REPORT ON BIOGAS PLANT

1. Introduction

PSG Institute of Technology and Applied Research (PSG iTech), Coimbatore, has installed a biogas plant at the Guest House to convert organic kitchen waste into biogas, a clean cooking fuel. The plant demonstrates the on-campus management of food and vegetable waste while reducing the use of commercial LPG. This initiative reflects the PSG iTech commitment to waste management, renewable energy utilisation and sustainable campus development.

2. Biogas Plant Details

The biogas plant is of the floating drum type and is installed at the Guest House. It is a prefabricated, modular system that uses a water seal model. The details of the plant are given below:

Parameter	Details
Type of plant	Floating drum type
Location	Guest House
Design	Prefabricated modular system with water seal model
Daily input capacity	~5 kg of food/vegetable waste and ~5 litres of water per day
Initial commissioning feed	~150 kg of cow dung
Daily biogas production	~0.5 m^3/day
Practical energy utility	Single burner cooking for 0.45 to 1 hour daily
Commercial LPG replaced	~0.25 kg per day

3. Biogas Composition

The composition of the biogas produced by the plant is given below:

Constituent	Approximate Share (% by volume)
Methane (CH_4)	~60 %
Carbon dioxide (CO_2)	~33 %
Other gases (H_2, H_2S, O_2, N_2)	~7 %

Methane is the combustible component of the biogas and makes it suitable for use as a cooking fuel.

4. Photographs of the Biogas Plant



5. Performance and Estimated Benefits

The plant generates about 0.5 m³ of biogas per day, which sustains single burner cooking for 0.45 to 1 hour daily and replaces about 0.25 kg of commercial LPG. Based on these values, the following indicators have been estimated:

Indicator	Estimated Value
Food / vegetable waste processed	~1,825 kg/year
Biogas generated	~182.5 m³/year
Commercial LPG replaced	~91 kg/year

6. Contribution to Sustainable Development Goals

The PSG iTech biogas plant supports the following United Nations Sustainable Development Goals (SDGs):

SDG 7 – Affordable and Clean Energy: Provides biogas as a renewable cooking fuel in place of commercial LPG.

SDG 11 – Sustainable Cities and Communities: Supports environmentally sound management of organic waste on the campus.

SDG 12 – Responsible Consumption and Production: Encourages the reduction and reuse of food waste.

SDG 13 – Climate Action: Reduces dependence on fossil fuel and supports climate change mitigation.

7. Conclusion

The floating drum type biogas plant at the PSG iTech Guest House processes about 5 kg of food and vegetable waste daily and generates about 0.5 m^3 of biogas, which is used for cooking and replaces commercial LPG. Its modular design, odourless and noiseless operation and low maintenance make it a practical waste-to-energy facility for the campus. The initiative demonstrates the commitment to renewable energy, waste management and the development of a greener campus.