International Journal of New Technology and Research (IJNTR)
ISSN: 2454-4116, Volume-1, Issue-1, May 2015 Pages 01-03

Solid Waste Management and Energy Generation by Natural Ways

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Abstract— **Nowadays in this tsunami of global warming and climate change, the project seems to be very effective one for the energy generation and solid waste management technique. In this project , moreover natural ways are taken into consideration. The weapon animals like cows, buffalo ,chickens, duck, earthworm etc are used. Mostly 70-80% of the daily waste in our community is organic and degradable one .This huge amount of waste is used directly fed to the cattle(infertile one mostly in the case of cattle) and the remaining and animal wastes are directly used for the generation of BIOGAS. Other animals work together for the waste settlement for ex: duck(fish waste),hen(rotted product),earthworm(for Fermi composting of the slurry of biogas product)etc. The project not only safely settles the waste but also helps for the income generation and employment which can help to prevent the youth of Nepal for migrating to foreign land too.**

The heavy,pollution creating and expensive equipments for waste management can be easily replaced by this sort of technique. The basic idea to this project is collection of waste separately for different eco friendly uses. The system can be accessed and monitored with the help of different application softwares (mobiles ,tablets)too. The timing of waste collection vehicles can be easily monitored with the help of these techniques. The method seems to be environment friendly and easily handled. The method can be practiced in the south Asian countries too. .This simple project can be easily implemented and fruitful end results can be surely observed.

Index Terms—**Pollution, Biogas ,Waste Management.**

I. INTRODUCTION

The aim of this paper is to give a clear idea on the natural concept of solving the major problem like solid waste management to some extent .This paper will discuss about the advantages of the concept over the old ones still in use in the country's like ours. The paper will also highlight some of the interesting findings.

In our country's waste basically in major cities like Kathmandu, pokhara,Biratnagar,Janakpur,Birgunj the majority of the waste is found to be organic one.

ORGANIC WASTE: 63%
PLASTIC : 11%
PAPER : 9%

According to some data obtained from the KATHMANDU METROPOLITAN CITY approximately Rs. 9,00,000/day is invested to manage the waste only in Kathmandu valley. The management is not effective too as we study the condition of dumping site located in Nuwakot district of Nepal. The concept stays clear that the waste if not mixed randomly is not waste at all. The concept consist of following processes:

i. • Collection of organic waste separately(from other waste)
ii. • Feeding to the animals after filtration(cows ,hen, duck ,goat)
iii. • Excreata of animals collected and feed to the biogas digestor
iv. • Biogas is utilized for different purposes and slurry is now feed to earthworm for Vermi composting.
v. • The useful product from the animals(duck and hen eggs) are collected and taken to market.

II. METHODOLOGY

The method is very simple. The waste is collected in different vans and delivered in the sites. The waste is filtered and fed to the animals and birds. After that the excreata of animals and birds are collected and fed into biogas digester. The biogas is obtained and slurry is fed to earthworm for vermin composting process .The manure is obtained within 48 hours. The process seems to be fast also.

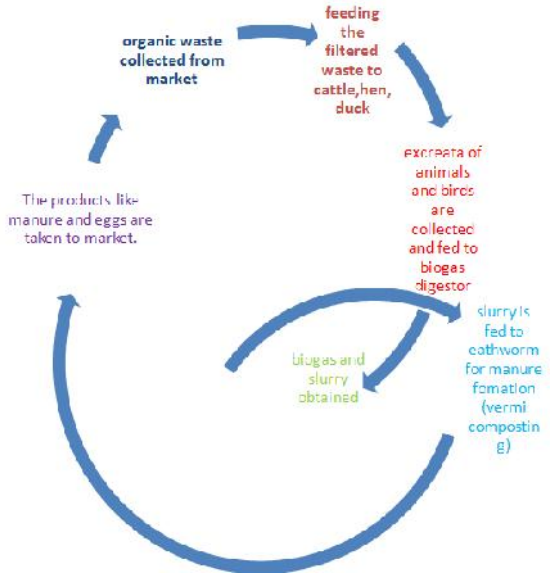

Fig 1: process in cycle concept

ADVANTAGES OF THIS CONCEPT

- The concept is very simple and easy in operation.
- The use of heavy and expensive machines for settling waste can be avoided to some extent.
- No need of skilled manpower for the operation of project.

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- The cattle for no further use can be made into work.(cows)
- No need of large investment except for the biogas plant.
- More than 50% of organic waste of can be managed easily in small towns and with some effort in large cities also.
- Biogas is generated which can be used for different purpose.
- The end product of the system is manure(vermi composting) which can be used for agriculture directly and can be sold in local market too.
- The product (eggs sometime milk) can be used for income generation activities.

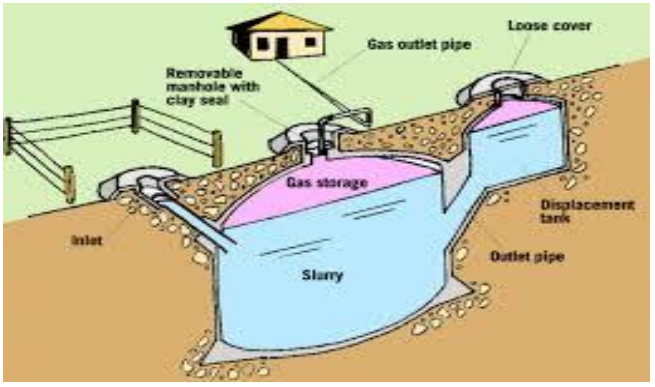
The future worth of this project can be extended to the management of waste collection technique guided by using different softwares too.

PURPOSE OF THIS CONCEPT USING INNOVATIVE TECHNIQUE

- ✓ To reduce the daily huge amount of money invested by Metropolitan city in waste management
- ✓ To reduce the side effects of solid waste in the environment(mostly in dumping sites)
- ✓ To make environment friendly contribution to the solid waste management
- ✓ To provide a unique concept to the small entrepreneurs for their investment
- ✓ To make the waste free society to some extent.

III. FINDINGS

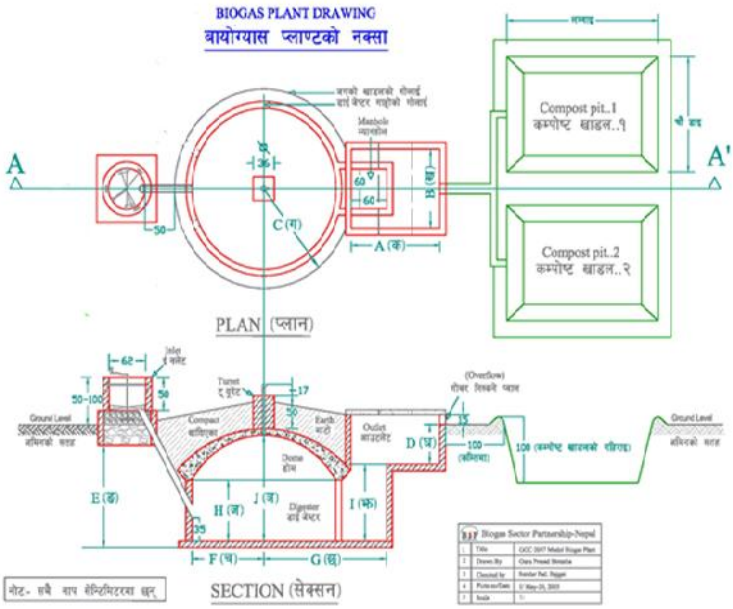
- ❖ The same phenomenon is practiced in some part of India successfully.
- ❖ The number of eggs laid by the hen and duck were tremendously high.
- ❖ Good quality of biogas was obtained which can be used in different purpose.
- ❖ The process is continuous one and energy can be achieved without break.
- ❖ The process is continuous in both night and day times.



BIOGAS GENERATOR

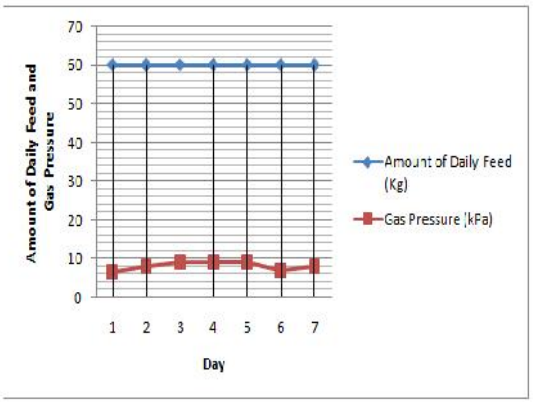
NIGHT: Earthworm(converting slurry into useful manure)

IV. BIOGAS DESIGN



S.No	Amount of Daily Feed (Kg)	Ambient Temperature (deg. C)	Slurry pH	Gas Pressure (k
1	60	21.4	4.2	6.5
2	60	25	4.4	8
3	60	26.1	4.5	9
4	60	24.4	4.4	9
5	60	26.6	4.5	9
6	60	22	4.3	7
7	60	26	4.5	8

SOME FINDINGS (In the context of Nepal)



V. CONCLUSION

The project seems to be very effective in reducing solid waste in eco friendly way .The most part of solid waste is the organic one. The organic waste treatment with cattle ,hen ,duck will not only reduce the cost of project but also helps in income generation activity As the project seems to be very effective in small towns, the project also can be carried out in big towns if proper planning and designing is done .Not only the organic waste but also the non organic waste can be managed easily if they are disposed separately. For the same purpose different vehicles for different waste can be used and the latest technology can be used on those vehicles (software alarming in mobile phones).In this way the project seems to be very effective and efficient to control the organic waste easily.

REFERENCES

[1]. Karki, A., Shrestha, J., Bajgain, S., and Sharma, I. ," BIOGAS As Renewable Source of Energy in Nepal Theory and Development", BSP-Nepal, Kathmandu.2002.
[2]. Mital, K.(1997) Biogas Systems : Policies, Progress And Prospects, New Age International (P) Limited, New Delhi.pp.53.
[3]. Solid Waste Management Technical Support Centre
[4]. BSP Nepal Biogas Plant Design Handbook