INTEGRATED GREEN ENVIRONMENT & ENERGY AUDIT REPORT

ANJUMAN COLLEGE OF ENGINEERING AND TECHNOLOGY

Mangalwari Bazar Rd, Sadar, Nagpur-440001 (MS)

Conducted By-

SHREYAS QUALITY MANAGEMENT SYSTEM

(ISO 9001:2015 QMS, ISO 14001:2015EMS, ISO 50001:2018 & ISO 45001:2018 OHSAS Certified Organization; QCI Life Member (LM/WR/5201) & Registered Lab Management System and Lean Manufacturing Sr. Consultant)

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- ISO 9001; ISO 14001 EMS, ISO50001EnMS, OHSAS 18001, ISO29990, ISO 27000
- ISO 17025 &15189 (Medical Lab) Accreditation ,IATF 16949, NABH & School Accreditation

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DISCLAIMER

Audit Team has prepared this report for Anjuman College Of Engineering And Technology, Nagpur based on input data submitted by the representatives of College complemented with the best judgment capacity of the expert team. The audit was conducted on the sample basis by visiting the college and interacting with the various stakeholders. Audit was conducted by interviewing the concerned persons, observing on-site implementation and verifying the documents and records.

While all reasonable care has been taken in its preparation, details contained in this report have been compiled in good faith based on information gathered.

It is further informed that the recommendations are arrived following best judgments and no representation, warranty or undertaking, express or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

The audit report is for the improvement and not intended for full filling any statutory and regulatory requirements. SQMS is not bound by any legal requirements for acceptance or rejection of the report and or recommendations.

Dr. R. R. Lakhe

Director

Shreyas Quality Management System, Nagpur.

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Acknowledgements:

Integrated Green Environment and Energy Audit (GEEn) Assessment Team (Dr. R.R.Lakhe, Mr. Nasir Sayyad) thanks Anjuman College of Engineering and Technology, Nagpur for assigning this important work of Audit. We appreciate the cooperation extended to our team during the entire process.

Our special thanks are due to Principal, IQAC & Team members for giving us necessary inputs to carry out this very vital exercise of GEEn Audit.

We are also thankful to Department Heads and other staff members who were actively involved while collecting the data and conducting field measurements.

Dr. R. R. Lakhe

Director

Shreyas Quality Management System, Nagpur.

Executive Summary:

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institute which will lead for sustainable development.

Anjuman College of Engineering and Technology, Nagpur is deeply concerned and unconditionally believes that there is an urgent need to address these fundamental problems and reverse the trends. Being a premier institution of higher learning, the college has initiated 'The Green Campus' program two years back that actively promote the various projects for the environment protection and sustainability.

The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. It works on the several facets of 'Green Campus' including Water Conservation, Tree Plantation, Waste Management, Paperless Work, Alternative Energy and Mapping of Biodiversity. With this in mind, the specific objectives of the audit are to evaluate the adequacy of the management control framework of environment sustainability as well as the degree to which the Departments are in compliance with the Green Policy. It can make a tremendous impact on student health and learning college operational costs and the environment. The criteria, methods and recommendations used in the audit were based on the identified risks.

Objectives of the Study:

The purpose of this audit was to ensure that Green Environment & Energy Policy and practices is established, followed and implemented in the campus, across all departments, administrative bodies and students.

Methodology:

In order to meet its objectives, this audit combined physical inspection with a review of relevant documentation and interviews with various stakeholders. Audit is carried out on sample basis and the performance data/information submitted by college for last 3 years.

Review of the Documentation

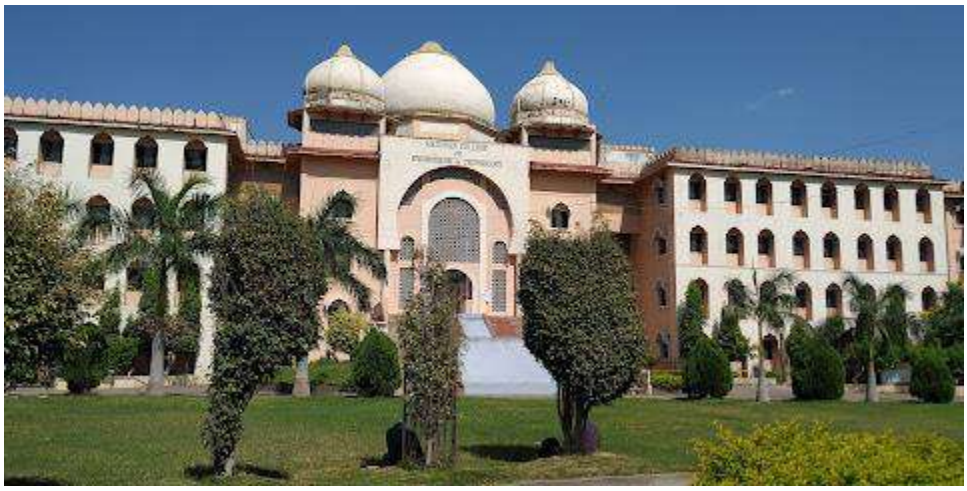
Green, Environment & Energy Policy, & ISO14001: 2015 requirements.

Interviews

Interviews were conducted with the Principal, and also faculties and students.

Physical Inspection

The audit team was in the college to inspect the campus.



Introduction of Green, Environment & Energy (GEEn) Audit:

Green Environment, & Energy (GEEn) Audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. The 'GEEn Audit' aims to analyze environmental practices within and outside the college campus, which will have an impact on the eco-friendly ambience. It was initiated with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment. Through GEEn Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out Audit.

About the College:

The Anjuman College of Engineering and Technology [A.C.E.T.] is managed by Anjuman Hami-E-Islam, Nagpur. It is a pioneer Educational Trust, serving the cause of education in the region. For well over 134 years. Irrespective of the considerations of the various caste and creed It has wide spread reputation in the field of education in Vidharbha and is currently running 20 educational Institutions. Anjuman Hami- E-Islam started an Engineering College from academic year 1999-2000 with three branches Mechanical , Electrical , Electronics and Telecommunication, two more branches viz. Computer Science & Engineering and Civil Engineering has been added. Also in order to meet Industry 4.0 challenges, Artificial intelligence and Data Science branch was

introduced. Slowly and steadily the College has carved a niche for itself and has established itself as a name to be reckoned with providing quality Technical Education at a very affordable cost.

Address: Mangalwari bazar Road , Sadar, Nagpur440001

Website/Email/ Contact No.9823843180/9822714806

Contact Person: Dr. Archana Shirbhate

Basic information:

No. of Branches: UG (06)…PG (02)

No. of Students: 1535

No. of Faculty Members: 104

No. of Non-Teaching Members: 81

No. of Buildings: 03

Total campus area: 20496.05 m2

Total Garden Area/ Open Area: 3302 Sq.Mt.

College building Spread Area: 13258 m2

Total Number of Computer/Laptop/Printers. PC 701/ Laptop -3/ Printers - 37

Vision

To be a centre of excellence for developing quality technocrats with moral and social ethics, to face the global challenges for the sustainable development of society.

Mission

To create conducive academic culture for learning and identifying career goals.

To provide quality technical education, research opportunities and imbibe entrepreneurship skills contributing to the socio-economic growth of the Nation.

To inculcate values and skills, that will empower our students towards development through technology.

Core Values

Aiming access to education: Our aim is to provide quality education in different fields. Human Touch: Service of people through quality education for betterment of community and nation.

Integrity: Imbibing knowledge to students of all communities, contributing to the socio economic growth of the nation

Academic Excellence: Our aim is to be a centre of excellence in engineering and technology , developing highest level of technocrats.

Challenge- Care Change: We commit our service to people. Take it as a challenge to uplift the students of every community, caring for them and aim to bring the change.

Encouragement: We encourage critical thinking, qualitative reasoning, effective communication, ethical decision making and social responsibility in our students.

Team spirit: We inculcate the team spirit of professionalism and moral values among our technocrats aiming their all-round development economically and socially.

Institutional Values and Best Practices:

The institute offers equality in the policies for all stakeholders. Equal opportunities is provided for all eligible individuals to participate in any of the academic / extracurricular, co-curricular activities including the recruitment process as well. Institute has a very strong NSS team. As per the motto of NSS, the college plans lots of community activities which brings in the mind set of mutual co-existence, cooperation, help the needy, and inculcates compassion towards under-privileged. Environmental Science subject is made compulsory to all courses in the university. Since its inception the institution always aimed to build Eco –friendly atmosphere in the campus. The institute is committed towards environment friendly atmosphere and green campus by managing various wastes like Solid Waste, Liquid Waste and E-Waste. The development plans are always driven by the concern for ecofriendly environment and sustainability of life giving resources like energy, water, greenery and pollution free environment. Institute takes various efforts to accommodate Differntly-abled students (Divyangjan) like provision of ramps, rails, lift, braille software etc.

Every year institute plans and organizes national festivals like Independence Day, Republic Day, International Yoga Day and many more. One of the best practices we follow is excellence in academics and teaching learning process. This practice has helped us to fetch University rank holders. Another best practice that we follow is overall development through interpersonal skill, co-curricular and extra- curricular development of student and faculties. This practice motivates students and prepares them for their future.

The college has also adopted the 'Green Campus' system for environmental conservation and sustainability. There are main three pillars i.e. zero environmental foot print, positive impact on occupant health and performance and 100% graduates demonstrating environmental literacy. The goal is to reduce CO2 emission, energy and water use, while creating an atmosphere where students can learn and be healthy. The college administration works on the several facets of 'Green Campus' including Water Conservation, Tree Plantation, Waste Management, Paperless Work, Alternative Energy and Mapping of Biodiversity is ensured.

Environment conservation:

- Programs such as tree plantation drive, poster presentation, Swach Bharat Abhiyaan, Plastic free drive etc. are being conducted on regular basis.
- Students are being made to visit power station and power plants on a regular basis to get a sense of power scenario and the methodologies being employed to improve the power generation and utilization strategies.
- Short term training programmes related to sustainable development and environmental awareness are regularly conducted for the staff members. Such as ISTE approved 2 week STTP on "Sustainable and Renewable Energy for Power Generation -Economics, Financing and Environmental concern" have been conducted by the institute.
- Institute regularly organizes a visit to Orange City Water (OCW) works, Nagpur. The curriculum includes a Subject "Environmental Studies" which is an effort to inculcate the importance of Environment amongst the students.
- Development of e-learning system

Overall Recommendation

The following observations are noticed during the visit of GEEn Audit:

1. Framing of Green, Environment, Energy policy and percolation of same through awareness to be built up.
2. Kitchen waste is the main concern. Waste management Training to be given, competitions to be arranged for waste reduction.
3. 'No to Single use plastic' to be promoted.
4. Water sprinkler system for watering the plant/lawn
5. Adoption of 3R (Reduce, Recycle, Reuse) for waste handling.

6. Enhance the use of solar system at energy saving potential areas street lights, common utility area lighting system, solar water heating system etc.
7. The rain water harvesting is to be done on front left side of the campus.
8. Wash room basin to be cleaned regularly.
9. Waste segregation, treatment prior to disposal, disposal method to be adopted as per MPCB guidelines.
10. Adoption of BEE approved energy saving equipments/appliances to be strengthen.
11. Earth pit resistance of the building to be measured with defined frequency to arrest the leakages/energy losses.
12. Air Quality Index to be monitored.
13. New danger board to be used near DG set and Energy meter
14. Presently College is utilizing fresh water for all its water requirements, the management is considering the possibilities of plant based waste water treatment (STP) as part and will be accomplished when the funds will be available.
15. Possibilities for the storage of rain water is also under consideration by the College which can be utilized as fire extinguisher, gardening purpose, primary treatment is required for the same needs to provide as a project to student. Rain water harvesting to be carried out by taking proper step and guidelines.
16. Training to the cleaners in economical use of water for cleaning purposes and a system in place for immediate response when issues of water leakage are observed so that water losses are prevented.
17. Cleaning schedule of water purifier, overhead tank to be made and followed.
18. All the vehicles used by staff must be PUC certified.
19. Motivation to use electric vehicles to be promoted.
20. Plantation of Indian origin trees, medicinal trees to be motivated.
21. For internal movement, use of bicycle, solar/e-car, walking to be promoted.
22. For renovation or new construction, green building concept, verticle gardening to be adopted.
23. Conduction of water audit, electric audit with defined frequency will help to arrest leakages.
24. Automatic water level controller to be installed to avoid overflow.

25. Sensor based electric appliances controller system to avoid electrical wastage.
26. Bio-waste composting system to be adopted.
27. Researches and projects on biodiversity, environment/energy friendly applications to be promoted amongst the staff and students.

WATER CONSERVATION:

This auditing indicator addresses water consumption, water sources, irrigation, appliances and fixtures. In survey water used at bathrooms, toilets, laboratory, garden, shower and as well as leakages and over flow of water from overhead tanks is also been evaluated. The data collected from all the sections is examined and verified. The water supply in the Campus is provided by Bore wells. This water is being used for all water requirements at the campus, such as for drinking, cleaning, in the labs, gardening and flushing the toilets. The data collected from all the departments is to be examined and monitored. No water meter is observed in any of the bore well to check the total quantity of water used by the college in one academic years.

Observations:

Sources of water:

- Municipal corporation Water √
- Well water√

Presently College is utilizing fresh water for all its water requirements, the management is considering the possibilities of plant based waste water treatment (STP) as part and will be accomplished when the funds will be available. Probably by 2021-22 a feasibility study and implementation of STP will be possible.

Taps available in colleges, toilets and hostel and in canteen with no leakage.

Approximate water consumption of the college is as per the following:

Total water consumption for last 3 years

Sr. No.	19-20	20-21	21-22	22-23
Water Consumption	5634340	7714177	6995860	8114120

College has a provision to use the rain water for gardening purposed directly.

Taps available in colleges, toilets and hostel and in canteen with no leakage.

Water conservation facilities available in the Institution:

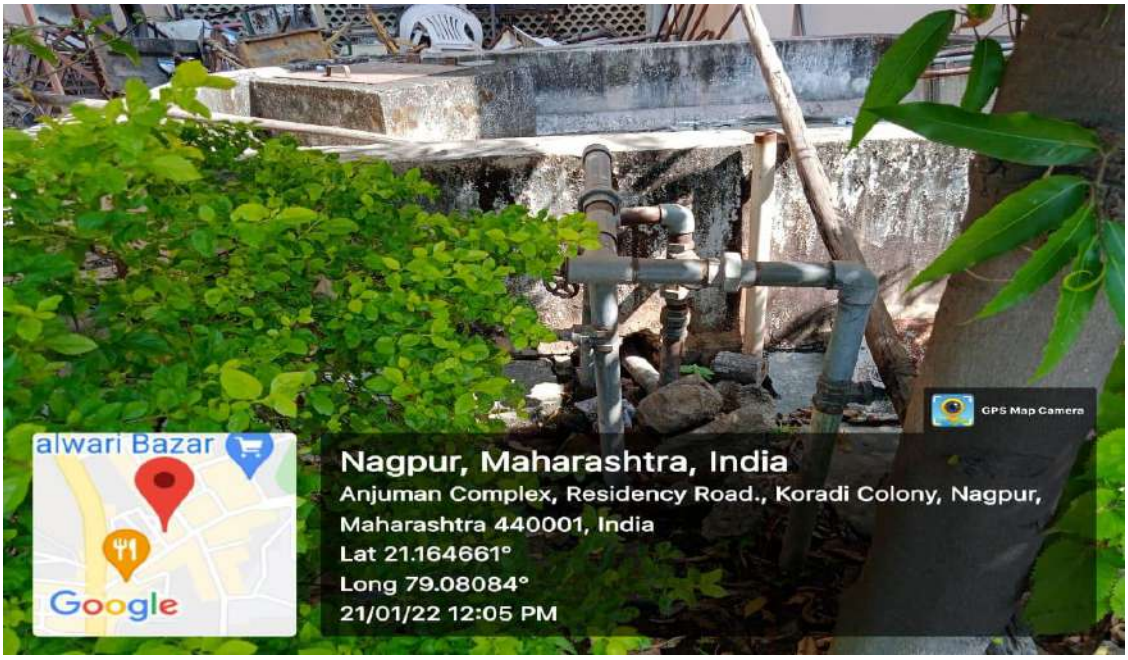
1. Rain water harvesting pipes
2. Open well
3. Concealed tanks
4. Maintenance of water bodies and distribution system in the campus

1) RAIN WATER HARVASTING PIPES (Pipes from roof top)[Ground floor Vehicle Parking Area]

2) RAIN WATER HARVASTING PIPES WITH FILTER ATTACHED(Pipes from Roof Top of First year building)

ROOF TOP RAIN WATER GET FILTERS BEFORE ITS TRANSIENT INTO OPEN WELL (From Roof Top of First year building)

3) CONSEALED OPEN WELL (Besides first year building)



4) CONSEALED WATER TANK (Besides main building)

5) PUMP HOUSE FOR WATER DISTRIBUTION(Besides first year building)

Recommendations:

The team of Auditors commends the College administration for the good practices in conserving water such as regular plumbing services, regulating the water flow from top and some of the flushes are switched to water efficient flushes. There is willingness to explore the option of Waste Water Treatment thus the (plant based) recycled water can be utilized for the toilet flushing and gardening if it is implemented successfully and the option for collecting the rainwater possibly in syntax tanks as a precaution for the disaster preparedness. As it is not possible to estimate the exact quantity of water used by different departments, however the highest consumption of water is most likely happening in toilets, hostels, canteen, and in chemical lab in view of the escalation of water scarcity in the region team recommend basic steps be carried out to optimize the water utilization at the college level, which will also contribute to reducing the related expense:

I. Putting up notices in all washrooms and near all water coolers about the need for saving water, and simple tips like ensuring all the taps are properly closed, leakages are immediately brought to the notice of the management, respective floor cleaning staff

could be given the responsibility to keep a check on every floor if any taps are open or leaking.

II. Training to the cleaners in economical use of water for cleaning purposes and a system in place for immediate response when issues of water leakage are observed so that water losses are prevented.

III. It was observed that the drinking water coolers are generally placed near washrooms; if possible drinking water coolers could be shifted to other places for aesthetic and hygiene point of view. d. Regular monitoring of tank (which will be provided for firefighting) to avoid any last moment inconvenience during any fire hazards.

IV. Need of monitoring, controlling overflow is essential and periodically supervision drills should be arranged. In campus small scale/medium scale/ large scale reuse and recycle of water system is necessary.

V. Minimize wastage of water and use of electricity during water filtration process, if used, such as RO filtration (Drinking Water) process and ensure that the equipment's used for such usage are regularly serviced and the wastage of water is not below the industry average for such equipment's used in similar capacity.

VI. Ensure that all cleaning products used by college staff have a minimal detrimental impact on the environment, i.e. are biodegradable and non-toxic, even where this exceeds the Control of Substances Hazardous to Health (COSHH) regulations.

VII. Electrical fittings and plumbing kept in proper condition to prevent electricity leakage and water dripping. All water taps to be checked for its leakage particularly in toilet (Hostels).

VIII. Identification of areas to be carried out such as compost making area, water harvesting tank, bore well used for water harvesting purpose, bore well used for consumable purpose, parking area of staff, students, hazard area etc.

IX. Water meter to be installed in both the bore well available in the college and daily monitoring and record of water used to be kept as per the following;

X. Cleaning schedule of water purifier to be made and followed.

XI. Water consumption of the college to be monitored and graphs/table to be prepared.

XII. Cleaning of overheads tanks to be done on regular basis.

XIII. Flow control valve to be installed at two overhead water tanks.

XIV. Rain water harvesting to be carried out by taking proper step and guidelines.

XV. Install low-flow fixtures in the toilets or in hostels.

XVI. Aerate your lawn/ Empty land to maximize the water soaking.

XVII. Use waste water for watering plants.

XVIII. Educate stakeholders about importance of water

Rain Water Harvesting:

Possibilities for the storage of rain water is also under consideration by the College which can be utilized as fire extinguisher, gardening purpose, primary treatment is required for the same needs to provide as a project to civil department student till then there is No rain water harvesting units in the premises for storing and reuse of water.

College has a provision to use the rain water for gardening purposed directly.

Rain Water Harvesting Structures details with Photographs

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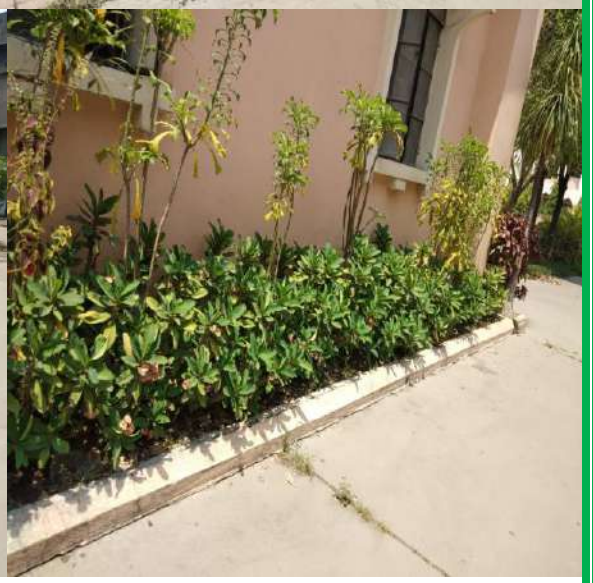


Energy Use and Conservation:

This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliance, natural gas and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment. The college primarily uses energy in the form of electricity provided by Distribution Centre. A proper analysis of energy consumption, we need to understand the electricity consumption over at least one academic year, and ideally three previous years. Major use of the energy is at office and laboratories for lighting, practical and laboratory work. This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliance, natural gas and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment

Observations:

Equipments like Computers are used with power saving mode. Also, campus administration runs switch –off drill on regular basis.

Kitchen is equipped with heavy ovens and refrigerator also has one heavy duty washing machine for laundry purpose. Solar system is installed for heating the water used in the hostels.

In all sections of campus lecture rooms, office rooms, laboratories etc are spacious voluminous and airy, having proper natural light and ventilation. Hence actual requirement energy consumption in lightening is minimal. The air conditioners in the management chamber or in Principal Chamber are rarely used and avoiding unnecessary use of the same is a part of the green

practice in the College. It is required to monitor and measure the electricity consumption and monthly basis and graph/ table to be prepared.

Besides this, **solar system is also installed in the campus for very limited capacity as an alternate renewable source of energy, It is suggested to enhance the capacity with plan and regular interval so that college become energy producer rather than user only.** Equipments like Computers are used with power saving mode. Also, campus administration runs switch –off drill on regular basis.

It is required to monitor and measure the electricity consumption and monthly basis and graph/ table to be prepared.

- Total Energy consumption for last 3 years

Sr. No.	19-20	20-21	21-22	22-23
Electrical Consumption (Solar + MSEB)	-	-	1,33,343	1,48,551

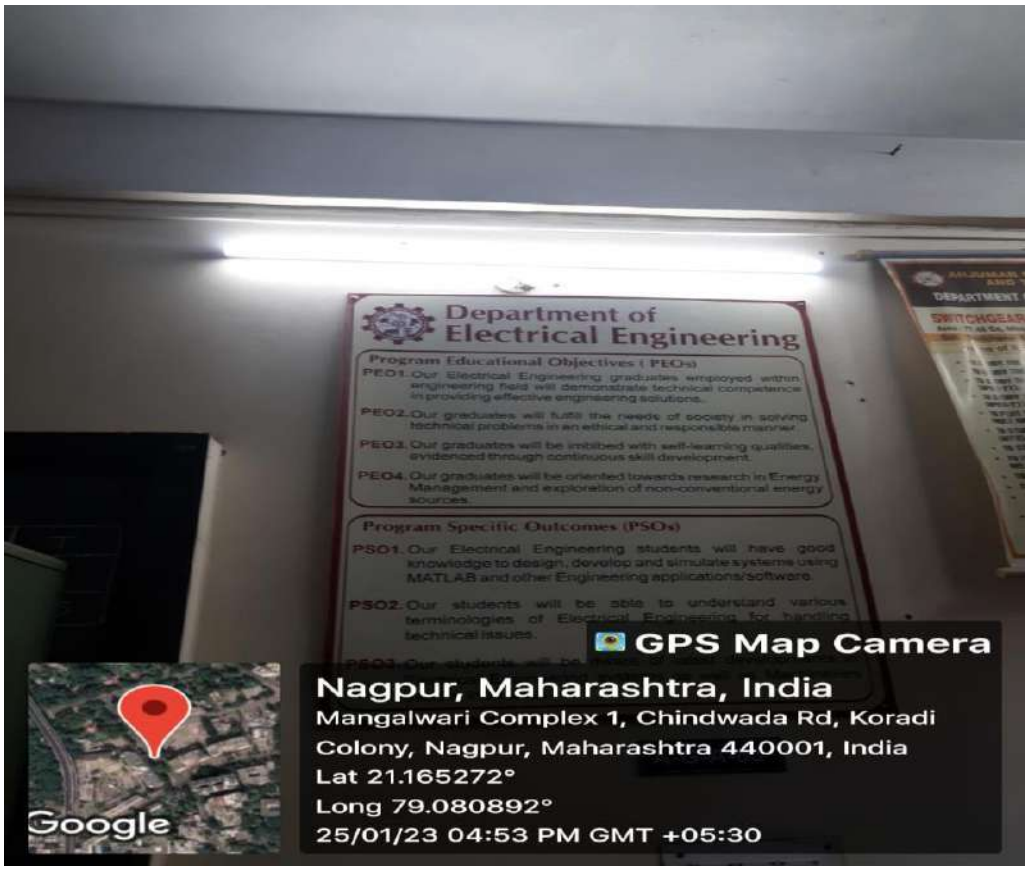
Electrical Bills for last 12 months

Month	March 2022	Apr 2022	May 2022	June 2022	July 2022	Aug 2022	Sept 2022	Oct 2022	Nov 2022	Dec 2022	Jan 2023	Feb 2023	Mar 2023
Electrical Bill (Units)	1316	1856	2138	3589	3295	1008	1669	1110	1186	1423	1212	1113	1537
Amount (Rs)	54,959	61,384	67,119	86,140	79,693	90,944	60,161	52,493	53,641	57,358	54,023	52,785	58,95

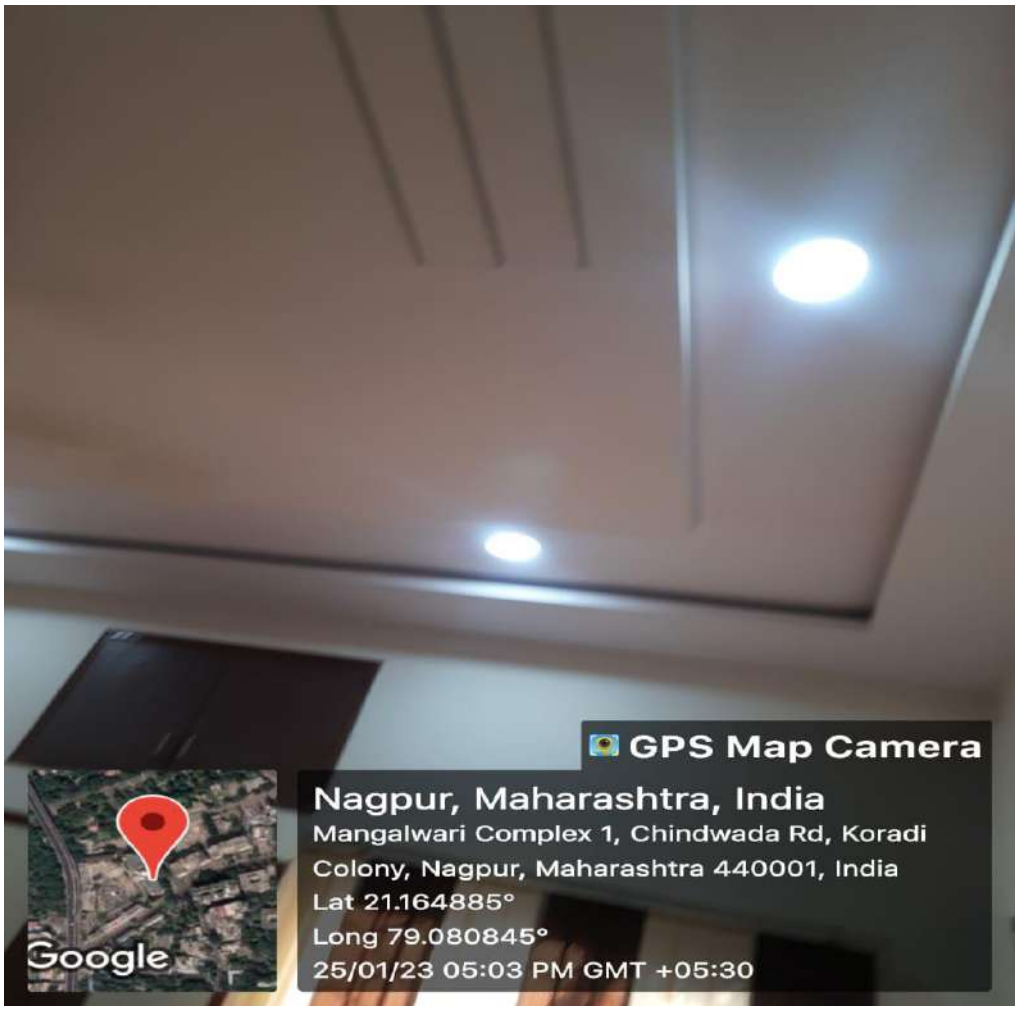
Energy meter installed at basement. No facility of energy consumption at building/department wise.

- Electrical energy consumption per day for institute.407 Units/Day

% of LED lamps of total lightning of the campus. 15%.



LED Tube light



- Does institute have policy to procure BEE approved, 5 star Rating energy devices/instruments/utilities: No
- Details of En. Consuming devices/utilities used in institute

Sr.No	Utility	Quantity/Nos.
1.	Split AC	10
2.	Window AC	04
3.	LED Light	121
4.	Tube light (other than LED)	685
5.	Cooler	40
6.	Fan	422
7.	Laptop	06
8.	Desktop LED	523

9.	Desktop Tube type	161
10.	Water cooler	05
11.	Street light (write type)	06
12.	Printer	37
13.	Projector	39

- Does institute of centralize Air conditioning system. If yes, capacity? NO
- Has annual maintenance contract been given or is preventive maintenance plan is available for ACs. NO.
- List of major consuming equipments/ devices lab instrument in institute? YES
- Are safety precautions like earthings , checking of earth resistance, 3 pin plug with details. YES
- Capacity: 100KVA.
- 

- Total running Hr/Year: Very Less use.
- Total energy use by generator: -

- PUC testing: - To be done.
- Electrical testing: -To be done.

Solar Installations:

- No. of solar panels installed? 289.

- Capacity? 395 Total Capacity = 100KW

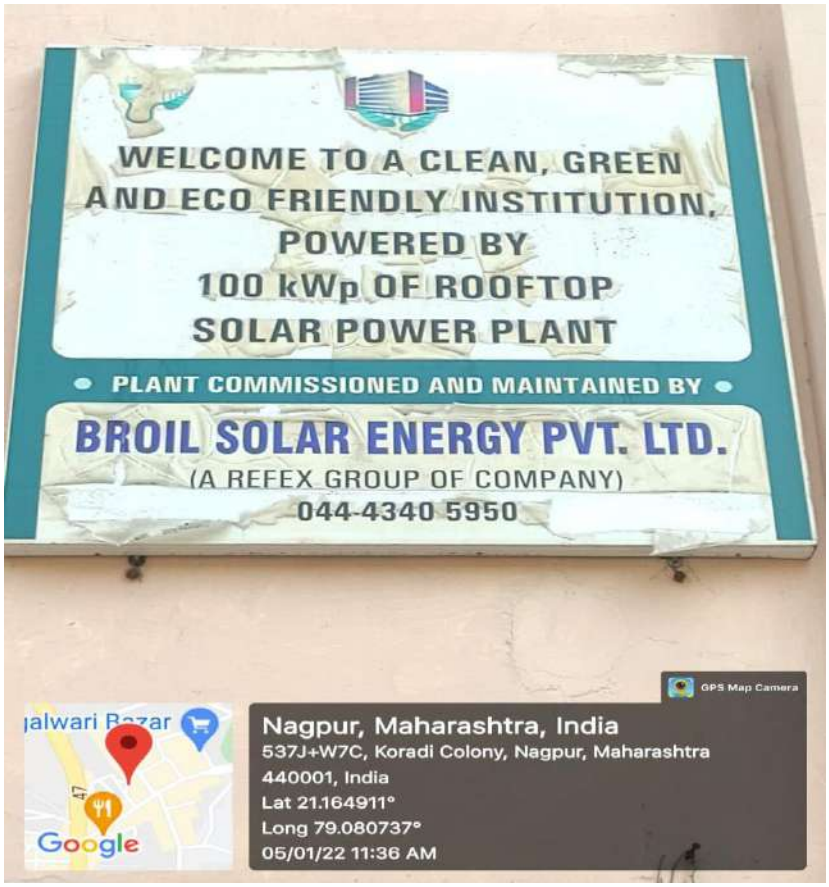
- Amount of energy generated through solar? Approx 380 units

- Amount of solar energy utilization against total energy requirements/year.

380/407= 93.36%

- Energy done by Institute to reduce electrical energy consumption:-
- Plan for expanding total energy use:-

Solar Panel of 100 KVA



Solar Lighting

Following simple ways to reduce electricity consumption one must follow:

1. Don't Leave Electronic Appliances On Standby Mode: It is a common tendency among the people to switch off their electrical appliances using the remote, leaving them on standby mode. They fail to realize that the device is still consuming 85% of electricity energy and wasting the valuable energy reserve. Instead, by switching off the main power button or by unplugging the socket, they can make a commendable contribution in saving electricity energy.
2. Lighting: The traditional bulbs and tube lights consume a large amount of electricity energy, making a contribution of almost 10 to 15 percent in the electricity bill. In lieu of these outdated bulbs, one must prefer purchasing an energy saving bulb and the fluorescent tubes that glows brightly without consuming more energy.
3. Bring Solar Garden Lights: To lighten your garden and add grace to its look, one can easily bring the highly efficient solar garden lights as they do not entail you to dig trenches or set up wiring connections. Users can easily arrange these fitting anywhere

they desire and highlight the dark areas of their gardens. These lights get charged up during the day and illuminate the garden at night.

4. Check out The Energy Star Label: While purchasing electronic appliances like air conditioner, refrigerator, microwave and other household appliances, one must make sure that the appliance has an energy star label on it that can help to cut almost 30 percent of the electricity bills.
5. If possible replacement of conventional electric appliance with BEE approve energy saving equipments/appliances.

Recommendations:

1. Energy source utilized by all the departments and common facility center is electricity only. It is required to monitor and measure the electricity consumption and monthly basis and graph/ table to be prepared.
2. List of equipment (Oven, Fridge, Electric Instruments/Machineries, air conditions, Water cooler- (centralized), heaters etc.) with capacity to be prepared.
3. All electrical loose wire to be dressed up properly.
4. Electrical Earthing of the college to be checked regularly.
5. Awareness for the use of electricity and paper to be developed in the college.
6. Instruction such as all electrical appliances (lights/fans/AC) shall be switched off when not in use or at the end of the day to be displayed.
7. College takes steps to purchase/replace conventional electric appliance with BEE approve energy saving equipments/appliances ie. with low energy consumptions with maximum star ratings.
8. College has to replace resistance regulators with electronic regulators, CRT monitors with LED monitors and DOT matrix printers with Deskjet printer.
9. Use of Diesel generator (50KW) to be avoided (to reduce the consumption of oil).
10. Enhanced renewable energy source capacity.
11. The display of the instruction boards/to be displayed on each classrooms/ lab for switching of the fans and lights when not required.
12. Switching to star rating electric appliances in phase wise manner.

Waste Generation

This indicator addresses waste production and disposal of different wastes like paper, food, plastic, biodegradable, construction, glass, dust etc. and recycling. Furthermore, solid waste often includes wasted material resources that could otherwise be channeled into better service through recycling, repair, and reuse. Solid waste generation and management is a burning issue. Unscientific handling of solid waste can create threats to everyone. The survey focused on volume, type and current management practice of solid waste generated in the campus. The different solid wastes collected as mentioned above.

Observations:

For Plastic and waste generated in the college there is a provision to dispose the same with waste collection vehicle on daily basis under the swatch Bharat Abhyaan.

Also college encourage their staff and students for using the plastic bags of more than 50 micron or use clothes bags or paper bags makes with the waste paper through awareness training.

The total solid waste collected in the campus is approximately 2-3 Kg/day. Waste generation from tree droppings and lawn management is a major solid waste generated in the campus. The waste is segregated at source by providing separate dustbins for Bio-degradable and Plastic waste. Single sided used papers reused for writing and printing in all departments. Important and confidential reports/ papers are sent for pulping and recycling after completion of their preservation period. Very less plastic waste (0.1Kg/day) is generated by some departments, office, garden etc but it is neither categorized at point source nor sent for recycling. Metal waste and wooden waste is stored and given to authorized scrap agents for further processing. Few glass bottles are reused in the laboratories. The food waste from main kitchen & rooms/dining area/ Labs is used or sent for **vermicomposting.** The institute has adopted **vermiculture composting in four plastic drums used for the purpose.** The main purpose of this is to reduce disposable waste in the college campus.

Recommendations:

I. Reduce the absolute amount of waste that it produces from college staff offices.
II. Make full use of all recycling facilities provided by City Municipality and private suppliers, including glass, cans, white, colour and brown paper, plastic bottles, batteries, print cartridges, cardboard and furniture.
III. Provide sufficient, accessible and well-publicized collection points for recyclable waste, with responsibility for recycling clearly allocated.
IV. Single sided papers to be used for writing and photocopy
V. Important and confidential papers after their validity to be sent for pulping.

VI. Solid garbage (building debris, unused building materials is to be removed from the college campus.

VII. Waste paper, iron waste to be sold to vendor used for recycling.

VIII. Different types of bins to be made available in the cafeteria particularly for dry and wet disposal.

IX. Use of Plastics (Polythene, Thermocole, PVC etc.) is minimized and waste plastics are recyclable.

X. The college building kept clean by washing and cleaning. Waste to be disposed of as per the guideline set.

E-Waste Generation

E-waste can be described as consumer and business electronic equipment that is near or at the end of its useful life. This makes up about 5% of all municipal solid waste worldwide but is much more hazardous than other waste because electronic components contain cadmium, lead, mercury, and Polychlorinated biphenyls (PCBs) that can damage human health and the environment.

Observations:

E-waste generated in the campus is very less in quantity. The cartridges of laser printers are refilled outside the college campus. Administration conducts the awareness Programmes regarding E-waste Management with the help of various departments. The E- waste and defective item from computer laboratory (Library) is being stored properly. The maintenance person taking back the E-waste of college. The quantity of e-waste generated in college is very few.

The institution has to sign MoU with approved E-waste management and disposal facility in order to dispose E-waste in scientific manner.

Recommendations:

1. Recycle or safely dispose of white goods, computers and electrical appliances to be given only to recommended E-Waste Vendor.
2. Always purchase recycled resources where these are both suitable and available.

Green Area:

This includes the plants, greenery and sustainability of the campus to ensure that the buildings conform to green standards This also helps in ensuring that Environmental Policy is enacted, enforced and reviewed using various environmental awareness Programmes.

Observations:

Campus is located in the vicinity of various species of trees. Various tree plantation programs are being organized during the month of July and August at college campus and surrounding villages.. This program helps in encouraging eco-friendly environment which provides pure oxygen within the institute**. The plantation program** includes various types of indigenous species of ornamental and medicinal wild plant species.

Total land area covered by plantation. 3302Sq. Mt

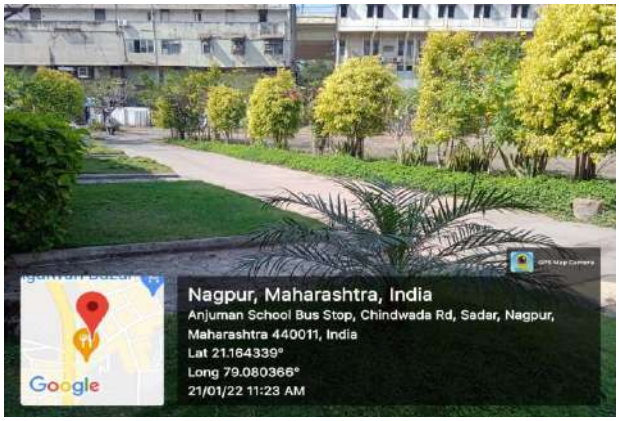
Green campus initiatives

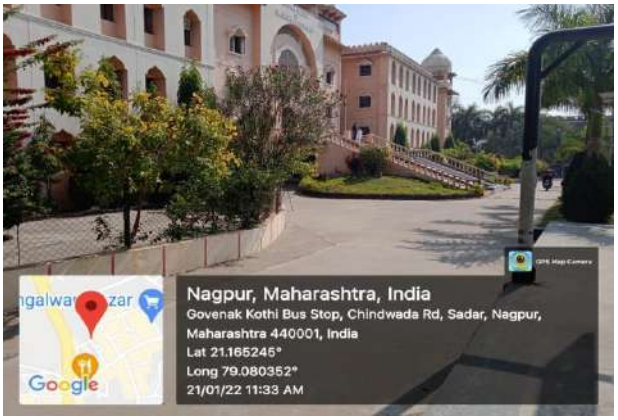
1) Use of Bicycles
2) Pedestrian Friendly pathways
3) Ban on use of Plastic
4) Landscaping with trees and plants

1) Use of Bicycles

USE OF BICYCLES

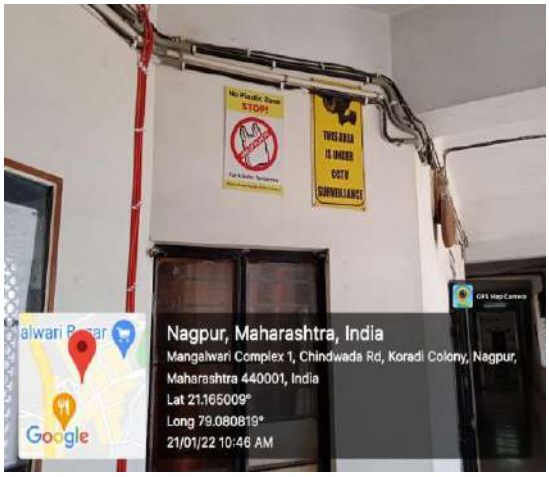
2) Pedestrian Friendly pathways from front gate to first year building





PEDESTRIAN FRIENDLY PATHWAY

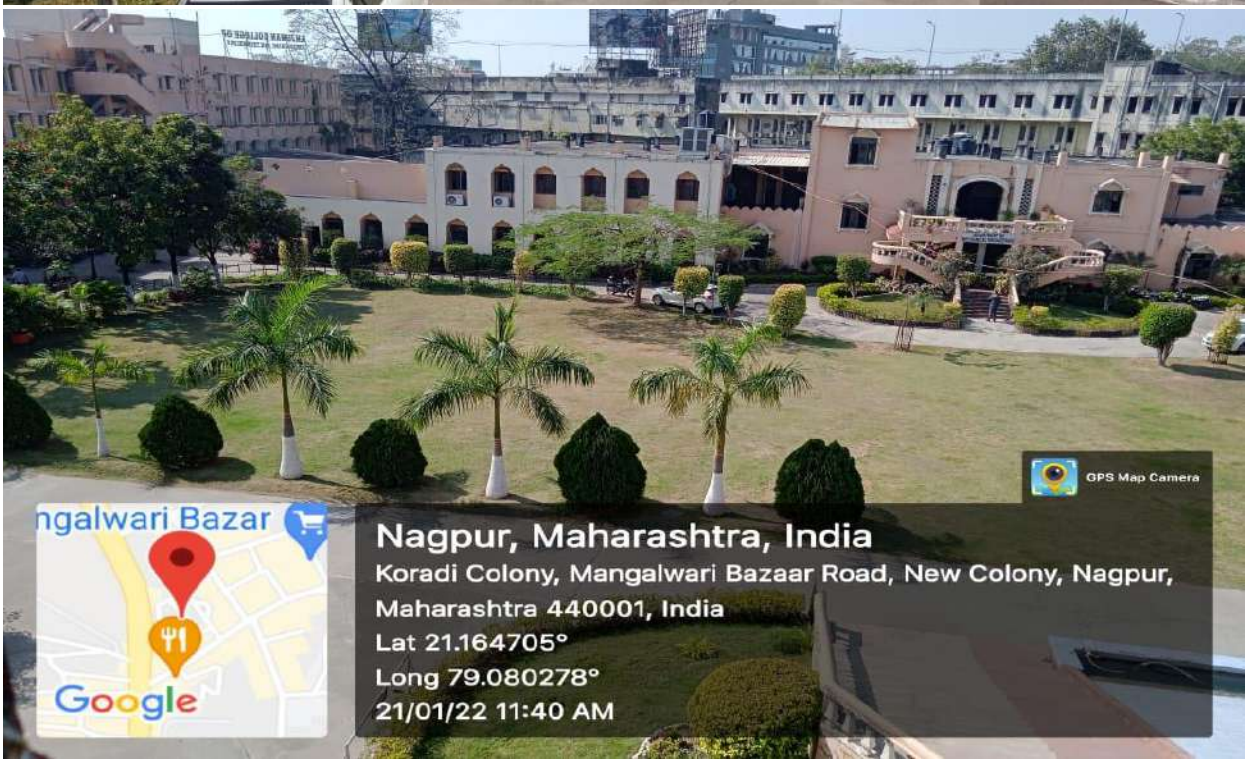
3) Ban on use of Plastic



NO TO PLASTIC, SAVE ENVIRONMENT

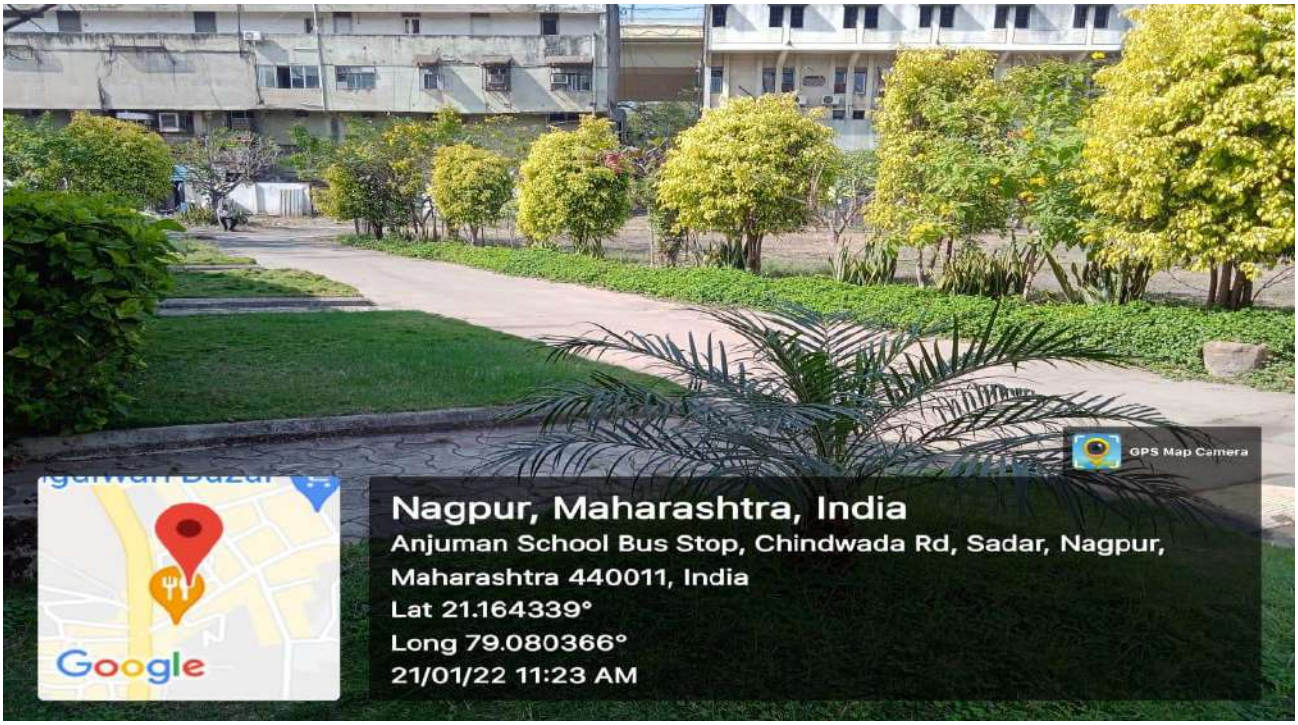
4) Landscaping with trees and plants

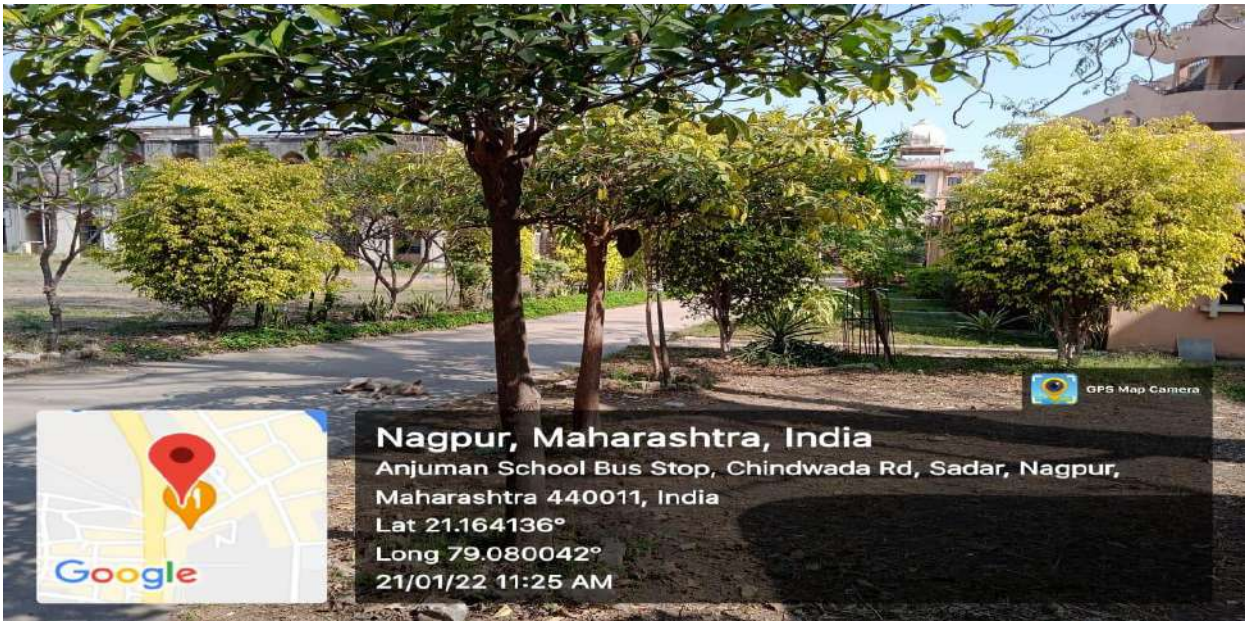
a) Landscaping with trees



LANDSCAPING WITH TREES

b) Landscaping with plants




GPS Map Camera
Nagpur, Maharashtra, India
Anjuman School Bus Stop, Chindwada Rd, Sadar, Nagpur,
Maharashtra 440011, India
Lat 21.164136°
Long 79.080042°
21/01/22 11:25 AM
Google


GPS Map Camera
Nagpur, Maharashtra, India
Anjuman School Bus Stop, Chindwada Rd, Sadar, Nagpur,
Maharashtra 440011, India
Lat 21.164265°
Long 79.080121°
21/01/22 11:27 AM
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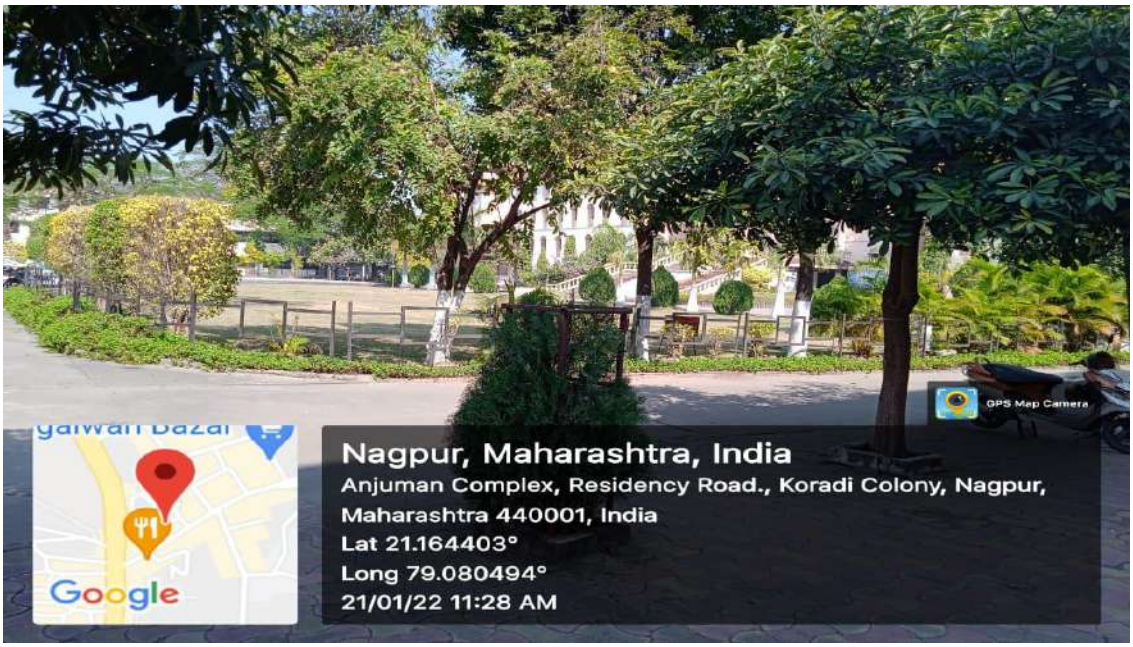

c) LANDSCAPING WITH TREES &PLANTS

ANJUMAN COLLEGE OF ENGINEERING & TECHNOLOGY

Mangalwari Bazar Road, Sadar, Nagpur-440001.

ACADEMIC YEAR 2021-22

Name of Event: CATCH THE RAIN	**Date of Event**: 08/08/21
Name of Organizers: NSS, ACET	**Duration of Event;: 1 Hrs**
Name of Coordinators: Dr. Zakir Khan	**Place of Event**: ACET CAMPUS GROUND ,, ACET

REPORT

"CATCH THE RAIN SEMINAR and Online Webinar AT ACET"

National Service Scheme unit of Anjuman College of Engineering & Technology organizing **"CATCH THE RAIN" Webinar Sunday, on 8th August, 2021 at 11:00 AM** on Zoom Meeting or at College Basketball Court for ACET Teaching & Non-Teaching Staff Members & Students.

To make aware and educate Youth Leaders and NSS Volunteers ,families and Village communities on issue and need of water conservation and rain water harvesting . To empower youth to assume lead role for educating people to practice Rainwater"Harvesting" and popularize tagline "Catch the Rain, Where it falls, when it falls"

Sir you are requested to give permission for ACET NSS virtually organize **"CATCH THE RAIN" Webinar** on ZOOM MEET, and please provide faculty for Technical support to organize on ZOOM Meet .

The Staff and Student of Anjuman college of Engineering &Technology, participated in the noble cause.

Dr. Zakir S. Khan, ACET-NSS Program officer along with the all NSS Volunteers organizing committee worked under the supervision of **Dr. S. M. Ali Sir** for the success of **"CATCH THE RAIN" event.**

Dr. Zakir S. Khan
Program Officer,ACET

Dr. S. M. Ali
Principal, ACET

College don't have owned vehicles that will emit CO2.

- **Institute has carried out environment testing? Air, Water, Soil. Share test report.**
- Is institute having ISO14001:2015 certification? No
- No. of subjects offered related to environment management. 2 (Civil Engg) + 1 Open Elective for other branches..
- Is environment preservation, protection part of curricular for each branch? As open Elective (Environment Engineering)
- Is green technology used for energy conservation?

Yes 1. Solar Panels 2. Rainwater harvesting

- No. of lectures/seminars/conference conducted for energy conservation sustainable development? 1 No.
- How is environment awareness and consciousness built amongst the faculty members and students? Seminar, Guest lectures, Conference display
- What are top priorities of institute for inspiring green environment campus of institute? Solar panels, Tree plantation, Dustbins, etc
- Is water quality testing carried out? Yes
- Are water taps filled with high efficiency aerator taps to reduce wastages of water? Yes
- Are washrooms fitted with digital water flows for saving water? If yes, what is the Percentage? Yes. But limited.
- Are Separate dust-bin use to collect the waste? Yes

GEEn Improvements carried out in college :

1. √ Energy saving initiatives carried out by institute and energy consumption reduced
2. √ Environment improvement initiatives
3. Energy/Environment awareness programmes for 1.staff, 2. Students
4. Corporate Social Responsibility programmes undertaken
5. Vermi compost/Biogas system
6. Medicinal trees, Pollution control plantation
7. Reusable Water Bottles
8. √ Reusable water
9. √ Ban on single use plastic
10. Researches carried out (Energy .saving/Environment.)

11. √ Rain water harvesting
12. √ Green building initiatives
13. √ Provision & Use of bicycles in campus
14. Procurement of 5 star energy efficient devices/instruments
15. √ Displays
16. √ List of books/ papers published by faculties/students related to Green/ Environment/ Energy saving/conservation.

Sr.No.	Paper/Book Published topic	Author (Faculty/Student)	Year of Publication	Journal/Publishing Agency/Publisher

17. List of researches by faculties/students related to Green/ Environment/ Energy saving/conservation.

Sr.No.	Research	Carried out by: Faculty/Student	Year of Research	Highlights/Publication
1.	Resource Efficinet structure by Green Concrete		2020	IJSRST

18. Professional/National/International tie-ups related to Green/Environment/Energy initiatives. CSR activities etc.(If any)

Recommendations

1. Reviews periodically the list of trees planted in the garden, allot numbers to the trees and keep records. Give scientific names to the trees.
2. Promote environmental awareness as a part of course work in various curricular areas, independent research projects, and community service. Create awareness of environmental sustainability and takes actions to ensure environmental sustainability.
3. Establish a College Environmental Committee that will hold responsibility for the enactment, enforcement and review of the Environmental Policy. The Environmental

Committee shall be the source of advice and guidance to staff and students on how to implement this Policy.

4. Ensure that an audit is conducted annually and action is taken on the basis of audit report, recommendation and findings.
5. **Celebrate every year 5th June as 'Environment Day' and plant trees on this day to make the campus more Green.**
6. It is necessary to increase their land under vegetation, since there is lots of scope.
7. Plantation of some medicinal trees to be done in the premises such as neem, aloevera, Tulsi, eucalyptus, arjun etc.

Some Other Recommendations:

1. Environmental Policy and Objectives to be defined displayed at prominent Location and make the staff and student aware of it.
2. Developed Environmental manual in line with ISO 14001:2015.
3. Developed policies such as "No Tobacco Zone", "Plastic Ban premises", "Zero Water Leakage" etc.
4. Save environment related poster to be displayed everywhere in the college.
5. Use of electricity related awareness amongst the staff and student to be enhanced by displaying the poster.
6. Identification of areas to be carried out such as Canteen, Waste Collecting area, Water Cooler, DG Set, Garden Area etc.
7. College shall strongly ban the use of plastic bag.
8. Environmental committee to be formed which may include the students of various departments, teaching, non-teaching staff and if possible some local interested people.
9. Separate container to be provided for sanitary napkin disposal.
10. Use of tobacco, smoking or chewing in campus shall be banned and instruction to be displayed at various places.
11. Cafeteria shall have proper food licence from the competent authority.
12. Person working in the cafeteria shall have proper medical check-up certificate.
13. College takes the step to sensitize the students and staff for the environment, energy conservation, and pollution hazard.
14. Pollution certificate of vehicles entering into the college to be ensured.

15. Cover the one of the well situated in front of the reception of the college.
16. DG set license to be made available. Get tested its emission and noise. Record of use of DG set to be maintained.
17. Air quality index to be tested periodically from recognized lab.
18. Water quality to be tested for its portability from recognized lab.
19. Consumption of cooking gas to be reduced and quantified.
20. Capacities of air coolers available in the college premises with details of their capacity to be enlisted.
21. List of equipments available in the colleges with their electrical consumption details to be prepared.
22. Student awareness to be enhanced for green environment and also for disposal of e-waste.
23. Training related to GEEn Audit /ISO 14001:2015 to be provided to college staff, students, non-teaching staff etc.
24. Different types of bins to be made available in the cafeteria particularly for dry and wet disposal.
25. List of Major equipment with energy consumed to be prepared.
26. Total quantity of oil consumed per month for DG set to be calculated.
27. Record of water consumed to be made available day wise.
28. Energy consumed per month to be distinguished and keep the record of it.
29. No. of plantation done year wise and total survival rate to be maintained.
30. Replacement of Old conventional fan with BLDC Fan in phase vise
31. Earth pit resistance to be measured once in a year.
32. All the bikes in premises must have PUC

Conclusions:

Considering the fact that the institution is predominantly an undergraduate college, there is significant environmental research both by faculty and students. The environmental awareness initiatives are substantial. The installation of solar panels, paperless work system and composting and water harvesting activities are practiced. Besides, environmental awareness Programmes initiated by the administration shows how the campus is going green. Few recommendations are added to curb the menace of waste management using ecofriendly and scientific techniques. This

may lead to the prosperous future in context of Green Campus & thus sustainable environment and community development.

As part of GEEn Audit of campus, we carried out the environmental monitoring of campus. It was observed that Illumination and Ventilation is adequate considering natural light and air velocity present. The college needs to provide the training to the teaching, non-teaching staff, students to maintain the green culture in the premises and day to day life of the individual.

Its Beginning……