

AUTOMATIC WASTE DESTROY USING GSM TECHNOLOGY

V.P. Krishnammal¹, M. Vignesh², and T. Vinoth²

¹Asst.Professor, EIE Department, Adhiyamaan college of Engineering, Hosur, India

²Student, EIE Department, Adhiyamaan college of Engineering, Hosur, India

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ABSTRACT: Automatic Waste Destroy using GSM technology, the dustbins are split off as two half and it is located throughout the city or the Campus, these dustbins are provided with low cost embedded device which helps to track the level of the dustbins and an unique ID will be provided for every dustbin in the city so that it is easy to identify which garbage bin is full. When the level reaches the threshold limit, the device will destroy automatically and it can be accessed by the concern authorities from their place with the help of GSM and an immediate action can be made to clean the dustbins.

KEYWORDS: GSM, microcontroller, IR sensor.

1 INTRODUCTION

Now a days, the dustbins are placed in cities or campuses which are overflowing due to increase in waste every day. It creates unhygienic condition for the people and creates bad smell around the surroundings this leads in spreading some deadly diseases & human illness, to avoid such a situation to design a "AUTOMATIC WASTE DESTROY USING GSM TECHNOLOGY". In this proposed system the dustbin is split into two half, one is biodegradable and another one is non-biodegradable. The dustbin is provided with low cost embedded device. When the limit reaches, IR sensor senses the waste which is in dustbin, then the relay act as electrically controllable switch is turned on to heating the coil. The door will get closed automatically until the temperature becomes to the room temperature.

When the waste is destroyed, collect the ash from the bin by the concern authorities with the help of GSM. The polluted air from the chimney, which is filtered by using CITYCARB F7 filter to reduce the Polluted air by 93%. While in another side is non-biodegradable waste such as plastics, glasses, etc.. When the bin reaches the limit, IR sensor senses the waste and sends the message to the concern authorities by using the help of GSM.

2 LITERATURE REVIEW

Internet of Things: Challenges and state-of-threat solutions in Internet-scale Sensor Information Management and Mobile analytics by Arkady Zaslavsky, Dimitrios Georgakopoulos. This paper gave us the details about mobile analysis and sensor information management that will help in data segregation of various dustbins[1].

City Garbage collection indicator using RF (Zigbee) and GSM technology. This paper gave the details for the module required for the transmission of the data to the receiver side and also the main channel follow of the project. Initially we used GSM technology for our project but later on decided to us Wi-Fi module for the ease of data transmission .

Smart Garbage Management System by Vikrant Bhor.et.al. provided us with additional details and designs needed for flow and management of garbage while collection[3].

M. Al-Maaded, et.al analysed the important to understand the societal concerns over the increased rate of resource consumption and waste production and therefore the policy makers have encouraged recycling and reuse strategies to reduce the demand for raw materials and to decrease the quantity of waste going to landfill[4].

C.Raghumani Singh, M.Dey, The objective of the study was to determine the characterization of the waste and the current system of management activities. The paper highlights an overview of the current municipal solid waste management (MSWM) system of Thoubal Municipality and it concludes with a few suggestions, which may be beneficial to the authorities to work towards further improvement of the current management systems[5].

3 PROPOSED SYSTEM

Considering the Waste Destroy System, the smart garbage bin can be expensive but considering the amount of dustbin needed in India, expensive garbage bin would not be a prior experiment to reduce the waste generated in a day completely that is why we have decided to use heating coils to destroy and recycle it quickly and also make it efficient in applications.

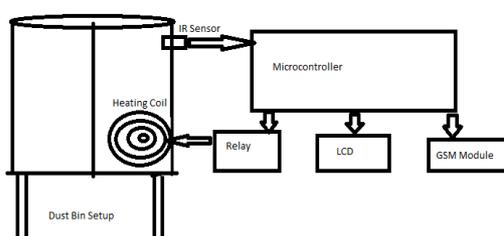


Fig.2. Block diagram

4 SYSTEM ARCHITECTURE

4.1 MICROCONTROLLER (ATMEGA328)

Circumstances that we find ourselves in today in the field of microcontrollers had their beginnings in the development of technology of integrated circuits. This development has made it possible to store thousands of transistors in to one chip. That was a prerequisite for production of microprocessors, and the first computers were made by adding external peripherals such as memory, Input-output modules, timers and other. Further increasing of the volume of the package resulted in criterion of integrated circuits. These integrated circuits contained both processor and peripherals. The Features are High Performance, Low Power AVR® 8-Bit Microcontroller, Advanced RISC Architecture, 131 Powerful Instructions, Most Single Clock Cycle Execution, 32 x 8 General Purpose Working Registers Fully Static Operation, Peripheral Features, Two 8-bit Timer/Counters with Separate Pre scalers and Compare Modes, One 16-bit Timer/Counter with Separate Pre scalers, Compare Mode. Real Time Counter with Separate Oscillator, 8-channel 10-bit ADC, on-chip Analog Comparator.

4.2 IR SENSOR

An IR sensor is a device which consists of a pair of an IR LED and a photodiode which are collectively called a photo-coupler or an opto-coupler. The IR LED emits IR radiation in the range of 760 nm wavelength, reception and/or intensity of reception of which by the photodiode dictates the output of the sensor. Such LEDs are usually made of gallium arsenide or aluminum gallium arsenide. They are along with IR receivers used as sensors. The appearance is same as a common LED. Since the human eye cannot see the infrared radiations, it is not possible to identify whether the LED is working or not, unlike a common LED. To overcome this problem, the camera on a cellphone can be used. The camera can show us the IR rays being emanated from the IR LED in a circuit.



Fig.2.IR sensor

4.3 GSM MODULE

A GSM is a wireless modem that works with GSM wireless network. A wireless modem behaves like a dial-up modem. The main difference between them is that a dial-up modem sends and receives data through a fixed telephone line with a wireless modem sends and receives data through radio waves. . the GSM module has some characteristics like Reading, writing and deleting SMS messages, sending SMS messages, Monitor the signal strength, Monitor the charging status and charge level of the battery, Reading, writing and searching phone book entries.

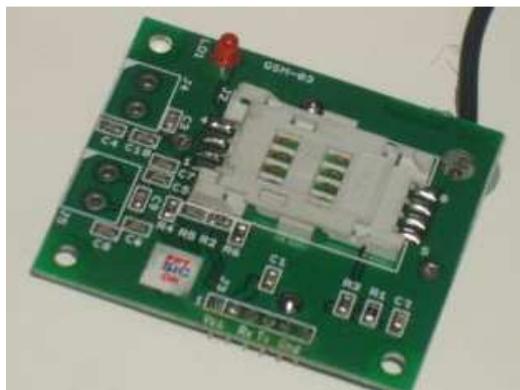


Fig .3. GSM module

4.4 LCD

LCD stands for Liquid Crystal Display. LCD is finds the wide spread use of replacing LEDs (seven segment LEDs or other multi segment LEDs) because of the following reasons:

1. The declining price of LCDs.
2. The ability to display a numbers, characters and graphics. This is contrast to LEDs, which are limited to a numbers and characters.
3. Ease of programming for characters and graphics.

These components are “specialized” for used with the microcontrollers, which means that they cannot be activated by standard IC circuits. They are used for writing different messages on a miniature LCD.

4.5 RELAY

A relay is an electrically controllable switch widely used in industrial controls, automobiles and appliances. The relay allows the isolation of two separate sections in a system with two different voltage sources i.e., a small amount of voltage/current on one side can handle a large amount of voltage/current on the other side but there is no chance that these two voltages mix up.

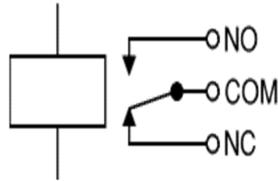


Fig 4. Relay

When current flowing through the coil, a magnetic field is created around the coil, when the coil get energized. This causes the armature to be attracted with the coil. The armature's contact act like a switch and closes or opens the circuit. When the coil is not energized, a spring pulls the armature to its normal state of open or closed. There are all types of relays for all kinds of applications.

5 RESULTS AND DISCUSSION

When the power supply is on, it convert the 230V AC to 5V DC. This DC voltage will be turn ON the microcontroller, and then controller goes to initialization mode after then using keypad we can change the mobile number in the program. When the level reaches the limit, IR sensor senses the waste which is in the dustbin. Then the relay is switched ON to the heating coil. The door will closed automatically until the temperature becomes to the room temperature. When the waste is destroy, it converted in to Ash content from the bin and the other hand Non-biodegradable wastes reaches the limit, Both particles in the bin are collected by the concern authorities with the help of GSM.



Fig.5. Hardware Kit



Fig.6. Hardware Kit with Mechanical Setup

6 CONCLUSION

The implementations of Automatic waste destroy using GSM technology that includes IR sensor, Microcontroller and GSM module. In biodegradable waste gets destroyed automatically and converts into ash particles to reusing in industrial application and agricultural purpose. On the other hand non-biodegradable wastes are sends to particular industries for reusing purpose.

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