

RAJARAJESWARI COLLEGE OF ENGINEERING

Approved by AICTE, New Delhi.

Affiliated to the Visvesvaraya Technological University, Belagavi



Criterion: 7.1 Academic Year: 2016-2020



7.1.2 The Institution has facilities for alternate sources of energy and energy conservation measures: Geotagged photographs:

Sl No	Energy Conservation measures	Tick mark	Link
1	Solar Energy	√	https://www.rcee.org/rcee/wp-content/uploads/2016/12/DVV-7.1.2.pdf
2	Biogas Plant	√	
3	Wheeling to the Grid	×	
4	Sensor based energy conservation	√	
5	Use of LED bulbs / power efficient equipment	√	

J. adf

Principal
Principal
RAJARAJESWARI
COLLEGE OF ENGINEERING
Ramohalli Cross, Bengaluru-7



Report

7.1.2 The Institution has facilities for alternate sources of energy and energy conservation measures.

1. Solar Energy

In the past few years, the threat of climate change has made RajaRajeswari College of Engineering to switch over to solar water heaters in hostels which is the best ways to save electricity cost and helps in saving the environment by targeting the go green campaign.

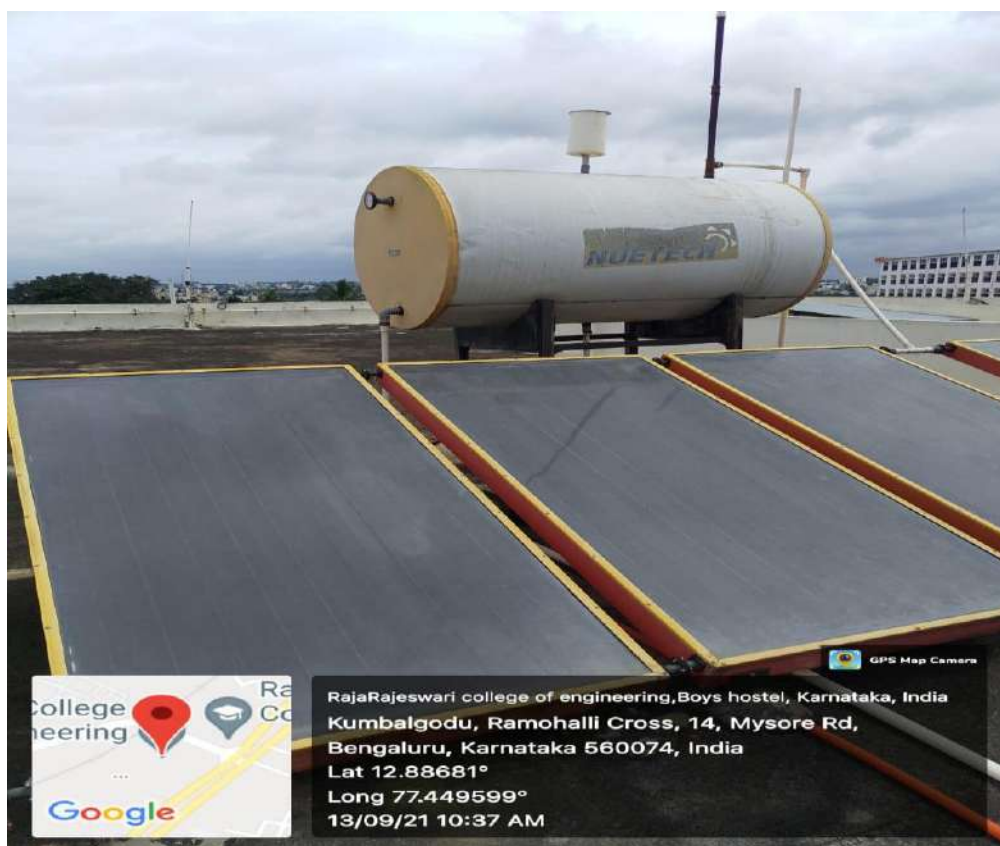


Photo 1: Solar water heating systems in RajaRajeswari College of Engineering Boys hostel



Photo 2: Solar water heating systems in RajaRajeswari College of Engineering Girls hostel

2. Biogas Plant

The institution has successfully completed and recently commissioned Biogas plant at RajaRajeswari Medical College and Hospital (RRMCH) to handle 500 kg/day of solid waste. This is an in-house design developed involving engineering students (from RRCE) in the surveys for the estimation of solid waste generated on day today basis. The construction was also taken up by in-house civil team. The food waste collected at RajaRajeswari College of Engineering is taken to this plant to produce Biogass. The salient features of the Bio-gas systems are listed as below:

- [A] The biogas plant receives the solid wastes from canteen (leftover cooked and foods), student mess, hostels, staff quarters and college buildings.
- [B] The biogas plant comprises of a floating dome bio-digester, flame arresters, gas compressors, gas metering and gas stoves provided in the kitchen. The feeding



line is also designed at two locations so as to simultaneously feed other waste for Research and enhancement of Bio-gas production.

- [C] A settling cum filtration unit has also been commissioned to separate digested solids from the liquid. The dried solids are to be further used as compost/soil conditioner. It is estimated that almost 150 kg of dry solids may be recovered per day.
- [D] The filtrate is recycled back to the feeding tray of the crushing unit to dilute the solid food waste prior to its entry into the Bio Digester.
- [E] The biogas recovered is directly used in the kitchen nearby, through the underground GI pipe line fitted with the flame arresters as fire safety.
- [F] The segregation of wet waste and dry waste is under implementation within the campus so as to divert all the wet wastes to the bio-digester.
- [G] The area around the biogas plant is paved with the concrete paver blocks to maintain cleanliness and hygienic.
- [H] The plant design is in such manner as to expand conveniently in future and/or convert the existing system into a two reactor system for better efficiencies.



Photo.3: Centralized Biogas plant facility at RajaRajeswari Medical College and Hospital.



3. Wheeling to the Grid

Planning for the near future.

4. Sensor-based energy conservation

Sensor based water pumps system is installed for all the water pumps in the college which consist of liquid level sensor use a magnetic float, which rises and falls with the liquid in the sump. Once the water level fills to the maximum level, the magnet in the system reach a certain level then a reed magnetic switch is activated to switch off the pump to avoid waste of water thereby saving energy.



Photo.4: Sensor based water pump systems in RajaRajeswari College of Engineering

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Sensor based Diesel Generator (DG Set) is installed in the iON Dizital zone inside the campus for conducting online examinations. This helps by providing uninterrupted power supply for the online examinations like GATE. DG Set Specifications consist of Ashok Leyland, 82.5 KVA.

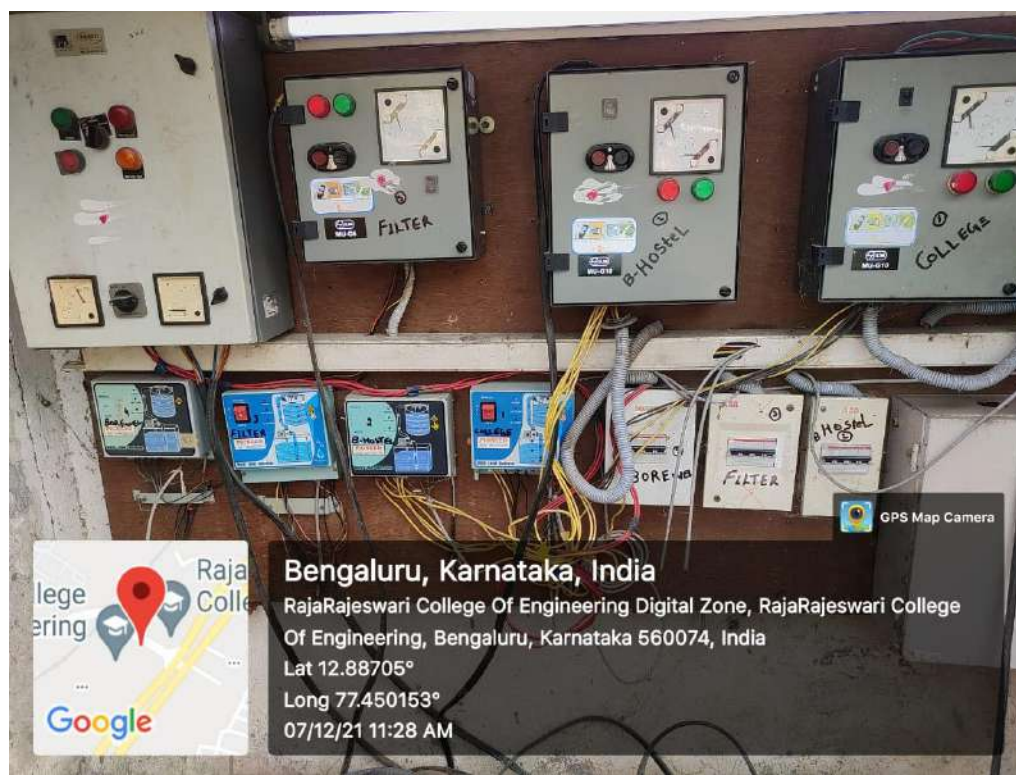


Photo.5: Sensor based 82.5 KVA Generator set systems in RajaRajeswari College of Engineering

5. Use of LED bulbs / power efficient equipment

a. Replacement of CFL Tube lights with LED Lights: During August 2020 to July 2021

Total Tube Lights	LED Lights	Total Savings (in units)
1152 (36 Watts)	16 Watts	69147
512 (40 Watts)	16 Watts	37080
TOTAL SAVINGS		106227

On the expenditure front, a total of 1667 LED lights costs Rs. 5,00,100/-

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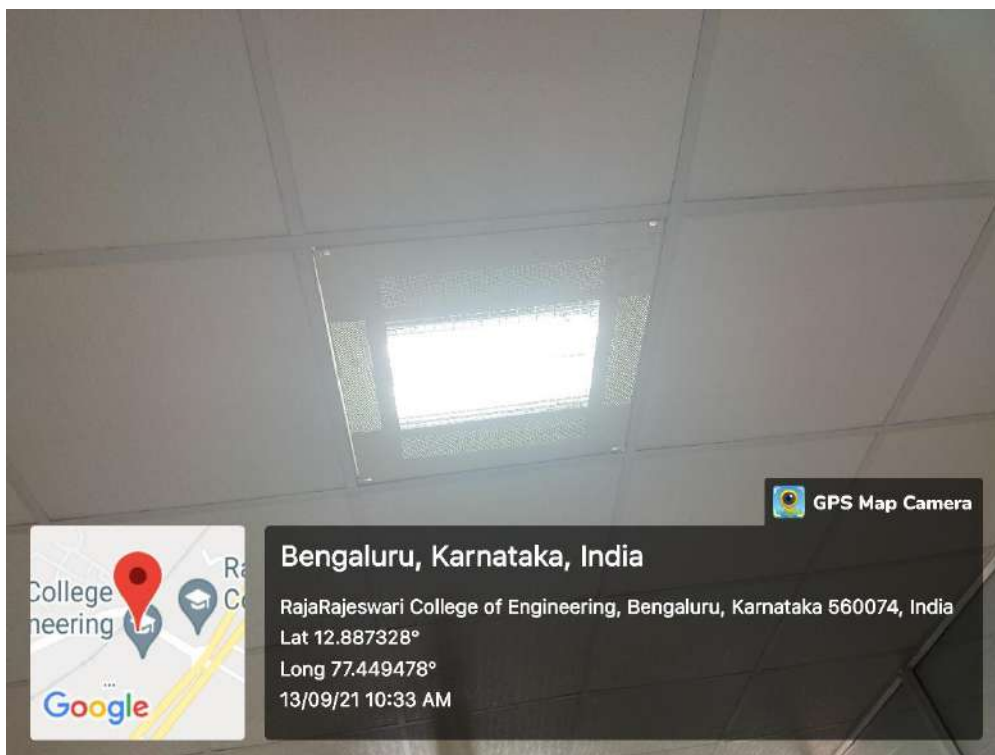


Photo.6: LED Tube lights in Lab at RajaRajeswari College of Engineering

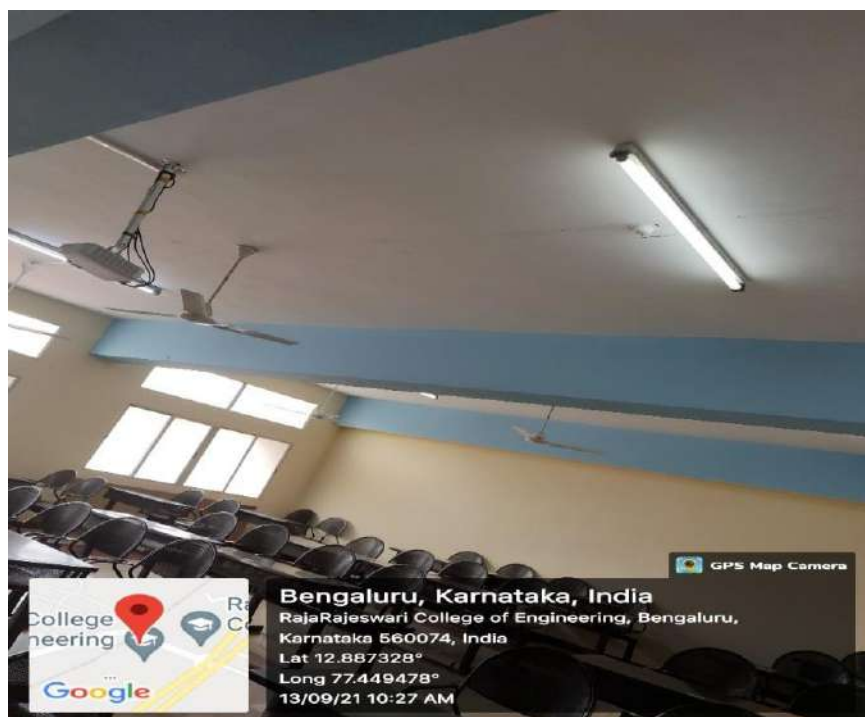


Photo.7: LED Tube lights in Classrooms at RajaRajeswari College of Engineering



b. Replacement of old Air conditioner with Energy efficient Air conditioner.

In the year August 2015, the old Air conditioner was switched to Energy efficient air conditioner. A Bluestar Air condition is installed in the seminar hall which is helping to save energy for the energy conditions.

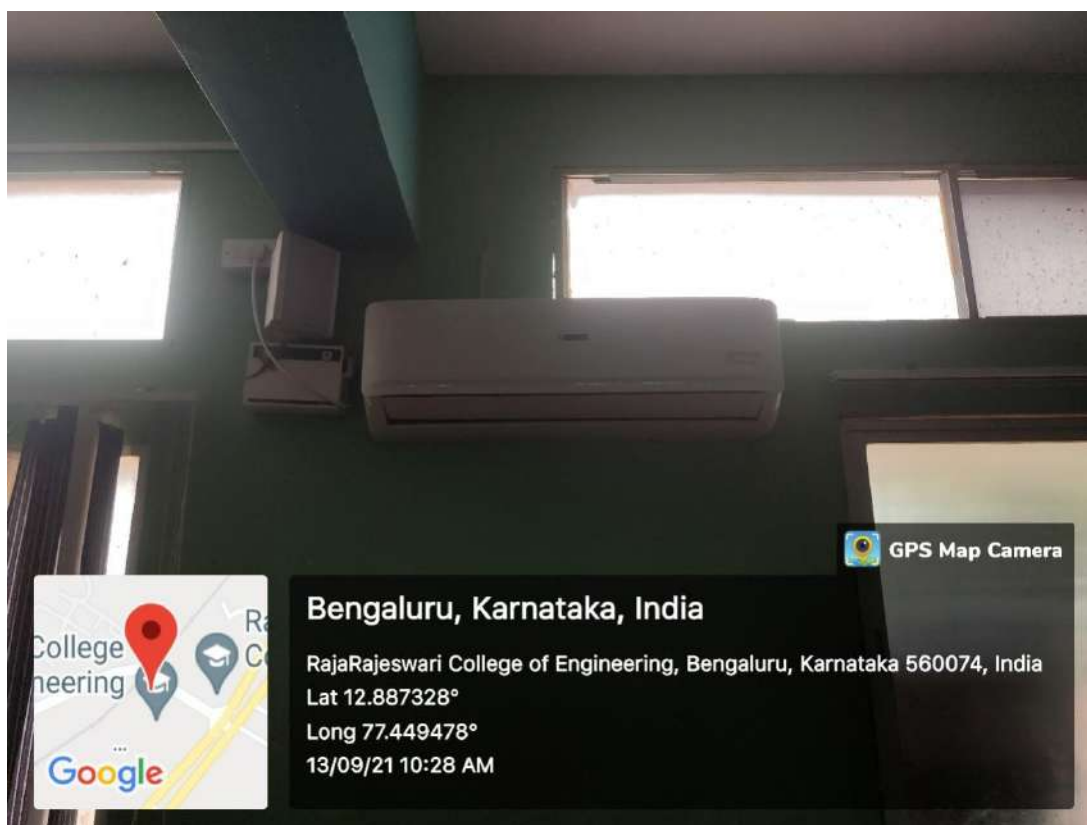


Photo.8: Air Conditioner in Seminar Hall at RajaRajeswari College of Engineering.

Energy Conservation boards are displayed in the institution premises. The students and employees will gain the knowledge and practice of turning off lights after the class hours in order to lower energy costs, to save electric energy and reduce environmental impact.

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Photo 9: Energy Conservation boards displayed inside the laboratory



Photo 10: Energy Conservation sign boards displayed inside the laboratory

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<https://www.rrec.org>

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