



# COIMBATORE INSTITUTE OF TECHNOLOGY

(Government Aided Autonomous Institution)

(Affiliated to Anna University, Chennai & Approved by AICTE, New Delhi)

Established in 1956, A Unit of V.Rangasamy Naidu Educational Trust

**CIVIL AERODROME POST, COIMBATORE-641 014, TAMILNADU, INDIA**

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## Criterion VII–Institutional Values and Best Practices

### Key Indicator - 7.1 Institutional Values and Social Responsibilities

*7.1.3 Describe the facilities in the Institution for the management of the following types of degradable and non-degradable waste (within 500 words)*

### Contents

- Bio-gas Plant for Solid Waste Management



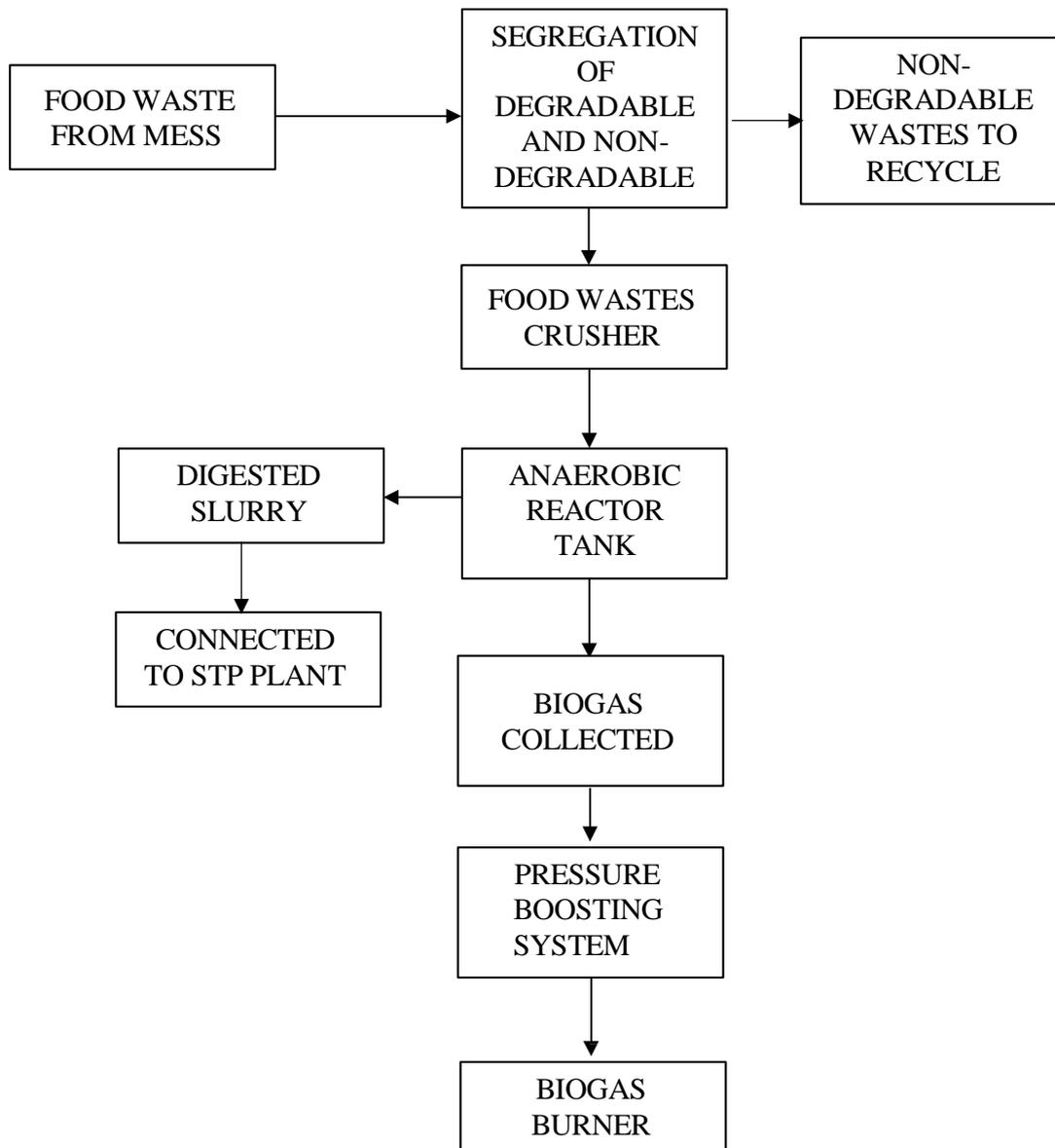
***COIMBATORE INSTITUTE OF TECHNOLOGY  
CIVIL AERODROME POST  
COIMBATORE  
BIOGAS PLANT: 85M3***

***PROJECT BACKGROUND***

Solid Waste management is a process of treating biological waste and to produce liquid waste suitable for discharge to the environment or for reuse with some bi-products. The process of biological treatment can be done either by aerobic fermentation or by anaerobic fermentation. Due to high running cost for aerobic treatment anaerobic treatment is usually promoted which can produce Biogas and manure which can be used as fertilizer. Biogas is produced by anaerobic digestion or fermentation of biodegradable materials such as biomass, manure, sewage, municipal waste, green waste, and plant material and energy crops. This type of biogas comprises primarily methane and carbon dioxide. Anaerobic digesters also function as a waste disposal system, even for human waste, and can, therefore, prevent potential sources of environmental contamination and the spread of pathogens. Industries and institutions are also made possible, from the sale of surplus gas to the provision of power for industry; therefore, biogas may also provide the user with income generating opportunities. The true degree of effectiveness of biogas plants and consequently their profitability is in the maximum possible utilization of annual hours of full capacity use. Procurement of highest-quality components reduces downtime to a minimum. Profitable biogas plants provide additional yield from constant full capacity running with cost savings achieved from a low degree of downtime.

<b>Plant Size</b>	<b>: 85m3</b>
<b>Max Feeding Capacity</b>	<b>: 600kgs</b>
<b>Gas Production</b>	<b>: 42kgs / Day</b>

## FLOW CHART



## **BRIEFING:**

### **Food waste collection and segregation**

In the beginning, our campus hostel canteen food waste collected and segregated by degradable and non-degradable. Biogas generated by degradable food waste only.

### **Food waste crusher**

After segregation of degradable food waste, it will be crushed with the help of Crusher. Crushed food waste directly fed into the biogas plant through PVC pipe line.

### **Anerobic reactor tank**

The digester mainly consists of a digestion chamber and along with fixed gas holder. The feed directly enters the digester where the reaction carried out is an anaerobic digestion (in the absence of oxygen). The size of the digester is designed on the basis of type of waste and quantity of waste. Only the waste which completes its HRT (Hydraulic Retention Time) will be coming out of the digester as slurry. As the part of digestion methane gas will be formed which will be collected in the gas holder.

### **Slurry collection tank**

Digester is connected to an outlet tank in which slurry can be collected. This slurry can be directly used or can be connected to drainage or used as manure for garden.

### **Pressure boosting system And Burner**

Biogas pressure boosting is a major part of the system, help of this system we can increase the burning pressure in Biogas burner and we get more calorific value.

## **RESOURCES REQUIRED FOR PLANT OPERATION:**

1. Power Required – 1 Hp for 30mints per day
2. Manpower Required for feeding and operation – 1 No's

COIMBATORE INSTITUTE OF TECHNOLOGY, COIMBATORE. 85M3 BIOGAS PLANT DRAWING

