GREEN AUDIT REPORT

Sipna Shikshan Prasarak Mandal Amravati's,

ARTS SCIENCE & COMMERCE COLLEGE,

Chikhaldara

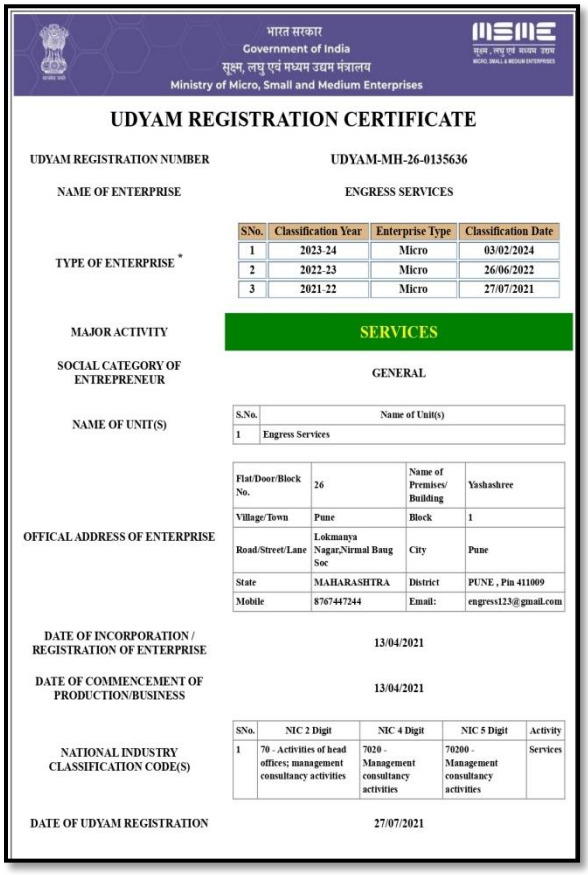
Year: 2023-24

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

ASSOCHAM

GEM Certificate

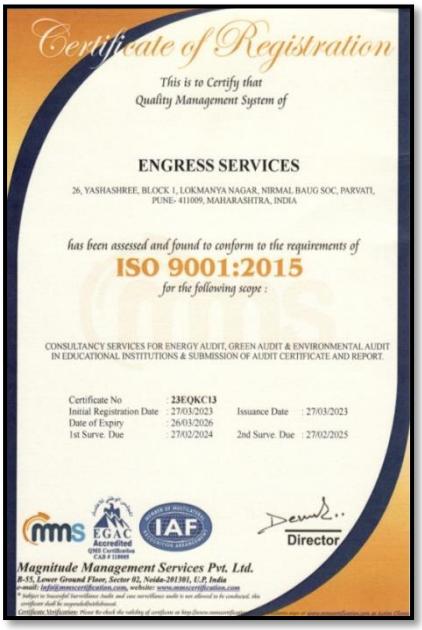
ASSOCHAM hereby certifies that

Mr. A Y Mehendale

has successfully passed the
Green and Eco-friendly Movement Certified Professional Test (GEM CP)
with
"Excellent Performance"
on
06 June, 2022

He/she is now eligible to execute the GEM Sustainability Certification Projects.
ASSOCHAM feels proud to award the GEM Certified Professional title to him/her.

Pankaj R. Dharkar, Chairman, GEM
GEM CP 22/788
Deepak Sood, Secretary General, ASSOCHAM



Certificate of Registration

This is to Certify that
Quality Management System of

ENGRESS SERVICES

26, YASHASHREE, BLOCK 1, LOKMANYA NAGAR, NIRMAL BAUG SOC, PARVATI, 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 : 23EQKC13
Initial Registration Date : 27/03/2023
Date of Expiry : 26/03/2026
1st Surve. Due : 27/02/2024
Issuance Date : 27/03/2023
2nd Surve. Due : 27/02/2025

Director

Magnitude Management Services Pvt. Ltd.
B-55, Lower Ground Floor, Sector 02, Noida-201301, U.P, India

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

ECN/2022-23/CR-43/1709 — 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 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/2022-23/Class A/EA-32.*

- 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 **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 reasons thereof.

General Manager (EC)

Certificate of Registration

This is to Certify that
Environmental Management System of

ENGRESS SERVICES

26, YASHASHREE, BLOCK 1, LOKMANYA NAGAR, NIRMAL BAUG SOC, PARVATI, PUNE- 411009, MAHARASHTRA, INDIA

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for the following scope :

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Certificate No : 23EEKW20
Initial Registration Date : 29/03/2023
Date of Expiry : 28/03/2026
1st Surve. Due : 29/02/2024
Issuance Date : 29/03/2023
2nd Surve. Due : 28/02/2025

Director

Magnitude Management Services Pvt. Ltd.
B-55, Lower Ground Floor, Sector 02, Noida-201301, U.P, India

INDEX

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Sipna Shikshan Prasarak Mandal Amravati's Arts, Science & commerce college, Upper Plateau Chikhaldara 444807, for awarding us the assignment of Green Audit of their Solapur Campus for the Year: 2023-24.

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

EXECUTIVE SUMMARY

1. Sipna Shikshan Prasarak Mandal Amravati's Arts Science & Commerce College, Chikhaldara 444 807 consumes Energy in the form of **Electrical Energy;** used for various gadgets, Office & other facilities.

2. Present Energy Consumption & CO_2 Emission:

No	Particulars	Value	Unit
1	Annual Energy Consumed	**7503**	kWh
2	Annual CO_2 Emissions	**6.98**	MT

3. Usage of Renewable Energy:

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

4. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Organic Waste	Provision of Bio Composting Bed
3	Liquid Chemical Waste	Provision of Soak Pit
4	E Waste Management	Recommended to dispose through Authorized Agency

5. Rain Water Management:

The College has installed Rain Water Harvesting Project, wherein the Rain Water falling on the terrace is collected and is stored in a separate Water Storage Tank. The Water is further used for domestic purpose.

6. Green & Sustainable Practices:

- Maintenance of good Internal Road
- Tree Plantation in the campus.
- Provision of Ramp for Divyangajan
- Creation of awareness on Energy Conservation by Display of Posters
- Conductance of Tree Plantation & Cleanliness Drive in the Campus

7. Assumption:

1. **1 kWh** of Electrical Energy releases **0.93 Kg** of **CO_2** into atmosphere

8. Reference:

- For CO_2 Emissions: www.ccd.gujarat.gov.in

ABBREVIATIONS

BEE	Bureau of Energy Efficiency
kWh	Kilo Watt Hour
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 Sipna Shikshan Prasarak Mandal Amravati's Arts, Science & commerce college, Upper Plateau, Chikhaldara.

1.2 Key Study Points:

No	Particulars
1	Study of Present Energy Consumption & CO_2 Emission
2	Study of Usage of Renewable Energy
3	Study of Waste Management Practices
4	Study of Rain Water Management
5	Study of Green & Sustainable Initiatives

1.3 College Location Image:

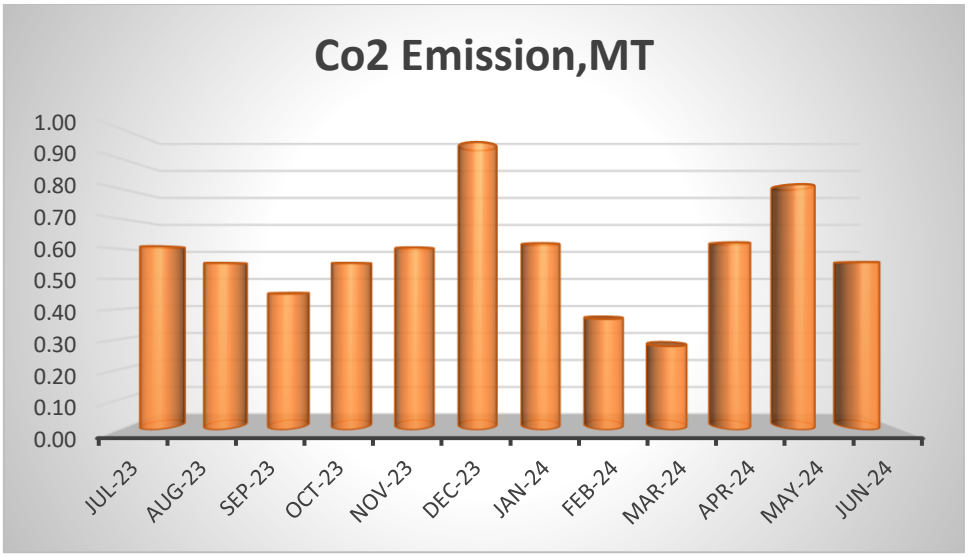
CHAPTER-II
STUDY OF ENERGY CONSUMPTION & CO_2 EMISSION

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO_2 Emissions: 1 kWh** of Electrical Energy releases **0.93 Kg of CO_2** into atmosphere.

Table No 1: Month wise Energy Consumption & CO_2 Emissions:

No	Month	Energy Consumed, kWh	CO_2 Emissions, MT
1	Jul-23	654	0.61
2	Aug-23	595	0.55
3	Sep-23	485	0.45
4	Oct-23	595	0.55
5	Nov-23	650	0.60
6	Dec-23	1025	0.95
7	Jan-24	665	0.62
8	Feb-24	395	0.37
9	Mar-24	298	0.28
10	Apr-24	668	0.62
11	May-24	875	0.81
12	Jun-24	598	0.56
13	Total	7503	6.98
14	Maximum	1025	0.95
15	Minimum	298	0.28
16	Average	625.25	0.58

Chart No 1: Month wise CO_2 Emissions:



CHAPTER III
STUDY OF USAGE OF RENEWABLE ENERGY

The College has yet to install Roof Top Solar PV Plant

CHAPTER IV
STUDY OF WASTE MANAGEMENT

In this Chapter, we present the Waste Management Practices, followed by the College.

Details of Waste Management Practices:

No	Head	Observation	Photograph
1	**Solid Waste**	Segregation of Waste at Source: Provision of Waste Collection Bins	**Waste Collection Bin:** 
2	**Organic/Leafy Waste**	Provision of Bio Composting Bed	**Bio Composting Bed:** 
3	**Liquid Waste**	For treatment of laboratory chemicals, the College has a soak Pit wherein the laboratory liquid waste is first mixed with water and then drained to a soak Pit which contains layers of sand and activated carbon.	**Liquid Waste Soak Tank Arrangement:** 
4	**E Waste**	Recommended to dispose of through Authorized Agency	

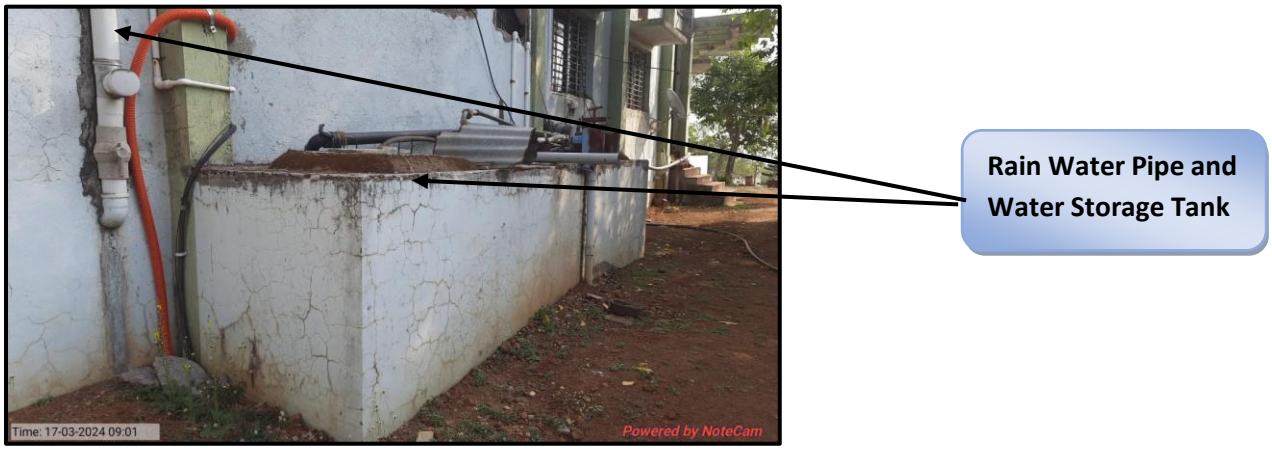
CHAPTER-V
STUDY OF RAIN WATER MANAGEMENT

The College has installed Rain Water Harvesting Project, wherein the Rain Water falling on the terrace is collected and is stored in a separate Water Storage Tank. The Water is used for Girls Hostel & for Gardening purpose.

Water Storage Tank Details:

- Area of Tank: 1939 sq. ft.
- Tank Height: 2 meters
- Water Storage Capacity: 360400 Liters

Photograph of Rain Water Storage Tank Facility:

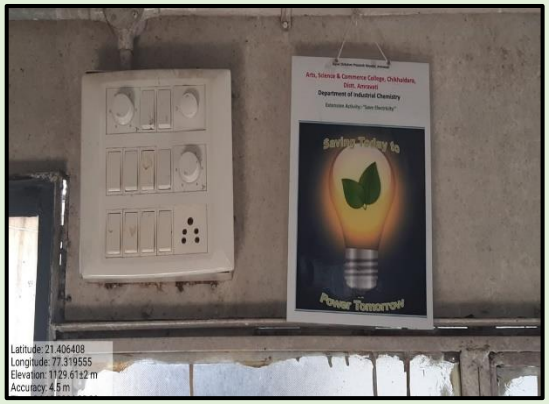


CHAPTER-VI
STUDY OF GREEN & SUSTAINABLE PRACTICES

In this Chapter, we present the Green & Sustainable Practices followed by the College.

Green & Sustainable Practices:

No	Head	Observation	Photograph
1	**Easy Movement of Stake Holders**	Provision of Good Internal Road within the Campus	**Internal Road:** 
2	**Tree Plantation**	Internal Tree Plantation in the Campus	**Internal Tree Plantation:** 

3	**Facilities for Divyangajan**	Provision of Ramp for Easy Movement for Divyangajan	**Ramp For Divyangajan:** 
4	**Creation of Awareness among Stake Holders**	Display of Poster on Energy Conservation	**Poster on Energy Conservation:** 
5	**Awareness Creation about Tree Plantation & Cleanliness**	Conductance of Tree Plantation and Cleanliness Drive in the College Campus	**Tree Plantation & Cleanliness Drive:**  

ENERGY AUDIT REPORT

Sipna Shikshan Prasarak Mandal Amravati's,

ARTS SCIENCE & COMMERCE COLLEGE,

Chikhaldara

Year: 2023-24

Prepared by:

ENGRESS SERVICES

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

REGISTRATION CERTIFICATES: BEE, UDYAM, MEDA, ISO-9001 & 14001:

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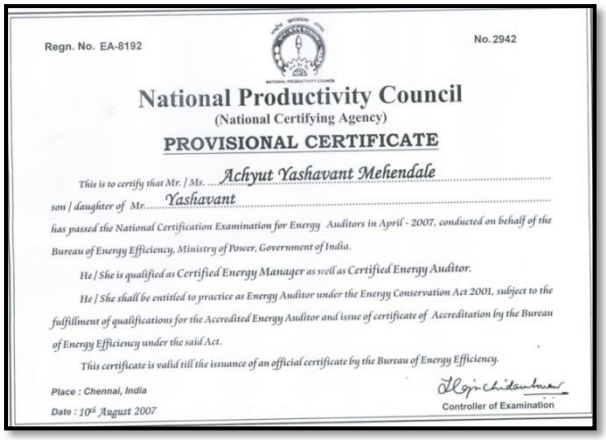


Regn. No. EA-8192 — No. 2942

National Productivity Council
(National Certifying Agency)
PROVISIONAL CERTIFICATE

This is to certify that Mr. / Ms. *Achyut Yashavant Mehendale*
son / daughter of Mr. *Yashavant*
has passed the National Certification Examination for Energy Auditors in April - 2007, conducted on behalf of the Bureau of Energy Efficiency, Ministry of Power, Government of India.

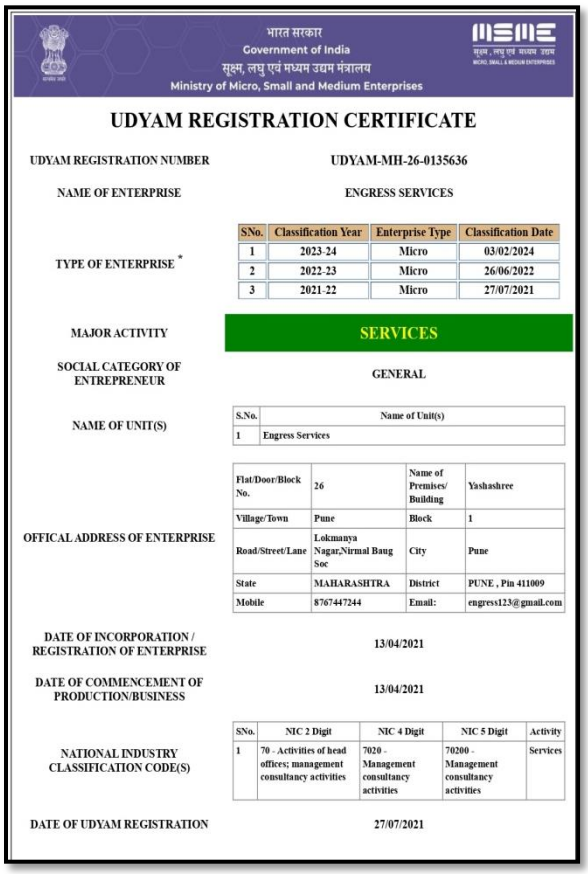
He / She is qualified as Certified Energy Manager as well as Certified Energy Auditor.

He / She shall be entitled to practice as Energy Auditor under the Energy Conservation Act 2001, subject to the fulfillment of qualifications for the Accredited Energy Auditor and issue of certificate of Accreditation by the Bureau of Energy Efficiency under the said Act.

This certificate is valid till the issuance of an official certificate by the Bureau of Energy Efficiency.

Place : Chennai, India
Date : 10st August 2007

Controller of Examination



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Ministry of Micro, Small and Medium Enterprises

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

TYPE OF ENTERPRISE *

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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

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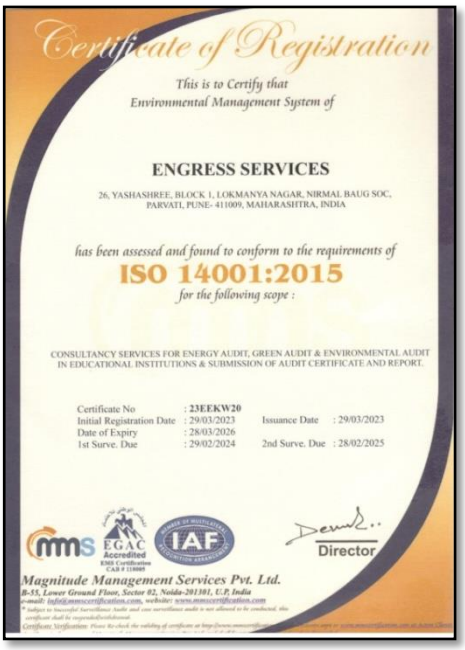
DATE OF UDYAM REGISTRATION: 27/07/2021



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Date of Expiry : 28/03/2026
1st Surve. Due : 29/02/2024 — 2nd Surve. Due : 28/02/2025

EGAC Accredited — IAF

Director

Magnitude Management Services Pvt. Ltd.
B-55, Lower Ground Floor, Sector 02, Noida-201301, U.P. India

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

EXECUTIVE SUMMARY

1. Sipna Shikshan Prasarak Mandal Amravati's Arts Science & Commerce College, Chikhaldara 444 807 consumes Energy in the form of **Electrical Energy;** used for various gadgets, Office & other facilities.

2. Present Connected Load & Energy Consumption:

No	Particulars	Value	Unit
1	Total Connected Load	**49**	kW
2	Annual Energy Consumed	**7503**	kWh

3. Per Capita Energy Consumption:

No	Particulars	Value	Unit
1	Total Annual Energy Consumed	**7503**	kWh
2	Total No of Students		Nos
3	Per Capita Energy Consumption **= (1) / (2)**		kWh/Annum

4. Study of % Usage of LED Lighting:

No	Particulars	Value	Unit
1	% of Usage of LED Lighting to Total Lighting Load	**35**	%

5. Renewable Energy & Energy Efficiency Projects:

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

6. Assumption:

1. **1 kWh** of Electrical Energy releases **0.93 Kg of CO_2** into atmosphere

7. References:

- Audit Methodology: www.mahaurja.com
- Energy Conservation Building Code: ECBC-2017: www.beeindia.gov.in
- For CO_2 Emissions: www.ccd.gujarat.gov.in

ABBREVIATIONS

AC	:	Air conditioner
BEE	:	Bureau of Energy Efficiency
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 Introduction:

An Energy Audit is conducted at Shri Siddheshwar Devasthan, Solapur Shree Siddheshwar Women's College of Engineering, Bhawani Peth, Solapur.

The guidelines followed for conducting the Energy Audit are:

- BEE India's Energy Conservation Building Code: ECBC-2017
- Maharashtra Energy Development Agency (www.mahaurja.com)
- Tata Power: www.tatapower.com

1.2 Key Study Points:

No	Particulars
1	Study of Present Connected Load
2	Study of Present Energy Consumption
3	Study of Per Capita Energy Consumption
4	Study of Lighting
5	Study of Energy Efficiency & Renewable Energy

1.3 College Location Image:

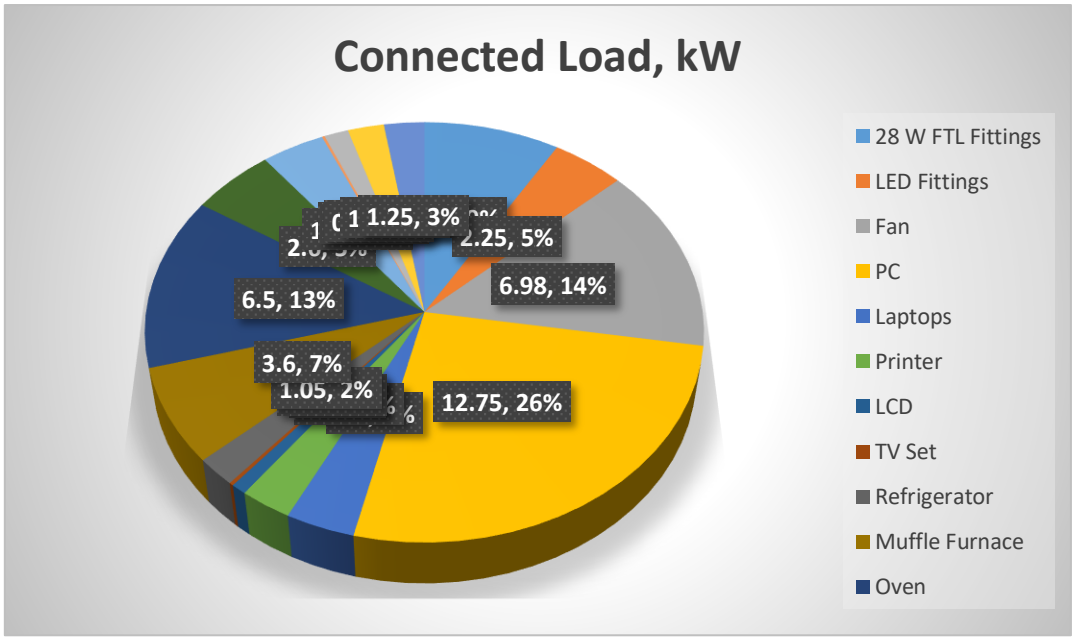
CHAPTER-II
STUDY OF CONNECTED LOAD

The major contributors to the connected load of the College include:

Table No 1: Study of Equipment wise Connected Load:

No	Equipment	Qty	Load, W/Unit	Load, kW
1	28 W FTL Fittings	150	28	4.2
2	LED Fittings	150	15	2.25
3	Fan	97	72	6.98
4	PC	85	150	12.75
5	Laptops	20	90	1.8
6	Printer	9	150	1.35
7	LCD	4	100	0.4
8	TV Set	2	55	0.11
9	Refrigerator	3	350	1.05
10	Muffle Furnace	5	720	3.6
11	Oven	10	650	6.5
12	Distillation unit	4	650	2.6
13	Autoclave	3	650	1.95
14	Sound system	1	85	0.09
15	Pump-1 HP	1	746	0.75
16	Pump-1.5 HP	1	1119	1.12
17	Other Equipment	5	250	1.25
18	**Total**			**49**

Chart No 1: Study of Connected Load:



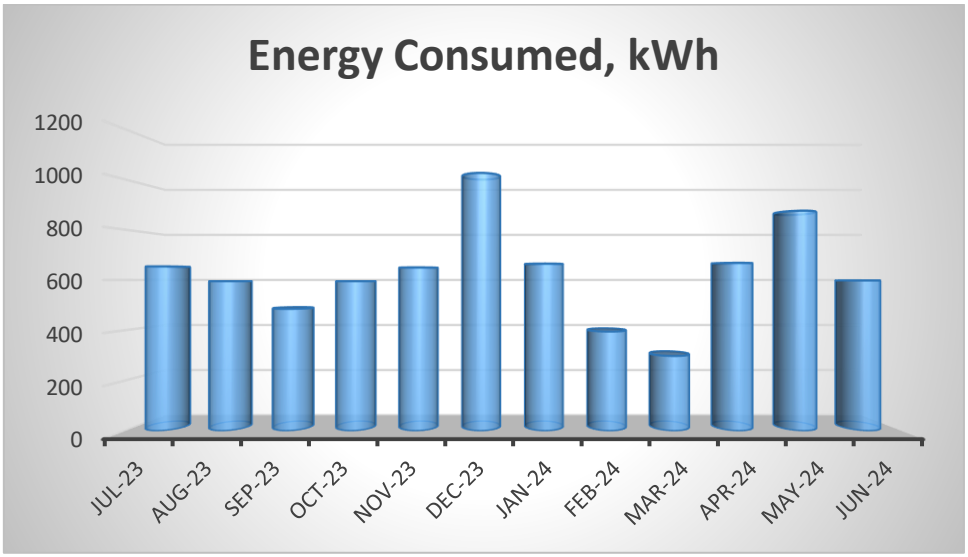
CHAPTER-III
STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of Electrical Energy Consumption.

Table No 2: Electrical Energy Consumption Analysis- 2023-24:

No	Month	Energy Consumed, kWh	CO_2 Emissions, MT
1	Jul-23	654	0.61
2	Aug-23	595	0.55
3	Sep-23	485	0.45
4	Oct-23	595	0.55
5	Nov-23	650	0.60
6	Dec-23	1025	0.95
7	Jan-24	665	0.62
8	Feb-24	395	0.37
9	Mar-24	298	0.28
10	Apr-24	668	0.62
11	May-24	875	0.81
12	Jun-24	598	0.56
13	Total	7503	6.98
14	Maximum	1025	0.95
15	Minimum	298	0.28
16	Average	625.25	0.58

Chart No 2: To study the variation of Monthly Electrical Energy Consumption:



CHAPTER-IV
STUDY OF PER CAPITA ENERGY CONSUMPTION

Per Capita Energy Consumption Index: Per Capita Energy Consumption Index of an educational College/College is its Annual Energy Consumption in Kilo Watt Hours per student studying in the College/College.

It is determined by:

$$\text{Per Capita Energy Consumption} = \frac{\text{(Annual Energy Consumption in kWh)}}{\text{(Total No of students studying)}}$$

Table No 3: Computation of Energy Consumption:

No	Particulars	Value	Unit
1	Total Annual Energy Consumed	**7503**	kWh
2	Total No of Students		Nos
3	Per Capita Energy Consumption **= (1) / (2)**		kWh/Annum

CHAPTER-V
STUDY OF LIGHTING

Terminology:

1. Lumen is a unit of light flow or luminous flux. The lumen rating of a lamp is a measure of the total light output of the lamp. The most common measurement of light output (or luminous flux) is the lumen. Light sources are labeled with an output rating in lumens.

2. Lux is the metric unit of measure for illuminance of a surface. One lux is equal to one lumen per square meter.

3. Circuit Watts is the total power drawn by lamps and ballasts in a lighting circuit under assessment.

4. Installed Load Efficacy is the average maintained illuminance provided on a horizontal working plane per circuit watt with general lighting of an interior. Unit: lux per watt per square metre (lux/W/m²)

5. Lamp Circuit Efficacy is the amount of light (lumens) emitted by a lamp for each watt of power consumed by the lamp circuit, i.e. including control gear losses. This is a more meaningful measure for those lamps that require control gear. Unit: lumens per circuit watt (lm/W)

6. Lighting Power Density: It is defined as Total Lighting Load in a room divided by the Area of that Room in square meters.

In this Chapter we compute the percentage usage of LED Lighting to total Lighting Load.

Table No 4: Percentage Usage of LED Lighting to Total Lighting Load:

No	Particulars	Value	Unit
1	No of 28 W FTL Fittings	150	Nos
2	Demand of FTL Fitting	28	W/Unit
3	Total Demand of FTL Fittings	**4.2**	kW
4	No of 15 W LED Fittings	150	Nos
5	Demand of 18 W LED Fitting	15	W/Unit
6	Total Demand of 18 W LED Fittings	**2.25**	kW
7	Total Lighting Load= **3+6**	**4.2**	kW
8	Total LED Lighting Load= **6**	**2.25**	kW
9	% of LED Lighting to Annual Lighting Load= **(8)*100/(7)**	**35**	**%**

CHAPTER-VI
STUDY OF RENEWABLE ENERGY & ENERGY EFFICIENCY

6.1 Usage of Renewable Energy:

The College has yet to install Roof Top Solar PV Plant

6.2 Energy Efficiency Measures adopted:

- The College has Energy Efficient LED Fittings.

Photographs of LED Lighting:

ENVIRONMENTAL AUDIT REPORT

Sipna Shikshan Prasarak Mandal Amravati's,

ARTS SCIENCE & COMMERCE COLLEGE,

Chikhaldara

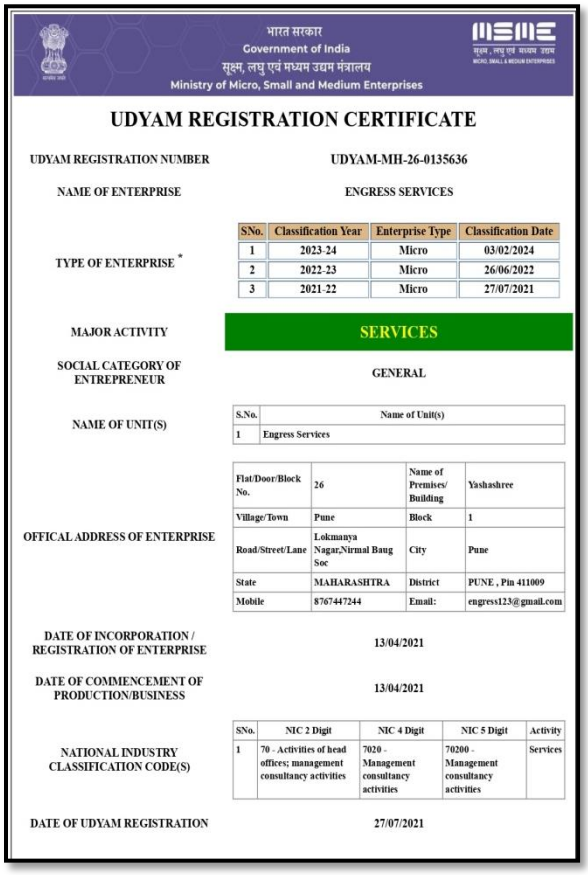
Year: 2023-24

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

ASSOCHAM

GEM Certificate

ASSOCHAM hereby certifies that

Mr. A Y Mehendale

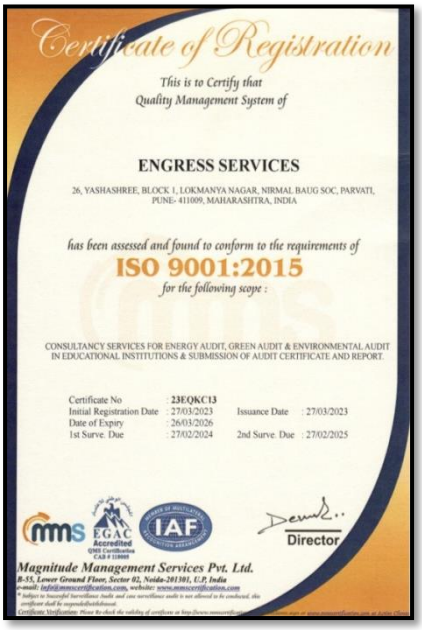
has successfully passed the
Green and Eco-friendly Movement Certified Professional Test (GEM CP)
with
"Excellent Performance"
on
06 June, 2022

He/she is now eligible to execute the GEM Sustainability Certification Projects. ASSOCHAM feels proud to award the GEM Certified Professional title to him/her.

Pankaj R. Dharkar
Chairman, GEM

GEM CP 22/788

Deepak Sood
Secretary General, ASSOCHAM



Certificate of Registration

This is to Certify that
Quality Management System of

ENGRESS SERVICES

26, YASHASHREE, BLOCK 1, LOKMANYA NAGAR, NIRMAL BAUG SOC, PARVATI, 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	: 23EQKC13		
Initial Registration Date	: 27/03/2023	Issuance Date	: 27/03/2023
Date of Expiry	: 26/03/2026		
1st Surve. Due	: 27/02/2024	2nd Surve. Due	: 27/02/2025

mms EGAC Accredited IAF

Director

Magnitude Management Services Pvt. Ltd.
B-55, Lower Ground Floor, Sector 02, Noida-201301, U.P, India

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

ECN/2022-23/CR-43/1709 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 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/2022-23/Class A/EA-32.*

- 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 **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 reasons thereof.

General Manager (EC)

Certificate of Registration

This is to Certify that
Environmental Management System of

ENGRESS SERVICES

26, YASHASHREE, BLOCK 1, LOKMANYA NAGAR, NIRMAL BAUG SOC, PARVATI, 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	: 23EEKW20		
Initial Registration Date	: 29/03/2023	Issuance Date	: 29/03/2023
Date of Expiry	: 28/03/2026		
1st Surve. Due	: 29/02/2024	2nd Surve. Due	: 28/02/2025

mms EGAC Accredited IAF

Director

Magnitude Management Services Pvt. Ltd.
B-55, Lower Ground Floor, Sector 02, Noida-201301, U.P, India

INDEX

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Sipna Shikshan Prasarak Mandal Amravati's Arts, Science & commerce college, Upper Plateau Chikhaldara 444807, for awarding us the assignment of Environmental Audit of their Chikhaldara campus for the Year: 2023-24

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

EXECUTIVE SUMMARY

1. Shri Siddheshwar Devasthan, Solapur Shree Siddheshwar Women's College of Engineering, Bhawani Peth, Solapur consumes Energy in the form of **Electrical Energy;** used for various gadgets, Office & other facilities.

2. Pollution due to College Activities:

- **Air pollution:** Mainly CO_2 on account of Electricity Consumption
- **Solid Waste:** Bio degradable Garden Waste, Paper & Plastic Waste
- **Liquid Waste:** Human & lab Liquid Waste

3. Present Energy Consumption & CO_2 Emission:

No	Particulars	Value	Unit
1	Annual Energy Consumed	**7503**	kWh
2	Annual CO_2 Emissions	**6.98**	MT

4. Usage of Renewable Energy:

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

5. Indoor Air Quality Parameters:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	**53**	**33**	**40**
2	Minimum	**40**	**24**	**33**

6. Indoor Lux & Noise Level Parameters:

No	Parameter/Value	Lux Level	Noise Level, dB
1	Maximum	**156**	**49**
2	Minimum	**126**	**44.2**

7. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Organic Waste	Provision of Bio Composting Bed
3	Liquid Chemical Waste	Provision of Soak Pit
4	E Waste Management	Recommended to dispose through Authorized Agency

8. Rain Water Management:

The College has installed Rain Water Harvesting Project, wherein the Rain Water falling on the terrace is collected and is stored in a separate Water Storage Tank. The Water is further used for domestic purpose.

9. Environment Friendly Initiatives:

- Tree Plantation in the campus.
- Creation of awareness on Energy Conservation by Display of Posters
- Conductance of Tree Plantation & Cleanliness Drive in the Campus

10. Assumption:

1. **1 kWh** of Electrical Energy releases **0.93 Kg** of **CO_2** into atmosphere

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

ABBREVIATIONS

Kg	:	Kilo Gram
MSEDCL	:	Maharashtra State Distribution Company Limited
MT	:	Metric Ton
kWh	:	kilo-Watt Hour
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. 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

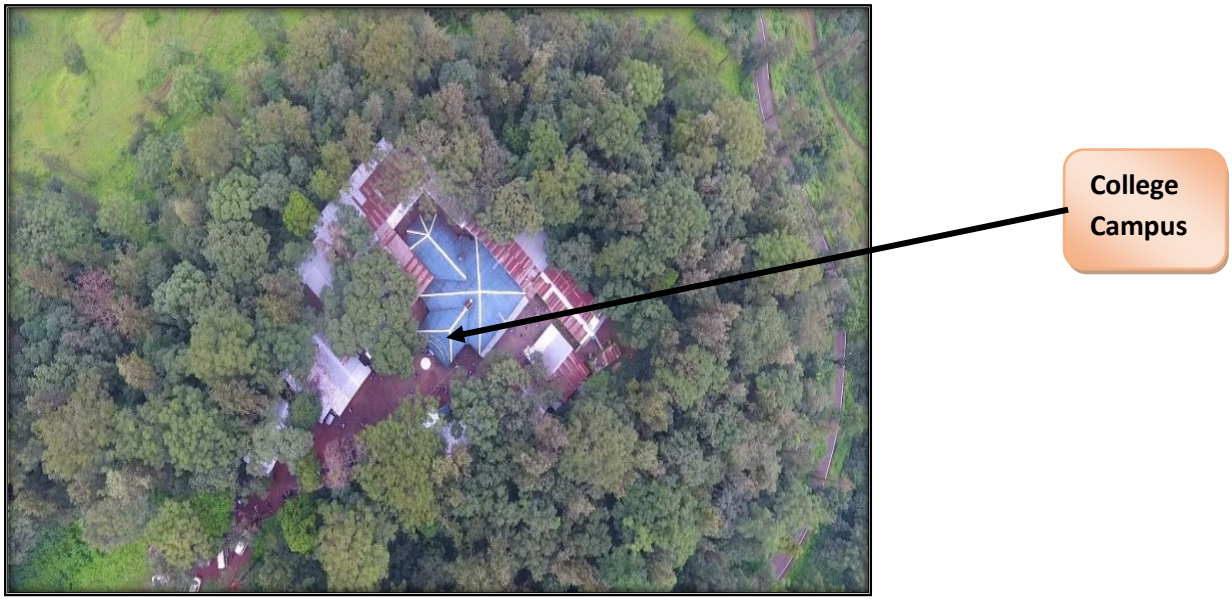
1.2. Environmental Audit: Definition:

According to UNEP, 1990, "Environmental audit can be defined as a management tool comprising systematic, documented and periodic evaluation of how well environmental organization management and equipment are performing with an aim of helping to regularize the environment

1.2 Key Study Points:

No	Particulars
1	Study of Present Resource Consumption & CO_2 Emission
2	Study of Usage of Renewable Energy
3	Study of Indoor Air Quality
4	Study of Indoor Lux & Noise Level
5	Study of Water Management
6	Study of Waste Management Practices
7	Study of Environment Friendly Practices

1.3 College Location Image:



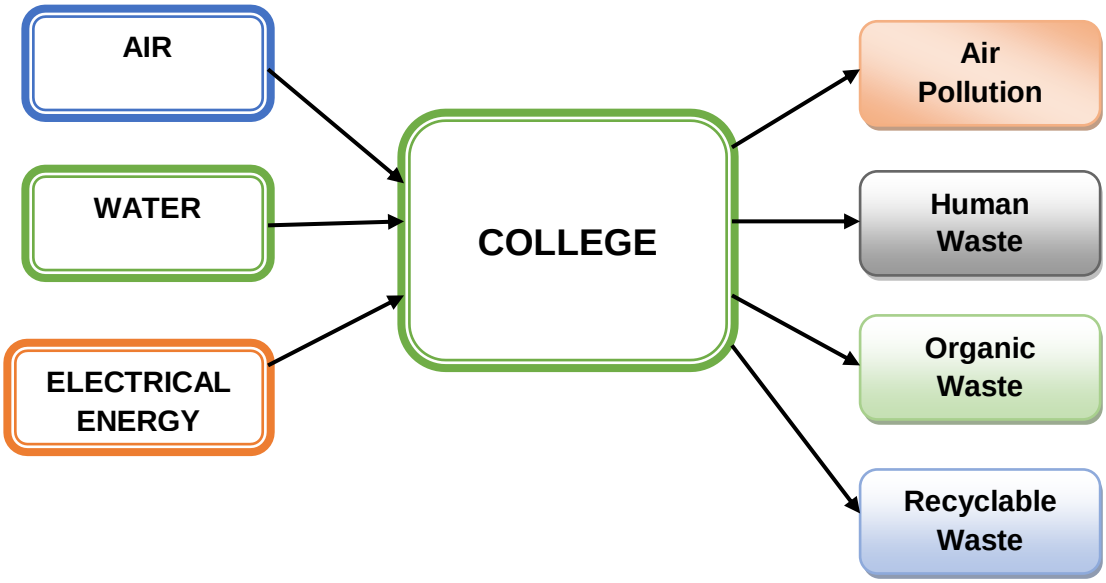
CHAPTER-II
STUDY OF RESOURCE CONSUMPTION & CO_2 EMISSION

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:



Now we compute the Generation of CO_2 on account of consumption of Electrical Energy. The basis of Calculation for CO_2 emissions due to Electrical Energy is as under.

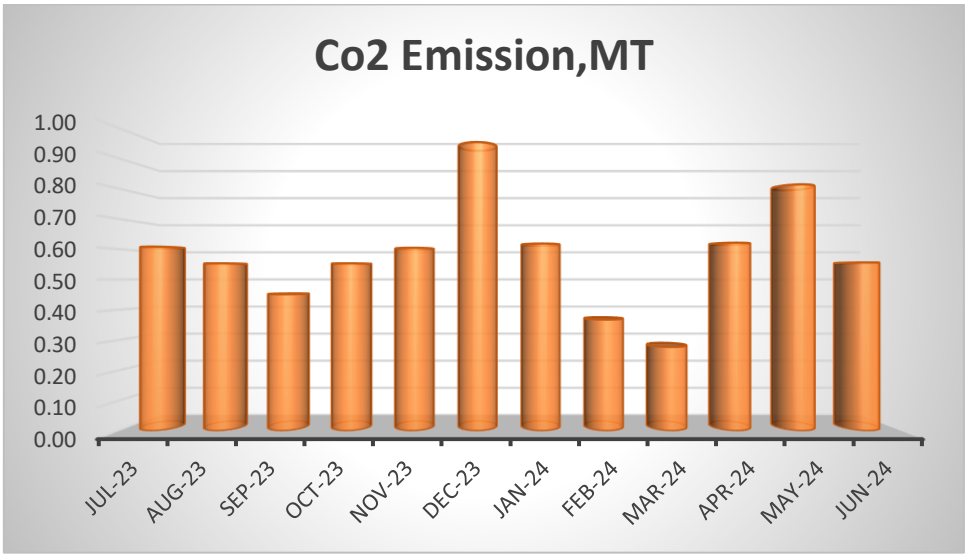
- **1 kWh** of Electrical Energy releases **0.93 Kg of CO_2** into atmosphere

Table No 1: Study of Purchase of Energy & CO_2 Emissions: 2023-24:

No	Month	Energy Consumed, kWh	CO_2 Emissions, MT
1	Jul-23	654	0.61
2	Aug-23	595	0.55
3	Sep-23	485	0.45
4	Oct-23	595	0.55
5	Nov-23	650	0.60
6	Dec-23	1025	0.95
7	Jan-24	665	0.62

8	Feb-24	395	0.37
9	Mar-24	298	0.28
10	Apr-24	668	0.62
11	May-24	875	0.81
12	Jun-24	598	0.56
13	Total	7503	6.98
14	Maximum	1025	0.95
15	Minimum	298	0.28
16	Average	625.25	0.58

Chart No 2: Month wise CO_2 Emissions:



CHAPTER III
STUDY OF USAGE OF RENEWABLE ENERGY

The College has yet to install 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 2: Indoor Air Quality Parameters:

No	Location	AQI	PM2.5	PM10
1	Classroom	40	24	33
2	Office	50	30	38
3	Lab	43	26	34
4	Principal Cabin	46	26	34
5	Staff Room	53	33	40
	Maximum	**53**	**33**	**40**
	Minimum	**40**	**24**	**33**

Table No 3: 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 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 4: Study of Indoor Lux Level and Noise Level Parameters:

No	Location	Lux Level, Lumen	Noise Level, dB
1	Classroom	156	49
2	Office	149	46.3
3	Lab	145	45
4	Principal Cabin	126	44.2
5	Staff Room	136	47
	Maximum	**156**	**49**
	Minimum	**126**	**44.2**

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

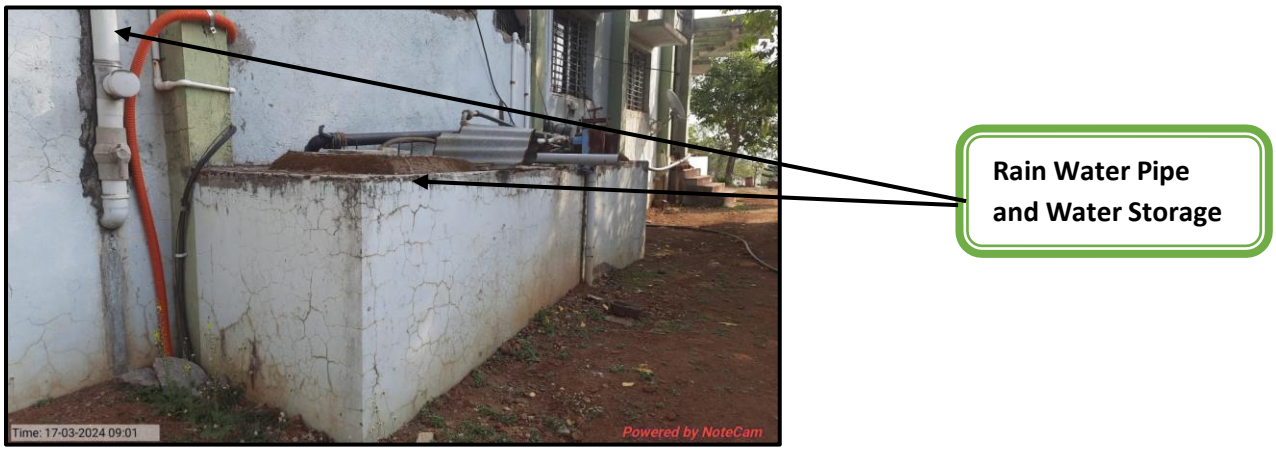
CHAPTER VI
STUDY OF RAIN WATER MANAGEMENT

The College has installed Rain Water Harvesting Project, wherein the Rain Water falling on the terrace is collected and is stored in a separate Water Storage Tank. The Water is used for Girls Hostel & for Gardening purpose.

Water Storage Tank Details:

- Area of Tank: 1939 sq. ft.
- Tank Height: 2 meters
- Water Storage Capacity: 360400 Liters

Photograph of Rain Water Storage Tank Facility:



CHAPTER-VII
STUDY OF WASTE MANAGEMENT

In this Chapter, we present the Waste Management Practices, followed by the College.

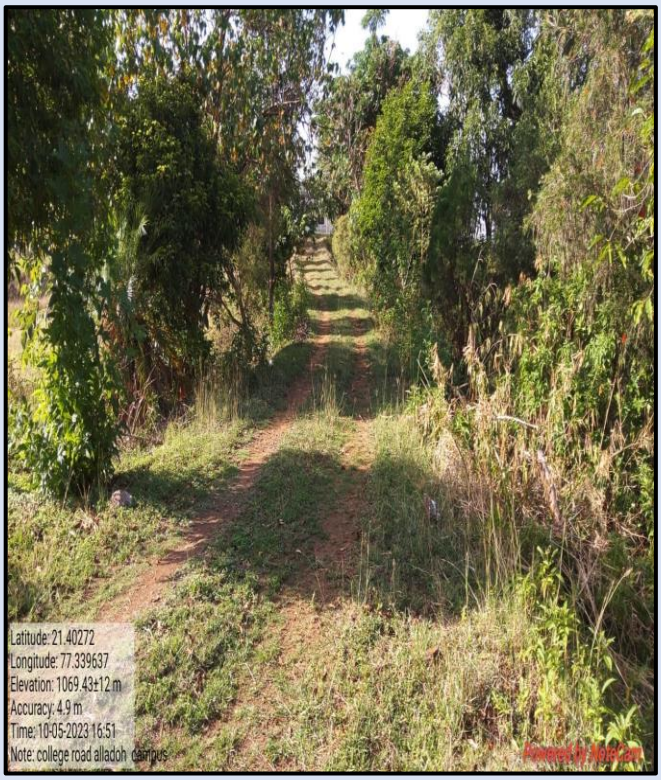
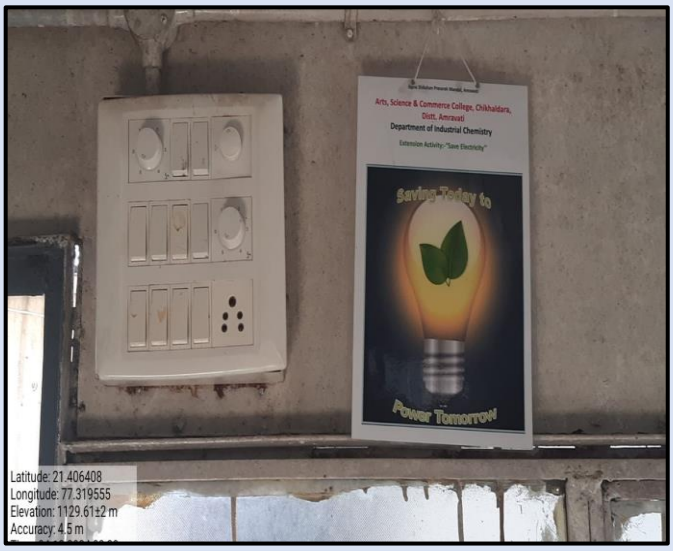
Details of Waste Management Practices:

No	Head	Observation	Photograph
1	**Solid Waste**	Segregation of Waste at Source: Provision of Waste Collection Bins	**Waste Collection Bin:** 
2	**Organic/Leafy Waste**	Provision of Bio Composting Bed	**Bio Composting Bed:** 
3	**Liquid Waste**	For treatment of laboratory chemicals, the College has a soak Pit wherein the laboratory liquid waste is first mixed with water and then drained to a soak Pit which contains layers of sand and activated carbon.	**Liquid Waste Soak Tank Arrangement:** 
4	**E Waste**	Recommended to dispose of through Authorized Agency	

CHAPTER-VIII
STUDY OF ECO-FRIENDLY PRACTICES

In this Chapter, we present the Eco-Friendly Practices, followed by the College.

Details of Eco-Friendly Practices:

No	Head	Observation	Photograph
1	**Tree Plantation**	Tree Plantation in the Campus	**Internal Tree Plantation:** 
2	**Creation of Awareness among Stake Holders**	Display of Poster on Energy Conservation	**Poster on Energy Conservation:** 

5	**Awareness Creation about Tree Plantation & Cleanliness**	Conductance of Tree Plantation and Cleanliness Drive in the College Campus	**Tree Plantation & Cleanliness Drive:**  

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School,
Parvati, Pune 411 009 Tel: 09890444795 Email: engress123@gmail.com
UDYAM Regn. No: UDYAM-MH-26-0135636,
MEDA Regn. No: ECN/2023-24/CR-43/1709
ISO: 9001-2015 Certified (Cert No: 23EQKC13),
ISO: 14001-2015 Certified (Cert No: 23EEKW20)

ENERGY AUDIT CERTIFICATE

Certificate No: ES/SSPMAASCCC/23-24/01 **Date: 12/7/2024**

This is to certify that we have conducted Energy Audit at **Sipna Shikshan Prasarak Mandal Amravati's Arts, Science & Commerce College**, Upper Plateau Chikhaldara 444807 in the Year 2023-24.

The College has adopted following 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 Energy Efficient.

For Engress Services,

A Y Mehendale,
B E-Mechanical, M Tech- Energy
BEE Certified Energy Auditor, EA-8192

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School,
Parvati, Pune 411 009 Tel: 09890444795 Email: engress123@gmail.com
UDYAM Regn. No: UDYAM-MH-26-0135636,
MEDA Regn. No: ECN/2023-24/CR-43/1709
ISO: 9001-2015 Certified (Cert No: 23EQKC13),
ISO: 14001-2015 Certified (Cert No: 23EEKW20)

GREEN AUDIT CERTIFICATE

Certificate No: ES/SSPMAASCCC/23-24/02 **Date: 12/7/2024**

This is to certify that we have conducted Green Audit at **Sipna Shikshan Prasarak Mandal Amravati's Arts, Science & Commerce College**, Upper Plateau Chikhaldara 444807 in the Year 2023-24.

The College has adopted following Green & Sustainable Practices:

- Usage of Energy Efficient LED Light Fitting
- Segregation of Waste at source
- Provision of Bio Composting Bed, for conversion of Organic Waste
- Provision of Soak Pit for chemical Liquid Waste management
- Implementation of Rain Water Harvesting Project
- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp for Divyangajan
- Creation of Awareness on Energy Conservation by Display of Poster
- Conductance of Tree Plantation & Cleanliness Drive

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

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School,
Parvati, Pune 411 009 Tel: 09890444795 Email: engress123@gmail.com
UDYAM Regn. No: UDYAM-MH-26-0135636,
MEDA Regn. No: ECN/2023-24/CR-43/1709
ISO: 9001-2015 Certified (Cert No: 23EQKC13),
ISO: 14001-2015 Certified (Cert No: 23EEKW20)

ENVIRONMENTAL AUDIT CERTIFICATE

Certificate No: ES/SSPMAASCCC/23-24/03 **Date: 12/7/2024**

This is to certify that we have conducted Environmental Audit at **Sipna Shikshan Prasarak Mandal Amravati's Arts, Science & Commerce College**, Upper Plateau Chikhaldara 444807 in the Year 2023-24.

The College has adopted following Environment Friendly Practices:

- Usage of Energy Efficient LED Light Fitting
- Segregation of Waste at source
- Provision of Bio Composting Bed, for conversion of Organic Waste
- Provision of Soak Pit for chemical Liquid Waste management
- Implementation of Rain Water Harvesting Project
- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp for Divyangajan
- Creation of Awareness on Energy Conservation by Display of Poster
- Conductance of Tree Plantation & Cleanliness Drive

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation & making the campus Green and Eco Friendly.

For Engress Services,

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

Conservation of Medicinal plants

2023-24

Department of Botany

- **Period : 2023-2024**
- **Venue : Ethnobotanical garden,**
  Art's, Sci. &Commerce College Chikhaldara
- **Objectives :**
  1. **Identification of plants**
  2. **To collect medicinally used plants data.**
  3. **To know current status of plants**
  4. **To conserve the plants in ex-situ manner.**
  5. **To propagate plants naturally.**
- **Brief Report :**

Regarding our objectives we considered that the medicinal plants have long been integral to human health, providing raw materials for pharmaceuticals, traditional remedies, and nutritional supplements. However, rapid deforestation, habitat destruction, overharvesting, and climate change are threatening the existence of many plant species that are vital for medicine. The information of the plants is printed in the form of syllabus for college students. **The Sant Gadge Baba Amravati University** affiliated Colleges students of Botany, Ayurveda College students, as well as Forest department.

Local Melghat tribal people have knowledge of these medicinal plants. During the visits students get knowledge and collect data about how tribal people use these medicinal plants for the cure of their diseases.

Today many medicinal plants face extinction but detail information is lacking, so it is important to conserve and preserve the medicinal plants. To propagate and conservation such medicinal plants, in ex-situ manner in our botanical garden of ethnobotany, in program 40 Students were participated. Melghat Forest is tropical, dry, deciduous type forest. The soil and climate of **Chikhaldara plateau** is suitable for

medicinal plants. According our programme objectives we have taken step; Conserved some medicinal plants statistics are:

Medicinal plants : 51 genera
Aromatic plants : 05
Grasses : 05
Aquatic : 02
Tuberous : 10
Rhizomatous : 05
Others : 10

- **Beneficiary : 40 Students participated.**

Dr. Ujwala Ramesh Kokate
Professor & Head
Department of Botany
Arts, Science & Commerce College,
Chikhaldara

HOD

Principal

PRINCIPAL
Art, Science & Commerce
Co[illegible]ikhaldara

Dr. U. R. Kokate Guiding students about Medicinal plants and its use

Prof. G. D. Muratakar Introducing Medicinal plants