

ENERGY AUDIT REPORT

2021-22

SHRI SWAMI VIVEKANAND SHIKSHAN SANSTHA'S
VIVEKANAND COLLEGE, KOLHAPUR
(AUTONOMOUS)
(Affiliated to Shivaji University, Kolhapur)
NAAC Accredited with 'A' Grade, with CGPA 2.34,
College With Potential For Excellence (CPE), ISO 9001: 2015



Certified by
Mr. Manohar Shivthare Mr. Vijay Sawant
(MS Enviro Pollution Control Services & Consultant)

On behalf of Institute
Mr. A.S.Kadam Mr. S.G.Bhosale
2021-22



MS ENVIRO
POLLUTION CONTROL SERVICES & CONSULTANT
Reg. No. UDYAM-MH-30-0002061

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Ref. No:-909

Date: 02-03-2022

CERTIFICATE

This to certify that,
the Energy Audit Report of Vivekanand College, Kolhapur (Autonomous)
has been prepared and certified by the MS Enviro Pollution Control Services
& Consultant based on the documents produced by the college.

Date:

Place:

Thanking you,

Yours faithfully,

MS ENVIRO
POLLUTION CONTROL SERVICES & CONSULTANT
Manohar
Proprietor



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Chapter 1 Introduction

1.1 About College:

Vivekanand College, Kolhapur which was established in 1964 is known as one of the best quality colleges in Maharashtra. The U.G.C. granted autonomy to this college from the academic year 2018-19. About 8000 students are enrolled every year for various programmes. Besides the conventional programmes like B.A., B.Com. and B.Sc., the college offers the professional programmes like B.B.A., B.C.A., B.C.S., B.Sc. (Biotechnology), B.Sc. Microbiology, B.Voc., Community College and M. B. A. The college also provides opportunity to undertake degrees like B.A., B.Com., B. Sc., B. Lib., M. Lib. and M.B.A. of YCMOU, Nashik.

Dr. Bapuji Salunkhe alias Govindrao Dnyanojirao Salunkhe, the great visionary educationalist founded Shri Swami Vivekanand Shikshan Sanstha, Kolhapur in 1954 which is catering the education needs of students belonging to 11 districts of the State of Maharashtra. The college has also acquired reputation in the fields of dance, drama, music, other arts and sports, besides academics. The college has won the „Meghnath Nageshkar Trophy“ of Shivaji University for the Best College in the field of Sports for eleven years continuously. The college has also proved its talent in the field of cultural activities by winning General Championship in the Central Youth Festival of the university for seven consecutive years.

Considering the strengths of the college, the NAAC, Bangalore has reaccredited the college with „A“ Grade. The college is identified twice as the “College with Potential for Excellence” by the UGC, and included in “The Star College Scheme” by the DBT, Govt. of India. The college has always focused on co-curricular activities along with academic programmes. Students and faculty members participated in various social and environmental awareness programmes like Tree plantation, No Vehicle Day, Cleanliness Activities and other cultural activities.

1.2 Vision of the College:

Vivekanand College will be an educational center devoted to the dissemination of “**Education for Knowledge, Science and Culture.**”

1.3 Mission of the College:

Mission of the college is to strive hard to realize the vision of our founder Dr. Bapuji Salunkhe i.e. to make education accessible to the masses, and to mold responsible citizens by inculcating noble values and a thirst for knowledge.

1.4 Goals and Objectives of the College:

1. To provide equal opportunity of quality education to all by means of sheer hard work, dedication and devotion.
2. To promote scientific attitude and inculcate cultural values into the students.
3. To enhance the commitment of faculty, staff and students towards diversity, social

- justice, truth, honesty, character and democratic citizenship.
4. To aim at overall personality development through various activities.
 5. To provide a platform to develop skills necessary to grab new opportunities and face challenges in the ever-changing society.
 6. To provide a substantive, supportive, safe, affordable and accessible teaching-learning environment.
 7. To motivate the teachers and students to attain community and social development through various activities.

The vision and mission statements of the college are clearly indicative of the objectives of the National Policy on Education demanding that centers of higher education should perform multiple roles like creating new knowledge, acquiring new capabilities and producing an intelligent human resource pool, through teaching, research and extension activities. The college plans and executes its curricular, co-curricular and extracurricular activities to translate the vision and mission statements into reality.

1.5 Motto of the Vivekanand College, Kolhapur:

“Dnyan Vidnyan ani Susanskar Yasathi Shikshan Prasar” (The spread of education is with a view to diffusing knowledge, science and bud breeding) is the motto of the sanstha. Bapuji defines “dnyan as the knowledge of truth, character, integrity, demolition of the exploitative tendencies, service and dedication. “Vidnyan consists in the application of the aforesaid principles to life which, in turn will lead to good breeding.

1.6 Environmental Policy:

Vivekanand College is aimed at balancing environmental protection and the conservation of natural resources with other policy goals, such as affordable energy, air and drinking water quality monitoring, rainwater harvesting. Green Campus Committee of the college has established clean and green campus with awareness and protection and in fulfilling sustainable development goals set forth to implement environmental policies given by government from time to time.

Table : Name and Address of the Institution:

| | |
|---------|---|
| Name | Shri Swami Vivekanand Shikshan Sanshtha“s Vivekanand College, Kolhapur Affiliated to Shivaji University Kolhapur, Autonomous, NAAC Accredited with „A“ Grade, with CGPA 2.34, College With Potential For Excellence (CPE), ISO 9001- 2015 |
| Address | 2130, E Ward, Tarabai Park, Kolhapur, Maharashtra 416003 |
| City | Kolhapur |
| E. Mail | info@Vivekanandcollege.org |
| Website | http://www.Vivekanandcollege.org |

Location:

| | |
|---------------------------|----------|
| Location | Urban |
| Campus area | 7.0 Acre |
| Built up area in sq. mts. | 4775.63 |

Coordinates: 160 42`17” N 740 13`44.9” E

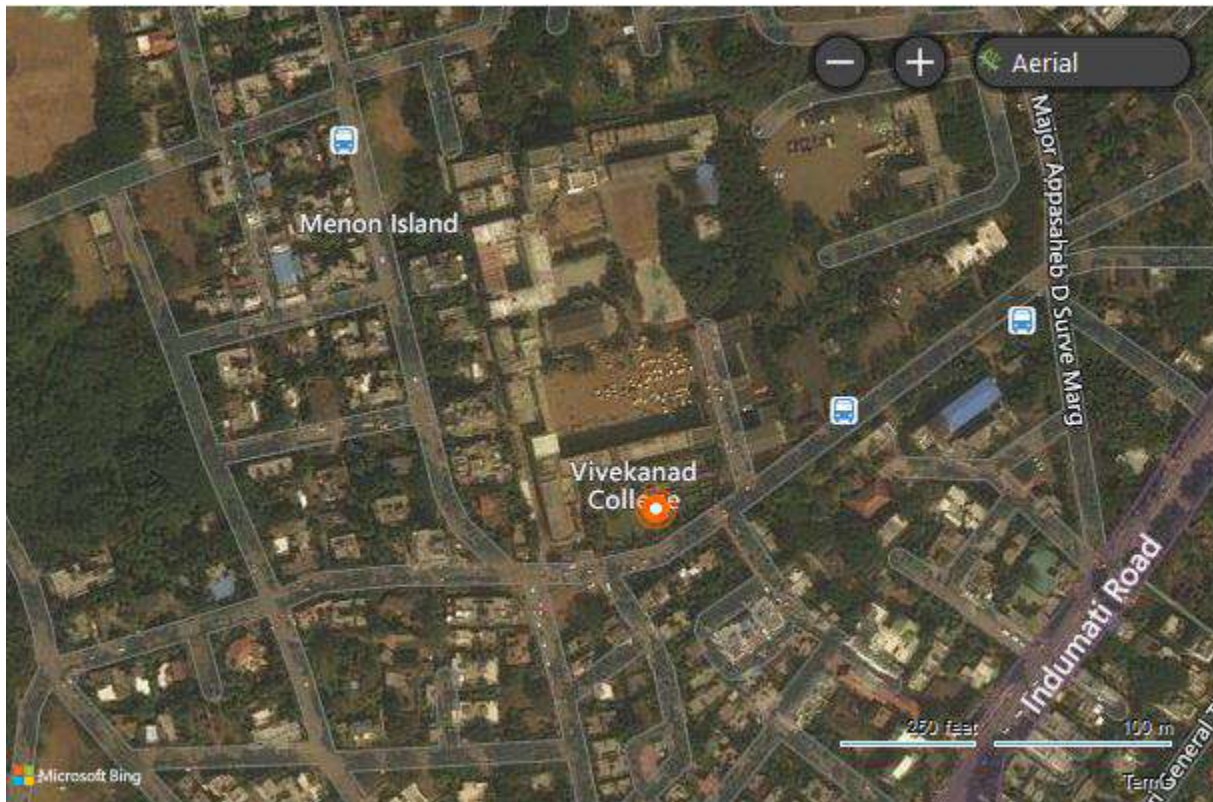


Plate No.01: The Google Earth Image of the Vivekanand College, Kolhapur

Chapter 2 Energy Aspect

2.1 Energy Audit:

Energy is one of the major inputs for the economic development of any country. The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect. Also it can be said as “the strategy of adjusting and optimizing energy, using system and procedure so as to reduce energy requirements per unit of output while holding constant or reducing total costs of producing the output from these systems”. The energy audit is key to a systematic approach for decision making in the area of energy management. It attempt to balance the total energy inputs with its use, and serve to identify all the energy streams in a facility.

Energy is an important parameter has to be study while going through green audit. We use different forms of energy such as electricity, LPG, petrol, diesel, wood etc. to carry out our day to day activities. On the background of climate change and Paris Agreement, India has intended to reduce its carbon emission by various ways. Reject, Reduce and Replace are the three R’s for efficient use of energy. Electricity and LPG are the forms of energy majorly used in higher education institutes. Use of LED lights instead of incandescent lamp and tube lights is one of the important green practices followed by college. Along with use of LED lamps use of natural ventilation, natural light are useful practices to carry out in the college to reduce the use of electricity.

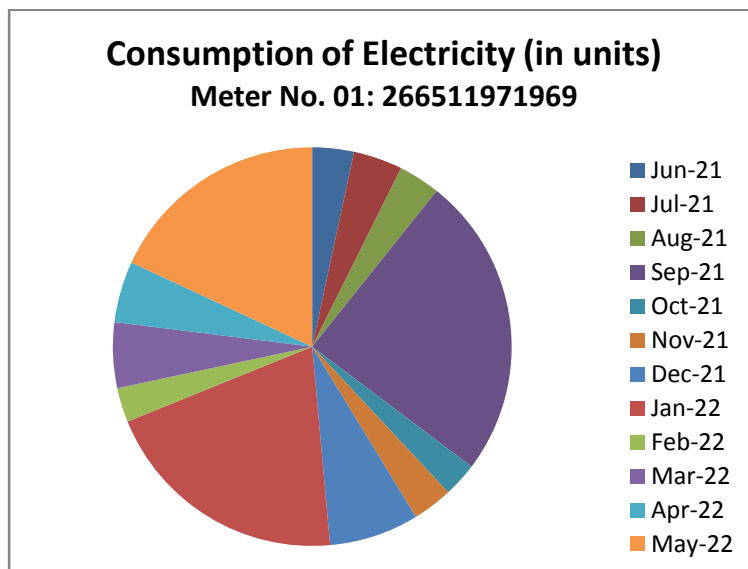
Energy resources utilized by all the departments, support services and the administrative buildings of Vivekanand College, Kolhapur campus include electricity and liquid petroleum. Major use of the energy is at office, canteen, hostel and laboratories, for lighting, transportation, cooking and workshop instruments. Following is the data related to energy consumption and conservation practices analyzed under audit process of Vivekanand College, Kolhapur.

2.1.2 Energy Consumption:

a) Electricity consumption by Meter No. 01: 266511971969 Avg. consumption = 711.4 units.

Table: Electricity consumption by Meter No.1: 266511971969

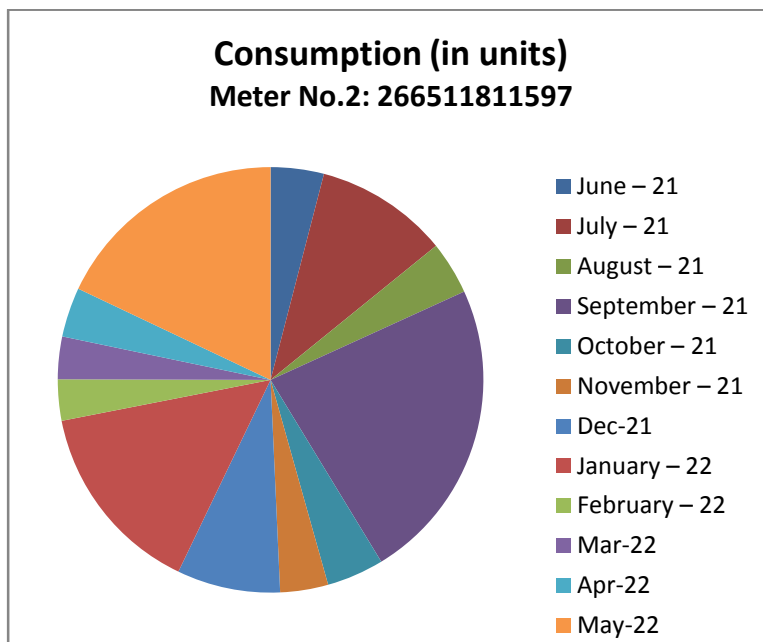
| Sr.No. | Month | Consumption (in units) |
|--------|----------------|------------------------|
| 1 | June – 21 | 287 |
| 2 | July – 21 | 341 |
| 3 | August – 21 | 287 |
| 4 | September – 21 | 2096 |
| 5 | October – 21 | 236 |
| 6 | November – 21 | 278 |
| 7 | December- 21 | 622 |
| 8 | January – 22 | 1732 |
| 9 | February – 22 | 238 |
| 10 | March- 22 | 455 |
| 11 | April- 22 | 423 |
| 12 | May- 22 | 1542 |
| | Average | 711.4 |



b) Electricity consumption by Meter No. 02, 266511811597 Avg. consumption = 537.83 units.

Table: Electricity consumption by Meter No.2: 266511811597

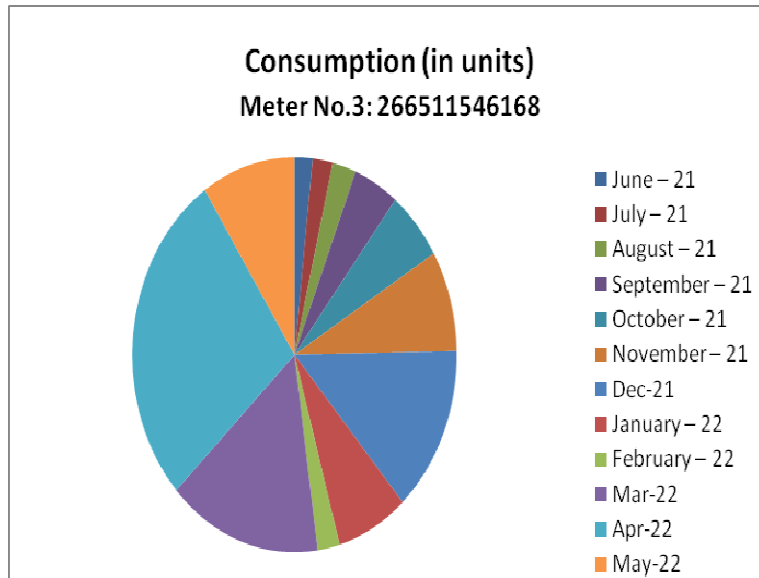
| Sr.No. | Month | Consumption (in units) |
|--------|----------------|------------------------|
| 1 | June – 21 | 260 |
| 2 | July – 21 | 654 |
| 3 | August – 21 | 260 |
| 4 | September – 21 | 1491 |
| 5 | October – 21 | 280 |
| 6 | November – 21 | 235 |
| 7 | December- 21 | 507 |
| 8 | January – 22 | 954 |
| 9 | February – 22 | 202 |
| 10 | March- 22 | 209 |
| 11 | April- 22 | 243 |
| 12 | May- 22 | 1159 |
| | Average | 537.83 |



c) Electricity consumption by Meter No. 03: 266511546168 Avg. consumption = 1378.08 units.

Table: Electricity consumption by Meter No.3: 266511546168

| Sr.No. | Month | Consumption (in units) |
|--------|----------------|------------------------|
| 1 | June – 21 | 297 |
| 2 | July – 21 | 331 |
| 3 | August – 21 | 388 |
| 4 | September – 21 | 747 |
| 5 | October – 21 | 956 |
| 6 | November – 21 | 1365 |
| 7 | December- 21 | 2265 |
| 8 | January – 22 | 1178 |
| 9 | February – 22 | 363 |
| 10 | March- 22 | 2528 |
| 11 | April- 22 | 4577 |
| 12 | May- 22 | 1542 |
| | Average | 1378.08 |



Electricity supplied from the Maharashtra State Electricity Board (Mahavitaran) is the main source of energy for the activities on the campus like illuminating rooms, operating fans computers, instruments, motor and for water coolers. It is depicted from above tables and graphs that the average electricity consumption by college is 804.5 unit per month. Diesel operated Green power Kirloskar generator is used as an alternating source of Energy during emergency conditions.



Plate No.2: Generator operated on Diesel at college campus.

Chapter 3 Best Environmental Practices

The administration of Vivekanand College is very keen on saving electricity and fuel which is been used on the campus. The college has implemented some unique ideas like promotion of electrical vehicles on campus, LED lights on campus and use of Bicycles. The various departments also conducted energy conservation awareness programmes, motivation of students, staff and faculty to use public vehicles as well as Car pool system.

The Institution has facilities for alternate sources of energy and energy conservation

1. Solar energy
2. Use of LED bulbs/ power-efficient equipment

The alternative for conventional energy sources is need of present days. Our Indian government encouraging the society to use more and more green energy. The college has taken initiative in the measures for alternate energy sources for conservation of energy.

3.1 Solar energy:

Rooftop solar water heaters systems are cost-effective and eco-friendly way to generate hot water. They can be used in any climate, and the input energy it uses is sunshine which is always free to us. In our college hostel solar heaters are used to prepare hot bathing water for the students. It reduces our electricity bill.

Solar street light systems are installed in the campus for along the roads in the campus for energy conservation.



Plate No. 03: Solar Panels at College

3.2 Solar Photovoltaic street lamps are also installed at Vivekanand College campus. Compared to fossil and nuclear energy sources, very little research money has been invested in the development of solar cells, so there is considerable room for improvement.



Plate No. 04 Solar Photovoltaic street lamps at Campus

3.3 Use of LED bulbs/ power-efficient equipment:

The college is using CFL, LED bulbs and star rated power electrical equipments which uses lesser energy. In newly constructed buildings and renovated areas we have totally used LED bulbs. 5 STAR electronic gadgets like rated air conditioners, freeze etc. are used and maintained regularly to achieve energy conservation. Slogans and Signage are posted in the campus for the awareness

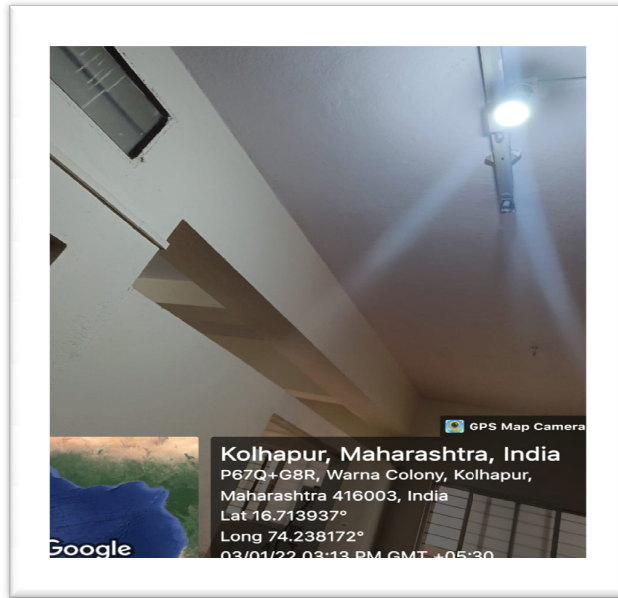


Plate No. 05 Use of LED lamps/bulbs at Campus



Plate No. 06 Use of bicycles by students

Chapter 5

Summary, Conclusion and Recommendations

Summary:

Green Audit is one of the important tool to check the balance of natural resources and its judicial use. Green auditing is the process of identifying and determining whether institutional practices are eco-friendly and sustainable. It is a process of regular identification, quantification, documenting, reporting and monitoring of environmentally important components in a specified area. The MS Enviro, Diskal, Satara has conducted a “Energy Audit” of Vivekanand College, Kolhapur in the academic year 2021-22. The main objective to carry out green audit is to check the green practices followed by college and to conduct a well defined audit report to understand whether the college is on the track of sustainable development.

After completing the audit procedure of college for green practices, there are following conclusions and recommendations which can be followed by college in future for keeping campus environment friendly.

Conclusion:

From the energy audit following are some of the conclusions:

1. Installation of solar panels provides a very useful alternative of electricity.
2. Electrification of street lights by solar power has been done in campus.
3. Use of bicycles proving to be one of the good practice to save the fuel and help for green and clean environment on the campus. The use of electrical cars and e-bikes will be good initiatives to save fuel.
4. Electricity is saved by the use of CFL/LED bulbs for illumination and switched off when not in use.

Recommendations:

Following are some of the key recommendation for improving campus environment:

1. College needs to use alternative sources instead of use of LPG (Non conventional sources) for laboratory and other sources.
2. Eco-friendly parameters should be included in the purchase of articles and goods for the Campus.
3. Green building guidelines should be followed for future expansion projects of the College
4. Need to restart the ‘No Vehicle Activity’ again in the college so that energy resource can be saved