



**CHILDREN'S EDUCATION SOCIETY (Regd.)**  
**THE OXFORD COLLEGE OF ENGINEERING**

(Recognised by the Govt. of Karnataka, Affiliated to Visvesvaraya Technological University, Belagavi.

Approved by A.I.C.T.E. New Delhi.

Recognised by UGC Under Section 2(f)

Bommanahalli, Hosur Road, Bangalore - 560 068.

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## Geotagged Photographs of the Facilities for Alternate Sources of Energy and Energy Conservation

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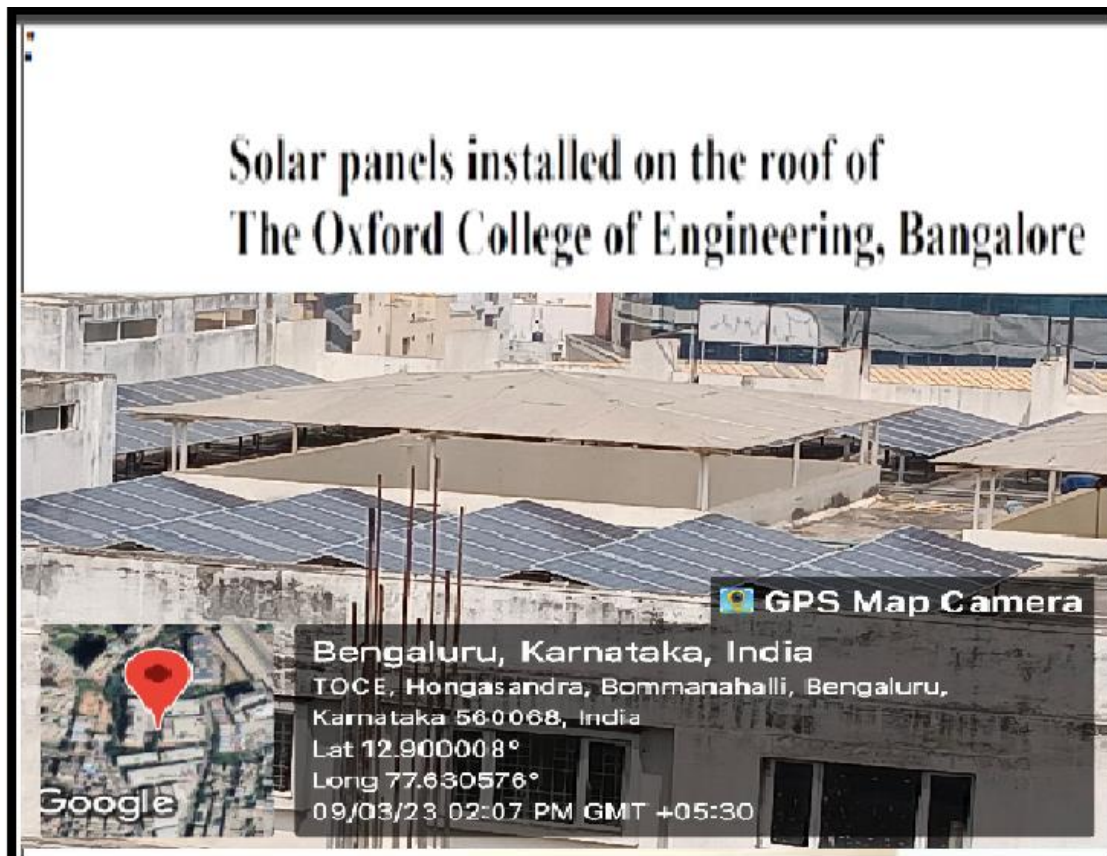
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**Geotagged Photographs of the Facilities for Alternate Sources of Energy and Energy Conservation**

**a. SOLAR PV PANEL**

Our institution has implemented energy conservation measures by installing solar panels in the campus to reduce power consumption. The surplus power (institutional consumption total power generated) generated out of the solar panel is used by the electricity board. The institution purchased the Solar Panel on 17 August 2014.

Renewable energy generated and used – 300KW



Overview of Solar Panel



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Overview of Solar Panel





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## **b. BIO - GAS PLANT**

The college authorities have installed a biogas plant in the college campus to process food waste and other biodegradable garbage generated in the campus. The plant is capable of processing up to 50 kg waste daily. It has been set up at a cost of Rs. 1 lakh. The project has been funded by the College Development Council.

### **I. Research Methodology:**

The feedstock is collected from the messes and transported to plant small scale prototype. The required quantity of feedstock and water is mixed in the inlet tank and the slurry is discharged to the digester vessel for digestion. The gas produced through methanogenesis by bacteria in the digester and gas is collected in the dome the generation of biogas for respective feed is obtained.

### **II. Design Based Calculation:**

Prototype,

Dome Height=0.54 m

Dome Diameter=0.46m

1 cubic meter = 1000 litre

For Cooked Food, the Feed to Water Ratio is 1:3

**Working of Biogas Plants:** Biogas is a clean and efficient fuel. It is a mixture of methane ( $\text{CH}_4$ ), carbon dioxide ( $\text{CO}_2$ ), hydrogen ( $\text{H}_2$ ) and hydrogen sulphide ( $\text{H}_2\text{S}$ ). The chief constituent of biogas is methane (65%).

**Production of Biogas:** The fixed- dome type of biogas plant is used for the production of biogas. The microorganisms present in the digester are capable of decomposing the substance in the absence of air, thus, they are also called as the anaerobic bacteria. This biogas produced in a biogas plant has many commercial and household applications, like; this biogas can be used as a fuel, even as a kitchen gas, and also in gas engines.





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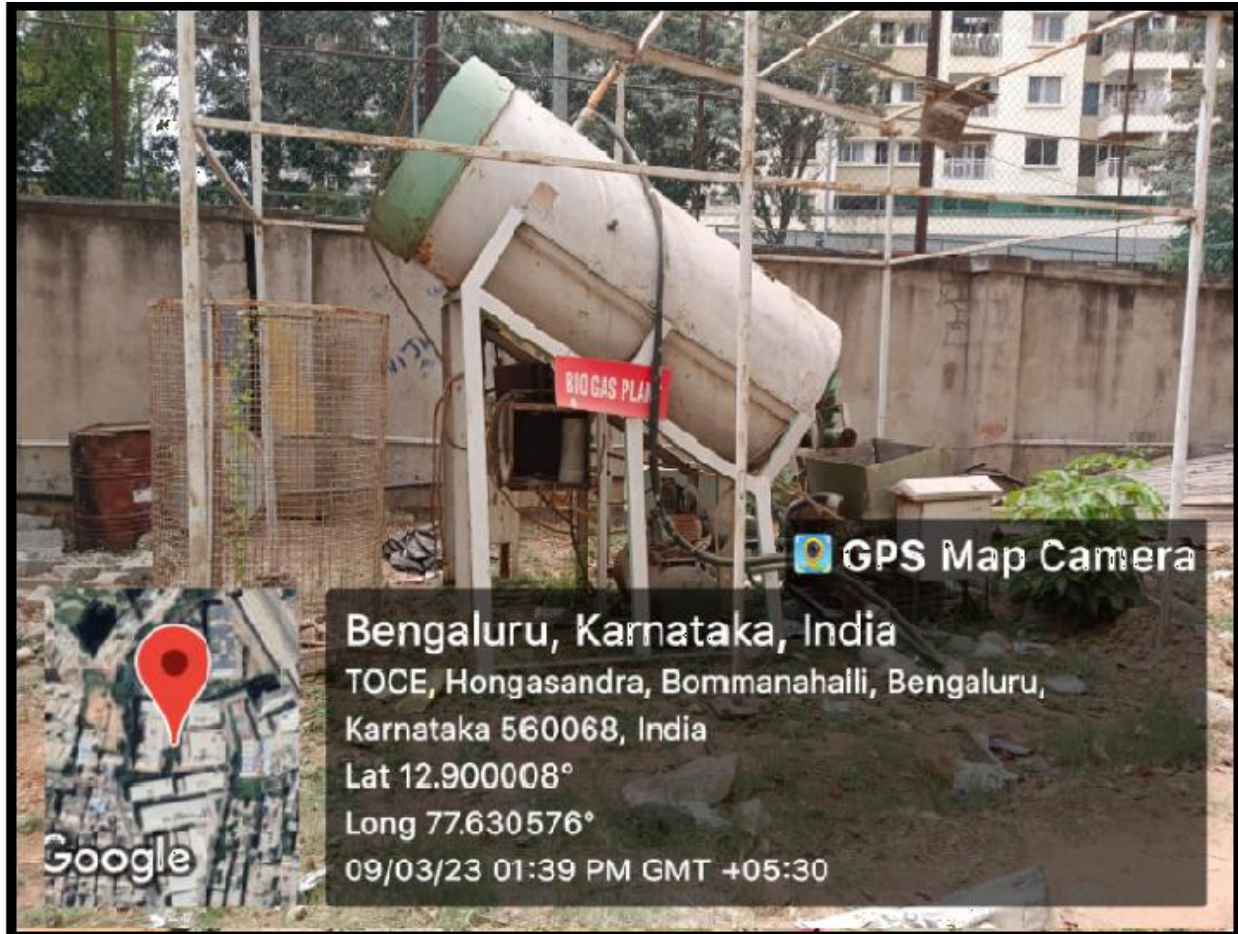
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The biogas plant located near the canteen and the power from this plant is Used in the canteen.



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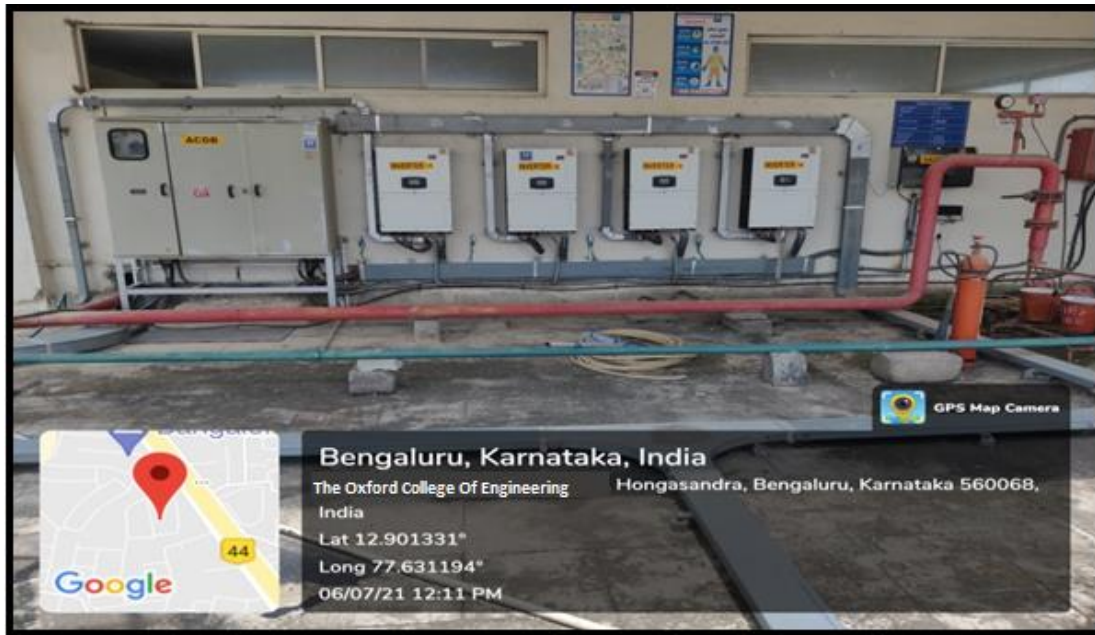
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**c. WHEELING OF GRID**

Wheeling of electricity is implemented more in urban areas especially for Solar PV. It plays an important role for technologies like wind and hydro power. Wheeling of electricity enables the customers to offset their power consumption from the utility.



Overview of Grid



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**d.USE OF LED BULBS/ POWER EFFICIENT EQUIPMENT**

Conventional fluorescent and incandescent tube lights in the college were replaced progressively by LED lamps. Installation of LED Bulbs in the campus has ensured a significant reduction in power consumption.







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**List of Electrical Equipment's Room wise with their Daily Energy Consumption Units**

Sl. No.	Electrical Appliances	Numbers	Wattage (in W)	Operation - hrs/day	Montly Operating hours	Monthly Power Consumption (kWh)
1	Tube light	550	40	8	240	528000
2	Fan	350	60	8	240	504000
3	Water Cooler	10	410	10	300	123000
4	Computer	180	140	8	240	604800
5	CCTV Camera	20	45	24	720	648000
6	Projector	12	455	2	60	327600
7	Air Conditioner	12	2100	3	90	2268000
8	Exhaust Fan (Large)	6	1200	2	60	432000
9	Exhaust Fan (Small)	18	100	6	180	324000
10	Refrigerator (4 star rating)	12	600	8	240	172800
11	Water Pump	10	2500	3	90	2250000
12	Oven	15	1000	1	30	450000
13	CFL Bulb	110	18	8	240	475200
14	Photocopy Machine	9	2500	3	90	202500
15	Focus Lamp	6	1000	4	120	720000
16	Sound system	8	250	6	180	360000
17	Halogen	6	400	6	180	432000
18	Air Cooler	4	210	6	180	151200
19	10% for accounted area					1252830
<b>Total</b>						<b>13781130</b>

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