

AUTOMATED WASTE MANAGEMENT SYSTEM AND ITS APPLICATION.

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ABSTRACT

Management of waste material is essential, To maintain the hygiene of society. It is necessary to manage waste produced by civilians and industries automatically, this can be done by using sensor based technology like inductive, capacitive proximity sensor and moisture sensor. This will optimize the system.

Keywords - Proximity Sensors, GSM Module, Collection Plate, Tank Sensors, Metallic - Non Metallic Dry waste, Wet waste.

I. INTRODUCTION

Waste management system is a automatic process for segregation of waste material, In this system the waste material is segregated in dry and wet waste at initial stage, After this initial stage the system will move further and segregate dry waste in metallic and non-metallic waste, the system will also help us to reach municipal corporation and send an alert message to corporations waste collection department, about the status of societies waste tank level.

Collection plates are the area outside each flat for the user to dump there waste. After collecting and segregating the waste in dry or wet waste. The material will be sent to dry tank and waste tank, these tanks will be located beneath every building of the society, and will be in roll of main waste collection point.

The system will stand by and wait until the tanks get full. Once the system senses that the tanks are about to be full, it will send an alert message to corporations waste management office. That the tanks under particular society's particular buildings is about to be full and need to be evacuate as soon as possible. Moving further the system will also segregate the dry waste material in metallic waste and non-metallic waste.

I. OBJECTIVE

- 1) Maximize hygiene level in social life.
- 2) Reduction in harms caused in segregation of hazardous Materials.
- 3) Using the end products from the system we can use them in Many other applications

III. AIM

Separation of dry and wet waste material, and hence reducing human efforts and increase hygiene level of society.

IV. SYSTEM DEVELOPMENT

Use of PIC 18F4550 as the systems main controller which will take inputs from combination of capacitive and inductive proximity sensor and moisture sensor. is made to develop the waste management system to sense whether the waste present on collection plate, is wet or dry. After sensing the type of waste material the system will start the segregation motor. and swap down the waste in wet waste tank but the dry waste will be moved down to second collection plate. Resetting the collection plate one on its previous position. After this primary segregation the

system will initiate next step that is segregation of dry material in metallic and non-metallic waste. In this process the system will use combination of capacitive and inductive proximity sensor. To sense the type of material whether its metallic or non-metallic, then controller will start second segregation motor and swap down the waste in metallic or non-metallic waste tank. After this the waste segregation process will conclude. Moving further on next step of this processing the system will generate and send a alert message to municipal corporation, about the tanks fulfillment level, here the system will use infra red sensors to sense the level of tank and use a GSM module to send a message or we may use internet of things (IOT) for the communication. System in experimental model which consist of Proximity sensor, moisture sensor, PIC 18F4550, DC motors, GSM module Infra red sensors.

V. PERFORMANCE ANALYSIS

The analysis of system developed is by experimental method, the performance of each sensor and its optimistic results are verified. By giving output of one block to next block, each subsystem is optimistically verified, and the best optimistic output with available conditions is analyzed by recording the wave forms at different stages.

VI. PROPOSED SYSTEM ARCHITECTURE

- **Microcontroller**
We are using PIC18f 4550 as microcontroller, which is heart of project.
- **IR sensor**
For detecting the tank level. which will help us provide related information to corporation office.
- **Display**
A 16*2 display is interfaced and used for displaying system progress.
- **Proximity sensor**
For sensing or recognizing that waste material is present on the collection plate.
- **Moisture sensor**
Depending on level of moisture the waste can be segregated. This is the one of the important sensor in this system to help and decide what type of material is present on collection plate.
- **L293D IC**
This particular IC is used for controlling the motor, the rotation of motor in clock wise or anti clock wise direction.
- **Geared DC motor**
These motors are particularly used to rotate the collection plate on right or left side. to let the waste material slide down for further processing.
- **GSM Module**
Here any GSM module can be used to send the alert message to the municipal corporation, with location and name.

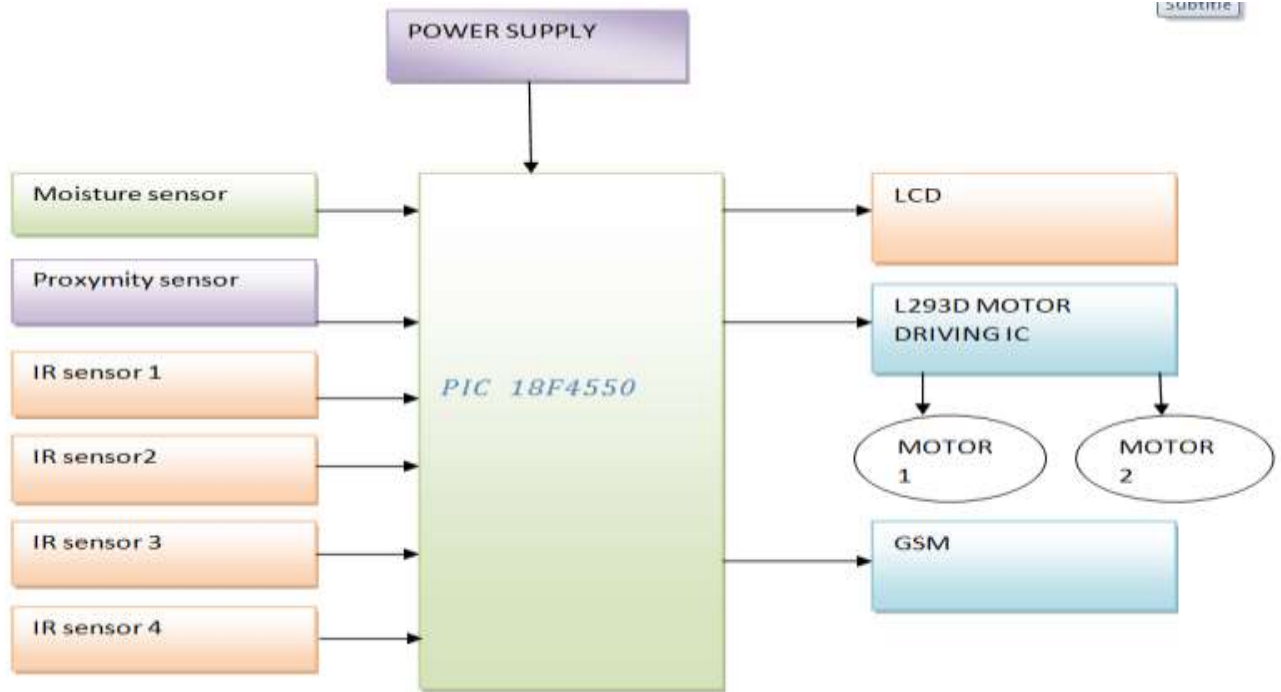


Fig -1 Block Diagram

VIII. APPLICATION

- Plastics from dry waste can be used directly in recycling process same with the metallic materials.
- System is best suited for smart city application.
- Very much useful in commercial places.

XI CONCLUSIONS

Automatic waste management system will help to increase health and hygiene level of society. Which will also help to maintain disease free world. And the material at the output can be directly used for recycling process, or for further processing.

IX. REFERENCES

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