

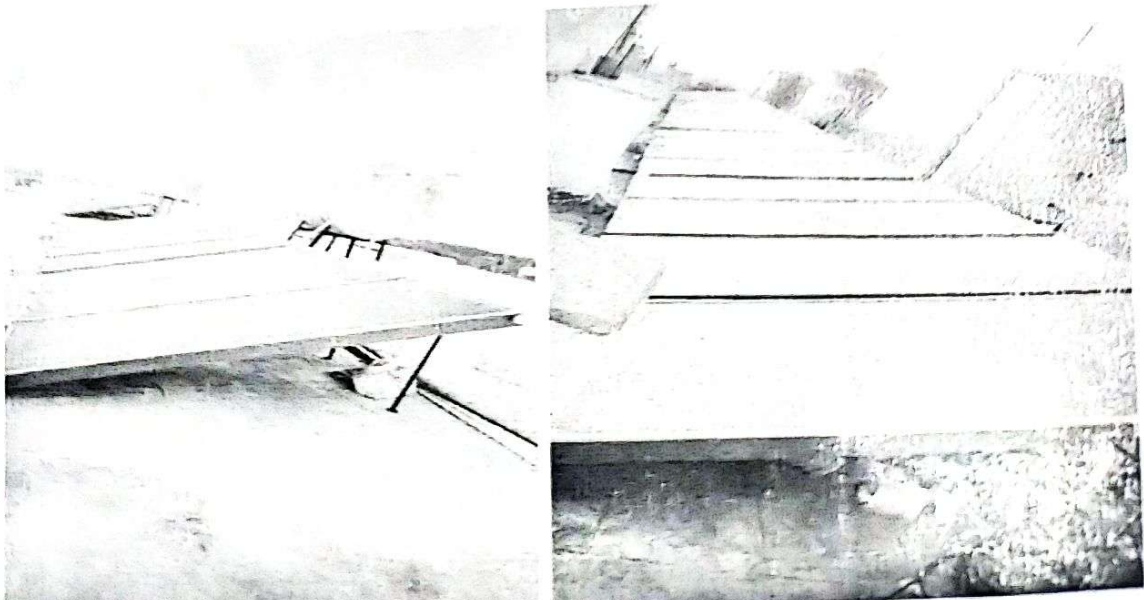
**Environmental Consciousness and Sustainability / Alternate Energy initiatives such as: Percentage of annual power requirement of the College met by the renewable energy sources**

### **1. Replacement of CFL Tube lights with Led Lights:**

- During April 2017 – March 2019, a Total of 3750 tube lights ( 36 Watt) were replaced with 18 W LED Lights, which resulted in Total savings of 197100 units and a saving of Rs 15,07,815 ( Rs 15 lakh).
- Similarly in above duration a total of 7515 Tube lights (40 Watt) were also replaced by 18 W LED lights resulting in savings of 482763 units and of additional Rs.3693,136.
- Thus, altogether Total saving of 6,79,863 Units were saved affecting savings of Rs 52,00,951 (Say 52 lakh) in two years time.
- On the expenditure front, a total of 10,965 LED lights @ Rs 400 each costs Rs 45,06,000 (say Rs 45 lakh) which is recoverable in two year time.

### **2. Solar Thermal Energy Harnessing:**

In order to conserve the electrical energy in the boys and Girls Hostels, a total of 96 Solar Water Heating Panels and 12 tanks have been installed and operated on day today basis. This has eliminated the use of electrical geysers in the hostels as the hot water is required round the year in Bangalore climate



**Photo: Solar Panels for water heating**

### 7.1.7 Initiatives taken by the institution to make the campus eco-friendly

#### Regulatory Compliances:

In order to comply with the regulatory stipulations, ACSCE from time to time, has been renewing the Consents to operate and Authorizations for Waste Management from the Karnataka Pollution control Board.

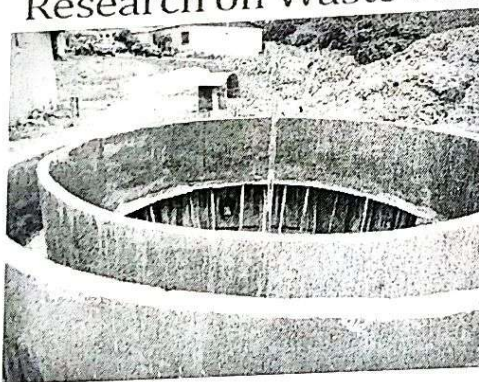
#### 1. Municipal Solid Waste Management:

- Non Hazardous solid waste (MSW) generated from the canteens, hostels, colleges and hospital is collected separately and disposed through the vendors.
- The management is now working on a two bin collection system towards segregation of wet and dry waste and subsequent disposal of wet waste through Bio- digestion and recovery of Biogas for its utilization in the canteen.
- The Bio-digester having capacity to handle 500 kg waste/ day is under construction and estimated to generate approximately 2 cylinders of equivalent LPG gas/day. Compost (120 Kg/day) shall be yet another product from the digester, thus making premises as zero garbage.

Biogas Plant Under

#### Construction

Project accepted by DST, GOI for future Research on Waste Management



Capacity 500 kg solid waste/day, Biogas = 2 cylinders/day and Compost = 100 Kg/day

#### 500 Kg/day capacity Biogas Tank Under construction

#### 2. Water Supply, Sewage Disposal and Water Conservation:

- In order to meet day today requirement for the fresh water, a total of 17 Bore wells have been installed in the premises and underground water is supplied to Hospital, Colleges, Canteens and the Hostels. In order to control the hardness of the water, all together 6 RO plants have also been installed to meet the drinking water demand.



- With a view to comply with the stipulations of the KSPCB, the Management has installed a 300 KLD sewage treatment plant to treat the sewage from the hostels and canteens and 32KLD of waste water is supplied.
- Since the management has created a sizable Cricket ground and stadium, there is a significant demand of water to maintain the green grass on the ground. This demand is met from the treated sewage from the 300 KLD STP and thus fresh water is conserved to that extent.
- Similarly the use of treated sewage in secondary flushing in toilets also reduces the demand for the fresh water to that extent.

### **3. Rain Water Harvesting:**

- In order to minimize the abstraction of ground waters, maintain the underground water table and control the hardness of the water supplied in the campus, the rain water potential has also been estimated for its tapping.
- As per the scheme the roof top water shall be collected in the underground tanks/sumps, whereas the water collected from paved and unpaved areas shall pass through grease cum silt trap and clean water shall be either directly used or shall be used for recharging the existing bore wells within the campus as per drawings.
- One such Rain water harvesting tank near Students mess is shown below. Similar structures shall be replicated at different locations within premises and other institutions.



**Rain Water Harvesting System near Students Mess**

### **4. Sewage Treatment and Disposal:**

- Waste Water is treated in 300 KLD STP which receives waste water primarily from the hostels, canteen and ACS College of Engineering.
- The treated waste water is utilized for maintaining the green belt in the campus, maintaining green grass on the cricket ground and also for the secondary flushing in the toilets in the hostel buildings.
- The rejects from the RO plants are also used for maintaining the greenery in the campus.
- Thus, significant quantity of fresh water is conserved through utilization of treated sewage



## 5. Green Campus Initiatives:

### i. Use of Battery Operated Carts:

- The Management has procured two battery operated carts for the use within the campus to minimize the movement and pollution arising due to fuel driven vehicles within the campus.
- Although, the steep slopes within the campus are not bicycle friendly, yet majority of the students and staff prefer walking within the campus as the same is quite compact.
- The Hospitals and Colleges being in sensitive zones, the noise levels are kept to the minimum due to noise less battery operated carts and minimal movement of automobiles within the campus.



Photo: Battery Operated Carts

### ii. Green Belt Development:

- The premises has created plant nursery that is responsible to create and maintain greenery within the campus.
- The large sized cricket ground along with other green belt is helpful in creating significant lung space within the campus and thus, improved air quality.
- The STP sludge is used as soil conditioner cum manure for maintaining the entire greenery in the campus. Also the treated sewage imparts Nitrates and Phosphates to the plants and hence a healthy growth.



Green Belt Developments



### iii. Conservation of Water Bodies:

- At times the treated waste water is released into the nearby pond whenever the water levels in the pond are lowest. This helps in maintaining the ecosystem and the aquatic life in the pond.
- The diversion of rain water from the premises to this pond also ensures that during monsoon time, the pond must fill to the maximum extent.



**Natural Pond filled with Rain + Treated water**

### iv. Recycling of Hazardous Wastes:

- As the institution operates a fleet of buses to transport the staff and students, the lead acid batteries discarded from these vehicles are sold back to the vendors for the purchase of a new battery. The discarded batteries are subsequently processed to recover lead for making new batteries.
- Similarly the used oil collected from the Diesel Generator sets is also sold to agents for its re-refining and subsequent use as lubricating oils.
- The disposal of e- waste is handled as per the guide lines of Ministry of Environment and Forest, Government of India Notification 2016.

### v. Combat Against Global Warming:

- The installation of Biogas digester and use of biogas (2 commercial cylinders / day) shall be a land mark in reducing the green house gases ( $\text{CO}_2$ ,  $\text{CH}_4$ ) release into the atmosphere.
- The green zones shall be fixing  $\text{CO}_2$  from the atmosphere and releasing  $\text{O}_2$  in the atmosphere shall help in slowing down the global warming.
- The solar panels producing green energy is yet another contribution to minimize the use of energy that is generated using the fossil fuels.