Underground Waste Disposal System

Smit Parte[1], Suraj Prajapati[2], Sahil Savaliya[3], Ashish Yadav[4], Parth Bhatt[5], Asst Prof. Hiren Khalasi[6]
[1, 2, 3, 4, 5, 6] Bhagwan Mahavir Collage of Engineering and Technology,Bharthana, Vesu,Surat,Gujarat(India)

Abstract- *Waste collection is one of the life cycle phases that influence the environmental sustainability of waste management. At present we follow with door-to-door collection, recycling and land -filling disposal. This system is highly flexible ,however it has several drawbacks giving rise to important environment impacts and nuisances. One of its weak spots is found in collection process of waste streams following a conventional door-to-door collection using a combination of trucks and waste bins. Hygiene issues, efficiency shortfalls in waste collection ,traffic disturbances and environment burdens in urban areas relating to the increased noise and air-emissions are some of its major disadvantages. This paper focuses on the underground waste disposal system. Thiswaste collection system represents a new way of arranging waste collection in densely populated urban areas. The development of underground infrastructures for the efficient management and collection of urban waste streams offers great advantages and solutions in tackling problems relating to these activities.*

Keywords- Underground waste collection system, municipal solid waste management, latest technology.

I. INTRODUCTION

The utilization of subsurface space is nowadays a key issue towards attaining an environmental friendly and sustainable development, especially in urban areas. Thus, activities or infrastructures that are difficult, impossible, environmentally undesirable or even less profitable to be installed above ground, can be relocated underground releasing valuable surface space for other uses and enhancing urban living conditions. Until recently, the management of municipal waste was relied on traditional collection and disposal activities, mainly associated with door-to-door collection, recycling and land-filling disposal. This system is highly flexible; however it has several drawbacks giving rise to important environmental impacts and nuisances. One of its weak spots is found in the collection process of the waste streams following a conventional door-to-door collection using a combination of trucks and waste bins. Hygiene issues, efficiency shortfalls in the waste collection, traffic disturbances and environmental burdens in urban areas relating to the increased noise and air-emissions are some of its major disadvantages. Waste management is one of the big issue of urban engineering. Today ,the total amount of waste generated annually worldwide (municipal, industrial, hazardous) is more than 4 billion tons. Almost 45 % of these are considered as municipal waste ,while rest is industrial waste, including hazardous one. The introduction of underground and semi-underground collection systems presents strong potential in the efficient collection/ management of the waste in an environmental friendly manners.

II. IMPLEMENTATION

- Utilization of subsurface space can be proved most beneficial in tacking the drawbacks of traditional waste management and collection systems.
- Surface space is released and made available for other use while on the same time, all process are taking place underground minimizing their effects in living environment.
- Major benefit from the usage of Underground Waste Disposal System is minimized operating cost for the waste handling 2 to 3 times lower than conventional ollection methods.
- This waste collection system in used to less Space on the Road.
- No dirty smell in environment.
- All the waste are Underground hence environment is clean.
- Secured collection no overflowing bins or stray animals feeding on waste.
- Citizen friendly waste disposal.

III. OBJECTIVES OF THEWORK

- The main aim of our project is just to improve the traditional waste storage system in our country by underground waste storage system.
- This system prevents from disease, air pollution and mosquitoes .
- It increases usefulness of land as it is underground system we can use that land for other purpose.
- This system can use in commercial as well as domestic purpose.
- The underground waste storage system is very helpful system as per health point of view.

DESIGN AND WORKING

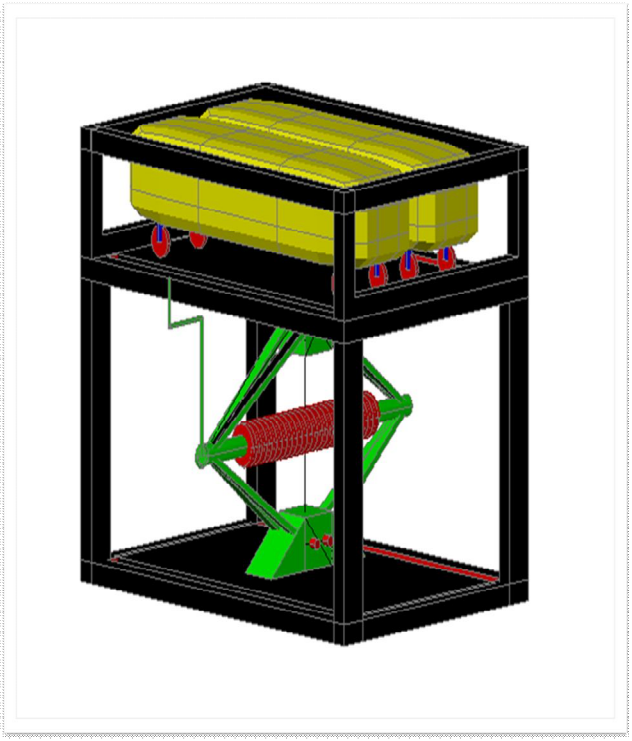

Figure: schematic diagram of UNDERGROUND WASTE DISPOSAL SYSTEM

This project is the waste management system. This system used to the one type of waste disposal system in our area. This system is the underground waste disposal system. In this design to used Toggle Jack ,Motor ,Battery. This component is the attached to the base frame. The middle movable plate on attached to the two container for waste. This container attached to the Roller support for easy to move. The ground level plate is put on the two small boxes have been placed on the ground level plate for disposal. The waste for these two boxes is deposited in the following container. The jack is connected to the motor and battery is power transmitted by motor. When the container is full it is loaded up with the help of a Jack. By moving the filled container there another container is placed. These empty container are transported back into the ground with the help of a Jack. This the working is Underground Waste Disposal System.

IV. ENVIRONMENTAL COMPARISON

The benefits of the Waste Disposal collection in terms of the environmental aspects of city living are given previously. Nevertheless, besides the improvement of the conditions of living and the aesthetics of the city there are some further issues that need to be pointed out. These are linked with the city's environmental conditions in terms of pollutant emissions due to the traffic load generated by the transport trucks. Apart from the reduction in noise and the traffic congestion effects, there will be a considerable upgrade in the city's air quality.

V. CONCLUSIONS

The development of new approaches for the management of the urban waste is become a big issue for modern society. The following are the conclusions draw by our present study:

- Utilization of subsurface space can be proved most beneficial in tackling the drawbacks of traditional waste management and collection systems.
- Surface space is released and made available for other use while on the same time , all process are taking place underground minimizing their effects in living environment.
- The establishment of permanent underground infrastructure for the collection and management of waste can provide efficient and cost effective solutions. Thus the following example already set by other utilities(e.g. water, sewerage , gas, electricity etc.) that have developed over time into an underground infrastructure.
- Pneumatic systems would also offer local safety and public health benefits due to reduced particulates emissions, noise emissions, accidents, disease vectors.
- Major benefit from the usage of Underground waste disposal system is minimized operating cost for the waste handling , 2 to 3 times lower than conventional collection methods.
- This waste collection System in used to less space on the road, Hence more space used to road.
- All the waste are Underground hence no smell and environment is clean.

VI. FUTURE SCOPE

- This system used to more benefits in traditional waste management system.
- More spaced used on the road because this system is totally underground.
- This system in the Increase carrying capacity in Jack. That the Increase waste collect capacity in container.
- This system is looking better to other waste collection system.
- In this system very easy to caring heavy container.

REFERENCES

[1] Kogler, T., 2007. Waste Collection. Report. ISWA Working Group on Collection and Transportation Technology. (Available: http:/ /www.iswa.org/uploads/tx_iswaknowledge/ctt_2007_2.pdf)
[2] Kanat G. Municipal solid- waste management in Istanbul. Waste Management 2010;30(8-9);1737-1745
[3] Sweco Viak AB, 2005. Hammarby Sjostad – Vastra Sjostaden: Comparison of manual waste handling and a stationary for 3 fractions. Fifth draft 23/ 03 / 2005, Report.
[4] Tomblom, J.,2008. Underground Waste Collection vs. Conventional In A Modern Urban Residential Development. Proc. ACR+/London Remade Conference on Waste and Climate Change , London, 31 Jan. & 1 Feb. 2008.
[5] Union health ministry report ,2004.
[6] Vehlow J. Muncipal solid waste management in Germany. Waste Management 1996; 16(5-6);367-374.