



TARA BIOGAS TECHNOLOGY

Biogas is a mixture containing 55-65% methane gas (CH_4), 30 to 40% carbon dioxide (CO_2) and remaining being of impurities like H_2 (hydrogen), H_2S (hydrogen sulphide), and some N_2 (nitrogen). It is a clean but slow burning gas with a calorific value ranging from 5000 to 5500 kcal/kg. It can be used directly in cooking reducing the demand for LPG & fire wood. In rural areas Biogas has been popular by the name "Gobar Gas" mainly due to the use of animal dung for its production. However it is not only the excreta of cattle, but also of pigs, as well as poultry dropping which can be effectively used for biogas generation. Other materials through which biogas can be generated are agro waste, kitchen waste, paper waste, sea weed, human excreta etc. However production of methane gas (CH_4) from agro waste is comparatively lesser than animal dung. Productivity of biogas depends on ambient temperature. In tropical regions it can be up to 30 days. In India between 30 – 50 day retention period is adopted depending on the bio-climatic region. Availability of gas in different types of feedstock also differs. Cattle dung has the maximum followed by poultry.



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Brief Production Process:

The production process occurs in three distinct phase:

Enzymatic Hydrolysis:

Fats, starches and proteins in cellulosic biomass are broken down in to simple compounds.

Acid formation:

Micro organisms are broken from acetic acid and volatile solids. Complex organic compound are broken down to short chained simple organic acid.

Methane formation:

Organic acids are converted in to methane (CH_4) and CO_2 (carbon dioxide) by bacteria which are strictly anaerobes. These bacteria are called methane formatters. For efficient digestion these acid formers and methane ferments must remain in a state of dynamic equilibrium which decides the efficiency of gas generation.

Areas of Application

Gas produced from this plant can be utilised for domestic and commercial fuel purposes. Waste Slurry of the plant can be utilised as enriched manure.

Advantage

There are several advantages of biogas plant. Usually the gas produced is consumed as a cooking fuel. Bye product manure is a very good fertilizer for agriculture. Biogas units are effective means for the sanitary disposal of human excreta. During the decomposition of night soil in a Biogas plant most of the disease / causing pathogens are killed. Biogas is a dependable source of rural energy form, providing an alternative source to kerosene, Diesel wood, cow dung etc. It can also be used as a new source of energy for rural agricultural mechanization and micro – enterprises.

Development Status

Commercialized

Technical Data

Specification	Quantity of gas consumed (m ³ ,hr)
2" Burner	0.33
2" Burner	0.47
6 " Burner	0.64
Per person / day 100 candle power	0.13
75 to 80 % replacement of diesel oil per BHP	0.51
1 kwh	0.21

Economic Data

Cost benefit analysis of Biogas with different fuels

Parameters	Biogas	LPG	Kerosene	Fire wood
Value of fuel per m ³	Rs. 7.50	Rs. 5.35	Rs. 4.96	Rs. 7.06
Replacement value(Qty)	35 cft.	0.50 kg	0.62 kg	3.47 kg
Energy value	23.40 mj	22.15 mj	25.91mj	55.11 mj

Business

TARA (Technology and Action for Rural Advancement) offers a clean fuel technology, which converts biomass waste i.e. cow dung into gas and slurry. There are no raw material cost which is assumed to be available in villages. The value addition is purely on account of man power costs. Technology is supplied by TARA (Technology and Action for Rural Advancement), a leading sustainable technology marketing organisation.

Transfer forms

Equipment, Turnkey basis

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