

“CITY GARBAGE COLLECTION INDICATOR USING WIRELESS TECHNOLOGY”

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Abstract:

The littering of garbage bins makes serious unhygienic conditions in any type of surroundings. It leads to several health issues. To overcome this problem and make the waste management system more efficient and reliable, we need smart solution like smart waste management and hence that is provided in this paper. In this project level of waste inside the bin is monitored with the help of level indicator switches. Microcontroller is interfaced with the system. A GUI is designed. Also a lead is provided at the top. Dustbin is divided into separate sections as per need. This will improve the segregation process. It is noticed that garbage bin gets overflow because of irregular removal of garbage. AS the level reaches 100% the lead cannot be opened from outside it can be opened only after valid card. A force sensor is used to open the lead.

I. Introduction:

Due to rapid population growth, disorganization of city governments, a lack of public awareness and limited funding for programs waste management is become a global problem. The Central Public Health and Environmental Engineering Organization (CPHEEO) have estimated that waste generation in India is as much as 1.3 pounds per person per day. This figure is relatively low.

Compared to the 4 pounds of waste generated per person per day in the United State (U.S.). But the U.S. population was close to 307 million in July 2009, whereas India's population was 1.4 billion. These record means India is generating more than 26 million tons of waste than the U.S. Government of India has struggled for years to find a way to manage the country's ever increasing amount of trash. According to the survey carried out in 1994 the

garbage produced in Mumbai is 5800 tons per day. Municipal Corporation of Greater Mumbai (MCGM) operates a huge fleet of 983 Municipal and Private Vehicles for collection of waste making 1396 number of trips each day. Solid Waste Management (SWM) expenditure outlay in the year 2007-08 is Rs.10479.3 Million. But still there is overflow of garbage in many areas in Mumbai. To avoid this smart garbage management system is developed in this paper.

In our city many times we see that the garbage bins or dustbins placed at public areas are overflowing. It creates unhygienic atmosphere. Also it creates ugliness to that place. At the same time bad smell is also spread. To avoid all such situations we are going to implement a project called City Garbage collection indicator using wireless technology.

With increase in population, the scenario of cleanliness about management of waste is degrading a lot. The littering public areas creates the unhygienic atmosphere for surrounding. To overcome this issue, 'smart garbage management system' is advised here. In the advised paper, the level of waste in the dustbins is detected with the help of switches, and the level is indicated through GSM module. Microcontroller is used to interface the sensor system with GSM module. A GUI is designed to monitor the level of waste in the dustbin. Here we have designed a concept for municipal dustbins. After level reaches 100%, lead of dustbin gets closed and it can be opened only after card is swiped and correct password is entered. Also because of separate sections problem of segregation is reduced.

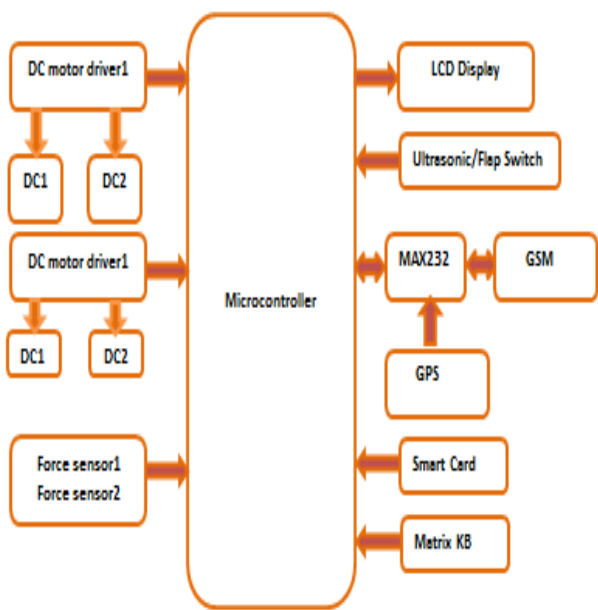
II. Literature Survey:

As per the statistics and study, garbage bins needs separate sections and various indication facility so that respective

authorities can monitor the bins effectively. Solid waste management facility in India is very poor. There is no organized efforts and processing plan to segregation. It leads to a lot of human efforts. This concept reduces the problems of current waste management problems to a lot extent.

III. Proposed System Description:

1) Block Diagram:



2) Methodology:

Our project enhances “smart dustbin management system”. We have made the separate sections for different types of waste (dry, wet, medical, etc.). Also we have covered them with a lead on top to avoid the problem of littering of garbage. It consists of sensors which constantly senses and detect the level of dustbin. There are 3 level indicator switches placed at different levels of dustbin (50%, 75%, and 100%). When the level reaches up to 50% of dustbin 1st message is been sent to respective authority. Similar process happens at 75% and 100%. When the level reaches at 100% the lead will be closed and will not open even after applying the pressure of force sensor.

Flexi force sensor is also used so that the lead will open only after applying the pressure from outside. After the dustbin is 100 % filled the message of dustbin as well as the exact location will be sent through GSM and GPS installed at circuit of dustbin. At the receiver side the exact location of dustbin is being displayed with the help of google maps and a sms alert is being sent on phone. The same procedure takes place for each section of dustbin. Because of time to time indication to respective authority

the bins will emptied as soon they gets full and this will avoid the problem of littering as well as segregation further. As the lead gets closed after reaching the level at 100%, it will be opened only by the members who come to collect the garbage. Security matrix is being provided and it will open only when the password is entered with the help of keyboard.

Proteus 7.4 is used for development of PCB layout and dip trace for developing circuit diagram.

IV. Algorithm:

- Start
- Initialize ARM ports pins and init LCD.
- Init UART for serial communication and set baud rate (9600).
- Init SMS for GSM modem
- Init Keyboard.
- After initialization, Display project name.
- Check receive interrupt flag is generated?
- Yes, then check GPS \$GPRMC command is received
- Yes, and then read the longitude and latitude from the GP display on LCD.
- After receiving coordinate check next condition
- Check Dry force sensor pulse is received?
- Yes, first check dry garbage level and is not overflow?
- Yes, then dry garbage container is Open
- No, Check Wet force sensor pulse is received?
- Yes, first check wet garbage level and is not overflow?
- Yes, then wet garbage container is Open
- No, check level key is detected?
- Yes, if 25% level is detected then send location and level the PMC using GSM
- No, check if 25% and 50% level is detected then send location and level % to the PMC using GSM
- No, check if 25% ,50% and 90% level is detected then send location and level %
- Check smart card is detected?
- Yes, then display enter password using KB
- Check password is valid?
- Yes, then container is activated for empty process?
- No, go back to the step number 7.....

V. ADVANTAGES:

1. To collect dustbins placed at public places in city.
2. This project can also be used in college / university campus
3. This project can also be used in companies

4. Many times Garbage dust bin is overflowed and many animals like dog or goat enters inside or near the dustbin. This creates a bad scene. Also some birds are also trying to take out garbage from dust bin. This project can avoid such situations

VI. CONCLUSIONS:

1. If this concept implemented, will reduce the unhygienic conditions and will make the processing of garbage very easy.
2. People using waste as a raw material for business will get desired quality of garbage.
3. Need of smart cities concept.
4. Various features such as durability, affordability, prevention against damage and maintenance issues is kept in mind while designing the dustbin. Implementation these Smart Dustbins can prevent the accumulation of the garbage along the roadside to a great extent thereby controlling the widespread of many diseases. It can prevent pollution and also prevent the consumption of the spread out garbage by the street animals. This Smart Dustbin can contribute a lot towards a clean and hygienic environment in building a smart city.

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