Adsul's Technical Campus

NAAC Criteria VII

7.1.3 Quality audits on environment and energy regularly undertaken by the Institution.

Previous Years Green Audit Reports

GREEN AUDIT

REPORT (2021-22)

for

Adsul's Technical Campus

Chas, Ahmednagar- 414005.

Phone no-(0241)2570425

Prepared by

Supreme Electrical Energy and Consultancy Services, LLP, Pune.

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Preface

We are very grateful to the Management and Principal of "Adsul's Technical Campus Chas, Ahmednagar Campus" for giving us an opportunity to carry out Green Audit of the institute. Further, we sincerely thank to all other college staff for providing us necessary facilities, required data and co-operation during the whole Green Audit. This helped us to complete the Green Audit successfully.

Further we hope, this will boost the new generation to create healthy environment in the campus and propagate these views for many generations to come.

Dr. Sanjay A. Deokar
BEE Certified Energy Auditor (EA- 4494)
Indian Green Building Council (AP, ID: AA02EEHE)
Environmental Lead Auditor (ISO:14001-2015)

SUPREME
Electrical Energy and Consultancy Services

CERTIFICATE

This is to certify that "Supreme Electrical Energy and Consultancy Services, LLP", Pune has conducted **Green Audit** of **"Adsul's, Technical Campus, Chas, Ahmednagar-414005"** Campus. It has been observed that the campus not only have implemented various Green measures in the campus for wellbeing of staff and students in the campus but also has separate Green policy of the campus which helps to maintain healthy environmental balance.

Dr. Sanjay A. Deokar
Indian Green Building Council(IGBC)
Accredited Professional
(ID:AA02EEHE)

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Table of Contents

1. Executive Summary

The rapid urbanization and economic development at local, regional and global level has led to various environmental crises which affected the environment very badly. Hence in order to make world environment friendly during development process there is a need to have a Green Campus Policy for the institute.

A clean and healthy environment aids effective learning and provides a conducive learning environment. Educational institutions now a day are becoming more sensitive to environmental factors and more concepts are being introduced to make them eco-friendly. To preserve the environment within the campus, various viewpoints are applied by the several educational institutes to solve their environmental problems such as promotion of the energy savings, recycle of waste, water reduction, water harvesting etc. The activities pursued by colleges can also create a variety of adverse environmental impacts. Environmental auditing is a process whereby an organization's environmental performance is tested against its environmental policies and objectives. Green audit is defined as an official examination of the effects a college has on the environment. As a part of such practice, Green Audit is conducted to evaluate the actual scenario at the campus.

Green audit can be a useful tool for an Institute to determine how and where they are using the most energy or water or resources; the college can then consider how to implement changes and make savings. It can also be used to determine the type and volume of waste, which can be used for a recycling project or to improve waste minimization plan. Green auditing and the implementation of mitigation measures is a win-win situation for the entire institute, the learners and the planet. It can also create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Green impact on campus. Green auditing promotes financial savings through reduction of resource use. It gives an opportunity for the development of ownership, personal and social responsibility for the as environmental sustainability is becoming an increasingly important issue for the nation, and the role of higher educational institutions in relation to environmental sustainability is more prevalent.

Adsul's Technical Campus, Chas, Ahmednagar is deeply concerned about the problem of global warming and environmental hazards due to development and urbanization. Thus the college has taken steps to make campus green by conducting green audit.

The baseline data prepared for the Adsul's Technical, Chas, Ahmednagar will be a useful tool for campus greening, resource management, planning of future projects, and a document for implementation of sustainable development of the college. Existing data will allow the college to compare its programs and operations with those of peer institutions, identify areas in need of improvement, and prioritize the implementation of future projects. We expect that the management will be committed to implement the green audit recommendations to promote environment protection and sustainability.

We are happy to submit this green audit report Adsul's Technical Campus, Chas, Ahmednagar authorities.

2. About the College

The Adsul's group of Institution has established in the year 2010 – 11. The Institution is run by the Sakeshwar Gramin Vikas Seva Sanstha established on 24th September 2004 to promote the noble cause of education. The founder member & president of this Sanstha is Hon. Prof. Anirudha Manik Adsul.

The college is equipped with state of art infrastructural facilities like advanced classrooms, laboratories with high end equipment's, updated library, playground, gymnasium and auditorium.

At present institute has total 69 teaching faculties. Out of these, there are 38 males and 31 females. There are 65 non-teaching faculties which includes 36 males and 29 females. Total students are 1208 which includes 953 males and 243 females. Total buildup area of the building is 12323 Sq. M. and green area in the campus is 4446 Sq. M.

At present Adsul Technical Campus, Ahmednagar is offering various Diploma, Undergraduate (B.E) and Post Graduate program (M.B.A). It is my pleasure to introduce one of the best technological Institutes of Maharashtra.

The vision of college is to create value based employable engineers and professionals for catering the needs of industries and society.

The vision of college is

- To provide training on latest technology and to improve industry-institute interaction to make highly competent professionals.
- To provide required facilities at affordable expenses to cater the needs of economically weaker section of society.
- To create holistic atmosphere to inculcate basic human values, right attitude and knowledge for overall development of student and staff.
- To provide all possible support to promote research and Development activities.

3. Objectives of Study

The main objective of the green audit is to promote the Environment Management and Conservation in the College Campus. The purpose of the audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green Audit are:

1) To introduce and aware students to real concerns of environment and its sustainability

2) To secure the environment and cut down the threats posed to human health by analyzing the pattern and extent of resource use on the campus.

3) To establish a baseline data to assess future sustainability by avoiding the interruptions in environment that are more difficult to handle and their corrections requires high cost.

4) To bring out a status report on environmental compliance.

5) To identify, quantify, describe and prioritize framework of environment sustainability in compliance with the applicable regulations, policies and standards.

4. Methodology

In order to perform green audit, the methodology includes different tools such as preparation of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. The study covered the following areas to summarize the present status of environment management in the campus:

- Water management
- Energy Conservation
- Waste management
- Green area management

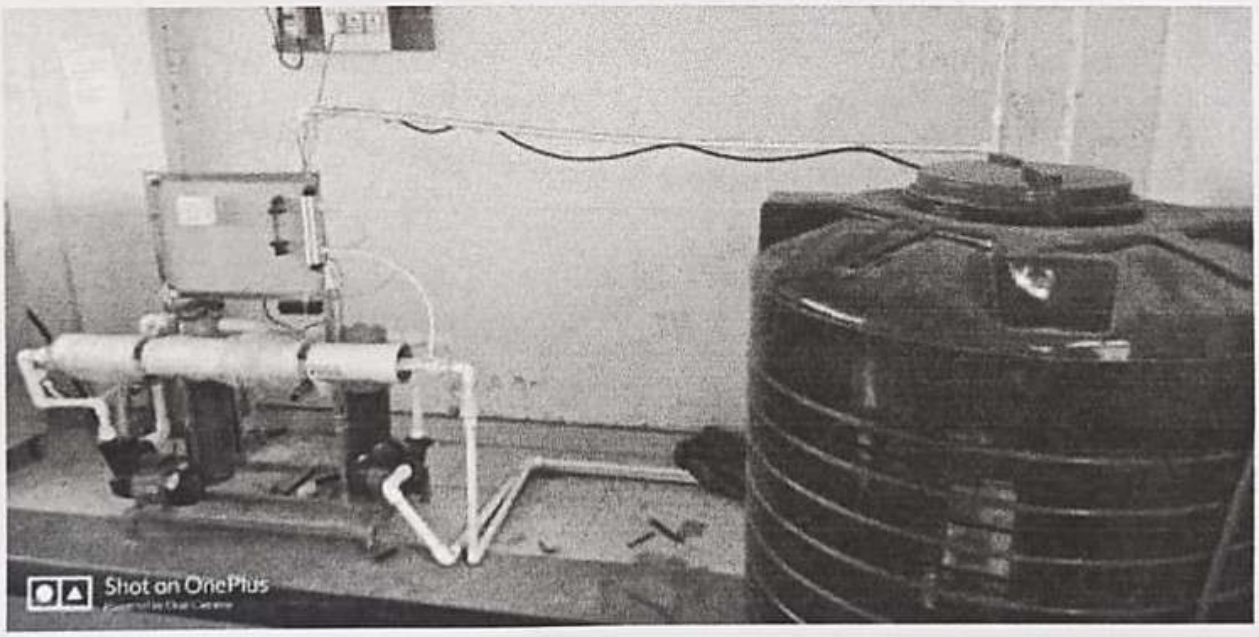
5. Observations and Recommendations

5.1 Water Use

This point towards level of water consumption, types of water sources, water storage strategies, water appliances and fixtures. A water audit is an on-site survey and assessment to determine the water use and hence improving the efficiency of its use.

a) Observations

The study observed that well and bore well are the two major sources of water. The bore wells and Jack well is used for drinking purpose. There is provision of underground storage tank of 90,000 liters and overhead storage tanks of 52,000 liters' capacity on terrace. It has been observed that RO plant is installed in the campus. Liquid waste from the points of generation like the canteen and toilet etc. is let out as effluent into a proper drainage facility and to avoid stagnation. The cleaning is done by internal staff twice in a month. Rainwater from college building terrace is collected through a pipeline and stored in a 50,000-liter tank. This water is used for gardening by using electric pump. Drinking water is tested twice in a year from District Health Center Ahmednagar.



(Waste water treatment plant)

b) Recommendations

- Need of monitoring, controlling overflow is essential and periodically supervision drills should be arranged.
- Minimize water leakage by continuous monitoring of water fixtures in institute and by taking remedial actions on it.
- Water level monitoring & controlling overflow of water is necessary, for this implement automatic water level controller.
- Water efficient fittings & taps to be installed in toilets, bathrooms & dual flush faucets to save water.
- Deploy the pervious paver blocks in the campus to avoid the rain water run-off.

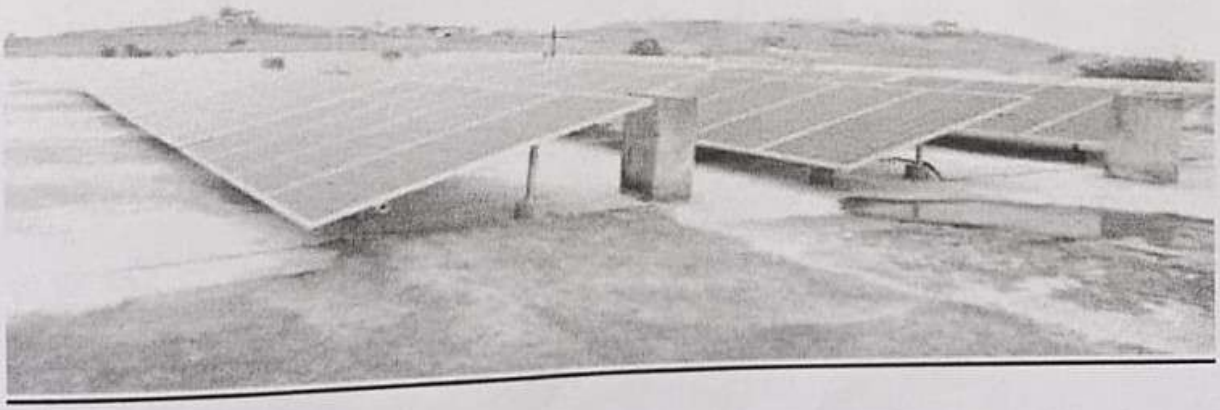
5.2 Energy Use and Conservation

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.

a) Observations

Energy source utilized by all the departments and administrative section is electricity only. Total connected load is determined as 250KW. All the departments and common facility centers are equipped with T12, 40 W tubes. Approximately 250 tubes are counted in survey. The total electricity bill for the year 2021 is Rs.1,62,494.00. The average electricity bill of the campus for the year 2021 is Rs. 13,542.00. The total energy consumption for the year 2021 is 1419 units. The average monthly energy consumption of the campus is 118 kWh(units). In the December:2021 the Billing demand was **14 KVA** and power factor was 0.830. At present connected load of the campus is 250KW including workshop load, electric motor load, lighting load, computer load and UPS Load.

It has been observed that campus has installed 20 KW roof top Solar PV system which genertes 50 units per day which contributes substantially to reduce power consumption from Grid.



(Solar PV Roof Top 20 KW Net Metering System)

b) Recommendations

- Install integrated solar based LED street light (12W/20W/30W) as per requirement. They can be fitted with timers to start & stop them automatically.
- Replace old 36 watt T12 tubes by 18 watt LED tubes.
- Replace old 28 watt T8 tubes and CFL lamps by 18 watt LED tubes.
- Replace the existing ceiling fan (80W) by energy efficient fan (28 W).
- Shut down computer and turn off any lights and appliances if you are the last to leave for the day.
- Use BEE Certified Green Pro / Energy 3 star rated appliances (e.g. Refrigerators, Photocopiers, Printers, Water coolers, UPS, Coffee vending machines, TVs, Fans, and others as appropriate).
- Minimize artificial lighting at least 25% of the regularly occupied spaces during the day. Project can consider strategies like Light pipes, other passive features And / Or Use Motion sensors, daylight sensors in the interior space to cover at least 75% of the regularly occupied areas.
- As far as possible use natural light.
- Enhance energy efficiency in the interior spaces, to optimize energy consumption, thereby reducing environmental impacts.
- Encourage sub-metering and continuous monitoring to implement energy efficiency measures, thereby reducing environmental impacts.

5.3 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 its management is a burning issue. 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.

a) Observations

It is observed that solid waste is the highest source of waste out of total waste generated. Journal papers, Record files are the main sources of solid waste. The solid waste disposal method adopted by institute is that paper is collected in bins and handed over to concerned authority. The waste water generated from college (toilet, bathroom etc.) and canteen is collected in septic tank by using proper pipeline system. For the E waste management several steps were taken by authority such as

1. Old version computers are transferred to the schools run by our education society.
2. All the miscellaneous e-waste such as CDs, batteries, fluorescent bulbs, PCBs and electronic items are collected from every department and office and delivered for safe disposal.
3. Useful parts of electronic gadgets like resistors, capacitors, inductors, diodes, transistors, thermistors etc. have been removed from the gadgets for reuse in practical/projects.

Liquid waste from the points of generation like the canteen and toilet etc. is let out as effluent into a proper drainage facility and to avoid stagnation.

b) Recommendations

- Reduce the absolute amount of waste that is produces from college staff offices.
- Make full use of all recycling facilities provided by City Municipality, local authority and private suppliers, including glass, cans, white, colored and brown paper, plastic bottles, batteries, print cartridges, cardboard and furniture.
- Provide sufficient, accessible and well-publicized collection points for recyclable waste, with responsibility for recycling clearly allocated.

- Encourage the use of green consumables in the interior space that have low impacts on human health and the environment
  1. Source green consumables for the following applications
     - Use of recycled paper for more than 50% requirement of consumption

5.4 Green Area Management

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 the Environmental Policy is enacted, enforced and reviewed using various environmental awareness programs.

a) Observations

Various tree plantation programs are being organized at college campus and surrounding villages and areas by institute. This program helps in encouraging eco-friendly environment which provides pure oxygen within the institute and awareness among villagers. The plantation program includes various types of indigenous species of ornamental and medicinal wild plant species. **The institute campus is provided with adequate amount of plantation and institute has planted 725 indigenous species of 106 types such as Indian neem, Chinch, Nirgil, Badam, Pimpal, Bel, Nim, Shirish, Pone game tree, Jamun trees, Green Eucalyptus, Alstonia,Ashoka tree etc.**

(Greenery and plantation activities in the campus)

b) Recommendations

- 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.
- Ensure that an audit is conducted annually and action is taken on the basis of audit report, recommendation and findings.
- Encourage the use of green consumables in the interior space that have low impacts on human health and the environment
- Provide adequate outdoor air ventilation, so as to avoid pollutants affecting indoor air quality.
- Encourage usage of indoor plants to enhance indoor air quality, thereby improving the health and wellbeing of occupants

5.5 Indoor Environment

a) Observations:

Good indoor environmental quality is essential to the health, happiness and productivity of occupants. It is observed that indoor environment of the institute is moderate. The indoor plant species are not sufficient to create healthy environment. The requirement is to have at least one plant in every 100 sq.ft of carpet area of regularly office spaces. Plants like these help in absorbing toxins like formaldehydes. This can improve the indoor air quality inside the space, besides enhancing the aesthetics. There are several factors which impact the quality of indoor environment such as:

- Access to Day lighting
- Indoor air quality
- Availability of fresh Air
- Thermal Comfort
- Cleanliness and hygiene
- CO2 monitoring
- Ergonomics and Acoustics

- Connection to the outdoor environment

b) Recommendations:

- In Future encourage the use of eco-certified interior products that consider impacts through the life cycle, thereby resulting in lower environmental impacts.
- Provide adequate outdoor air ventilation, so as to avoid pollutants affecting indoor air quality.
- Provide good working environment so as to enhance the productivity and well-being of occupants.
- Minimize the exposure of building occupants and maintenance persons to hazardous indoor and outdoor pollutants, thereby enhancing indoor air quality and occupant health.
- Promote occupant wellbeing so as to enhance physical, emotional and spiritual well-being of building occupants (Staff and students).Encourage use of indoor plants like Bamboo palm/Areca palm, Lady palm, Rubber Plant, Peace Lily, Spider Plant, Money plant, Kentia palm, Queensland Umbrella, Boston fern, Aloe Vera, Snake Plant, Mother in law's tongue, Corn or cornstalk plant which helps to removes air pollutants, removes formaldehydes, benzene, trichloroethylene, removes household chemicals & carcinogens, absorbs carbon dioxide, gives off oxygen, resistance to insects and absorbs VOC.

6. Conclusion

Based on the audit conducted at your campus you are complying with all important requirements of NAAC committee.

Additional points are given to you for further improvements to strengthen environmental system adopted by you. By complying with these points the effectiveness of system will be improved.

GREEN AUDIT REPORT (2018-19)

for

Adsuls Technical Campus
Faculty of Engineering & MBA,
Chas,Ahmednagar , 414005

Prepared by

Supremeelectricalenergy and Consultancy Services LLP

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Address: Vimal Bharati Avenues, Row House No-02, Dhayari, Pune-411041.

Preface

We are grateful to the management and principal of Adsuls Technical Campus Faculty of Engineering & MBA, Chas, Ahmednagar to carry out Green Audit of the institute.

Further we sincerely thank the college staff for providing us necessary facilities, required data and co-operation during the audit. This helped us to make the Green Audit a success.

Further we hope, this will boost the new generation to take care of Environment and propagate these views for many generations to come.

Dr. Sanjay A. Deokar 04/01/2020

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We are happy to submit this green audit report Adsuls Technical Campus Faculty Of Engineering & MBA, Chas, Ahmednagarauthorities.

2. About the College

Given increasing globalization and the need to build a well-rounded personality through experiential learning and a holistic approach, the Adsul's group of Institution was established in 2010 – 11. The Institution is run by the SakeshwarGraminVikasSevaSanstha established on 24th September 2004 to promote the noble cause of education. The founder member & president of this sanstha is Hon. Prof. AnirudhaManikAdsul.

Adsul's Group of Institutions, established in 2011. At present Adsul Technical Campus, Ahmednagar is offering undergraduate program (B.E) and Post graduate program (M.B.A). The institute has state-of-art laboratories, in each department. It is my pleasure to introduce one of the best technological Institutes of Maharashtra, Adsul's Group of Institutions, established in 2011. At present Adsul Technical Campus, Ahmednagar is offering undergraduate program (B.E) and Post graduate program (M.B.A). The institute has state-of-art laboratories, in each department.

The vision of college is to create value based employable Engineers and professionals for catering the needs of Industries and society.

The vision of college is

- To provide training on latest technology and to improve industry-institute interaction to make highly competent professionals.
- To provide required facilities at affordable expenses to cater the needs of economically weaker section of society.
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- To secure the environment and cut down the threats posed to human health by analyzing the pattern and extent of resource use on the campus.
- To establish a baseline data to assess future sustainability by avoiding the interruptions in environment that are more difficult to handle and their corrections requires high cost.
- To bring out a status report on environmental compliance.

4. Methodology

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- Green area management

5. Observations and Recommendations

5.1 Water Use

This point towards level of water consumption, types of water sources, water storage strategies, water appliances and fixtures. A water audit is an on-site survey and assessment to determine the water use and hence improving the efficiency of its use.

a) Observations

The study observed thatborewellsand Jack wellare the two major sources of water. The borewells and Jack wellis used for drinking purpose. There is provision of underground storage tank of 2, 00,000litres and overhead storage tanks of 25,000 litres capacity on terrace. It is observed that RO plant is installed.Liquid waste from the points of generation like the canteen and toilet etc. is let out as effluent into a proper drainage facility and to avoid stagnation. The cleaning is done by internal staff once in a week.

- It has been observed that Rain water harvesting plant is absent in premises.

b) Recommendations

- Need of monitoring, controlling overflow is essential and periodically supervision drills should be arranged.
- Drinking water should be tested twice in a year from external water quality agency.
- Minimize water leakage by continuous monitoring of water fixtures in institute and by taking remedial actions on it.
- Water level monitoring & controlling overflow of water is necessary, for this implement automatic water level controller.
- Water efficient fittings & taps to be installed in toilets, bathrooms & dual flush faucets to save water.
- Try to deploy the pervious paver blocks in the campus to avoid the rain water run-off.
- **Rainwater Harvesting On site:**Occupy a building which has implemented rain water harvesting for at least 35% of runoff from roof areas.
- **Rainwater Harvesting Off-site:** Install rainwater harvesting systems in any Government School orCommunity center to capture at least 35% of run-off from roof areas.

5.2 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.

a) Observations

Energy source utilized by all the departments and administrative section is electricity only. Total connected load is determined as 67 KW. All the departments and common facility centers are equipped with T12 40 W tubes. Approximately 340 tubes are counted in survey. It has been observed that the use of renewable energy sources is absent.

b) Recommendations

- Install integrated solar based LED street light (12W/20W/30W) as per requirement. They can be fitted with timers to start & stop them automatically.
- Replace old 36 watt T12 tubes by 18 watt LED tubes.
- Replace old 28 watt T8 tubes and CFL lamps by 18 watt LED tubes.
- Replace the existing ceiling fan (65W) by energy efficient fan (28 W).
- As the per the government norms, the subsidy is to be provided for the use of renewable energy such as solar PV plant. Try to implement solar PV plant of 10 KW on terrace.
- Shut down computer and turn off any lights and appliances if you are the last to leave for the day.
- Use BEE Certified GreenPro / Energy 3 star rated appliances (e.g. Refrigerators, Photocopiers, Printers, Water coolers, UPS, Coffee vending machines, TVs, Fans, and others as appropriate)
- **Non Air-conditioned spaces:** Implement alternate efficient cooling methods like Evaporating cooling systems, Air Ambiators

- **Conditioned spaces:** Split/ Window Air-conditioners: Use Bureau of Energy Efficiency (BEE) 3 star and above or equivalent Coefficient of Performance (COP) (or) Energy Efficient Ration (EER)
- Minimize artificial lighting atleast 25% of the regularly occupied spaces during the day. Project can consider strategies like Light pipes, other passive featuresAnd / OrUse Motion sensors, daylight sensors in the interior space to cover atleast 75% of the regularly occupied areas
- As far as possible use natural light.
- Enhance energy efficiency in the interior spaces, to optimize energy consumption, therebyreducing environmental impacts.
- Encourage sub-metering and continuous monitoring to implement energy efficiency measures, thereby reducing environmental impacts.

5.3 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 it'smanagement is a burning issue. 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.

a) Observations

It is observed that solid waste is the highest source of waste out of total waste generated. Journal papers, Record files are the main sources of solid waste. The solid waste disposal method adopted by institute is that paper iscollected in bins and handed over to concerned authority.

For the E waste management several steps were taken by authority such as

1. Old version computers are transferred to the schools run by our education society.
2. The major e-waste such as written off instruments/ equipment's, CRTs, Printers, and Computers. Electronic gadgets, circuits, kits have been written off on regular basis and then it is sold out to buyers by auctioning.
3. All the miscellaneous e-waste such as CDs, batteries, fluorescent bulbs, PCBs and electronic items are collected from every department and office and delivered for safe disposal.
4. Useful parts of electronic gadgets like resistors, capacitors, inductors, diodes, transistors, thermistors etc. have been removed from the gadgets for reuse in practical/projects.

Liquid waste from the points of generation like the canteen and toilet etc. is let out aseffluent into a proper drainage facility and to avoid stagnation.

There is provision in the campus to clean the waste regarding radioactive chemical. Such kinds of chemicals are used in chemistry lab. There is one outlet

through which it is collected through pipe and collected in one underground pit at backside of campus.

b) Recommendations

- Reduce the absolute amount of waste that is produces from college staff offices.
- Make full use of all recycling facilities provided by City Municipality, local authority and private suppliers, including glass, cans, white, colored and brown paper, plastic bottles, batteries, print cartridges, cardboard and furniture.
- E-waste should be collected by approved E-waste Management Company.
- Provide sufficient, accessible and well-publicized collection points for recyclable waste, with responsibility for recycling clearly allocated.
- Encourage the use of green consumables in the interior space that have low impacts on human health and the environment
    1. Source green consumables for the following applications
        - Use of recycled paper for more than 50% requirement of consumption
        - No use of plastics in Interior fit-outs

5.4 Green Area Management

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 the Environmental Policy is enacted, enforced and reviewed using various environmental awareness programs.

a) Observations

Various tree plantation programs are being organized at college campus and surrounding villages and areasby institute. This program helps in encouraging eco-friendly environment which provides pure oxygen within the institute and awareness among villagers. The plantation program includes various types of indigenous species of ornamental and medicinal wild plant species. The institute campus is provided with adequate amount of plantation and institute has planted various indigenous species such as Limb, Jambhul, Chinch, Nirgil, Badam, Pimpal, Bel, Nim, Shirishetc

b) Recommendations

- 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.
- Celebrate every year 5th June as 'Environment Day' and plant trees on this day to make the campus more Green.
- Ensure that an audit is conducted annually and action is taken on the basis of audit report, recommendation and findings.
- Encourage the use of green consumables in the interior space that have low impacts on human health and the environment
- Provide adequate outdoor air ventilation, so as to avoid pollutants affecting indoor airquality.
- Encourage usage of indoor plants to enhance indoor air quality, thereby improving the health and wellbeing of occupants
    - Select indoor plant species suitable to indoor environment. The requirement is to have atleast one plant in every 100 sq.ft of carpet area of regularly office spaces. Plants like these help in absorbing toxins like formaldehydes. This can improve the indoor air quality inside the space, besides enhancing the aesthetics.
    - eg.Peace lily, Gerbera daisy, Lady Palm, Bamboo palm, Rubber Plant
- Promote environmental awareness as a part of course work in various curricular areas, independent research projects, and community service.

6. Conclusion

Based on the audit conducted at your college you are complying with all important requirements of NAAC committee.

Additional points are given to you for further improvements to strengthen environmental system adopted by you. By complying with these points the effectiveness of system will be improved.

Previous Years

Energy Audit Reports

Energy Audit Report For
ADSUL'S TECHNICAL CAMPUS
A/P.Chas, Ahmednagar: 414005, Maharashtra, India.

Prepared by
Supreme Electrical Energy and Consultancy Services LLP, Pune.
March-2022.
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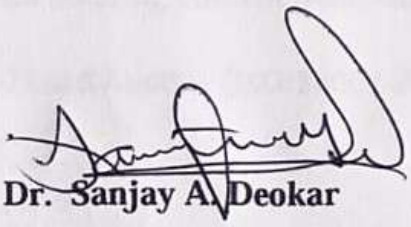
PREFACE

Energy Audit will review variations in energy costs, availability and reliability of supply of energy, decide on appropriate energy mix, identify energy conservation technologies, retrofit for energy conservation equipment etc. It is the translation of conservation ideas into realities, by evolving technically feasible solutions with economic and other organizational considerations within a specified time.

An energy audit is a study of a plant or facility to determine how and where energy is used and to identify methods for energy savings. There is now a universal recognition of the fact that new technologies and much greater use of some that already exist provide the most hopeful prospects for the future. The opportunities lie in the use of existing renewable energy technologies, greater efforts at energy efficiency and the dissemination of these technologies and options.

This energy audit of Adsul's Technical Campus, Chas, Ahmednagar Campus is just one step, a mere mile marker towards our destination of achieving energy efficiency and we would like to emphasize that an energy audit is a continuous process. We have compiled a list of possible actions to conserve and efficiently utilize our scarce resources and identified their savings potential. The next step would be to prioritize their implementation. We look forward with optimism that the institute authorities, staff and students shall ensure the maximum execution of the recommendations and the success of this work.

We are also thankful to the other staff members who were actively involved while taking measurements and conducting field study.



Dr. Sanjay A. Deokar

BEE Certified Energy Auditor (EA- 4494)

Indian Green Building Council (AP)

Environmental Lead Auditor (ISO:14001-2015)

CERTIFICATE

This is to certify that "Supreme Electrical Energy and Consultancy Services, LLP", Pune has conducted **Energy Audit** of "**Adsul's Technical Campus, Chas, Ahmednagar-414005**". It has been observed that the campus has separate Energy efficiency policy. The Campus not only have implemented various Energy Efficiency measures to conserve electrical energy but also started utilizing energy from roof top Solar PV net metering system.

17/09/2024

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LIST OF INSTRUMENTS USED:

Three Phase Power Analyzer (Dranetz, USA)

Single Phase Power Analyzer (ALM 10, Germany)

Lux meter, Power guard, Multimeter, Contact Thermometer, Tachometer.

SITE VISIT

Organization Name:	[Adsul's Technical Campus, Chas, Ahmednagar]
Site Name & Address:	Chas , Nimblak By Pass Road, Ahmednagar, 414005 Maharashtra, India]
Energy Auditor:	1.Dr. Sanjay Deokar (ME, PhD-Electrical Engg.) BEE Certified Energy Auditor, (EA-4494) IGBC(AP) [supremeelectricalenergy@gmail.com] [M:9823141287] 2.Madhuri Bhosale (BE Electrical) [M:7038180028]

1. INTRODUCTION

1.1 Energy Audit

Energy plays a key role in the development and growth of the economy. The Government of India has put special emphasis to ensuring adequate, reliable, secure and cost effective supplies and to utilizing energy resources efficiently while minimizing the negative impacts on the environment. To ensure that there is sustainability of energy in the future, energy audit activities are necessary to determine suitable steps to be undertaken to use energy efficiently. An energy audit is an examination of the energy consumption of the equipment or system to ensure that energy is being used efficiently. This is one of the responsibilities of the Registered Electrical Energy Manager (REEM). This is a guideline for Registered Electrical Energy Manager (REEM) during their energy audit exercise. REEM should not be bound with this guideline but they have to establish their own justification in order to meet the facilities requirement according to the types and purposes such as offices, hotels, shopping complexes, hospital, college/universities etc Objectives:

i) To set minimum standards for undertaking detailed energy audit.

ii) To guide REEM, asset owner and/or operator to identify Energy Conservation Measures (ECMs) in buildings.

1.2 Energy Audit Definitions

There are several definitions of an energy audit. Some guidebooks define energy audit as a systematic, documented verification process of objectively obtaining and evaluating energy audit evidence, in conformance with energy audit criteria and followed by communication of results to the client1 (CIPEC 2002). In the Indian Energy Conservation Act 20012 (BEE 2008), an energy audit is defined as the verification, monitoring and analysis of the use of energy and submission of technical report containing recommendations for improving energy efficiency with cost benefit analysis and an action plan to reduce energy consumption. An energy audit is a study conducted to identify where, when and how much energy is being used in the business and

how to reduce the cost of energy for the business. Even though there are several definitions, the objective or goal is the same which is to reduce the energy consumption without compromising comfort and quality of the building. This guideline is meant for REEM who have basic understanding on energy audits, for them to conform to the requirements of the Efficient Management of Electrical Energy Regulations 2008 (EMEER 2008).

1.2.1. Walk-through/preliminary Energy Audit

Walk-through audit is a process used to establish an overall picture of the potential of energy savings through visual inspection of the premises including air conditioning system, lighting, metering, building automation, building maintenance and other factors affecting energy consumption of the building. References to the records of equipment ratings, technical catalogues, operation and maintenance (O&M) manuals that are readily available will be very helpful to quickly determine whether equipment or systems are operating efficiently. Calculation, usually simple in nature, should be done to quantify the savings achievable for implementation of the identified Energy Conservation Measures (ECMs).

The walk-through/preliminary energy audit usually is carried out in one or two days by either REEM alone or with a team, depending on the size, complexity of the building and the scope of audit. Usually, simple instruments such as a clamp amp meter, thermometer, hygrometer (humidity meter) and lux meter will serve the purpose.

1.2. 2. Detailed Energy Audit

The detailed energy audit involves in-depth investigations into how the energy is currently being consumed, current performance of the existing systems and identification of various potential Energy Conservation Measures. It also gives the estimated cost and simple payback periods for all recommended Energy Conservation Measures.

The detailed energy audit involves the following four (4) main processes:

i) Data collection

ii) End-use load distribution

iii) Identification of Energy Conservation Measures

iv) Reporting and presentation

Figure 1.0 shows the process flow of a detailed energy audit.

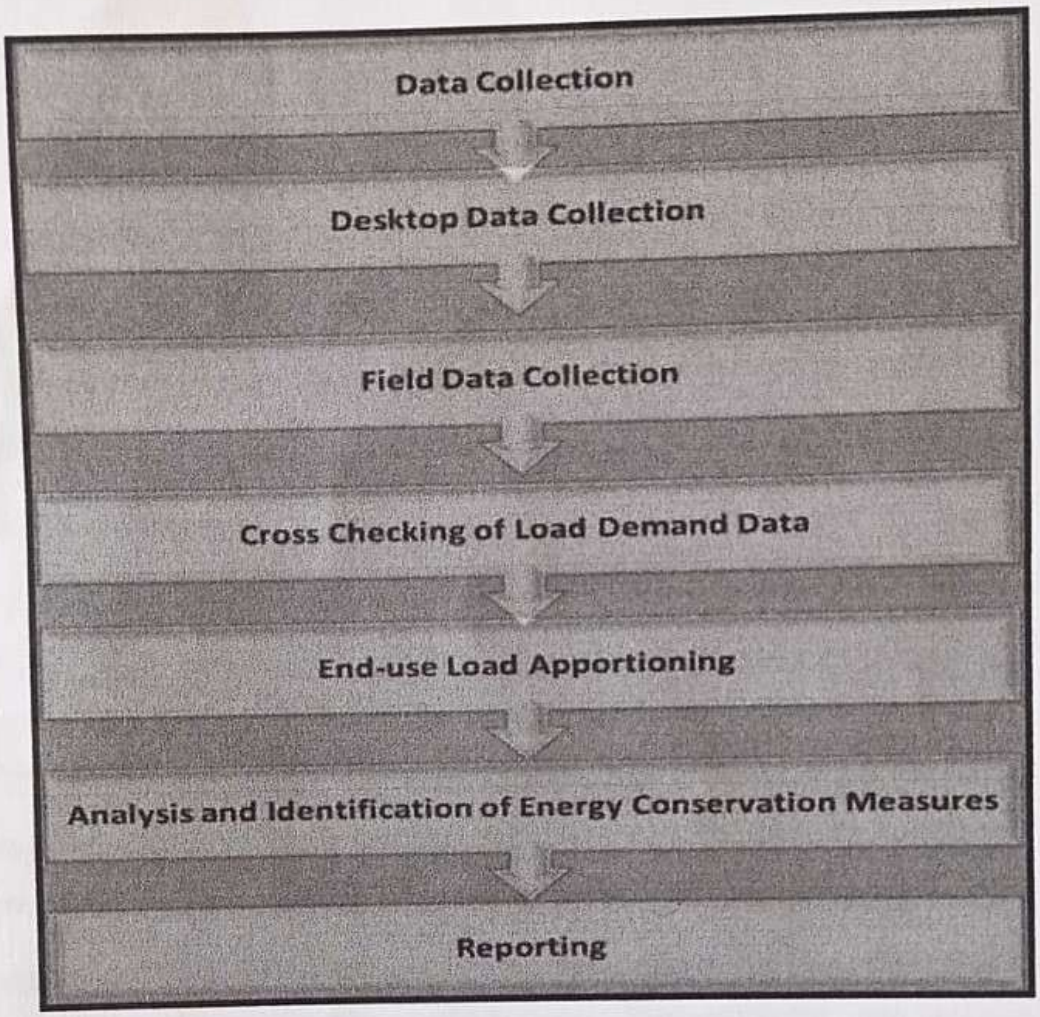


Fig. 1.0: The process flow of a detailed energy audit.

1.3. Detail Energy Audit Process

1.3.1. Data Collection

One of the key tasks in Energy Auditing is the collection of all energy related data required by the REEM to apportion the total facility energy consumption into various energy end-uses. The collected data is then used to build a reliable picture of where and how much energy is being consumed and the cost of energy being used at the building. Data collection is one of the most laborious tasks in Energy Auditing and inability to collect the required data will lead to less reliable Energy Audit results.

One of the difficulties faced by the REEM in order to establish the building's major end-use demands (air-conditioning, lighting and general equipment) is the limited or lack of building metering equipment. To be able to estimate reliably the major building's end-use demand, it is recommended that the REEM uses the following three steps to identify the building end-use demand:

a) Desktop data collection
b) Field data collection
c) Cross checking of load demand data

The process of carrying out these three steps of data collection is explained in the following paragraphs:

a) Desktop Data Collection

The purpose of desktop data collection is to minimize the field energy related data collection by using all available facility data. It would be advisable during the initial process to collect preliminary building energy related data using a Building Detailed Audit form. This form allows the REEM to understand the nature of the audited building and areas to focus on during the auditing. The data collection through the form can be used to estimate the time and manpower required for the field data collection activity later.

To minimize the time and manpower for the field data collection, the REEM should try to gather energy related data as much as possible using available resources such as:

i) Architectural drawings (as built drawing)
ii) Mechanical & Electrical drawings
   - Lighting circuit drawings (as built drawing)
   - Air conditioning system drawing and design manual (as built drawing)
   - Single line power supply schematic drawings (as built drawing)
iii) Electrical energy bill historical data (for at least one year)
iv) Load control systems such as timers, building automation system if any and others (as built drawing)

The REEM will use all desktop available energy related data to estimate the current building major energy end-uses.

The desktop data gathering should be considered as a first step of data collection, which will be complemented and verified during the Field Data Collection process.

b) Field Data Collection

The field data collection is a critical step for:

i. Complementing the missing data, which the REEM could not find during the Desktop Data Collection process.
ii. Verifying the accuracy of Desktop Data.
iii. Understanding closely the building operations, energy wastages and building maintenance status.
iv. Carrying out the necessary field measurements required to establish main incoming load profile, major energy end-uses such as Heating Ventilation and Air Conditioning (HVAC), lighting and others. Establishing actual building load apportioning.

c) Cross Checking of Load Demand Data

The accuracy of estimated end-use energy consumption will affect the accuracy of estimated energy savings of various building ECMs. Therefore, for reliable estimate of the building and end-use energy consumption, it is recommended to use the following approach:

Use the field data collected to estimate the building's total and end-use energy consumptions. Due to a number of assumptions used in this method, in particular the equipment loading and time usage factors, the accuracy in estimating the building total end-use energy consumption may vary depending on the loads measured. For instance, due to the predictable nature of lighting load, this method allows reliable determination of the building lighting load.

Use appropriate data loggers to record the building and end-use load cycles. For example, it is recommended to record typical daily load profiles of main incoming for seven (7) days, one (1) to seven (7) days for HVAC system and one (1) hour to one (1) day for other equipments.

The logged data can be used to verify the accuracy of the estimated building total and end-use energy consumption generated by the desktop data collection. If there is a large deviation between the end-use loads estimated by desktop data collection and the end use loads estimated by field data collection, the REEM should alter the assumptions (equipment loading and time usage factors) applied in estimating the building equipment loads used in the desktop

data collection to reduce these deviations to an acceptable range. REEM should take into account other factors such as seasonal variations and occupancy changes during the year that may impact on overall energy consumption.

1.4 Analysis and Identification of Energy Conservation Measures (ECMs)

The effectiveness of an energy audit is related to the understanding in depth of the nature and operations of the audited building by the REEM. Knowing the acceptable level of comfort and tolerance for lighting, temperature and humidity level by employees are essential to come up with effective and acceptable ECMs.

1.5 About Institute & Facility Description: -

Given increasing globalization and the need to build a well-rounded personality through experiential learning and a holistic approach, the Adsul's group of Institution was established in 2010 – 11. The Institution is run by the Sakeshwar Gramin Vikas Seva Sanstha established on 24th September 2004 to promote the noble cause of education. The founder member & president of this sanstha is Hon. Prof. Anirudha Manik Adsul.

Adsul's Group of Institutions, established in 2011. At present Adsul Technical Campus, Ahmednagar is offering undergraduate program (B.E) and Post graduate program (M.B.A). The institute has state-of-art laboratories, in each department. It is my pleasure to introduce one of the best technological Institutes of Maharashtra, Adsul's Group of Institutions, established in 2011. At present Adsul Technical Campus, Ahmednagar is offering undergraduate program (B.E) and Post graduate program (M.B.A). The institute has state-of-art laboratories, in each department.

The vision of college is to create value based employable Engineers and professionals for catering the needs of Industries and society.

The vision of college is

- To provide training on latest technology and to improve industry-institute interaction to make highly competent professionals.

- To provide required facilities at affordable expenses to cater the needs of economically weaker section of society.
- To create holistic atmosphere to inculcate basic human values, right attitude and knowledge for overall development of student and staff.
- To provide all possible support to promote research and Development activities.

1.6 Methodology Adopted: -

Pre-audit stage:

Defining scope of energy audit

Forming an energy audit team

Estimating time frame

Collecting building information

Energy audit stage:

Conducting site inspection and measurement

Analyzing data collected

Preparing energy audit report

Post-audit stage:

Implementation of energy management opportunities

Monitoring and review.

Energy Audit is conducted as per the guidelines of Bureau of Energy Efficiency (BEE)

- Relevant Data collection like inventory list of lighting fixtures, pumps, air cconditioner and other equipment's.
- Measurement of main supply Voltage, Current, p.f., kW, kVAR, kVA and Voltage & Current Harmonics are done at the LT side of the Transformer and trend is recorded.
- Measurement of power consumption load centers at distribution panels.
- Analysis of the past data for understanding the consumption pattern.
- Recommendation of energy improvement projects and methods to reduce the energy cost.
- Analysis of Techno-economic feasibility of the project with simple payback.

2. ENERGY CONSUMPTION PATTERN

2.1 Electricity Bills:-

The Electricity Bill of a utility consists of

- Maximum demand
- Load factor
- Power Factor (PF) incentive
- Time of Day Tariff (TOD tariffs)

Maximum Demand:

Maximum demand is the highest average kVA recorded during any one-demand interval within the month. The demand interval is normally 30 minutes, but may vary from utility to utility from 15 minutes to 60 minutes. The demand is measured using a tri-vector meter / digital energy meter.

Load Factor:

Load factor is the ratio of average load to maximum billed load. It is an indicating parameter to show if maximum demand can be reduced. The monthly load factor is calculated as follows:

$$\text{Load Factor} = \frac{\text{Actual units consumed}}{\text{Maximum demand X No of hours per month X Average P.F.}}$$

P.F incentives:

PF is the ratio of ACTIVE POWER to APPARENT POWER.

Thus,

PF = KW/KVA.

Hence PF can be maintained by controlling the Maximum Demand.PF can also be improved by installing a capacitor bank at the connected load as per the requirement the rating of the capacitor bank directly depends upon the desired and the existing PF which is given by the relation:

kVAr Rating = kW [tan φ1 – tan φ2]

Where,

KVAr rating= No. of capacitors required.

tan φ1=Existing Power Factor.

tan φ2=Improved Power Factor.

As per the MSEDCL tariff, whenever average power factor in a month, is more than 0.95, following incentives are offered:

For every 0.01 improvement of average PF above 0.95, an incentive of 1% of the amount of monthly energy bill, (excluding Regulatory Liability Charge (RLC), Demand Charges, Fuel and Other Cost Adjustment Charges (FOCA), Electricity Duty) is offered.

For PF of 0E.99 the effective incentive will amount to 5% of the energy charges, and for unity PF the effective incentive will amount to 7% of the energy charges.

TOD Tariff:

Time of Day metering (TOD), also known as Time of Usage (TOU) or Seasonal Time of Day (SToD), metering involves dividing the day, month and year into tariff slots and with higher rates at peak load periods and low tariff rates at off-peak load periods. While this can be used to automatically control usage on the part of the customer (resulting in automatic load control), it is often simply the customer's responsibility to control his own usage, or pay accordingly (voluntary load control). This also allows the utilities to plan their transmission infrastructure appropriately. See also Demand-side Management (DSM).

TOD metering normally splits rates into an arrangement of multiple segments including on-peak, off-peak, mid-peak or shoulder, and critical peak. A typical arrangement is a peak occurring during the day (non-holiday days only), such as from 1 pm to 9 pm Monday through Friday during the summer and from 6:30 am to 12 noon and 5 pm to 9 pm during the winter.

More complex arrangements include the use of critical peaks which occur during high demand periods. The times of peak demand/cost will vary in different markets around the world.

For all HT consumers the Time of Day (TOD) tariff is applicable in Maharashtra. For this purpose the day has been divided into 4 different time zones as given in table

Zone	Consumption during following hours of the day	Energy Charge (p/u)
A	2200 – 0600 Hrs	**- 1.50**
B	0600 – 0900 Hrs 1200 – 1800 Hrs	**0**
C	0900 – 1200 Hrs	**80**
D	**1800 – 2200 Hrs**	**110**

The Adsul's Technical Campus, Chas, Ahmednagar is LT user. The Facility has one meter installed at their premises.

Sr. No	Unit	Meter No.	Contract Demand	Connected Load	Category
1	1	162038503511	35KW	40KW	LT

The total electricity bill for the year 2021 is Rs.1,62,494.00. The average electricity bill of the campus for the year 2021 is Rs. 13,542.00. The total energy consumption for the year 2021 is 1419 units. The average monthly energy consumption of the campus is 118 kWh(units). In the December:2021 the Billing demand was **14 KVA** and power factor 0.830.

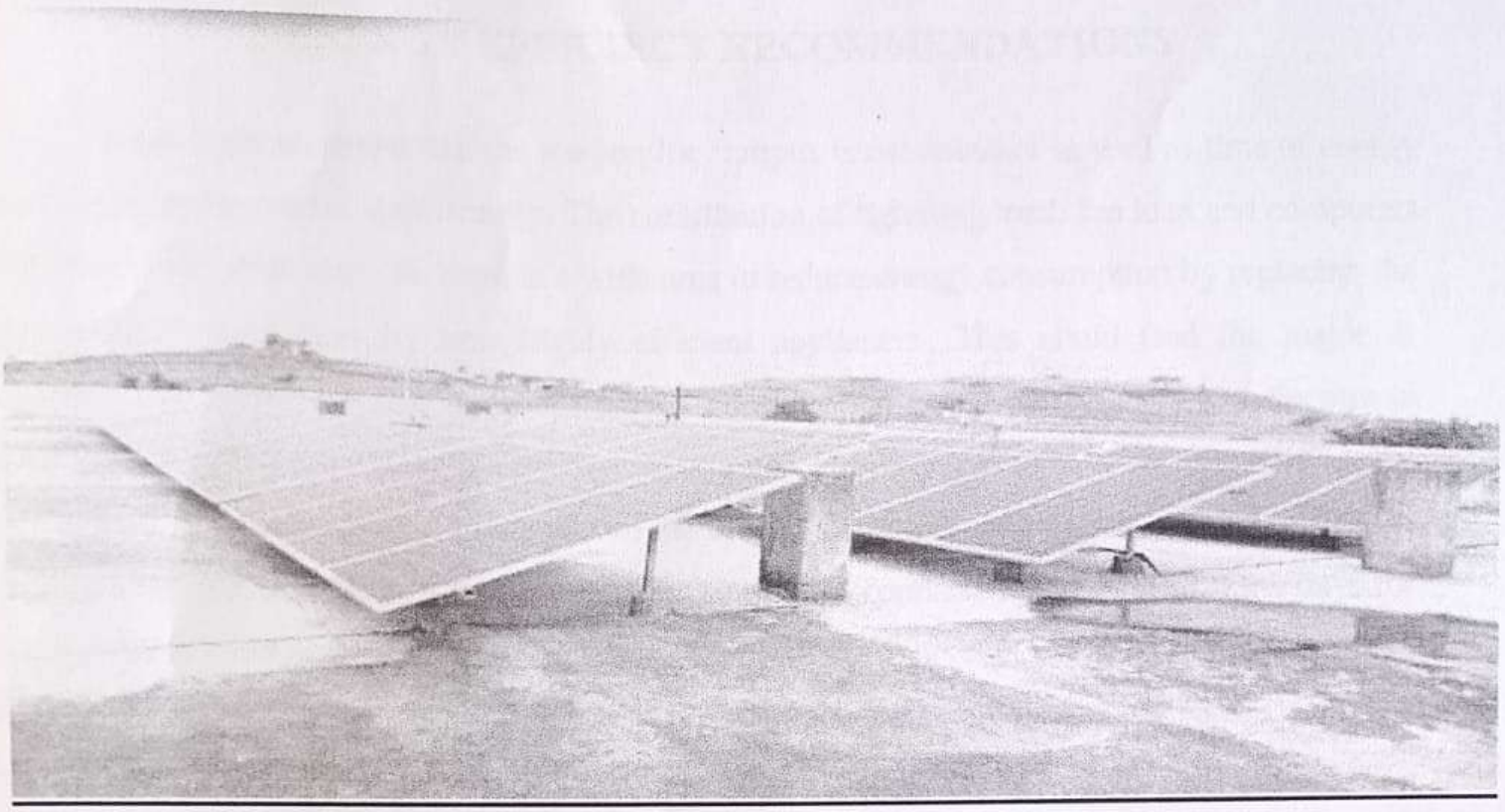
At present connected load of the campus is 250KW including workshop load, electric motor load, lighting load, computer load and UPS Load.

(**Note: 1.** The billing unit & yearly energy consumption is at actual mentioned on Electricity bill.)

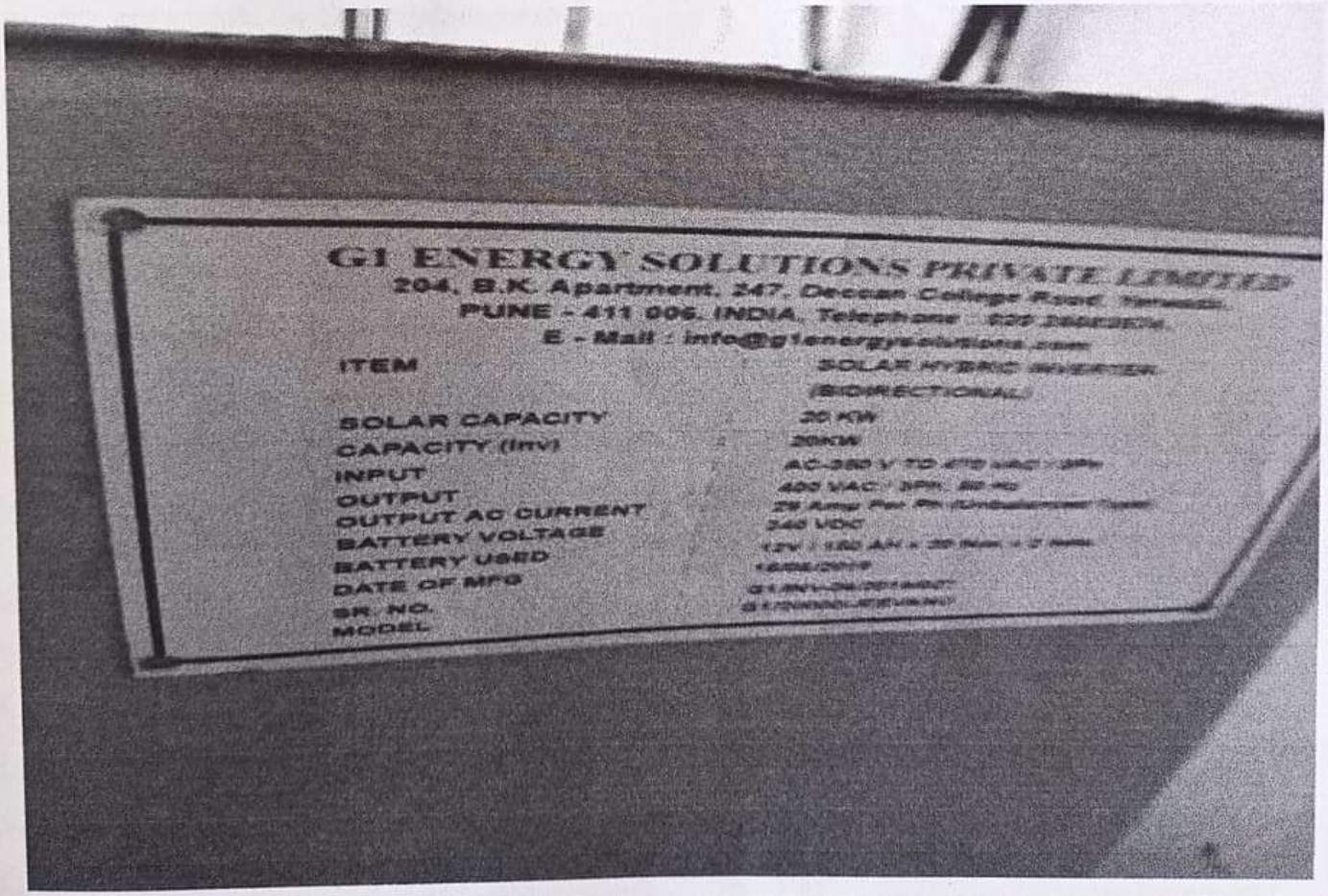
Sr. No.	Month	Units Consumed	Total Energy Bill
		kWh	Rs
1.	Dec-21	248	10,869.31.
2.	Nov-21	127	9,310.48
3.	Oct-21	43	8499.77
4.	Sept-21	62	8311.38
5.	Aug -21	122	15705.93
6.	Jul -21	486	21729.94
7.	Jun -21	75	14,838.72
8.	May -21	11	13,856.09
9.	Apr -21	53	14,467.58
10.	Mar -21	56	14,224.76
11.	Feb-21	28	14,886.11
12.	Jan-21	108	15,793.06

Monthly Variation of Electricity Consumption during the year 2021.

Solar PV Net Metering System: It has been observed that campus has installed 20 KW roof top Solar PV system which genertes 50 units per day which contributes substantially to reduce power consumption from Grid.



(Solar PV Roof Top Net Metering System)



3. ENERGY EFFICIECY RECOMMENDATIONS

It has been observed that the load on the campus is not constant as well as time of energy consumption also varies significantly. The contribution of lightning load, fan load and computers are found to be dominant. So there is a wide area to reduce energy consumption by replacing the conventional appliances by new highly efficient appliances. This could find the major & economically viable solution to reduce energy consumption & ultimately leads to reduction in electricity bill. For calculating the power consumption, it is required to have the diversity factor, as the facility working period is considered the diversity factor is assumed to be 0.4 (i.e,40%) it signifies that the 40% load consumption out of 100% total connected load. The working days for the college premises are 240 days while working hours are 7 hrs this will give the exact energy consumption. The commercial rate according to tariff scheme is on an average Rs.8.0/unit. The required data will also include the various ratings of conventional as well as efficient appliances.

3.1 Replace the existing Office ordinary FTL-Copper Choke (1x40W+16W choke), with 20W LED Tube light.

The overall benefit by this replacement is:

Old Fitting:

Type fitting	: 1x40W MC FTL
No of Fitting	: 250 Nos.
Total Wattage Including Choke	: 56 W
Operating Hours	: 240 days x 7 hours = 1680 hrs.
Electricity Consumed per year	: 23,520 kWh (Unit)
Electricity Rate	: Rs. 8.0 per unit
Annual Electricity Cost	**: Rs.1,88,160/-**

New Fitting:

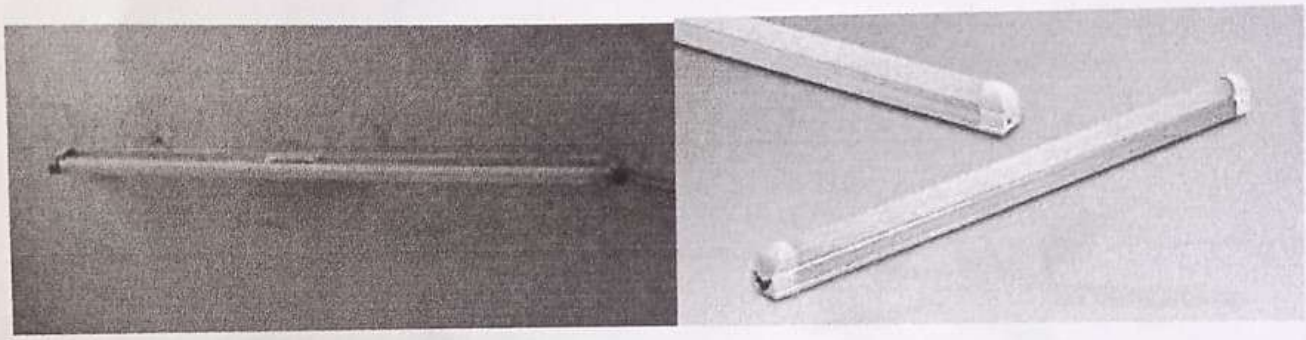
Type fitting	: 20 W LED Tube
No of Fitting	: 250 Nos.
Cost of fitting	: Rs.250 (per fitting)
Total Investment for fitting	**: Rs. 62,000/-**
Operating Hours	: 240 days x 7 hours = 1680 hrs.

Electricity Consumed per year	: 8400 kWh (Unit)
Electricity Rate	: Rs. 8.0 per unit
Annual Electricity Cost	**: Rs. 67,200/-**

Simple payback period:

Net annual saving	: Rs. 1,88,160 - Rs. 67,200= **Rs. 1,20,960/-**
Simple payback period	: Total Investment / Net Annual Saving
	: **6 months 15 says.**

Existing1x36WCopper Choke FTL Fitting Proposed 18W LED Tube Light Fitting



3.2 Replace existing ceiling fan (80 W) by energy efficient fan (28 W).

The overall benefit by this replacement is:

Old Fitting:

Type fitting	: 80W ceiling fan
No of Fitting	: 207 Nos.
Total Wattage	:16560 Watts.
Operating Hours	: 240 days x 7 hours = 1680 hrs.
Electricity Consumed per year	: 27820 kWh (Unit)
Electricity Rate	: Rs.8.0 per unit
Annual Electricity Cost	**: Rs.2,22,566.00**

New Fitting:

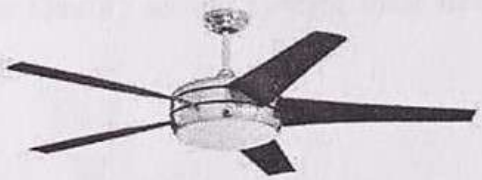
Type fitting	: 28 W Energy efficient fan
No of Fitting	: 207 Nos.
Cost of fitting	: Rs.2500 (per fitting)

Total Investment for fitting	**: Rs. 3,17,500/-**
Operating Hours	: 240 days x 7 hours = 1680 hrs.
Electricity Consumed per year	: 9738 kWh (Units)
Electricity Rate	: Rs.8.0 per unit
Annual Electricity Cost	**: Rs. 77,898.00**

Simple payback period:

Net annual saving	: Rs. 2,22,566.00 - Rs. 77,898.00= **Rs. 1,44,668/-**
Simple payback period	: Total Investment / Net Annual Saving
	: 2 Years 02 months (2.2 year)

Existing 80 W Fan ***Proposed 28 W energy efficient fan***



3.3 Sensor based solar operated led outdoor light

An LED based solar street lighting system aims at providing solar electricity for operating LED lights for specified hours of operation per day. Rapid developments in solar cells, LED lighting and energy storage are creating great opportunities for solar-powered solid-state lighting.

It is recommended to installed sensor based solar operated LED street lamp in the campus.

3.4 Principal/Director/Head of Department (HOD) Cabin Automation:

Mobile based IOT system can be installed in Principal/Directors/HOD cabin in the campus. There will be sufficient amount of energy saving.

3.5 Power Factor Correction:

As per the MSEDCL tariff, whenever average power factor in a month, is more than 0.95, following incentives are offered:

For every 0.01 improvement of average PF above 0.95, an incentive of 1% of the amount of monthly energy bill, (excluding RLC, Demand Charges, FOCA, and Electricity Duty) is offered.

For PF of 0.99 the will amount to 7% of the energy charges.

Currently the average Power factor reflected in the energy bill of 0.82, which can be improved by installing automatic power factor correction panel at the main distribution system, which will be beneficial for the improvement of power Quality as the current total harmonic distortion is 23.4 % which is beyond the permissible limit.

- **Power Factor Incentive**

(Applicable for HT I, HT II, HT IV, HT V, HT VI and IX categories, as well as LT II (B), LT II (C),
LT III, LT V (B), LT X (B) and LT X (C) categories) whenever the average power factor is more than 0.95, an incentive shall be given at the rate of the following percentages of the amount of the monthly bill including energy charges, reliability charges, FAC, and Fixed/Demand Charges, but excluding Taxes and Duties.

Sr. No.	Range of Power Factor	Power Factor Level	Incentive
1	0.951 to 0.954	0.95	0%
2	0.955 to 0.964	0.96	1%
3	0.965 to 0.974	0.97	2%
4	0.975 to 0.984	0.98	3%
5	0.985 to 0.994	0.99	5%

6	0.995 to 1.000	1.00	7%

Note: PF to be measured/computed up to 3 decimals, after universal rounding off.

It is strongly recommended to install APFC to maintain unity power factor in the campus to get advantages of power factor incentives and to avoid maximum demand penalty.

3.6 Other recommendations are:

- ✓ Switch off the computers during idle time. Instructions to be given to faculty members and all students.
- ✓ Switch off the lights/fans when it is not in use.
- ✓ Use BEE Certified by Green Pro / Energy 3 star rated appliances (e.g. Refrigerators, Photocopiers, Printers, Water coolers, UPS, Coffee vending machines, TVs, Fans, and others as appropriate)
- ✓ Use of natural light as maximum as possible in the campus.

CONCLUSION

The Adsul's Technical Campus, Chas, Ahmednagar campus is having average electricity consumption of 7,137 kWh per Month, The average monthly Electricity Bill is Rs. 47,686.

After the evaluation of the system and conducting the energy audit of college, following point were inferred.

- "walk-through" energy audit was performed in the institution and following points were concluded:
  - ✓ The various types of loads connected to the system were analyzed.
  - ✓ Replacement/suggestions for reduction in the energy usage were inferred. In order to conserve electricity and reduce the energy bills.

- By replacing tubes lights (40W) by 20W, replace the existing ceiling fan (80W) by energy efficient fan (28 W), doing HOD cabin automization, significant amount of energy can be saved saved.
- Sensor based solar operated LED outdoor light need to be installed for considerable energy saving

ENERGY AUDIT REPORT
FOR
ADSULS TECHNICAL CAMPUS FACULTY OF ENGINEERING & MBA, Chas,
Ahmednagar ,414005
Maharashtra, India

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PREFACE

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This energy audit of Adsuls Technical Campus Faculty Of Engineering & MBA, Chas, Ahmednagar Campus is just one step, a mere mile marker towards our destination of achieving energy efficiency and we would like to emphasize that an energy audit is a continuous process. We have compiled a list of possible actions to conserve and efficiently utilize our scarce resources and identified their savings potential. The next step would be to prioritize their implementation. We look forward with optimism that the institute authorities, staff and students shall ensure the maximum execution of the recommendations and the success of this work.

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01/01/2020

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LIST OF INSTRUMENTS USED:

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Lux meter, Power guard, Multimeter, Contact Thermometer, Tachometer.

SITE VISIT

Organization Name:	[Adsuls Technical Campus Faculty Of Engineering & MBA, Chas, Ahmednagar]
Site Name & Address:	Chas , Nimblak By Pass Road, Ahmednagar, 414005 Maharashtra, India]
Energy Auditor:	[Dr. Sanjay Deokar (ME, PhD-Electrical Engg.) BEE Certified Energy Auditor, EA-4494] **[**supremeelectricalenergy@gmail.com**]** [9823141287]

1. INTRODUCTION

1.1 Energy Audit

Energy plays a key role in the development and growth of the economy. The Government of India has put special emphasis to ensuring adequate, reliable, secure and cost effective supplies and to utilizing energy resources efficiently while minimizing the negative impacts on the environment. To ensure that there is sustainability of energy in the future, energy audit activities are necessary to determine suitable steps to be undertaken to use energy efficiently. An energy audit is an examination of the energy consumption of the equipment or system to ensure that energy is being used efficiently. This is one of the responsibilities of the Registered Electrical Energy Manager (REEM). This is a guideline for Registered Electrical Energy Manager (REEM) during their energy audit exercise. REEM should not be bound with this guideline but they have to establish their own justification in order to meet the facilities requirement according to the types and purposes such as offices, hotels, shopping complexes, hospital, college/universities etc
Objectives:

i) To set minimum standards for undertaking detailed energy audit.

ii) To guide REEM, asset owner and/or operator to identify Energy Conservation Measures (ECMs) in buildings.

1.2 Energy Audit Definitions

There are several definitions of an energy audit. Some guidebooks define energy audit as a systematic, documented verification process of objectively obtaining and evaluating energy audit evidence, in conformance with energy audit criteria and followed by communication of results to the client1 (CIPEC 2002). In the Indian Energy Conservation Act 20012 (BEE 2008), an energy audit is defined as the verification, monitoring and analysis of the use of energy and submission of technical report containing recommendations for improving energy efficiency with cost benefit analysis and an action plan to reduce energy consumption. An energy audit is a study conducted to identify where, when and how much energy is being used in the business and how to reduce the cost of energy for the business. Even though there are several definitions, the

objective or goal is the same which is to reduce the energy consumption without compromising comfort and quality of the building. This guideline is meant for REEM who have basic understanding on energy audits, for them to conform to the requirements of the Efficient Management of Electrical Energy Regulations 2008 (EMEER 2008).

1.2.1. Walk-through/preliminary Energy Audit

Walk-through audit is a process used to establish an overall picture of the potential of energy savings through visual inspection of the premises including air conditioning system, lighting, metering, building automation, building maintenance and other factors affecting energy consumption of the building. References to the records of equipment ratings, technical catalogues, operation and maintenance (O&M) manuals that are readily available will be very helpful to quickly determine whether equipment or systems are operating efficiently. Calculation, usually simple in nature, should be done to quantify the savings achievable for implementation of the identified Energy Conservation Measures (ECMs).

The walk-through/preliminary energy audit usually is carried out in one or two days by either REEM alone or with a team, depending on the size, complexity of the building and the scope of audit. Usually, simple instruments such as a clamp amp meter, thermometer, hygrometer (humidity meter) and lux meter will serve the purpose.

1.2. 2. Detailed Energy Audit

The detailed energy audit involves in-depth investigations into how the energy is currently being consumed, current performance of the existing systems and identification of various potential Energy Conservation Measures. It also gives the estimated cost and simple payback periods for all recommended Energy Conservation Measures.

The detailed energy audit involves the following four (4) main processes:

i) Data collection

ii) End-use load distribution

iii) Identification of Energy Conservation Measures

iv) Reporting and presentation

Figure 1.0 shows the process flow of a detailed energy audit.

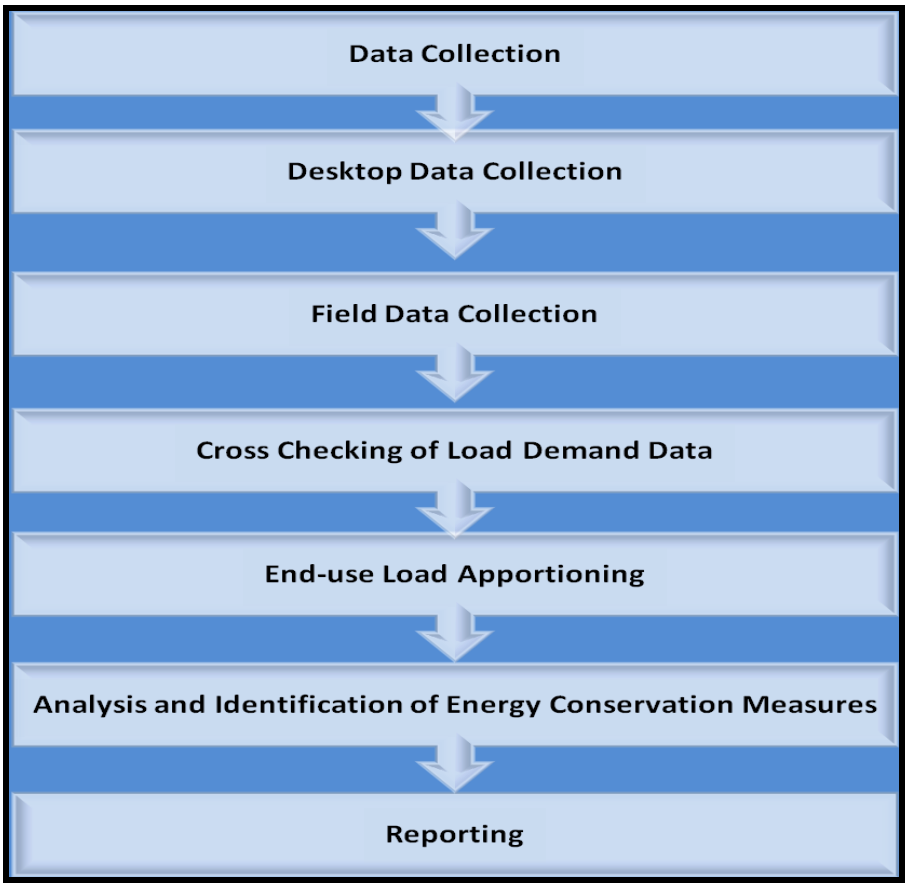


Fig. 1.0: The process flow of a detailed energy audit.

1.3. Detail Energy Audit Process

1.3.1. Data Collection

One of the key tasks in Energy Auditing is the collection of all energy related data required by the REEM to apportion the total facility energy consumption into various energy end-uses. The collected data is then used to build a reliable picture of where and how much energy is being consumed and the cost of energy being used at the building. Data collection is one of the most laborious tasks in Energy Auditing and inability to collect the required data will lead to less reliable Energy Audit results.

One of the difficulties faced by the REEM in order to establish the building's major end-use demands (air-conditioning, lighting and general equipment) is the limited or lack of building metering equipment. To be able to estimate reliably the major building's end-use demand, it is recommended that the REEM uses the following three steps to identify the building end-use demand:

a) Desktop data collection
b) Field data collection
c) Cross checking of load demand data

The process of carrying out these three steps of data collection is explained in the following paragraphs:

a) Desktop Data Collection

The purpose of desktop data collection is to minimize the field energy related data collection by using all available facility data. It would be advisable during the initial process to collect preliminary building energy related data using a Building Detailed Audit form. This form allows the REEM to understand the nature of the audited building and areas to focus on during the auditing. The data collection through the form can be used to estimate the time and manpower required for the field data collection activity later.

To minimize the time and manpower for the field data collection, the REEM should try to gather energy related data as much as possible using available resources such as:

i) Architectural drawings (as built drawing)
ii) Mechanical & Electrical drawings
    - Lighting circuit drawings (as built drawing)
    - Air conditioning system drawing and design manual (as built drawing)
    - Single line power supply schematic drawings (as built drawing)
iii) Electrical energy bill historical data (for at least one year)
iv) Load control systems such as timers, building automation system if any and others (as built drawing)

The REEM will use all desktop available energy related data to estimate the current building major energy end-uses.

The desktop data gathering should be considered as a first step of data collection, which will be complemented and verified during the Field Data Collection process.

b) Field Data Collection

The field data collection is a critical step for:

i. Complementing the missing data, which the REEM could not find during the Desktop Data Collection process.
ii. Verifying the accuracy of Desktop Data.
iii. Understanding closely the building operations, energy wastages and building maintenance status.
iv. Carrying out the necessary field measurements required to establish main incoming load profile, major energy end-uses such as Heating Ventilation and Air Conditioning (HVAC), lighting and others. Establishing actual building load apportioning.

c) Cross Checking of Load Demand Data

The accuracy of estimated end-use energy consumption will affect the accuracy of estimated energy savings of various building ECMs. Therefore, for reliable estimate of the building and end-use energy consumption, it is recommended to use the following approach:

Use the field data collected to estimate the building's total and end-use energy consumptions. Due to a number of assumptions used in this method, in particular the equipment loading and time usage factors, the accuracy in estimating the building total end-use energy consumption may vary depending on the loads measured. For instance, due to the predictable nature of lighting load, this method allows reliable determination of the building lighting load.

Use appropriate data loggers to record the building and end-use load cycles. For example, it is recommended to record typical daily load profiles of main incoming for seven (7) days, one (1) to seven (7) days for HVAC system and one (1) hour to one (1) day for other equipments.

The logged data can be used to verify the accuracy of the estimated building total and end-use energy consumption generated by the desktop data collection. If there is a large deviation between the end-use loads estimated by desktop data collection and the end use loads estimated by field data collection, the REEM should alter the assumptions (equipment loading and time usage factors) applied in estimating the building equipment loads used in the desktop

data collection to reduce these deviations to an acceptable range. REEM should take into account other factors such as seasonal variations and occupancy changes during the year that may impact on overall energy consumption.

1.4 Analysis and Identification of Energy Conservation Measures (ECMs)

The effectiveness of an energy audit is related to the understanding in depth of the nature and operations of the audited building by the REEM. Knowing the acceptable level of comfort and tolerance for lighting, temperature and humidity level by employees are essential to come up with effective and acceptable ECMs.

1.5 About Institute & Facility Description:-

Given increasing globalization and the need to build a well-rounded personality through experiential learning and a holistic approach, the Adsul's group of Institution was established in 2010 – 11. The Institution is run by the Sakeshwar Gramin Vikas Seva Sanstha established on 24th September 2004 to promote the noble cause of education. The founder member & president of this sanstha is Hon. Prof. Anirudha Manik Adsul.

Adsul's Group of Institutions, established in 2011. At present Adsul Technical Campus, Ahmednagar is offering undergraduate program (B.E) and Post graduate program (M.B.A). The institute has state-of-art laboratories, in each department. It is my pleasure to introduce one of the best technological Institutes of Maharashtra, Adsul's Group of Institutions, established in 2011. At present Adsul Technical Campus, Ahmednagar is offering undergraduate program (B.E) and Post graduate program (M.B.A). The institute has state-of-art laboratories, in each department.

The vision of college is to create value based employable Engineers and professionals for catering the needs of Industries and society.

The vision of college is

- To provide training on latest technology and to improve industry-institute interaction to make highly competent professionals.

- To provide required facilities at affordable expenses to cater the needs of economically weaker section of society.
- To create holistic atmosphere to inculcate basic human values, right attitude and knowledge for overall development of student and staff.
- To provide all possible support to promote research and Development activities.

1.6 Methodology Adopted:-

Energy Audit is conducted as per the guidelines of Bureau of Energy Efficiency (BEE)

- Relevant Data collection like inventory list of lighting fixtures, pumps, air cconditioner and other equipment's.
- Measurement of main supply Voltage, Current, p.f., kW, kVAR, kVA and Voltage & Current Harmonics are done at the LT side of the Transformer and trend is recorded.
- Measurement of power consumption load centers at distribution panels.
- Analysis of the past data for understanding the consumption pattern.
- Recommendation of energy improvement projects and methods to reduce the energy cost.
- Analysis of Techno-economic feasibility of the project with simple payback.

2. ENERGY CONSUMPTION PATTERN

2.1 Electricity Bills:-

The Electricity Bill of a utility consists of

- Maximum demand
- Load factor
- Power Factor (PF) incentive
- Time of Day Tariff (TOD tariffs)

Maximum Demand:

Maximum demand is the highest average kVA recorded during any one-demand interval within the month. The demand interval is normally 30 minutes, but may vary from utility to utility from 15 minutes to 60 minutes. The demand is measured using a tri-vector meter / digital energy meter.

Load Factor:

Load factor is the ratio of average load to maximum billed load. It is an indicating parameter to show if maximum demand can be reduced. The monthly load factor is calculated as follows:

$$\text{Load Factor} = \frac{\text{Actual units consumed}}{\text{Maximum demand X No of hours per month X Average P.F.}}$$

P.F incentives:

PF is the ratio of ACTIVE POWER to APPARENT POWER.

Thus,

PF = KW/KVA.

Hence PF can be maintained by controlling the Maximum Demand.PF can also be improved by installing a capacitor bank at the connected load as per the requirement the rating of

the capacitor bank directly depends upon the desired and the existing PF which is given by the relation:

kVAr Rating = kW [tan φ1 – tan φ2]

Where,

KVAr rating= No. of capacitors required.

tan φ1=Existing Power Factor.

tan φ2=Improved Power Factor.

As per the MSEDCL tariff, whenever average power factor in a month, is more than 0.95, following incentives are offered:

For every 0.01 improvement of average PF above 0.95, an incentive of 1% of the amount of monthly energy bill, (excluding Regulatory Liability Charge (RLC), Demand Charges, Fuel and Other Cost Adjustment Charges (FOCA), Electricity Duty) is offered.

For PF of 0E.99 the effective incentive will amount to 5% of the energy charges, and for unity PF the effective incentive will amount to 7% of the energy charges.

TOD Tariff:

Time of Day metering (TOD), also known as Time of Usage (TOU) or Seasonal Time of Day (SToD), metering involves dividing the day, month and year into tariff slots and with higher rates at peak load periods and low tariff rates at off-peak load periods. While this can be used to automatically control usage on the part of the customer (resulting in automatic load control), it is often simply the customer's responsibility to control his own usage, or pay accordingly (voluntary load control). This also allows the utilities to plan their transmission infrastructure appropriately. See also Demand-side Management (DSM).

TOD metering normally splits rates into an arrangement of multiple segments including on-peak, off-peak, mid-peak or shoulder, and critical peak. A typical arrangement is a peak occurring during the day (non-holiday days only), such as from 1 pm to 9 pm Monday through Friday during the summer and from 6:30 am to 12 noon and 5 pm to 9 pm during the winter. More complex arrangements include the use of critical peaks which occur during high demand periods. The times of peak demand/cost will vary in different markets around the world.

For all HT consumers the Time of Day (TOD) tariff is applicable in Maharashtra. For this purpose the day has been divided into 4 different time zones as given in table

Zone	Consumption during following hours of the day	Energy Charge (p/u)
A	2200 – 0600 Hrs	**- 1.50**
B	0600 – 0900 Hrs 1200 – 1800 Hrs	**0**
C	0900 – 1200 Hrs	**80**
D	**1800 – 2200 Hrs**	**110**

In addition to normal tariff of Rs.4.3 per unit consumed, TOD tariff as indicated is levied depending on time zone during which the unit has been consumed.

2.2 Load Analysis:-

The Adsuls Technical Campus Faculty Of Engineering & Mba, Chas, Ahmednagar is LT user. The Facility has 1 meter installed at their premises.

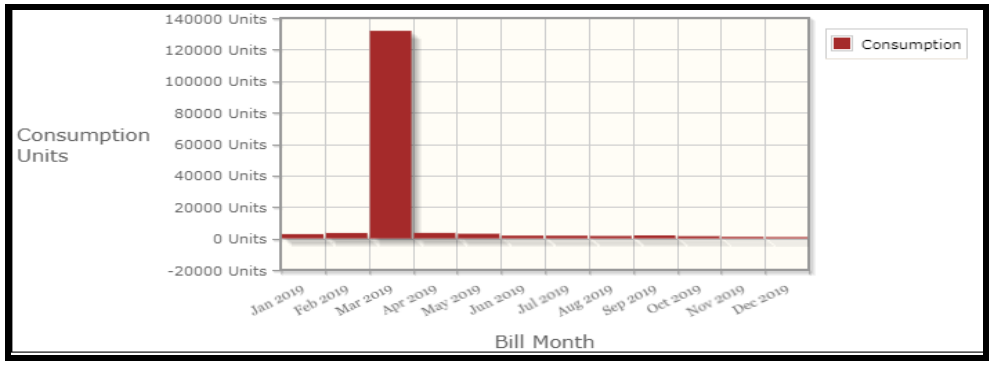
Sr. No	Unit	Meter No.	Billing Unit	Connected Load (kW)	Category
1	1	162038503511	864	67	LT

The average electricity bill of the campus is Rs. 47,686 The average unit's consumption of the campus 7,137 kWh with an average unit cost of Rs. 6.85 /kWh. (Commercial rate)

(**Note: 1.** The billing unit & yearly energy consumption is at actual mentioned on Electricity bill.)

Sr. No.	Month	Units Consumed	Total Energy Bill
		kWh	Rs
1.	Dec-19	864	27,270
2.	Nov-19	1,002	29,703
3.	Oct-18	1,402	36,083
4.	Sept-18	1,900	43,165
5.	Aug -18	1,562	36,415
6.	Jul -18	1,725	39,983
7.	Jun -18	1,800	42,128
8.	May -18	2,960	64,519
9.	Apr -18	3,517	74,671
10.	Mar -18	1,31,893	22,35,436
11.	Feb-18	34,722	70,460
12.	Jan-18	27,060	60,153

Monthly Variation of Electricity Consumption during the year 2019-20



3. ENERGY EFFICIECY RECOMMENDATIONS

It has been observed that the load on the college facility is not constant as well as time of consumption also varies significantly. The contribution of lightning load, fan load, computers are found to be dominant. So there is a wide area to reduce energy consumption by replacing the conventional appliances by new highly efficient appliances. This could find the major & economically viable solution to reduce energy consumption & ultimately leads to reduction in electricity bill. For calculating the power consumption it is required to have the diversity factor, as the facility working period is considered the diversity factor is assumed to be 0.4 (i.e,40%) it signifies that the 40% load consumption out of 100% total connected load. The working days for the college premises are 240 days while working hours are 7 hrs this will give the exact energy consumption. The commercial rate according to tariff scheme is on an average Rs.6.8/unit. The required data will also include the various ratings of conventional as well as efficient appliances.

3.1 Replace the existing Office ordinary FTL-Copper Choke (1x40W+16W choke), with 18W LED Tube light.

The overall benefit by this replacement is:

Old Fitting:

Type fitting	: 1x40W MC FTL
No of Fitting	: 340 Nos.
Total Wattage Including Choke	: 56 W
Operating Hours	: 240 days x 7 hours = 1680 hrs.
Electricity Consumed per year	: 31,987 kWh (Unit)
Electricity Rate	: Rs. 6.85 per unit
Annual Electricity Cost	**: Rs.2,19,112/- (31,987 x 6.85 Rs.)**

New Fitting:

Type fitting	: 18 W LED Tube
No of Fitting	: 340 Nos.
Cost of fitting	: Rs.400 (per fitting)
Total Investment for fitting	**: Rs. 1,36,000/-**
Operating Hours	: 240 days x 7 hours = 1680 hrs.

Electricity Consumed per year	: 0.018 x 340 x 1680 = 10,281 kWh (Unit)
Electricity Rate	: Rs. 6.85 per unit
Annual Electricity Cost	**: Rs. 70,428/- (10,281 x 6.85 Rs.)**

Simple payback period:

Net annual saving	: Rs. 2,19,112 - Rs. 70,428= **Rs. 1,48,684/-**
Simple payback period	: Total Investment / Net Annual Saving
	: **11 months (0.9 years)**

Existing1x36WCopper Choke FTL Fitting Proposed 18W LED Tube Light Fitting

3.2 Replace the existing ceiling fan (75W) by energy efficient fan (28 W).

The overall benefit by this replacement is:

Old Fitting:

Type fitting	: 1x75W ceiling fan
No of Fitting	: 309 Nos.
Total Wattage	: 75W
Operating Hours	: 240 days x 7 hours = 1680 hrs.
Electricity Consumed per year	: 38,934kWh (Unit)
Electricity Rate	: Rs. 6.85 per unit
Annual Electricity Cost	**: Rs.2,66,697/- (38,934 x 6.85 Rs.)**

New Fitting:

Type fitting	: 28 W Energy efficient fan
No of Fitting	: 309 Nos.
Cost of fitting	: Rs.1200 (per fitting)

Total Investment for fitting	**: Rs. 3,70,800/-**
Operating Hours	: 240 days x 7 hours = 1680 hrs.
Electricity Consumed per year	: 0.028 x 309 x 1680 =14,535 kWh (Unit)
Electricity Rate	: Rs.6.85 per unit
Annual Electricity Cost	**: Rs. 99,567/- (14,535 x 6.85 Rs.)**

Simple payback period:

Net annual saving	: Rs. 2,66,697 - Rs. 99,567= **Rs. 1,67,130/-**
Simple payback period	: Total Investment / Net Annual Saving
	: **2 Years 02 months (2.2 year)**

Existing 75 W Fan ***Proposed 28 W energy efficient fan***

3.3 Rooftop solar photovoltaic System Recommendation

Existing UPS uses power from Maharashtra State Electricity Distribution Co. Ltd. to charge the Batteries and which is done continuously. The campus has a large scope for energy saving if the Solar Photovoltaic panels are installed on the roof top of the building. Solar panels generate DC Electrical power which can be fed to the existing UPS with the help of some modifications in the circuit and through the same existing batteries can be charged. Batteries will be charged with the solar panels when sun light is available and will supply the power to the existing load in the building. Power from MSEDCL will be drawn only when sun light is not available or excess power is required than the capacity of Solar Photovoltaic system.

Proposed Solar Rooftop Solar PV System	10	kW
Energy generated per day(considering 6 hrs of full solar intensity)	40	KWh
Energy generated per Month(considering 6 hrs X 25days of full solar intensity)	1,000	KWh
Per Month Power Saving after Installation of Solar system	6,850	Rs.
Annual Power Saving after Installation of Solar system	12,000 =(40*300)	kWh
Total Units Power Consumed in Last Financial Year	31,510	kWh
Amount Paid Against Power in Last Financial year	3,62,219	Rs
Current Rate of Energy	6.85	Rs.
Anticipated Total Saving per year after installation of Solar system	82,200	Rs.
Investment on Solar system with Ministry of New and Renewable Energy (MNRE) **30% subsidy**	4,90,000/-	**Rs.**
Simple Payback Period	5.9	years
Working Life of the Solar system	**25**	**years**

3.4 Sensor based solar operated led outdoor light

An LED based solar street lighting system aims at providing solar electricity for operating LED lights for specified hours of operation per day. Rapid developments in solar cells, LED lighting and energy storage are creating great opportunities for solar-powered solid-state lighting.

It is recommended to installed sensor based solar operated LED street lamp in campus.

3.5 Head of Department (HOD) Cabin Automation:

One can go for automation of HOD cabin. fan, tubes may operate when person enters into cabin. So that there will be sufficient amount of energy saving.

3 CONCLUSION

The Adsuls Technical Campus Faculty Of Engineering & MBA, Chas, Ahmednagar campus is having average electricity consumption of 7,137 kWh per Month, The average monthly Electricity Bill is Rs. 47,686.

After the evaluation of the system and conducting the energy audit of college, following point were inferred.

- "walk-through" energy audit was performed in the institution and following points were concluded:
  - ✓ The various types of loads connected to the system were analyzed.
  - ✓ Replacement/suggestions for reduction in the energy usage were inferred. In order to conserve electricity and reduce the energy bills.
  - ✓ It is observed that in many classroom tubes and fans were in ON condition even when no one is in the classroom.

- By replacing tubes lights (40W) by 18W, replace the existing ceiling fan (75W) by energy efficient fan (28 W), doing HOD cabin automization, significant amount of money is saved.
- Sensor based solar operated LED outdoor light need to be installed for considerable energy saving

- Other recommendations are:
  - ✓ Switching off the computers during idle time. Instructions to be given to faculty members and students
  - ✓ Switch off the lights when it is not in use.
  - ✓ Use BEE Certified by Green Pro / Energy 3 star rated appliances (e.g. Refrigerators, Photocopiers, Printers, Water coolers, UPS, Coffee vending machines, TVs, Fans, and others as appropriate)
  - ✓ Minimize artificial lighting at least 25% of the regularly occupied spaces during the day. Project can consider strategies like Light pipes, other passive features and / or use motion sensors, daylight sensors in the interior space to cover at least 75% of the regularly occupied areas

The recommendations for energy efficiency and cost reduction are as below:

Sr. No.	Measures	Savings	Investment	Simple Payback
		Rs./year	**Rs.**	
1.	Replacing the existing Office FTL-Copper Choke (1x40W), by 18W LED Tube light. 340 Nos.	1,48,684	1,36,000	0.9 Years
2.	Replace the existing ceiling fan (75W) by energy efficient fan (28 W). 309 nos.	1,67,130	3,70,000	2.2 Years
3.	Rooftop solar photovoltaic System	82,200	4,90,000	5.9 years
	TOTAL	**3,98,014**	**9,96,000**	**2.5 Years**

CLEAN AND GREEN CAMPUS INITIATIVES

SAKESHWAR GRAMIN VIKAS SEVA SANSTHA'S
ADSUL'S TECHNICAL CAMPUS
At/Post – Chas, Chas Nimbalak bypass Road Tal – Nagar, Dist – Ahmednagar
(Approved By AICTE New Delhi, Recognized by Government of Maharashtra, DTE and Affiliated to SPPU, Pun

Permission Letter

Date: 3/06/2022

To,
The Principal,
Adsul's Technical Campus,
Ahmednagar.

Sub: Proposal for conducting a one day Campaign for Plastic ban water conservation, waste segregation, cleanliness and antipollution on 6/6/2022.

Respected sir,

With reference to above mentioned subject, I would like to seek your permission for organizing one day Campaign for Plastic ban water conservation, waste segregation, cleanliness and antipollution at Chas.

I request you to kindly grant permission to use the above mentioned dates.

Yours Sincerely

HOD

Adsul's Technical Campus DTE 5380 SPPU 1321 Chas, A.Nagar

2

SAKESHWAR GRAMIN VIKAS SEVA SANSTHA'S

ADSUL'S TECHNICAL CAMPUS

At/Post – Chas, Chas Nimbalak bypass Road Tal – Nagar, Dist – Ahmednagar

(Approved By AICTE New Delhi, Recognized by Government of Maharashtra, DTE and Affiliated to SPPU, Pune)

"विद्या राष्ट्रस्य प्रतिष्ठा"

4/6/2022

Notice

All SE,TE,BE Students are hereby informed that College is going to organize "Campaign for Plastic ban water conservation, waste segregation, cleanliness and antipollution" on 6/6/2022. Therefore, it will be mandatory for all students to attend the campaign.

Principal

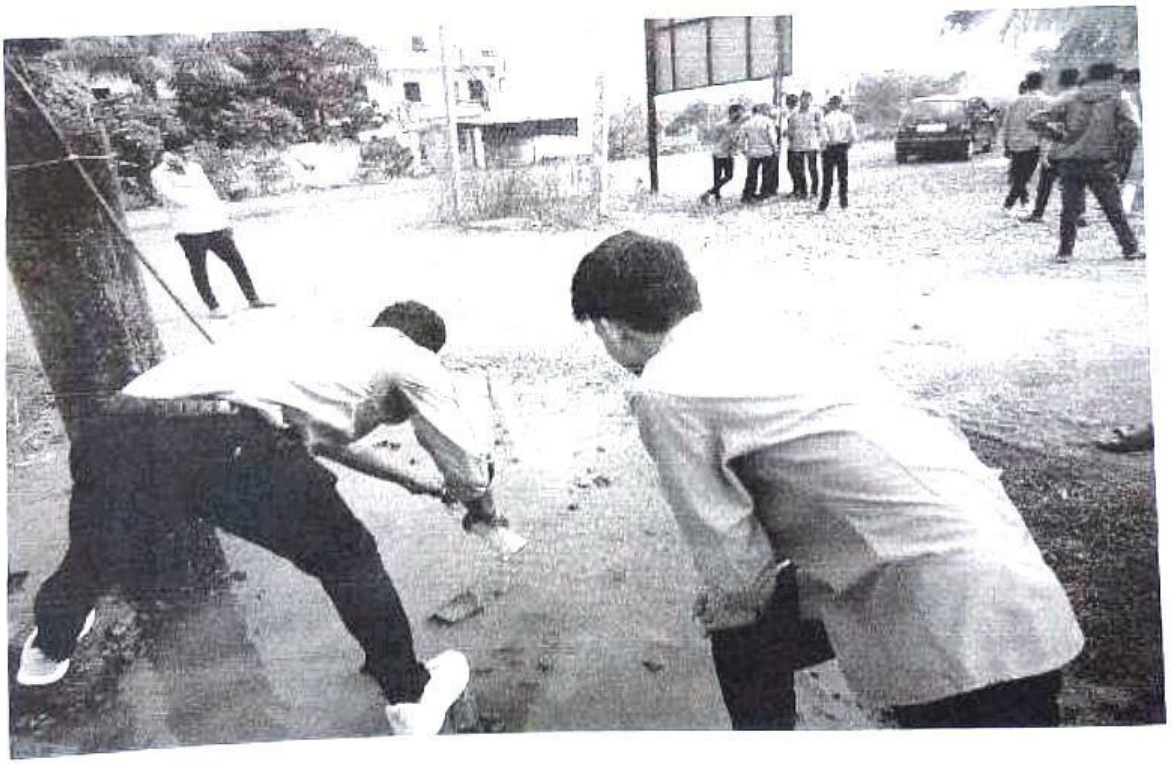
Principal
Adsul's Technical Campus
Chas, Ahmednagar

Adsul's Technical Campus • Chas, A.Nagar • DTE 5080 SPPU 1321

3

Photographs

"Campaign for Plastic ban water conservation, waste segregation, cleanliness and antipollution" on 6/6/2022.



4

Adsul's Technical Campus DTE 536 SPPU 1321 Chas, A.Nagar

Report

On

Awareness "Campaigns for Plastic ban water conservation, waste segregation, cleanliness and antipollution"

At

Adsul's Technical Campus

Organized By: Environmental Club

Adsul's Technical Campus organised Awareness **"Campaigns for Plastic ban water conservation, waste segregation, cleanliness and antipollution"**

Objective: The objective of the Awareness "Campaigns for Plastic ban water conservation, waste segregation, cleanliness and antipollution" is to make the student's aware of hazardous result of plastic uses for environment

Target Participants: All BTech Engineering Students.

Adsul's Technical Campus DTE 5380 SPPU 1321 Chas, A.Nagar

Sakeshwar Gramin Vikas Seva Sanstha's Sanchalit
ADSUL'S TECHNICAL CAMPUS
At Chas, Chas-Nimblak Bypass Road, Tal.& Dist.Ahmednagar -414 005.
Ph. (0241) 2570425, Fax (0241) 2570426
Website : www.adsulstechnicalcampus.com E-mail : adsulstechnicalcampus@gmail.com
Approved by AICTE,DTE,and Maharashtra Govt.& Affiliated to Savitribai Phule Pune University.
1. AICTE approval No.: I-444222791/2011
2.Maharashtra Gov.Approval/TEM/2011/L.No.162/TASI-4
3. DTE Approval No.: 2/NGC/INC/Approval/2011/268
4.PUNE UNIVERSITY Approval No. : CA/2551

Ref.No. :

Date :

Tree Plantation Activity

Continuing with its tradition of preserving the environment and having eco-friendly activities, the "Tree Plantation Event" was conducted in the Adsul's Technical Campus on world nature conservation day, 28th July 2021. Understand the importance of nature for our existence and conserve the nature in all manner, is our moral responsibility. It's not too hard to believe that without trees we, humans would not exist on this beautiful planet. Also, we have felt the change of purity in nature and reduction in pollution effect during this pandemic situation. While the latest technology has provided us with many comforts, the consequent urbanization and industrialization also have some undesirable side effects; Global Warming is one of those. This event is a positive step towards achieving a healthy environment and to reconnect humans to nature and foster environmental stewardship.

Dr. Kamble V. V. shared an outlook towards nature that must be changed from Utility to Divinity, he added, "We should not only save the trees but should put our equal efforts in planting as well nurturing the trees till its growth." Students and staff have planted more than 50 saplings in the campus. At the plantation of saplings, all have recited a shloka to maintain the divinity between the human and nature.

Adsul's Technical Campus 5380 Chas,Ahmednagar

Principal
Adsul's Technical Campus
Chas, Ahmednagar

Sakeshwar Gramin Vikas Seva Sanstha's Sanchalit
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Approved by AICTE,DTE,and Maharashtra Govt.& Affiliated to Savitribai Phule Pune University.
1. AICTE approval No.: I-444222791/2011 2.Maharashtra Gov.Approval/TEM/2011/L.No.162/TASI-4
3. DTE Approval No.: 2/NGC/INC/Approval/2011/268 4.PUNE UNIVERSITY Approval No. : CA/2551

Ref.No. : Date :

Clean Campus Activity

Clean Campus promotes Hygiene; it improves hygiene level in campus and also helps to reduce the spread of sickness, maintaining a clean campus environment sets a good example to students. Cleanliness encourages learners to take pride in their college, which makes them less likely to drop litter and as such they will potentially make a bigger effort to maintain their environment. Cleanliness gives rise to a good character by keeping body, mind, and soul clean and peaceful. Maintaining cleanliness is the essential part of healthy living because it is the cleanliness only which helps to improve our personality by keeping clean externally and internally. Adsul's Technical Campus had organized a Clean Campus campaign on world nature conservation day, 28th July 2021 to educate and to promote civic sense among students community. Students gathered to clean the campus; enthusiastically they collected plastic wastes, tea cups, weeds, and dry leaves spread in the campus. The volunteers collected all the waste and trash bags and handed over to Raj Hans Agency which provides cleaning services. The whole cleaning drive was quite inspiring and motivating for the students and staff of Adsul's Technical Campus.

Adsuls Technical Campus 5380 Chas,A.Nagar

Principal
Adsul's Technical Campus
Chas, Ahmednagar

To,

The Principal,
ATC, Chas,
Ahmednagar.

Subject: - **About Permission of "Tree plantation".**

Respected Sir,

We have the honor to state that we are very interested to organize a tree plantation on the occasion of **'ENVIROMENT DAY'** that is 5th of June 2019 in our college campus. We all know that tree plantation today has turned into a revolution. People all over the country have taken the program very enthusiastically. Moreover, the government agencies and the private sectors have come forward to make the program a complete success. Being a part and parcel of the society, we cannot remain idle. Rather, we should work shoulder to shoulder for tree plantation with the mass people of the country.

Under the above circumstances, we pray and hope that your honor would be kind enough to permit us to organize tree plantation to save our environment in the campus so that we can create awareness about tree plantation as well as importance of environment in our life among the students of the college.

I am very pleased to tell you.

Thanking you.

Yours sincerely,

Principal

Adsul's Technical Campus
DTE 5380 SPPU 1321
Chas, A.Nagar

Principal
Adsul's Technical Campus
Chas, Ahmednagar

Sakeshwar Gramin Vikas Seva Sanstha's
Adsul's Technical Campus
Approved by AICTE, Maharashtra Govt. Recognized by DTE AndAffiliated to SPPU
At Post- Chas, Tal. & Dist. - Ahmednagar.

SGVSS/ATCFOE/EE/2019-20/

DATE: 03 / 06 /2019

NOTICE

This is to inform the students from classes S.E, T.E, and B.E as well as staff of the college's Environment Club is going to hold 'Tree Plantation Programmed on June 5, at college campus on the occasion of environment day. Approximately 100 trees will be planted outside and inside along the boundary of the college. Honorable Principal of the college is the chief guest. So interested students should present within time in college campus.

Sign of co-coordinator

Adsul's Technical Campus DTE 5380 SPPU 1321 Chas, A.Nagar

sign of Principal

Principal
Adsul's Technical Campus
Chas, Ahmednagar

Sakeshwar Gramin Vikas Seva Sanstha's

Adsul Technical Campus Faculty of Engineering

Approved by AICTE, Maharashtra Govt. Recognized by DTE And Affiliated to SPPU

At Post- Chas, Tal. & Dist. - Ahmednagar.

SGVSS/ATCFOE/EE/2019-20/

DATE: 05 /06 /2019

Adsul's Technical Campus DTE 1321 Chas, A.Nagar

SAKESHWAR GRAMIN VIKAS SEVA SANSTHA'S
ADSUL'S TECHNICAL CAMPUS, FACULTY OF ENGINEERING & MBA
At/Post – Chas, Chas Nimbalak bypass Road Tal – Nagar, Dist – Ahmednagar
(Approved By AICTE New Delhi, Recognized by Government of Maharashtra, DTE and Affiliated to SPPU, Pune)

Date: - 02/07/2018

Report on Tree Plantation

The Tree Plantation was organized by Adsul Technical Campus College of Engineering, Chas, Dist. Ahmednagar in academic session 2018-19. It was held in the college campus. All the preparations such as arrangement of tree and water etc. were made. The Program was inaugurated by Principal of institute. The honorable principal of our institute give speech on the growing need of Plant in the state and commended the young to do such social activity. Globally, forest cover is one-third less than what it once was and global deforestation continues at 18 million hectares per year. This indiscriminate felling of trees, needs to be undertaken on a large scale to reverse the ill effects of deforestation and restore the ecological balance. The enthusiastic helping came forward to tree plantation during the program which included teaching & non-teaching staff, students. This social activity was successfully accomplished with everyone's support. It is a proud feeling after completing this Tree Plantation program. As our college is in rural area & grooming day by day, we are planning more eagerly for such kinds of events.

Tree Plantation Program Details:

Date: 1th July. 2018 **Time:** 08:00am to 01:00pm

Venue: Adsul Technical Campus, Chas, Ahmednagar.

Sr. No.	Number of Trees planted	Number of students involved	Number of staff members involved
1	150	200	20

Adsul's Technical Campus * Chas, Ahmednagar * DTE-5380 College-4098

PHOTOGRAPHS

Tree plantation inauguration by Krushi Adhikari, Rahuri

Director, Principal, staff and Students of ATC, Chas

SAKESHWAR GRAMIN VIKAS SEVA SANSTHA'S
ADSUL'S TECHNICAL CAMPUS, FACULTY OF ENGINEERING & MBA
At/Post – Chas, Chas Nimbalak bypass Road Tal – Nagar, Dist – Ahmednagar
(Approved By AICTE New Delhi, Recognized by Government of Maharashtra, DTE and Affiliated to SPPU, Pune.)

Date: - 30/06/2017

NOTICE

All the students of Adsul's Technical Campus are hereby informed that our college is organizing **'Tree Plantation Program'** on 1th July, 2017. So, you will be present for the same and your ideas (if any) about this social activity are most welcome. Attendance is compulsory.

Adsul's Technical Campus DTE-5380 College-4098 Chas, Ahmednagar

Principal
Principal
Adsul's Technical Campus
Chas, Ahmednagar

Date:- 03/07/2017

Report on Tree Plantation

The Tree Plantation was sorted out by Adsul Technical Campus in scholastic Odd semester. It was held in the college Campus. Every one of the arrangements, for example, course of action of tree and water and so forth were made. The Program was introduced by Principal of institute. The honorable principal of our institute give speech on the growing need of Plant in the state and commended the young to do such social activity. Globally, forest cover is one-third less than what it once was and global deforestation continues at 18 million hectares per year. This indiscriminate felling of trees, needs to be undertaken on a large scale to reverse the ill effects of deforestation and restore the ecological balance.

The eager causing approached to tree Plantation during the program which included educating and non-showing staff, understudies. This social action was effectively cultivated with everybody's help. It is a glad inclination in the wake of finishing this Tree Plantation program. As our college is in rural area and preparing step by step, we are arranging all the more anxiously for such sorts of occasions.

Tree Plantation Program Details:

Date: 1th July. 2017

Venue: Adsul Technical Campus, Chas, Ahmednagar.

Time: 10:00 am to 2:00 pm

Sr. No.	Number of Trees planted	Number of Students Participated	Number of Staff members involved
1	100	210	20

Adsul's Technical Campus
DTE-5380
College-4098
Chas, Ahmednagar

PHOTOGRAPHS

Tree planted by Director, Principal, Staff and Student of Adsul's Technical Campus, Chas, Ahmednagar.

Tree planting by Student of ATC, Chas, Ahmednagar

BEYOND THE CAMPUS ENVIRONMENTAL PROMOTION ACTIVITIES

"स्वच्छतेतुन समृध्दीकडे" "ग्रामपंचायत लोकशाहीचा पाया आहे" स्थापना : २९/०३/१९५९

ग्रामपंचायत कार्यालय, निमगांव वाघा

तालुका - नगर जिल्हा - अहमदनगर

उपसरपंच
श्री. शंकर कारभारी गायकवाड
मो. 9850757473

सरपंच
श्रीमती सुमन विश्वनाथ डोंगरे
मो. 9422830305
9970234329

दिनांक 02/10/2018

जा. क्र.

प्रति,

आडसूळ टेक्नीकल कॅम्पस,
चास, अहमदनगर.
४१४००५

विषय : स्वच्छता अभियान श्रमदानाबद्दल

महोदय,

वरील विषया नुसार आपले आडसूळ टेक्नीकल कॅम्पसचे विद्यार्थी व शिक्षक आमच्या निमगाव वाघा मध्ये येऊन गावचा परिसर तसेच गावठाण स्वच्छ भारत अभियान अंतर्गत स्वच्छ केल्याबद्दल आम्ही कॉलेजचे प्राध्यापक आणि संस्थेचे आभार मानतो.

धन्यवाद!!!

आपला विश्वासू,

सुमन डोंगरे
सरपंच
ग्रामपंचायत निमगांव वाघा
ता.जि.अहमदनगर

ग्रामपंचायत निमगांव वाघा स्थापना ता. २९/३/५९ ता.जि.अहमदनगर

Adsul's Technical Campus DTE-6380 College-4098 Chas, Ahmednagar

SAKESHWAR GRAMIN VIKAS SEVA SANSTHA'S

Adsul's Technical Campus, Faculty of Engineering & MBA

At/Post – Chas, Chas Nimbalak bypass Road Tal – Nagar, Dist – Ahmednagar
(Approved By AICTE New Delhi, Recognized by Government of Maharashtra, DTE and Affiliated to MSBTE, Mumbai)

Date: 30/09/2018

Notice

All the faculties and students of Adsul's Technical Campus are hereby informed that our college has arranged **'Swachh Bharat Abhiyan Program'** at Nimgaon Wagha, Ahmednagar on 2th Oct. 2018. It is mandatory to present all for program. So, you will be present sharply 7:45 am at college campus for the same.

Note: Bus timing - 7.50am from college

Program Coordinator

Adsul's Technical Campus DTE-6380 College-4098 Chas, Ahmednagar

Principal

Principal
Adsul's Technical Campus
Chas, Ahmednagar

Report of Swachh Bharat Abhiyan Program

Date: 2th Oct. 2018

Venue: Nimgaon Wagha, Ahmednagar.

Sr. No.	Number Gram Panchayat Member	Number of students involved	Number of Teaching & Non-Teaching members involved	Total
1	15	150	15	180

- Swatch Bharat Abhiyan planned by Adsul's Technical Campus of on occasion of Gandhi Jayanti i.e. 2nd October, 2018.
- The members of Grampanchayat, Nimgaon Wagha supported a lot during whole Swatchata mission and guided the students about the government policies of the same.
- All students and staff members are involved enthusiastically for the Swatchata Abhiyan.

Last session of the day, we are suggesting preventing issues to all the village members. Suggestions are as follows in the below table.

Adsul's Technical Campus * DTE-6380 College-4098 * Chas, Ahmednagar *

Photographs: Swachh Bharat Abhiyan

Adsul's Technical Campus
Chas, Ahmednagar

ग्रामपंचायत हा लोकशाहीचा पाया आहे.

ग्रामपंचायत कार्यालय, विळद

ता. नगर, जि. अहमदनगर, मो.नं. ९५५२५१५५५५

Email- grampanchayatvilad@gmail.com

सरपंच
सौ. मनिषा संजय वाघकर

उपसरपंच
सौ. मंदाताई बाळासाहेब वाळके

ग्रामसेवक
श्री. सागर बाळासाहेब खळेकर

दि. 02/10/2017

जा.क.

विळद

प्रति,
मा. प्राचार्य
आडसुल टेक्निकल कॅम्पस
चास अहमदनगर
M-I-M-DOS.

विषय - दि. 2 ऑक्टोबर 2017 रोजी स्वच्छता अभियान राबविले बाबत आभार.

सर,

दि. 2 ऑक्टोबर 2017 रोजी विळद गावात आपल्या आडसुल टेक्निकल कॅम्पस् द्वारे श्रमस्वच्छता राबवुन आमचे गाव स्वच्छ केले, विळद गांवातील नागरीक व मदत्या यांच्या विविध आभार व्यक्त करतो

यापुढेही आपण आमेच सामाजीक कार्य करत राहावे हिच सदिच्छा व्यक्त करतो.

Adsul's Technical Campus
DTE-5380
College-1098
Chas, Ahmednagar

ग्रामसेवक
ग्रामपंचायत विळद
ता. जि. अहमदनगर

Sakeshwar Gramin Vikas Seva Sanstha's Sanchalit

ADSUL'S TECHNICAL CAMPUS

At Chas, Chas-Nimblak Bypass Road, Tal.& Dist.Ahmednagar -414 005.
Ph. (0241) 2570425, Fax (0241) 2570426
Website : www.adsulstechnicalcampus.com E-mail : adsulstechnicalcampus@gmail.com
Approved by AICTE,DTE,and Maharashtra Govt.& Affiliated to Savitribai Phule Pune University.

1. AICTE approval No.: I-444222791/2011
2.Maharashtra Gov.Approval/TEM/2011/L.No.162/TASI-4
3. DTE Approval No.: 2/NGC/INC/Approval/2011/268
4.PUNE UNIVERSITY Approval No. : CA/2551

Ref.No. :

Date :

Adsul's Technical Campus DTE 5380 College 098 Ahmednagar

Sakeshwar Gramin Vikas Seva Sanstha's Sanchalit

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Ref.No. :

Date :

Adsul's Technical Campus DTE 5380 College 098 Chas,A.Nagar

Swachhata Abhiyan _Vilad

Sakeshwar Gramin Vikas Seva Sanstha's Sanchalit

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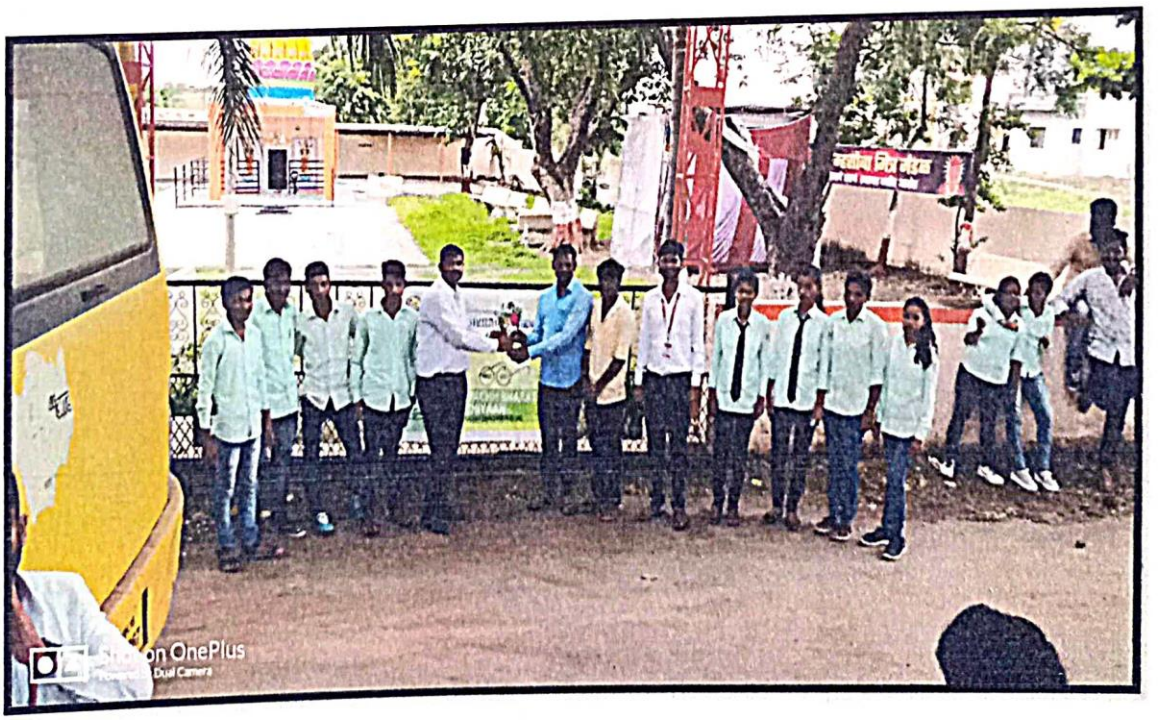
Date :

Adsul's Technical Campus DTE 5380 College 098 Chas,A.Nagar



Report of Swachh Bharat Abhiyan Program

Date: 2th Oct. 2017
Venue: Vilad, Ahmednagar.

Sr. No.	Number Gram Panchayat Member	Number of students involved	Number of Teaching members involved	Number of Non-Teaching members involved	Total
1	15	160	10	05	190

- On the occasion of Gandhi Jayanti (2nd October, 2017), we are organizing Swachh Bharat Abhiyan program planned at Vilad Village Ahmednagar.
- The members of Grampanchayat, Vilad supported a lot during whole Swatchata mission and guided the students about the government policies of the same.
- All students and staff members are involved totally for the Swatchata Abhiyan Program.

Adsul's Technical Campus DTE-6389 College-4098 Chas, Ahmednagar