



# SRI BHARATHI

ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)  
Kaikkurichi, Pudukkottai -622 303

[www.sbec.edu.in](http://www.sbec.edu.in)

## NAAC DOCUMENTS



Quality Indicator Frame Work

Criterion – 7

**Institutional Values and Best Practices**

Submitted by

**IQAC**

**Internal Quality Assurance Cell**

**Sri Bharathi Engineering College for Women**



# SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

Pudukkottai - Aranthangi Road,

**Kaikkurichi, Pudukkottai - 622 303.**

Date : .....

## TO WHOMSOEVER IT MAY CONCERN

7.1.3 Quality audits on environment and energy regularly undertaken by the Institution. The institutional environment and energy initiatives are confirmed through the following

1. Green audit / Environment audit
2. Energy audit
3. Clean and green campus initiatives
4. Beyond the campus environmental promotion and sustainability activities

*Options:*

- A. All of the above
- B. Any 3 of the above
- C. Any 2 of the above
- D. Any 1 of the above
- E. None of the above

**Response:** *Option A. All of the above*

**PRINCIPAL**

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SRI BHARATHI ENGINEERING  
COLLEGE FOR WOMEN  
KAIKKURICHI - 622 303.  
PUDUKKOTTAI DISTRICT





**SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN**  
(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai-25)  
Kaikkurichi, Pudukkottai, Tamil Nadu – 622 303, India

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## **7.1 Institutional Values and Social Responsibilities**

**7.1.3 Quality audits on environment and energy regularly undertaken by the institution. The institutional environmental and energy initiatives are confirmed through the following**

1. Green audit / Environmental audit
2. Energy audit
3. Clean and green campus initiatives
4. Beyond the campus environmental promotion activities

**POLICY DOCUMENT ON ENVIRONMENT AND  
ENERGY USAGE CERTIFICATE FROM THE  
AUDITING AGENCY**





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Criterion 7	Institutional Values and and Best Practices	100
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**Key Indicator 7.1 - Institutional Values and Social Responsibilities**

**7.1.3 Quality audits on environment and energy regularly undertaken by the institution. The institutional environmental and energy initiatives are confirmed through the following**

1. Green audit / Environmental audit
2. Energy audit
3. Clean and green campus initiatives
4. Beyond the campus environmental promotion activities

Responses : **Option A. All of the above**

**POLICY DOCUMENT ON ENVIRONMENT AND ENERGY  
USAGE CERTIFICATE FROM THE AUDITING AGENCY**



# ENERGY AUDIT REPORT



**SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN  
KAIKURICHI, PUDUKKOTTAI-622303, TAMILNADU**

## **AUDIT CONDUCTED BY**

**YOJO NETWORK & TRAINING CENTER**

**(Registered Audit Agencies)**

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### ACKNOWLEDGEMENT

Yojo Network & Training Center is thankful to the Board of Management, Head of Institution, Faculty and Technical team members of **SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN** for providing an opportunity to conduct a detailed Energy Audit process in the college premises. It is our great pleasure which must be recorded here that the Management of **SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN** extended all possible support and assistance resulting in thorough completion of the audit process. The audit team appreciates the co-operation and guidance extended during the course of site visit and measurements. We are also thankful to all those who gave us the necessary inputs and information to carry out this very vital exercise of Energy Audit.

Finally, we offer our sincere thanks to all the members in the engineering division/technical /non- technical divisions and office members who were directly and indirectly involved with us during collection of data and while conducting field measurements.

### Audit Team Members

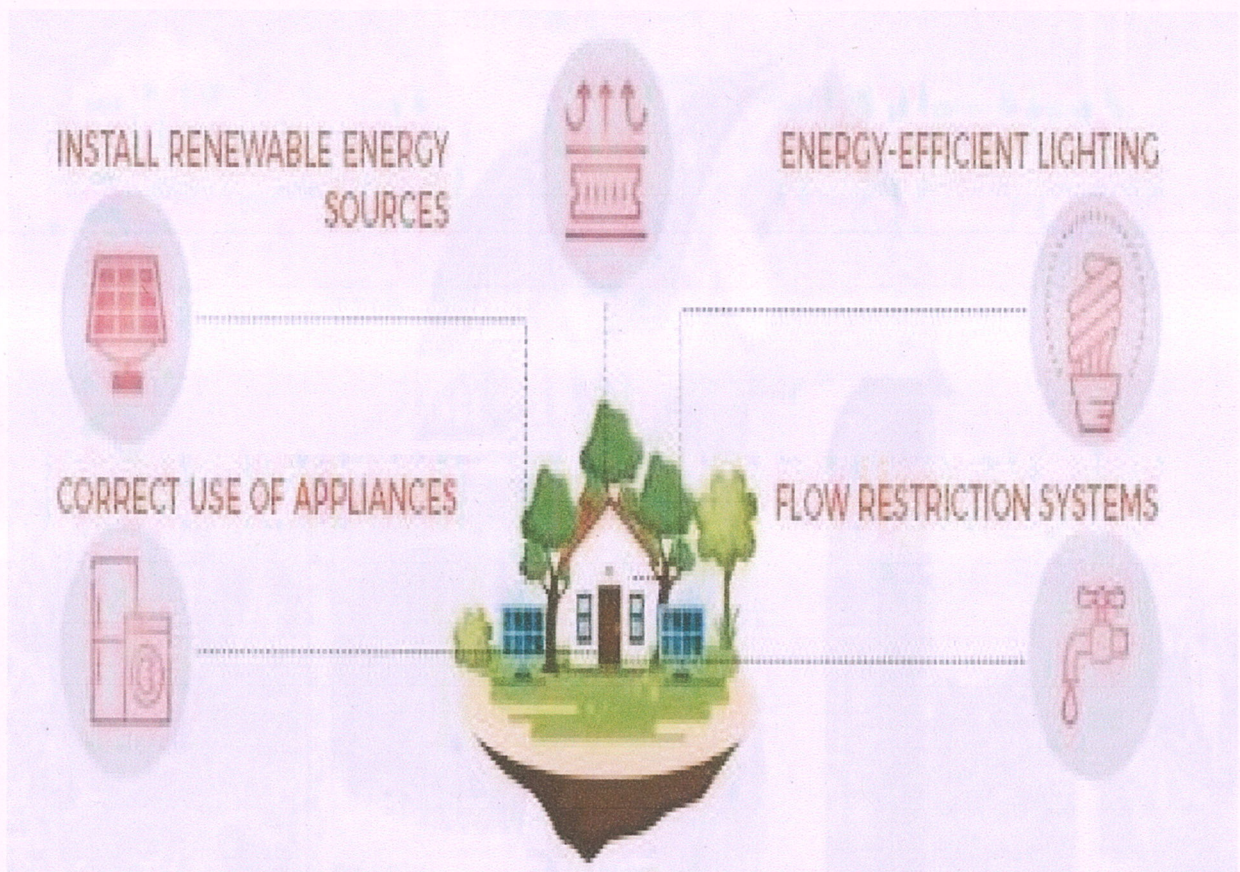
Er. V. Marimuthu., B.E.,	UKAS Certified Energy Auditor (KQ-233) Lead Auditor-ISO-9001:2015,14001:2015(EMS), UKAS, KQ Reg., COC.
Er. C. Saravanakumar., B.E.,	Carbon Footprint Auditor Mobile:+91-9047205733
Er. R. Rajkumar, B.E.,	Audit Associate



# ENERGY AUDIT REPORT

## INTRODUCTION TO ENERGY AUDIT

### 5 IDEAS FOR A SUSTAINABLE INSTITUTION







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### 1.1 : Preface about the Institution:

**SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN** was seeded by Sri Bharathi Educational Trust in the year 2009 with five B.E/B.Tech courses to inculcate quality education for rural women. This institution is located on the outskirts of Pudukkottai, about 6 kilometers from Pudukkottai and almost in a rural atmosphere.

The undergraduate courses offered are - Civil Engineering, Computer Science and Engineering, Electrical and Electronics Engineering, Electronics and Communication Engineering and Information Technology. This College has a good digital library with high-speed internet facilities to the benefit of students and faculty. The well equipped library with number of International and National Journals and Magazines. This College has well-qualified faculties, modern infrastructure with well-equipped laboratories. The main building has G+3 floors with a total carpet area of 80,000 Sq.feet and another building with G+1 floors with a carpet area of 27000 square feet. This College got permanent affiliation for two Departments - Computer Science and Engineering and Electronics and Communication Engineering.

### 1.2 : Quality Policy:

**SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN** maintains various policies to enhance the growth of the students, staff along with the growth of the Institution.

The policies are as follows:

- GREEN POLICY
- CODE OF CONDUCT
- ENVIRONMENT POLICY
- ENERGY POLICY
- WASTE MANAGEMENT POLICY
- E-GOVERNANCE POLICY

### 1.3 : Scope of the Audit Process:

- **Energy Audit:** To conduct a detailed energy audit in the college campus with a main focus to identify judicious usage of electrical and thermal energy (where, when, why and how energy is being utilized).



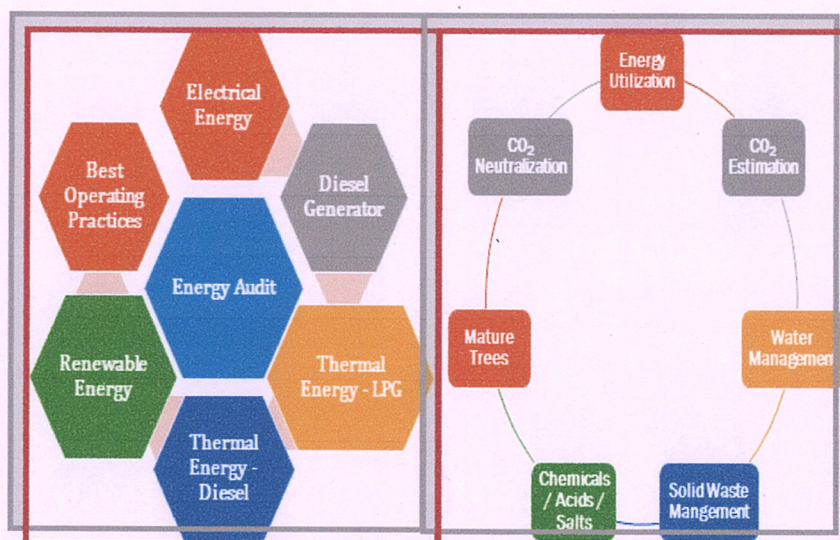
#### 1.4 :Outcomes of the Audit Process:

- Recommendations based on field measurement with achievable **Energy Conservation (ENCON)** proposals under **No cost / Low cost and Cost investment categories**.
- **Minimization of present energy cost** by adjusting and optimizing energy usage and reduction of energy wastage without affecting the regular activities.
- **Identification of possible cost and energy saving from energy conservation.**

#### 1.5 :Standards Used:

- Bureau of Energy Efficiency Guidelines to conduct the detailed energy audit process.
- **ISO 14064-Part-1** – Specification with guidance at the organization level for quantification and reporting of GHG emissions and removals (Second Edition).
- **ISO 14064-Part-2** – Specification with guidance at the project level for quantification, monitoring and reporting of GHG emissions reductions or removal enhancement (Second Edition-2019).
- **ISO 14064-Part-3** – Specification with guidance for the verification and validation of GHG statements (Second Edition-2019).
- The Green house Gas Protocol- a Corporate Accounting and Reporting Standard (Revised Edition) released by World Resources Institute & World Business Council for Sustainable Development – 2014.

#### 1.6 : Coverage in Energy Audit Process:





**1.7 : List of Faculty Members Involved in Audit Process & Data Collection:**

S. No.	Faculty Details	Contribution
1.	Dr. K. Ambujam AP/ Dept. of ECE	Overall Coordinator for the Audit Process.
2.	Ms. S.Raga Brintha AP/ Dept. of EEE	Collection of Electrical Energy Parameters from College & Hostel.
3.	Mrs. T. Parthiban AP/ Dept. of EEE	Collection E.B utility & D.G Details.
4.	Dr. Saravanan Principal & Chairperson IQAC New Prince Shri Bhavani College of Engineering and Technology, Medavakkam, Chennai	External Member



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# ENERGY AUDIT REPORT

## STUDY ON ENERGY CONSUMPTION & GENERATION PATTERN

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**1.1 Assessment of Existing Electrical and Thermal Energy Systems**

S. No.	Description	Details				
<b>Electrical Energy (Consumption)</b>						
1.	Name of the customer (As per the utility bill)	CHAIRMAN SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN				
2.	Type of Utility Supply, Service No. & Tariff.	LTSC. No: 06-145-001-558				
3.	Tariff Structure	Rs.12.00/kWh+Rs.120/ kw as demand charges (fixed charges accounted for the sanctioned demand)				
4.	Energy Suppliers	Tamil Nadu Generation & Distribution Corporation (TANGEDCO)				
5.	Permitted Demand(PD)	SC.No: 06-145-001-558–100.0 kW				
6.	Capacity of Diesel Generator (DG) Sets	<b>63 KVA–1 No.</b>				
		All are air-cooling. Internal fuel tank & separate earthing done				
7.	Annual Electricity Consumption (kWh)	<b>2018-19</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>
		48322	47636	27857	48153.5	47694
8.	Annual Electricity Generation from DG(kWh)	1245	1342	624	1343	1352
9.	Annual Diesel Consumption for DG (L)	4,332	4,445	1,269	4,941	4,155



Thermal Energy (Consumption)							
10.	Types of Thermal Energy Used	Liquefied Petroleum Gas (LPG)				Cooking	
		Diesel (Ordinary)				Transport + DG	
11.	Annual LPG Consumption (kg)	2018-19	2019-20	2020-21	2021-22	2022-23	
		1,611	1,611	349	1,815	1,510	
12.	Annual Diesel Consumption for Transport (L)	7605	7562	1372	7645	7630	
General Loads (Both Electrical and Thermal)							
13.	Lighting System	<b>Indoor lighting:</b> LED based Energy efficient lamps					
		<b>Outdoor lighting:</b> All the street lightings are LED based Energy efficient lamps (20W).					
14.	Fan Loads(Ceiling)	<ul style="list-style-type: none"> <li>All the indoor ceiling fans are conventional fans</li> </ul>					
15.	HVAC System	<ul style="list-style-type: none"> <li>Unitary air conditioning system installed in the Required places</li> <li>Most of the AC units are <b>Three star rated</b> and the outdoor units are mostly placed in sunshade</li> <li><b>Total capacity of the AC system is 20 TR</b></li> </ul>					
16.	Motors and Pump loads	<ul style="list-style-type: none"> <li>Mainly used for water distribution and purification</li> <li>Small motors are used in kitchen equipments</li> </ul>					
17.	Uninterrupted Power System (UPS)	<ul style="list-style-type: none"> <li>All the computers, servers, surveillance systems, projectors, telephonic units are connected with UPS with nominal back up time of 15-30 min</li> <li><b>The total capacity of the UPS is 60 kVA</b></li> </ul>					







YOJO NETWORK

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CHIRMAN புதுக்கோட்டை யின் பரிர்மான வட்டம்  
மின் கட்டண ஓரீது  
LM2S2 Units: 3360

வாரிசை எண் :  
PDK 0120716

வ.எண்: 06-145-001-558  
கு எண் : TRP145IA2Q772 [5-2023] 23-08-2023-11:12:17

நாள் :

வ.எண்	CC Charges	கட்டண விகிதம்	தொகை ரூ.
	Total	39670/-	

மொத்தம்

Thirty Nine Thousand Six Hundred And Seventy Only  
தொகை (எழுத்தால்):  
இதர விவரங்கள் :

Cheque/DD No. 171873 Date: 24/05/2023 Amount: 39670/-  
Bank: 002 கணக்கிடாளர் / கணக்கீட்டு ஆய்வாளர் / வருவாய் மேற்பார்வையாளர்

### 1.2 :Recommendations and Best Operating Practices:

- All SSB must be fitted with digital energy meters are the readings must be taken daily. Or connect those meters with EMS and monitor the energy pattern of each building.
- Prepare block wise maintenance check list of electrical and thermal systems.
- Calculate the Unit per Liter (UPL) for every run of DG and average it for monthly.
- Install AIRCON energy saver gadget which works on dynamic un-saturation principle with the sensor algorithms so that the air conditioners run hours are cut by 20 to 25 %
- Similar to Fan, now BLDC based ACs are made available in the market; which consumes less amount of energy (Power) during its starting and running condition.



  
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## AUDIT SUMMARY & CONCLUSION



**Dr. S.THILAGAVATHI M.E.,Ph.D.,**  
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**SUMMARY OF THE AUDIT PROCESS:**

In order to make SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN campus 100 % energy efficient, the audit team recommends implementing the following measures:

**i. Energy Conservation & Management – Electrical Energy:**

- Implement Energy Management System (EMS) to accurately measure & monitor energy flow
- Prepare a policy plan to convert the distributed UPS layout into centralized UPS and save energy. This step also saves the maintenance time due to reduction in number of batteries
- Diesel flow meter must be fitted with each DG and calculate the UPL accurately
- Prepare suitable formats for all energy consumption and regularly follow the records. Make proper corrections; if it deviates from the standard operating procedure.

**ii. Energy Conservation & Management – Thermal Energy:**

- Regularly cleaned stove burners and ensured that the flame in light bluish color in the kitchen.



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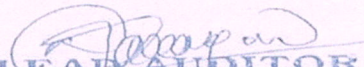
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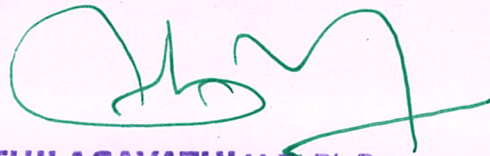


## COMPLETION OF THE REPORT

This report is prepared as a part of the Energy Audit process conducted at **SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN, Pudukkottai** by **YoJo Network and Training Center, Tamilnadu.**



  
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## CERTIFICATE FOR ENERGY AUDIT PROCESS

This is to certify that, we have conducted the ENERGY AUDIT at **SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN**, Kaikurichi Village, Pudukkottai Dt, Tamil Nadu, India from 12 June 2023 to 16 June 2023 and it is **appreciated that, the institution strictly follows energy conservation measures for the use age of electrical and thermal energy.**

This process investigates the following activities;

- ✓ **Conduction of detailed energy audit for electrical and thermal energy usage in the college campus and identify the energy conservation measures followed in the Institution**
- ✓ **Minimization of present energy cost by adjusting and optimizing energy usage and reduction of energy wastage without affecting the regular activities.**
- ✓ **Identification of possible cost and energy saving from energy conservation.**
- ✓ **Recommendation for SSB may be fitted with digital energy meters and the readings must be taken daily. Or connect those meters with EMS and monitor the energy pattern of each building**
- ✓ **Recommendation to install AIRCON energy saver gadget so that the air conditioners run hours are cut by 20 to 25 %.**
- ✓ **Recommendation to use BLDC based ACs are made available in the market; which consumes less amount of energy (Power) during its starting and running condition.**

Thank You



Page 14 of 14

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