GSM BASED GARBAGE MANAGEMENT SYSTEM

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ABSTRACT

Rapid increase in population. We see present day, many times Dust bin are placed near public places in the cities/villages are filled due to increase in the waste every day. so efficient method to dispose the waste has been designed with Gsm system. If the disposal of waste is not proper done it creates unhygienic condition for the people and it creates ugliness to that place. At the same time bad smell is also spread this leads in causes some deadly diseases & human illness, to avoid such a situation we are planning to design "GSM Based Waste Management for Smart Cities". In this proposed designed System there are multiple dustbins located throughout the city, these dustbins are provided with ultrasonic sensor which helps in level of the garbage bins and an so that it is easy to identify which garbage bin is full. When the level reaches the Maximum limit, the ultrasonic device will transmit the level along with the percentage of dustbin these details can be accessed by the concern authorities from their place with the help of GSM Modem and an immediate action can be made to clean the dustbins

Keyword: GSM, Atmega328p, LDR ,LCD

I INTRODUCTION

Due to increase in population .we have few garbage bins placed in cities which is overflowing and it checked by local authorities there are all types of garbage all disposed in bins and it all dumped together. So we designed the new concept of waste manangent disposal using automatic garbage level detecting from ultrasonic sensors and it will provide real time information about dustbins which is situated city. we classified waste in following categories:

- Biological waste
- Recyclable waste
- Plastic Waste

The garbage dustbins is filled these information can be send to the concerned authority person to clean the dustbin. For real time information we use GSM.GSM is now back bone of communication system which is low cost and high performance device and easy to implement. And another application are used in these system is GPS. GPS will show the location of the dustbin. the working of gsm module is give message signal when the dustbin is 95% filled. We have also provided the LCD display for showing the authority number and security purpose
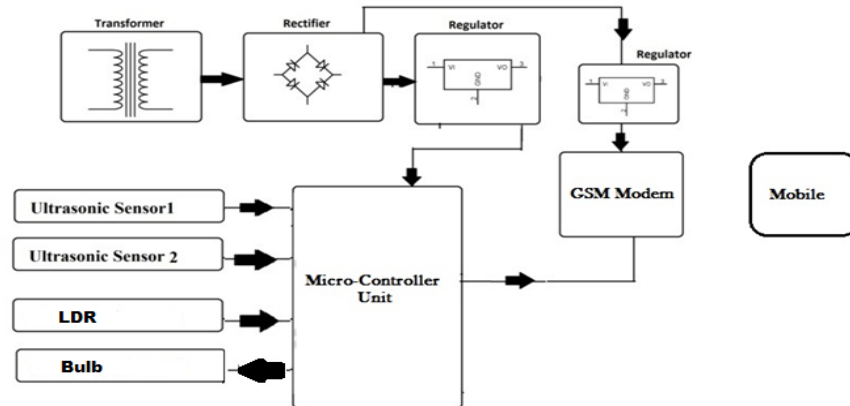
II PROPOSED WORK

2.1 Block diagram

Fig.1.Block Diagram

2.2 Block Diagram Description

In this proposed system supply given to the step-down transformer. the output of the transformer is connected to the input to the full wave bridge rectifier. The output of bridge rectifier is given to the Regulator (7805).The output of regulator gives +5 positive supply which is given to the whole electronic component of the system. Atmega 328 micro-controller is used in these system and the ultrasonic sensors which is fixed the garbage bin is also connected to the micro-controller The ultrasonic sensor is based on property of sound wave and frquency.16*2 alpha-numeric LCD display is used which shows the real time information about dustbin is full or empty.Sim 900 Gsm Module is used for communication purposes. Which works on a frequency of 850/900/1800/1900 MHz
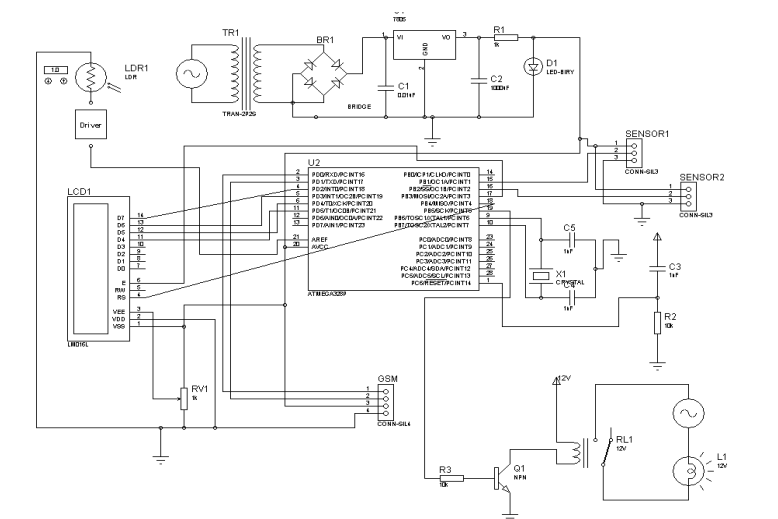
2.3 Ciruit Diagram

Fig.2.Circuit Diagram

In this proposed system 230 volt step down transformer is used. the transformer is connected to the bridge rectifier The function of the bridge rectifier is converted into Ac to DC There are capacitor are used for the filtering purposes. The 7805 voltage regulator are used the function of the voltage regulator is provide constant +5 voltage supply to the system. The heat sink is providing to the regulator for the cooling purpose.

The ultrasonic sensor is connected to the dustbin for the sense the level of the dustbins. The ultrasonic sensor is worked on property of sound and frequency there are two terminals of sensor which is eeco and trigger .Eeco which transmit the waves and these reflected waves are captured by the trigger. The trigger this captured signal gives to the micro controller and micro controller sense the signal and immediate take action. The atmega 328p AVR family micro-controller is used in this system. Which has inbuilt ADC/DAC, timer, shift registers. The 16MHz crystal oscillator is provided to the micro controller for the internal operation Sim 900 GSM modules is used for the communication purposes. Which works on a frequency of 850/900/1800/1900 MHz .which is high frequency as compare to the other gsm module

III HARDWARE DISCRIPTION

3.1 ATMEGA328P Micro Controller

The atmega328P is the one of the most advanced micro controller from micro chip. It is widely used for the experimental and modern application because of its low price, high quality, multiple futures which has inbuilt ADC/DAC, timer, shift registers
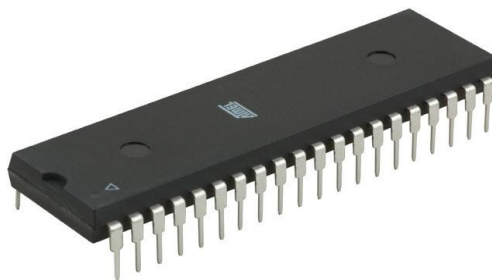

Fig.3.1 Micro Controller

3.2 Ultrasonic sensors

The ultrasonic sensor is connected to the dustbin for the sense the level of the dustbins. The ultrasonic sensor is worked on property of sound and frequency there are two terminals of sensor which is eeco and trigger.Eeco which transmit the waves and these reflected waves are captured by the trigger. The trigger this captured signal gives to the micro controller and micro controller sense the signal and immediate take action.

Fig.3.2.Ultrasonic Sensores

3.3 GSM Module

The GSM module is used in this system for communication purposes for send and receiving messages by using sim card. The RS232 port can be used for communication with computer and embedded system.sim 900 module is worked on a frequency of 850/900/1800/1900 MHz .which is high frequency as compare to the other gsm module. The supply voltage to the system is 3.4V to 4.5V.it is highly flexible plug and play quad band SIM900A
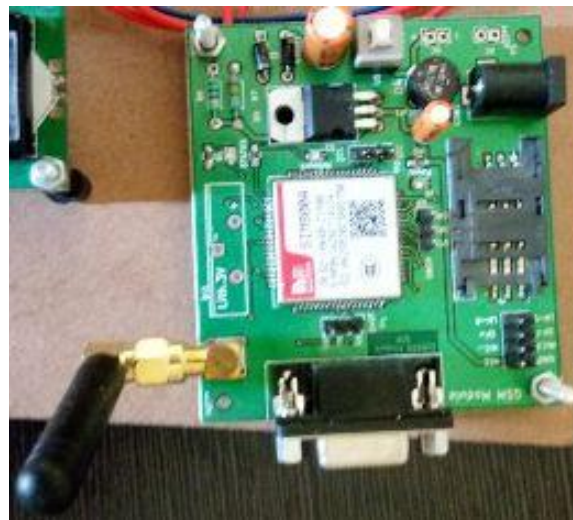

Fig.3.3 GSM Module

3.4 LCD Module

A 16*2 liquid-crystal display is a display which shows various characters. it is compact and light .it has low power consumption The variable potentiometer is connected to the adjust brightness and content.Lcd are available to display arbitrary images or fixed images.
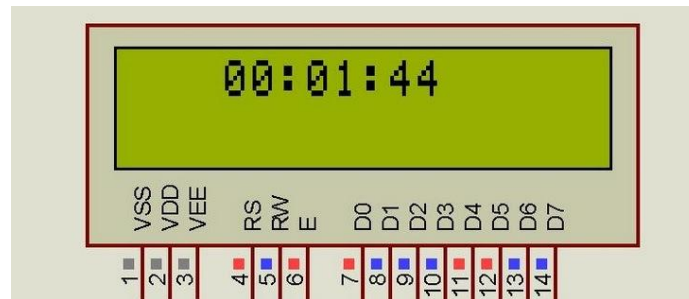
Fig.3.4 LCD Module

IV RESULT ANAYLSIS

The garbage collection is mostly prepared in the urban part of India. More than 65% waste is collected from urban cities. Many time we see the garbage bins are place in public places are overflow. due to this unhygienic condition are occurs and causes deadly diseases. For avoid these condition we implement real time waste management system using gsm system. In these proposed system using automation technique we reduce human efforts. Ultrasonic sensor is provided for detection of garbage levels and passes signal to the microcontroller and micro controller provide signal to the gsm system and gsm module send the message to the authorized person and he collect the garbage from located bins. so it reduces transportation cost and less time consuming system. The fig.7.Shows the message of dustbin levels full/empty and also location of garbage bins for authorised person. Another application added in this system is Light Emitting Diode which works on the intensity of light
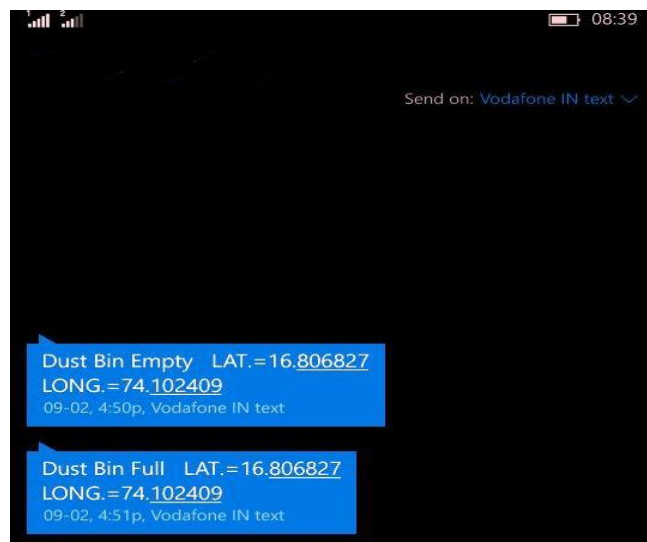

Fig.4.1.Dustbin

Fig.4.2.SMS

V CONCLUSION

- This paper shows the implementation of smart garbage management system using ultrasonic sensors, microcontroller and GSM module. This system assures the cleaning of dustbins soon when the garbage level

reaches its maximum. If the dustbin is not cleaned in specific time, then the record is sent to the higher authority who can take appropriate action against the concerned contractor.

- We have implemented real time waste management system by using smart dustbins to check the fill level of smart dustbins whether the dustbin are full or not.In this system the information of all smart dustbins can be accessed from anywhere and anytime by the concern person and he/she can take a decision accordingly. By implementing this proposed system the cost reduction, resource optimization, effective usage of smart dustbins can be done

VI ACKNOWLEDGMENT

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