

GREEN AUDIT REPORT
of
**YASHAWANTRAO CHAVAN MAHARASHTRA
OPEN UNIVERSITY,**
Dnyangangotri, Near Gangapur Dam, Nashik 422 222



Year: 2022-23

Prepared by:

ENGRESS SERVICES

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ENGRESS SERVICES

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MEDA Registration No: ECN/2022-23/CR-43/1709
ISO: 9001-2015 Certified (Cert No: 23EQKC13),
ISO: 14001-2015 Certified (Cert No: 23EEKW20)

GREEN AUDIT CERTIFICATE

Certificate No: ES/YCMOU/22-23/02

Date: 10/7/2023

This is to certify that we have conducted Green Audit at Yashwantrao Chavan Maharashtra Open University, Dnyangangotri, Near Gangapur Dam, Nashik in the year 2022-23.

The University has adopted following Green & Sustainable Practices:

- Usage of Energy Efficient LED Fittings
- Usage of BEE STAR Rated Equipment
- Installation of 218.184 kWp off Grid Solar PV Plant
- Installation of 27000 LPD Solar Thermal Water Heating System.
- Segregation of Waste at source
- Vermi Composting Arrangement for Conversion of Organic Waste
- Installation of Sanitary Waste Incinerator
- Construction of Internal Bandhara of Capacity 26.2 Million Liters
- Construction of Farm pond
- Rain Water Harvesting project for making use of rain water falling on terrace
- Good Internal Roads
- Tree Plantation in the campus
- Provision of Ramp for Divyangajan
- Creation of Awareness on Clean & Green Campus by Display of Boards
- Usage of Solar Powered E Vehicle in the Campus

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,

B E- Mech, M Tech-Energy, Certified Energy Auditor, EA-8192
ASSOCHAM GEM Certified Professional: GEM: 22/788



REGISTRATION CERTIFICATES

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

Maharashtra Energy Development Agency
(Government of Maharashtra Institution)
Aashvi Road, Opposite Spina College Road, Near Commerce College of Applied Handicraft,
Aashvi, Pune, Maharashtra 411007
PIN No: 411 007, 411004/05
Email: enr@maheda.org, Web: www.maheda.org

ECN/2022-23/CR-431709 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 green category in
Energy Efficiency & Energy Audits, as Member for Energy Conservation Programme of
MEDA.

Name and Address of the Firm: M/s Engress Services
Yashwantrao Chavan, 26, Internal Bag Society,
Near Muktangan English School,
Pune, Pune - 411 009.

Registration Category: Empowered Consultant for Energy Conservation
Programme for Class 'A'

Registration Number: MEDA/ECN/2022-23/CR-431709

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take necessary steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior intimation to verify quarterly activities performed by the firm and cancelling the registration, if the information is found incorrect.
- This certificate 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 reason thereof.

Control Manager (CA)



MEDA REGISTRATION CERTIFICATE

Certificate of Registration

This is to Certify that
Quality Management System of

ENGRESS SERVICES

26, YASHWANTRAO CHAVAN, 26, INTERNAL BAG SOCIETY, NEAR MUKTANGAN ENGLISH SCHOOL, PUNE - 411009, MAHARASHTRA, INDIA

has been assessed and found to conform to the requirements of
ISO 9001:2015
for the following scope:

CONSULTANCY SERVICES FOR ENERGY AUDIT, GREEN AUDIT & ENVIRONMENTAL AUDIT
IN EDUCATIONAL INSTITUTIONS & SUBMISSION OF AUDIT CERTIFICATE AND REPORT

Certificate No: 23EQK13
Initial Registration Date: 26/05/2022
Date of Expiry: 26/05/2024
1st Surve. Date: 27/05/2023
2nd Surve. Date: 27/05/2023

Director

MMS IAGC IAF
Magnitude Management Services Pvt. Ltd.
B-15, Lower Ground Floor, Sector 43, Noida-201301, U.P. India
Email: info@mmsservices.com, website: www.mmsservices.com
* Auditor or Assessor/Inspector, under contract conditions, shall be responsible to maintain the
confidentiality of the assessed information.

ISO: 9001-2015 Certificate

ASSOCHAM GEM CP CERTIFICATE

Certificate of Registration

This is to Certify that
Environmental Management System of

ENGRESS SERVICES

26, YASHWANTRAO CHAVAN, 26, INTERNAL BAG SOCIETY, NEAR MUKTANGAN ENGLISH SCHOOL, PUNE - 411009, MAHARASHTRA, INDIA

has been assessed and found to conform to the requirements of
ISO 14001:2015
for the following scope:

CONSULTANCY SERVICES FOR ENERGY AUDIT, GREEN AUDIT & ENVIRONMENTAL AUDIT
IN EDUCATIONAL INSTITUTIONS & SUBMISSION OF AUDIT CERTIFICATE AND REPORT

Certificate No: 23EERW26
Initial Registration Date: 29/05/2023
Date of Expiry: 29/05/2026
1st Surve. Date: 29/05/2024
2nd Surve. Date: 29/05/2025

Director

MMS IAGC IAF
Magnitude Management Services Pvt. Ltd.
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ISO: 14001-2015 Certificate

INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	5
II	Executive Summary	6
III	Abbreviations	8
1	Introduction	9
2	Study of Energy Consumption & CO ₂ Emission	10
3	Study of Usage of Renewable Energy	11
4	Study of Waste Management	13
5	Study of Rain water Harvesting	14
6	Study of Green & Sustainable Practices	15
	Annexure	
I	List of Trees & Plants	18

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Yashwantrao Chavan Maharashtra Open University, Dnyangangotri, Near Gangapur Dam, Nashik 422 222 for awarding us the assignment of Green Audit of their Nashik Campus, for the Year: 2022-23.

We are thankful to All the Staff members for helping us during the field study.

EXECUTIVE SUMMARY

1. Yashwantrao Chavan Maharashtra Open University, Nashik uses Energy in two forms, namely: Electrical Energy and Diesel.

2. Present Energy Consumption & CO₂ Emission:

No	Particulars	Value	Unit
1	Annual Energy Purchased	527744	kWh
2	Annual Diesel Consumed	9600	Liters
3	Annual CO ₂ Emissions	500.70	MT

3. Renewable Energy Usage & Reduction in CO₂ Emissions:

No	Particulars	Value	Unit
1	Solar PV Plant Capacity	218.184	kWp
2	Energy generated in 22-23	261820.8	kWh
3	Reduction in Annual CO ₂ Emissions	235.34	MT

4. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Organic waste	Provision of Vermi Composting Facility
3	Sanitary Waste	Provision of Sanitary Waste Incinerator
4	E Waste	Disposed of through Authorized Agency

5. Rain Water Harvesting:

The University has installed Rain Water Harvesting Project in three ways:

1. Construction of Bandhara of Capacity 26.2 Million Liters
2. Construction of Farm Pond
3. Rain Water Harvesting of Water falling on Terrace.

6. Green & Sustainable Practices:

1. Good Internal Roads
2. Tree Plantation in the campus
3. Provision of Ramp for Divyangajan
4. Creation of Awareness on Green & Clean Campus by display of Boards
5. Paperless Campus Initiatives
6. Solar Powered E Vehicle Usage

7. Assumptions:

- 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere
- 1 Liter of Diesel releases 2.68 Kg of CO₂ into atmosphere

8. References:

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

ABBREVIATIONS

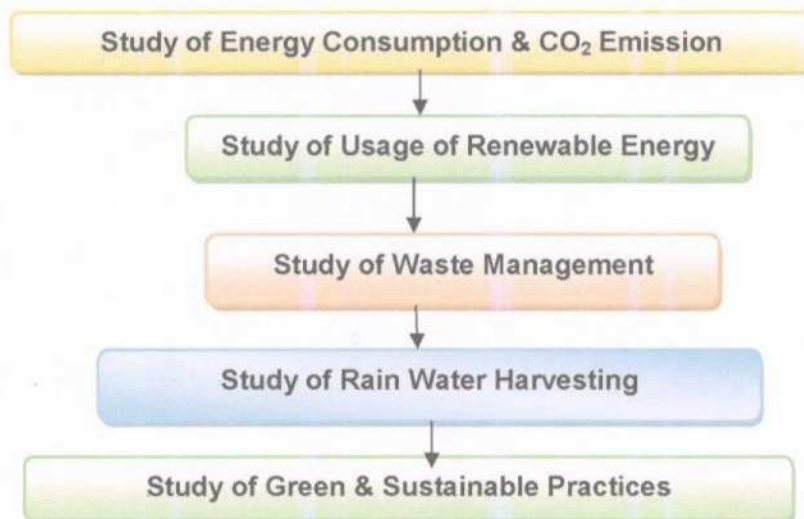
BEE	Bureau of Energy Efficiency
kWh	Kilo Watt Hour
LPD	Liters Per Day
Kg	Kilo Gram
MT	Metric Ton
CO ₂	Carbon Di Oxide
Qty	Quantity

CHAPTER-I INTRODUCTION

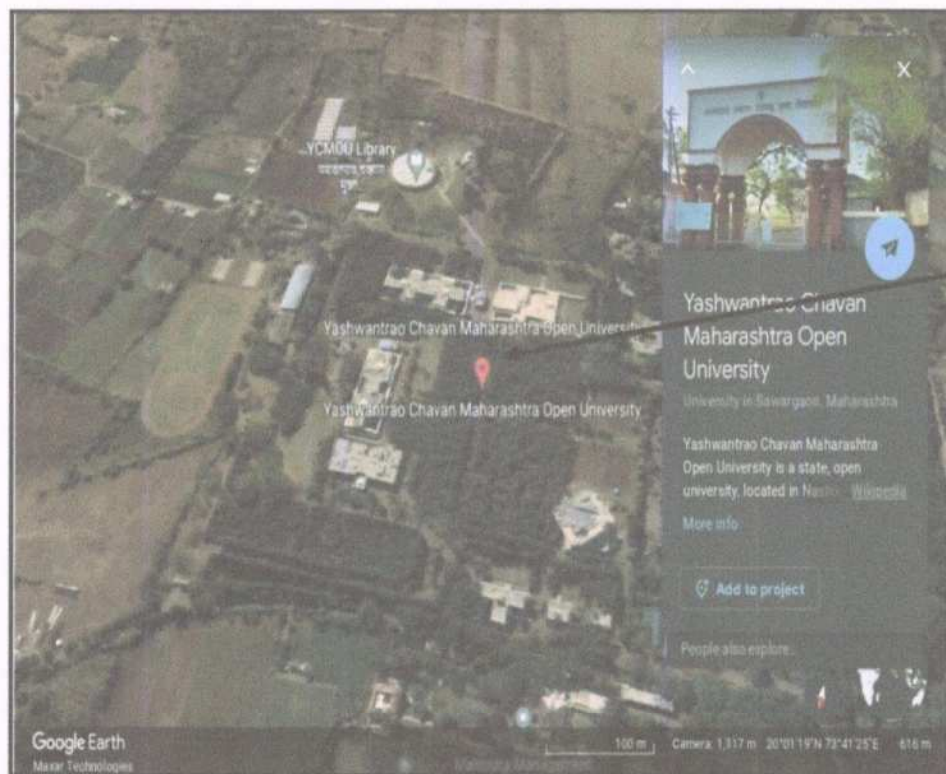
1.1 Introduction:

A Green Audit is conducted at Yashwantrao Chavan Maharashtra Open University Nashik.

1.2 Audit Procedural Steps:



1.3 University Location Image:



University
Campus

CHAPTER-II**STUDY OF ENERGY CONSUMPTION & CO₂ EMISSION**

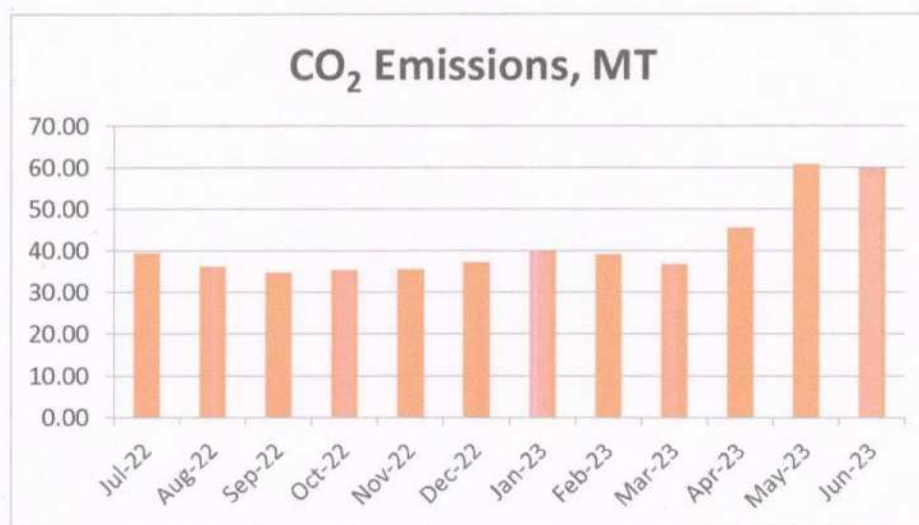
A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.. The University uses Electrical Energy for various Electrical gadgets.

Basis for computation of CO₂ Emissions: The basis of Calculation for CO₂ emissions due to Electrical Energy is as under. **1 kWh** of Electrical Energy releases **0.9 Kg** of CO₂ and **1 Liter of Diesel** releases **2.68 Kg** of CO₂ into atmosphere

Table No 1: Month wise CO₂ Emissions:

No	Month	Energy Purchased, kWh	Diesel Consumed, Liters	CO ₂ Emissions, MT
1	Jul-22	41443	800	39.44
2	Aug-22	35748	1500	36.19
3	Sep-22	31888	2300	34.86
4	Oct-22	38101	400	35.36
5	Nov-22	39147	150	35.63
6	Dec-22	40366	350	37.27
7	Jan-23	43706	200	39.87
8	Feb-23	42891	200	39.14
9	Mar-23	38269	900	36.85
10	Apr-23	48573	700	45.59
11	May-23	63837	1200	60.67
12	Jun-23	63775	900	59.81
13	Total	527744	9600	500.70
14	Maximum	63837	2300	60.67
15	Minimum	31888	150	34.86
16	Average	43978.67	800	41.72

Chart No 1: Month wise CO₂ Emissions:



CHAPTER III

STUDY OF USAGE OF RENEWABLE ENERGY

3.1 The University has installed:

- Roof Top Solar PV Plant on various Buildings, Solar Street Lights, Solar Based Traffic Signals & Solar High Mast Lights.
- The Total Installed Solar PV Capacity is **218.184 kWp**
- Solar Thermal Water Heating System of Capacity **27000** Liters per Day
- The University is also installing Grid Connected Solar PV Plant of Capacity **300 kWp**

3.2 Table No 2: Reduction in CO₂ Emissions due to Usage of Solar Energy:

No	Particulars	Value	Unit
1	Total Installed Solar PV Capacity	218.184	kWp
2	Average Energy generated per Day	4	kWh/kWp
3	Annual Solar Generation Days	300	Nos
4	Annual Energy Generated =1*2*3	261820.8	kWh/kWp
5	1 kWh of Energy is equivalent to	0.9	Kg of CO ₂
6	Annual Reduction in CO ₂ Emissions =4*5/1000	235.64	MT

Photograph of Roof Top Solar PV Plant & Solar Thermal Water Heating System:



CHAPTER IV

STUDY OF WASTE MANAGEMENT

4.1 Segregation of Waste at Source:

The recyclable Waste, like paper, plastic waste is segregated at source and is handed over to Authorized Agency.

Photograph of Waste collection Bin:



4.2 Vermi Composting Plant:

The University has Vermi-composting facility & about 100 MT of Vermi compost is produced annually and is used in the own campus.

Photograph of Vermi Composting Plant:



4.3 Sanitary Waste Management:

The University has installed a Sanitary Waste Incinerator, for disposal of Sanitary Waste generated.

Photograph of Sanitary Waste Incinerator:



4.4 E Waste Management:

The E Waste is disposed of through Authorized Agency, M/s. Arihant E-Recycling Pvt. Ltd.

CHAPTER-V

STUDY OF RAIN WATER HARVESTING

The University has implemented the Rain Water Harvesting Project by three ways, namely:

1. Yashwant Bandhara
2. Farm Pond and
3. Collecting the rain water from terrace & using the same for Bore well recharging.

6.1 Yashwant Bandhara: The Water Storage capacity is about **26.2 Million Liters.**

Photograph of Yashwant Bandhara:



6.2 Farm Pond:

The University has a farm pond which can store approximately -- million liters of Water. This farm pond has helped the nearby farmers, as the underground water level has increased substantially due to this farm pond.

6.3 Rain water harvesting from Terrace at Main Building:

The rain water falling on the terrace is used to recharge the bore well.

Photograph of Rain Water Collecting Pipe from Terrace:



CHAPTER VI

STUDY OF GREEN & SUSTAINABLE PRACTICES

6.1 Pedestrian Friendly Road & Internal Tree Plantation:

The University has well maintained internal road to facilitate the easy movement of the students within the campus. The University has well maintained lawn and landscaped garden in the campus.

Photograph of Internal Road & Tree plantation:



6.2 Provision of Ramp for Divyangajan:

For easy movement of Divyangajan, the University has made provision of Ramp.

Photograph of Ramp:



6.3 Creation of Awareness about Clean & Green Campus:

The University has displayed posters emphasizing on importance of Clean & Green Campus.

Photograph of Poster on Clean & Green Campus:



6.4 Paperless Office Initiatives:

The University is taking various measures to make the Day-to-Day operations Paper less. There about Thirteen sections/operations wherein software based solutions are adopted are:

- E-Books Down load
- YCMOU Regional Centers
- Finance
- Admission
- Results
- Migration
- Grievances
- Scanned copy of Mark list, to name a few
- Revaluation of Answer Book
- E-Tenders

6.5 Usage of E Vehicle in the Campus:

The University has Solar Power, E Vehicle. It is used for internal transportation. Photograph of Solar Powered E Vehicle:



ANNEXURE-I

LIST OF TREES IN THE CAMPUS

No	Name of the Tree	Qty
1	Babhul	1188
2	Eucalyptus	3404
3	Casurina	522
4	Australian Acacia	1869
5	Subabul	60
6	Neem	244
7	Cashew	13
8	Mango	10
9	Jamun	16
10	Umbar	42
11	Kashid	117
12	Shiso	385
13	Vilayati Chinch	11
14	Glyrisidia	715
15	Shivan	76
16	Karani	133
17	Bamboo	20
18	Tembhurni	10
19	Sadada	19
20	Waras	06
21	Agasti	70
22	Moha	31
23	Bhendi	15
24	Kadamb	61
25	Pimpal	22
26	Jakaranda	38
27	Shiras	766
28	Raintree	279
29	Silver Oak	54