

GREEN AUDIT REPORT
of
Dr. D. Y. Patil Pratishthan's,
Dr. D. Y. Patil Institute of Engineering Management
and Research, Akrudi, Pune



Year: 2020-21

Prepared by

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MAHARASHTRA ENERGY DEVELOPMENT AGENCY

AN ISO 9001 : 2000 Reg. no. : RD/91 / 2482



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 Muktangan 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 (EC)



Enrich Consultants

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Ref: EC/DYPIEMR/20-21/02

Date: 25/7/2021

CERTIFICATE

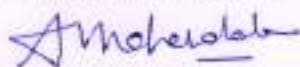
This is to certify that we have conducted Green Audit at Dr D Y Patil Pratishthan's Dr. D. Y. Patil Institute of Engineering Management and Research, Akurdi, Pune in the Academic year 2020-21.

The Institute has already adopted **Energy Efficient & Green** practices like:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Maximum usage of Day Lighting
- Installation of **20 kWp** Roof Top Solar PV Plant.
- Installation of **1500 LPD** Solar Thermal Water Heating System
- Segregation of Waste at source
- Installation of **100 KLPD** Sewage Treatment Plant
- Implementation of Rain Water Harvesting Project
- Provision of Ramp for Divyangajan
- Provision of Sanitary Waste Incinerator
- Creation of awareness about Resource Conservation by Display of Posters

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 at Enrich Consultants, Pune, express our sincere gratitude to the management of Dr D Y Patil Pratishthan's Dr. D. Y. Patil Institute of Engineering Management and Research, Akurdi, Pune, for awarding us the assignment of Green Audit of Akurdi campus for the Academic Year: 2020-21.

We are thankful to all the Head of the Departments & Staff members for helping us during the field study.



EXECUTIVE SUMMARY

1. Dr. D Y Patil Pratishthan's D Y Patil Institute of Engineering Management and Research, Akurdi, Pune consumes Energy in the form of **Electrical Energy** used for various gadgets, Office & other facilities.

2. Present Energy Consumption & CO₂ Emission:

No	Parameter /Value	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Total	61047	54.94
2	Maximum	9718	8.75
3	Minimum	2942	2.65
4	Average	5087.25	4.58

3. Various Majors Adopted for Energy Conservation:

- Usage of Energy Efficient LED Fittings
- Usage of Energy efficient STAR Rated Equipment
- Installation of **20 kWp** Roof Top Solar PV Plant
- Installation of **1500 LPD** Solar Thermal Water Heating System

4. Usage of Renewable Energy:

- The Institute has installed **20 kWp** Roof Top Solar PV Plant.
- The Energy generated by Solar PV Plant in the Year: 20-21 is **24000 kWh**.
- The reduction in CO₂ Emissions due to Solar PV Plant in 20-21 is **21.6 MT**.

5. Waste Management:

5.1 Solid Waste Management:

5.1.1 Segregation of Waste at Source:

The waste is segregated at the source. There are Waste Collection Bins at various locations, to collect the Waste.

5.2 Liquid Waste Management:

The Institute has installed Sewage Treatment Plant of Capacity **100 KLPD**. The treated Water is used for watering the internal Garden.

5.3 E-Waste Management:

The E-Waste generated in the campus is disposed, through authorized vendors by calling the tenders, for disposal of E-Waste.

6. Rain Water Harvesting:

The Institute has installed Rain Water Harvesting Plant. The Rain Water is stored in an underground water tank and then is used for domestic purpose.

7. Green & Sustainable Practices:

- Well maintained internal road
- Well maintained Garden.
- Provision of Ramp for Divyangajan
- Provision of Sanitary Waste incinerator at Hostel Block, for disposal of Sanitary Waste
- Creation of Awareness in respect of Resource Conservation by displaying posters

8. Notes & Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere
2. **1 kWp** Solar PV system generates **4 kWh** of Electrical Energy per Day
3. Annual Solar Energy Generation Days: **300 Nos**

9. References:

1. For CO₂ Emissions: www.tatapower.com
2. For Solar PV Energy Generation: www.solarroftop.gov.in

ABBREVIATIONS

LED	: Light Emitting Diode
kWh	: kilo-Watt Hour
Qty	: Quantity
W	: Watt
kW	: Kilo Watt
MT	: Metric Ton
LPD	: Liters Per Day

CHAPTER-I INTRODUCTION

1.1 Objectives:

1. To study present level of Energy Consumption
2. To Study the present CO₂ emissions
3. To study Scope for usage of Renewable Energy
4. To study Waste Management: Solid, Liquid & E-Waste
5. To study Rain Water Harvesting
6. To study Green & Sustainable Practices.

1.2 Table No 1: General Details of Institute:

No	Head	Particulars
1	Name	Dr D Y Patil Pratishthan's Dr. D. Y. Patil Institute of Engineering Management and Research, Akurdi
2	Address	D Y Patil Educational Complex, Sector 29, Nigdi, Pradhikaran, Akurdi, Pune
3	Year of Establishment	2012-13

CHAPTER-II

STUDY OF PRESENT ENERGY CONSUMPTION

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

Table No 2: Electrical Energy Consumption Analysis- 2020-21:

No	Month	Energy Purchased, kWh
1	Jul-20	2942
2	Aug-20	3663
3	Sep-20	4420
4	Oct-20	9718
5	Nov-20	4045
6	Dec-20	4592
7	Jan-21	7558
8	Feb-21	7276
9	Mar-21	5548
10	Apr-21	3998
11	May-21	3208
12	Jun-21	4079
13	Total	61047
14	Maximum	9718
15	Minimum	2942
16	Average	5087.25

Chart No 1: To study the variation of Month wise Energy Consumption, kWh:

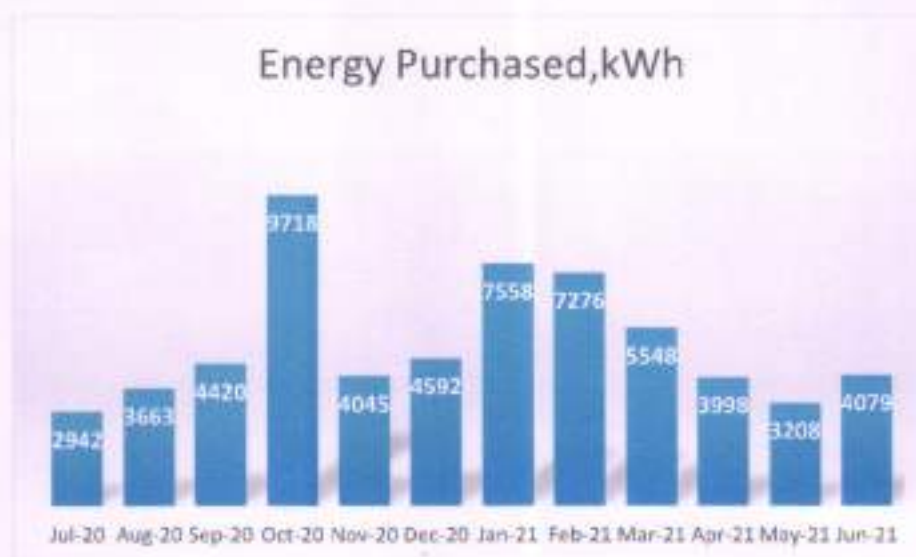


Table No 3: Key Parameters:

No	Parameter	Energy Purchased, kWh
1	Total	61047
2	Maximum	9718
3	Minimum	2942
4	Average	5087.25



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 Institute for performing its day to day activities

The Institute uses Electrical Energy for various Electrical gadgets.

Basis for computation of CO₂ Emissions:

The basis of Calculation for CO₂ emissions due to Electrical Energy is:

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 Institute due to its Day to Day operations

Table No 4: Month wise CO₂ Emissions:

No	Month	Energy Purchased, kWh	CO ₂ Emission ,MT
1	Jul-20	2942	2.65
2	Aug-20	3663	3.30
3	Sep-20	4420	3.98
4	Oct-20	9718	8.75
5	Nov-20	4045	3.64
6	Dec-20	4592	4.13
7	Jan-21	7558	6.80
8	Feb-21	7276	6.55
9	Mar-21	5548	4.99
10	Apr-21	3998	3.60
11	May-21	3208	2.89
12	Jun-21	4079	3.67
13	Total	61047	54.94
14	Maximum	9718	8.75
15	Minimum	2942	2.65
16	Average	5087.25	4.58

Chart No 2: Representation of Month wise CO₂ emissions:

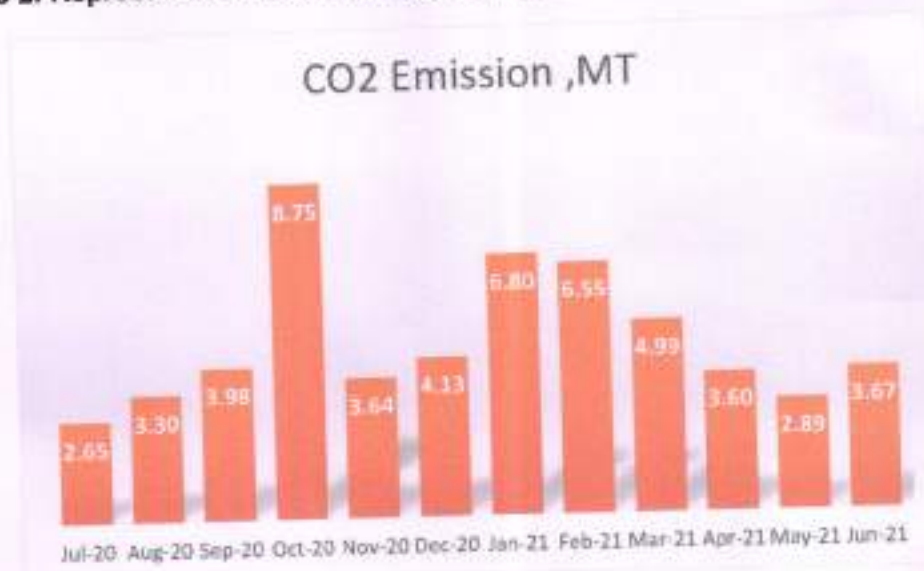


Table No 5: Key Parameters:

No	Value	Energy Purchased, kWh	CO ₂ emissions, MT
1	Total	61047	54.94
2	Maximum	9718	8.75
3	Minimum	2942	2.65
4	Average	5087.25	4.58

CHAPTER-IV

STUDY OF USAGE OF RENEWABLE ENERGY

The Institute has installed a Roof Top Solar PV Plant of capacity **20 kWp**. In the following Table we present the Annual Reduction in CO₂ Emissions due to Solar PV Plant.

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

No	Particulars	Value	Unit
1	Installed Roof Top Solar PV Plant Capacity	20	kWp
2	Average Daily Energy Generated	4	kWh/kWp
3	Annual Generation Days	300	Nos
4	Annual Solar Energy Generated	24000	kWh
5	1 kWh of Electrical Energy emits	0.9	Kg of CO ₂
6	Annual Reduction in CO ₂ Emissions = (4) * (5) / 1000	21.6	MT

Photograph of Roof Top Solar PV Plant:



CHAPTER V

STUDY OF WASTE MANAGEMENT

5.1 Solid Waste Management:

5.1.1 Provision of Separate Waste Collection Bins:

The Institute has good housekeeping practices. The Waste is segregated at source. Waste collection Bins are placed at strategic locations.

Photograph of Waste Collection Bin:



5.2 Liquid Waste Management:

The Institute has installed Sewage Treatment Plant of Capacity 100 KLPD. The treated Water is used for Watering the internal Garden.

Photograph of Sewage Treatment Plant:



5.3 E-Waste Management:

The E-Waste generated in the campus is disposed, through authorized vendors by calling the tenders, for disposal of E-Waste.

CHAPTER-VI

STUDY OF RAIN WATER HARVESTING

The Institute has installed Rain Water Harvesting System. The Water falling on the building terrace is collected and is stored in an underground Storage tank. Further it is used for domestic purpose.

Photograph of Rain Water Storage Tank:



CHAPTER-VII

STUDY OF GREEN & SUSTAINABLE PRACTICES

7.1 Pedestrian Friendly Internal Road: & Tree Plantation:

The Institute has well maintained internal roads to facilitate the easy movement of the students within the campus. The Institute has beautiful maintained lawn and trees in the campus.

Photograph of Internal Road:



Photograph of Internal Tree Plantation:



7.2 Provision of Ramp for Divyangajan:

The Institute has made provision of Ramp for easy movement of Divyangajan.

Photograph of Ramp:



7.3 Provision of Sanitary Waste Incinerator:

The Institute has installed a Sanitary Waste Incinerator at Hostel block, to dispose of the Sanitary Waste.

Photograph of Sanitary Waste Incinerator:



7.4 Creation of Awareness about Resource Conservation:

The Institute has displayed Posters on Importance of Energy Conservation, appealing the stake holders to switch of the Equipment.

Photograph of Posters on importance of Energy Conservation:



ANNEXURE I

DETAILS OF TREES & PLANTS IN THE CAMPUS

List of Trees and Plants:

No	Common Name of Tree/Plant	Qty
1	Chafa	52
2	SonChafa	17
3	Pimpal	4
4	Vad	3
5	Umbar	6
6	Gulmohor	34
7	Sisum	5
8	Neem	11
9	Bahava	33
10	Karanj	7
11	Suru	11
12	Kanchan	42
13	Bakul	1
14	Coconut	21
15	Ber	3
16	Almond	4
17	Jamun	7
18	Jack fruit	2
19	Cashew nut	1
20	Custard Apple	4
21	Guava	7
22	Mango	24
23	Pomegranate	1
24	Drum stick	16
25	Traveller Palm	1
26	Foxtail Palm	20
27	Christmas Tree	18
28	Bottle Palm	66
29	Bottle Brush	25
30	Ficus- Black	45



31	Ficus- Safari	5
32	Spathodium	48
33	Rubber Plant	6
34	Acasia	106
35	Saptapani	46
36	Furn	81
37	Tokomo	5
38	Sollver Oak	26
39	Pentak	12
40	Jatropha	17
41	Lemon	1
42	Arecanut	16
43	Total	860

Photograph of Ornamental Plants:

