

**10** YEARS

**OF UNIVERSITY  
RECOGNITION**

**20** YEARS OF  
ACADEMIC  
EXCELLENCE



**REVA**  
UNIVERSITY

Bengaluru, India



# **ALTERNATE SOURCES OF ENERGY AND ENERGY CONSERVATION MEASURES AT REVA**

The Administrative block of REVA is a Platinum LEED certified building and is completely solar sustained. All e-vehicles are solar powered and charged. EV Charging points are made available in the campus.

## **BIOGAS PLANT**

At REVA, the principle of 'Four R's' are followed very stringently: Reduce, Reuse, Recycle and Renew. Since the campus houses 8 number of hostels and 3 buildings of residences, the University has installed a Biogas plant.

Keeping in mind above, a Kitchen waste based floating Drum Biogas plant (KWBP) has been installed at the university near the hostels. This was installed for environment friendly disposal of the food waste being generated from the various kitchens of the hostel mess. This plant works on similar principles of traditional Cow Mud (Gobar) gas plants with the exception of type of feed with the above modifications

### **COMPONENTS OF THE BIO-GAS PLANT:**

The floating drum shaped biogas plant installed has following components:

- A manual mixer / stirrer / agitator for mixing the solid waste
- Pre digester tank with inlet for feeding the kitchen waste
- Main digester tank
- Gas holder tank with an outlet for the digested slurry
- A Burner
- Manure pit



## PROCESS FOR THE FUNCTIONING

A process for producing biogas from biodegradable material comprises of the following steps:

- a) Adding a biodegradable material (kitchen food waste) to Pre-Digester through feed inlet.
- b) Addition of inoculum (Caustic Soda)
- c) Providing anaerobic conditions
- d) Carrying out an anaerobic process
- e) Collecting the biogas

## ASSOCIATED PARAMETERS FOR PROCESS

Parameters	Mess food waste and Food court food waste
Amount of kitchen waste	500 Kg
Amount of water added	1500 Litres
Amount of inoculum added	20 gm / 100 kg (Caustic Soda)
Retention Time	24 hours
Waste to water ratio	1:3
pH	7.5
Temperature	103°F

## **SOME DO'S BEING UNDERTAKING FOR THE MAINTENANCE OF KWBP:**

- Observe for gas generation.
- Check for the flame if the drum floats.
- Do not feed the plant with citric/acidic items, Lemon, and onion peels.
- Feedstock should be fed daily with solid organic waste and must be mixed with water in a ratio of 1:1 before feeding into the biogas plant.
- Feed the plant with kitchen waste such as rice, cooked vegetables, waste oil, rice washed water, tea and coffee powders and vegetables peels from the kitchen.
- Rotate the drum regularly for half a circle. If it is tight, add water along the sides of the gas holder.
- Feed the plant daily. Maximum 6 kg of kitchen waste + 6 kg of water and minimum 2 kg of kitchen waste+ 2 kg of water.

## **ECONOMIC AND SOCIAL SUSTAINABILITY**

- The gas being generated from the food waste for 4 to 5 members is enough to work for a single burner stove for more than 1 hour every day.
- A 1 Cm<sup>3</sup> plant can save 70% - 90% on the consumption of firewood or other cooking fuels each day



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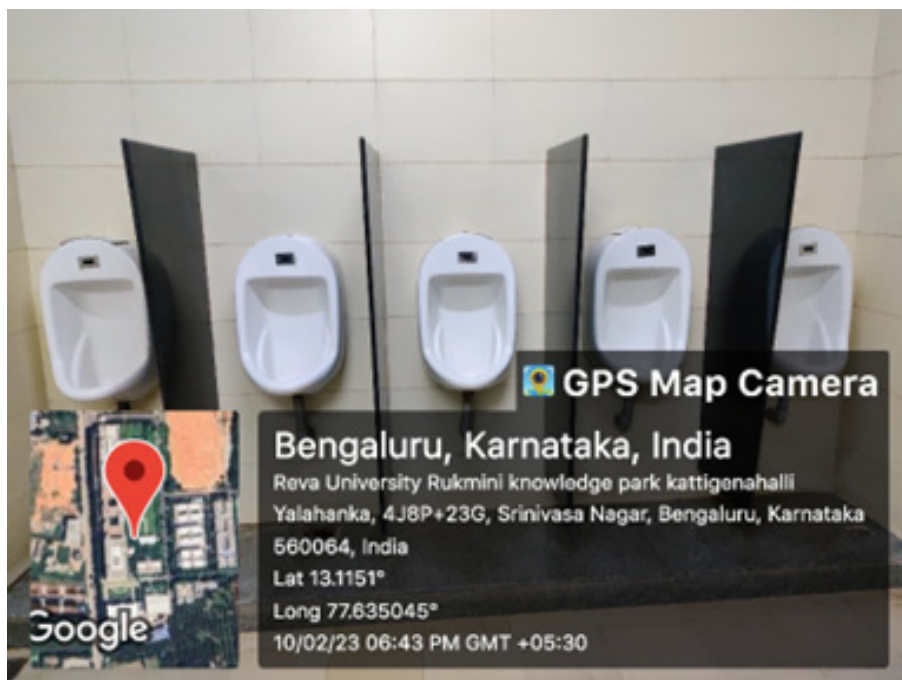
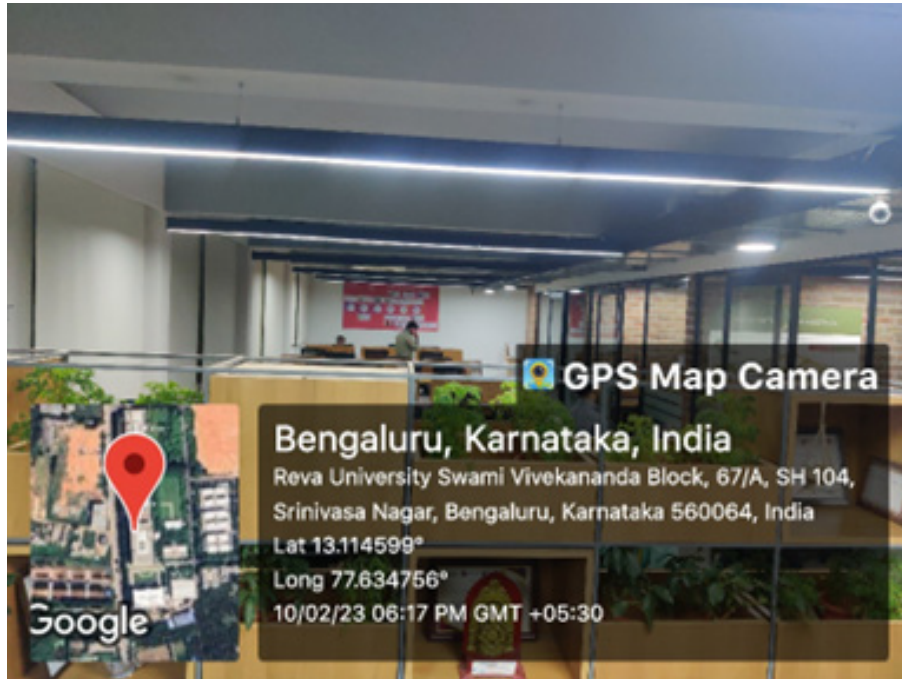
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## **SENSOR BASED ENERGY CONSERVATION.**

The street lighting system, main motor, fountain waster, high mast etc. all work through DPET (Digital Programmable Electronic Timer) technology. Automatic sensors have been installed for 3 buildings – lights, taps and flush tanks. Sensor based energy conservation is being followed at the campus.







## USE OF LED BLUBS

LED lights are replacing conventional lighting in a phased manner at REVA. Almost 50 % of conventional lighting system has been replaced as on date.

