



7.1.3 a Green Audit

1. The Geographical location

Truly Green Campus in Green Surroundings.



2. Floral and Faunal diversity

BIT has diverse flora & fauna & the environment encourages growth of biodiversity. There are around 50 species of plants and trees present in the campus and around 20 species of birds and other insects in campus.

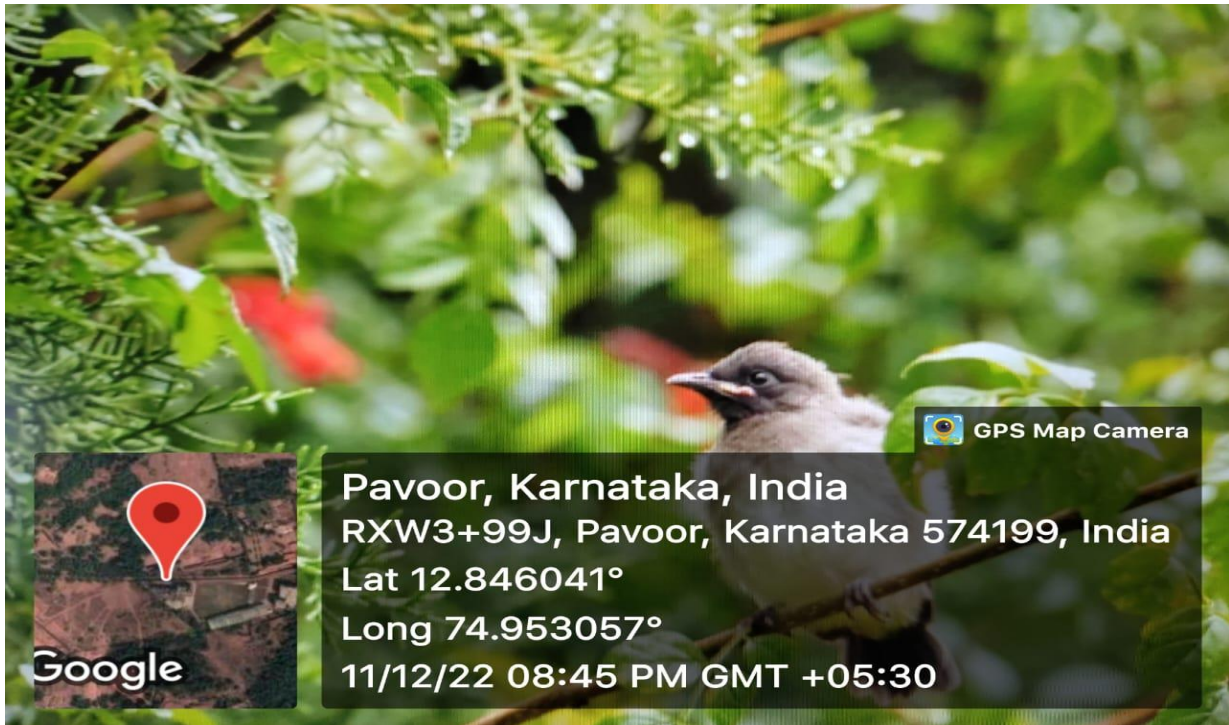




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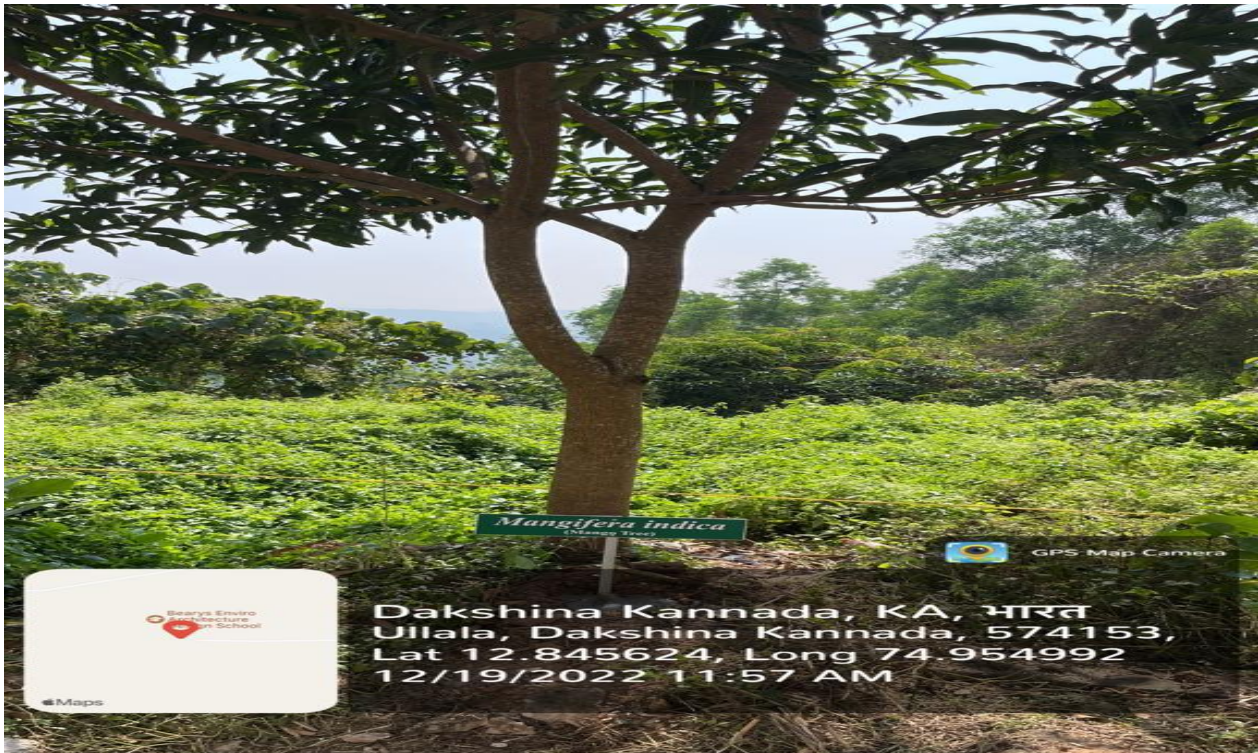




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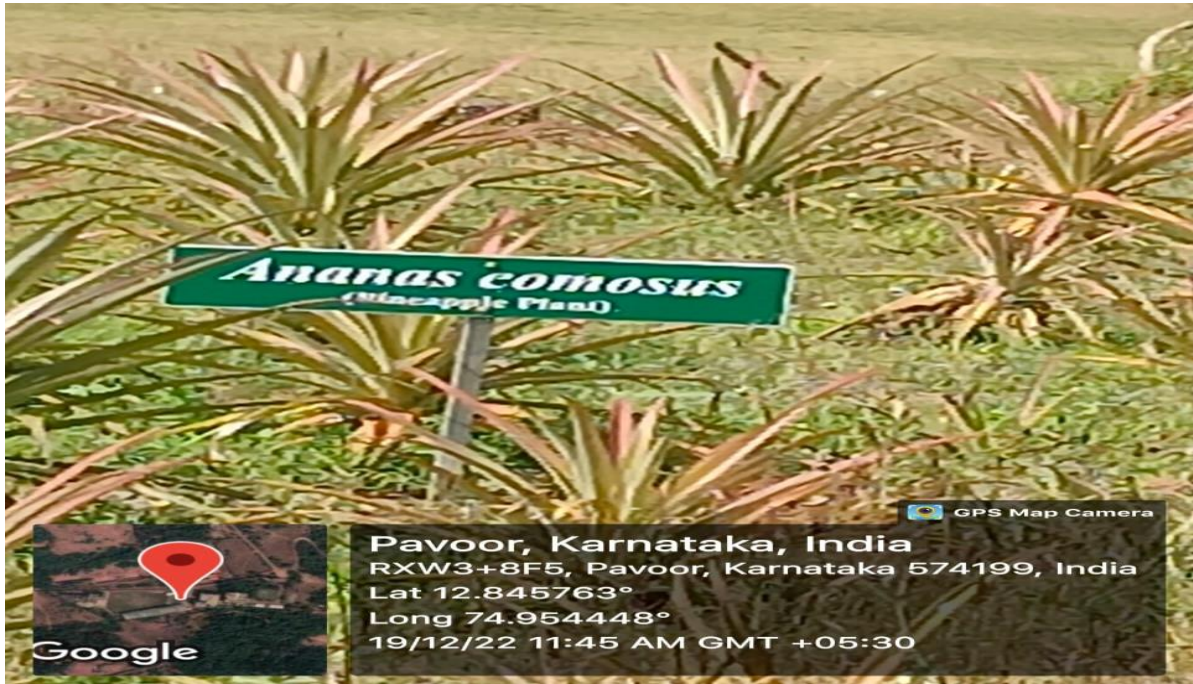
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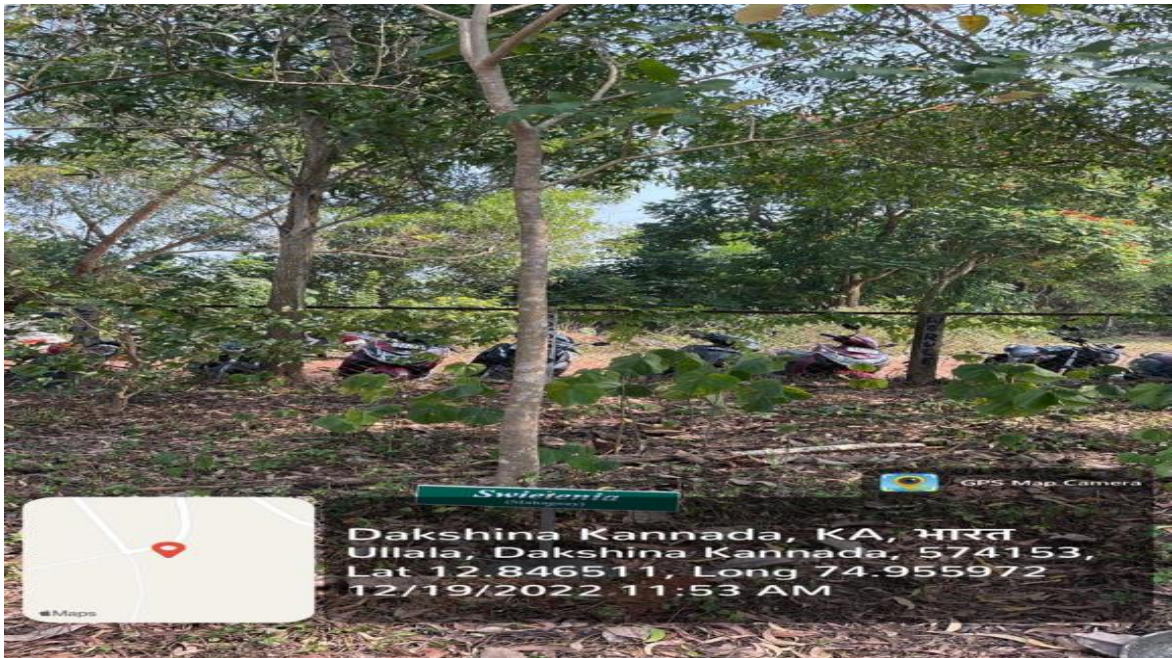


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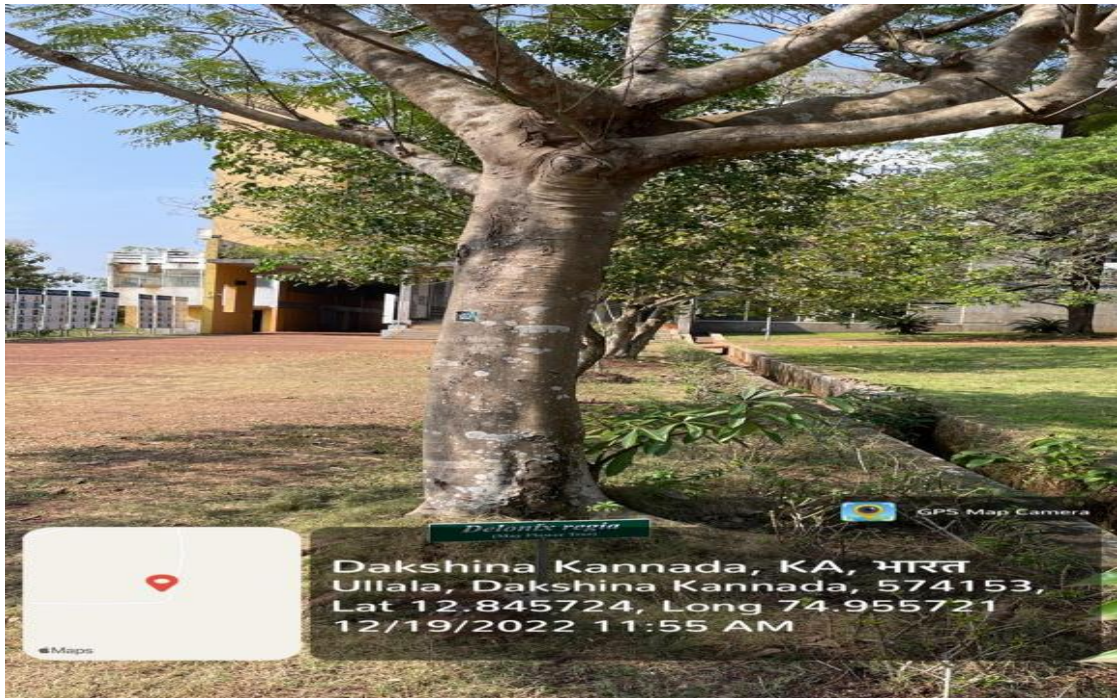
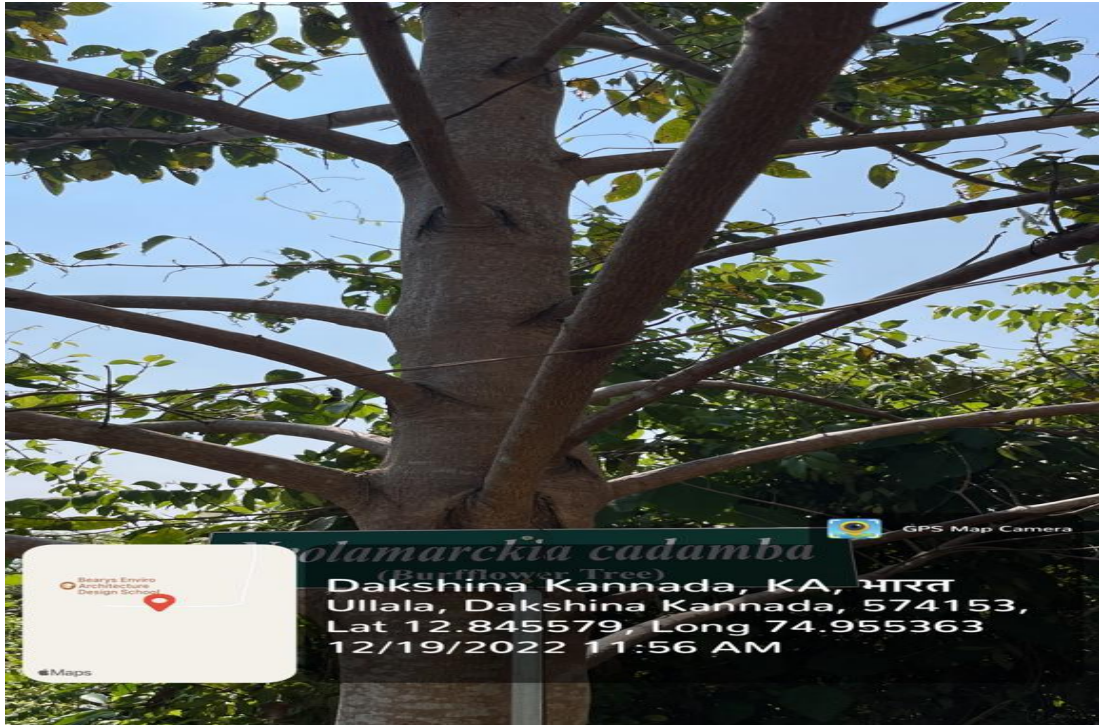
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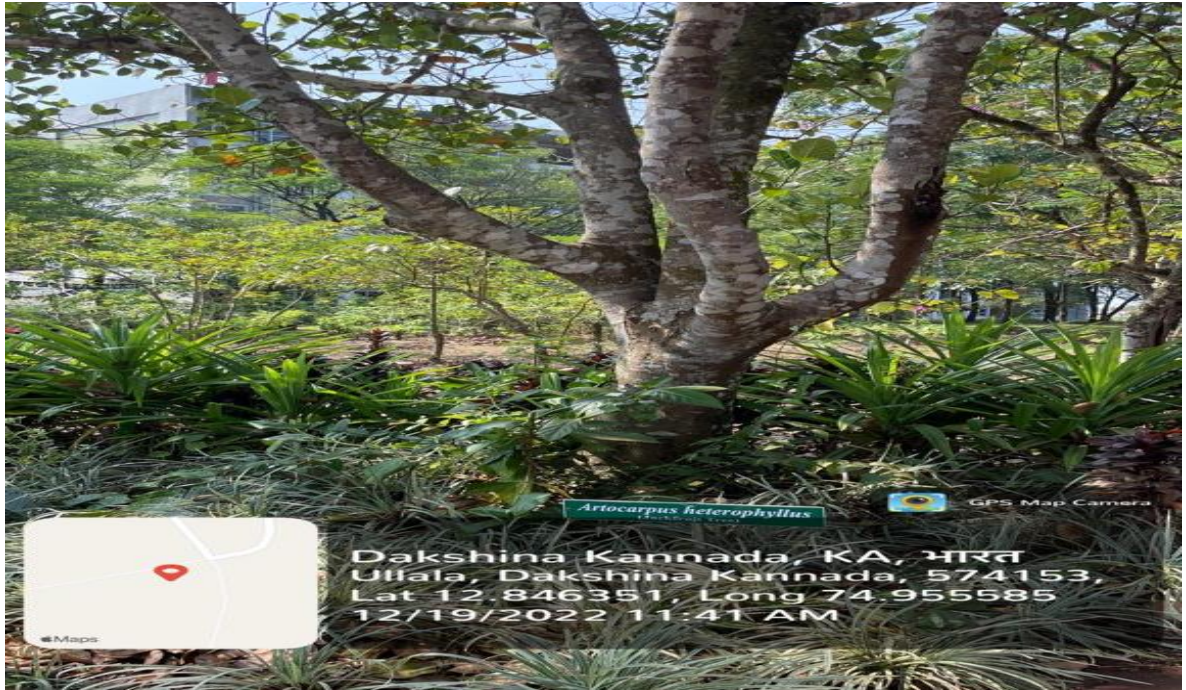
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3. Bearys Sport Arena, BIT

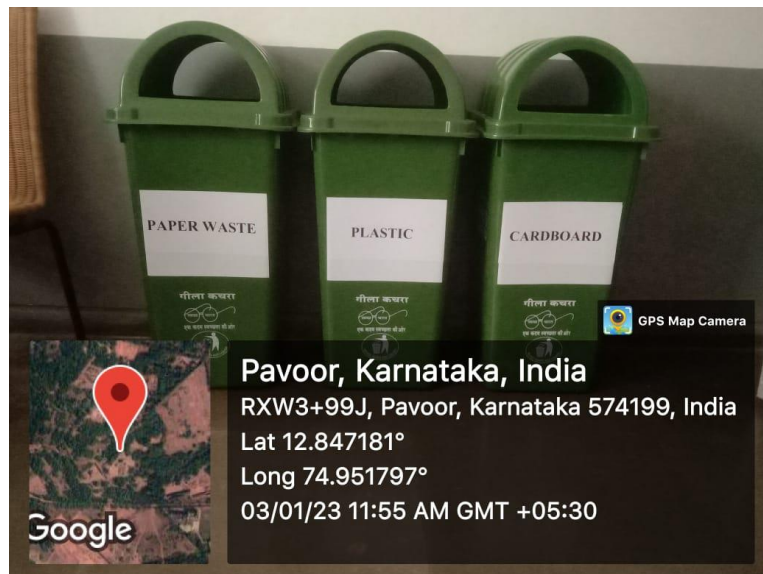
Innovative method of irrigation from subsoil introduced which reduces irrigation water needs from 30000 litres per day to 3000 litres per day.

Rooftop Rainwater is channelized through drain pipes to percolate into the ground to help sustain groundwater table.



4. Waste Segregation & Recycling:

Waste bins are placed at several locations in the Campus. Waste is segregated & stored separately as Plastic, Glass, Food waste, E-waste Etc





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30/12/22 02:05 PM GMT +05:30



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-----*Serve to succeed*-----

Date: 06.03.2022

Walk Through Energy Audit Report

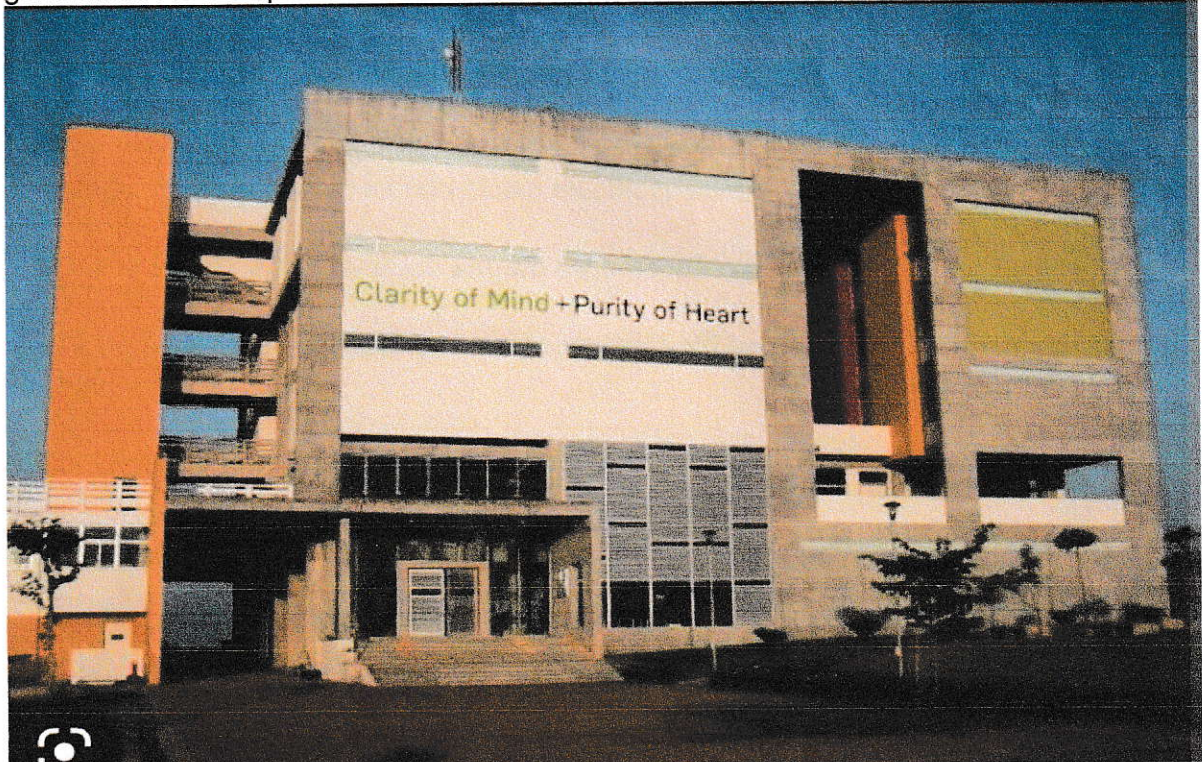
To,

Bearys Institute of Technology
Land End, Innoli, Mangalore, Karnataka
PIN: 574153

Kind attn.: **Mr.DayanandaPrabhu**

Preview:

An efficient use of energy is the need of the time for sustainable development for us & future generation. As a responsible educational institution, **BearysInstitute of Technology**



has decided go for an Energy audit. As a prelude to this, a walk through energy audit has been done by VLS Technology Solutions, Bangalore (B.L.Bhat, BEE certified Energy Auditor -EA11373)

B.L.Bhat

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As is status of Energy usage:

Electrical energy from local distribution company (MESCOM) is the primary source & complimented by back up stand by source in the form a DG set to suit the requirement of the educational campus.

MESCOM consumer RR No.: ULHT-48, Tariff -HT2 (C) (II)
Sanctioned contract demand: **90 kVA**

Transformer rating: 250 kVA, 11 kV/0.433 kV, Oil cooled, Delta-Star type
Recorded Maximum demand: **67.3 kVA** (as per MESCOM Bill No.4471 Dated 01.12.2022)
KWh consumption: 17263 units
Power factor: 0.97 Lag

Standby DG sets:

DG →100 kVA, 415 Greaves make

The electrical energy is mainly used for lighting (indoor/outdoor), computers & other office equipments, Air-conditioners (16 kW rating for specific seminar hall), water heater and water supply

Opportunities observed:

- 1) As lighting is the main load, it is feasible to go for **energy efficient LED luminaries** throughout the campus either in a single go or in a phased manner.

Outdoor luminaries can be solar powered LED.

Sensor based switching & dimmable option can also be explored for both indoor & outdoor lighting system for optimizing electricity usage.

As a mandate all luminaries should be periodically cleaned/wiped for dust removal

With going for LED lighting, load reduction will be about 2 kW & ROI will be less than a year.

- 2) **Day light sensor and motion/presence sensor based lighting switching** is suggested only for common area (after thorough evaluation on usage) where ROI will be about 18-24 months

- 3) **Rooftop solar electric power plant:**

Option – a:

Roof top solar power plant to meet the basic minimum power requirement is suggested.

BCBhand

Option – b:

Roof top solar power plant (maximum installation feasible kW rating) with net metering is also suggested.

- 4) After taking the required decision on available opportunities 1,2 & 3, it is suggested to re-visit the requirement of sanctioned demand & if feasible, reduce the same.
- 5) **Solar thermal for heating** (in place of existing Electrical water heating system)

At present connected load of 30 kW is for water heating system in hostels & quarters. Presently about 3600 kWh consumption & 35000 INR is being spent on monthly basis.

It is suggested to go for **Solar thermal for heating water** where ROI will be about 18-24 months

- 6) **Static VAR compensators (Electronic SVC)** are suggested for managing the power factor & mitigating harmonics in the system and thus increasing the life of the installation and improve the efficiency of DG sets. This also reduces the distribution losses in the network.

Regular capacitors based power factor improvement system is having shorter life, needs periodic maintenance/replacement and cannot mitigate harmonics

- 7) A comprehensive water management system using digital water meter with IOT is suggested
- 8) Suggest to go for IOT based combined solution for Electrical Energy & Water management system
- 9) Poster campaigns, seminars, quiz for saving electricity, water and cleaner environment can motivate the student's community to become a better responsible energy users in future.
- 10) It is a known fact that awareness of energy users & re-viewing the exiting design can help to conserve about 3% of total energy consumption without implementing other measures.

For VLS Technology Solutions,



Proprietor

Energy Auditor



B.L.Bhat

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