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# PROPOSED BY DISPOSAL OF MUNCIPAL SOLID WASTE BY BIO METHANATION IN GADHINGLAJ CITY

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Abstract: In India Bio-Methanation in conventional biogas plant have been proposed as one of the appropriate alternative sources of energy which can counter the escalating demand of fossilfuels. In India large quantity of waste generates produce per day and hence the noof biogas installation of biogas plant is increasing rapidly and the trend is expected to continue at least for the foreseeable future. Biogas plant like many other energy generating technologies is not free from environmental problem.

Biogas production requires anaerobic digestion. The biogas plant creates an organic processing facility to create biogas which will be more cost effective, eco friendly, cut down on landfill waste, generate a high quality renewable fuel and reduce Carbon Dioxide and Methane emission. The anaerobic digestion of kitchen waste produces biogas, which primarily consist of methane ($CH_4$ ) and Carbon Dioxide ($CO_2$). Biogas can be used as energy source and also for numerous purposes. But any possible application requires knowledge and information about composition and quantity of constituent in the biogas produced.

***INTRODUCTION***

Energy is an essential need for human existence. There is shortage of energy due to fastdepletion of fossil fuel and the increase in demand for energy .Due to scarcity of petroleum andcoal it threatens supply of fuel throughout the world also problem of their combustion leads to research in different corners to get access the new source of energy, like renewable energy resources. Solar energy, wind energy, different thermal and hydro sources of energy, biogas are all renewable energy resources. But, biogas is distinct from other renewable energybecause its characteristics, controlling and collecting organic waste and the same time producing fertilizer and water in agricultural irrigation. Biogas does not have any geographical limitation nor those it require advanced technology for producing energy also is it very simple to use and apply.

The disposal of solid waste is a problem. This problem continues to grow with growth of population and development of industries. Disposal of waste in open pits how become routinein majority of places. Semi solid or solid matter that are

Created by human or animal activities and which are disposed because of they are hazardous or useless are known as a solid waste. Today solid waste disposal technology is needed for further survival and welfare of human being it is the fact 0.40 kg/capita/day of municipal solid waste (MSW) is generated in the urban areas similarly about 150 of per capita per day sewage waste generate

**1. Future scope**

**Renewable Energy Source**:

Bio-methanation plants utilize organic waste such as agricultural residues, food waste, and sewage to produce biogas, primarily methane. With increasing concerns about climate change and the need to transition away from fossil fuels, bio-methanation presents a renewable energy source that can help reduce greenhouse gas emissions.

***1.Energy Security:***

As countries aim to diversify their energy sources and reduce dependence on imported fossil fuels, bio-methanation offers a locally available energy option. It can contribute to energy security by harnessing locally generated organic waste to produce

**2. Objectives**

1. Study of Bio Methanation process
2. Design the Bio Methanation plant for Gadhinglaj city
3. To calculate amount of electricity generated from the plant
4. To utilize solid residue as manure
5. To minimize the environmental impact

**3.Need Of Project**

Forestry, crops, sewage, industrial residue, animal waste, and municipal waste are all used to create the biogas renewable energy. Traditionally biogas was used for cooking and heating purposes but these days it is being used for a number of other things as well.

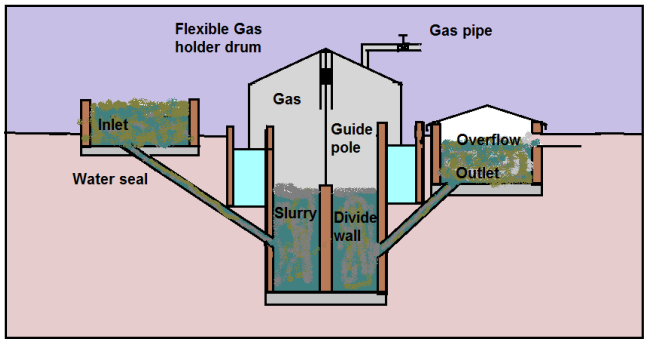
**4.Methodology**

1. Collection of data
2. Analysis of data
3. Visit to nearby Bio Methanation plant near Kolhapur city
4. Design of Bio Methanation plant for Gadhinglaj city
5. Conclusion

Data collection and analysis:

Essential data for the study, such as waste amount, current waste management technique if adopted, net searching etc. There is one dumping site available for waste collection near the Gadhinglaj city. But there is no waste management technique is used to treat that waste collected from the city.Visit to nearest Bio methanation plant near Kolhapur:

**5.FIGURES:**





**6.Results**

Most benefits of biogas plants are environment-related, as they produce renewable energy for domestic and industrial use. This energy can be stored or injected into the electricity grid to reduce dependence on fossil-fuel energy, which can help reduce our carbon footprint.

**7.Conclusion**

After completion of this project, we are concluded that there are biogas energy is distinct from other renewable energy source because of its characteristics. The biogas is effectively used for cooking, lighting and various purposes in rural areas can drasticallyreduce the depletion of natural resource like forest. The emission of $CH_4$ and $CO_2$ , gas generate from municipal solid waste pollutes environment and create unhealthy condition for living being, so this municipal solid waste can effectively use for production of biogas under anaerobic condition. After this process the remaining part of the municipal solid waste is converted in good fertilizer which isused for gardening purposes.

**8.References**

1. M. Stenstrom (1983), anaerobic digestion of Municipal solid waste, Journal of Environmental Engineering, Vol.109, PP.1148-1158.

2. T. Narayana (2008), Municipal solid waste management in India: From waste disposal torecovery of resources, Elsevier Waste Management, Vol.29, and PP.1163-1166.

3. A. Shekdar (2009), Sustainable solid waste management: An integrated approach for Asian countries, Elsevier Waste Management, Vol.29, PP.1438-1448.

4. C. R. Lohri (2013), Financial sustainability in municipal solid waste management- Costs & revenues in Bahir Dar Ethiopia, Elsevier Waste Management, Vol.34, PP.542-552.

5. A. Ahsan (2014), Assessment of municipal solid waste management system in a developing country, Hindawi Publishing Corporation Chinese Journal of Engineering Vol.1, PP.1-11.