ENERGY AUDIT REPORT

of

ASM's INSTITUTE OF PROFESSIONAL STUDIES,

Pimpri, Pune 411 018

Year: 2021-22

Prepared by

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society
Near Muktangan English School, Parvati, Pune 411009
Phone: 09890444795 Email: engress123@gmail.com

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

Maharashtra Energy Development Agency

(Government of Maharashtra Institution)
Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary,
Aundh, Pune, Maharashtra 411067
Ph No: 020-35000450
Email: ece@mahaurja.com, Web: www.mahaurja.com

ECN/2022-23/CR-43/1709

10th May, 2022

CERTIFICATE OF REGISTRATION
FOR CLASS 'A'

We hereby certify that, the firm having following particulars is registered with ***MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)*** under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

Name and Address of the firm : M/s Engress Services
Yashshree, 26, Nirmal Bag Society,
Near Muktangan English School,
Parvati, Pune – 411 009.

Registration Category : *Empanelled Consultant for Energy Conservation Programme for Class 'A'*

Registration Number : ***MEDA/ECN/2022-23/Class A/EA-32.***

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **09th May, 2024** from the date of registration, to carry out energy audits under the Energy Conservation Programme
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

General Manager (EC)

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ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society,
Near Muktangan English School, Parvati, Pune 411 009
Tel: 020-24220747 Email: engress123@gmail.com

Ref: ES/ASMIPS/21-22/01

Date: 23/6/2022

CERTIFICATE

This is to certify that we have conducted Energy Audit at ASM's Institute of Professional Studies, Pimpri, Pune 411 018 in the year 2021-22.

The Institute has adopted Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- Usage of BEE Star Rated Equipment
- 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

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ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of ASM's Institute of Professional Studies, 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 Institute of Professional Studies, 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	45345	40.81
2	Maximum	4677	4.21
3	Minimum	2942	2.65
4	Average	3779	3.40

3. Various Majors Adopted for Energy Conservation:

- Usage of Energy Efficient LED fittings
- Usage of BEE STAR Rated Equipment
- In process installation of **2.5 kWp** Roof Top Solar PV Plant.

4. Usage of Alternate Energy Source:

- The Institute 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 **4.44 kW.**
- The Total Lighting Load is **14.12 kW.**
- The percentage of LED Lighting Total Lighting load works out to be **31.44 %**

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

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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 Institute:

No	Head	Particulars
1	Name	ASM's Institute of Professional Studies
2	Address	Pimpri, Pune 411 018
3	Year of Establishment	2008
3	Affiliation	Savitribai Phule Pune University

1.3 Google Earth Image:

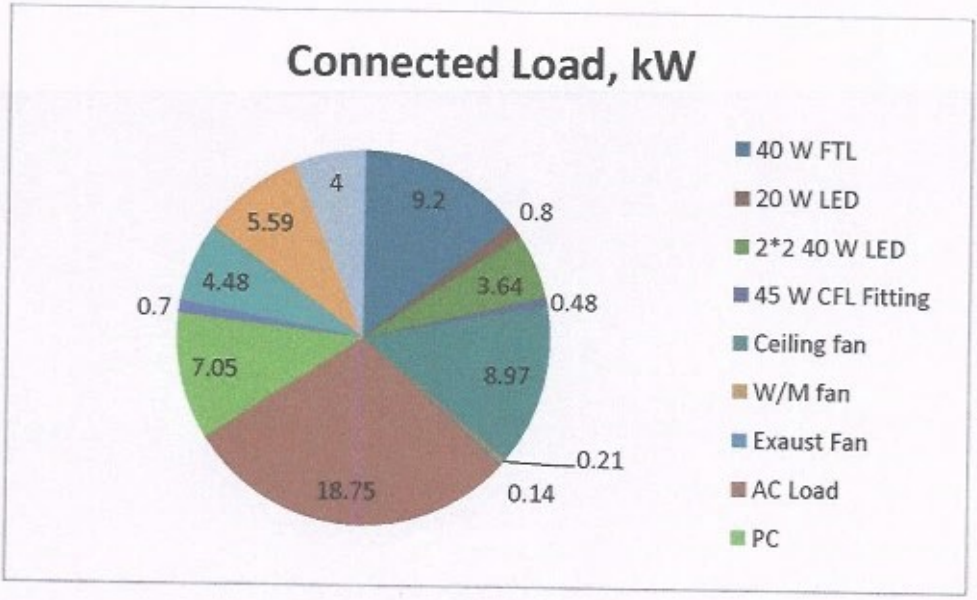
CHAPTER-II
STUDY OF CONNECTED LOAD

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	230	40	9.2
2	20 W LED	40	20	0.8
3	2*2 40 W LED	91	40	3.64
4	45 W CFL Fitting	10	48	0.48
5	Ceiling fan	138	65	8.97
6	W/M fan	4	52	0.21
7	Exhaust Fan	4	36	0.14
8	AC Load		1250	18.75
9	PC	47	150	7.05
10	Printer	4	175	0.7
11	Water Pump	2	2238	4.48
12	Lift	1	5595	5.60
13	Other Equipment	20	200	4
13	**Total**			**64**

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	3109
2	May-21	2942
3	Jun-21	3544
4	Jul-21	4159
5	Aug-21	3292
6	Sep-21	3401
7	Oct-21	4137
8	Nov-21	3992
9	Dec-21	4677
10	Jan-22	4490
11	Feb-22	3782
12	Mar-22	3820
13	Total	45345
14	Maximum	4677
15	Minimum	2942
16	Average	3779

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

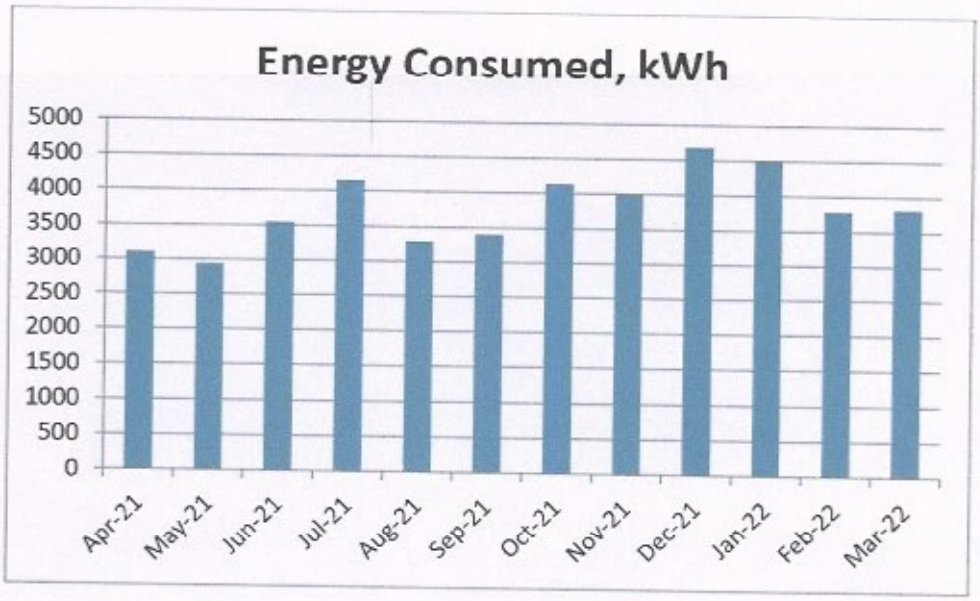


Table No 4: Important parameters:

No	Parameter	Energy Consumed, kWh
1	Total	45345
2	Maximum	4677
3	Minimum	2942
4	Average	3779

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 Institute for performing its day to day activities

The Institute 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 Institute 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	3109	2.80
2	May-21	2942	2.65
3	Jun-21	3544	3.19
4	Jul-21	4159	3.74
5	Aug-21	3292	2.96
6	Sep-21	3401	3.06
7	Oct-21	4137	3.72
8	Nov-21	3992	3.59
9	Dec-21	4677	4.21
10	Jan-22	4490	4.04
11	Feb-22	3782	3.40
12	Mar-22	3820	3.44
13	Total	45345	40.81
14	Maximum	4677	4.21
15	Minimum	2942	2.65
16	Average	3779	3.40

Chart No 3: Representation of Month wise CO_2 Emissions:

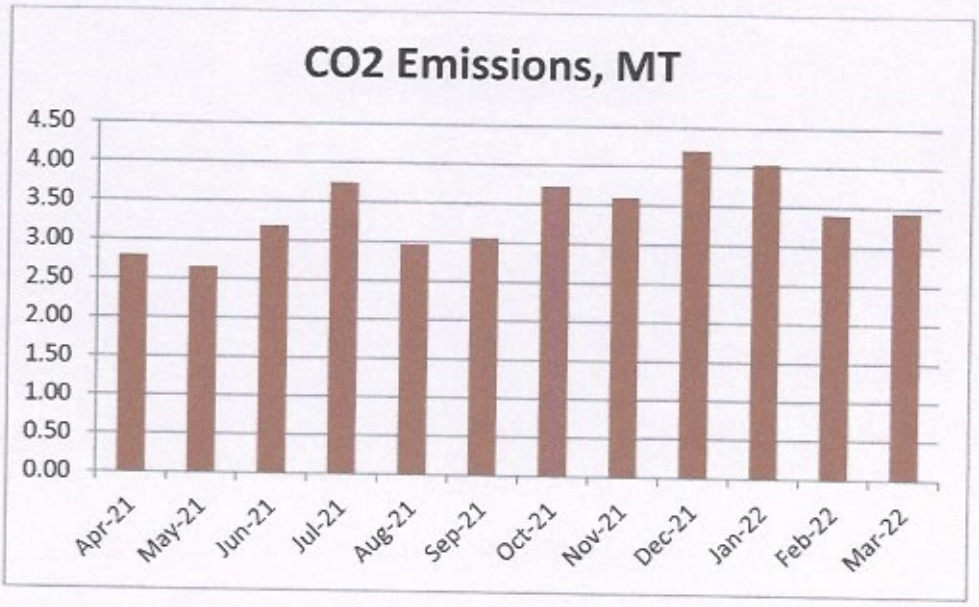


Table No 6: Key observations:

No	Parameter	Energy consumed, kWh	CO_2 Emissions, MT
1	Total	45345	40.81
2	Maximum	4677	4.21
3	Minimum	2942	2.65
4	Average	3779	3.40

CHAPTER-V
STUDY OF USAGE OF ALTERNATE ENERGY

The Institute 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	230	Nos
2	Load per Unit of 40 W FTL Fitting	40	W/Unit
3	Total Load of 40 W FTL Fittings	**9.2**	kW
4	Qty of 20 W LED Fittings	40	Nos
5	Load per Unit of 20 WLED Fitting	20	W/Unit
6	Total Load of 20 W LED Fittings	**0.8**	kW
7	Qty of 40 W LED Fittings	91	Nos
8	Load per Unit of 40 WLED Fitting	40	W/Unit
9	Total Load of 40 W LED Fittings	**3.64**	kW
10	Qty of 45 W CFL Fittings	10	Nos
11	Load per Unit of 45 W CFL Fitting	48	W/Unit
12	Total Load of 45 W CFL Fittings	**0.48**	kW
13	Total LED Lighting Load =6+9	**4.44**	kW
14	Total Lighting Load= 3+6+9+12	**14.12**	kW
15	Percentage of LED to Total Lighting Load=**13*100/14**	**31.44**	%

SUDHAKAR JANARDHAN BOKEPHODE

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