

GREEN AUDIT REPORT
of
Jayawant Shikshan Prasarak Mandal's
Jayawantrao Sawant College of Pharmacy and Research,
Handewadi, Hadapsar, Pune



Year: 2020-21

Prepared by:

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MAHARASHTRA ENERGY DEVELOPMENT AGENCY

An ISO 9001:2000 Reg. No. RG 91/2462



Maharashtra Energy Development Agency

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ECN/2021-22/CR-14/1577

22nd April, 2021

**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 Enrich Consultants
Yashashree, Plot No. 26, Nirmal Bag Society,
Near Muktagan English School, Parvati,
Pune - 411009.
- Registration Category** : *Empanelled Consultant for Energy Conservation Programme for Class 'A'*
- Registration Number** : *MEDA/ECN/2021-22/Class A/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 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 **21st April, 2023** 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 (FC)



Enrich Consultants

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Tel: 09890444795 Email: enrichcons@gmail.com

Ref: EC/JSCOPR/20-21/02

Date: 19/8/2021

CERTIFICATE

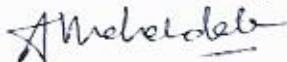
This is to certify that we have conducted Green Audit at Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant College of Pharmacy & Research, Handewadi Pune, in the Academic year 2020-21.

The College has adopted following Green Initiatives:

- Usage of Energy Efficient LED Light Fitting
- Usage of BEE STAR Rated Energy Efficient Equipment
- Maximum Usage of Day Lighting
- Installation of Roof Top Solar PV Plant of Capacity 10 kWp
- Provision of Separate bins for Dry & Wet Waste
- Installation of Vermi Composting Plant
- Implementation of Rain Water Harvesting Project
- Maintenance of good Internal Road
- Tree Plantation in the campus
- Provision of Ramp for Divyangajan
- Provision of Sanitary Waste Incinerator

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 Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant College of Pharmacy & Research, Handewadi, Hadapsar, Pune for awarding us the assignment of Green Audit of their Campus for the Year: 2020-21.

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



EXECUTIVE SUMMARY

1. Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant College of Pharmacy & Research, Handewadi, Pune consumes Energy in the form of Electrical Energy used for various Electrical Equipment, office & other facilities.

2. Present Energy Consumption & CO₂ Emissions:

No	Parameter/ Value	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Total	33748	30.37
2	Maximum	3553	3.20
3	Minimum	2317	2.09
4	Average	2812	2.53

3. Various initiatives taken for Energy Conservation:

- Usage of Energy Efficient BEE STAR Rated Equipment
- Usage of Energy Efficient LED Lighting
- Maximum Usage of Day Lighting
- Installation of Roof Top Solar PV Plant of Capacity 10 kWp.

4. Usage of Renewable Energy:

- The College has installed Roof Top Solar PV Plant of Capacity 10 kWp.
- The Electrical Energy generated in 20-21 is 12000 kWh.
- Reduction in CO₂ Emissions in 2020-21 works out to be 10.8 MT.

5. Waste Management:

5.1 Solid Waste Management:

The recyclable waste, like paper, plastic waste is handed over to Authorized waste collecting agent for further recycling.

5.2 Organic Waste Management:

The College has installed a Vermi Composting Plant and the organic Waste is composted in the Plant, which is further used in the own garden.

5.3 E-Waste Management:

The E-Waste is disposed of through Authorized E-Waste collecting agency.

6. Rain Water Harvesting:

The College has installed the Rainwater harvesting project, the rain water falling on the terrace is collected and is used for recharging the bore well.



7. Green & Sustainable Initiatives

- Maintenance of good Internal Road
- Maintenance of Internal Garden
- Provision of Ramp for Divyangajan
- Provision of Sanitary Waste Incinerator
- Display of Posters on Resource Conservation

8. Notes & Assumptions:

- 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere
- Annual Solae Energy Generation Days: 300 Nos.

9. References:

- For CO₂ Emissions: www.tatapower.com
- For Roof Top Solar Energy generation: www.solarrooftop.gov.in



ABBREVIATIONS

BEE	Bureau of Energy Efficiency
kWh	Kilo Watt Hour
LPD	Liters Per Day
Kg	Kilo Gram
MT	Metric Ton
CO ₂	Carbon Di Oxide
Qty	Quantity



CHAPTER-I INTRODUCTION

1.1 Objectives:

1. To study present Energy Consumption
2. To Study CO₂ emissions
3. To study usage of Renewable Energy
4. Study of Waste Management
5. Study of Rain Water Harvesting
6. Study of Green & Sustainable Practices

1.2 General Details of College: Table No 1:

No	Head	Particulars
1	Name of Institution	Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant College of Pharmacy & Research
2	Address	Handewadi, Hadapsar
3	Affiliation	Savitribai Phule Pune University



CHAPTER-II STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of Electricity Bills

Table No 2: Electrical Bill Analysis- 2020-21:

No	Month	Energy Consumed kWh
1	Jul-20	2379
2	Aug-20	2317
3	Sep-20	2664
4	Oct-20	2684
5	Nov-20	2727
6	Dec-20	2845
7	Jan-21	3501
8	Feb-21	3513
9	Mar-21	3553
10	Apr-21	2663
11	May-21	2546
12	Jun-21	2356
13	Total	33748
14	Maximum	3553
15	Minimum	2317
16	Average	2812

Chart No 1: Variation in Monthly Energy Consumption:

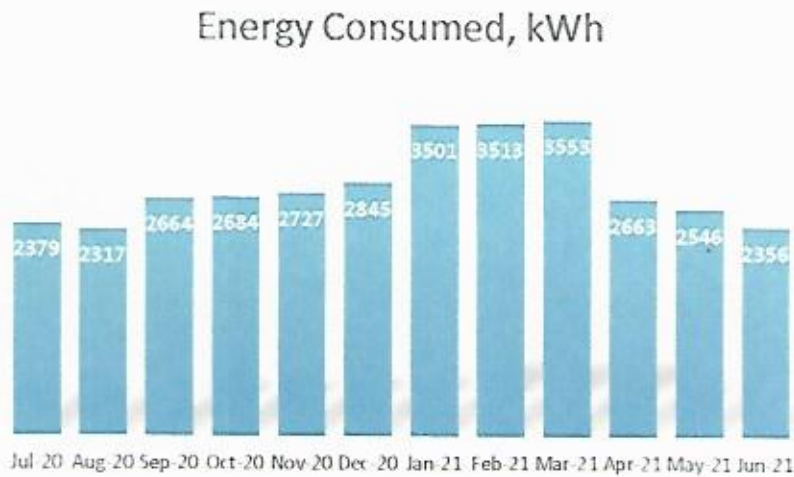


Table No 3: Variation in Important Parameters:

No	Parameter/ Variation	Energy Consumed, kWh
1	Total	33748
2	Maximum	3553
3	Minimum	2317
4	Average	2812



CHAPTER III STUDY OF 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 CO₂ Emissions:

The basis of Calculation for CO₂ emissions due to LPG & Electrical Energy are as under

- 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere

Based on the above Data we compute the CO₂ emissions which are being released in to the atmosphere by the College due to its Day to Day operations

Table No 4: Month wise CO₂ Emissions:

No	Month	Energy Consumed kWh	CO ₂ Emissions, MT
1	Jul-20	2379	2.14
2	Aug-20	2317	2.09
3	Sep-20	2664	2.40
4	Oct-20	2684	2.42
5	Nov-20	2727	2.45
6	Dec-20	2845	2.56
7	Jan-21	3501	3.15
8	Feb-21	3513	3.16
9	Mar-21	3553	3.20
10	Apr-21	2663	2.40
11	May-21	2546	2.29
12	Jun-21	2356	2.12
13	Total	33748	30.37
14	Maximum	3553	3.20
15	Minimum	2317	2.09
16	Average	2812	2.53



Chart No 2: Month wise CO₂ Emissions:

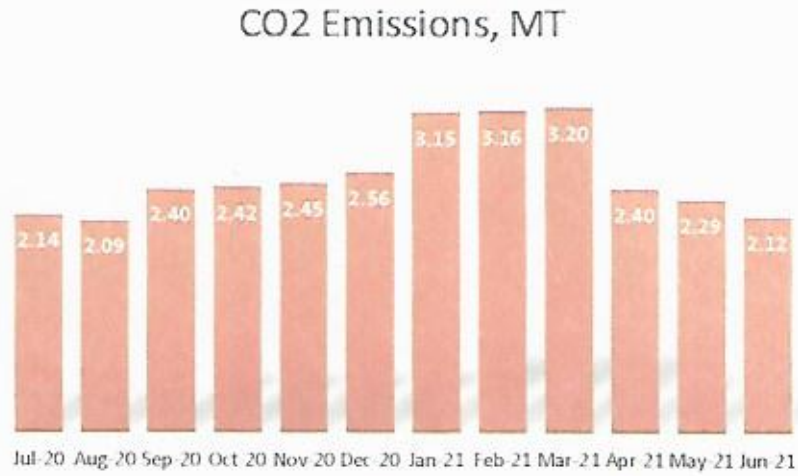


Table No 5: Variation in Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Total	33748	30.37
2	Maximum	3553	3.20
3	Minimum	2317	2.09
4	Average	2812	2.53



CHAPTER IV STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity 10 kWp.

In the following Table, we compute the Annual Reduction in CO₂ Emissions due to installation of Roof TOP Solar PV Plant.

Table No 6: Computation of Annual Reduction in CO₂ Emissions:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	10	kWp
2	Energy Generated in per kWp	4	4 kWh/kWp
3	Annual Solar Energy generation Days	300	Nos
4	Energy Generated in the Year: 20-21	12000	kWh
5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	Qty of CO ₂ Saved by Solar PV Plant = (4)*(5) /1000	10.8	MT of CO ₂

Photograph of Roof Top Solar PV Plant:



CHAPTER V STUDY OF WASTE MANAGEMENT

5.1 Solid Waste Management:

The recyclable waste, like paper waste is handed over to authorized waste collecting agent for further recycling.

Photograph of Waste Collection Bins:



5.2 Organic Waste Management:

The Bio degradable waste like leafy waste is composted in a Vermi composting Plant.

Photograph of Vermi Composting Plant:



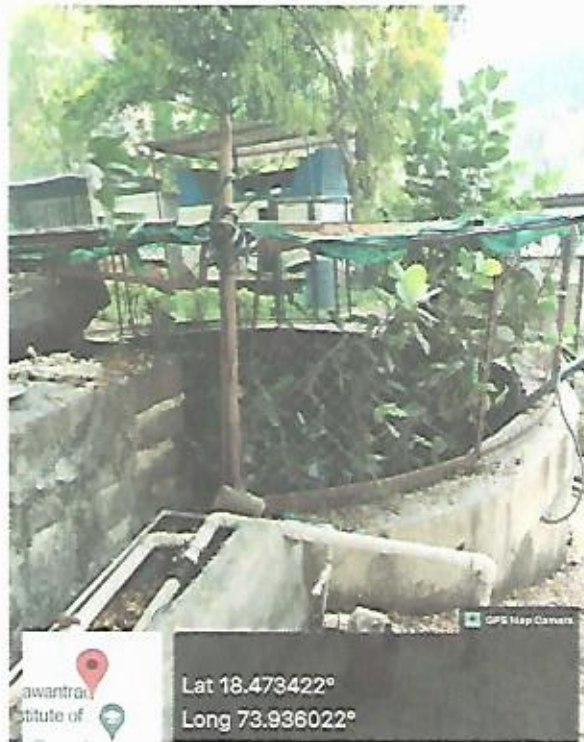
5.3 E-Waste Management: The E-Waste is disposed of through Authorized Agency.



CHAPTER-VI STUDY OF RAIN WATER HARVESTING

The College has implemented the Rain Water Harvesting Project. The College has installed Pipes from the terrace and the Rain water falling on the terrace is gathered and is used for recharging the bore well.

Photograph of Rain water Harvesting Pipe Section:



CHAPTER-VII STUDY OF GREEN & SUSTAINABLE PRACTICES

7.1 Pedestrian Friendly Roads:

The College has well maintained internal road to facilitate the easy movement of the students within the campus.

Photograph of Internal Road:



7.2 Internal Tree Plantation:

The College has well maintained landscaped garden in the campus.

Photograph of Tree plantation:



7.3 Provision of Ramp:

For easy movement of Divyangajan, the College has made provision of Ramp at the main entrance.

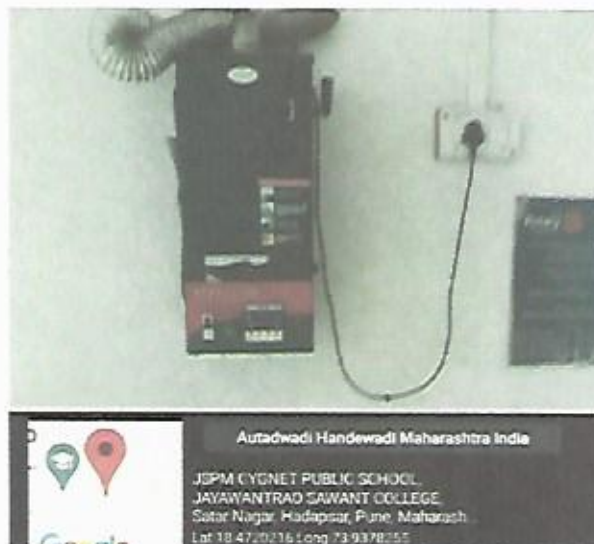
Photograph of Ramp:



7.4 Provision of Sanitary Waste Incinerator:

For disposal of Sanitary Waste, a Sanitary Waste Incinerator is installed in the campus.

Photograph of Sanitary Waste Incinerator:



7.5 Creation of Awareness about Energy Conservation:

The College has displayed posters emphasizing on importance of Energy Conservation.

Photograph of Poster on Energy Conservation:



**ANNEXURE-1:
LIST OF TREES & PLANTS IN THE CAMPUS:**

No	Common Name of Plant
1	Hibiscus
2	Vinca
3	Jatropha
4	Colius
5	Dracina
6	Duranda
7	Khalifa
8	Tikmal
9	Ova
10	Chincha
11	Mahabrhunga raj
12	Rudraksha
13	Haad sandhi
14	gokarna
15	Nilgiri
16	Bhuinimba
17	Falsi
18	Karanja
19	Ritha
20	Khair
21	Drumstick
22	Rose
23	Mehendi
24	Ratrarani
25	Papaya
26	Bel
27	Adulsa
28	Raktarohida
29	Lajalu
30	Panfuti
31	Dhotra
32	Kantakari
33	Pushkarmul
34	Chitrak
35	Tuti
36	Tantani



37	Korphad
38	Kadipatta
39	Idlimbu
40	Koinel
41	Vala
42	Jireniyam
43	Tulas
44	Tikoma
45	Hemiliya
46	Plumbego

Photograph of Nakshatra Garden:

