

# MULTIPURPOSE GARBAGE MONITORING SYSTEM IN SMART CITY USING IOT IMPLEMENTED WITH TIME STAMP

<sup>1</sup>SenthilMurugan S, <sup>2</sup>Hemamalini S

<sup>1</sup>Associate Professor, <sup>2</sup>II MCA Student

<sup>1,2</sup>Department of Computer Application,

<sup>1,2</sup>Priyadarshini Engineering College, Vaniyambadi, Vellore, Tamilnadu, India

**Abstract:** Municipality takes many measures to maintain the cleanliness of the city. One of which is establishing dustbins in Regular distances for the convenience of public to discard Garbage cleaning this Garbage is an important function of Municipality which is directly related to health issues . We have designed a model for a “SMART DUSTBIN”. Which indicates directly that the dustbin is filled to a certain level by the Garbage and Cleaning or emptying them is a matter of immediate concern. This paper consists of smart city Garbage Monitoring System proposed with Time stamp. Which includes Time stamp and contains lastly cleaned information and the next time slot for cleaning and also level sensor indicates the Garbage level of Dustbin. Also its sends signal to Central server to indicate that the Dustbin is fill before the timeslot

**IndexTerm:** Internet of Things (IOT), Dustbin, Time stamp, Timeslot, Level sensor, Wi-Fi module.

## INTRODUCTION

Garbage Monitoring System: - Garbage may consists of the UN wanted material left over from City, Public area, Society, College, home etc. This project is related to the “Smart City” and based on “Internet of Things” (IOT). So for smart lifestyle, cleanliness is needed, and cleanliness is begins with Garbage Bin. This project will helps to eradicate or minimize the garbage disposal problem. Dustbin is a common and basic need everywhere.

It is observed that often the garbage get accumulated due to irregular removal of garbage present in the dustbin. Here we have figured out a new model for the municipal dustbins which intimates the center of municipality for immediate cleaning of dustbin. This dustbin is also designed to compress the garbage periodically thus preventing the unnecessary occupying of dustbin's space by light weighted but space occupying garbage particles like sponges, etc.

## OVERVIEW OF IOT

Internet and its applications have become an integral part of today's human lifestyle. It has become an essential tool in every aspect. Due to the tremendous demand and necessity, researchers went beyond connecting just computers into the web. These researches led to the birth of a sensational gizmo, Internet of Things (IOT). Communication over the internet has grown from user - user interaction to device – device interactions these days. The IOT concepts were proposed years back but still it's in the initial stage of commercial deployment. Home automation industry and transportation industries are seeing rapid growth with IOT.

The Internet of things (IOT) is the internetworking of physical devices, vehicles, buildings, and other items—embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data. This project IOT 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 the level of garbage collected in the garbage bins via a web page. For this the system uses level sensors placed over the bins to detect the garbage level and compare it with the garbage bins depth. The system makes use of time stamp, time slot, Wi-Fi modem for sending data and a buzzer. The system is powered by a 12V transformer. The timeslot &time stamp is used to display the status of the level of garbage collected in the bin.

## LITERATURE REVIEW

In this paper consideration of waste management issues have been solved by smart Dustbin interface of time stamp, time slot and Level sensor with the help of power supply and Wi-Fi module people get best solution to management of waste this is replacement of traditional dust bin into smart bin .

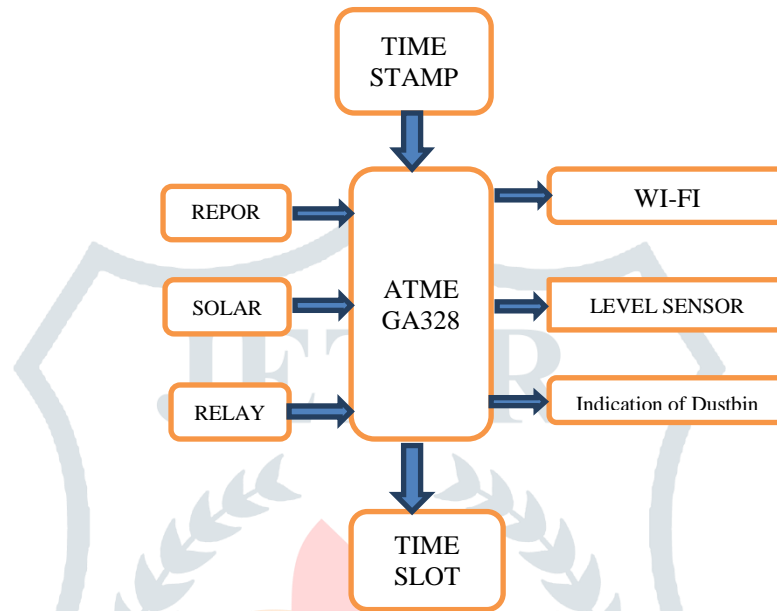
This bin made and Level sensor node is attached to dust bin send the signal to road side unit real time show status of the bin other same signal from Wi-Fi reaches the Garbage Collecting Vehicle (GCV) arrive that place and collecting garbage. Many technology uses to recycling the garbage. For unhygienic condition people face more problems regarding to health Such situation is control by providing unique ID to garbage bin and identify ID number is given to each can if bin is fill then send SMS to the server. In this paper we consider the time stamp-it is a sequence of character or encoded information identifying with a certain event occurs.

Time slot-it is a length of time allocated to someone or something especially in a Broadcasting Schedule. Level sensor detects the level of the Garbage inside the bin and thus we get an information about the level of the Garbage in the bins. This paper detects the full indication of Dustbin  
 It will check that sensor detected the Dustbin will be filled or not with the help of the Wi-Fi module. It will operate like ON & OFF accordingly during night and heavy raining or bad weather in the duration of the during the any seasons. Keep the city clean with the help of time stamp, time -slot & level sensor Detects the level of Garbage in the bin.

**WORKING PRINCIPLE**

Block Diagram

**A. Transmitter**



**Time stamp**

A timestamp is the current time of an event that is recorded by a computer. Through mechanisms such as the Network Time Protocol (NTP), a computer maintains accurate current time, calibrated to minute fractions of a second. Such precision makes it possible for networked computers and applications to communicate effectively. The timestamp mechanism is used for a wide variety of synchronization purposes, such as assigning a sequence order for a multi-event transaction so that if a failure occurs the transaction can be avoided.

**Short Cut Keys**

If you need to use current date or time stamp, Word provides two shortcut keys that do this for you:

- \*Alt+ Shift+ D - Current date;
- \*Alt+ Shift+ T - Current time.
- \*Select pasted Current Date or/and Current Time.

Do one of the following:

On the Home tab, in the Clipboard group, in the Paste list choose Keep Text Only

**Time-slot**

A length of time allotted to someone or something especially in a broadcasting schedule. Time slot a time assigned on a schedule or agenda **"the TV program has a new time slot"**, **"an aircraft landing slot"**

We denoted in the picture, and the time-slot we shortly say privilege.

TIME SLOT MODEL						
time	day	Monday	Tuesday	Wednesday	Thursday	Friday
09.00-10.45		A1	B1	A4	C6	D4
11.00-12.45		A2	B2	A5	C7	D5
13.15-15.00		C1	C4	D1	B3	D6
15.15-17.00		C2	C5	D2	B4	D7
17.15-19.00		C3	A3	D3	B5	(D8)
19.15-22.00		E1	E2	E3	E4	

It shows the Time slot model for duration of time, date and day weekly during processes. Municipality takes the model to indicate time slot weekly-weekly its change. In short we say privilege.

**Level sensor**

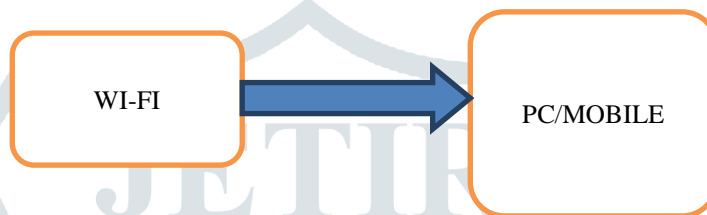
Level sensor detects the level of fluid and solid. Level sensor measures a level and gives a specific range of Values. Level sensor senses that the substance (solid or liquid) is above or below the desire point.

**Atmega328p**

The Atmega328p is a 8-BIT AVR RISC-based microcontroller. It has 32 kb flash memory with read while -write capabilities, 1 kb EEPROM, 2 kb SRAM. It also has 23 general purpose I/O lines, 32 general purpose working registers, three flexible timer/counters also internal and external interrupts, serial programmable USART, 2-wire serial interface, SPI serial port, 6-channel 10-bit A/D convertor.

**B. Receiver**

Block diagram



**Wi-Fi Module**

The ESP8266 Wi-Fi Module is a self-contained SOC with Integrated TCP/IP protocol stack that can give any microcontroller access to your Wi-Fi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor.

**Full Indication of Dustbin**

If once the Garbage level reaches the particular height then it will immediately process the information to the web based software including the message as Garbage is being filled by using WI-FI module. We able to see the filled level in the Garbage bin.

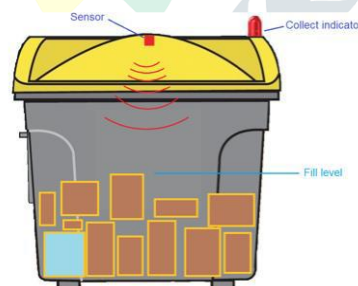
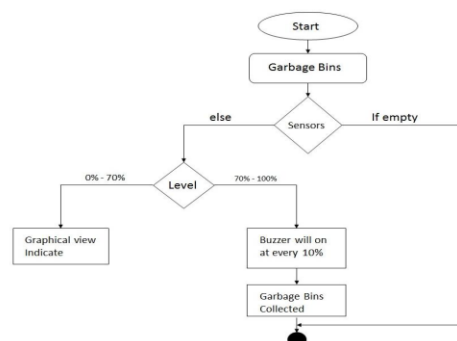


Fig: Full indication of dustbin.

**FLOW CHART**



## Future Work

1. When considering a region with excessive waste disposals, one can make use of a load cell by providing a threshold value to detect the full condition of the garbage bin and also more accurate results.
2. The scope for the future work in the Smart Dustbin we able to create the Report, daily report or monthly reports.
3. We can generate electricity with the help of solar panel in this garbage monitoring system.

## CONCLUSION

In this project, an integrated system of time stamp, time slot, IOT, level Sensor is introduced for efficient and economic garbage collection. The developed system provides improved database for garbage collection time and waste amount at each location. We analyzed the solutions currently available for the implementation of IOT. By implementing this project we will avoid over flowing of garbage from the container in residential area which is previously either loaded manually or with the help of loaders in traditional trucks. It can monitor the garbage level Sensor & send the information to collection truck. The technologies which are used in the proposed system are good enough to ensure the practical and perfect for solid garbage collection process monitoring and management for green environment.

## REFERENCES

- [1] Prof. R.M.Sahu, AK shay Godase, Pramod Shined, Reshma shined, "Garbage Monitoring System Using Internet of Things" INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH IN ELECTRICAL, ELECTRONICS, INSTRUMENTATION AND CONTROL ENGINEERING, ISSN (Online) 2321 – 2004, Vol. 4, Issue 4, April 2016.
- [2] 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.
- [3] Md. Shaniqua Islam, M.A. Hannan, Maher Arabiya , Hassan Bagri , "An Overview For Solid Waste Bin Monitoring System", Journal of Applied Sciences Research, ISSN 181-544X, vol.5,issue4, February 2012.
- [4] Twinkle Sinha, k.mugesh Kumar, p.saisharan, "SMART DUSTBIN", International Journal of Industrial Electronics and Electrical Engineering, ISSN: 2347-6982 Volume-3, Issue-5, May2015.
- [5] Rich Sam Alex, R Narcissi Star bell, "Energy Efficient Intelligent time stamp s& timeslot System Using Level and Sensors", International Journal of Engineering and Advanced Technology (IJEAT) ISSN: 2249 – 8958, Volume-3, Issue-4, April 2014.
- [6] Narendra Kumar G., Chandra Swami, and K. N. Nagadarshini, "Efficient Garbage Disposal Management in Metropolitan", Cities Using VANETs Journal of Clean Energy Technologies, Vol. 2, No. 3, July 2014.