BATTERY MONITORING SYSTEM USING IOT

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***Abstract*: In this paper, real-time monitoring of lead acid batteries based on Internet of things is proposed and evaluated. Our proposed system monitors and stores parameters that provide an indication of the lead acid battery's acid level, state of charge, voltage, current, and the remaining charge capacity in a real-time scenario. The wireless local area network is used as the backbone network. The information collect from all the associated battery clients in the system is analysed in an asynchronous transmission control protocol/user datagram protocol based C server program running on a personal computer to determine important parameter.**

***Index terms*--Batteries, monitoring parameters, charge capacity, buzzer, LCD display .**

INTRODUCTION

The growing understanding of global warm around the world, the demand for clean fuel/energy is on the rise and as a result there is a continuous shift towards the electric vehicles and hybrid electric vehicles. Battery performance is influenced by factors such as depth of discharge (DOD), temperature and charging algorithm. This paper attempts to provide a measurement of voltage and current level of the battery using internet of things.Lead-acid batteries are very effective at powering many different applications. They are easy to obtain, relatively inexpensive, and provide a lot of power to whatever they are hooked up to. Regrettably, if there is nil monitoring the charge, the battery will eventually run out of power. In addition to determine the charge of the battery, the current voltage of the battery is needed. By depending on the output voltage of the battery, the approximate charge of the battery can be estimated.

1. IMPLEMENTATION OF BATTERY MONITORING

In order to implement this design, a microcontroller with an ADC is required. Many microcontrollers do not support voltages above 2.5V or 5V reference voltage for their ADC, so a voltage divider is needed in order to step down the voltage to something the ADC can work with. Resistor R would then be 50000 / (Vin / Vout - 1). Therefore, the range of voltages obtained at Vout will be between 0V and whatever logic high is for the microcontroller. The code for the microcontroller will not be difficult to write.

1.1. EXISTING SYSTEM

Battery performance is influenced by factors such as depth of discharge (DOD), temperature and charging algorithm. In the existing system of this project, the health monitoring of the batteries is done by using temperature sensor and voltage sensors. So the voltage level and temperature level only calculated in this system. Then the state of charge is obtained in the existing system. In the existing system only the temperature and voltage level only identified. Monitoring parameters less.

3. PROPOSED WORK

The demand for electric power for industrial purposes is growing rapidly. Many transportation vehicles and uninterruptible power supply (UPS) systems that are used in heavy industries require electric power for their smooth operation. These vehicles and UPS systems are equipped with lead–acid batteries as an alternate source of electric power. In addition, fuel saving strategies that actively utilize the power from these batteries are being considered. Therefore, a reliable battery system is indispensable for effective operation in industry. However, it is to be noted that these batteries are considerably costlier and excessive use could result in their malfunction. Also, the damaged lead–acid batteries can have a negative impact on the environment during the recycling process. It is therefore very important to continuously monitor the development and management of these batteries to preclude undue damage and prolong the lifetime of the battery. This paper attempts to provide a measurement of electrolyte temperature, and no. of backup hours parameters of lead-acid batteries. Temperature, Humidity, Remaining Capacity, Full Charge Capacity, Voltage, Average Current are monitored in this method. Monitoring parameters is high. Battery lifetime will be extended. Real time monitoring using IOT interference.

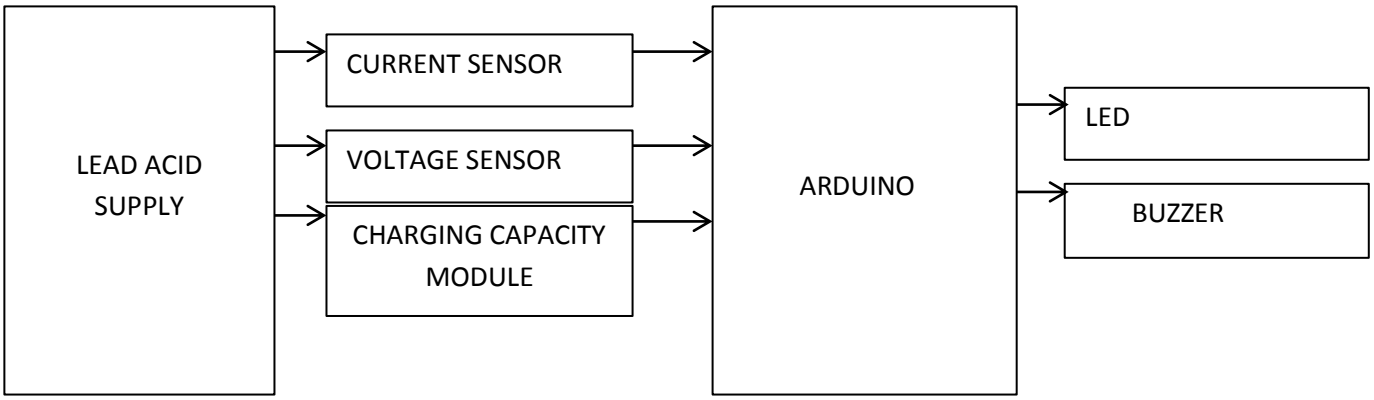
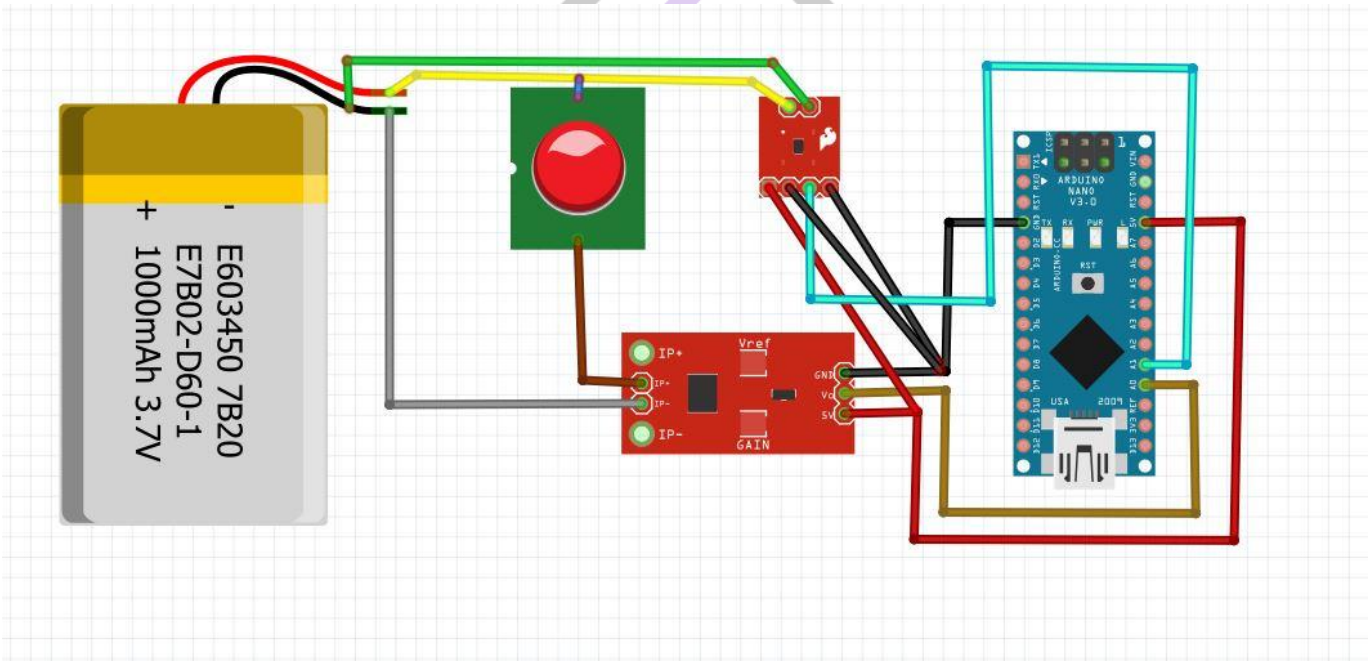


Figure: 1 Block diagram

3.1. WORKING

3.1.1. MONITORING THE WORKING COMPONENTS



3.2. COMPONENTS

3.2.1.VOLTAGE SENSOR:

Voltage gate ion channel generate electrical signals in species from bacteria to man. Their voltage sensing modules are responsible for initiation of action potentials and graded membrane potential changes in response to synaptic response and other physiological stimuli.

3.2.2. CURRENT SENSOR:

Current sensors are either opened or closed loop. Open loop current sensors measure AC and DC current and give electrical isolation between measured and output of the sensor.

3.2.3. BUZZER:

The Buzzer is an electric signalling device, such as doorbell, that makes a buzzing sound, which may be mechanical, electromechanical, or piezoelectric. Representative uses of buzzer comprise alarm devices, timers, and authentication of user comments such as a mouse click or keystroke.

CONCLUSION:

In this project, we are going to monitor the battery level using current sensor and voltage sensor. When the battery level is getting low, the led will blink, as well as it will be also displayed in lcd and also send message to the particular person using internet of things.

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