How to Start Biogas Production

Biogas – An Intense Opportunity

(Landfill Gas (LFG), Solid-Fuel, Biomass, Biofuel, Renewable Energy, Biogas Digester)

Introduction

As we know that air contains 21% oxygen which means the energy that is released consents biogas to be used as a fuel. Generally, biogas is a renewable fuel. In any country, for cooking or heating purposes biogas can be used as a low-cost fuel.

Biogas can be used as a fuel in stationary and mobile engines, to supply motive power, pump water, drive machinery (e.g., threshers, grinders) or generate electricity. It can be used in both spark and compression (diesel) engines. The spark ignition engine is easily modified to run on biogas by using a gas carburetor.

Ignition systems need not be altered, other than minor timing adjustments. At the standard compression ratios, a decrease in power results. Supplementary fuels can be used with biogas in spark ignition engines.

The introduction of biogas technology in the rural areas of India requires technological improvements and financial help for successful operation. The technological improvements should be:

(a) To nullify the effect of low temperature on gas production;

(b) To devise simple, economical and labour-saving equipment for dung collection;

(c) Effective techniques for drying and transporting the effluent.

Biogas, like natural gas, is a gas mixture of gases consisting chiefly of methane. It is produced by microorganisms as they decompose organic waste. Biogas is also generated in sewage plants and at landfill sites. Biogas can be stored without difficulty, meaning that it can be used at any time in any location irrespective of where it is produced.

Advantages of biogas technology on farms

1. Odour reduction – up to 95% of bad odours removed

2. Improved energy security from on-site generation of energy, particularly electricity.

3. A payback period of five years for pig farms, potentially longer for other livestocks.

4. Overflow water or slurry, a residue from the process, is a high-grade fertilizer that can replace expensive mineral fertilizers, in particular nitrogen.

5. The technology is ideal for effective and productive management of livestock wastes.

6. It provides an integrated system for energy production, fertilizer production and waste treatment.

7. Bio digesters relieve the environmental impact by capturing and utilizing harmful gasses.

8. A biogas digester can be locally produced or built, and locally operated.

India is the fourth largest energy consumer in the world, after the United States, China, and Russia. Despite a slowing global economy, India's energy demand continues to rise. In India, the estimate for the production of biogas is about 20,757 lakh cubic meters in 2014-15. This is equivalent to 6.6 crore domestic LPG cylinders. This is equivalent to 5% of the total LPG consumption in the country today. Apart from these, under the twelfth five year plan (2012-2017), the government of India had set a target to set up 6.5 lakh biogas plants across the nation with a budget of Rs.650 crore under a program called, the National Biogas and Manure Management Program (NBMMP).

Bio Gas typically refers to a gas produced by the biological breakdown of organic matter in the absence of oxygen. Organic waste such as dead plant and animal material, animal dung, and kitchen waste can be converted into a gaseous fuel called Bio Gas. Bio Gas is basically a mixture of methane and carbon dioxide; it originates from biogenic material and is a type of bio fuel. It is a low cost form of energy derived from renewable waste resources: animal manures, agricultural residues, industrial wastewater, human waste and other organic materials. Bio Gas has been used widely as a source of energy and waste treatment, and as liquid fertiliser for soil enhancement, since long time.

Digestion the underlying biological process of Bio Gas technology leads to a renewable energy service that ensures a distributed energy production, in which the energy is produced at the point of consumption or demand. A Bio Gas digester, which produces the Bio Gas, also provides an excellent agricultural waste management solution, most notably animal manures. Also, capturing methane generated in a Bio Gas digester has an immensely important role to play with respect to rural energisation, poverty alleviation and development, increased industrial and agricultural efficiency and competitiveness, and improved management of our greenhouse gas emissions.

The major applications of Bio Gas are as fertilizer, fuel gas, methane production, mechanical and electrical power production, diesel engine operation, etc. Bio Gas technology is one of the fastest growing renewable energy sectors worldwide, with the annual market growth exceeding 30% each year.

This book majorly deals with Bio Gas plants, raw materials for Bio Gas generation, utilization of Bio Gas and slurry, engineering design of Bio Gas units for developing countries, engineering aspects of small scale Bio Gas plants, a village scale Bio Gas pilot plant study using high rate digester technology, structural behaviour and stress conditions of fixed dome, simplified anaerobic digesters for animal waste,

mechanical and electrical power from Bio Gas in developing countries, fuel gas production from organic wastes by low capital cost batch digestion, the toxicity effect of pesticides and herbicides on the anaerobic digestion process, the toxicity effect of pesticides and herbicides on the anaerobic digestion process, Bio Gas manure as a complete fertilizer, feasibility for Egyptian farmers etc.

The book contains technology of Bio Gas generation with its applications. This book will be an invaluable resource for researchers, consultants, entrepreneurs, institutional libraries, students etc.

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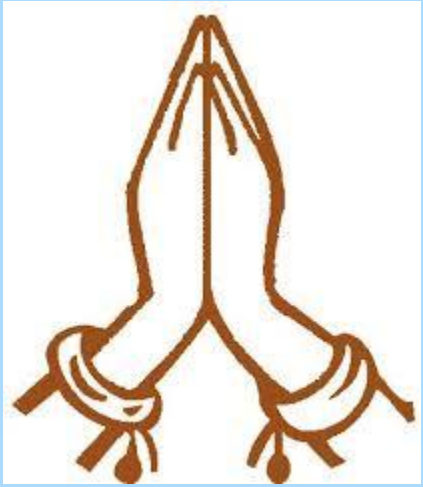

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