



बहुउद्देशिय
महिला संघ
श्रीमती वनिता तिरपुडे (संचालिका)

बहुउद्देशिय महिला संघ

संचालिका
श्रीमती वनिता तिरपुडे

निंबुनाबाई तिरपुडे हॉस्पिटल, चॉक्स कॉलोनी, कामठी रोड, नागपूर. फोन : 0712-2640305, 6540838

Energy Audit Certificate

17 MAY 2023

This is to certify that Shri Balasaheb Tirpude College of Hotel Management and Catering Technology, Nagpur conducted detailed Energy Audit dated 6th May to 10th May, 2023 of their campus and has submitted necessary data and credentials for scrutiny. The activities and measures carried out by college have been verified based on the report submitted and was found to be satisfactory. The effort taken by the faculty and students towards environment and sustainability is highly appreciated and commendable.

Mrs. Vanita Tirpude

Director

Bahu-Uddeshiya Mahila Sangh

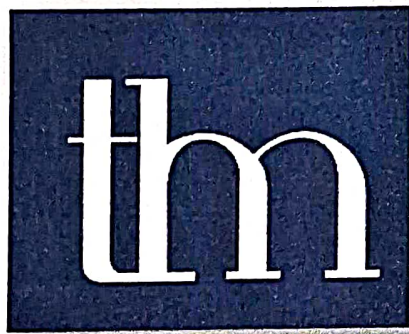
Code-F-1618(Nagpur)

अध्यक्ष / सचिव

बहुउद्देशिय महिला संघ

नागपूर-१७

Energy Audit Report of
Shri Balasaheb Tirpude College of
Hotel Management and Catering
Technology
2022-2023



Conducted by Bahu- Uddeshiya Mahila Sangh, Nagpur



YUGANTAR EDUCATION SOCIETY'S

**SHRI BALASAHEB TIRPUDE COLLEGE OF HOTEL
MANAGEMENT AND CATERING TECHNOLOGY**

(Approved by AICTE, New Delhi, Govt. of India, Govt. of Maharashtra & Nagpur University, Nagpur)

1, Shri Balasaheb Tirpude Marg, Civil Lines, Sadar, Nagpur - 440001 Phone (Off.) : +91 712 2550695, 2550032

Email : tirpudehmct@gmail.com Visit us at - www.tirpudehmct.ac.in

AICTE Permanent Institute Id : 1-14318331 • DTE Institute Code : HM4219 • RTM College Code - 007

AISHE Code : C-18976

Ref: SBTC/HMCT/2023/215/439 (A)

Date:2/05/2023

To,

Bahu- Uddeshiya Mahila Sangh

Nimbunabai Tirpude Hospital, Chalks Colony,

Kamptee Road,

Nagpur, India, 440014

Subject: Request for conducting Energy Audit Green Audit, and Environment Audit as per NAAC requirements at Shri Balasaheb Tirpude College of Hotel Management & Catering Technology, Civil Lines, Sadar, Nagpur, Maharashtra 440001.

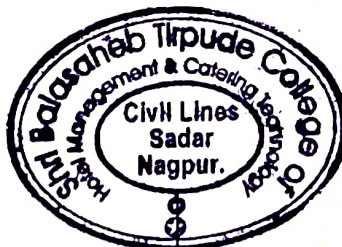
Respected Sir/Madam,

Shri Balasaheb Tirpude College of Hotel Management and Catering Technology was established in 1994 by the Yugantar Education Society an institution devoted to responding of education among all sections of society. The Yugantar Education society during 92 years of existence has created a niche for itself throughout Maharashtra and the college is now one of the leading institutes of Central India. The college is affiliated to RTM Nagpur University and approved by AICTE, New Delhi as well as Technical Education Board. Govt. of Maharashtra is a brief introduction of the Institute.

This year the Institution is applying for National Assessment and Accreditation Council, First Cycle for that college seeks your help for conduction of Energy Audit Green Audit, and Environment Audit as per NAAC requirements, seeking your valuable guidance. I request you to kindly assist in this matter as this is an absolutely new subject for us.

Regards,

Mr. Akshay Dandale
OFFICIATING PRINCIPAL
Shri Balasaheb Tirpude
College of Hotel Management
& Catering Technology, Nagpur
Approved By



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In Association



AISHE



Executive Summary

Sustainability has become a core concern among younger generations who aspire for an eco-friendly world. There is self-reflection among students about their actions and how the larger community can shape sustainable development, which can create a better carbon footprint. A collective effort from Institute to highlight environmental education has a positive impact that begins at the student level and permeates through society.

A Green Campus is a place where environmentally friendly practices and education combine to promote sustainable and eco-friendly practices in the campus. The green practices of Institutes offer the opportunity to take the lead in redefining its environmental culture and developing new paradigms by creating sustainable solutions to environmental, social and economic needs of the mankind.

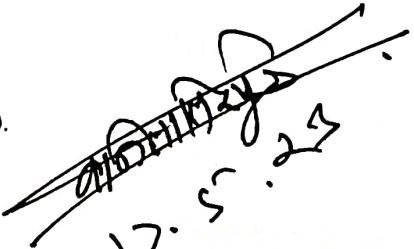
The purpose of the energy audit was to ensure that the practices followed in the campus are in accordance with the Energy Policy adopted by the institution.

Energy Auditing of a Higher Education Institution is required as a part of Criterion VII (of the 7 criteria prescribed) under the Guidelines for Submission of the mandatory annual Internal Quality Assurance Report (IQAR) by Accredited Institutions.

The 'Energy audit' aims it is a technique used to establish the pattern of energy use, and identifies the areas where energy can be saved or where energy can be used judiciously. An energy audit consists of a detailed examination of how a facility uses energy, what the facility pays for that energy, and finally, a recommended program for changes in operating practices or energy consuming equipment that will effectively save on energy bills.

Assignment was conducted and the following areas have been covered in the study.

1. Electricity Bill
2. Lights
3. Air Conditioning Load
4. Solar Power (Installation under Process).


17.5.23
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Introduction

Bahu-Uddeshiya Mahila Sangh, Nagpur has been entrusted with the task of conducting Energy Audit & Energy Management study for the Shri Balasaheb Tirpude College of Hotel Management and Catering Technology, Nagpur. The field work and data collections were carried out in 6th May To 10th May 2023.

The study encompassed the examination of the existing pattern of energy use in the college and identification of areas where energy & monetary savings could be achieved by employingsuitable techno-economic measures.

This report gives the details of observations of the team along with appropriate recommendations and supporting calculations. We hope that the findings of the team will supplement the efforts of the management in bringing the energy consumption of the office to the lowest possible level.



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About the Institute

Shri Balasaheb Tirpude College of Hotel Management and Catering Technology was established in 1994 by the Yugantar Education Society an institution devoted to responding of education among all sections of society. The Yugantar Education society during 92 years of existence has created a niche for itself throughout Maharashtra and the college is now one of the leading institutes of Central India. The college is affiliated to RTM Nagpur University and approved by AICTE, New Delhi as well as Technical Education Board. Govt. of Maharashtra.

The college has excellent infrastructure compressing of three storied building which houses well equipped kitchens, training restaurants, bar & has bakery, classrooms, front office lab, training guest room, laundry conference and seminar hall, computers lab library boy's common room, girls' common room. Being a successful hotel manager means having firsthand experience of every aspect of running hotels. Hotel managers who have proven the most successful in their profession are those who are efficient in both the managerial aspects of their job. A fine-tuned perception as regards customer satisfaction and communication is as essential quality in any industry, which involves contact with public.

Shri Balasaheb Tirpude College of Hotel Management and Catering Technology offers its students are opportunity to develop their practical management and communication skills and provides each individual student with the training and know how required for a successful career in the highly competitive industry.

The structure of the academic program achieves this by combining management theory with practical experiences. The combination Of 4 years of academic term with 6 months industrial training allows both the theoretical and practical aspects of hospitality to be developed.

Institute association with Bahu- Uddeshiya Mahila Sangh

Address: Nimbunabai Tirpude Hospital, Chalks Colony, Kamptee Road, Nagpur, India,
440014

Previously there was no association between Bahu- Uddeshiya Mahila Sangh and Shri Balasaheb Tirpude college of Hotel Management and Catering Technology, Nagpur.

Aims and Objectives of an Energy Audit

The primary objectives of energy audit are to identify and evaluate opportunities to reduce energy consumption per unit of product output and reduce operating costs through energy conservation and planning. 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. An energy audit is a useful tool for developing and implementing comprehensive energy management plans of an organization. The aim of an energy audit is to identify the energy efficiency, conservation and savings opportunities at the premises of the audit sites in a systematic manner. The audit process is carried out as per the following.

- Review of energy saving opportunities and measures implemented in the audit sites.
- Identification of additional various energy conservation measures and saving opportunities.
- Providing a technical information on how to build an energy balance as well as guidance to be sought for particular applications.
- Providing a technical information on how to build an energy balance as well as guidance to be sought for particular applications.
- Use of incandescent (tungsten) bulb and CFL bulbs, fans, air conditioners, cooling apparatus, heaters, computers, photo copiers, inverter, generators and laboratory equipment and instruments installed in the organization.

Benefits of an Energy Audit

- **Reduced Energy Expenses:** The most obvious benefit is that the less energy the Organization uses, the less money that the Organization will have to spend on energy costs.
- **Identify Problems:** An energy audit can also help to identify any issues that the equipment might have.
- **Increased Employee Comfort:** During the audit, the Organization might learn about changes that have been made regarding insulation and air sealing. Completing these enhancements will help create a more reliable and more efficiently cooled or heated space for the employees.
- **Personalized Recommendations:** Working with an energy expert can help learn about new energy-efficient technologies.
- **Show Environmental Concern:** By taking steps to be more energy efficient, the Organization will be showing the employees and clients that the organization cares about the impact on the environment.
- **Longer Equipment Lifespan:** An energy auditor might recommend to update some of the equipment for maximum energy savings.
- **Increased Property Value:** Using the recommendations of an energy auditor to make facility more energy efficient could also help to increase its overall worth. Things like solar panels, high-efficiency LED lighting, and weatherization procedures are all things that contribute to a higher property value.

Methodology

In order to perform energy audit, the methodology included different tools such as, 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:

- Observation on electricity bill analysis,
- Physical inspection of the campus,
- Review of the relevant documentation.

Energy Use and Conservation

This indicator addresses energy consumption, energy sources, energy monitoring, lighting, appliance, natural gas and vehicles. Energy use is clearly an important aspect of campus sustainability and thus requires no explanation for its inclusion in the assessment.

The premise uses following sources of energy consumption.

A. Primary sources of Energy consumption

1. **Electrical (Metered)** – Light, Fans, AC, Equipment's, Pumps.
2. **Electricity (Solar - Photovoltaic cells are used for solar energy)** – There are solar panels installation is under process in premise at present.

B. Secondary sources of Energy consumption

1. **UPS** – There are 5 UPS connected as a backup for the computer systems in the premises used on a monthly basis.

C. Gas cylinders – There are 21 gas cylinders in the premises used.

Observations and Site investigation analysis

Energy source utilized by the campus is electricity and Natural source. The entire campus including common facility centers are equipped with LED lamps and LED tube lights, except at few locations. Besides this, Provision of solar lights panel is also in campus. Computers are set to automatic power saving mode when not in use. Also, campus administration runs switch-off drill on regular basis.

- **Energy conservation & Energy efficiency:** Passive design strategies can dramatically affect a building's energy performance. These encompass the building's shape and orientation, Provision for is under process passive use of solar energy, and the use of natural lighting.
- **Natural light:** Each class rooms, practical laboratories, Corridors and staff rooms had installed with minimum 2-3 large windows to optimise natural lighting, as the studies have shown that it has a positive impact on productivity and well-being as well. Cleaning of all the glass panes of windows is done periodically to improve natural lighting.

- **Artificial lighting:** Institute is switching to LED bulbs from CFL and signage board are place to encouraging everyone to save energy by off lights during hours when they are unlikely to be used. General lighting system with light-coloured paints on the walls and smooth surfaces to maximize the intensity of the available light are used.
- **Appliances:** Minimize the electric loads from appliances and other electrical equipment as well as lighting by ensuring that the they are well maintained and clean periodically for the highest possible efficiency. Turn off lights, equipment and fans in particular area that are physically unoccupied.

Biogas Plant: A biogas plant installed and the organic waste generated in the culinary laboratory are used for the production of biogas which is later used for preparing teas to staff.

Other Observations:

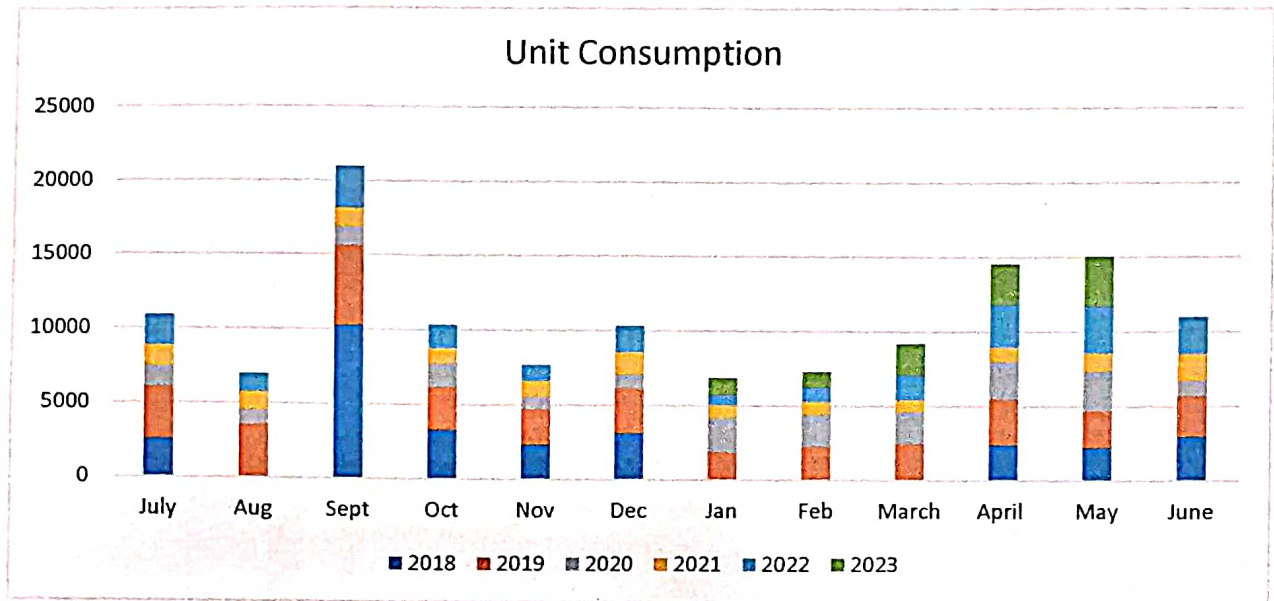
- Institute place signage for Conserving energy and also shifting to renewable energy.
- Dripping of AC are used to fill the coolers and watering the plants.
- Institute regularly initiating the session to make students aware about green practices seeking to them to create the better equip the world of work to understand the challenges and opportunities of the coming transition, and help them take up the active role that they must play in managing this change.
- There are no Ultra-violet lights and any other harmful lights used in the premise.
- All Equipment are in working conditions and Daily monitoring and check is done by the maintenance staff and admin staff in an excellent manner.
- No defect was found in any equipment of electrical consumption.

D. Actual Electrical Consumption as per Bill

The bill for Meter which is connected to the building and is main source of energy supply. The supplier is MAHAVITARAN (Maharashtra State Electricity Distribution Co. Ltd) analysis of actual electrical energy consumption is summarized below. The solar panels were installed in recently post which the cost of electricity has been reduced. The details of unit consumption meter wise is as follows.

Sr. No	Month	Year and Total Units Consumed												Avg. Unit Consumption	Avg. Bill Amount Paid
		2018 Unit	Bill Amount	2019 Unit	Bill Amount	2020 Unit	Bill Amount	2021 Unit	Bill Amount	2022 Unit	Bill Amount	2023 Unit	Bill Amount		
	July	2528	25366	3527	61329	1376	11206	1427	11186	2061	17865			2184	25390
	August	-	270	3530	63944	983	8130	1250	9855	1201	10604			1393	18561
	September	10262	111947	5319	84051	1255	10259	1302	10246	2822	58148			4192	54930
	October	3298	34111	2884	55859	1590	12880	999	7966	1578	42747			2070	30713
	November	2311	24829	2396	45635	841	7019	1077	8553	1083	9608			1542	19129
	December	3127	61472	3028	59348	924	7669	1493	11683	1744	15188			2063	31072
	January			1869	19296	2304	25657	853	7113	726	5913	1110	9836	1372	13563
	February			2247	24138	2166	24125	861	7176	1023	8147	1011	9000	1462	14517
	March			2478	25842	2166	23778	767	6440	1702	13564	2100	49229	1842	23770
	April	2382	29180	3111	33255	2499	20144	963	7696	2928	55747	2704	53439	2431	33243
	May	2220	22360	2498	52873	2631	-20674	1206	9524	3201	62356	3327	57639	2513	30679
	June	2981	29530	2724	53644	983	8130	1833	14241	2505	59151			2205	32939
	Total Unit Consumption	29109		35611		19718		14031		22574		10252			
	Total Bill Amount Paid		339065		579214		138323		111679		359038		179143		

Note: Study of the electricity consumption of the meters in premise Before Solar as it was under installation at the time of Audit



E. Electrical Equipment and Facilities Observed in the College:

Sr. No.	Equipment/Utility	Quantity
1	Fan	126
2	Camera	38
3	R O	8
4	Water Coolar	4
5	Exhaust Fan	10
6	Oven	2
7	Tubelights	125
8	Refrigrator	4
9	Freezer	2
10	Waving Scale	3
11	Large Planeteriums	1
12	Small Planeteriums	2
13	Hand Bitter	3
14	Projector	16
15	Television	7
16	Kitchen Hoods	9
17	LED Lights	161
18	Chandelier	7
19	AC	7
20	Music System	8
21	Coolar	7
22	Printer	10
23	Computer	35
24	UPS	5
25	Biometric	1

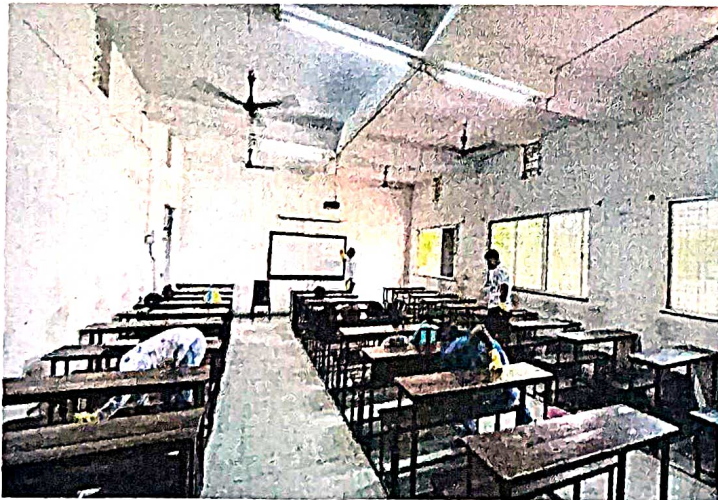
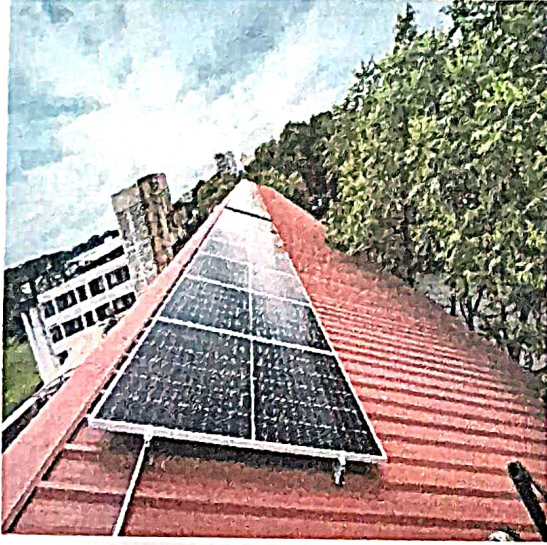
26	Radio	1
27	Mirowave	2
28	Salamander	2
29	Sandwich maker	1
30	Food Processor	1
31	Blower	1
32	Laptops	13
33	Pumps	2
34	DVR	1
35	Mixer	5
36	Smart TV	1
37	Press	1
38	Coffee Maker	2
39	Ice Cube Machine	1
40	Minibar	2
41	Shoe Polish Machine	4
42	Aquarium	1
43	Washing Machine	1
44	Hair Dryer	1
45	Table Lamps	2
46	Vaccum Cleaner	2
47	Scrubing Machine	1
48	High Pressure Washer	1
49	Solar Lights	2
50	Sanitary Napkin Dispensing Machine	1
51	Router	3
52	Modem Router	7

F. Recommendations

- In campus premises electricity should be shut down after occupancy time, to prevent power loss due to eddy current.
- Support renewable and carbon-neutral electricity options on any energy purchasing consortium, with the aim of supplying all college properties with electricity that can be attributed to renewable and carbon-neutral sources.
- Installation of LED lamps instead of CFL and replacing the old tube lights with the new LED tubes.
- 5–star rated Air Conditioners, Fans and CFLs should be used.
- Cleaning of tube-lights/bulbs to be done periodically, to remove dust over it.

Random Photo taken while Auditing

17.5.23



(Handwritten signature)
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