Smart Power Distribution Scheduling for Electric Vehicle

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Abstract— As electric vehicles going to capture the market and also Indian pollution standards are going to narrow. So there is huge change in traditional vehicles. As our conventional electric grid is infeasible to use as reliable source for electric vehicle according to time aspect. There is always headache to charge battery operated equipment's. In this project, we are going to develop smart scheduling system to charge the electric vehicle on demand. We are going to use RFID tags for on/off the switch, also we are using voltage sensor. By using this system user will able to avoid misuse of charging switch which located at a parking area and also reduce the power consumption.
Keywords: Electric Vehicle, RFID, Arduino Uno

I. INTRODUCTION

We are surround with many embedded products our daily life depends on the proper functioning of these gadgets. By using palm devices of our work space enables us to do many of our tasks effectively like television, radio, washing machine, micro oven in our kitchen. As the technology is advanced things are becoming easier for us and with the help of Automation devices are controlled to reduce the human work in production of goods and services. The most important problems faced in our society is misuse of electricity and its loss. Sometimes due to knowingly or unknowingly persons switch ON the lamps or fans which results in wastage of electricity. The design helps to finish all these problems. So there is the system which useful for the misuse of electricity. RFID is used for identification purpose. Identification of individuals is always prioritized in secured places like bus and train stations, national and international airports.

It is very important factor to be considered while allowing security solutions for apartment area. RFID is an inexpensive technology which does not require Guided data for transmitting data.

In fact, security provided by the RFID is much better for identification purpose. Enhancement in the usage of this emerging technology is being traced in the fields of business, industry and logistics support in particular due to its capability to detect, track, classify and manage the flow of information systematically. An ideal RFID system comprises of RFID tag, RFID reader, application software at back-end for management, computing hardware for operation handling and middle-ware to cover up any incompatibility among the components regarding the data formats.
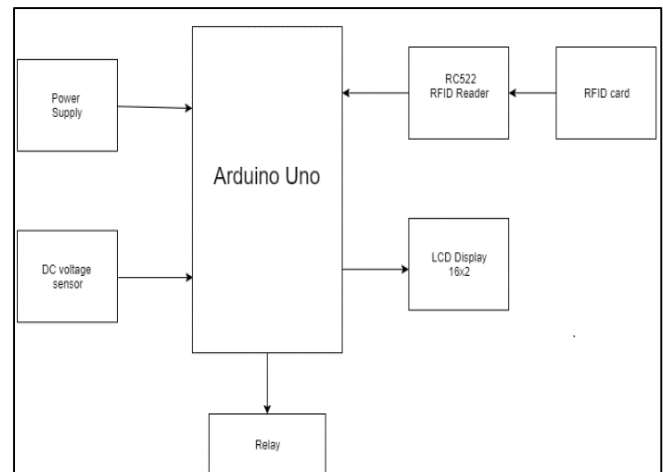
II. BLOCK DIAGRAM

Fig. 1: Block Diagram of Proposed System

A. Block Diagram Description:

In this project we use RFID (RC-522) module at input side. For controlling section there is use of ATmega328 (Arduino UNO) controller. Also Relay is present at output side for on/off purpose.

1) RFID Module:

Radio Frequency Identification (RFID) module use for the identification purpose. This module consist of a reader and tags/cards. Reader acts as Receiver and Tags acts as Transmitter.

2) Arduino (UNO):

ATmega328 is a controller which control the RTC and RFID system. According to input section (RTC and RFID) Arduino (ATmega328) this controller control the output section (Relay).

3) Voltage Sensor:

Voltage sensor measures the voltage of the battery of the electric vehicle. It has maximum input voltage range in 0-25 v DC.
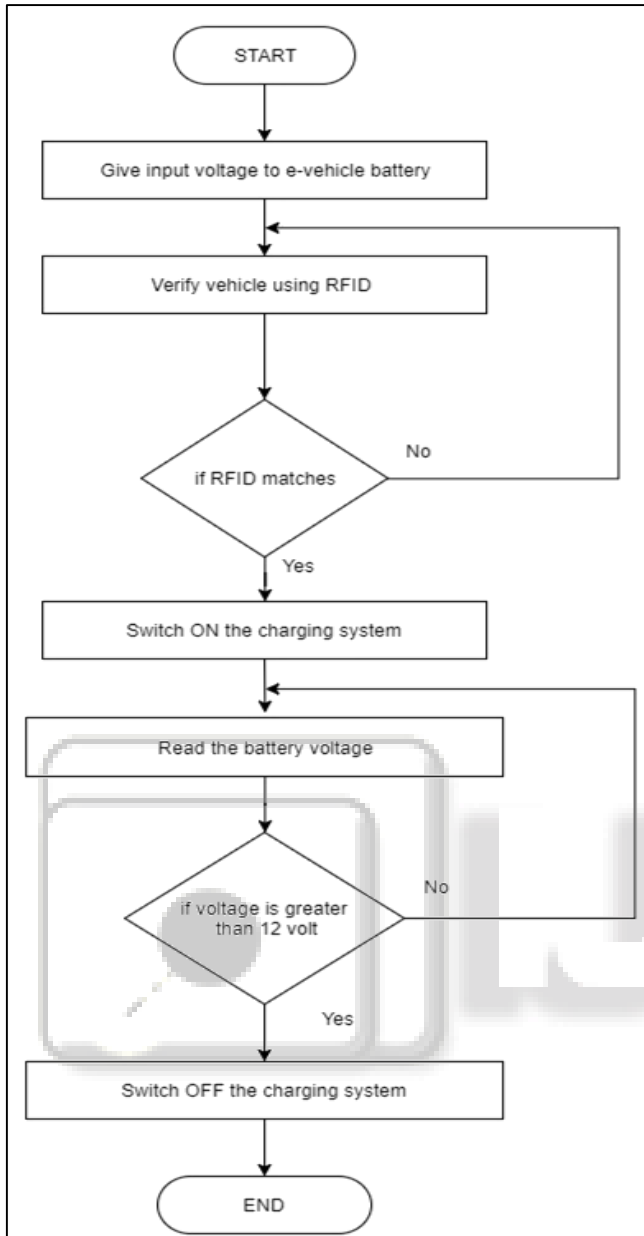
III. FLOW DIAGRAM

Fig. 2: Flow Diagram

IV. WORKING

In this project, for charging Electric vehicle first applied voltage to electric vehicle battery. After that switch is verify by using the RFID tag. For this purpose RC-522 RFID reader is used.IfRFID Card is matched then switch ON the charging system. If RFID Card not match then charging system does not turn ON. After recognizing Card, voltage sensor reads the current voltage of battery. And calculates battery percentage. Battery percentage is shown on the LCD display of the system. If voltage is greater than 12 volt then system shows that 'battery is fully charged', otherwise it continues in charging condition. When battery is fully charged then system will automatically turns OFF.

Fig. 3: Project Setup

V. CONCLUSION

In this project, the system uses radio frequency identification with biometrics technology to differentiate between valid and invalid users. The switch will be controlled by RFID tags. User will able to control the access of that switch. Also protect the battery from over charging.It can be also used in many military application where authorization is required.

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