ENVIRONMENTAL AUDIT REPORT

Modern Education Society's,

WADIA COLLEGE OF ENGINEERING,

Off Bund Garden Road, Pune 411 001

Year: 2024-25

Prepared by:

ENGRESS SERVICES

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

Registration Certificates: UDYAM, MEDA, ASSOCHAM GEM-CP, ISO: 9001 & 14001:

भारत सरकार
Government of India
सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय
Ministry of Micro, Small and Medium Enterprises

UDYAM REGISTRATION CERTIFICATE

UDYAM REGISTRATION NUMBER	UDYAM-MH-26-0135636
NAME OF ENTERPRISE	ENGRESS SERVICES

TYPE OF ENTERPRISE *

SNo.	Classification Year	Enterprise Type	Classification Date
1	2023-24	Micro	03/02/2024
2	2022-23	Micro	26/06/2022
3	2021-22	Micro	27/07/2021

MAJOR ACTIVITY: SERVICES

SOCIAL CATEGORY OF ENTREPRENEUR: GENERAL

NAME OF UNIT(S)

S.No.	Name of Unit(s)
1	Engress Services

OFFICAL ADDRESS OF ENTERPRISE

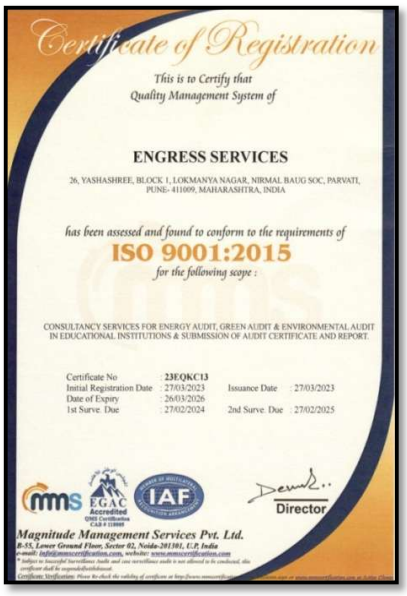
Flat/Door/Block No.	26	Name of Premises/ Building	Yashashree
Village/Town	Pune	Block	1
Road/Street/Lane	Lokmanya Nagar,Nirmal Baug Soc	City	Pune
State	MAHARASHTRA	District	PUNE , Pin 411009
Mobile	8767447244	Email:	engress123@gmail.com

DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE	13/04/2021
DATE OF COMMENCEMENT OF PRODUCTION/BUSINESS	13/04/2021

NATIONAL INDUSTRY CLASSIFICATION CODE(S)

SNo.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
1	70 - Activities of head offices; management consultancy activities	7020 - Management consultancy activities	70200 - Management consultancy activities	Services

DATE OF UDYAM REGISTRATION: 27/07/2021



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: eee@mahaurja.com, Web: www.mahaurja.com

ECN/2024-25/CR-02/389 — 8th October, 2024

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/2024-25/Class A/EA-22*

- 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 **7th October, 2026** 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)

INDEX

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Modern Education Society's, Wadia College of Engineering, Off Bund Garden Road, Pune 411 001 for awarding us the assignment of Environmental Audit of their Campus for the Year: 2024-25.

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

EXECUTIVE SUMMARY

1. An Environmental Audit is conducted at **Modern Education Society's, Wadia College of Engineering, Pune 411001**

2. Pollution due to College Activities:

No	Head	Particulars
1	Solid Waste	Paper, Plastic Waste, Food, Organic Waste
2	Liquid Waste	Human Waste
3	Air Pollution	CO_2: On Account of Electricity Consumption

3. Present Energy Consumption & CO_2 Emission:

No	Particulars	Value	Unit
1	Annual Energy Consumed	**8**	kW
2	Annual CO_2 Emissions	**8.93**	tCO2e

4. Usage of Renewable Energy:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant	**8**	kWp
2	Total Energy Generated by kWp Plant in 24-25	**9600**	kWh
3	Annual Reduction in CO_2 Emissions in 24-25	**8.93**	tCO_2e

5. Indoor Air Quality:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	**46**	**27**	**35**
2	Minimum	**40**	**21**	**30**

6. Indoor CO_2 Level:

No	Parameter/Value	CO_2, in ppm
1	Maximum	**535**
2	Minimum	**516**

7. Indoor Lux & Noise Level Parameters:

No	Parameter/Value	Lux Level	Noise Level, dB
1	Maximum	**235**	**49**
2	Minimum	**218**	**45**

8. Water Quality Parameters:

No	Parameter	Value
1	pH Level	**7.35**
2	Total Dissolved Salts	**59**

9. Initiatives on Climate Change:

No	Head	Particulars
1	**Usage of Renewable Energy**	Installation of 8 kWp Roof Top Solar PV Plant.
2	**Promotion of Energy Efficiency**	Usage of Energy Efficient LED Lights
3	**Water Conservation**	Usage of Rain Water for recharging the Underground Water Table & Storage in Open Well
4	**Initiatives for Green India Mission**	Internal Tree Plantation
5	**Environment Conservation/Awareness**	Creation of Awareness on Energy Conservation by Display of Poster

10. Assumptions:

1. Emission Fator of Electrical Energy: **0.93 Kg of CO_2 / kWh**
2. Energy generated by Roof Top Solar PV Plant: **4 kWh/kWp per Day**
3. Annual Solar Energy Generation Days: **300 Nos**
4. CO_2 Emissions are computed For **Scope- 2**

11. References:

- For CO_2 Emissions: www.ccd.gujarat.gov.in
- For Various Indoor Air Parameters: www.ishrae.com
- For AQI Quality Standards: www.cpcb.com
- For Solar Energy Generation: www.solarrooftop.gov.in

ABBREVIATIONS

Kg	:	Kilo Gram
MSEDCL	:	Maharashtra State Distribution Company Limited
MT	:	Metric Ton
kWh	:	kilo-Watt Hour
LPD	:	Liters per Day
LED	:	Light Emitting Diode
AQI	:	Air Quality Index
PM-2.5	:	Particulate Matter of Size 2.5 Micron
PM-10	:	Particulate Matter of Size 10 Micron
CPCB	:	Central Pollution Control Board
ISHRAE	:	The Indian Society of Heating & Refrigerating & Air Conditioning Engineers

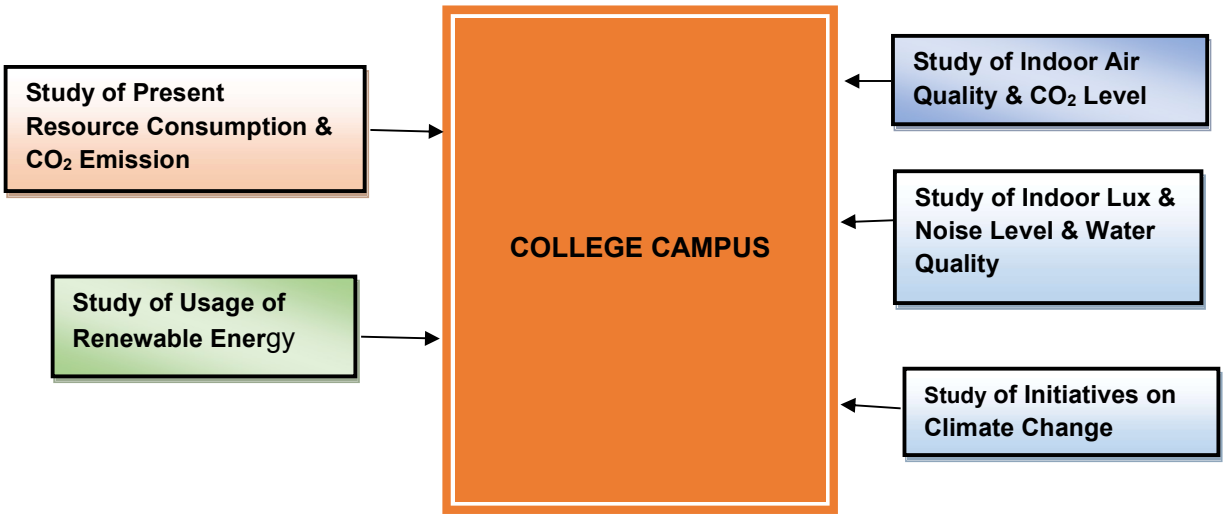
CHAPTER-I
INTRODUCTION

1. Important Definitions:

1.1.1 Environment: Definition as per environment Protection Act: 1986

Environment includes water, air and land and the inter-relationship which exists among and between Water, Air, Land and Human beings, other living creatures, plants microorganism and property

1.2 Key Study Points:



1.3 College Location:

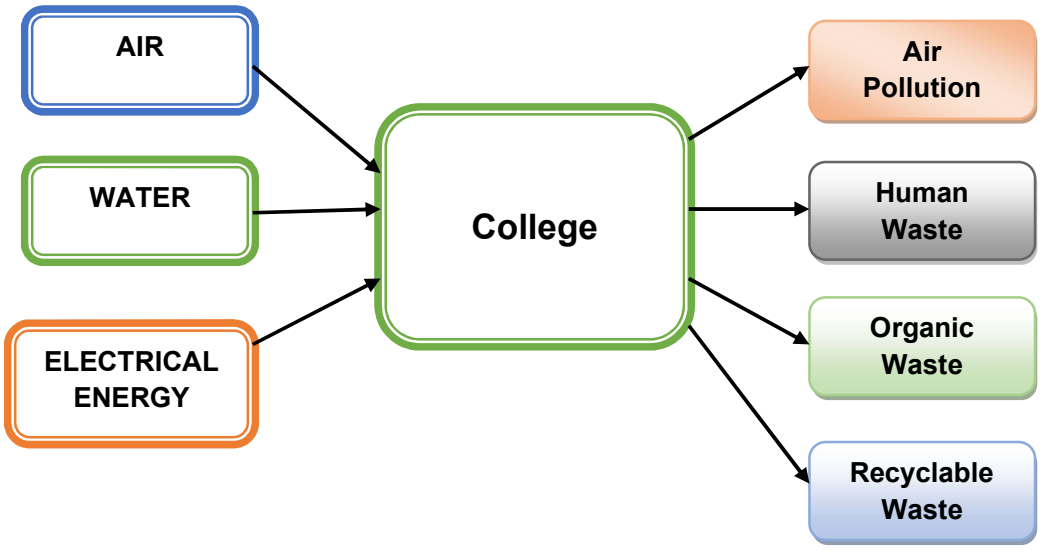
CHAPTER-II
STUDY OF RESOURCE CONSUMPTION & CO_2 EMISSION

The College consumes following basic/derived Resources:

1. Air
2. Water
3. Electrical Energy

We try to draw a schematic diagram for the College System & Environment as under.

Chart No 1: Representation of Resource Requirement & Waste of a College:



A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. The CO_2 Emission is computed for **Scope-2**

Emission Factor:

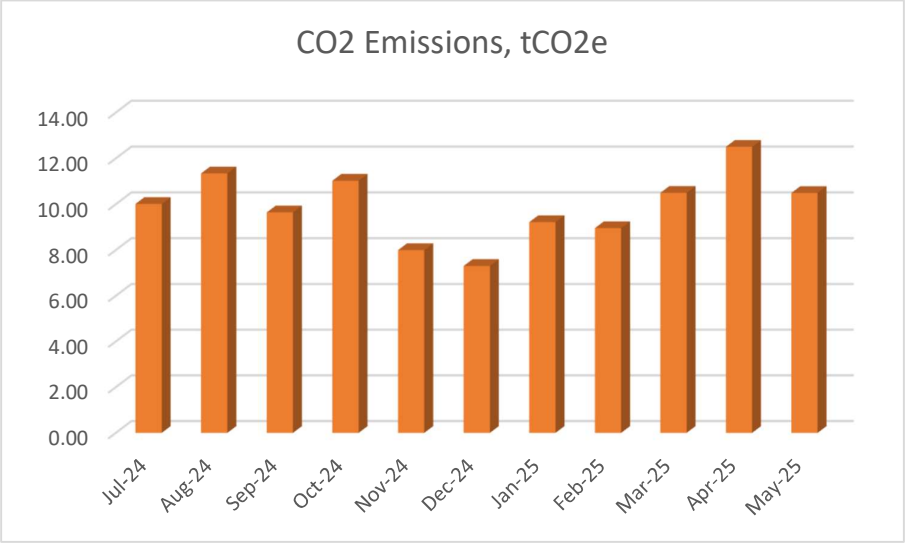
- Emission Fator of Electrical Energy: **0.93 Kg of CO_2 / kWh**

Table No 1: Study of Purchase of Energy & CO_2 Emissions: 24-25:

No	Month	Energy Purchased, kWh	CO_2 Emissions, tCO_2e
1	Jul-24	10768	10.01
2	Aug-24	12200	11.35
3	Sep-24	10370	9.64
4	Oct-24	11857	11.03
5	Nov-24	8600	8.00
6	Dec-24	7857	7.31
7	Jan-25	9915	9.22

8	Feb-25	9633	8.96
9	Mar-25	11291	10.50
10	Apr-25	13447	12.51
11	May-25	11284	10.49
12	Jun-25	10115	9.41
13	**Total**	**127337**	118.42

Chart No 2: Month wise CO_2 Emissions:



CHAPTER III
STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity **8 kWp**.

In the following Table, we compute the Reduction in Annual CO_2 Emissions due to installation of Roof Top Solar PV Plant.

Table No 2: Computation of Annual Reduction in CO_2 Emission:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	8	kWp
2	Energy Generated in the Year: 24-25	9600	kWh
3	1 kWh of Electrical Energy saves	0.93	Kg/kWh
4	**Qty of CO_2 Saved by Solar PV Plant = (2)*(3) /1000**	**8.93**	tCO2e

Photograph of Roof Top Solar PV Plant:

CHAPTER IV
STUDY OF INDOOR AIR QUALITY

1. Air: The common name given to the atmospheric gases used in breathing and photosynthesis.

2. Air quality is a measure of the suitability of air for breathing by people, plants and animals.

3. Air Quality Index: Air Quality Index (AQI) is a number used by government agencies to measure the **Air Pollution** levels and communicate it to the population.

In this Chapter, we present three important Parameters: **AQI**- Air Quality Index, **PM-2.5**- Particulate Matter of Size 2.5 micron and **PM-10**- Particulate Matter of Size 10 micron

Table No 3: Indoor Air Quality Parameters:

No	Location	AQI	PM2.5	PM10
1	Admin Section	46	27	35
2	Library	41	23	32
3	Class Room-	44	23	33
4	Mech Engg Department	45	24	33
5	Computer Lab	40	21	30
	Maximum	**46**	**27**	**35**
	Minimum	**40**	**21**	**30**

Table No 4: Air Quality Index Values & Concentration of PM 2.5 & PM10: (By CPCB):

No	Category	AQI Value	Concentration Range, PM 2.5	Concentration Range, PM 10
1	Good	0 to 50	0 to 30	0 to 50
2	Satisfactory	51 to 100	31 to 60	51 to 100
3	Moderately Polluted	101 to 200	61 to 90	101 to 250
4	Poor	201 to 300	91 to 120	251 to 350
5	Very Poor	301 to 400	121 to 250	351 to 430
6	Severe	401 to 500	250 +	430 +

Conclusion:

From the above measured values, we conclude that the observed values of AQI, PM-2.5 & PM-10 are in the **Satisfactory Range**, as per the guidelines given by Central Pollution Control Board.

CHAPTER V
STUDY OF INDOOR CARBON-DI-OXIDE LEVEL

In this Chapter, we present the CO_2 Level in the Campus.

Table No 4: Study of CO_2 Level:

No	Location	CO_2 Level in ppm
1	Admin Section	519
2	Library	535
3	Class Room-	529
4	Mech Engg Department	520
5	Computer Lab	516
	Maximum	**535**
	Minimum	**516**

Acceptable Level of CO_2 Level as per **World Health Organization** Standard is 1000 ppm

Conclusion:

From the above measured values, we conclude that the observed values of CO_2 Level are within the Limit of Acceptable Value furnished by World Health Organization

CHAPTER VI
STUDY OF LUX & NOISE PARAMETERS

In this Chapter, we present the various Indoor Comfort Parameters measured during the Audit. The Parameters include: **Lux Level and Noise Level.**

Table No 5: Study of Indoor Lux Level and Noise Level Parameters:

No	Location	Lux Level	Noise Level, dB
1	Admin Section	223	48
2	Library	226	46
3	Class Room-	218	49
4	Mech Engg Department	235	45
5	Computer Lab	229	45.2
	Maximum	**235**	**49**
	Minimum	**218**	**45**

Recommended Lux & Noise Level: As per BEE & ISHRAE Guidelines:

A) Noise Level Reference:		
No	**Location**	**Noise Level Range, dB**
1	Offices	45-50
2	Occupied Class Room	40-45
3	Libraries	35-40
B) Reference Lux Level, Lumens:		
1	For Class Rooms	**200 Plus**
2	For Reading Rooms	**200 Plus**

Conclusion:

From the above measured values, we conclude that:

- The Noise Level is within the prescribed Limit
- The Lux Level at various locations is Okay

CHAPTER VII
STUDY OF WATER QUALITY

In this Chapter, we present the Water Parameters like pH and TDS.

Table No 6: Study of Water pH and TDS:

No	Parameter	Value
1	pH Level	**7.35**
2	Total Dissolved Salts	**59**

Recommended Values of Water pH & TDS, as per BIS:

A) Reference:		
No	**Parameter**	**Water Parameters Range,**
1	pH Level	6.5 to 8.5
2	TDS	500 (Max)

Conclusion:

From the above measured values, we conclude that: The Water Parameters are within the prescribed Limit

CHAPTER-VIII
STUDY OF INITIATIVES ON CLIMATE CHANGE

The **Government of India** launched the **National Mission on Action Plan for Climate Change (NAPCC)** in 2008. The important initiatives under **NAPCC** for Educational include:

- Promotion of Solar Energy & Energy Efficiency
- Water Conservation
- Mission for Green India
- Capacity Building on Climate Change

In this Chapter we present the various Initiatives adopted by the College.

Initiatives on Climate Change:

No	Head	Action Taken	Photograph
1	**Promotion of Solar Energy**	Installation of Roof Top Solar PV Plant of Capacity 8 kWp	**Solar PV Plant:** 
2	**Promotion of Energy Efficiency**	Usage of LED Lights	**LED Lights** 
3	**Water Conservation**	Usage of rain Water for Recharging the Open well & Underground Water Table	**Rain Water Collecting Open Well** 

4	**Mission for Green India**	Conductance of Tree Plantation Drive	**Tree Plantation Drive** 
5	**Environment Conservation**	Creation of Awareness on Energy Conservation by Display of Poster	**Poster on Energy Conservation:**