

**CERTIFICATE FOR ENERGY-ENVIRONMENT-GREEN AUDIT PROCESS**

This is to certify that, we have conducted an **ENERGY-ENVIRONMENT-GREEN AUDIT** in **THAMIRABHARANI ENGINEERING COLLEGE, Thatchanallur, Tirunelveli - 627 358, Tamil Nadu, India** on **11 JUNE 2019**. The description of the audit process is given below.

S. No.	Description	Parameters
1.	Present Annual Energy Consumption	80,333 kWh + 4,182 kg of LPG
2.	Proposed % of Energy Savings	10.0 % Electrical + 5.0 % LPG
3.	Proposed Annual Energy Savings	8033 kWh + 209 kg of LPG
4.	Proposed Financial Savings	Rs. 0.9 Lakhs
5.	Initial Investment Required	Rs. 1.5 Lakhs
6.	Simple Payback Period	Nearly 1.7 Years

**Analysis of Environment Audit Process and CO<sub>2</sub> Balance Sheet:**

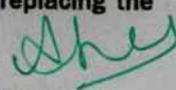
S. No.	Annual Energy Consumption & CO <sub>2</sub> Emission			Annual CO <sub>2</sub> Neutralization		
	Description	Annual Usage	CO <sub>2</sub> Emission (Tons)	Description	Annual Usage	CO <sub>2</sub> Neutralized (Tons)
1.	Diesel	63,161 Litres	166.7	Mature Trees	626 No's	13.6
2.	Electrical Energy	80,333 kWh	65.9			
3.	LPG	4,182 kg	12.5			
4.	Total Emission		245.2	Total-Neutralized		13.6

Balance CO<sub>2</sub> to be Neutralized = 231.5 Tons/Annum & Per Capita CO<sub>2</sub> Consumption = 0.37 Tons/Annum <sup>1</sup>

(<sup>1</sup> Total strength of students, teaching and technical staff = 628)

**Recommendations of the Audit Process:****I. Energy Conservation & Management:**

1. Conduct a detailed study on energy consumption of each buildings and categorize the buildings based on their energy consumption
2. From the study; identify the equipment's which consumes higher energy and prepare a plan to replace the same into energy efficient gadgets in a phased manner
3. Graphically represent the energy consumption of all locations and implement best energy conservation practices only to high energy consuming building
4. Ensure that the campus energy demand should not exceed the permitted demand. Also ascertain that no penalty was paid to the electrical distribution utility.
5. Based on the energy study; prepare a list highlighting the % energy saving after replacing the conventional lights, ballasts and fans into energy efficiency system

  
PRINCIPAL

THAMIRABHARANI ENGINEERING COLLEGE  
Chathirampudukulam Village,  
Chidambaranagar - Vepenkulam Road,  
Thatchanallur, Tirunelveli - 627 358.



6. Conversion of Fluorescent lamps into Energy Efficient LED saves good amount of energy
7. Measure the earth resistance at regular interval and maintain within the standard.
8. Observe the voltage drop between supply point and load end and ensure that the voltage drop must be minimum
9. Voltage drop at the load end can be improved by load end capacitors compensation

**II. Environmental Management:**

1. Energy usage and CO<sub>2</sub> emission must be reduced using proper conservation methods
2. Regularly test the pollution level of the college owned vehicles
3. Similar to the energy analysis; conduct green campus study indicating i) total no. of matured trees, ii) flowering bushes and iii) shrubs

**Equipment's/Systems Audited:**

• Electrical System & Network	• Motors & Water Pumping Systems
• Lighting, Fan & Air Conditioning System	• Cooking System
• Inverter, UPS & Battery System	• LPG Consumption
• Diesel Consumption (Vehicles + DG)	• Solid & E-Waste Handling & Management
• Usage of Chemical, Salts & Acids	• RO Plant & Water Distribution System
• Coverage of mature trees	• Pollution certificates for all transport vehicles
• Rain Water Harvesting	• Survey on Bio-diversity

**Note: Audited and Accounted from June-2018-19**

**Audit Conducted and Verified by**

*S.R. Sivarasu*

**(Dr. S.R. SIVARASU)**

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