

## BIOWASTE TO BIOENERGY PROJECT



**Green Energy  
for the  
Green Future™**

### Registered Office

No: 5/6, 2nd Cross Street,  
United Colony, Kolathur,  
Chennai - 600 099

### Factory

No: 308, Womens SIDCO  
Industrial Park, Kattur,  
Thirumullaivoyal, Chennai - 600 062

### Branches

Kakinada  
Banglore  
Hyderabad

### Contact

[www.uniccare.com](http://www.uniccare.com)  
[info@uniccare.com](mailto:info@uniccare.com)  
**98400 44277, 98411 12981**

# INTRODUCTION

- India dumps about 36.5 million tonnes of waste annually. More than half of which is Biowaste.
- Out of the total municipal waste collected, about 94% is dumped on land and barely 5% is composted.
- It is estimated that the status of organic wastes would go up to 40% to 60% within 2025.
- Waste when disposed carelessly will ultimately reach to us through food and water affecting the nations health as a whole.
- Waste is a resource and it has a purpose. If utilized efficiently, waste is an asset.



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## ABOUT US

- Unic Care Technologies, an organization established with the principal aim of protecting the environment by producing Biowaste to Bioenergy solutions.



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# ACTION POINT



- The waste when utilized effectively can deliver valuable products.
- The best approach to use bio waste is to feed it in Biogas plants.
- A biogas plant produce 40kg of Bio CNG from 1 MT of bio waste along with a number of bi-products.



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# BIOGAS PLANT



A Biogas plant is a decentralized energy system, which can lead to self-sufficiency in power and energy needs, and at the same time reduces environmental pollution.

PRODUCTS	25 MT/DAY	50 MT/DAY	110 MT/DAY
Bio CNG	1,050 kg/day	2,100 kg/day	4,000 kg/day
Bio CO <sub>2</sub>	2,200 kg/day	4,400 kg/day	8,200 kg/day
Bio Solid Fertilizer	900 kg/day	1,800 kg/day	3,500 kg/day
Bio liquid Fertilizer	10,500 L/day	21,000 L/day	39,700 L/day



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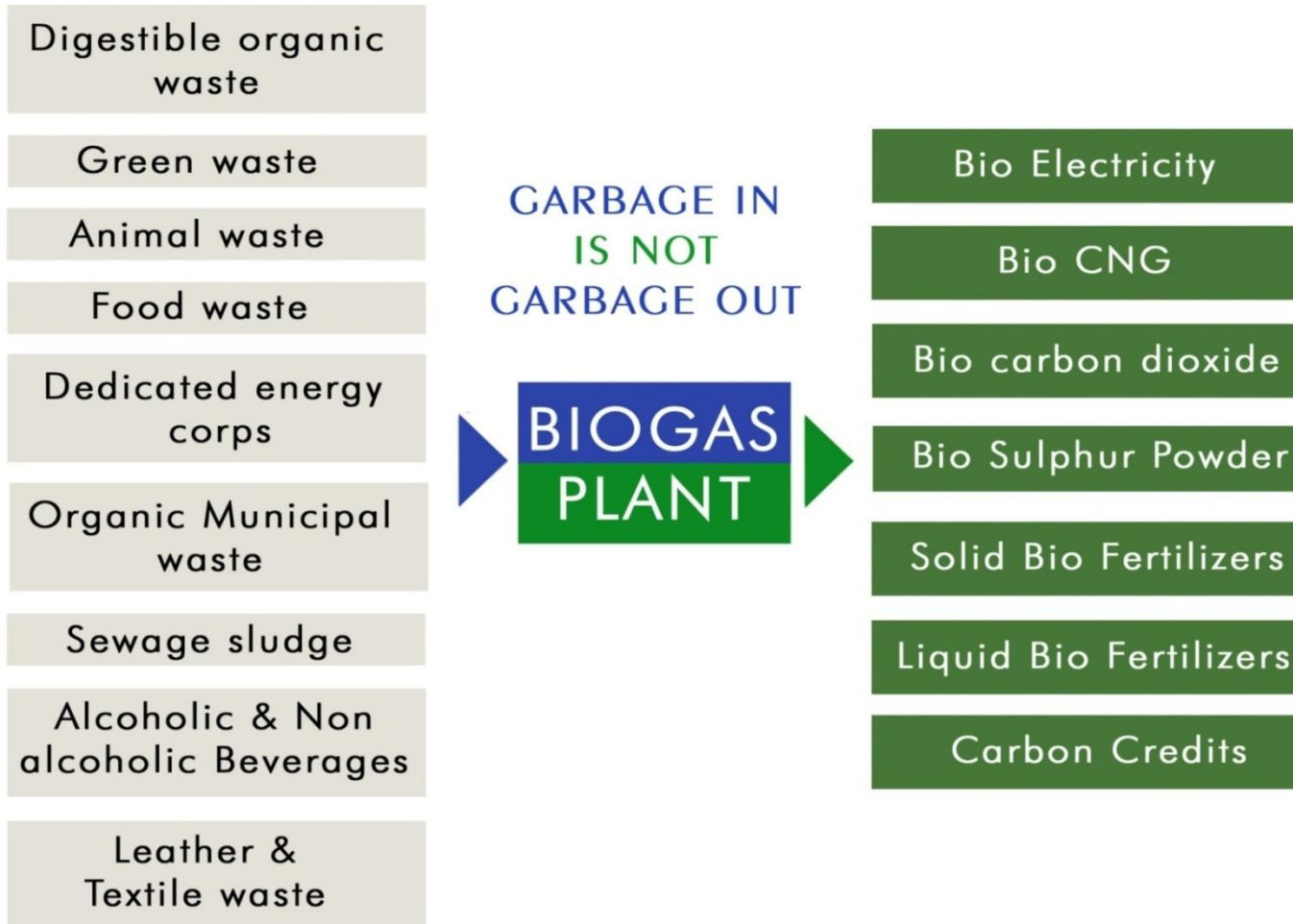
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# FEEDSTOCK ANALYSIS



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# FEEDSTOCK



Green Waste



Manure



Dedicated Crops



Sludge



Food waste



Fish & Slaughter Wastes

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# OUTCOME



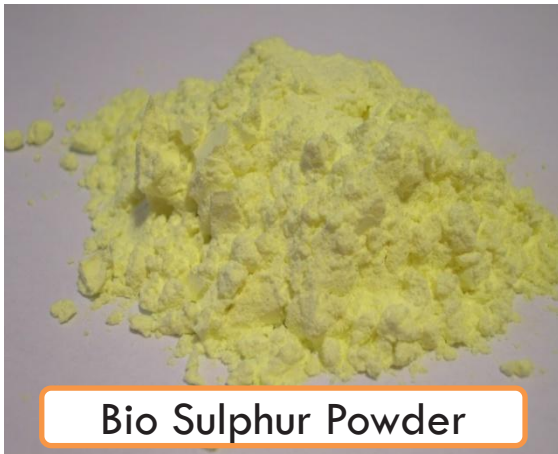
**Bio Electricity**



**Bio CO<sub>2</sub>**



**Bio CNG**



**Bio Sulphur Powder**



**Bio Fertilizers**



**Carbon Credits**

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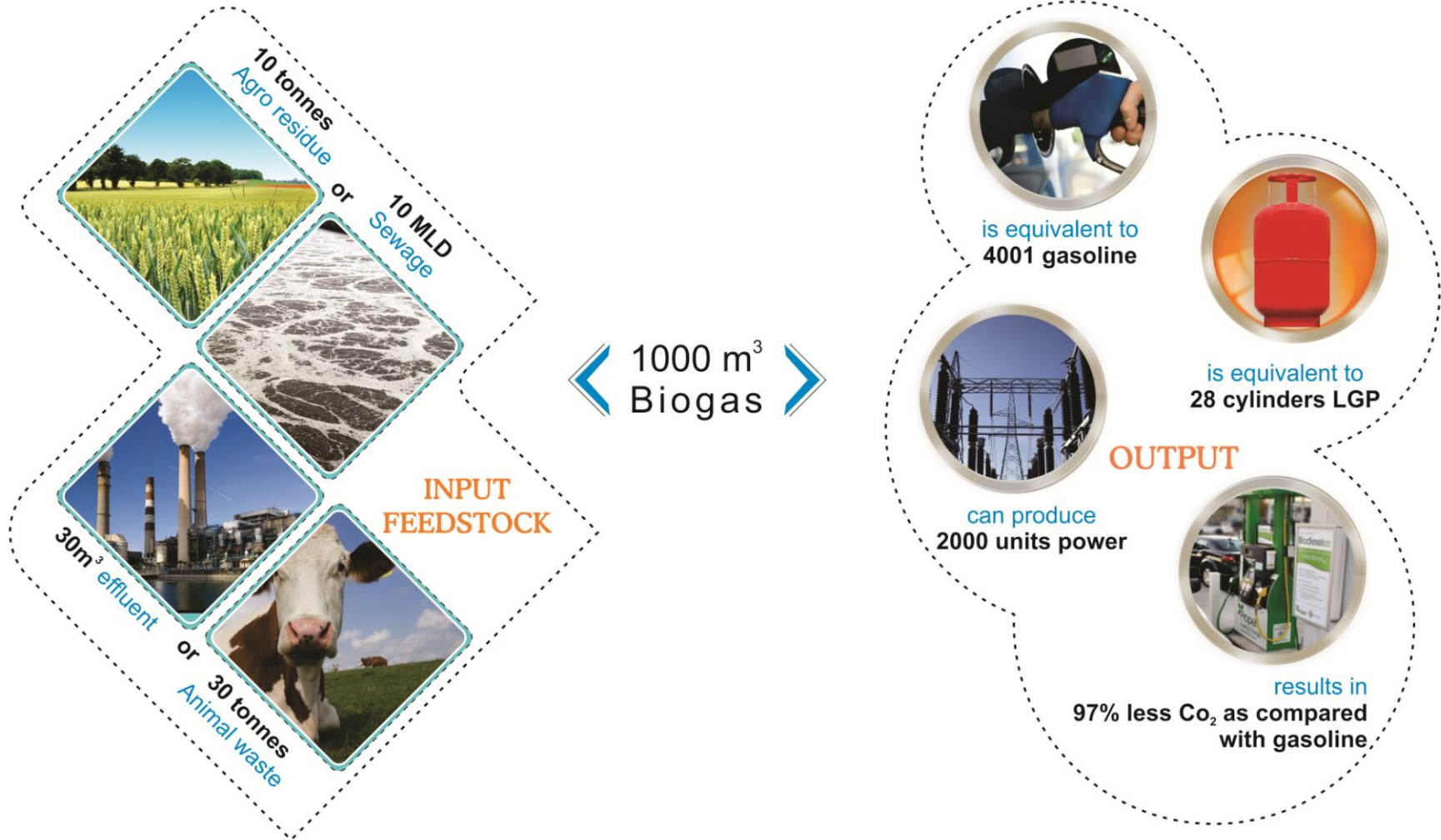
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# BIOWASTE TO BIOENERGY CONVERSION



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## Biogas to BioCNG – End use Application

### BIOCNG

#### Fuel Replacement

Compressor -----> Storage Cascade -----> Transportation -----> Storage Cascade -----> Furnace

#### Vehicular Fuel-Fuel Station

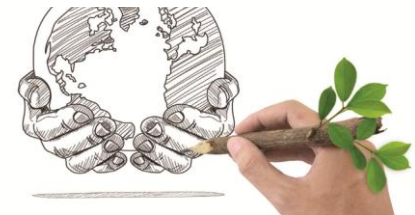
Compressor -----> Storage Cascade -----> Transportation -----> Storage Cascade -----> Bio-CNG Dispense

#### Local use

Compressor -----> Storage Cascade -----> Bio-CNG Dispense

#### Grid Pipeline

Compressor -----> To Gas Grid



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# BENEFITS

Eco-friendly



Replacement of Fossil Fuels



No Global Warming



No Pathogens



No Nutrient Run-off



Active Ground water Protection



CO<sub>2</sub>

Lower Carbon footprint



No Flies



**ZEROWASTE**



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# STATUTORY APPROVALS



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## VIABILITY OF THE PROJECT

- Investment returns in 5 to 6 years
- Biogas plants with long life and bare minimum maintenance
- Plant operates 365 days irrespective to climatic changes
- Realisation of multiple streams of revenue through multiple yield
- Multiple yield includes Bio electricity, Bio CNG, Bio CO<sub>2</sub>, Bio Sulphur powder, Bio fertilizers and carbon credits.
- **Trusted Partnership**
- Credibility fulfilled
- An investment in green energy is an investment to green future



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# 3D VIEW OF BIOGAS PLANT



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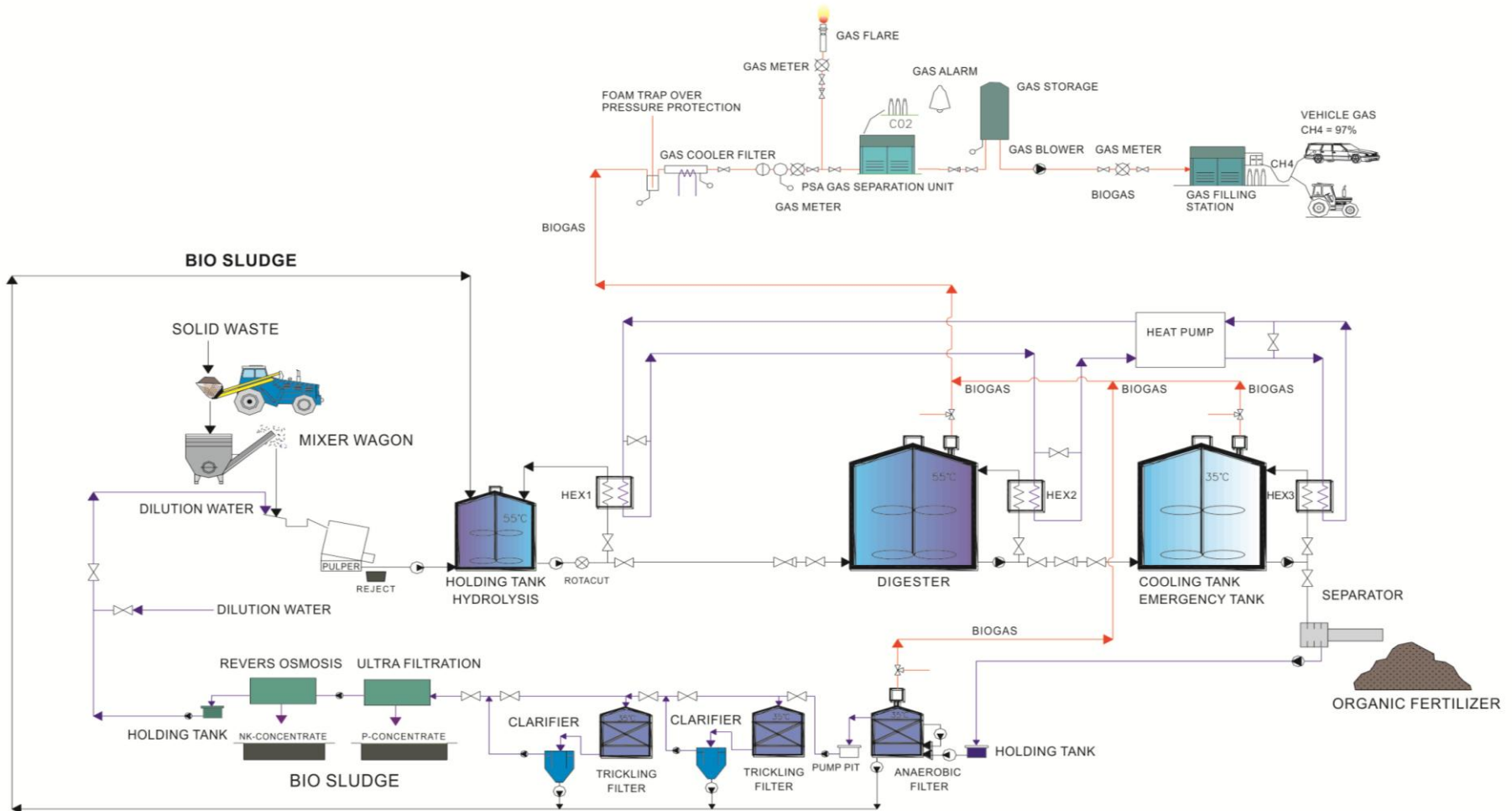
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# PROCESS FLOW DIAGRAM



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# EQUIPMENT DETAILS



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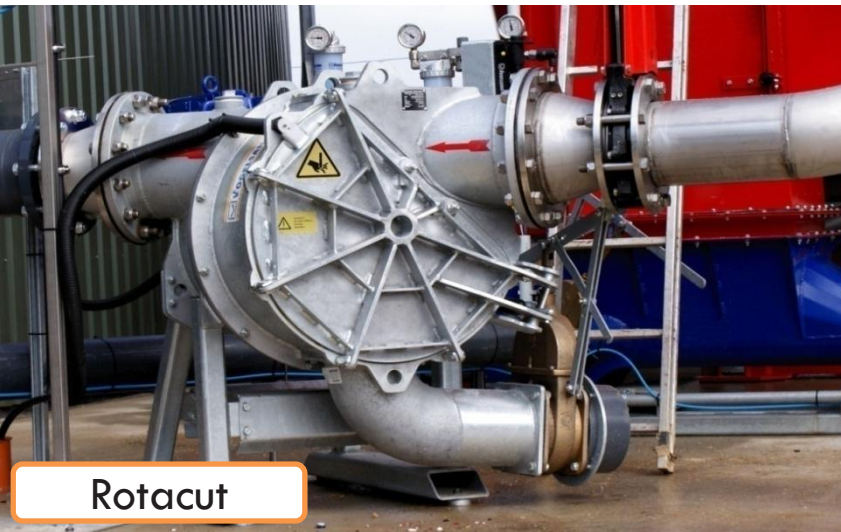
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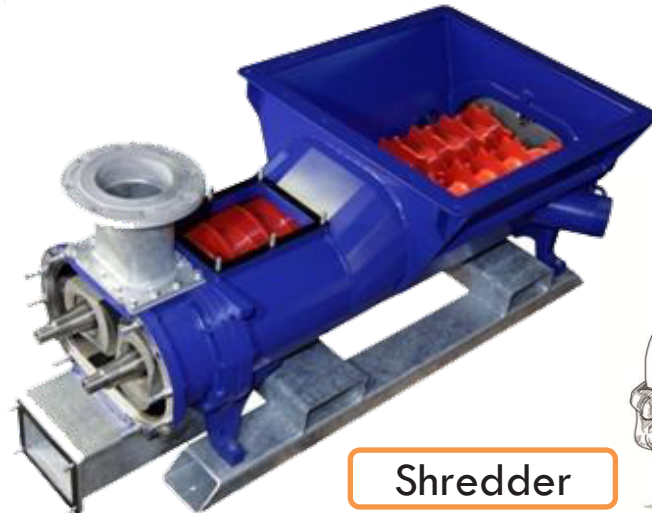
# EQUIPMENTS & TECHNOLOGY



Weigh Bridge



Rotacut



Shredder



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Screw Conveyor



Macerator



Pulper



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## Anaerobic Digestion

Anaerobic digestion is a biological process in which biomass is converted in to bioenergy by anaerobic bacteria in the absence of oxygen. This involves four key processes;

- Hydrolysis
- Acidogenesis
- Acetogenesis
- Methanogenesis

Our Biogas plant implies;

- Multi stage thermophillic biomethanation optimized at 55<sup>0</sup>C.
- Biogas cooling at 35<sup>0</sup> C.
- Concealed digester tanks.



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Foam Trap



Air Cooler Filter



Gas Meter



Gas Analyser



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## Bio gas Upgradation by PSA



- This technique provides 97% pure Biomethane (Bio CNG).
- The Carbondioxide from the Biogas is adsorbed and regenerated by the PSA system.
- H<sub>2</sub>S and residual gases are scrubbed.



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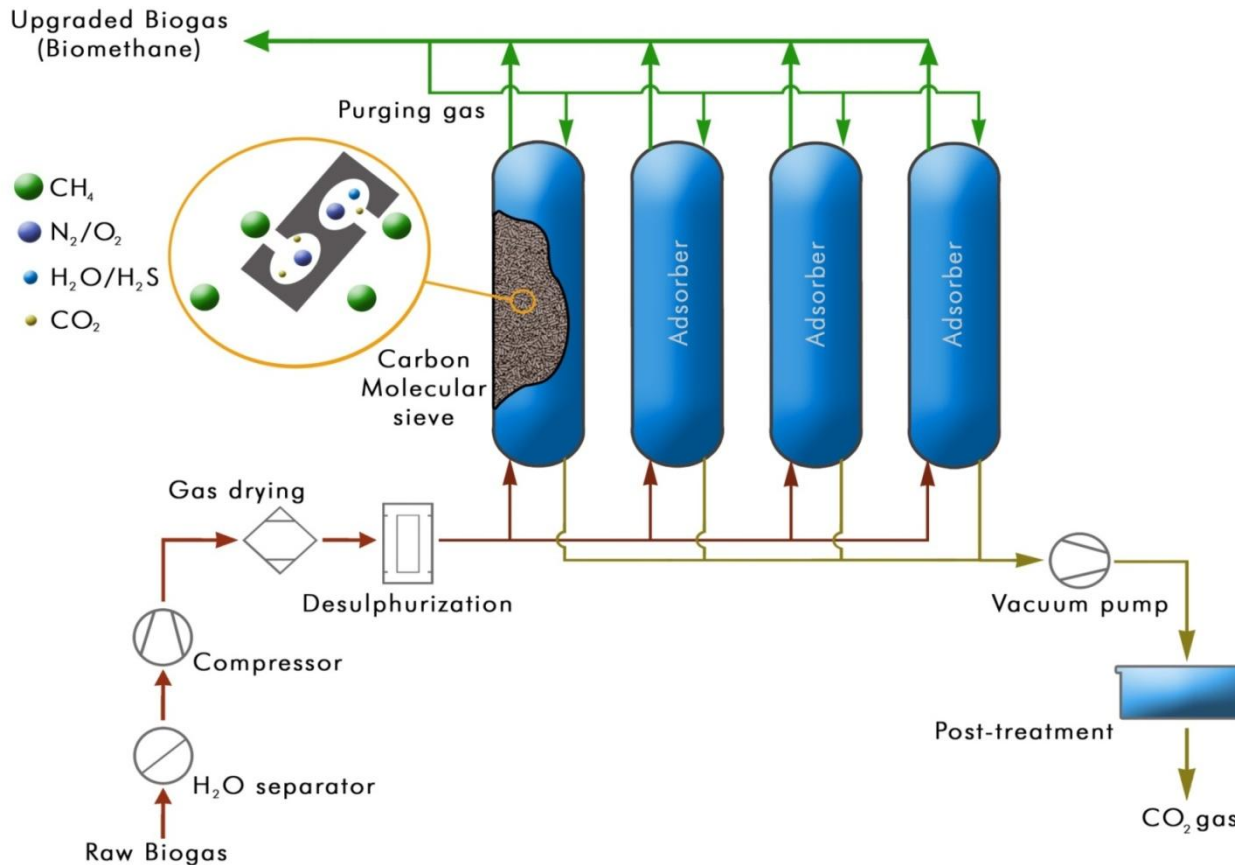
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## Pressure Swing Adsorption

- Delivers upgraded Biogas and separates carbondioxide.



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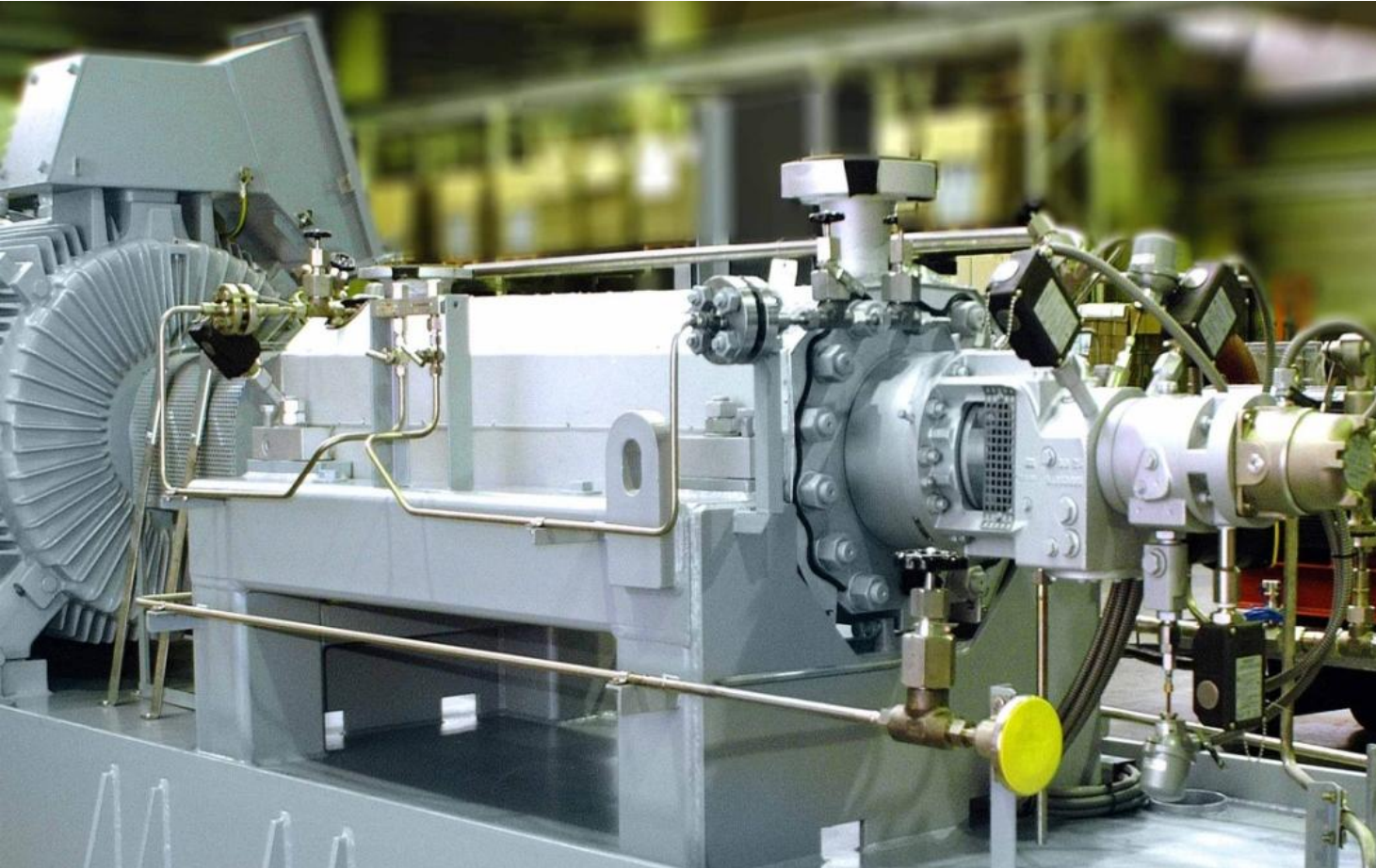
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## Heat Pump



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## Heat Exchanger



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## Biogas holding tank



## Cooling Tower



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## Moisture Trap



## Pressure Relief Valve



## Bio Selector Safety Valve



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Gas Flare



Gas Pressure Gauge



Flame Arrester



Gas Alarm



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## Biogas Blower



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## Bio CO<sub>2</sub> Compressor



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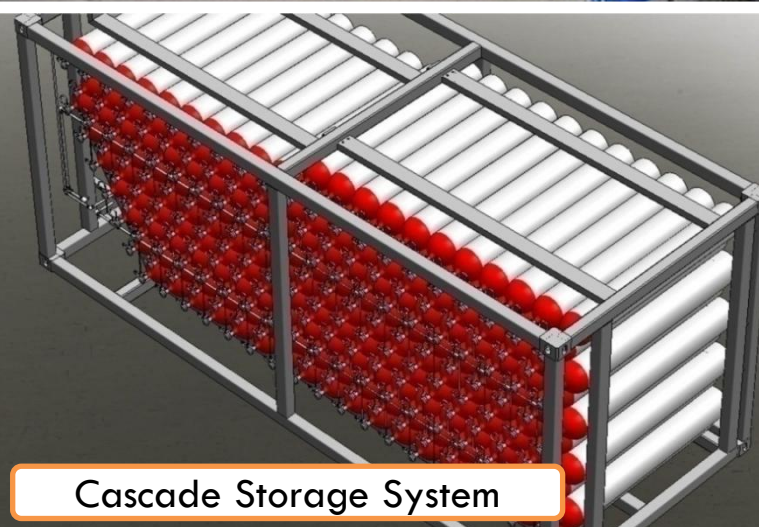
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**Biogas Bottling**



**Cascade Storage System**



**Bio CNG Filling Station**



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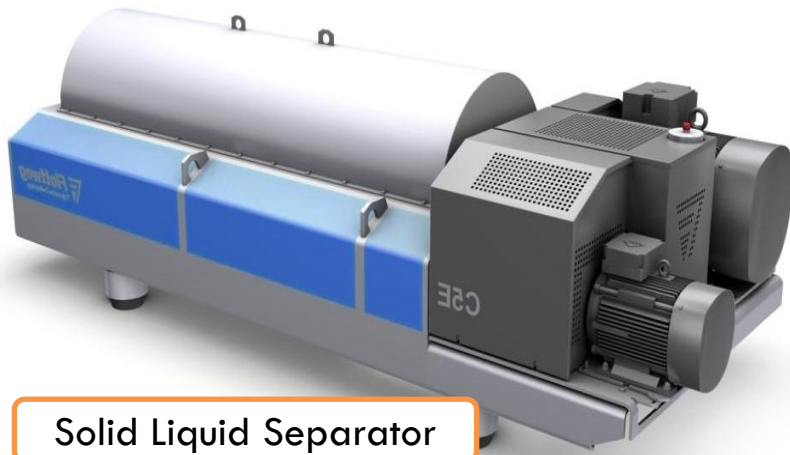
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## Digestate Conditioning



**Solid Liquid Separator**



**Bio Liquid & Solid Fertilizers**



**Bio Liquid Fertilizer Packing Machine**



**Bio Solid Fertilizer Packing Machine**



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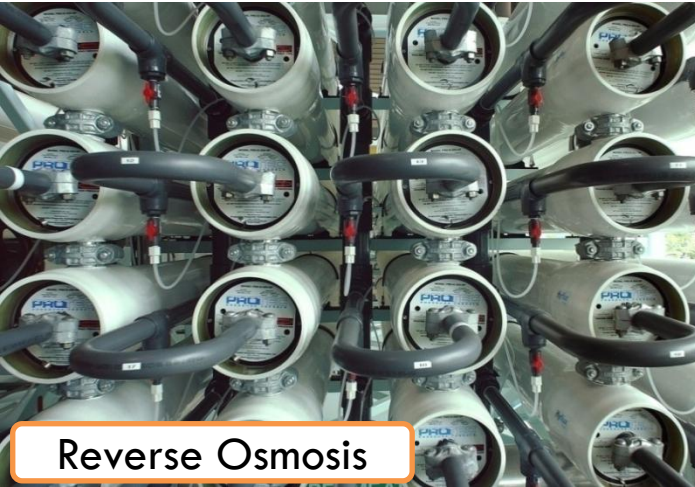
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## High end Water Purification



Reverse Osmosis



Ultrafiltration



Clarifier



Trickling Filter



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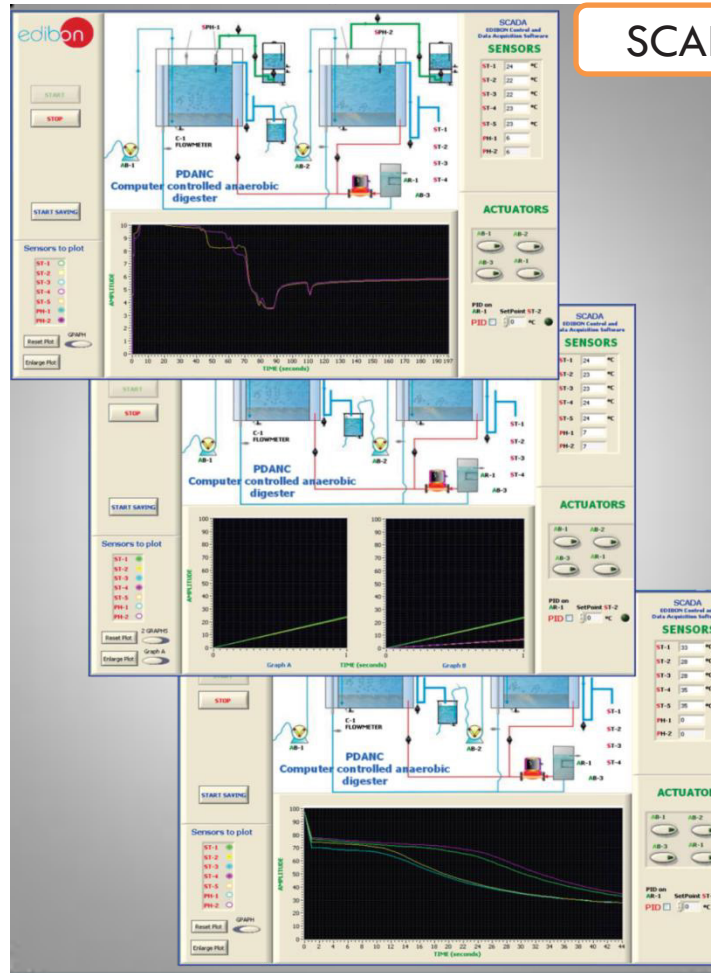
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**98400 44277, 98411 12981**



## Fully Computerized Process



## Programmable Logic Controller



## SCADA



### Registered Office

No: 5/6, 2nd Cross Street,  
United Colony, Kolathur,  
Chennai - 600 099

### Factory

No: 308, Womens SIDCO  
Industrial Park, Kattur,  
Thirumullaivoyal, Chennai - 600 062

### Branches

Kakinada  
Banglore  
Hyderabad

### Contact

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## PLANT OPERATION & MAINTENANCE

- Biogas plant will be constructed and operated on turnkey basis.
- Our team manages the biogas plant on behalf of the client for the first fifteen years.
- Our support includes
  - Plant operations
  - Preventive maintenance
  - Breakdown maintenance
  - System upgradation



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# Thank You



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