

ENERGY AUDIT REPORT

2022-2023



**TEHATTA SADANANDA
MAHAVIDYALAYA**

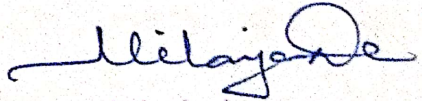
Tehatta, Purba Bardhaman, West Bengal

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ENERGY AUDIT TEAM

Sl.No.	Name	Designation	Department and Institution	Signature
1	Dr. Alokanda Ghosh	Assistant Professor	Dept. of Geography, Tehatta Sadananda Mahavidyalaya	Alokanda Ghosh 25/07/2023
2	Dr. Anindya Mondal	Assistant Professor	Dept. of Mathematics, Tehatta Sadananda Mahavidyalaya	A. Mondal 26.6.23
3	Achintya Mukherjee	Cashier	Tehatta Sadananda Mahavidyalaya	Achintya Mukherjee 27.07.23
4	Santanu Bhattacharya	Non-Teaching Staff	Tehatta Sadananda Mahavidyalaya	Santanu Bhattacharya 27.07.23
5	Rajkumar Bhattacharya	Non-Teaching Staff	Tehatta Sadananda Mahavidyalaya	Rajkumar Bhattacharya 23/07/23


Principal
Tehatta Sadananda Mahavidyalaya
Tehatta, Purba Bardhaman

1. Acknowledgement

We are taking the opportunity to appreciate and gratified to the Principal of Tehatta Sadananda Mahavidyalaya for giving us the opportunity to conduct energy audit for the college. We are indeed fascinated by the helpful attitude and co-operation of all faculties and non-teaching staff, who rendered their valuable assistance and co-operation the course of study. The dedication and commitment to assessing the energy audit have been invaluable in fostering sustainability within our campus community.

Furthermore, we would like to express sincere gratitude to the Principal for his leadership in advocating sustainability initiatives within our college. Your vision and insightfulness have inspired us to prioritize environmental responsibility and integrate sustainable practices into our campus culture.

2. Introduction

Energy consumption in different forms has been continuously rising almost in all the sectors- agriculture, industry, transport, commercial, residential (domestic) and educational institutions. This has increased the dependency on fossil fuels and electricity. Therefore, energy efficiency improvement and possible energy conservation became a necessary objective for energy consumers. The Government of India enacted the Energy Conservation Act, 2001 in October 2001.

The Energy Conservation Act, 2001 became effective from 1st March, 2002. According to the act, energy audit “means the verification, monitoring and analysis of use of energy including submission of technical report containing recommendations for improving energy efficiency with cost benefit analysis and an action plan to reduce energy consumption” .

3. Executive Summary

Conducting an energy consumption audit in a college is essential for numerous reasons, ranging from economic savings to environmental accountability. The executive summary of the energy audit report furnished in this section briefly gives the identified energy conservation policies, scopes, objectives and measures along with recommendation that can be implemented in a strategic manner to conserve energy, increase productivity inside the college campus.

It marks a significant milestone in the establishment of Tehatta Sadananda Mahavidyalaya, being a beacon of educational opportunity in the heart of rural outskirts of Kalna-II C.D.Block. It is only Degree College in the 30 kilometer radius of Kalna-II. Founded with a vision to empower the local community through accessible and quality education, the college has since been a keystone of academic excellence and community development in the region from 2013. The college is affiliated to the University of Burdwan and has introduced honours course in six departments and pass course in three departments.

The founding principles and values of the college are to bring forth the commitment to rural development, educational equity, and community engagement. It has emphasized the dedication to foster a supportive and inclusive learning environment. The college has adopted the village named, Akalpaush and has a strong impact not only on this village but on the entire local rural community, including its role in providing educational opportunities, economic development, and cultural enrichment.

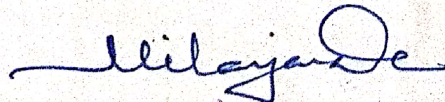
4. Vision and Mission

Our Vision

To educate and empower the underprivileged youth of Tehatta and its neighbouring villages by providing value based quality education for their holistic development so as to enable them to transform the socio-economic fabric of the region into a lively and progressive one.

Our Mission

- To encourage the youth belonging to economically backward and underprivileged communities to pursue higher studies.
- To encourage greater participation of female learners in the field of higher education for women empowerment.
- To develop a socially and economically inclusive academic ambience that is flexible to changing needs.
- To impart value based quality education and to unfold the potential and skills of the local youth to enable them emerge as self reliant and competent individuals of the society.
- To promote an academic ambience that is free from gender discrimination and stereotypical social and racial prejudices.
- To enlighten young minds and help them to develop vocational skills and social awareness to provide opportunities of employment to students in the context of changing world.
- To help the neighbouring areas in feasible ways to create a benevolent society free from all biases.


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5. About the College

5.1. Campus Area

Located in the serene countryside of Kalna-II Block, nestled in the heart of Akalpaush Gram Panchayet, the college campus sprawled across lush green, framed by towering trees and manicured gardens. The rural setting offers students a peaceful retreat from the hustle and bustle of city life, fostering a close-knit community and a deep connection with nature. From the vantage point of the campus, students could admire the natural scenic beauty of the surrounding and the panoramic views of the agricultural field. The geographical area of the college provided an idyllic backdrop for learning and personal growth.

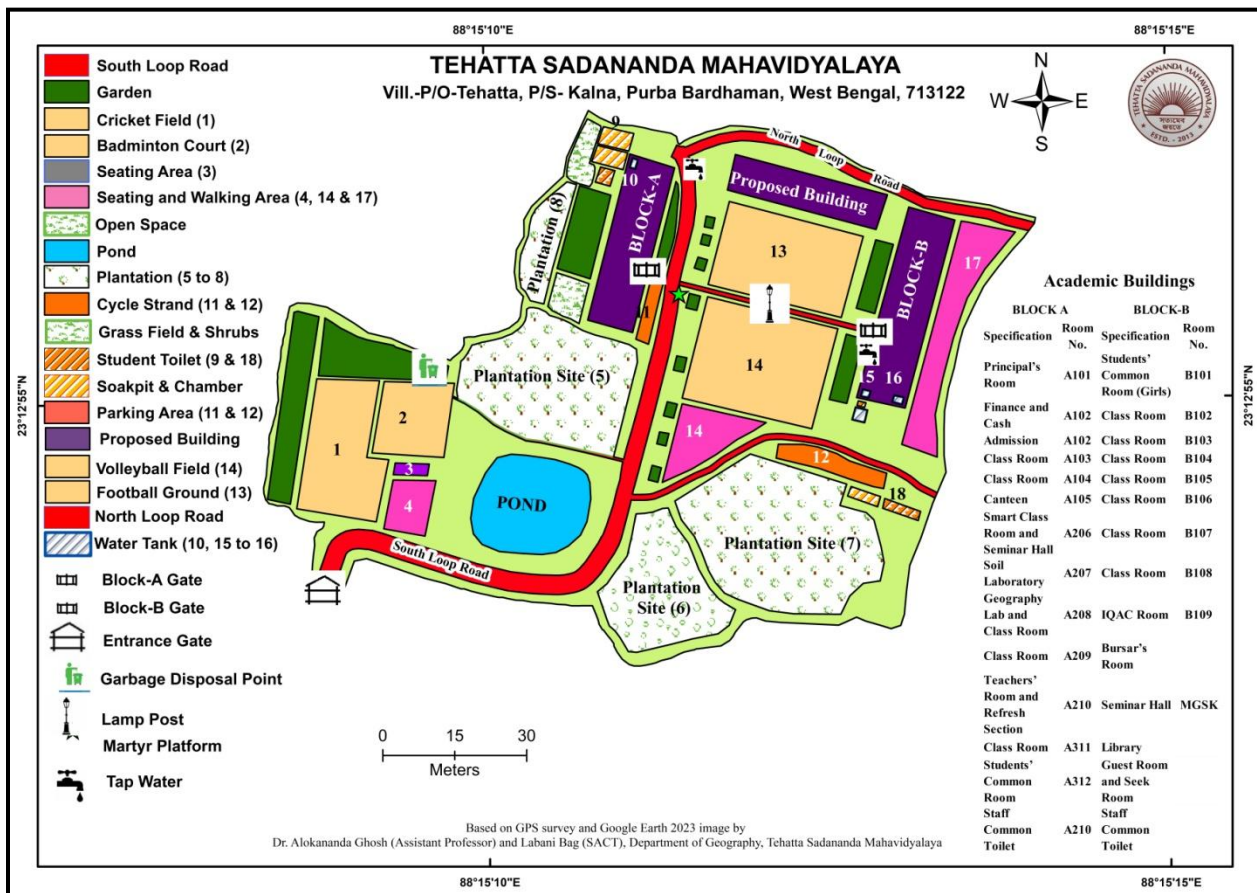


Fig. 1. Layout of College Campus, Tehatta Sadananda Mahavidyalaya

5.2. History of college

The birth of Tehatta Sadananda Mahavidyalaya was the outcome of a long and ardent desire of the local erudite to free the toiling and underprivileged masses of Tehatta and her neighbouring villages from the darkness of illiteracy by providing them the scope of receiving education. The first step towards this philanthropic gesture was the foundation of Tehatta Sailendra Smriti Sangha, a village library, a small hospital, a post office and Tehatta Free Primary School and Tehatta High School. The latest and most significant addition to the list was the establishment of Tehatta Sadananda Mahavidyalaya in 2013, a co-educational Government aided Degree College, affiliated to the University of Burdwan.

Being situated in an agrarian rural locale, the college had immense challenges to overcome to steer forth in the direction of its aim. Fortunately the college is flourishing under the constructive and positive leadership of the authority who are relentlessly giving their best effort to practically implement the mission and vision of the institution. The Governing Body of the college along with the law making and administrative authority together with the Teaching and non-teaching staff have jointly come together to promote, strengthen and upgrade this institution to provide a holistic education to the learners and they have made a commendable progress within a short span of time.

Tehatta Sadananda Mahavidyalaya is the only degree college in Kalna Block II and the Department of Higher Education, Government of West Bengal has sanctioned grants for the construction of the College Building which is in the process of its making. The University of Burdwan and the Higher Education Council have granted permission to carry on the teaching-learning process in full swing. Honours course has been introduced in six departments. The college also intends to initiate Science and Commerce stream in near future. The infrastructure is also gradually improving and new teaching and non-teaching posts have been sanctioned.

The establishment of the college is a major step towards enlightenment and betterment of the youth of the locality and what is vitally important at present is the sincere dedication and selfless commitment towards making the college a leading institution in the district. All the stake holders of the institution happily have joined hands in realising this dream and it is our belief that with

continuous effort and hard work we will steadily strive towards a better tomorrow which will free the youth from the clutches of poverty, illiteracy, superstition and mutual differences to collectively emerge as self reliant individuals of the society capable of transforming the socio-economic fabric of the area into a vibrant one.

6. Methodology

The Energy Audit would provide a clear picture to identify the orientation to the energy cost reduction, preventive maintenance and quality control programmes which are the most essential for any production and utility related activities both in academic and non-academic sector. Such an audit programme will help to determine the energy costs, availability and reliability of supply of energy, identify energy conservation areas, adopting the technologies etc. In general, Energy Audit is the translation of conservation ideas into realities, by lending technically feasible solutions with economic and other organizational considerations within a specified time frame. The primary objective of Energy Audit is to determine ways to reduce energy consumption per unit of product output or to lower operating costs. Energy Audit provides a "bench-mark" for managing energy in the organization and also provides the basis for planning a more effective use of energy throughout the organization.

The Preliminary energy audit is a relatively quick exercise to:

- Identifying the areas of energy consumption in the organization
- Assessing the overall cost
- Introspecting a temporal variation of load and consumption
- Estimate the scope for saving
- Identify the most likely and the easiest areas for modification and reduction
- Identify immediate improvements/ savings
- Set a 'reference point'
- Identify areas for more detailed study/measurement
- Preliminary energy audit uses existing, or easily obtained data

Detailed energy auditing is carried out in three phases: Phase I, II and III.

Phase I - Pre Audit Phase

Phase II - Audit Phase

Phase III - Post Audit Phase

Table 1. Phases of Energy Audit

Audit Phase	Plan of Action	Purpose/Result
Pre-Audit Phase	Plan and Organize	Resource planning and team formation
		Fixed time frame
		Energy Policy Formation
		First hand observation and data collection
		Macro level survey (oral)
	Conduct meeting and awareness program	Meeting for letting the stakeholders aware for reduction in energy consumption
Students meeting for making them aware about classroom behaviour and energy consumption		
Orientation program for the audit team and members of the institution		
Audit Phase	Data Collection, Processing	Listing of equipments according to their number, load and unit of consumption
		Collecting the past years energy consumption data and bills
	Analysing	Data analysing to validate the temporal consumption monitoring
		Annual energy bill, interview.
		Material balance and energy waste analysis
		Cost benefit monitoring
Post Audit Phase	Shifting of equipments	Tube light to LED
		20 kilowatt Solar PV system installment for restricting the use of conventional energy
	Plant Adaptation Initiative' and other initiatives	Every departments of the college was directed to take care of certain section of the garden
		Awareness programme
		Rain water harvest and use for garden and other cleaning activities

7. Energy Conservation Policy

To promote environmental awareness and holistic development, the college has adopted Energy Conservation Policy for '**Conservation of Resource for a Sustainable Environment**'. The institution aims to radically and extensively reduce energy consumption to promote healthy pollution free indoor air quality as well as improving energy efficiency within the campus through implementation of safe, secure, and eco-friendly measures within the premises. The policy is focusing on efficient, responsible, and cost- effectiveness of the adopted measures within campus.

The policy is compulsory for all the stakeholders of the institution and should be maintained while undertaking various activities by the institution. The college taken the '**Green Campus**' initiative and the formation of '**Eco-Club**' is one of such official platform which is devoted to the cause of environmental awareness and sustainable development.

➤ Objectives of the Policy

- To make all the stakeholders aware and understand about the importance of environment in daily life and in long term as well.
- To educate student teachers about the activities that is harmful for environmental health and will teach them how to stay reluctant from those activities.

8. Practices and Initiatives Taken

- The college has developed save energy plan at the institution level towards energy conservation. Thus the institution has adopted measures to use renewable energy and has replaces all the tube lights with light emitting diode (LED) tubes. The LED tube lights significantly reduce your energy use since LED bulbs are 90% more efficient and cost effective.

- Energy conservation practices and eco-friendly habits are inculcated among students and staff through simple programmes like- Tree plantations, Awareness programme done by NSS on ‘Tree Plantation Programme’, ‘Save Water Save Life’, ‘Deplasticisation’, ‘Cleaning College Campus’, ‘World Health Day Celebration’, ‘Cleaning of Courtyard of the College’ etc.
- Green Audit has been initiated by the college and policy taken to make it a mandatory programme.
- The college has taken tree plantation drive for every year 5th June.
- The college has its noise free zone and has encouraged in many ways to reduce local air pollution emissions.
- The college has undertaken green initiatives and has conducted ‘Green Literacy Programmes’ in the adopted village to spread awareness amongst the villagers about the practices of energy saving and environmental conservation.
- The College has taken ‘Plant Adaptation Initiative’, in which each department of the college have been gifted at least one plant for nurturing and taking care of.

9. Future Plan to Conserve Energy

- 20 kilowatt Solar PV system installment for restricting the use of conventional energy and to meet considerable amount of energy uses and maintain cost effectiveness,
- The college will develop systematic waste management mechanism.
- The college is on its way to harvest rain water.

9.1. Save Energy Measures to be followed in Daily Basis:

- Activate power management features on computer and monitor so that it will go into a low power “sleep” mode when the students and staff are not working on it.
- Turning off the lights and fan while leaving the staff room and class room
- Water the adopted plant by the departmental staff and students every day.
- Avoid using plastic bags and packets within campus.
- Turn off the tap after collecting water.

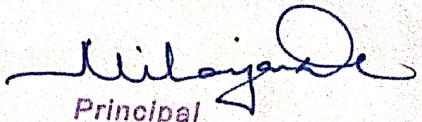
10. Recommendation

1. There has to be Institute level student community that keeps track of the energy consumption Parameters of the various departments, classrooms, areas, etc.
2. The college must ensure of limited use of xerox machine both for reducing the paper and energy consumption.
3. Energy auditing inside the campus has to be done on a regular basis and report should be made public to generate awareness.
4. The college must install solar panel to ensure sustainable use of energy.
5. Need to create energy efficiency/renewable energy awareness among the college campus i.e. solar, wind, Biogas energy. College should take initiative to arrange seminars, lectures, paper presentation competition among students and staff for general awareness.

ANNEXURE-I

Table 1. Month wise energy consumption

Months	Consumption (Unit)	Expenditure (Rs./-)
December to January, 2022	431	2199
May to July, 2022	655	3342
August to October, 2022	754	3814
November to January, 2023	951	4759
February to April, 2023	575	2955
May to July, 2023	712	3618
August to October, 2023	1015	5594
November to January, 2023	1248	5091
February to April, 2023	574	2603
May to July, 2023	1164	4930


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