEVI, describe coin base mobile charger using solar tracking system. In this research, the system is designed for public in rural as well as semi urban. This is designed base on microcontroller that does the countdown time for a period for a 3 min. with LCD display showing the actual time left. During the time period a relay out is latch and finishing time in process.

[2]. Gunjan Chhabra, Sunil Kumar and Pankaj Badoni. In this communication era, mobile- telephone industry has grown profoundly. The urban population uses the latest mobile phone technology while the rural population buys second hand ones, mostly with degraded battery, that require frequent charging. This battery problem becomes a giant when user doesn't have a standard charger or an electricity connection. In this paper, researchers intent is to propose a public coin based mobile battery charging system. By using image processing technique, value of the coin has been detected for a limited time; it will charge the device accordingly. A suitable microcontroller is programmed for all the controlling application. The source for charging is obtained either from a direct power grid or by solar energy.

[3]. After understanding the related articles, literature and analysis of a few similar projects, the current design strategy was selected. In this project a method of charging mobile phones with RFID smart card has been designed and with the provision of solar tracking and locking system, travelers who need to charge their mobile phones and gadget any time and anywhere.

[4]. Thus we have worked on the project RFID based mobile charger as per above survey. This paper is very useful in day to day life because now a days every person wants to connected with each other. But every time we can not carry charger with us or may forget to carry mobile charger for long drive then this is very useful.

4. METHODOLOGY

Hardware used: Solar panel, Rechargeable batteries, RFID reader, capacitors, Voltage regulator IC, Buzzer, sensor, Microcontroller, Relay, LCD display (16*2).

Software used: Arduino nano (ATMEGA16)

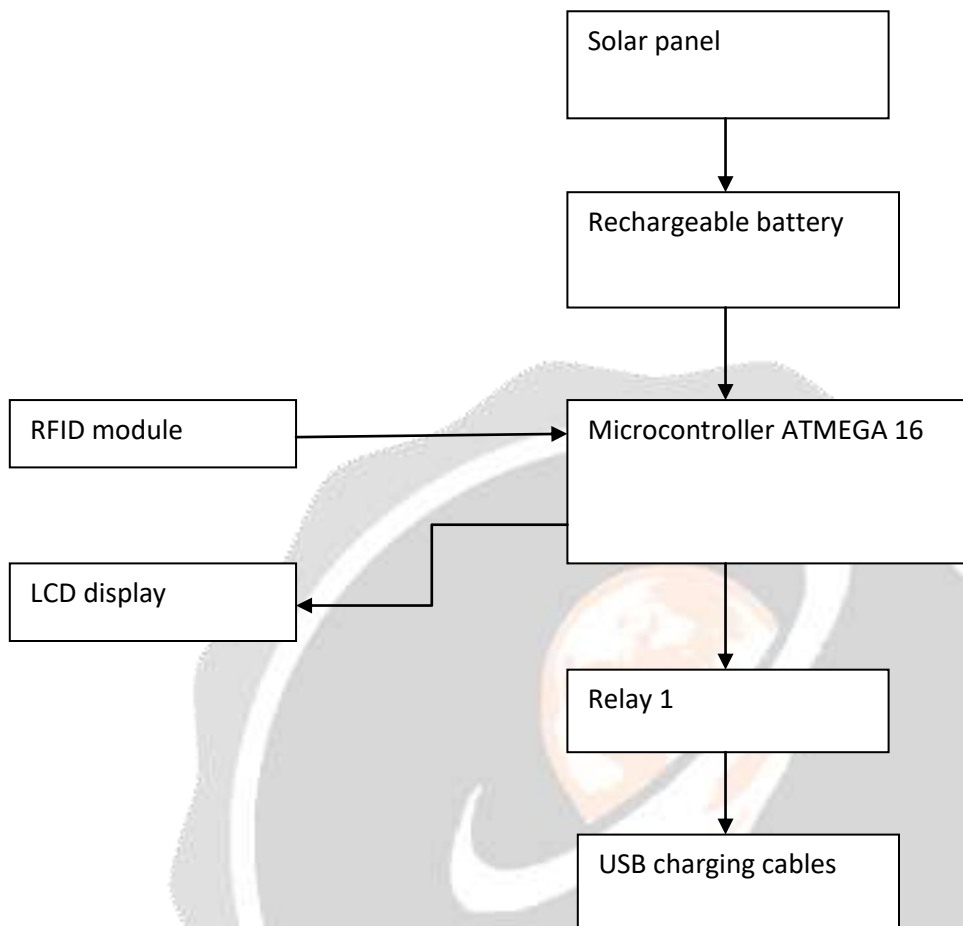


Figure 1: Block diagram

4.1 METHOD OF IMPLEMENTATION OF PROPOSED SYSTEM

INPUT- In this when a RFID CARD is inserted in a reader which is made up of one and receiver. When interruption occurs in the sensor mechanism then command signal will be send to the microcontroller.

CONTROLLER- Microcontroller works only when the command receives from RFID reader. LCD display will shows the timer in reverse counting. Controller gives command signal to relay switch ON or OFF.

OUTPUT- The supply from relay given to the mobile charger pin. The charger will be ON only when the RFID card swaps. It gives 5v & 1500mah power to the mobile battery.

4.2 ALGORITHM

1. Start
2. Swap RFID card.
3. Gives the command to the microcontroller.
4. Send supply to relay switch ON/OFF.
5. Relay provide supply to mobile charger pin.
6. Mobile charging will start.
7. After completing charging message will be displayed on LCD.

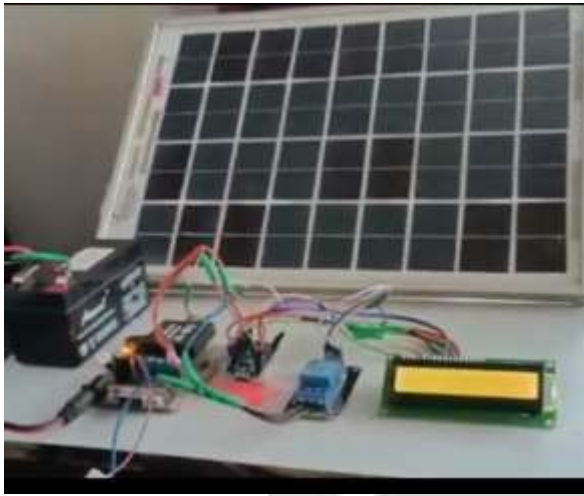


Fig -2 Experimental setup of the proposed work



Fig-3 Components used

5. RESULT AND DISCUSSION

In this project a novel method of charging mobile batteries of different manufacturer using solar panel has been designed for rural and remote areas where power supply is not at all available all the time. This project is very useful in today's life. Because nowadays the necessity of communication is very important, so every person having mobile phone but every time we cannot carry charger with us. When we are going for long travel we may forget to carry mobile phone charger. This project is used to help the people by RFID based mobile charger.

Working in RFID mode using solar power supply.

The supply to the system is given by solar energy. When user swipe RFID card in the RFID reader, the communication between RFID tag and RFID reader takes place and sends resultant signal to microcontroller and relay gets close to start charging the mobile phone. User has to plug the phone to one of the pins. If RFID card is

invalid than RFID reader will not read the tag. After completion of charging time user can take out his mobile phone. All this process is carried out by programmed microcontroller.

6. CONCLUSION

After understanding the related articles, literatures and analysis of a few similar projects, the current design strategy was selected. In this project a novel method of charging mobile phones with RFID card has been designed and with provision of solar tracking and locking system, travelers who need to charge their mobile phones and gadgets any time and anywhere. Thus we have worked on the project solar operated RFID bases mobile charger.

7. SCOPE FOR FUTURE WORK

As this is an opensource project the market potential for it makes no sense. On the flip side of popularity of this project is expected to be huge. To make sure we have plenty of energy in future, it's up to all of us to use energy wisely. We must all conserve energy and use it efficiently. It's also up to those who will create the new energy technologies for the future.

This idea can be used for many purposes instead for charging mobile. It is used for buying foods in restaurant, snacks in the stores, by inserting the required amount of money to that particular product. By this idea, queue can be reduced at the ticket buying places in the trains, and buses in the fast moving society. This project can also installed in hilly areas, where wind power can be implemented to charge and store power in the battery.

The project can be used in the following areas

1. Railway station: This type of project is used in railway station for public when they are in need.
2. Shops: It can be installed in many shops and earn easy money.
3. Rural areas: This project can be installed in rural areas where the power grid is not available at partial/full time.

Charging slots can be increased for more number of users.

Laptop and camera can be charged using this system.

Also used theft proof RFID based charging system.

8. REFERENCES

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