LITERATURE SURVEY

The amount of waste produced everyday by the industries and the households is increasing at an appalling rate, and the major reason for this is soaring use of packaged items, textiles, paper, food, plastics, metals, glass etc, thus management of this refuse becomes a crucial part in our everyday life. In most of the developed countries there are many efficient techniques which are used for the proper management of this waste, but in some countries especially the developing ones the careless attitude of people towards maintaining clean surroundings, along with this many issues such as no stringent laws for using the biodegradable materials, no proper environ policies, no laws for sustainable development are the seed for the fatal results of waste management. Due to the increasing waste, the public bins which are used for collecting this waste are overflowing, the locality is jumbled of trash, causing not only malodorous streets but also a negative impact on the health and environment.

Waste is a crucial issue, which needs to be addressed smartly. we segregate the waste at our homes for ease at processing and recycling. We observed trash vans come irregular to homes creating a despoliation of households. Due to this many civilians empty their overloaded dustbins in open spaces. This in turn increases environmental pollution

The waste is a great hassle for our health and the environment it has many effects which are dreadful. Trash is breeding ground for bacteria, insects, flies these flies are the same that roam around the eatable and drop the off springs. thus they increase the risk with food poisoning, typhoid, gastroentetritis, salmonella, the insects cause malaria dengue etc, beside these flies and insects other animals that prosper from the trash are the rats and the stray dogs spreading diseases

Today big cities around the world are facing a common problem, problem, managing the city waste effectively without making city unclean. Today's waste management systems involve a large number of employees being appointed to attend a certain number of wastebins this is done every day periodically. This leads to a very inefficient and unclean system in which some wastebins will be overflowing some wastebins might not be even half full. This is caused by variation in population density in the city or some other random factor this makes it impossible to determine which part needs immediate attention. Here a waste management system is introduced in which each wastebins is embedded in a monitoring system that will notify the corresponding personal if the wastebins is full.

This smart garbage dustbin 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. For this the system uses ultrasonic sensors placed over the bins to detect the garbage level and compare it with the garbage bins depth. The overflowing of the garbage bins is very common in many cities, but this will impact our society and our surroundings. It will damage the environment day by day to cause the many types of pollution along with to create many diseases for human and other animals also. We proposed smart dustbin system which will monitor and alert when the garbage level crosses the threshold level of the garbage bin. This process will be carried out with the help of sensors. Now days in most cities there are many dustbins which are in bad conditions. The garbage in a dustbin are all overflowed of the dustbin. Many people are throwing garbage on that dustbin which are already full or overflowed. Due to this unclean of garbage bins pollution is increases which are bad for the environment. This creates a very bad look of the city which is a way to support to the air pollution and to some harmful diseases which are easily spreadable. For this we have to develop an automatic dustbin which will detect the garbage is dry or wet then separate the garbage and informs about the

level of garbage collected in the garbage bin to a person in the garbage collecting vehicle and by using vending machine coins comes out the smart dustbin. This system helps to city clean and green.

The idea of smart garbage bins and systems have been in discussion for quite a long time. The technologies used at disposal to develop this smart system have also evolved, Internet of Things (IoT). Each idea seems to be similar but is slightly different at its core and our proposed work is no exception from the same. After the IoT field, finding its hold in our lives, this is our original plan for designing a smart garbage collection system which has provision for citizen participation and analysis of data for better decision making. At hardware level, the smart system is a garbage bin with ultrasonic sensor, a micro-controller and Wi-Fi module for transmission of data.

The worldwide implementation of Internet of Things is possible with a Cloud centric vision. This work exploits the future possibilities, key technologies and application that are likely to drive IoT research. But a strong foundation to our work is provided, where the basics and applications of Arduino board is explained. It is quite interesting as it implements a GAYT (Get As You Throw) system concept as a way to encourage recycling among citizens. As we would discuss further, the citizen participation part of our system is quite influenced by their work.

Although there are many research work on smart bins and intelligent waste management systems, here we have critically analyzed and summarized around twenty research works and projects addressing this issue. It is observed that most the the recent works uses Arduino Uno as their platform. Most of the works have the same working principle that their system based on IoT monitors the level of waste in the dustbin using the ultrasonic sensors installed in it. The sensed information is transmitted through RF signals to the PIC controller which in turn forwards the data to the central server. The data recorded can be checked on the webpage in the receiver's LCD that is connected to the

server. For waste collection when the waste level in the dustbin gets beyond the limit buzzer alarm is used. With this the authority gets aware and the message is sent to the driver of the dump truck and the further actions are taken. The entire system is cost effective as less number of equipment and resources are required.

In other applications, loT based sensor system is applied to detect the volume of trash. The GPS (Global Positioning system) system is used to identify the location of these smartbins. This location information is communicated to the waste management department through GSM (Global System for Mobile Communications) on smartphones. Using the Google Maps the location of the dustbin can be found.

We have designed this kit to convert the normal dust hins to smart dust bin. It is implemented with real time systems to monitor the fill level and weight of the smart dustbins whether it is full or not. In this system the information of all smart dustbins can be accessed from anywhere and at any time by the authorized person he/she can take a decision accordingly.

By implementing this proposed system, the cost reduction, resource optimization, effective usage of smart dust bins can be done. This system indirectly reducing traffic in the city. In major cities, the garbage collection vehicle has to visit the area everyday twice or thrice depends on the population of the particular area and sometimes these dustbins may not be full.

Our system will inform the status of each and every dustbin in real time so that the concern authority can send the garbage collection vehicle only when the dustbin is full.

This assures the collection of garbage soon when the garbage level reaches its maximum level. The system will thus provide accurate reports, increasing the efficiency of the system. The real-time monitoring of the garbage level with the help of sensors and wireless communication will reduce the total number of trips required of GCV and thus,

will reduce the total expenditure associated with the garbage collection. Thus, the dustbins will be cleared as and when filled, giving way to cleaner city, better infrastructure and increased hygiene.

Clean Earth, Green Earth !