

# ENERGY AUDIT REPORT

of

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

Pimpri, Pune 411 018

Year: 2018-19

Prepared by

## **Enrich Consultants**

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**MAHARASHTRA ENERGY DEVELOPMENT AGENCY**

**Maharashtra Energy Development Agency**

(A Government of Maharashtra undertaking)  
2<sup>nd</sup> Floor, MEDA Commercial Complex, Opp. Fridal Nagar, Yerwada, Pune-411 006,  
Ph.No: 020-26614393/266144403

Email: [ee@maharaja.com](mailto:ee@maharaja.com), Web: [www.maharaja.com](http://www.maharaja.com)

LCN/2018-19/CR-05/4174

19<sup>th</sup> September, 2018

**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** : **Enrich Consultants**  
Yashashree, Plot No. 26, Nirmal Bag Society,  
Near Muktaangan English School,  
Parvati, Pune - 411009.

**Registration Category** : Empanelled *Consultant for Energy Conservation Programme*

**Registration Number** : **MEDA/ECN/CR-05/2018-19/EA-03**

- 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 the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.
- This empannelment is valid till **31<sup>st</sup> March 2021** 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.

  
(Smita Kudarkar)  
General Manager (FC)



# Enrich Consultants

Yashashree, 26, Nirmal Bag Society,  
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Tel: 098990444795 Email: [enrichcons@gmail.com](mailto:enrichcons@gmail.com)

Ref: EC/ASMCSIT/18-19/01

Date: 2/7/2019

## 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 2018-19.

The College has adopted Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- 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.

For Enrich Consultants,



**A Y Mehendale,**  
Certified Energy Auditor  
EA-8192



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## **ACKNOWLEDGEMENT**

We Enrich Consultants, 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: 18-19.

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<sub>2</sub> Emission:

No	Parameter	Energy Consumed, kWh	CO <sub>2</sub> emissions, MT
1	Total	40008	32.01
2	Maximum	3968	3.17
3	Minimum	2604	2.08
4	Average	3334	2.67

3. Various Majors Adopted for Energy Conservation:

- Usage of Energy Efficient LED fittings
- Maximum usage of Day Lighting

4. Usage of Alternate Energy Source:

- The College has yet to install Roof Top Solar PV Plant.

5. Usage of LED Lighting to Total Lighting Load:

- The LED Lighting Load is **0.89 kW**.
- The Total Lighting Load is **8.57 kW**.
- The percentage of LED Lighting Total Lighting load works out to be **10.36 %**

6. Assumption:

- 1 kWh (Unit) of Electrical Energy releases **0.8 Kg** of CO<sub>2</sub> into atmosphere



## 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<sub>2</sub> 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





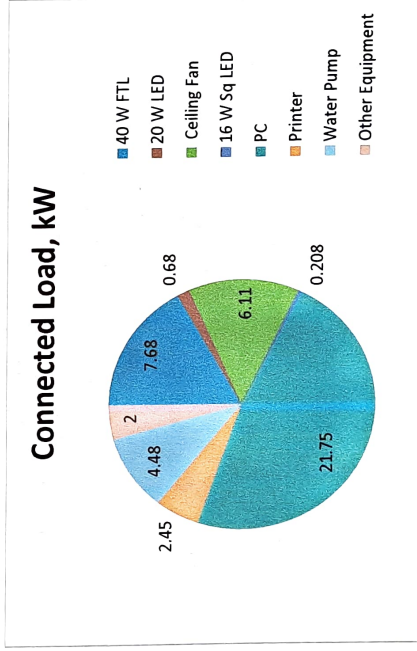
## CHAPTER-II STUDY OF CONNECTED LOAD

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	192	40	7.68
2	20 W LED	34	20	0.68
3	Ceiling Fan	94	65	6.11
4	16 W Sq LED	13	16	0.208
5	PC	145	150	21.75
6	Printer	14	175	2.45
7	Water Pump	2	2238	4.48
8	Other Equipment	8	250	2
9	<b>Total</b>			<b>45.35</b>

Chart No 1: Details of Connected Load:

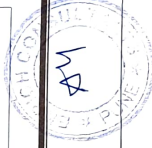
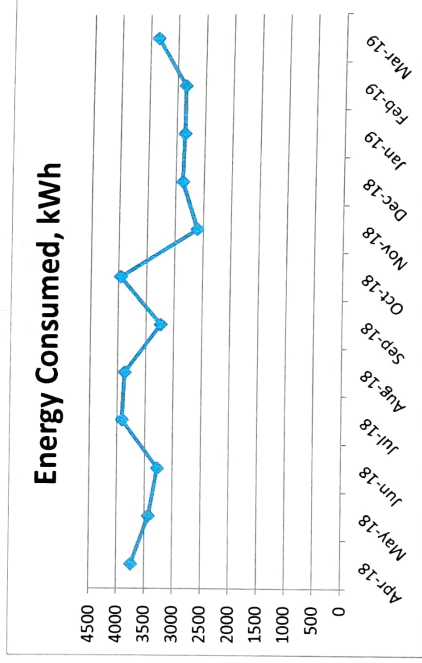


### CHAPTER-III STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Energy Consumed  
Table No 3: Electrical Energy Consumed: 18-19:

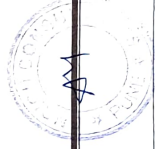
No	Month	Energy Consumed, kWh
1	Apr-18	3742
2	May-18	3433
3	Jun-18	3277
4	Jul-18	3919
5	Aug-18	3877
6	Sep-18	3238
7	Oct-18	3968
8	Nov-18	2604
9	Dec-18	2880
10	Jan-19	2859
11	Feb-19	2852
12	Mar-19	3360
13	Total	40008
14	Maximum	3968
15	Minimum	2604
16	Average	3334

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	40008
2	Maximum	3968
3	Minimum	2604
4	Average	3334



## **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.

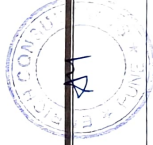
### **Basis for computation of CO<sub>2</sub> Emissions:**

The basis of Calculation for CO<sub>2</sub> emissions due to Electrical Energy are: 1 Unit (kWh) of Electrical Energy releases **0.8 Kg of CO<sub>2</sub>** into atmosphere

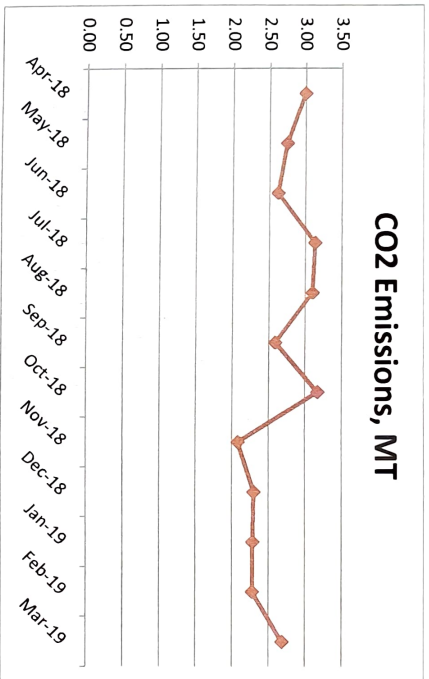
Based on the above Data we compute the CO<sub>2</sub> emissions which are being released in to the atmosphere by the College due to its Day to Day operations

**Table No 5: Month wise CO<sub>2</sub> Emissions:**

No	Month	Energy Consumed, kWh	CO <sub>2</sub> Emissions, MT
1	Apr-18	3742	2.99
2	May-18	3433	2.75
3	Jun-18	3277	2.62
4	Jul-18	3919	3.13
5	Aug-18	3877	3.10
6	Sep-18	3238	2.59
7	Oct-18	3968	3.17
8	Nov-18	2604	2.08
9	Dec-18	2880	2.30
10	Jan-19	2859	2.29
11	Feb-19	2852	2.28
12	Mar-19	3360	2.69
13	Total	40008	32.01
14	Maximum	3968	3.17
15	Minimum	2604	2.08
16	Average	3334	2.67



**Chart No 3: Representation of Month wise CO<sub>2</sub> Emissions:**



**Table No 6: Key observations:**

No	Parameter	Energy consumed, KWh	CO <sub>2</sub> Emissions, MT
1	Total	40008	32.01
2	Maximum	3968	3.17
3	Minimum	2604	2.08
4	Average	3334	2.67



**CHAPTER-V**  
**STUDY OF USAGE OF ALTERNATE ENERGY**

The College has yet to install 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	192	Nos
2	Load/Unit of 40 W FTL Fitting	40	W/Unit
3	Total Load of 40 W FTL fittings	7.68	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	34	Nos
8	Load/Unit of 20 W LED fitting	20	W/Unit
9	Total Load of 20 W LED fittings	0.68	KW
10	Total LED Lighting Load=6+9	0.89	KW
11	Total Lighting Load=3+6+9	8.57	KW
12	% of LED to Total Lighting Load = $10 \times 100/11$	10.36	%

