

# PRODUCTION OF BIOGAS FROM KITCHEN WASTES

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**Abstract:** - kitchen waste is generally ignored in terms of household wastes. these wastes can be used for better purpose. Biogas production is one of the beneficial uses from biodegradable kitchen wastes. Biogas production requires anaerobic digestion process. Biogas is organic in nature as it is cost effective, eco-friendly, minimize landfill activity and renewable fuel. Anaerobic digestion is a microbial process, which produces valuable energy resource. In this process, biodegradable waste from kitchen and cow dung is used along with water to Make slurry. Combination of all these mix release gases like methane, carbon dioxide. Gas is detected, collected and burn for various purposes.

## I. INTRODUCTION

Scarcity of petroleum and coal threatens the supply of fuel throughout the world also problem of their combustion leads to research in different corners to get access the new sources 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 energies because of its characteristics of using, controlling and collecting organic wastes and at the same time producing fertilizer and water for use in agricultural irrigation. Biogas does not have any geographical limitations nor does it require advanced technology for producing energy, also it is very simple to use and apply.

Deforestation is a very big problem in developing countries like India, most of the part depends on charcoal and fuel wood for fuel supply which requires cutting of forest. Also, deforestation leads to decrease the fertility of land by soil erosion. Use of dung, firewood as energy is also harmful for the health of the masses due to the smoke arising from them causing air pollution. We need an eco-friendly substitute for energy.

Kitchen waste is organic material having the high calorific value and nutritive value to microbes, that's why efficiency of methane production can be increased by several order of magnitude. It means higher efficiency and size of reactor and cost of biogas production is reduced. Also, in most of cities and places, kitchen waste is disposed in landfill or discarded which causes the public health hazards and diseases like malaria, cholera, typhoid. Inadequate management of wastes like uncontrolled dumping bears several adverse consequences. It not only leads to polluting surface and groundwater through leachate and further promotes the breeding of flies, mosquitoes, rats and other disease bearing vectors. Also, it emits unpleasant odour and methane which is a major greenhouse gas contributing to global warming.

## II. BENEFITS OF BIO GAS TECHNOLOGY

1. Transformation of organic wastes to very high-quality fertilizer.
2. Improvement of hygienic conditions through reduction of pathogens.
3. Environmental advantages through protection of soil, water, air etc. Micro-economic benefits by energy and fertilizer substitutes.
4. Macro-economic benefits through decentralizes energy generation and environmental protection.

## III. COMPOSITION OF KITCHEN WASTE

- (A) Uncooked fruits & vegetables
- (B) Cooked meat
- (C) Uncooked meat
- (D) Bread
- (E) Teabags
- (F) Eggs
- (G) Cheese
- (H) Paper

## IV. PRODUCTION PROCESS

In this process experiment was done in 1lit & 20lit bottles. Here different concentration & combination of wastes are used. Different parameters of input and effluent like total solid, volatile solid, volatile fatty acid, pH, Temperature, Nitrogen, Carbon, Phosphorous will be measured. After that in 20 litre plastic container study done to check the gas production.

## V. CONCLUSION

In 1 litre bottle, gas was detected but not measured. Whereas, in 20 litre bottle gas was collected and burnt with blue flame. In small scale for household purpose. we can use biogas for cooking reducing the use of LPG. It is estimated that for 1000 litre biogas reactor 500-650 litres of biogas is produced. The decomposed matter obtained from reactor or bottles can be used as manure for gardens, lawns, parks and nursery.

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