A SMART WASTE MANAGEMENT FOR METROPOLITAN CITIES

Abstract-This Waste management is one of the serious challenges of the cities, the system now used in cities, we continue to use an old and outmoded paradigm that no longer serves the entail of municipalities, Still find over spilled waste containers giving off irritating smells causing serious health issues and atmosphere impairment. The Smart Waste Management System will simplify, with the Web applications and mobile phone, the solid and hydric waste inspecting process, and the management system of this presentation's total collection process. The proposed system is a GPS based. The suggested device and implementation will track waste storage and monitor the vehicle's waste driver. This method helps to make the customer aware of accountability behind the job such as the system for solid waste inspection and management, integrating communications technology for truck control systems such as GPS .

Introduction :

Today's waste management systems involve a large number of employees being appointed to attend a certain number of dumpsters this is done every day periodically. This leads to a very inefficient and unclean system in which some dumpsters will be overflowing some dumpsters 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 dumpster is embedded in a monitoring system that will notify the corresponding personal if the dumpster is full. In this system, it is also possible to separate wet and dry waste into two separate containers. This system provides an effective solution to the waste management problem

LITERATURE SURVEY

[1]   Joseph (2002) explain the perspectives of solid waste management in India. He explains the waste generation, and characteristics in India, then he shows the waste generation in Metropolitan cities of India, then shows the characteristics of municipal solid waste generated by metro cities like paper textile leather, plastic, metal, glass, ash earth, and others how generating that explain. Then focuses on the legal and institutional framework of Municipal solid waste Management (MSWM). Then he wrote the present management and practices of MSWM and explain the national plan of MSWM. And in conclusion, he explained how because of populism SWM is increasing in metropolitan cities and how it is the effect on the public health and therefore improvement of SWM to do awarness between community is very important.

[2]   Kaushal (2012) talking about Municipal SWM in India current status and future challenges. Then explain how because of urbanization SWM increasing in India mainly cities like Delhi, Mumbai, Kolkata, Chennai, Bangalore. Then explain the MSW generation, collection, treatment, disposal by the states. Then according to population wise mention the waste generation per capita in kg, then explain the different methods of managing the SWM like composting, gasification, incineration, landfilling bioreactor land filling , refused derived fuel plants. Then explaining the issues in MSWM like source segregation, treatment, and disposal, and resource generation issues, policy issues, technology issues,

financing issues. Then explain the future challenges and opportunities for waste management.

[3]   Pamnani, Srinivasarao (2014) talking about Municipal solid waste management in India. How it is implementing in India"s Metro cities, town, class I, class II cities. Then they explain the current scenario and future direction about SWM . In concluding remark they are saying the MSW generation depends on population, urbanization, climate, socio-economic criteria. Proper training is really required for the implementation of SWM. Lack of finance, training, leadership, lack of proper planning implementation of solid waste is found poor.

[4]   Mohammad Aazam, Marc St-Hilaire, Chung-Horng Lung, Ioannis Lambadaris (2016) provides the idea of sensors-based waste bins, capable of notifying waste level status. An automatic waste bin and make use of cloud computing paradigm to evolve a more robust and effective smart waste management mechanism. Waste management is linked to different stakeholders, including recyclers, importers and exporters, food industry, healthcare, research, environment protection and related organizations, and tourism industry Mohammad Aazam et al proposed Cloud SWAM, in which each bin is equipped with sensors to notify its waste level. Different bins for each category of waste, namely: organic, plastic/paper/bottle, and metal. In this way, each type of waste is already separated and through the status, it is known that how much of waste is collected and of what type. The availability of data stored in the cloud can be useful for different entities and stakeholders in different ways. Analysis and planning can start from as soon as waste starts gathering and up to when recycling and import/export related matters are conducted. The system Cloud SWAM provides Timely waste collection. Timely and efficient way of collecting waste leads to better health, hygiene, and disposal. The system provides shortest path to the location of waste bins. So the collectors can plan a better and fuel efficient route. Recycling and disposal by the system s uses separate smart bins for each type of waste. So the stakeholders will be able to see through the cloud and analyze type of waste and its magnitude. So they can do better arrangements and efficient ways of recycling can be adopted in a dynamic way. Resource management by Cloud SWAM is based on the waste generation trends of a particular city and/or area, resources can be effectively managed since the data is available live through the cloud. Food industry planning can done through the Cloud SWAM. Food industry can plan according to the trends of a certain locality. In this way, not only waste material can be minimized, but also, food trends and habits of an area can be coped in a much more operative way. Taxation With Cloud SWAM keeping track of each kind of waste, better taxation and fine imposition can be performed on unnecessary waste generation. Big Data practices can be used to reduce waste generation and improve its management. Various healthcare stakeholders can take benefit from the gathered   waste management data and foresee what type of diseases a particular locality is more prone to and how to prevent from certain types of insects and bugs from breeding. Waste-based energy production means generating energy from waste in the form of electricity or heat

[5]   The Waste of Nation and Garbage Growth in India Doron, Jeffery (2018) talking about how the garbage is increasing in urban cities according to time, place, and population. This book starts with the question that Why India is so filthy? Yes really always this question comes in mind but after reading this book we understand why this question raises on the country like India. Here the things like "Na man khud saaf karunga and jo kar raha hai usko sammanDunga" it is like this type of attitude we found in the Indians (I will not do cleaning of mine and someone else if doing I will not give respect to that person) In this book author is describing about experiences, conditions about the sanitation, solid waste management, local governance role, people"s condition and NGO"s involvement of various

metropolitan cities like Delhi, Mumbai, Moradabad, Pune, Kolkata, Chennai, etc. Then they talking about the technological solution about the solid waste management and its imperfection because of people"s are not capable to handle it also how because of lack of funding, management and limitations of local government there are issues happening in the implementation of SWM. And in last they talking about the occupation and its possibilities of waste management. In conclusion, they are saying that to clean India change the mentality of the people towards the cleanliness is really important.

ADVANTAGES:

- Time saving
- Cost saving
- Transparency
- Improving efficiency

DISADVANTAGES:

- Limited privacy
- Social control
- Pre-training is required
- Excess network trust

REFERENCE:

- ✓ Joseph (2002)
- ✓ Kaushal (2012)
- ✓ Pamnani, Srinivasarao (2014)

CONCLUSION:

Monitoring the fullness of bins through the use of sensors ,it is possible to achieve a more efficient system than the current existing