

Green, Energy & Environment Audit Report
Anand Vishwa Gurukul College of Law

Report

On

GREEN, ENERGY & ENVIRONMENT AUDIT

For

Anand Vishwa Gurukul College of Law
Thane

Prepared

By

Senergy Consultants Pvt Ltd
Mumbai

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Helping You to Conserve Energy

Green, Energy & Environment Audit Report
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I Introduction

Green & Energy Audit was undertaken at Anand Vishwa Gurukul College of Law, Opp ACC Cement Colony, Near Mental Hospital, Thane (West) – 400604, during the month of December 2018.

The organization is very keen to promote green culture wherever possible, as a commitment towards better environment and conservation of energy. A lot of efforts have already been put up to bring down the carbon footprint. To further optimize consumption and identify saving opportunities, M/s Senergy Consultants was assigned to carry out Green & Energy Audit of the premises.

This Audit Report presents the analysis of the data collected, observations made at the facility and is governed by the objectives, scope of work, methodology etc. discussed in the ensuing paragraphs.

Team:

The team members of the audit study.

- Mr Ravindra Datar
- Mr Nitesh Kharche
- Mr Tushar Kamble

Acknowledgment:

We wish to express our gratitude towards Adv. Suyash Pradhan for having given us the opportunity for conducting the study and the support provided during the study.

We are also thankful to Mr. Akash Dhawal & Mr. Ajay Sonawane for extending necessary help and co-operation from their side.

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II

Executive Summary

The premises were evaluated against the various criterions laid down by the National Assessment and Accreditation Council (NAAC). The major observations are.

Air Quality & Ventilation:

- The classrooms and other area are well ventilated to ensure proper air quality.
- The fans are appropriately installed to ensure proper air circulation.
- The outdoor and few indoor plants have also been provided to improve the environment.
- The air conditioned rooms are provided with proper ventilation and fresh air.

Lighting System:

- The usage of natural light is optimized through well designed structure and windows.
- A few of the light fittings are provided with high efficiency LED lamps. The conventional tube lights operating for longer period should be replaced with energy efficient LED lamps.
- It is suggested to automate switching of lamps in the common areas and washrooms with sensor based control.

Green Campus Initiative:

- The movement of vehicle inside the campus is restricted with vehicles of Staff and Special Dignitaries are allowed to enter the campus with designated parking area.
- There is a ban on plastic usage inside the campus.
- The campus is surrounded with a lot of greenery, trees, and proper landscaping.
- The college has internal committee for conservation of resources like energy, water.
- The student participation may be encouraged in such activities through student clubs and groups.

Environment & Energy Initiative:

- An internal committee is formed to formalize the various initiatives involving college faculty, staff and students.
- Green & Environment based seminars were organized within the college campus.
- Various Tree Plantation programs has been carried out within and outside the campus.

Water Quality & Conservation:

- The water is supplied by the Municipal Corporation, which is a common practice in Mumbai, Thane & Navi Mumbai.
- Water purifiers & coolers are provided at individual floors and convenient locations.
- The distribution network and piping are satisfactory and adequate.
- The toilets are provided with water efficient (low usage) fittings.

Waste Management:

- The effluent water is discharged in the municipal drain, which is a common practice in and around Mumbai, Thane & Navi Mumbai.
- The organic waste is segregated and disposed through municipal waste management system.
- There is no hazardous or medical waste generated in the college.
- The electronic gadgets / waste is either donated if useful or handed over to appropriate waste collectors.
- The general solid waste is disposed through municipal corporation.

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Air Conditioning System

- The Air Conditioners are operated as required with manual control. The operation is minimal consequently automation may not be economical.
- The room temperature is maintained at 24 to 25 °C, which is well within the recommended values.
- The Air Conditioners are serviced regularly and properly maintained.
- Most of the Air Conditioners units are energy efficient with 3 star rating.

Infrastructure usage:

- The on-campus movement is distributed with multiple entrances as well as staircases.
- The fire extinguishers are provided at key areas.
- The draining system for washrooms is efficient and effective.
- There were no seepages observed in the building premises.

Green IT culture:

- The Energy efficient computers and laptops have been procured.
- The electronic communication is encouraged to minimize usage of papers.
- Most of the papers are reused for doubled sided printing to further minimize usage of paper.

Renewable Energy:

- The possibility of installing Solar Photovoltaic System with NET metering may be assessed to meet part of the electricity consumption.
- The quantity of plate waste (organic waste with higher starch contents) is negligible, consequently, there is no potential for biogas generation.

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III

Electrical Gadget

Lamps:

Location	LED TL	TFL
	20 W	36 W
First Floor	15	17
Second Floor	28	30
Third Floor	10	30
Fourth Floor	10	30

Observations and Recommendations:

- The illumination level is generally as per the norms; the illumination level is higher mainly due to usage of day light.
- The use of daylight has been maximized through windows.
- The practice of switching off the lamps in the unoccupied areas has been followed.
- A few of the light fittings are provided with high efficiency LED lamps. The conventional tube lights may be replaced with energy efficient LED lamps; which can save 30 to 60% energy of individual lamp.
- It is suggested to automate switching of lamps in the common areas and rest rooms with sensor based control.

Ceiling Fans:

Location	Ceiling Fan
	65 W
First Floor	52
Second Floor	45
Third Floor	40
Fourth Floor	41

Observations:

- The fans are switched off, when not in use.
- It is suggested to procure energy efficient fans with High Efficiency Fans with BLDS Motors / or fans with 5 star rating while making new purchases.

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Location	Air Conditioners
	Split Type
First Floor	2
Third Floor	3
Fourth Floor	1

Observations:

- The air conditioners are switched off, when not in use.
- The hall temperature was observed to be 24 to 25 °C; which are standard values.
- The overall condition of indoor as well as outdoor units is satisfactory.
- It is suggested to procure energy efficient machines of 5 star rating while making new purchases.

Electricity Bill:

The electricity for the entire premises is supplied by Maharashtra State Electricity Distribution Company Limited (MSEDCL).

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IV Environmental System

Ventilation & Air Quality:

- The air ventilation is adequate.
- Several indoor & outdoor plants have been installed to improve air quality.

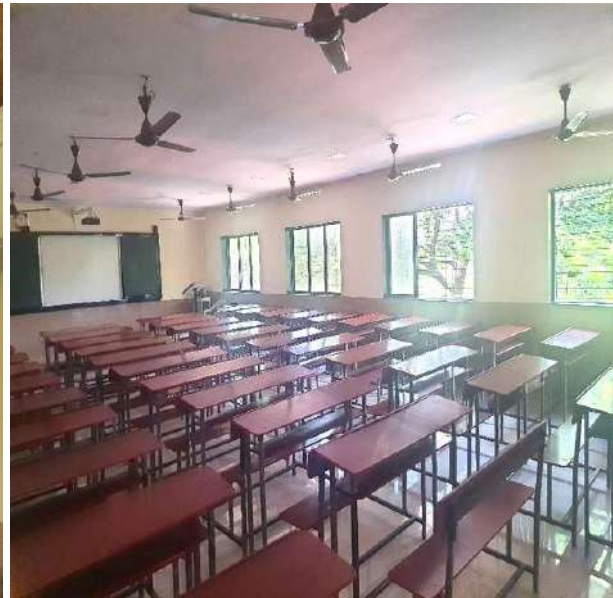


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- Natural light is been used for maximum illumination during daytime.
- It has been a general practice to switch off the fans & lights in an unoccupied area.



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V Water Management

Consumption Pattern:

The water supplied by the municipal corporation is used for drinking & other applications like washing of utensils and other requirements. The incoming water from the municipal corporation is metered.



The water consumption is generally within the norms.

Water Coolers & Purifiers:

Sr No	Location	Purifier	Coolers
1	First Floor	1	1
2	Second Floor	1	1
3	Third Floor	1	1
4	Fourth Floor	1	1

The water purifiers are installed on each floor.

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Water Distribution System:

The distribution network and piping are more or less satisfactory and adequate.

Rainwater Harvesting:

The rain water from the terrace area of the college building is being drained in to municipal storm water system through requisite ducts and pipes.

However, considering proximity to the seashore, rain water harvesting may not be practical.

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VI Waste Generation & Management

Solid Waste:

- The organic waste may be segregated and disposed through municipal system.
- There is no generation of hazardous or biomedical waste in the premises.
- The electronic gadgets with residual life are donated while the electronic waste is properly segregated and handed over to appropriate scrap collector.
- The total solid waste is disposed through Municipal system.



Sewage & Wastewater:

- The sewage is disposed through municipal system.
- There is no generation of harmful or hazardous effluent.
- The sewage treatment plant is not required due to minimal generation of waste.
- The municipal corporation charges cess for treating and disposing wastewater.

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VII Infrastructure & Safety



The premises are provided with multiple staircases with necessary entrances to ensure quick and effective movement in normal as well as emergency conditions.

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Parking space:



There is adequate parking space for vehicles/four wheelers. However, almost all the students and many of the faculty members avail public transport system which is very convenient due to proximity to railway station and bus services.

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Firefighting & fire escape system:



There are efficient fire extinguishers in the premises; which are checked / refilled as per the stipulated frequency.

The premise is provided with multiple staircases with requisite entrances to ensure quick and effective movement in emergency conditions.

Draining system:

The drains from the washrooms are connected to the municipal drainage, which is a common practice in the colleges in and around Mumbai.

The municipal corporation charges cess for water disposal.

Seepage in the building:

The premise was visually inspected for seepages.

No seepages were observed in any of the places.

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VIII Green Culture

Computers/Laptops:

Location	Computers (nos.)
First Floor	23
Second Floor	10
Third Floor	15
Fourth Floor	2



1. The LED / LCD monitors & Laptops has been procured, which are energy efficient.
2. These monitors are not only energy efficient but also generate minimal heat and cut down on air conditioning load.

The following steps may be initiated to further enhance efficiency of the systems.

1. An efficient power management system may be incorporated to
 - a. Switch off the display if not in use.
 - b. Put the computer in Sleep mode / switching off the machines, if not used for prolonged period.
2. Optimize brightness of the screen.
3. Discourage use of screen savers, which has similar power consumption.

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Tree Plantation Held by Staffs



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Tree Plantation Held by Students



Paper-less communication:

The major internal as well as external communication is through electronic medium.

Re-using one sided paper for printing:

It was observed that two side printing / printing on the back side of used paper in more than 80% of the cases.

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IX Renewable Energy

Solar Photovoltaic:

It is suggested to install rooftop solar panels with net metering for captive usage.

Solar Thermal:

There is no application of solar thermal system and does not find attractive in this case.

Biogas Plant:

There is no possibility of installing biogas plant for cooking as the quantity of plate waste is negligible.

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