

Innovation waste collection system using wireless sensor network AKA 'Smart Dustbin'

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ABSTRACT: In this paper, we have proposed an innovative method for collection of waste which would tackle the problems related to waste collection in rapidly developing smart cities. Thus we call this system 'SMART DUSTBIN'. The system enrolls highly sophisticated method by the addition of sensors and GSM module to keep a check on the human flaws and irregularities occurring frequently. Existing waste collection methods are increasingly becoming ineffective consequently. An emerging society thus needs a further more developed and sophisticated method to ensure proper collection and disposal of waste.

KEYWORDS: GSM 900 module, ultrasonic sensors, set of dustbins.

INTRODUCTION:

With the sprawling metropolis under a steep rise, the waste generated is exploding coherently. Solid waste collection has become among the difficult problems to tackle. It is not just the tones of waste but the manpower and economical investment too which adds to the misery. Deterioration in the aesthetic appearance, decreased hygiene level, reduced purity of air are among the direct impacts to name a few.

COMPONENT DESCRIPTION:

DC voltage source: A constant 5V feeds the system with the working voltage to ensure safe working of the system which is generated by a battery.

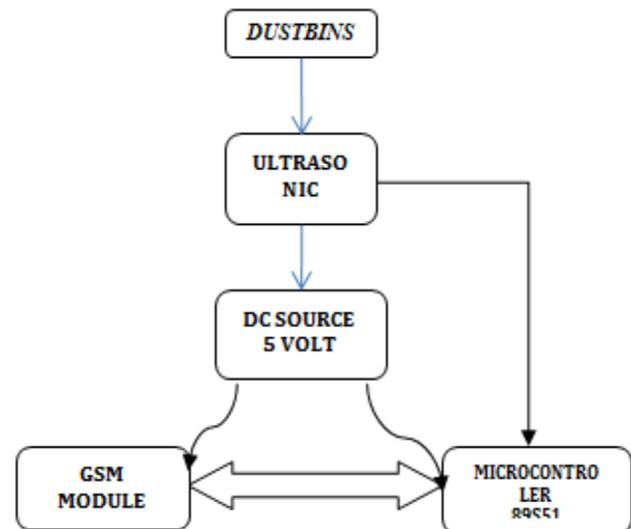
GSM 900 module: It can be considered as the heart of the system. The module generates the final signals which are sent to the concerned authorities via text messages according to the stages. 900 denotes the operating frequency of the system in Hertz.

Microcontroller 8051: It is the link between the sensor and GSM module. It takes the signal generated from the sensor as the input and converts it in a readable format for the GSM module as the input. This output of the

microcontroller fed to the GSM module is then utilized to generate the final warning signals for the concerned authorities in accordance with the fill stages of the bin.

Ultrasonic sensors: These sensors are used to generate a warning signal once the waste in the bin reaches to the concerned stages 1, 2 or 3 as mentioned in the working. The sensor provides vitality in the operation as it can be fully functional even in adverse conditions of dirt, mist and moisture.

The selection of the dustbin depends upon the waste generated in the respective area or locality.



WORKING:

The base of the system is a highly durable waste collection bin or the dustbin. These bins would be equipped with ultrasonic sensors at different fill capacity of the bin. Ultrasonic sensors would ensure uninterrupted functioning of the system even under extreme conditions of dirt, mist and moisture which makes it an almost ideal choice. The sensors would be fit at three different levels i.e. 50% of its full capacity (stage 1), 75% of its full capacity

(stage 2) and 95% of its full capacity (stage 3). Along with sensors the system would be equipped with a GSM module which will be used for generation and transmission of a warning signals to the concerned authorities via a text message. At stage 1, the warning message would be sent to the assigned waste collector. At stage 2, to the regional head office and at stage 3, to the concerned municipal corporation. We also plan to incorporate the use of medium, high and extra high capacity bins to ensure diversity in the collection . The GSM module generated signal once received by the authorities would help to keep a constant check on the irregularities in the collection of waste, If any.

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CONCLUSION:

The system would help to curb the existing issues of waste collection by the efficient working of the sensors and the GSM module. Proper and timely collection of waste would help to establish a safer and cleaner environmental conditions in the respective locality.

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