



**B.V.V Sangha's
Basaveshwar Commerce College, Bagalkot**



Energy Audit Report

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B.V.V.Sangha's
Basaveshwar Commerce College, Bagalkot

Energy Audit Report 1-8-2022 to 31-8-2023



Report Generated by NICHROME TESTING
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INTRODUCTION:

Energy audit is a valuable means for a college to determine how and where they are using the most energy or water or other resources; the college can then consider how to implement changes and make savings.

Energy Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of institute. It aims to analyze environmental practices within and outside of the concerned place, which will have an impact on the eco-friendly atmosphere. It can create health consciousness and promote environmental awareness. It provides staff and students better understanding of Green impact on campus.

Hence its important that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation and the role of higher educational institutions vis a vis Energy / Environmental sustainability is more prevalent.

The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory that all Higher Educational Institutions should submit an annual Energy / Environmental / Green Audit Report. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through carbon footprint reduction measures.

PREAMBLE:

The policy statement for abatement of pollution (1992) and the subsequent Environment Protection Act 1986 announced by the Government of India seeks integration of environmental considerations into decision making at all levels. Environmental Audit has been recognized as one of the instruments for achieving this objective.

An Environmental statement is an objective assessment, of the extent of compliance of a company with applicable Environmental laws and regulations. It is based upon a review of pertinent records and technical data. The Environmental statement achieves following purposes,

1. Assuring compliance with various Governmental regulations,
2. Reduces environmental risks and liabilities,
3. Cost savings or increasing the efficiency of operations,
4. Identifies environmental liabilities, if any.

Accordingly, the survey was carried out to review the operations, to collect relevant data like materials consumption, water consumption, waste generated and the pollution prevention method practiced by the Organisation etc. Further improvement plans of the Organisation during the financial year were also noted.

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OBJECTIVES

Energy Audit of an institution is increasingly becoming an important self-assessment tool of the institution which reflects the role of the institution in mitigating the present environmental problems. The college has been putting efforts to keep our environment clean since its inception. Therefore, the purpose of the present green 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 Audit are the following.

1. To map the Geographical Location of the college
2. To document the electrical diversity of the college
3. To record the meteorological parameter where college is situated
4. To document the ambient environmental condition of weather, air, water and noise of the college
5. To estimate the Energy requirements of the college and look for alternatives
6. Implement the alternatives and save energy / produce energy for overall environmental sustainability
7. To report the expenditure on green initiatives during the last five years

METHODOLOGY:

The purpose of the Energy audit is to ensure that the practices followed in the campus are in accordance with the Green Policy of the country. The methodology includes: collection of data, physical inspection of the campus, observation and review of the documentation and data analysis.

BRIEF INTRODUCTION OF ORGANISATION:

The Basaveshwar Commerce College, Bagalkot is one of the prestigious institute of Basaveshwar Veerashaiva Vidyavardhaka Sangha, Bagalkot which was founded by His Holiness Shri Gurubasava Mahaswamiji of Bilur in the year 1906, with the opening of a Sanskrit Patashala.

It provided the impetus that propelled a sleepy little town into an Educational, Commercial and Industrial hub of this backward area of Karnataka state.

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Main Campus

Aerial View of the College Campus.



BASAVESHWAR COMMERCE COLLEGE

The Basaveshwar Commerce College is part of B.V.V.Sangha, which was established in 1970 with 50 students. The college has become predominant in the field of commerce and management education within a span of five decades. Basaveshwar Commerce College is the only independent commerce college in Bagalkot district. At present, nearly 1800 students are studying at the College. The college is offering various courses such as B.Com, B.B.A, M.Com and CA foundation course. The college has committed and dedicated faculty by large, it is committed for academic excellence and all-round development of the students.

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The Alumni of college are serving at their various capacities around the world. Some of them are leading chartered accountants, judicial officers, people's representatives, government officers, and entrepreneurs. In total Basaveshwar Commerce College is one of the outstanding colleges in Karnataka.

Bagalkot, is a city in the state of Karnataka, India, which is also the headquarters of Bagalkot district. It is situated on branch of River Ghataprabha about 481 km (299 mi) northwest of state capital Bangalore, 410 km (255 mi) southwest of Hyderabad, and about 570 km (354 mi) southeast of Mumbai. The population of the urban agglomeration was 111,933 according to the provisional results of 2011 national census of India, and the city is spread over an area of 49.06 square kilometres (18.94 sq mi)[2] with an average elevation of 532 m (1,745 ft) above MSL.

Our Vision

Imparting Excellent Education and Training in Commerce and Business Administration, thereby earning a unique Distinction as Top-notch Commerce Institution in North Karnataka

Our Mission

Basaveshwar Commerce College was established in 1970 with a great mission of imparting professional education in commerce, Business Administration & Management at U.G & P.G. Levels.

The Broad Goal of the college is to respond to the ever-changing needs & expectation of Business Environment and Demands of the community by molding students into accountable citizens, developing a sense of Dedication, Social Conscience and Commitment.

Objectives of organisation

To bring out graduates of excellence, complete character and integrity to venture into right vocations, professions and entrepreneurship.

To harness the students potential through coordinated efforts and personal attention.

CORE VALUE

- Critical thinking and problem solving.
- Leadership.
- Encouraging and building student ability, character and creativity.
- Ethics: We believe in acting with honesty, courage, and trustworthiness.
- We value an institutional attitude and culture that promotes and supports total health and wellness of staff and students.
- Excellence: Maintain a high standard of integrity and performance leading to the achievement of academic and professional goals.

ENVIRONMENT PLEDGE

We, The Principal, staff and students, adopt responsible practices in our days energy use with due regard to the environment. We pledge to avoid using electrical power where not needed. We also pledge to use judiciously the electrical power by using Energy efficient products. We shall practice to switch off all appliances when not in use.

PURPOSE:

To realistically and comprehensively reduce energy consumption, assure acceptable indoor air quality, and improve energy efficiency on campus through methods that are consistent with a safe, secure, and inviting campus community. As outlined in this policy, Environment conservation will be accomplished by developing a proactive and progressive approach to providing energy efficient, responsible, and cost effective operations on campus. This policy will be reviewed and updated periodically as public awareness, management techniques, and technologies change.

APPLIES TO: Faculty, staff, students, and visitors.

CAMPUS: BVV Sangha's Basaveshwar Commerce College, Bagalkot.

We pledge to speak in open forums for the energy conservation first, Energy Efficiency next and eliminating of High Energy use appliances for better or low energy use one's.

We commit ourselves to the safe operation of all our needs, be it in classrooms, library, canteen, on road, off road, in-campus out-campus as well as at our place of stay.

We adhere to reduce environmental load by efficiently using resources, saving energy, reducing waste, encouraging material recycle, with special emphasize to minimising emissions of greenhouse gases, ozone depleting substance and particle matter. we endure to minimise environmental loads and adopt environmentally friendly technologies when ordering and purchasing necessary products and resources.

We endure to attend educational programs and promulgate our close friends and colleagues to follow suite.

We endure to ensure that we recognize the essence of this Energy use policy by actively and aggressively conducting workshops and training to all in environmental concepts.

We make wide ranging social contribution to close association with the students, teaching staff, administrative staff, housekeeping staff by disclosing Energy use (Star rating appliances) information and supporting minimized consumption of Energy.

ENVIRONMENT, OCCUPATIONAL HEALTH AND SAFETY POLICY

BVV SANGHA'S COMMERCE COLLEGE, BAGALKOT in its continual improvement shall be achieving Environmental, Occupational, health, and safety management system by

1. Providing good working condition and healthier environment to all employees
2. Optimum usage of natural resources by reducing, recycling and re using Prevention of pollution by minimizing waste generation and proper disposal of waste generated by all activities
3. Prevention of health and injuries by adopting safe working practices in all operations Comply with all applicable environmental requirements

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Basic Activity : Education Activity : Commerce College with B.Com Facility.
Faculty : 58 Number of Students : 1650

LAND USE DATA

CATEGORIES OF LAND USE	AREA (m ²)
PLANTATION AREA	965 Sq.m
BUILT UP AREA (INCLUDE ROADS)	1350 Sq.m
TOTAL AREA	2315 Sq.m

ELECTRICAL POWER CONSUMPTION:

Power consumption on an average is 9 kWh (units) of electricity per day. As a policy decision, the authority keeps on replacing the old filament bulbs, CFL bulbs and tube lights by low energy consuming LED bulbs and LED tubes (**completed this year 2022 in all class rooms, library and administrative office**) and bulky high-power consuming fans by energy efficient fans in order to keep the electricity consumption of the college as low as possible (to be completed shortly). This has led to substantial saving of energy.

In addition, College has installed UPS of 38 kVA and a standby generator of 15 kVA.

In addition to making Environmental Studies a very vital subject in our syllabus, our organisation has gone a step further by putting that theory into practice.

The college has **installed solar water heaters** having a capacity of 500 lit / hour. The energy from this solar installation is helping offset the institute's daytime peak electricity demand from the grid. Our Organisation was able to **offset part of energy usage from the state grid** thus moving towards a more reliable and greener option and **reducing its carbon foot print**.

OBSERVATIONS**Electrical Power Usage:**

It is important to understand the significance of the Energy use implication. The use of electrical power has been observed to be unnecessary. The administration should initiate to keep all unwanted and unused appliances switched off.

It is observed that the lights are left switched ON at majority of places and thus causing financial losses to the management and energy loss to the country.

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Solution:

Lighting improvements should be carried out by using T5/LED or The Induction Light systems in lieu of normal tube lights. If the finance department permits, it is advised to install 40W Induction lamps in all classrooms. It is advisable to install Light Intensity Sensors in all the rooms.

**NATURAL LIGHTING: Category 7.1.1, 7.1.2, 7.1.3 and 7.1.5**

It is found that the windows have not been blocked and also at some areas need to be maintained clean, if not it calls for switching on internal lights. If the windows are cleaned at regular intervals, it will help in increasing the illumination level in the room. Thus preventing switching on lights during day light.

It is also advised to increase the natural lighting wherever possible which in turn will decrease the energy requirement due to lighting.

It is also important that in no room the stacking of either the material or the placement of rooms should be allowed. Cupboards blocking natural day light should be avoided at all places in the campus.



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Windows:**Key observations and requirements on designing the windows.**

Windows are necessary for natural lighting and for cross flow of air. However, In educational institutions, the point of concern is that, the distraction of attention.

It has also been observed that the top part of the window, which is supposed to be the ventilator, has been permanently closed. It is necessary to open this part for indoor exhaust. In present situation, the warm air vented out by human breath is trapped in the top layer and has no escape path.

As the room temperature rises, the ceiling fans, turned on, churns in the same warm air in the room creating feel of heaviness.

The college buildings is well engineered to allow the natural breeze to flow & maintain comfortable room temperature. However, it is barred by wrong design and placement of windows.

Hence, we strongly advise to keep all the ventilators' clean & open. If possible, work with wall mounted Fans to act in line with natural theory of Commerce.

Well designed windows results into reduction of energy demand by 70%

The library / reading room is well illuminated using T8 & T12 type tube lights. However the following aspects are seen to be of high level of pollution.

Cutting of natural air circulation system has forced, keeping the fans in operation. However these fans are ceiling mounted and cause hot air revolving within the reading room causing loss of ideal supply of Oxygen and humidity.

Stacking of racks in front of the window, prevents natural illumination. This calls for forced lighting. The air vents are totally blocked and results into very poor air circulation.



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CHILLER PLANT:

The auditorium is centrally air conditioned. The hall is provided with the Chiller plant. The chilled water circulation is seen to be exposed to following factors leading to thermal loss and exposed to ambient temperature.

1. Skinned insulation media on pipe line.
2. Wrong indicator for operating the intake air vents.



BATTERY PLACEMENT: (Placing of Batteries Category 7.1.2, 7.1.3 and 7.1.5)

The batteries should be placed properly

1. Insulated platform not touching any of the metal frames.
2. Need cross ventilation for favorable breathing.
3. Provision for periodical checking and maintenance should be made possible without major obstacles.

In absence of the above

1. The batteries will discharge faster.
2. The charging time and current will increase as there is the return path for self discharge.

The presence of oxidation marks at the point of contact should not develop over the time. A well maintained battery will draw less charging power, ie saves on energy consumption, delivers more energy per charge thus resulting in better serviced life.



Batteries stacked for disposal

SUGGESTIONS

Suggestions are as follows

1. Energy wastages need to be arrested and switch over to well lighted buildings or LED usage (completed). To Change in phased manner the non energy efficient fans to energy efficient fans.
2. Saving of energy to be assessed and targets fixed YOY
3. Energy Audit to be followed with Energy Conservation e.g switching off lights and fans when not being used.
4. For Power factor improvement capacitor bank to be provided
5. Battery related improvements - Like ventilation, maintenance etc. Battery be given back to manufacturers only whenever replaced with proper discounts taken for the existing batteries.
6. Insulations to be checked across the campus and improvements to save energy
7. Illumination in rooms to be taken up to save energy.
8. Vehicle usage may be reduced in the campus which will have reduction in CO2 emissions. EV vehicles may be encouraged. Similarly pooling of members for vehicle usage will also reduce CO2 emissions.
9. Signage's be put across the whole of campus (Energy conservation, Safety, Environment, Botanical names, etc)
10. Next Audit, Carbon Foot print to be included and reduction of Carbon Foot Print to become a goal of the Organisation
11. Thermo vision camera to be used to identify the hot spot area and rectify if required

ACTION PLAN SUMMARY:

- Make an action plan both short term and long term.
- Execute plan as per schedule. Invite subject experts if required,
- Organize in person panel discussions and interaction to propagate the knowledge of energy conservation and mitigation.
- Prioritize the initiatives and execute.
- Observe and record the benefits and shortcomings.
- Workout further improvement by involving the staff and students.

AUDITED TEAM AND THEIR CREDENTIALS

DR KRISHNA N KULKARNI BE(Chem), MTech (Chem), PhD (Geology)

Environmental Expert

In the Environmental Field for the last 25 years having completed many Audits of Colleges, Industries and their compliances as per Ministry of Environment, Forests and Climate Change, New Delhi. Also an expert in Design, Execution and Operations of Waste Water Treatment Plants

Shri Ramesh Upadhye B.Tech(Electrical Power)

Electrical Expert

Former employee of POWERGRID (Central Government) and been in the field of Academics and Electrical Audits. Experience of more than 35 years

Shri Shrikantha Joshi BE(Civil)

Civil Engineering Expert

Expert on design of Buildings, Audits in Civil engineering area. Experience of more than 25 years

Shri Kallappa Udhoji

Bachelor in Science (Chemistry)

Formerly QA / QC Head - Lab Division, ADM Oil Industries. Analytical Expert and Incharge of Nichrome Testing Laboratory and Research Pvt Ltd Lab Section. Experience of more than 30 years

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Recognitions and Certifications :

- **NABL Accredited,**
- **MoEF & CC / CPCB Recognised,**
- **ISO 9001 : 2015**
- **ISO 45001 : 2018 Certified**
(Certificates Enclosed)

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