Amareshwar Arts and Commerce Degree College, Aurad(B), Dist. Bidar, Karnataka

Energy Audit

2018-19 to 2022-23

Conducted by

Department of B.Voc. Renewable Energy

Karnartak Arts, Science and Commerce College,

Hyderabad Road Bidar- 585401

Department of B.Voc. Renewable Energy

Karnartak Arts, Science and Commerce College,

Hyderabad Road Bidar- 585401

Ref: EC/DESBMCC/22-23/01 Date:16 April,2023

CERTIFICATE

This is to certify that we have conducted Energy Audit Amareshwar Arts and Commerce Degree College, Aurad(B), for the year 2018-19 to 2022-23. The College has adopted Energy Efficient practices:

1. Usage of Energy Efficient LED Fittings
2. Usage of Energy Efficient BEE STAR Rated equipment
3. Maximum usage of Day Lighting

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green.

Course Co-ordinator
Bachelor of Vocation
Renewable Energy

Name: Asst. Prof. Shweta Patil

Energy Auditor

ACKNOWLEDGEMENT

We the Auditors from the department of B.Voc. Renewable Energy, Karnatak Arts, Science and Commerce College, Bidar, express our sincere gratitude to the management of Amareshwar Arts and Commerce Degree College, Aurad(B),, for awarding us the assignment of Energy Audit of their campus for the Year: 2018-19 to 2022-23

We are thankful to various Head of Departments & other Staff members for helping us during the field measurements

Name: Asst. Prof. Shweta Patil

Energy Auditor

EXECUTIVE SUMMARY

An energy audit was carried out at Amareshwar Arts and Commerce Degree College, Aurad(B), College to assess the current energy consumption and identify opportunities for reducing energy use. The audit covered various areas of the campus, including classrooms, offices, and common areas, with a focus on lighting, ventilation, and office equipment.

1. Present Energy Consumption:

No	Parameter /Value	Electrical Energy Consumed, kWh	CO2 Emissions, MT
1	Total	2680	2.412
2	Maximum	286	0.257
3	Minimum	190	0.171
4	Average	238	0.214

2. Various Majors Adopted for Energy Conservation:
    - Usage of Energy efficient LED fittings
    - Usage of BEE STAR Rated Equipment
    - Maximum usage of Day Lighting

3. Notes : 1 kWh of Electrical Energy releases 0.9 Kg of CO_2 into atmosphere

ABBREVIATIONS

CFL : Compact Fluorescent Lamp

FTL : Fluorescent Tube Light

LED : Light Emitting Diode

kWh : kilo-Watt Hour

Qty : Quantity

W : Watt

kW : Kilo Watt

PC : Personal Computer

MT : Metric Ton

CHAPTER-I

INTRODUCTION

An energy audit was conducted at Amareshwar Arts and Commerce Degree College, Aurad(B), to assess the current energy consumption patterns and identify potential areas for energy savings. The audit focused on the various electrical installations within the college, including lighting, fans, and office equipment. The data collected includes the number and types of lights, ceiling fans, computers, printers, and other electronic devices used in different locations across the college.

Objectives

The primary objectives of the energy audit were to:

1. Identify areas of excessive energy consumption.
2. Recommend measures to improve energy efficiency.
3. Promote sustainable energy practices within the campus
4. To study the present CO_2 emission
5. To study LED Lighting.

Table No1: General Details of College:

No	Head	Particulars
1	Name of Institution	Amareshwar Arts and Commerce Degree College, Aurad(B),
2	Address	Aurad(b)
3	Affiliation	Gulbarga University Kalaburagi

CHAPTER-II

STUDY OF CONNECTED LOAD

In this chapter, we present the details of various Electrical loads as under

Table No 2: Details of Equipment Wise Connected Load:

Sl.No.	Equipments	Quantity	Load W/Unit	Load in kW
1	40W FTL	25	40	0.100
2	20W LED	05	20	0.010
3	20W CFL	04	20	0.080
4	Ceiling fans	24	6	0.144
5	PC	19	150	2.850
6	Scanner	01	175	0.175
7	Projector	01	350	0.350
8	Other Load	15	150	2.250
	Total			**5.959**

CHAPTER-III

STUDY OF Present Energy CONSUMPTION

In this chapter, we present the analysis of last year Electricity Energy Consumption

Table No 3: Electrical Energy Consumption Analysis- 2023-24:

No	**Month**	**Total Energy Consumed, kWh**
1	May	190
2	June	210
3	July	222
4	August	195
5	September	198
6	October	234
7	November	201
8	December	228
9	January	286
10	February	262
11	March	212
12	April	242
	Total	2680

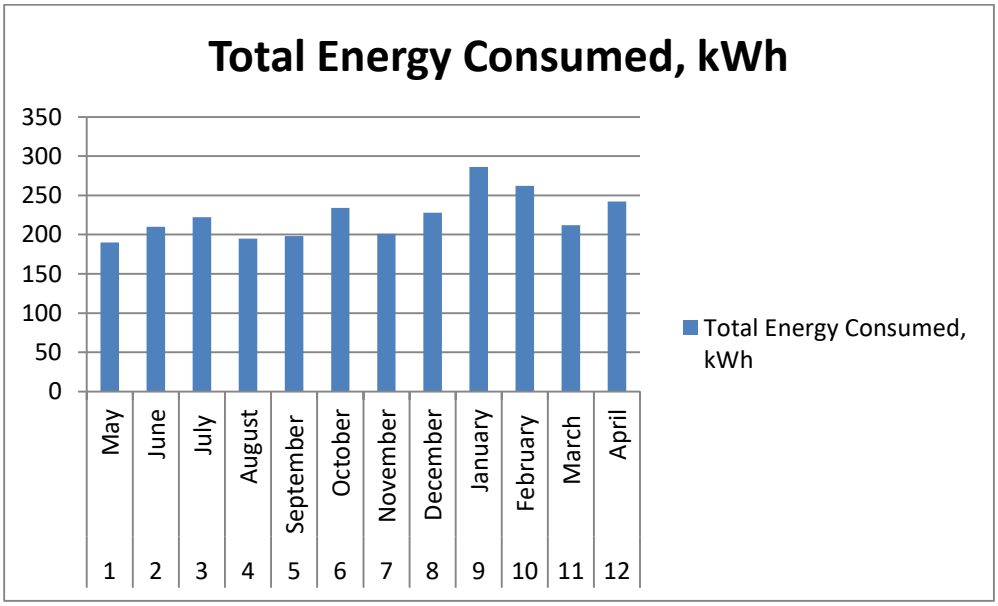

Table No. 4 Variations in Important Parameters

No.	Parameters/Variation	Energy Purchased kW
1	Total	2680
2	Maximum	286
3	Minimum	190
4	Average	238

CHAPTER-IV

CARBON FOOTPRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities. The College uses Electrical Energy for various Electrical gadgets.

Basis for computation of CO_2 Emissions:

The basis of Calculation for CO_2 emissions due to Electrical Energy is 1 kWh of Electrical Energy releases 0.9 Kg of CO_2 into atmosphere

Based on the above Data we compute the CO_2 emissions which are being released in to the atmosphere by the College due to its Day to Day operations

Table No 5: Month wise CO_2 Emissions:

No	Month	Total Energy Consumed, kWh	CO2 emissions, MT
1	May	190	0.171
2	June	210	0.189
3	July	222	0.199
4	August	195	0.175
5	September	198	0.178
6	October	234	0.210
7	November	201	0.180
8	December	228	0.205
9	January	286	0.257
10	February	262	0.238
11	March	212	0.190
12	April	242	0.217
13	Total	2680	2.412
14	Maximum	286	0.257
15	Minimum	190	0.171
16	Average	238	0.214

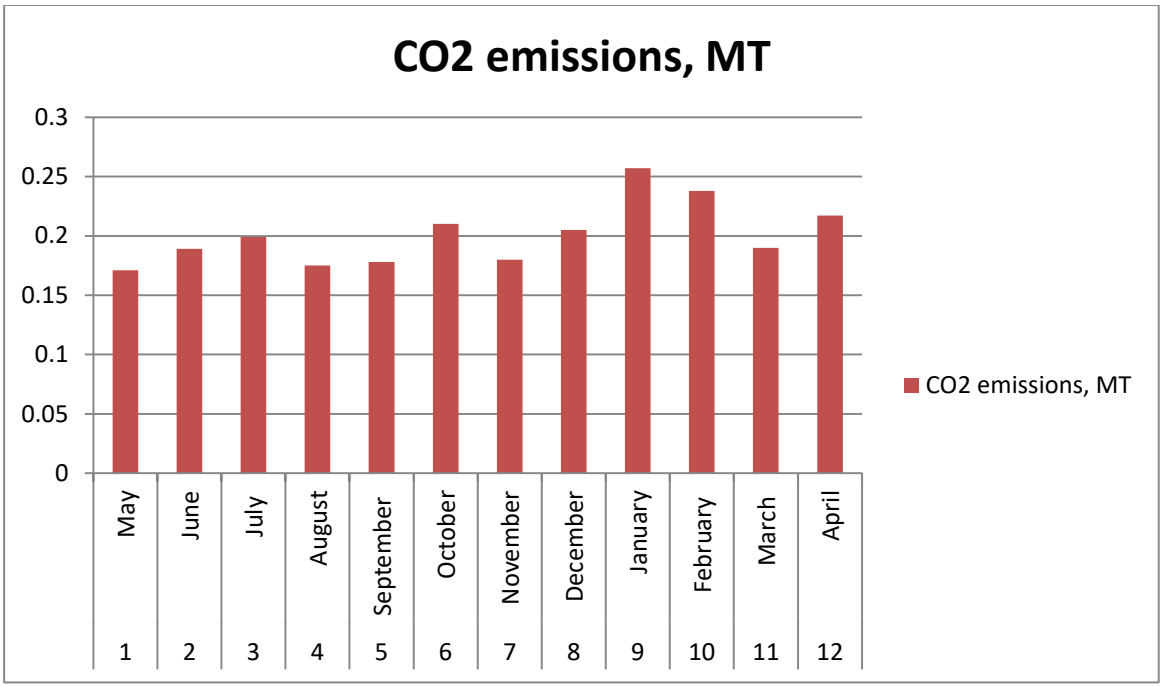

Table No. 6 : Important Parameters

No	Parameter /Value	Electrical Energy Consumed, kWh	CO2 Emissions, MT
1	Total	2991	2.691
2	Maximum	310	0.279
3	Minimum	212	0.190
4	Average	261	0.234

Study of Connected Load

Location Wise Connected Load

Sl.No.	Location	No. of Florescent lamp (Tube Lights)	No of CFL's (watt)	No of LED's (watt)	No. of Ceiling Fan's	No. of PC's	No. of Printers
01	G6	02			01		
02	G7	02			02		
03	G8	02			01	01 projector	
04	G5	01			01		
05	G4	02			01	02	01scanner
06	G3	01			01	01	
07	G2	02		02	02		
08	G1	-	02		02		
01	F10	03	02		01	02	
02	F9	02			02	14	
03	F7	02		03	02		
04	F1	02			02		
01	S4	01			02		
02	S6	02			02		
03	S7	01			02		
	Total	**25**	**04**	**05**	**24**	**19pc+01 proj.**	**01 scanner**

Recommendations:

1. LED Lighting: Replace all fluorescent lamps and CFLs with LED lights, which are more energy-efficient and have a longer lifespan.

2. Energy-Efficient Ceiling Fans: Consider replacing existing ceiling fans with energy-efficient models.

3. **Optimize Ventilation Systems:** Regular maintenance and potential replacement of old fans with energy-efficient models can improve energy efficiency.

4. Optimize Computing Equipment: Ensure that PCs and printers are turned off when not in use to avoid
standby power consumption.

Conclusion

The energy audit conducted at Amareshwar Arts and Commerce Degree College, Aurad(B), revealed significant opportunities for enhancing energy efficiency across the campus. The audit highlighted key areas where energy consumption could be reduced through targeted interventions. By implementing the recommended measures, the college can achieve greater energy efficiency, leading to cost savings and a reduced environmental impact