ENERGY AUDIT REPORT

of

ASM's College of Commerce, Science & Information Technology,

Pimpri, Pune 411 018

Year: 2021-22

Prepared by

ENGRESS SERVICES

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ENGRESS SERVICES PUNE

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Ref: ES/ASMCSIT/21-22/01

Date: 20/6/2022

CERTIFICATE

This is to certify that we have conducted Energy Audit at ASM's College of Commerce, Science & Information Technology, Pimpri, Pune 411 018 in the year 2021-22.

The College has adopted Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- Maximum usage of Day Lighting
- In process installation of 2.5 kWp Roof Top Solar PV Plant

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

For Engress Services,

A Y Mehendale,
Certified Energy Auditor
EA-8192

ENGRESS SERVICES PUNE

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ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of ASM's College of Commerce, Science & Information Technology, Pimpri, Pune 411 018, for awarding us the assignment of Energy Audit of their Pimpri campus for the Year: 21-22.

We are thankful to all staff members for helping us during the field study.

EXECUTIVE SUMMARY

1. ASM's College of Commerce, Science & Information Technology, Pimpri, Pune consumes Energy in the form of Electrical Energy; used for various gadgets, Office & other facilities.

2. Energy Consumed & CO_2 Emission:

No	Parameter	Energy Consumed, kWh	CO_2 emissions, MT
1	Total	36909	33.22
2	Maximum	3807	3.43
3	Minimum	2395	2.16
4	Average	3076	2.77

3. Various Majors Adopted for Energy Conservation:

- Usage of Energy Efficient LED fittings
- Maximum Usage of Day Lighting
- In process installation of 2.5 kWp Roof Top Solar PV Plant.

4. Usage of Alternate Energy Source:

- The College is in process of installation of 2.5 kWp Roof Top Solar PV Plant.
- The % of Annual Power requirement met by Alternate Energy is nil

5. Usage of LED Lighting to Total Lighting Load:

- The LED Lighting Load is 1.49 kW.
- The Total Lighting Load is 7.97 kW.
- The percentage of LED Lighting Total Lighting load works out to be 18.67 %

6. Assumption:

- 1 kWh (Unit) of Electrical Energy releases 0.9 Kg of CO_2 into atmosphere

7. Reference:

- For CO_2 Emission Calculations: www.tatapower.com

ABBREVIATIONS

AC	:	Air conditioner
ASM	:	Audyogik Shikshan Mandal
BEE	:	Bureau of Energy Efficiency
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
MSEDCL	:	Maharashtra State Electricity Distribution Company Limited

CHAPTER-I
INTRODUCTION

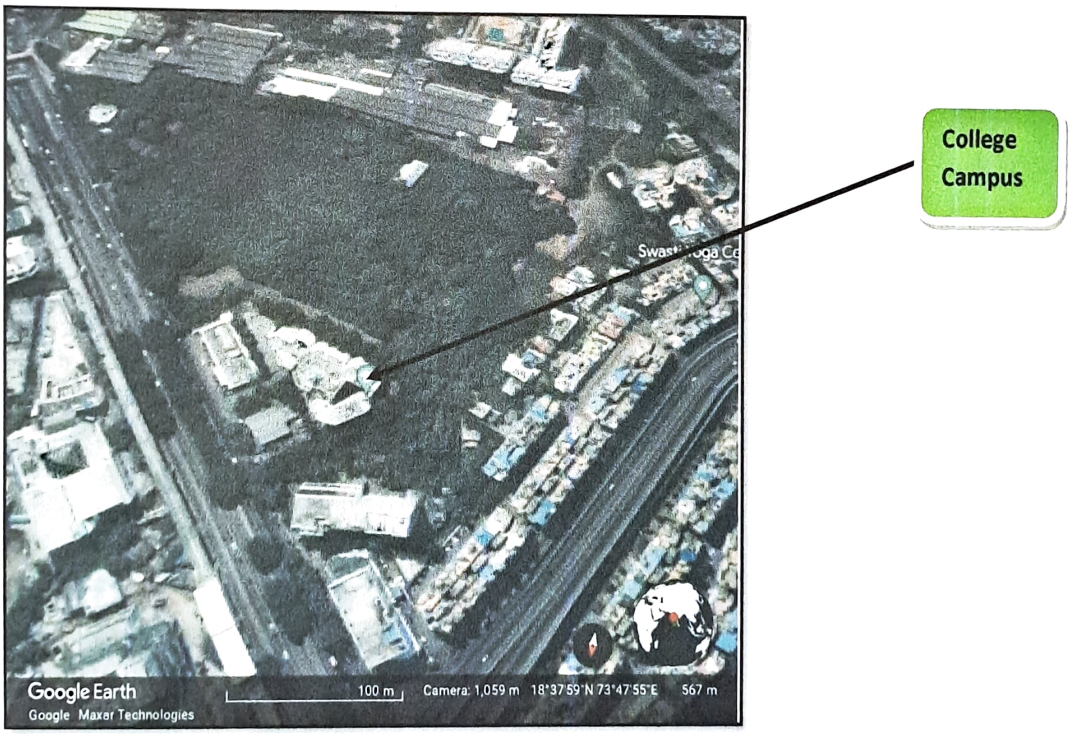
1.1 Objectives:

1. To study Connected Load and Present Energy Consumption
2. To Study CO_2 emissions
3. To study Scope for usage of Alternate / Renewable Energy
4. To study usage of LED Lighting

1.2 Table No-1: General Details of College:

No	Head	Particulars
1	Name	ASM's College of Commerce, Science & Information Technology
2	Address	Pimpri, Pune 411 018
3	Year of Establishment	2001
3	Affiliation	Savitribai Phule Pune University

1.3 Google Earth Image:



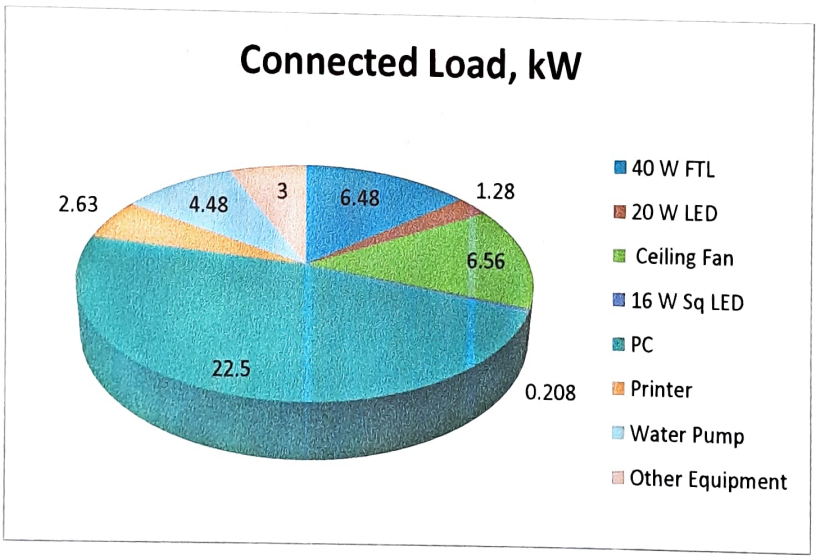
CHAPTER-II
STUDY OF CONNECTED LOAD

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

Table No 2: Study of Equipment wise Connected Load:

No	Equipment	Qty	Load, W/Unit	Load, kW
1	40 W FTL	162	40	6.48
2	20 W LED	64	20	1.28
3	Ceiling Fan	101	65	6.57
4	16 W Sq LED	13	16	0.208
5	PC	150	150	22.5
6	Printer	15	175	2.63
7	Water Pump	2	2238	4.48
8	Other Equipment	12	250	3
9	**Total**			**47**

Chart No 1: Details of Connected Load:



CHAPTER-III
STUDY OF PRESENT ENERGY CONSUMPTION

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

Table No 3: Electrical Energy Consumed: 21-22:

No	Month	Energy Consumed, kWh
1	Apr-21	2531
2	May-21	2395
3	Jun-21	2885
4	Jul-21	3385
5	Aug-21	2680
6	Sep-21	2769
7	Oct-21	3367
8	Nov-21	3249
9	Dec-21	3807
10	Jan-22	3655
11	Feb-22	3079
12	Mar-22	3109
13	Total	36909
14	Maximum	3807
15	Minimum	2395
16	Average	3076

Chart No 2: To study the variation of Month wise Energy Consumed, kWh:

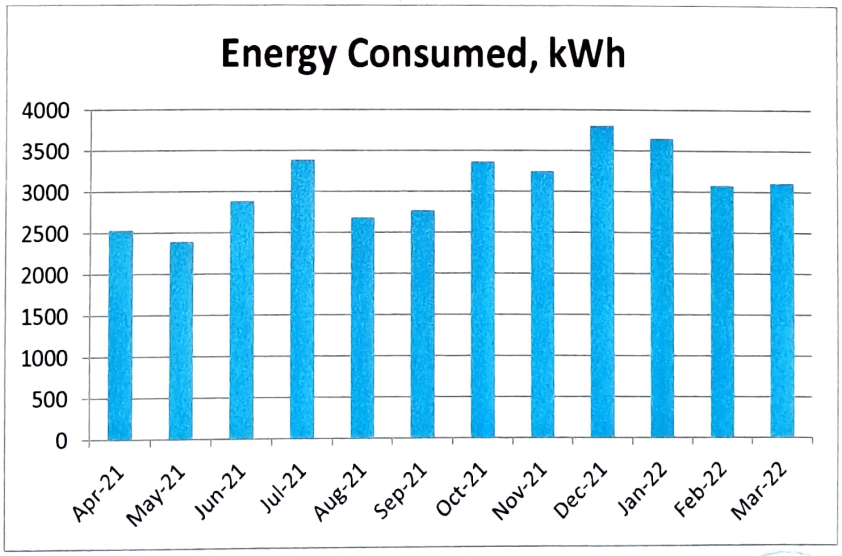


Table No 4: Important parameters:

No	Parameter	Energy Consumed, kWh
1	Total	36909
2	Maximum	3807
3	Minimum	2395
4	Average	3076

CHAPTER-IV
CARBON FOOT PRINTING

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 are: 1 Unit (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	Energy Consumed, kWh	CO_2 Emissions, MT
1	Apr-21	2531	2.28
2	May-21	2395	2.16
3	Jun-21	2885	2.60
4	Jul-21	3385	3.05
5	Aug-21	2680	2.41
6	Sep-21	2769	2.49
7	Oct-21	3367	3.03
8	Nov-21	3249	2.92
9	Dec-21	3807	3.43
10	Jan-22	3655	3.29
11	Feb-22	3079	2.77
12	Mar-22	3109	2.80
13	Total	36909	33.22
14	Maximum	3807	3.43
15	Minimum	2395	2.16
16	Average	3076	2.77

Chart No 3: Representation of Month wise CO_2 Emissions:

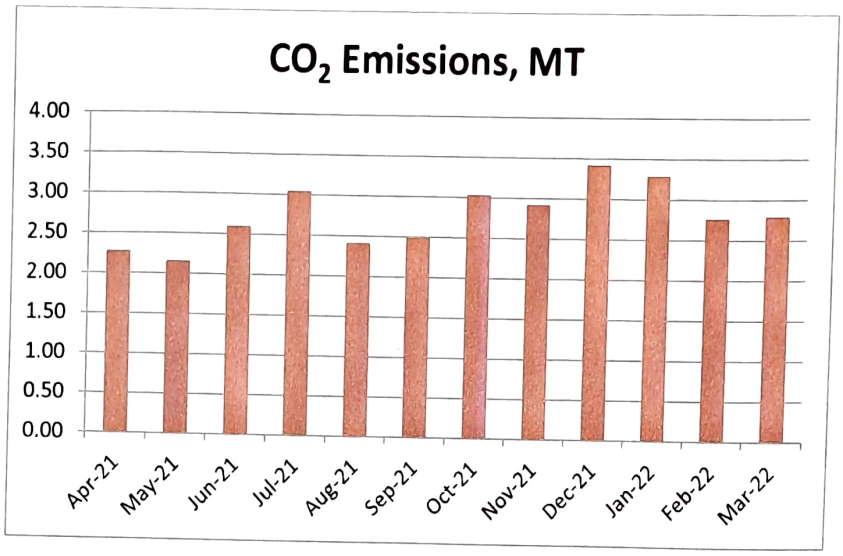


Table No 6: Key observations:

No	Parameter	Energy consumed, kWh	CO_2 Emissions, MT
1	Total	36909	33.22
2	Maximum	3807	3.43
3	Minimum	2395	2.16
4	Average	3076	2.77

CHAPTER-V
STUDY OF USAGE OF ALTERNATE ENERGY

The College is in process of installation of **2.5 kWp** Roof top Solar PV Plant

As on Date the percentage of Annual Power requirement by Alternate Energy is nil.

CHAPTER-VI
STUDY OF USAGE OF LED LIGHTS

In the following Table, we present the percentage of usage of LED lights to Total Lighting Load.

Table No 7: Study of % LED Lighting Load to Total Lighting Load:

No	Particulars	Value	Unit
1	Qty of 40 W FTL Fittings	162	Nos
2	Load/Unit of 40 W FTL Fitting	40	W/Unit
3	Total Load of 40 W FTL fittings	**6.48**	kW
4	Qty of 16 W LED fittings	13	Nos
5	Load/Unit of 16 W LED fitting	16	W/Unit
6	Total Load of 16 W LED fittings	**0.208**	kW
7	Qty of 20 W LED fitting	64	Nos
8	Load/Unit of 20 W LED fitting	20	W/Unit
9	Total Load of 20 W LED fittings	**1.28**	kW
10	Total LED Lighting Load=**6+9**	**1.49**	kW
11	Total Lighting Load=**3+6+9**	**7.97**	kW
12	**% of LED to Total Lighting Load = 10*100/11**	**18.67**	**%**