PROJECT REPORT & CATALOGUE FOR FOOD WASTE BASED DOMESTIC BIOGAS PLANT

APPLICATION

DOMESTIC BIOGAS PLANT FOR THERMAL APPLICATION

PROPOSAL SUBMITTED

BY

M/s. B-Sustain Energy Projects Pvt Ltd

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Chennai – 106.

1. TITLE

Biomethanation of Food waste based biogas generation

2. SPECIFIC BUSINESS FIELD

Field	Sub-field
Renewable Energy	Thermal application from Biogas

3. SUMMARY

OBJECTIVES:

The main objective of the project is to evaluate the viability of biogas generated from Food waste. Biogas can be obtained from any kind of fermentable wastes such as animal dung, vegetable waste, kitchen waste, food waste, Human faeces, Fruit waste or any kind of wet organic waste etc. Biogas is a clean and efficient fuel which can easily replace petrol, diesel and LPG. The application varies from cooking, lighting, power generation, irrigation, refrigeration and room heating. Apart from fuel gas, we can get good quality of manure from the wastes, is an added benefit of biogas production.

4. TECHNICAL INFORMATION

Technical aspects:

(I) Production Process: Methanogenic bacteria naturally available in Cow dung is fed into the digester as a initial start up and mass propagation of microbial culture takes and biogas production starts within 15 to 20 days under anaerobic condition. After micro-organisms development, start feeding Food waste into biogas digester. Waste is mixed with water and loaded inside. The biogas produced from the digester is supplied in pipe lines for Thermal application / power generation. The digested slurry which comes out of the biogas digester is going to the fields as enriched manure.

(II) Quality Standards: Methane gas coming out from the plant is as good as CNG or LPG. It's burning process and thermal efficiency is also of similar nature.

5. Anaerobic Bio-digester

Floating Drum Type – Water seal model

6. SPACE REQUIREMENT

For biogas plant (Inlet tank, bio-digester & outlet tank)

a) 0.5m3 biogas plant : 1.0 x 1.0 mt

b) 1m3 biogas plant : 1.4 x 1.4 mt

c) 2m3 biogas plant : 1.8 x 1.8 mt

d) 5m3 biogas plant : 2.4 x 2.4 mt

7. DETAILED LIST OF EQUIPMENTS

S.No	Name of the Equipment	Quantity	Scope of work	
			B-Sustain	Client's
	Biogas plant			
1	Floating drum type anaerobic digester with gas holder	1 No.	✓	
2	Inlet & outlet line	1 No.	✓	
3	Biogas stove	1 No.	✓	
4	Gas tubes from plant to Burner	Lot		✓
5	Food waste crusher with sink and stand fitting (Optional)	1 No.	✓	

8. TECHNICAL SPECIFICATIONS OF DOMESTIC BIOGAS PLANT

a) 5 KPD of Food Waste & 0.5 m3/day of biogas

Biogas Plant Model	Specifications
Biogas Plant Type	Floating drum –Water seal model
Feed stock	Food/Vegetable & Kitchen Waste
Required solids content (%)	~10%
Rated Waste Consumption (Kg/day)	~ 5
Rated Water consumption (L/day)	~ 5
Cow dung required for initial start-up (Kg)	~190
Bio-Digester Output	
Biogas production (m3/day)	~0.5
Average Gas Calorific Value (Kcal/Nm^3)	~4,700
Biogas burning time for single burner (Hrs.)	~0.45 to 1
Organic Manure Generated (Lit/Day)	~4
Biogas Equivalent to LPG	
Biogas Equivalent to LPG (Kgs/day)	~0.25
Biogas Efficiency (%)	
Typical Gas Composition (% on Volume basis)	CH_4 ~ 60% CO_2 ~ 33% H2 < 0.5% H_2S < 0.2% H_2O < 4% N_2 < 1% O_2 < 0.5%

b) 10 KPD of Food Waste & 1 m3/day of biogas

Biogas Plant Model	Specifications
Biogas Plant Type	Floating drum –Water seal model
Feed stock	Food/Vegetable & Kitchen Waste
Required solids content (%)	~10%
Rated Waste Consumption (Kg/day)	~ 10
Rated Water consumption (L/day)	~ 10
Cow dung required for initial start-up (Kg)	~312
Bio-Digester Output	
Biogas production (m3/day)	~1
Average Gas Calorific Value (Kcal/Nm^3)	~4,700
Biogas burning time for single burner (Hrs.)	~2 to 2.5
Organic Manure Generated (Lit/Day)	~8
Biogas Equivalent to LPG	
Biogas Equivalent to LPG (Kgs/day)	~0.5
Biogas Efficiency (%)	
Typical Gas Composition (% on Volume basis)	CH_4 ~ 60% CO_2 ~ 33% H2 < 0.5% H_2S < 0.2% H_2O < 4% N_2 < 1% O_2 < 0.5%

c) 20 KPD of Food Waste & 2 m3/day of biogas

Biogas Plant Model	Specifications
Biogas Plant Type	Floating drum –Water seal model
Feed stock	Food/Vegetable & Kitchen Waste
Required solids content (%)	~10%
Rated Waste Consumption (Kg/day)	~ 20
Rated Water consumption (L/day)	~ 20
Cow dung required for initial start-up (Kg)	~480
Bio-Digester Output	
Biogas production (m3/day)	~2
Average Gas Calorific Value (Kcal/Nm^3)	~4,700
Biogas burning time for single burner (Hrs.)	~3 to 3.5
Organic Manure Generated (Lit/Day)	~16
Biogas Equivalent to LPG	
Biogas Equivalent to LPG (Kgs/day)	~1
Biogas Efficiency (%)	
Typical Gas Composition (% on Volume basis)	CH_4 ~ 60% CO_2 ~ 33% H2 < 0.5% H_2S < 0.2% H_2O < 4% N_2 < 1% O_2 < 0.5%

d) 50 KPD of Food Waste & 5 m3/day of biogas

Biogas Plant Model	Specifications
Biogas Plant Type	Floating drum –Water seal model
Feed stock	Food Waste
Required solids content (%)	~10%
Rated Waste Consumption (Kgs/day)	~ 50
Rated Water consumption (L/day)	~ 50
Cow dung required for initial start-up (Kg)	~1800
Bio-Digester Output	
Biogas production (m3/day)	~5
Average Gas Calorific Value (Kcal/Nm^3)	~ 4,700
Biogas burning time single burner (Hrs.)	~ 10
Organic Manure Generated (Lit/Day)	~ 80
Biogas Equivalent to LPG	
Biogas Equivalent to LPG (Kgs/day)	~ 2.5
Biogas Efficiency (%)	
Typical Gas Composition (% on Volume basis)	CH_4 ~ 60% CO_2 ~ 33% H2 < 0.5% H_2S < 0.2% H_2O < 4% N_2 < 1% O_2 < 0.5%

9. FINANCIAL INFORMATION

S. No	Particulars	Cost of the plant in INR
1.	**0.5 m3/day biogas plant** along with basic accessories and auxiliaries. ❖ One set of Readymade plant **FRP** material (Digester & Gas holder) ❖ Slurry Inlet & Outlet PVC Pipes ❖ Biogas stove (SS-Single Burner)	**15,500**
2.	**1 m3/day biogas plant** along with basic accessories and auxiliaries. ❖ One set of Readymade plant **FRP** material (Digester & Gas holder) ❖ Slurry Inlet & Outlet PVC Pipes ❖ Biogas stove (SS-Single Burner)	**26,000**
3.	**2 m3/day biogas plant** along with basic accessories and auxiliaries. ❖ One set of Readymade plant **FRP** material (Digester & Gas holder) ❖ Slurry Inlet & Outlet PVC Pipes ❖ Biogas stove (SS-Single Burner)	**32,000**
4.	**Domestic Crusher (Optional)** ▪ Food waste crusher ▪ Sink mounting stand ▪ FRP Sink	**9,500**
Exclusions		

******Transportation of material, Transit Insurance and other formalities will be at buyer's scope.

**Unloading of the biogas plant will be at buyer's scope.

** Taxes & Duty extra wherever applicable.

******Pit digging (if required)**,** Cow dung arrangement & feeding into biodigester for initial start up**,** Gas hose from biogas plant to kitchen biogas stove, Electrical Starter for crusher, Electricity/water supply for crusher and other accessories will be at buyer's scope.

10. ADVANTAGES

- Solves Organic Waste disposal problem
- Generates Gas used for Cooking, lighting & Electricity generation
- Converts organic waste into high quality fertilizer
- No foul smell
- Kills harmful pathogens
- One time investment
- Reduces Global warming & Carbon Foot Print
- Easy to relocate the plant
- Lowers methane & nitrous dioxide emissions
- Safer than LPG
- No Maintenance

11. FEW OF OUR MAJOR CUSTOMERS

- ❖ Bio Economy Africa, Ethiopia.
- ❖ Indian Army Area Headquarters – Andhra, Tamilnadu, Karnataka &Kerala Area, Island Grounds, Chennai.
- ❖ Indian Oil Corporation, Teynampet, Chennai.
- ❖ Rain Cements Ltd, Producers of Priya Cements, Hyderabad, Andhra Pradesh.
- ❖ Aruljothi Anna Alayam, Perambur, Chennai.
- ❖ Good Governance Guards, Besant Nagar, Chennai.
- ❖ Saryam Engineering, Neelankarai, Chennai.
- ❖ Tapovan Senior Citizens Foundation, Madampatti, Coimbatore.
- ❖ A-Diet Express Hospitality Services Ltd, Sriperumbudur, Kanchipuram.
- ❖ Blue Bay Resorts, Vadanemmili, Mahabalipuram.
- ❖ Shree Senthil Andavar Textiles, Coimbatore.
- ❖ Ramesh Modern Rice Mill, Red Hills, Chennai.
- ❖ Sai Balaji Modern Rice Mill, Red Hills, Chennai.

- ❖ SBR Enterprises, Tirupur.
- ❖ Centre For Women Development & Research, Panaiyur, Marakkanam.
- ❖ SNV Vedapadasalai, Palakkad, Kerala.
- ❖ Opus Restaurant, Bangalore.

And More...

12. TERMS AND CONDITIONS

Payment Terms	100% as advance of basic value along with purchase order
Freight	Extra
Taxes	Extra
Packing & Forwarding	@ 2%
Delivery Period	5-15 days after the receipt of technically and commercially clear Purchase order & advance
Validity of Offer	30 days
Any other Tax Liability if applicable shall be in the scope of the purchaser.	

Thanking you,

Yours Sincerely,

B-Sustain

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