Smart Garbage Monitoring System

Kartik Choudhri[1], Parikshit Awaghad[2], Ashwin Tikam[3], Parag Fegade[4]

[4]Dr.R.Raut(Associate Professor And Dean Student Affair)DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING GOVERNMENT COLLEGE OF ENGINEERING NAGPUR 441 108

--***--

Abstract - *An India facing the problem of garbage monitoring. So Nowadays certain actions are taken to improve the level of cleanliness in the country. People are getting more active in doing all the things possible to clean their surroundings. Various movements are also started by the government to increase cleanliness. We will try to build a system which will notify the municipality truck driver to empty the bin on time. We will put a sensor on top of the garbage bin which will detect the total level of garbage inside it based on the total size of the bin. As soon as the garbage reaches the maximum level, a notification will be sent to the municipality truck driver, then the employees can take further actions to empty the bin. This system will help in cleaning the city in a better way. By using this system people do not have to monitor whole system manually but they will get a notification when the bin will get filled.*

Key Words: :*Ultrasonicsensor, MicrocontrollerPIC18F2520, Crystal Oscillator*

1. INTRODUCTION

As it stands, we are currently moving towards one of the most difficult phases of the country in terms being able to handle the amount of waste that the country produces each year. India is one of the fastest growing economies and which such big task comes the task of not only being able to develop the country to be economically sound but also to help our citizens grow and aid the nation in becoming a developed nation. All of this comes with the adaptability to technology and to be able to use it to our advantage. Trash, garbage, disposables are a huge threat to our nation. Traditionally where ever trash accumulates the diseases are prone to rise, hence our project here is to take on such issues that we often ignore or take for granted. That begins with managing the garbage produced. Generation of garbage or waste is increasing very highly with the increase of population, industrial development.

In Day to Day life, we see the pictures of garbage bins being overflow and all the garbage spills out resulting in pollution. This also increases number of infection as large number of pest and mosquitoes breed on it. Hence our problem statement is to plan a System Based on Controller for collecting the garbage from a particular region – the region whose public Garbage Bins are overflowing with previous concern. Solid waste management is a big challenge in urban areas for most of the countries throughout the world. An efficient waste management for

uphold a safe and green environment as there are rising all kinds of waste disposal. In this project, we have introduced an integrated system pooled with an integrated system of Global Positioning System (GPS) and Global System for Mobile Communication (GSM). The sensors would be placed in the common garbage bins sited on the public place. When the garbage reaches the level of the sensor, then that signal will be given to Controller. The controller will give signal to the garbage collection truck driver as to which garbage bin is completely filled and desires urgent attention. Controller will give indication by sending SMS using GSM technology. Whenever the garbage is full.

2. LITRETURE SURVEY:

[1] Waste Bin Monitoring System Using Integrated Technologies. This project uses Zig Bee and GSM technology. The sensors are planted in the common garbage bins placed at the public places. When the garbage reaches the level of the sensor the ARM 7 Controller gives an indication to the garbage collection truck driver as to which garbage bin is full and needs urgent attention. This is done by sending SMS using GSM technology.

The authors in [4] have made a quantitative analysis between existing dustbins and their serving population. The study first analyses the spatial distribution of dustbins in some areas of Dhaka city using average nearest neighbour functions of GIS. Remarkably, the spatial circulation of the current dustbins has appeared to be dominatingly in clustered pattern. Next, an optimal number of additional dustbins were calculated. It is shown that the number of existing dustbins is insufficient in the study area. The extent of pollution caused by the existing dustbins was calculated using spatial analyst functions of GIS. It is found that all the dustbins are burnt with wastes and causing pollution to the environment.
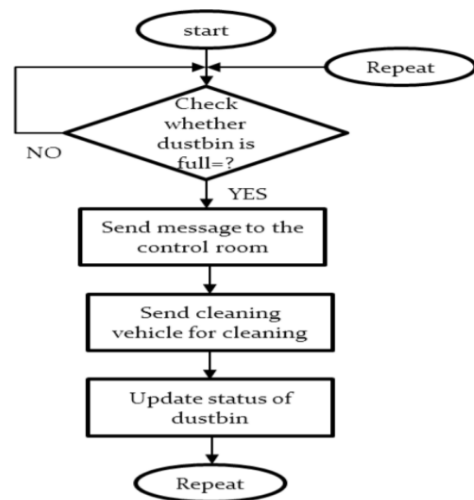
The results thus obtained would help to understand the present situation of the waste management of Research Article Volume 6 Issue No. 6 International Journal of Engineering Science and Computing, June 2016 7114 http://ijesc.org/ Dhaka city and to optimally place the required number of dustbins to prevent further pollution to environment.

[3]Battery-based smart garbage bins (SGBs) exchange information with each other using wireless mesh networks, and a router and server collects and analyze the

information for service provisioning. Furthermore, the SGB includes various IoT skills considering user convenience and increases a battery lifetime through two types of energy efficient operations of the SGBs: stand-alone operation and cooperation based operation. The proposed SGS had been functioned as pilot project in Gangnam district, Seoul, Republic of Korea, for a one-year period. The test demonstrated that normal measure of food waste could be decreased by 33%.

3. METHODOLOGY

The Smart Garbage Monitoring system is a very innovative system which will help to keep the cities clean. This system monitors the garbage bins and informs about a level of garbage collected in the garbage bins via a message. For this the system uses ultrasonic sensors placed in the bins to detect the garbage level and compare it with the garbage bins depth. The system makes use of PIC18F-2520 family microcontroller. In this system 9 V of dc power supply is used. This Power supply is given to the microcontroller board. The Ultrasonic Sensor is used to measure the distance with high accuracy and stable readings. It can measure distance from 2cm to 400cm or from 1 inch to 13 feet. The Module automatically sends e 40 kHz and detect whether there is a pulse signal back. The input to the microcontroller is ultrasonic sensor has four pins. The trig pin will send a signal and the Echo pin will be used to receive the signal. To generate an ultrasound signal, you will have to make the Trig pin high for about 10 us which will send a 8 cycle sonic burst at the speed of sound and after striking the object, when the strike signal come quickly it means that the garbage level is high, if it take some time to come back it means that level is medium and if it takes more than medium level it means that garbage level is low. According to the garbage level detected that information is send to the LCD screen on the bins and the same information is sends to the Garbage collector through GSM and GPS module.

Fig -1: Name of the proposed system

4. CONCLUSIONS

The system is able to monitor the garbage level in the bin, avoid the overflow of garbage by notifying the collector via an SMS and give the precise location. The system provides an efficient and effective way of garbage collection.

Currently waste collection is a major problem faced by the society. Using this waste collection methodology moves to next level. The waste accumulated in the bin directly affects the environment and also affects the people's health. To overcome this problem, this project provides a practical solution to help the city waste management system. This project is helpful for the nation's "CLEAN INDIA MISION". This project when implemented reduces the human interference and also increases the efficiency of waste collection.

5. REFERENCES

[1] Monika K A, Rao N, Prapulla S B and Shobha G 2016 Smart Dustbin-An Efficient Garbage Monitoring System International Journal of Engineering Science and Computing 6 7113-16
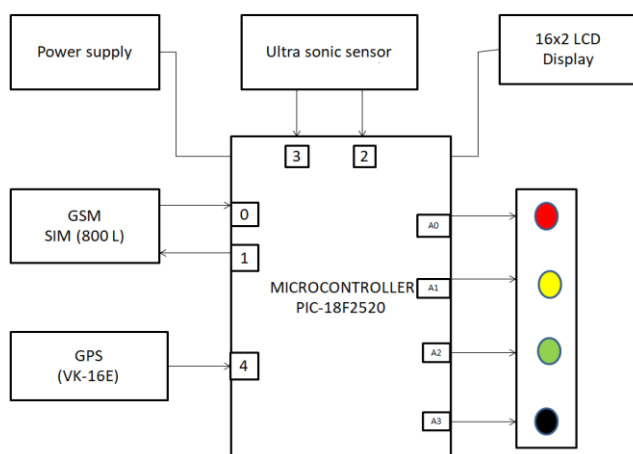
[2] Navghane S S, Killedar M S and Rohokale D V 2016 IoT Based Smart Garbage and Waste Collection Bin International Journal of Advanced Research in Electronics and Communication Engineering (IJARECE) 5 1576-78

[3] Kanchan Mahajan, Prof.J.S.Chitode, "Waste Bin Monitoring System Using Integrated Technologies", International Journal of Innovative Research in Science, Engineering and Technology (An ISO 3297: 2007 Certified Organization) Vol. 3, Issue 7, July 2014.

[4] Twinkle sinha, k.mugesh Kumar, p.saisharan, "SMART DUSTBIN", Prof. R.M.Sahu, Akshay Godase, Pramod Shinde, Reshma Shinde, "Garbage and Street ernational Journal of Industrial Electronics and Electrical Engineering, ISSN: 2347-6982 Volume-3, Issue-5, May 2015.

[5] Kumar N.S.Vuayalakshmi B.Prarthana R.J.Shankar A. "IOT basedsmart garbage alert system using Arduino UNO" Region 10 Conference,TENCON IEEE (2016), pp. 1028– 1034.

[6] Thakker S. Narayanamoorthi R "Smart and wireless waste management", International Conference on Innovations in Information, Embedded and Communication Systems ICIIECS, Coimbatore, India, IEEE (2015).