

# COMPRESSED BIOGAS PLANT



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## INTRODUCTION

The main objective of the project is to set up a compressed biogas plant to sale the Bio CNG to the local user at around Rs. 55 per kG. The plant also produces organic manure in large quantity which can be sold at about Rs. 1.5 per kg in open market. Bio CNG is in good demand. Similarly organic manure is always in short supply. It is needed for fruits and vegetables and horticulture farming.

A standard biogas plant of capacity 2000, 2500, 3500 or 5000 Cubic Meter per day can be used. We also know that 1 CU M raw biogas gives 400 Gram compressed biogas.

BIOGAS PLANT CAPACITY (CUBIC METER PER DAY)	2000	2500	3500	5000
ENRICHED BIOGAS CAPACITY (Nm <sup>3</sup> per day)	1100	1375	1925	2750
ENRICHED BIOGAS CAPACITY (Kg per day)	800	1000	1400	2000
ORGANIC FERTILIZER (30% moisture) (MT/day)	10	12.5	17.5	25.0
ORGANIC FERTILIZER (30% moisture) (MT/year)	3500	5375	6125	8750

The main raw material required for plant is cow dung or poultry droppings or Biomass or Food waste. This will be procured from dairies and farms in nearby areas. Water is required for process.

## BELOW WE ARE GIVING APPROXIMATE QUANTITIES OF RAW MATERIAL REQUIREMENTS.

PLANT CAPACITY, CUM	2000	2500	3500	5000
DUNG REQUIRED DAILY (TON) Or POULTRY DROPPINGS (TON) or BIOMASS WASTE (TON) OR FOOD WASTE (TON)	40 14 14 20	50 18 18 25	70 25 25 35	100 35 35 50

Combination of any of these can also work in proportionate quantity.

Area required is 1 acre to 2 acre.

**MAIN STATUTORY REQUIREMENTS**

1. Approval from state nodal agency
2. Pollution control approvals
3. Change of land use permission
4. License to fill compressed biogas cylinders from Petroleum and Explosive Safety Organization, (PESO) (Govt. of India) under Gas Cylinders Rules, 2004.

**GOVERNMENT SUPPORT**

1. Govt subsidy is Rs 4.0 Crore. Per 4800 kgs of Bio CNG/day generated from 12000 m3 Biogas /day.
2. No fees charged for change of land use permission.
3. Custom duty concessions

**OTHER FINANCIAL SUPPORT**

1. GOLD STANDARD CARBON CREDITS

**PLANT AND MACHINERY****1. BIOGAS PRODUCTION PLANT:**

- I. RECEIVING TANK:
- II. INLET PIPE:
- III. DIGESTER:
- IV. DOUBLE MEMBRANE TOP BALLOON:
- V. EFFLUENT BUFFER TANK:
- VI. EXCESS GAS FLARING SYSTEM:





**2. PURIFICATION PLANT:**

- I. WET SCRUBBER:
- II. BIOGAS ONLINE MONITORING:

**3. BOTTLING AND DISTRIBUTION SYSTEM:**

HIGH PRESSURE COMPRESSOR:



**4. SLURRY DEWATER AND BAGGING SYSTEM:**

- I. SCREW PRESS:
- II. SETTLING AND AERATION TANK:
- III. BAGGING MACHINE:

**FINANCIAL ANALYSIS OF DIFFERENT CAPACITIES (RS. IN LAKH)**

	INSTALLED CAPACITY	2000 CUM	2500 CUM	3500 CUM	5000 CUM
	<b>PLANT AND MACHINERY COST</b>	<b>385.00</b>	<b>442.00</b>	<b>534.00</b>	<b>662.00</b>
	<b>Equity of the promoters, 30%</b>	<b>148.00</b>	<b>170.00</b>	<b>213.00</b>	<b>257.00</b>
	<b>SUBSIDY</b>	<b>67.00</b>	<b>83.00</b>	<b>116.00</b>	<b>166.00</b>
	<b>Bio CNG in Kg / Day</b>	<b>800</b>	<b>1000</b>	<b>1400</b>	<b>2000</b>
	<b>Organic manure in Ton / day</b>	<b>16</b>	<b>20</b>	<b>28</b>	<b>40</b>
	<b>Cost of operation / year</b>	<b>100.00</b>	<b>124.00</b>	<b>158.00</b>	<b>207.00</b>
	<b>SALE PRICE OF RS. 55 PER kg</b>	<b>151.00</b>	<b>189.00</b>	<b>264.00</b>	<b>378.00</b>
	<b>SALE PRICE OF RS. 1.5 PER Kg</b>	<b>63.00</b>	<b>79.00</b>	<b>110.00</b>	<b>158.00</b>
	<b>TOTAL SALES AS CALCULATED</b>	<b>214.00</b>	<b>268.00</b>	<b>374.00</b>	<b>536.00</b>
	<b>NET OPERATING PROFIT</b>	<b>42.00</b>	<b>63.00</b>	<b>117.60</b>	<b>207.00</b>
	<b>PAYBACK PERIOD (Years)</b>	<b>4</b>	<b>3.5</b>	<b>3.00</b>	<b>2.5</b>
	<b>IRR</b>	<b>25%</b>	<b>30%</b>	<b>40%</b>	<b>45%</b>

**SUPPLIES AND SERVICES PROVIDED BY GEON ENGINEERS**

1. **PROJECT PROFILE:** The project profile is available with complete details on the project.
2. **ALL CLEARANCES INCLUDING, POLLUTION CONTROL, CLU AND PESO License:** All necessary documentation including DPR for clearances / approvals necessary for the project and all other applications.
3. **FINANCIAL CLOSURE:** We work to suggest the most appropriate financial structure and matching financial agencies. We work to get the approval the loan and fulfilment of pre-disbursement conditions.
4. **COMPLETE ENGINEERING, CIVIL CONSTRUCTION AND PLANT & MACHINERY SUPPLY AND ERECTION:** We can do complete engineering, construction, supply and commissioning of the plant and machinery.
5. **SUBSIDY, CUSTOM DUTY EXEMPTION AND GOLD STANDARD CARBON CREDITS:** All necessary documentation and work for approvals necessary for Subsidy, Custom and Gold Standard carbon Credits for the project.

**REPRESENTATIVE PROJECTS:**

1. **M/s. Hargobind Bio Energy, Patiala, Punjab:** M/s. Hargobind Bio Energy has set up grid connected biogas gas plant of 6000 CU M capacity with Biogas based Generator set of 635 kW capacity. The power produced is being fed to grid and the dry Bio-fertilizer is being used in the dairy farm.
2. **M/s. Gitwako Farms (India) Pvt. Ltd., Haryana:** They have set up one biogas gas plant of 350 CUM with Biogas based Generator set of 40 kW capacity.
3. **M/s. Anwesha Enterprises Pvt. Ltd., West Bengal:** They want to set up one Bio CNG gas plant of 2000 CU M capacity. The biogas produced will be sold locally. The dry Bio-fertilizer will be used in the farms.
4. **M/s. Shree Krishna Bio Power, Haryana:** They want to set up grid connected Biogas based Power Generation Plant. They will set up one biogas gas plant of 11000 CU M capacity with Biogas based Generator set of 1067 kW capacity.
5. **M/s. KDS Green energy Pvt. Ltd., Punjab:** M/s. KDS green wants to set up grid connected Biogas based Power Generation Plant of 11000 CU M capacity. They will also install Biogas based Generator set of 1067 kW capacity.
6. **M/s. K2 Power Renewal Pvt. Ltd., Haryana:** M/s. K2 Power Renewal wants to set up 2 grid connected Biogas based Power Generation Plants of 11000 CU M capacity each. They will also install 2 Biogas based Generator sets of 1067 kW capacity each.
7. **M/s. Mr. Pravash Sharma, Nepal:** Mr. Pravash Sharma, Nepal wants to set up one Bio CNG gas plant of 3500 CU M capacity. The biogas produced will be sold locally. The dry Bio-fertilizer will be used in the local farms.