

Biogas : Its Application and Production

Abstract

Biogas technology is an efficient solution to address the issue of more stable and efficient renewable energy source through its potential ability to keep pollution free environment. Besides being a renewable energy source, the biogas digester systems would prevent the direct exposure of methane, carbon dioxide and other pollutant emissions into the atmosphere. More ever the combustion of biogas displace the use of fossil fuels for energy generation hence contributes to additional emission reductions of green home gases (GHS) and other air pollutants.

Keywords: Biogas, Anaerobic, Biodegradable, Methane, Fermentation.

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Introduction

In 1976 for the first time, a Italian physicist Volta, demonstrated methane (CH_4) in the marsh gas generated from organic matter in bottom sediments of ponds and streams. Biogas is mainly composed of 60% CH_4 and 40% CO_2 . Methane is the main constituent of biogas. Bio gas can be produced by anaerobic, digestion with anaerobic organism which digest material inside a closed system or fermentation of biodegradable materials¹. Biogas is generally known as biofuel, sewerage gas, sludge gas, Gobar gas, bio energy etc.

Bio gas can also be used for cooking, lighting² and running engines. It is devoid of smell and burns with a blue flame without smoke.

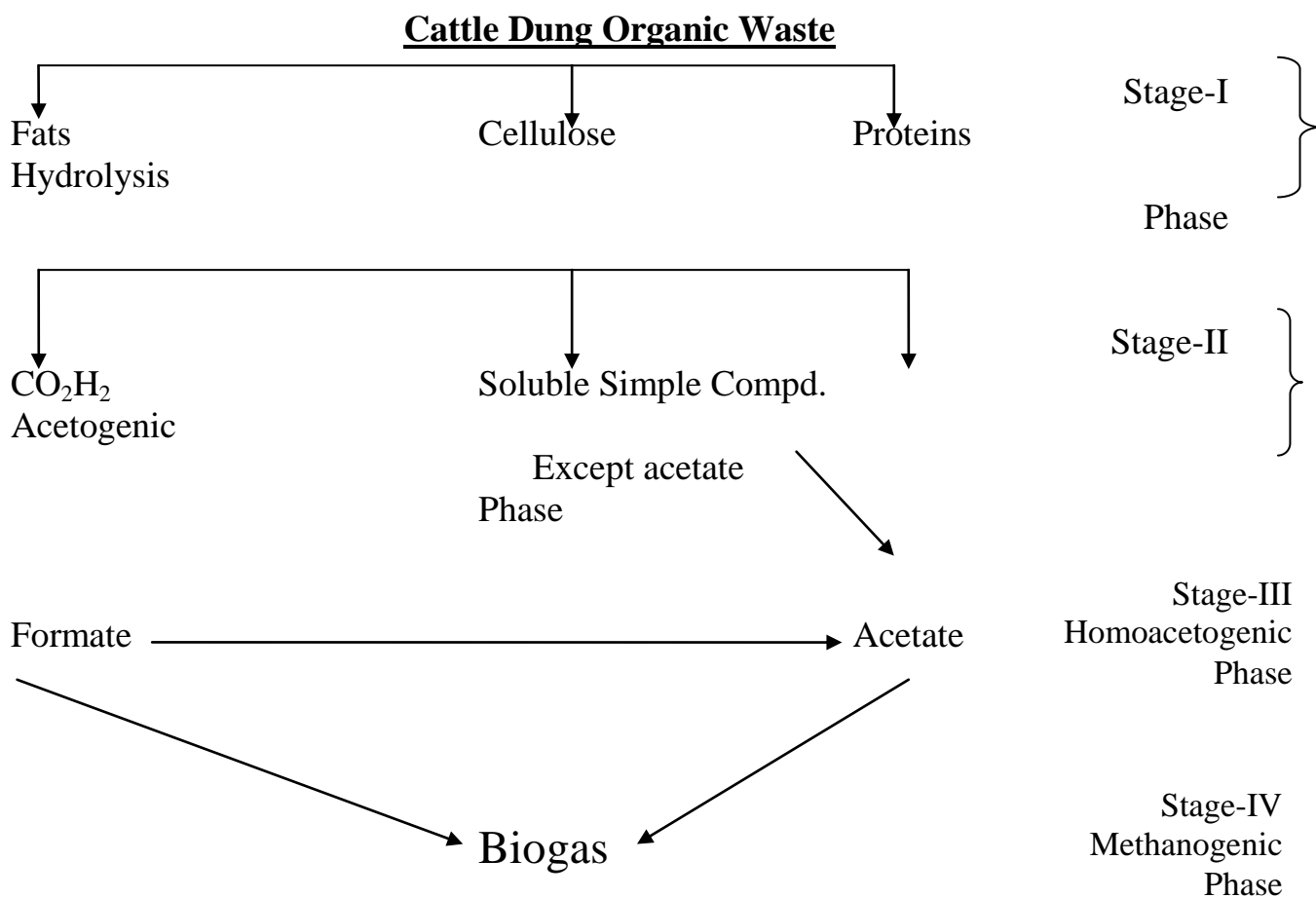
Production or Generation of Bio Gas

Biomass from animals are cattle dung, manure from poultry, goats, sheep and slaughter houses and fishing waste etc.

Biogas production is a microbial process all microbes involved in methane production grow in the absence of oxygen.

In experimental work at university of Alaska Fairbanks a 1000 litre digester using psychrophiles harvested from "Mud from a frozen lake in Alaska" has produced 200-300 litre of methane per day, about 20%-30% of the output from digesters in warmer climates.⁴

The process involves the combined action of four groups of bacteria in four stages.



Composition of Biogas

Compound	Formula	%
Methane	CH ₄	50-75
Carbon dioxide	CO ₂	25-50
Nitrogen	N ₂	0-10
Hydrogen	H ₂	0-1
Hydrogen Sulfide	H ₂ S	0-3
Oxygen	O ₂	0-0.5

Source www.kolumbusfi 2007⁵

Biogas Utilities

Biogas is a cheap and clean fuel. It burns with blue flame which is root free. It acts as cheaper and better fuel for Cooking, Lighting, Running diesel and petrol engine and general electricity on sewage works⁶ in a CHP gas engine. A biogas powered train named Biogas target Amanda has been in service in Sweden since 2005⁷⁸. Biogas powered automobiles.

Conclusion

Biogas typically refers to a mixture of different gases produced by the breakdown of organic matter in absence of oxygen. It is a renewable source of energy. Biogas plants significantly lower the green house effects on the earth.

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