SOLID WASTE MANAGEMENT PLANNING

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ABSTRACT

In the recent decades, urbanisation has increased tremendously. At the same phase there is an increase in waste production. Waste management has been a crucial issue to be considered. This paper is a way to achieve this good cause. In this paper smart bin is built on a microcontroller based platform 8051 microcontroller board which is interfaced with GSM modem and IR. IR is placed at the top of the dustbin which will measure the statue of the dustbin. The threshold state is set as 10cm. 8051 microcontroller will be programmed in such way that when the dustbin is being filled, the remaining height from the threshold height will be displaced. Once the garbage reaches the threshold level IR will trigger the GSM modem which will continuously alert the required authority until the garbage in the dustbin is squashed. Once the dustbin is squashed, people can reuse the dustbin at regular intervals dustbin will be squashed. Once these smart bins are implemented on a large scale, by replacing our traditional bins present today, waste can be managed efficiently as it avoids unnecessary lumping of wastes on road side. Foul smell found these rotten wastes that remain untreated for a long time, due to negligence of authorities and carelessness of public may lead to long term problems. And breeding of insects and mosquitoes can create nuisance around promoting unclean environment this may even cause dreadful disease.

INTRODUCTION

Solid waste management planning using IR sensor and GSM technology In our city many times we see that the dustbins placed at public places are overflowing. It creates unhygienic conditions for people. Also it creates ugliness to that place. At the same time bad smellis also spread. To avoid all such situations we are going to implement a project called solid waste management planning using IF and GSM technology. In these dustbin are interfaced with microcontroller based system having IR wireless system. These Dustbin are interfaced with the central System showing status of garbage in Dustbins on GUI(graphical user interface). IF the dustbin are loaded with garbage the status will display on screen. If the dustbin are not cleaned in specific time then SMS will be send to the municipal office. But not response municipal office then send SMS to the higher authority. Hence an automatic system can be designed to maintain the city Clean with the help of electronics. We have

observed that the municipal officer or the government authorized person will monitor the status of dustbin. Or generally we see that they have a regular schedule of picking up these dustbins. This schedule varies as per the population of that place. It can be once in a day or twice in a day or in some cases once in two days. However we see that in case there is some festival or some function, lots of garbage material is generated by people in that particular area. In such cases the garbage dustbin gets immediately full and then it overflows which creates many problems. So in situations, with help of our project the government authority person can get SMS immediately. So they will get SMS before their periodic interval visit of picking up the dustbin. Then they can go and pick up the dustbins.

Microcontroller using 8051 board which is interfaced with GSM modem and IR. IR is placed at the top of the dustbin which will measure the statue of the dustbin. IR sensor will sense the level of the dustbin and transmitter to the GSM Module and municipal office receives the SMS.

LITERATURE SURVEY

The related work in the area of solid waste management can be mainly categories in four ways: A)Optimal Vehicle routing algorithm B)Using Wireless Sensing Network C)Software applications involving people for waste management D)Sensor based monitoring of dustbin fullness status.

A. Optimal Vehicle routing algorithm*:*

Smart dustbins are designed whose fullness status will be displayed on a database for the respective person responsible for collection of garbage. The map will show the location of that particular bin as well as the shortest path to follow so as to reach that dust bin in optimal way. Various models for shortest path algorithm has been implemented that will help ultimately to manage routing cost etc. It can be said that the researches carried out for the solid waste management are majorly concerned with vehicle routing.

B. Using Wireless Sensing Network:

Wireless sensor networks are newly emerging advanced and widely using technology in these days. Many of innovations have used these networks so as to achieve smart objectives of respective system. Zigbee-Pro, GPRS are one of such type of network where the information of a particular sensor which is placed for some desired application can be sensed remotely and this data makes system user

enable to proceed further. Various papers has proposed work based on GIS, GPS techniques which also works efficiently in the field of remotely acquiring a field data.

C. Sensor based monitoring of bin fullness status**:**

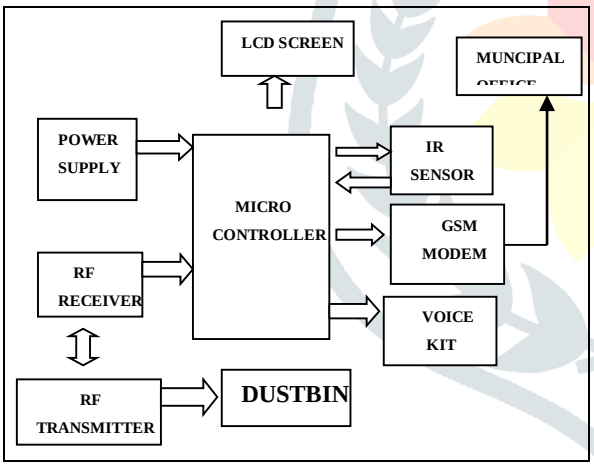
The liquid and gases takes the proper layers of filling so it is comparatively easier task to sense the level than to sense a level of solid materials Two sensors which are weight and filling sensors are placed sensed data from these two sensors

will give status regarding with bin fullness. The weight sensor is at the bottom of dustbin whereas filling sensor is at the top of the dustbin. Wireless networks will play role of conveying this status of respective dustbin.

D. Software applications involving people for waste management*:*

The software mobile application is developed to involve citizens in a process of managing a solid waste. Android mobile application is developed where people can come forward as volunteer or they may inform a corporation about the bin fullness so that they can collect it. This will avoid the overflow condition of a dustbin and ultimately its side effects like spreading number of diseases. Detailed provisions related to the opinion from citizens about the status of city with reference to cleanliness, categories of taking snaps and uploading it to server application, segregation of dust status based on waste class, distance, time is given so as to assigning preference etc, are given which makes software applications even more helpful to actively contribute in a process of waste management.

METHODOLOGY:



The figure1. Solid waste management planning on a microcontroller based platform 8051 microcontroller board which is interfaced with GSM modem and IR sensor. IR is placed at the top of the dustbin which will measure the statue of the dustbin.

8051 microcontroller will be programmed in such way that when the dustbin is being filled, the remaining height from the threshold height will be displaced. Once the garbage reaches the threshold level IR sensor will trigger the GSM modem which will continuously alert the required authority until the garbage in the dustbin is full. Once the dustbin is full, people can reuse the dustbin at regular intervals dustbin will be full. Once these smart bins are implemented on a large scale, by replacing our traditional bins present today, waste can be managed efficiently as it avoids unnecessary lumping of wastes on road side. Foul smell found these rotten wastes that remain untreated for a long time, due to negligence of authorities and carelessness of public may lead to long term problems. And breeding of insects and mosquitoes can create nuisance around promoting unclean environment this may even cause dreadful disease.

IF the dustbin are loaded with garbage the status will display on screen. If the dustbin are not cleaned in specific time then SMS will be send to the municipal office. But

not response municipal office then send SMS to the higher authority. Municipal officer or the government authorized person will monitor the status of dustbin.

RESULT

FIG:1

IFIG:2

CONCLUSION

This paper has presented details of a successful implementation of a cloud integrated wireless Solid waste management planning. The system has been tested in a real situation. This system significantly reduces the average cost of maintaining a clean and safe environment in bins by optimising the waste bin pick-up schedule and also prevents dangers like fire and germs spread. More importantly, this system uses the existing communication. Being wireless the system is easy to develop and maintain. It may be noted that this system is particularly relevant for developing countries, like ours, as it presents a cost-effective, quick and efficient implementation. It also fits in nicely with the plans of many governments to not only implement smart cities but also growing importance of developing of apps which are being included in Telecom policies of many countries.

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