

IoT Based Smart Segregation Dustbin For Clean India

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Abstract- Now a day the mankind makes their life easier by using various technology. The market reported that in whole world 2.02 billion tones waste generated. so, we are create an innovative way which revolutionizes in waste management. So, we can take the steps towards clean India. The present project is where the cities and villages are not kept to be clean means there is a overflowing of bins, mixing of waste, proper transportation and disposing. The proper segregating is possible and avoid the overflowing of bins by implementing the present scenario. Urbanization, constant economic growth, industrialization & population the result in increasing of categories and capacity of waste. The project is designed to segregate the dry and wet waste avoiding of overflowing of bins by using embedded technology.

Keywords- GSM Modem, IoT web server, Microcontroller, Ultrasonic sensor, IR sensor, Moisture sensor, LCD display, Buzzer.

I. INTRODUCTION

Urbanization has increased as well as the categories of waste also increase with waste production. The balance between human and environment on the earth is vital for sustainable growth with increase in technology and innovation .humans are directly interfere with environment for their comfort. It harms for environment dangerously. The waste generated by industrialization, population, urbanization is have to be disposed properly the improper disposal of waste can damage landfill and some type of the waste like dry, wet, metallic, plastic are going to mixed together then it will damage landfills because of plastic waste get long time for damage the dry waste long time to dispose as compare to waste.

So, the need of segregation properly in dry and wet waste, then the high quality of material is retained for recycling and reuse, the benefit of this is more value can be recovered from waste. The causes of pollution of water, soil and air avoided by this innovation. Waste management has been decisive issue to be can slider, this project required for the future. it revolutionizes in waste management for the sustainable growth in environment. it is need of time. the

presenting scenario is revolutionizes in “Swachha Bharat Abhiyan”.



Fig.1:- Dry and Wet waste dustbin

II. LITERATURE SURVEY

The authors in have made an analysis of existing garbage bins. In IoT based smart segregation dustbin, the categories of waste are separated and percentage of dustbin is show on the IoT web server & message will send to GSM module. The both dustbins will going to full then buzzer will on & show on display.

- [1] Sensors based smart dustbin for waste segregation and status alert has appeared to be clustered pattern. The waste is only segregated by ARM microcontroller using IR, moisture and ultrasonic sensor. The conveyor belt application is used in this plan.
- [2] In IoT based automated waste segregator for efficient recycling, the waste segregated by metal detector, IR sensor, moisture sensor using Arduino Mega controller, the embedded ‘C’ language used in plan and the level of bins are not detect on IoT web server.
- [3] The results thus obtained would help to understand the present situation of the dustbin means level of bins was checked and when the dustbin is full then closed door to prevent the pollution of environment in efficient IoT based smart bin for clean environment.
- [4] The design and implementation of trash bin includes the distance measure sensor. when the distance measuring sensor. when the distance measuring sensor indicates the dustbins full, then a micro-controller board will control a GSM module to send message alert, that contains bin ID and alert message, to a predefined phone number.



Fig.2.Iot based Smart bin for clean environment

III. PROBLEM STATEMENT

People in their household, mix the dry and wet waste due to which the manpower is need in waste management for separating both waste. The continuous human monitoring is required to control level and separation. In order to prevent overflow and mixing of waste of waste ,we are going to presenting an ‘IoT based smart Segregation dustbin’ which can detect the level of bins and percentage of dry and wet waste, it alerts to person in waste management also send buzzer with displaying it.

IV. PROPOSED SYSTEM

The presented system comprises various hardware component integrated into it. The automatic waste segregator the dry and wet waste by using IR sensor, moisture sensor. Moisture sensor detect the wet waste and IR sensor senses dry waste .The waste is fall from the upper dustbin on the moisture sensor.If the waste in the form dry waste, then DC servo motor moves towards dry waste otherwise it moves towards wet waste dustbin by sensing waste. Instead of that, the ultrasonic sensor senses distance. At first, it used for detecting where waste is present or not and activate sensor. After segregation process, ultrasonic sensors senses the level of particular dry and wet waste dustbin. The level of dry and wet waste dustbin are counted in percentage, sends message to the GSM also informs about level of bins or percentage of dry and wet waste in graphical representation via iot web server. The level of bin are full then it on the buzzer and showing on 7 segment LCD display.

V. BLOCK DIAGRAM

The Block diagram shows the different component used in the Smart Dustbin System is Power Supply, IR Sensor, and Moisture Sensor. IR Sensor is connected in dustbin, it is used to detect the level of dustbin where dustbin is full or empty. With the Help of Sensors, the system can segregate the was collected in collection point. In turn Controller initiates the arm to collect the waste and segregate accordingly

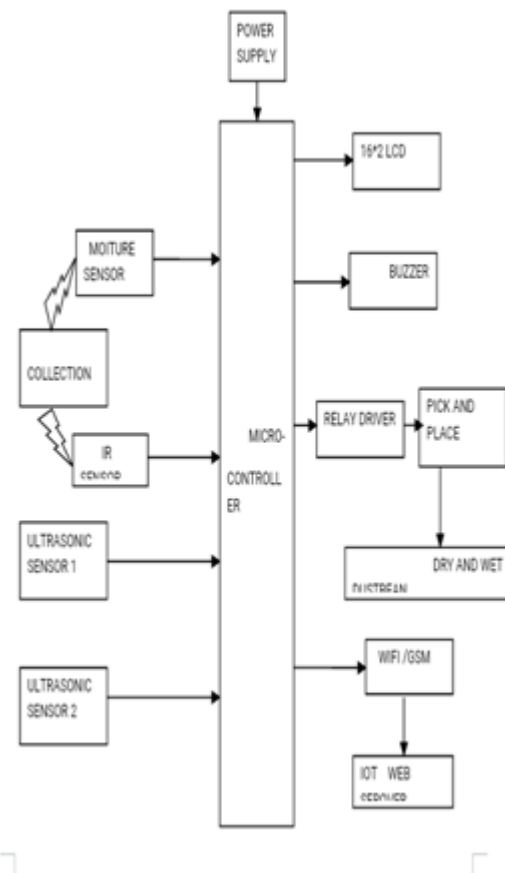


Fig.3. Block diagram of IoT based smart segregation dustbin

1) Hardware Used:

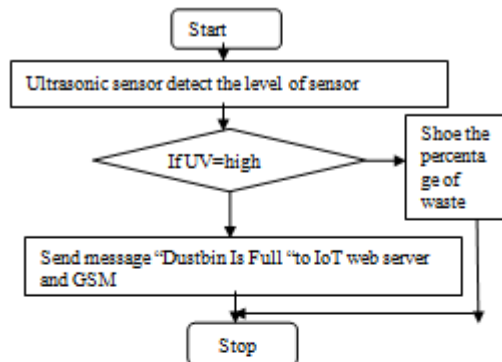
The various components used in this project are,

- PIC 18F4520
- LCD 16*2
- Moisture Sensor
- ULTRASONIC SENSOR
- IR Sensors
- DC Motors
- Relay Drivers

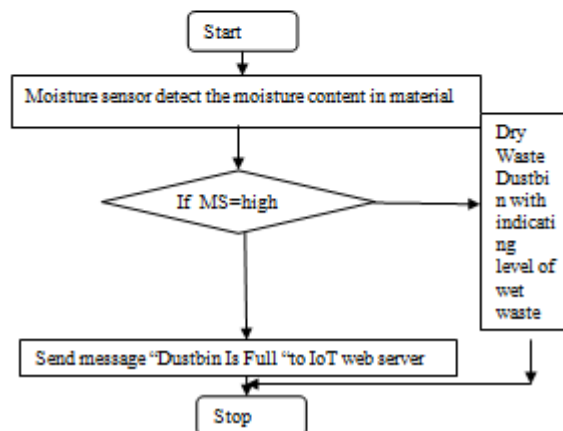
2) Software used:

- CCS Compiler
- IOT Gecko
- MC Programming Language: Embedded C (MPLAB IDE 8.00)
- PCB Wizard

C. Flowchart of working:



Fig(5):Flowchart of sending Message



Fig(4):Flowchart of waste management & segregation

VI. BENEFITS

- 1) Segregating wet & dry waste with automatically.
- 2) Collection of Waste in categories is easy.
- 3) Protect environment
- 4) By separating waste it can efficiently handle.
- 5) All types of waste is reduced.
- 6) Risks on our health are reduced.
- 7) Improve sustainable growth in environment
- 8) Recycling & reusing helps to save & get money
- 9) Make best use of resources(optimizes resources)
- 10) Less time required.

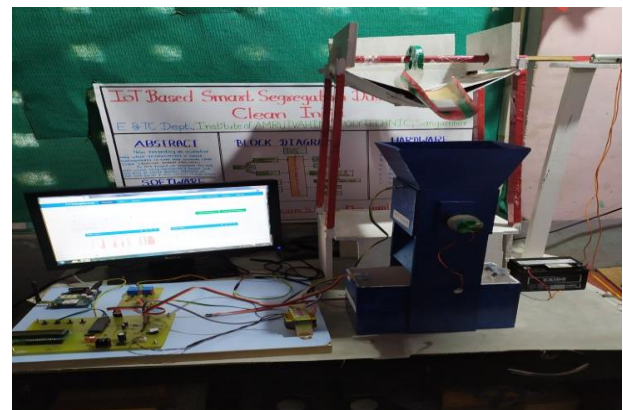
VII. DRAWBACKS

- 1) Sites are often dangerous
- 2) cost is high

VIII. APPLICATIONS

- 1) Support in 'Brilliant City Venture and "Computerized India".
- 2) Specially support to "Swachha Bharat Abhiyan" yojna invented by prime Minister of India.
- 3) In waste management
- 4) In agricultural field
- 5) Serve for residential use, in business, clinics for the business, and clinics for the business administration.

IX. RESULT



X. CONCLUSION

The presenting project is an innovative way which revolutionizes in waste management to takes the step towards 'Swachh Bharat Abhiyan' Yojana. By implementing this plan , waste segregate automatically and saves the time than currently employing method in waste management. We concluded that the existed system will inform status of garbage to each and every person who is authorized using IoT web server and GSM modem. An use of this system in waste management increases growth in environment.

XI. SCOPE OF FUTURE WORK

Smart segregation dustbin using IoT is implement for separating of waste in dry and wet waste. The continuously report of waste are send to IoT web server. It is essential for waste management. The installation of this technology will helps to achieve benefits. Some of the advanced features also get added in this technology in future. Some of the features are generation of power, biogas generation. Size of smart dustbin

is also be compact using technology which improves day by day.

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