

ENVIRONMENTAL AUDIT REPORT

of

**Yashaswi Education Society's,
International Institute of Management Studies,
Chinchwad, Pune 411 033**



Year: 2021-22

Prepared by

ENGRESS SERVICES

Yashashree, Plot No 26, Nirmal Bag Society,
Near Mukhtangan English School, Pune 411 009
Phone: 09890444795 Email: engress123@gmail.com



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/2021-22/CR-43/441

8th February, 2022

**CERTIFICATE OF REGISTRATION
FOR CLASS 'B'**

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 'B'*

Registration Number : *MEDA/ECN/2021-22/Class B/EA-07.*

- 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 February, 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)



Engress Services

Yashashree, 26, Nirmal Bag Society,
Near Muktagan English School, Parvati, Pune 411 009
Tel: 09890444795 Email: engress123@gmail.com

Ref: ES/YESIIMS/21-22/03

Date: 14/4/2022

CERTIFICATE

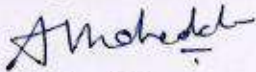
This is to certify that we have conducted Environmental Audit at Yashaswi Education Society's International Institute of Management Science, Chinchwad, Pune, in the Year: 2021-22.

The Institute has adopted following **Environment Friendly Practices**:

- Usage of Energy Efficient LED Lighting
- Maximum usage of Day Lighting
- Segregation of Waste at source
- Good internal Road within the campus
- Internal Tree Plantation in the campus
- Provision of Ramp for Divyangajan

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

For Engress Services,



A Y Mehendale,
Certified Energy Auditor
EA-8192



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ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Yashaswi Education Society's International Institute of Management Science, Chinchwad, Pune 411 033, for awarding us the assignment of Environmental Audit of their Chinchwad Campus, for the Year: 2021-22.

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



EXECUTIVE SUMMARY

1. Yashaswi Education Society's International Institute of Management Science Chinchwad consumes Energy in the form of Electrical Energy used for various gadgets, office & other facilities

2. Various Pollution caused due to Institute Activities:

- **Air pollution:** Mainly CO₂ on account of Electricity consumption
- **Solid Waste:** Bio degradable Waste, Garden Waste, Recyclable Waste and Human Waste
- **Liquid Waste:** Human liquid waste

3. Present Energy Consumption & CO₂ Emissions:

No	Parameter/ Value	Electrical Energy Consumed, kWh	CO ₂ Emissions, MT
1	Total	46067	41.46
2	Maximum	5542	4.99
3	Minimum	0	0.00
4	Average	3838.92	3.46

4. Various projects already implemented for Environmental Conservation:

- Usage of Energy Efficient LED fittings
- Usage of BEE STAR Rated Equipment
- Maximum Usage of Day-Lighting

5. Usage of Renewable Energy:

The Institute has yet to install Roof Top Solar PV Plant. It is recommended to install the same as early as possible.

6. Indoor Air Quality:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	91	54	72
2	Minimum	76	45	54

7. Indoor Comfort Condition Parameters:

No	Parameter/Value	Temperature, °C	Humidity, %	Lux Level	Noise Level, dB
1	Maximum	30.4	55	236	58
2	Minimum	26.8	44	116	49

8. Waste Management:

8.1 Segregation of Waste at Source:

The recyclable waste, like paper, board and plastic waste is segregated at source. There are separate bins for collection at various locations and is handed over for further for recycling.

8.2 E-Waste Management:

The E-waste is disposed of through Authorized Agency.

9. Rain Water Harvesting:

The Institute has implemented Rain Water Harvesting Project, wherein the Rain Water from terrace is collected and is used to increase the underground Water Table.

10. Environment Friendly Initiative:

- Maintenance of Internal Garden in the campus

11. Assumption:

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

12. References:

- For CO₂ Emissions: www.tatapower.com
- For Various Indoor Air Parameters: www.ishrae.com
- For AQI & Water Quality Standards: www.cpcb.com

ABBREVIATIONS

Kg	: Kilo Gram
YES	: Yashaswi Education Society
MSEDCL	: Maharashtra State Distribution Company Limited
MT	: Metric Ton
kWh	: kilo-Watt Hour
LPD	: Litres 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

1.1 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

1.1.2. Environmental Audit: Definition:

An audit which aims at verification and validation to ensure that various environmental laws are complied with and adequate care has been taken towards environmental protection and preservation

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"

1.1.3. Environmental Pollutant: means any solid, liquid and gaseous substance present in the concentration as may be, or tend to be, injurious to Environment.

1.1.4. Relevant Environmental Laws in India: Table No-1:

1927	The Indian Forest Act
1972	The Wildlife Protection Act
1974	The Water (Prevention and Control of Pollution) Act
1977	The Water (Prevention & Control of Pollution) Cess Act
1980	The Forest (Conservation) Act
1981	The Air (Prevention and Control of Pollution) Act
1986	The Environment Protection Act
1991	The Public Liability Insurance Act
2002	The Biological Diversity Act
2010	The National Green Tribunal Act

1.1.5. Some Important Environmental Rules in India: Table No-2:

1989	Hazardous Waste (Management and Handling) Rules
1989	Manufacture, Storage and Import of Hazardous Chemical Rules
2000	Municipal Solid Waste (Management and Handling) Rules
1998	The Biomedical Waste (Management and Handling) Rules
1999	The Environment (Siting for Industrial Projects) Rules
2000	Noise Pollution (Regulation and Control) Rules
2000	Ozone Depleting Substances (Regulation and Control) Rules
2011	E-waste (Management and Handling) Rules

2011	National Green Tribunal (Practices and Procedure) Rules
2011	Plastic Waste (Management and Handling) Rules

1.1.6 National Environmental Plans & Policy Documents: Table No-3:

1.	National Forest Policy, 1988
2.	National Water Policy, 2002
3.	National Environment Policy or NEP (2006)
4.	National Conservation Strategy and Policy Statement on Environment and Development, 1992
5.	Policy Statement for Abatement of Pollution (1992)
6.	National Action Plan on Climate Change
7.	Vision Statement on Environment and Human Health
8.	Technology Vision 2030 (The Energy Research Institute)
9.	Addressing Energy Security and Climate Change (MoEF and Bureau of Energy Efficiency)
10.	The Road to Copenhagen; India's Position on Climate Change Issues (MoEF)

1.2 Audit Methodology:

1. Study of Institute as System
2. Study of present Energy Consumption
3. Study of CO2 emissions & mitigation
4. Study of Waste Generation & Management
5. Study of Rain Water Harvesting
6. Study of Environment Friendly Initiatives

1.3 General Details of Institute: Table No: 4

No	Head	Particulars
1	Name of Institution	Yashaswi Education Society's International Institute of Management Science
2	Address	S.No.169/1A,Chichwad-Akurdi Link Road, Chinchwad, Pune 411033
3	Year of Establishment	2008
4	Affiliation	Savitribai Phule Pune University

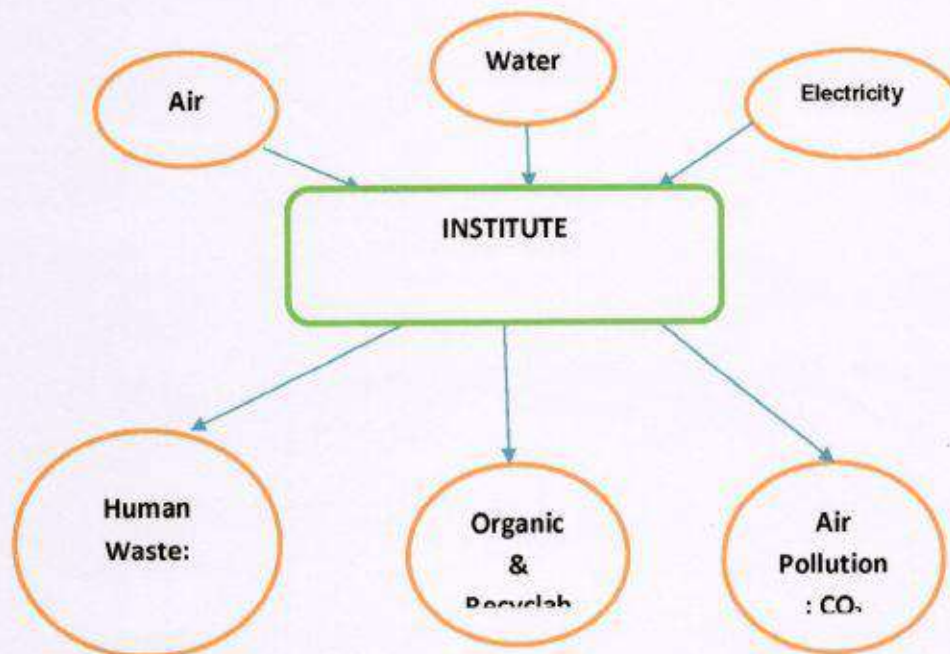
CHAPTER-II STUDY OF RESOURCE CONSUMPTION & CO₂ EMISSION

The Institute consumes following Natural/derived Resources:

1. Air
2. Water
3. Electrical Energy

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

Chart No: 1: Representation of Institute as System:



Now we compute the Generation of CO₂ on account of consumption of Electrical Energy is as under.

Table No 5: Study of Energy Consumption & CO₂ Emission: 21-22:

No	Month	Energy Consumed, kWh	CO ₂ Emission, MT
1	Apr-21	0	0.00
2	May-21	5524	4.97
3	Jun-21	4264	3.84
4	Jul-21	3966	3.57
5	Aug-21	3604	3.24
6	Sep-21	3423	3.08

7	Oct-21	3952	3.56
8	Nov-21	3894	3.50
9	Dec-21	4241	3.82
10	Jan-22	3358	3.02
11	Feb-22	4299	3.87
12	Mar-22	5542	4.99
13	Total	46067	41.46
14	Maximum	5542	4.99
15	Minimum	0	0.00
16	Average	3838.92	3.46

Chart No 2: Study of CO₂ Emission:

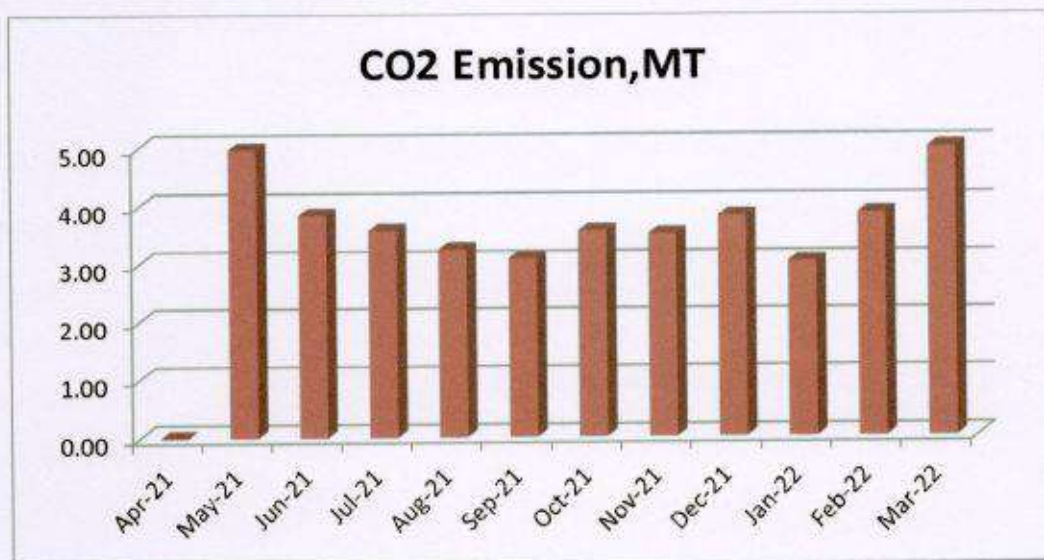


Table No 6: Variation in Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh	CO2 Emissions, MT
1	Total	46067	41.46
2	Maximum	5542	4.99
3	Minimum	0	0.00
4	Average	3838.92	3.46

CHAPTER-III

STUDY OF CO₂ EMISSION REDUCTION

The Institute has yet to install Roof top Solar PV Plant. It is recommended to install Roof Top Solar PV Plant, as early as possible.



CHAPTER IV STUDY OF INDOOR AIR QUALITY

4.1 Importance of Air Quality:

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

By volume, Dry Air contains 78.09% Nitrogen, 20.95% Oxygen, 0.93% Argon, 0.039% carbon dioxide, and small amounts of other gases.

On average, a person inhales about **14,000 litres** of air every day. Therefore, poor air quality may affect the quality of life now and for future generations by affecting the health, the environment, the economy and the city's livability.

Rapid urbanization and industrialization has added other elements/compounds to the pure air and thus caused the increase in pollution. In order to prevent, control and abate air pollution, the Air (Prevention and Control of Pollution) Act was enacted in 1981.

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

According to Section 2(b) of Air (Prevention and control of pollution) Act, 1981 'air pollution' has been defined as 'the presence in the atmosphere of any air pollutant.'

As per Section 2(a) of Air (Prevention and control of pollution) Act, 1981 'air pollutant' has been defined as 'any solid, liquid or gaseous substance [(including noise)] present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment

4.2 Air Quality Index:

An **Air Quality Index (AQI)** is a number used by government agencies to measure the **air pollution** levels and communicate it to the population. As the AQI increases, it means that a large percentage of the population will experience severe adverse health effects. The measurement of the **AQI** requires an **air monitor** and an **air pollutant** concentration over a specified **averaging period**.

We present herewith following important Parameters.

1. AQI- Air Quality Index
2. PM-2.5- Particulate Matter of Size 2.5 micron
3. PM-10- Particulate Matter of Size 10 micron

Table No 7: Indoor Air Quality Parameters:

No	Location	AQI	PM-2.5	PM-10
	Basement			
1	Office	85	50	60



	Ground Floor			
2	Director's Cabin	85	51	66
	First Floor			
3	MBA Computer Center	86	49	60
4	Computer Lab-I	90	52	62
5	Classroom-101	80	48	60
6	Seminar Room	86	51	62
	Second Floor			
7	Classroom-201	83	51	64
8	Classroom-202	83	52	72
9	Computer Lab-II	91	54	66
	Third Floor			
10	Computer Lab-III	86	52	62
11	Corporate Training Hall	83	50	60
	Fourth Floor			
12	Classroom-401	76	45	54
13	Classroom-402	85	52	63
14	Classroom-403	81	49	66
	Fifth Floor			
15	Classroom-501	85	52	63
16	Classroom-502	85	52	64
17	Classroom-503	86	52	62
18	Classroom-504	84	51	63
19	Maximum	91	54	72
20	Minimum	76	45	54

CHAPTER V

STUDY OF INDOOR COMFORT CONDITION PARAMETERS

In this Chapter, we present the various Indoor Comfort Parameters measured during the Audit.

The Parameters include:

1. Temperature
2. Humidity
3. Lux Level
4. Noise Level.

Table No 8: Study of Indoor Comfort Condition Parameters:

No	Location	Temperature, 0C	Humidity, %	Lux Level	Noise Level, dB
	Basement				
1	Office	29.2	49	116	49
	Ground Floor				
2	Director's Cabin	26.8	52	230	54
	First Floor				
3	MBA Computer Center	29	49	175	54
4	Computer Lab-I	29.5	52	160	56
5	Classroom-101	29.2	49	191	51
6	Seminar Room	29.6	49	144	56
	Second Floor				
7	Classroom-201	30.4	49	158	58
8	Classroom-202	29.8	48	182	49
9	Computer Lab-II	30.1	44	148	56
	Third Floor				
10	Computer Lab-III	30.2	50	185	51
11	Corporate Training Hall	29.9	50	194	50
	Fourth Floor				
12	Classroom-401	29.8	54	185	51
13	Classroom-402	29.8	55	184	51
14	Classroom-403	30	48	132	52
	Fifth Floor				
15	Classroom-501	29.9	49	203	52
16	Classroom-502	29.8	50	201	50



17	Classroom-503	30	48	169	54
18	Classroom-504	29.9	49	236	56
19	Maximum	30.4	55	236	58
20	Minimum	26.8	44	116	49

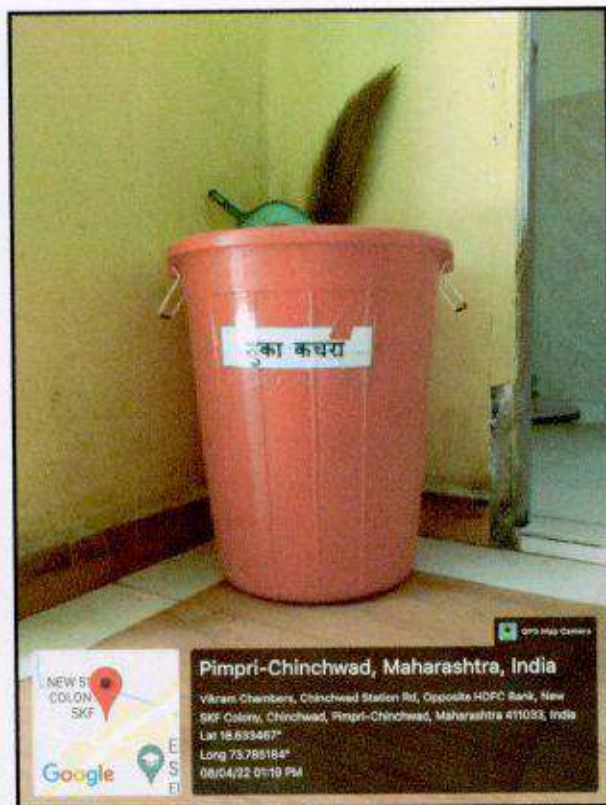


CHAPTER VI STUDY OF WASTE MANAGEMENT

6.1 Segregation of Waste at Source:

The recyclable waste, like paper, board and plastic waste is segregated at source. There are separate bins for collection at various locations and is handed over for further for recycling.

Photograph of Separate Waste Collection Bins for Dry and Wet Waste:



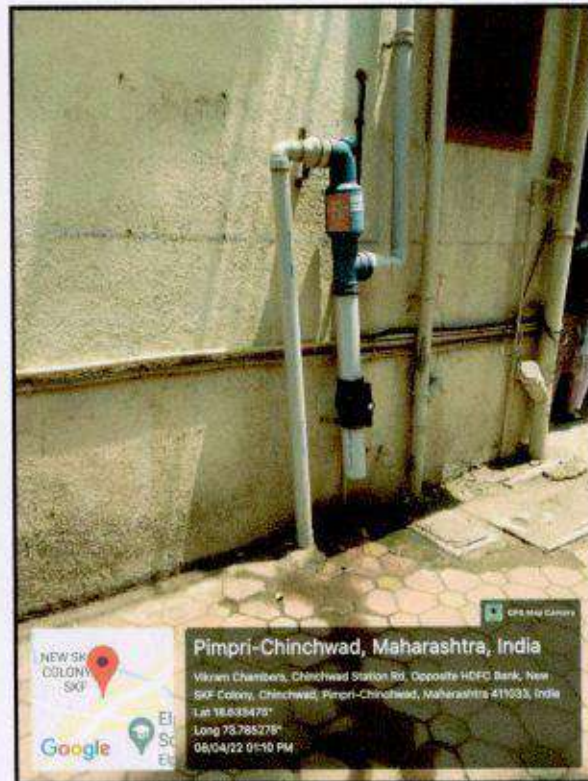
6.2 E-Waste Management:

The E-waste is disposed of through Authorized Agency.

CHAPTER-VII STUDY OF RAIN WATER HARVESTING

The Institute has implemented the Rain Water Harvesting Project. The Institute has installed Pipes from the terrace and the Rain water falling on the terrace is gathered, filtered and is used to increase the underground water table.

Photograph of Rain water Harvesting Pipe and Filter section:



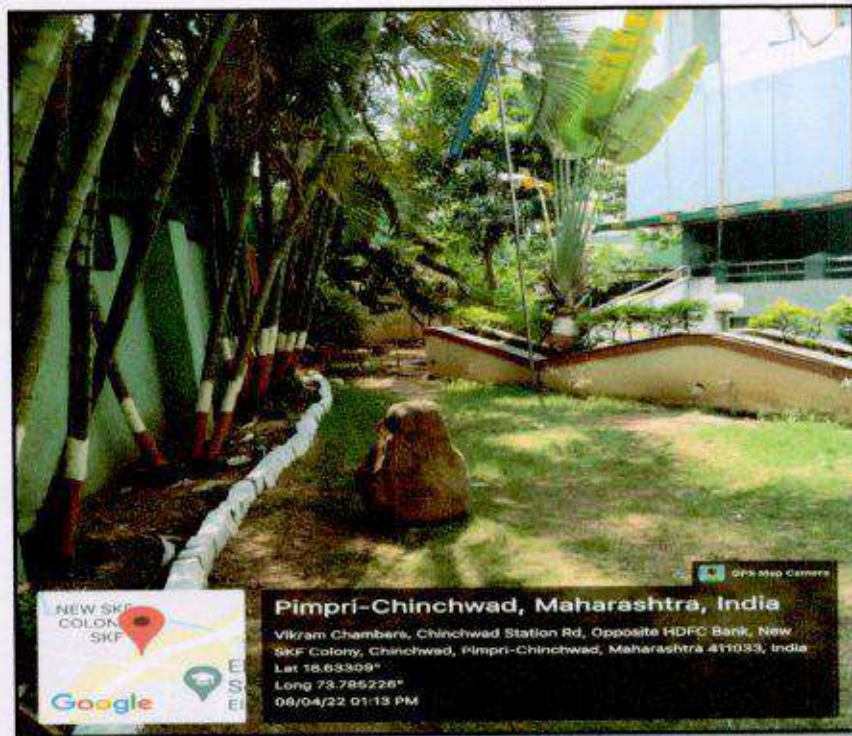
CHAPTER-VIII

STUDY OF ENVIRONMENT FRIENDLY PRACTICES

8.1 Internal Tree Plantation:

The Institute has well maintained garden in the campus. The Institute has also medicinal plant garden in the campus.

Photograph of Internal Garden/Tree Plantation:



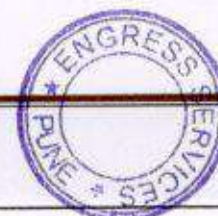
**ANNEXURE-I:
VARIOUS AIR QUALITY, WATER QUALITY, NOISE & INDOOR
COMFORT STANDARDS:**

1. Category Wise Air Quality Index Values & Concentration of PM 2.5 & PM10:

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 +

2. Recommended Water Quality Standards:

No	Designated Best Use	Criteria
1	Drinking Water Source without conventional Treatment but after disinfection	pH between 6.5 to 8.5 Dissolved Oxygen 6 mg/l or more
2	Drinking water source after conventional treatment and disinfection	pH between 6 to 9 Dissolved Oxygen 4 mg/l or more
3	Outdoor Bathing (Organized)	pH between 6.5 to 8.5 Dissolved Oxygen 5 mg/l or more
4	Controlled Waste Disposal	pH between 6 to 8.5



3. Recommended Noise Level Standards:

No	Location	Noise Level dB
1	Auditoriums	20-25
2	Outdoor Playground	55
3	Occupied Class Room	40-45
4	Un occupied Class Room	35
5	Apartment, Homes	35-40
6	Offices	45-50
7	Libraries	35-40
8	Restaurants	50-55

4. Thermal Comfort Conditions: For Non-conditioned Buildings:

No	Parameter	Value
1	Temperature	Less Than 33 ⁰ C
2	Humidity	Less Than 70%

ENVIRONMENTAL AUDIT REPORT
of
Yashaswi Education Society's,
INTERNATIONAL INSTITUTE OF MANAGEMENT STUDIES,
Chinchwad, Pune 411 033



Year: 2022-23

Prepared by

ENGRESS SERVICES

Yashashree, Plot No 26, Nirmal Bag Society,
Near Muktagan English School, Pune 411 009
Phone: 09890444795 Email: engress123@gmail.com



ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School,
Parvati, Pune 411 009 Tel: 09890444795 Email: engress123@gmail.com
MEDA Registration No: ECN/2022-23/CR-43/1709
ISO: 9001-2015 Certified (Cert No: 23EQKC13),
ISO: 14001-2015 Certified (Cert No: 23EEKW20)

ENVIRONMENTAL AUDIT CERTIFICATE

Certificate No: ES/YESIIMS/22-23/03

Date: 25/5/2023

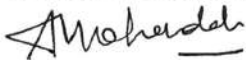
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The Institute has adopted following Environment Friendly Practices:

- Usage of Energy Efficient LED Lighting
- Maximum usage of Day Lighting
- Segregation of Waste at source
- Implementation of Rain Water Management Project
- Internal Tree Plantation in the campus

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



REGISTRATION CERTIFICATES

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

Maharashtra Energy Development Agency
 Maharashtra Energy Development Agency
 102, South Road, Opp. to, M. G. College, Bldg. No. 10, 1st Floor, 1st Stage, 1st Cross, Marol Nagar, Mumbai - 400 029
 Tel: No. 2612 0000
 Fax: No. 2612 0000
 E-mail: esd@meda.gov.in, www.mahmeda.gov.in

EX-NO: 22/2022/REG-1 Dt. 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 government of Maharashtra, India.

Name and Address of the firm: M. Y. E. S. Services
 Yashwantrao Chavan Marg, Pune, 411 004
 Registration Category: Registered Consultant for Energy Conservation Programme, Category - I

Registration Number: MEDA EX-2022/21 Class 'A' E-12

1. Energy Conservation Programme includes activities such as: wasteful use of energy should be avoided, the scope for Energy Conservation and take concrete steps to reduce the energy consumption.

2. MEDA reserves the right to visit at any time without prior information to verify the activities performed by the firm and cancelling the registration if the information is found to be false.

3. The registration is valid till 09th May, 2024 from the date of registration, to carry out activities under Energy Conservation Programme.

4. The Director of General, MEDA reserves the right to cancel the registration at any time without assigning any reason therefor.

Director
General Manager (E-1)

GEM Certificate

ASSOCHAM

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 enroll the GEM Sustainability Certification Program.
ASSOCHAM feels proud to award the GEM Certified Professional title to him/her.

GEM CP 22/788

Pankaj R. Dharkar
Chairman, GEM

Deepak Sood
Secretary General, ASSOCHAM

MEDA REGISTRATION CERTIFICATE

ASSOCHAM GEM CP CERTIFICATE

Attitude of Registration

This is to Certify that
Quality Management System of

ENGRSS SERVICES
B-1, VANDANBEH ROAD, 1, KOKASWANE, NEAR NARAYAN BAG, PUNE, PIN-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, ENVIRONMENTAL ASSESSMENT, INTERNATIONAL INSTITUTIONS & SUPERVISION FOR AESTHETIC IMPROVEMENT AND RENOVATION

Certificate No.	220109K13	Issue Date:	27/07/2021
Initial Registration Date	27/07/2021	2nd Survey Date	27/07/2021
Date of Expiry	26/07/2026		
1st Survey Date	27/07/2021		

Director

Magnitude Management Services Pvt. Ltd.
B-11, Lower Ground Floor, Sector 82, Noida-201301, U.P. India

Attitude of Registration

This is to Certify that
Environmental Management System of

ENGRSS SERVICES
B-1, VANDANBEH ROAD, 1, KOKASWANE, NEAR NARAYAN BAG, PUNE, PIN-411009, MAHARASHTRA, INDIA

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

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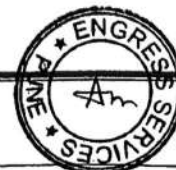
Certificate No.	220109K20	Issue Date:	28/07/2021
Initial Registration Date	27/07/2021	2nd Survey Date	28/07/2021
Date of Expiry	26/07/2026		
1st Survey Date	27/07/2021		

Director

Magnitude Management Services Pvt. Ltd.
B-11, Lower Ground Floor, Sector 82, Noida-201301, U.P. India

ISO: 9001-2015 CERTIFICATE

ISO: 14001-2015 CERTIFICATE



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ACKNOWLEDGEMENT

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



EXECUTIVE SUMMARY

1. Yashaswi Education Society's International Institute of Management Science Chinchwad consumes Energy in the form of Electrical Energy; used for various gadgets, office & other facilities

2. Pollution due to Institute Activities:

- Air pollution: Mainly CO₂ on account of Electricity Consumption
- Solid Waste: Bio degradable Garden Waste, Paper & Plastic Waste
- Liquid Waste: Human liquid waste

3. Present Energy Consumption & CO₂ Emission:

No	Particulars	Value	Unit
1	Annual Energy Consumed	53346	kWh
2	Annual CO ₂ Emissions	48.01	MT

4. Usage of Renewable Energy:

- The Institute 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	63	37	45
2	Minimum	56	34	38

6. Indoor Comfort Conditions:

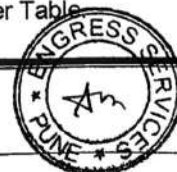
No	Parameter/Value	Temperature, °C	Humidity, %	Lux Level	Noise Level, dB
1	Maximum	23.7	77	147	45
2	Minimum	23.1	75	103	41

7. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	E Waste	Recommended to Dispose of through Authorized Agency

8. . Rain Water Management:

The Institute has implemented Rain Water Management Project, wherein the Rain Water from terrace is collected and is used to increase the underground Water Table



9. Environment Friendly Initiatives:

- Tree Plantation in the campus.

10. Assumption:

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

11. References:

- For CO₂ Emissions: www.tatapower.com
- For Various Indoor Air Parameters: www.ishrae.com
- For AQI Standards: www.cpcb.com



ABBREVIATIONS

Kg	:	Kilo Gram
YES	:	Yashaswi Education Society
MSEDCL	:	Maharashtra State Distribution Company Limited
MT	:	Metric Ton
kWh	:	kilo-Watt Hour
LPD	:	Litres 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. 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

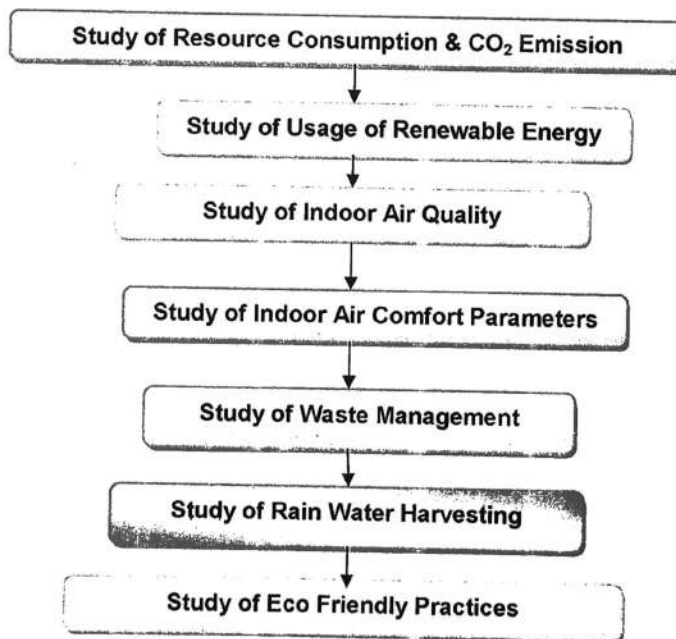
1.2. Environmental Audit: Definition:

An audit which aims at verification and validation to ensure that various environmental laws are complied with and adequate care has been taken towards environmental protection and preservation

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"

1.3. Environmental Pollutant: means any solid, liquid and gaseous substance present in the concentration as may be, or tend to be, injurious to Environment.

1.4 Audit Procedural Steps:



1.5 Institute Location Image:



Institute
Campus

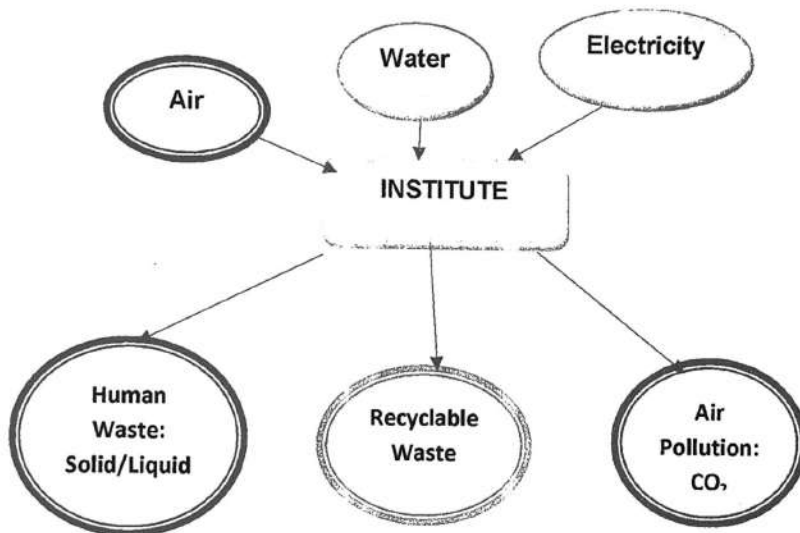


CHAPTER-II STUDY OF RESOURCE CONSUMPTION & CO₂ EMISSION

The Institute consumes following basic/derived Resources:

1. Air
2. Water
3. Electrical Energy

We try to draw a schematic diagram for the Institute System & Environment as under.
Chart No 1: Representation of Institute as System & Study of Resources & Waste



Now we compute the Generation of CO₂ on account of consumption of Electrical Energy. The basis of Calculation for CO₂ emissions due to Electrical Energy is as under.

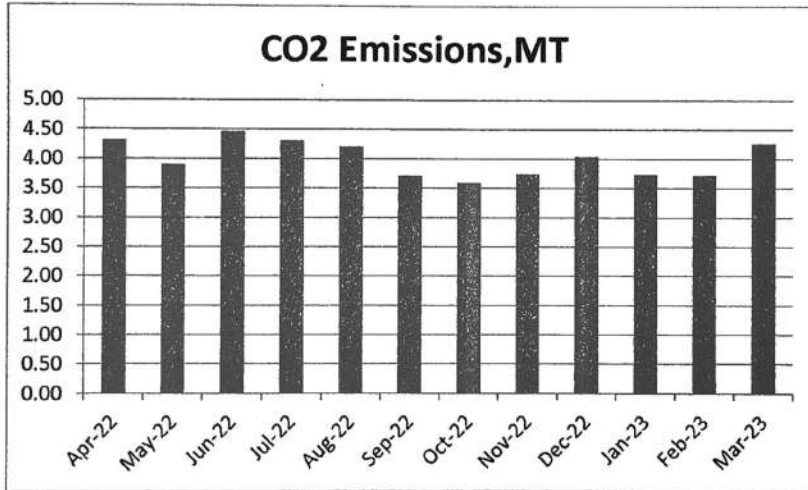
- 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere

Table No 1: Study of Purchase of Energy & CO₂ Emissions: 22-23:

No	Month	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Apr-22	4798	4.32
2	May-22	4336	3.90
3	Jun-22	4968	4.47
4	Jul-22	4785	4.31
5	Aug-22	4669	4.20

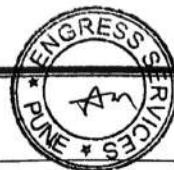
6	Sep-22	4125	3.71
7	Oct-22	3991	3.59
8	Nov-22	4161	3.74
9	Dec-22	4486	4.04
10	Jan-23	4149	3.73
11	Feb-23	4129	3.72
12	Mar-23	4749	4.27
13	Total	53346	48.01
14	Maximum	4968	4.47
15	Minimum	3991	3.59
16	Average	4445.5	4.00

Chart No 2: Month wise CO₂ Emissions:



CHAPTER-III
STUDY OF USAGE OF RENEWABLE ENERGY

The Institute has yet to install Roof top Solar PV Plant



CHAPTER IV STUDY OF INDOOR AIR QUALITY

4.1 Importance of Air Quality:

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

By volume, Dry Air contains 78.09% Nitrogen, 20.95% Oxygen, 0.93% Argon, 0.039% carbon dioxide, and small amounts of other gases.

On average, a person inhales about **14,000 liters** of air every day. Therefore, poor air quality may affect the quality of life now and for future generations by affecting the health, the environment, the economy and the city's livability.

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

4.2 Air Quality Index:

An **Air Quality Index (AQI)** is a number used by government agencies to measure the **air pollution** levels and communicate it to the population. As the AQI increases, it means that a large percentage of the population will experience severe adverse health effects.

We present herewith following important Parameters.

1. AQI- Air Quality Index
2. PM-2.5- Particulate Matter of Size 2.5 micron
3. PM-10- Particulate Matter of Size 10 micron

Table No 2: Indoor Air Quality Parameters:

No	Location	AQI	PM-2.5	PM-10
1	Office	61	37	44
2	Computer Lab	60	36	38
3	Classroom-201	60	36	38
4	Think Tank	63	37	45
5	Girls Common Room	60	34	39
6	Classroom-504	56	34	39
	Maximum	63	37	45
	Minimum	56	34	38

CHAPTER V

STUDY OF INDOOR COMFORT CONDITION PARAMETERS

In this Chapter, we present the various Indoor Comfort Parameters measured during the Audit. The Parameters include:

1. Temperature
2. Humidity
3. Lux Level
4. Noise Level.

Table No 3: Study of Indoor Comfort Condition Parameters:

No	Location	Temperature, 0C	Humidity, %	Lux Level	Noise Level, dB
1	Office	23.6	77	114	44.2
2	Computer Lab	23.1	75	123	45
3	Classroom-201	23.7	77	147	41
4	Think Tank	23.6	76	128	41.2
5	Girls Common Room	23.6	77	110	43.7
6	Summit	23.5	76	103	45
	Maximum	23.7	77	147	45
	Minimum	23.1	75	103	41

CHAPTER VI STUDY OF WASTE MANAGEMENT

6.1 Segregation of Waste at Source:

The recyclable waste, like paper, board and plastic waste is segregated at source. Waste Collection Bins are kept at various locations.

Photograph of Waste Collection Bin:



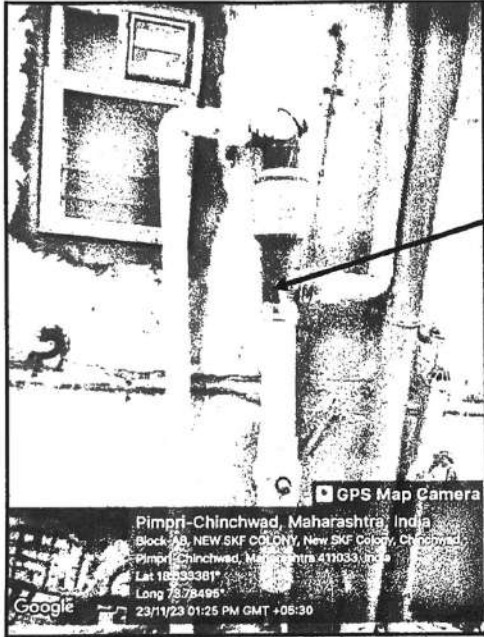
6.2 E-Waste Management:

It is recommended to dispose of the E-waste through Authorized Agency.

CHAPTER-VII STUDY OF RAIN WATER MANAGEMENT

The Institute has implemented the Rain Water Management Project. The Institute has installed Pipes from the terrace and the Rain water falling on the terrace is gathered, filtered and is used to increase the underground water table.

Photograph of Rain water Carrying Pipe and Filter Unit:



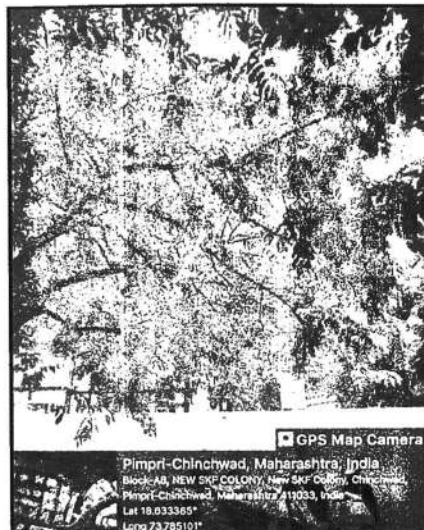
Rain Water
Carrying pipe
& Filter Unit

CHAPTER-VIII STUDY OF ECO FRIENDLY PRACTICES

8.1 Internal Tree Plantation:

The Institute has well maintained garden in the campus.

Photograph of Internal Garden/Tree Plantation:



**ANNEXURE-I:
VARIOUS AIR QUALITY, NOISE & COMFORT STANDARDS:**

1. Category Wise Air Quality Index Values & Concentration of PM 2.5 & PM10:

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 +

2. Recommended Noise Level Standards:

No	Location	Noise Level dB
1	Auditoriums	20-25
2	Outdoor Playground	55
3	Occupied Class Room	40-45
4	Un occupied Class Room	35
5	Apartment, Homes	35-40
6	Offices	45-50
7	Libraries	35-40
8	Restaurants	50-55

3. Thermal Comfort Conditions: For Non-conditioned Buildings:

No	Parameter	Value
1	Temperature	Less Than 33°C
2	Humidity	Less Than 70%

ENVIRONMENTAL AUDIT REPORT

Yashaswi Education Society's,
INTERNATIONAL INSTITUTE OF MANAGEMENT STUDIES,
Chinchwad, Pune 411 033



Year: 2023-24

Prepared by:

ENGRESS SERVICES

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



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

UDYAM REGISTRATION CERTIFICATE

UDYAM REGISTRATION NUMBER: UDYAM-MH-26-0115636

NAME OF ENTERPRISE: ENGRESS SERVICES

S.No.	Classification Year	Enterprise Type	Classification Date
1	2023-24	Micro	03.03.2024
2	2022-23	Micro	26.04.2023
3	2021-22	Micro	27.07.2021

MAJOR ACTIVITY: SERVICES

SOCIAL CATEGORY OF ENTREPRENEUR: GENERAL

NAME OF UNIT(S): Engress Services

OFFICIAL ADDRESS OF ENTERPRISE:

Flat/Door Block No.	26	Name of Premises/ Building	Yashwantrao
Village/Town	Pune	Block	1
Localities	Nagar, Nandgaon	City	Pune
State	MAHARASHTRA	Pincode	PUNE, Pin-411009
Mobile	974744244	Email	engress123@gmail.com

DATE OF INCORPORATION/REGISTRATION OF ENTERPRISE: 13/04/2021

DATE OF COMMENCEMENT OF PRODUCTION/BUSINESS: 13/04/2021

S.No.	SIC 2 Digit	SIC 4 Digit	SIC 5 Digit	Activity
1	78	7829	78200	Management consultancy activities

DATE OF UDYAM REGISTRATION: 27/07/2021



MAHARASHTRA ENERGY DEVELOPMENT AGENCY

Maharashtra Energy Development Agency
(Government of Maharashtra-1964-1965)
A-50/5, Opposite Spice Village Road, Near Government Institute of Animal Husbandry,
Aundh, Pune, Maharashtra 411007
Ph No: 020-3338833/4
E-mail: eneg@meda.gov.in; Web: www.meda.gov.in

13/04/2022

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 E I R E S S S E R V I C E S, Yashwantrao Nagar, Nandgaon, Near Mahatma Jyoti-B-School, Parkin Pune-411009

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

Registration Number: MEDA/EN/2022-23/Class A/24-32

- 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 intimation to verify quarterly activities performed by the firm and enclosing the registration, if the information is found incorrect.
- This registration is valid till 08th 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 therefor.

13/04/2022
Executive Manager (E.C.)



INDEX

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3	Study of Usage of Renewable Energy	11
4	Study of Indoor Air Quality	12
5	Study of Indoor Comfort Condition Parameters	13
6	Study of Rain Water Management	14
7	Study of Waste Management	15
8	Study of Eco-Friendly Practices	16

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Yashaswi Education Society's International Institute of Management Science, Chinchwad, Pune 411 033, for awarding us the assignment of Environmental Audit of their Chinchwad Campus, for the Year: 2023-24

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

EXECUTIVE SUMMARY

1. Yashaswi Education Society's International Institute of Management Science Chinchwad consumes Energy in the form of Electrical Energy; used for various gadgets, office & other facilities

2. Pollution due to Institute Activities:

- Air pollution: Mainly CO₂ on account of Electricity Consumption
- Solid Waste: Bio degradable Garden Waste, Paper & Plastic Waste
- Liquid Waste: Human liquid waste

3. Present Energy Consumption & CO₂ Emission:

No	Particulars	Value	Unit
1	Annual Energy Consumed	113048	kWh
2	Annual CO ₂ Emissions	105.13	MT

4. Usage of Renewable Energy:

- The Institute 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	80	48	60
2	Minimum	70	42	53

6. Indoor Lux & Noise Level Parameters:

No	Parameter/Value	Lux Level	Noise Level, dB
1	Maximum	241	47
2	Minimum	216	41.2

7. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	E Waste	Recommended to Dispose of through Authorized Agency
3	Organic Waste	Recommended to follow Bio Composting Route

8. Rain Water Management:

The Institute has implemented Rain Water Management Project, wherein the Rain Water from terrace is collected and is used to increase the underground Water Table.

9. Environment Friendly Initiatives:

- Tree Plantation in the campus.
- Creation of awareness on Energy Conservation Display of Posters

10. Assumption:

1. 1 kWh of Electrical Energy releases 0.93 Kg of CO₂ into atmosphere

11. References:

- For CO₂ 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
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
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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 Institute Location Image:



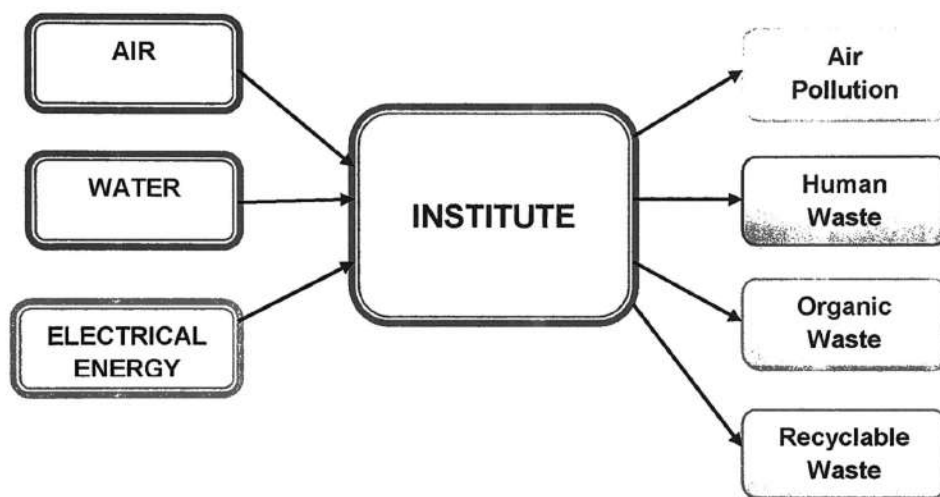
Institute
Campus

CHAPTER-II STUDY OF RESOURCE CONSUMPTION & CO₂ EMISSION

The Institute consumes following basic/derived Resources:

1. Air
2. Water
3. Electrical Energy

We try to draw a schematic diagram for the Institute System & Environment as under.
Chart No 1: Representation of Resource Requirement & Waste of a Institute:



Now we compute the Generation of CO₂ on account of consumption of Electrical Energy. The basis of Calculation for CO₂ emissions due to Electrical Energy is as under.

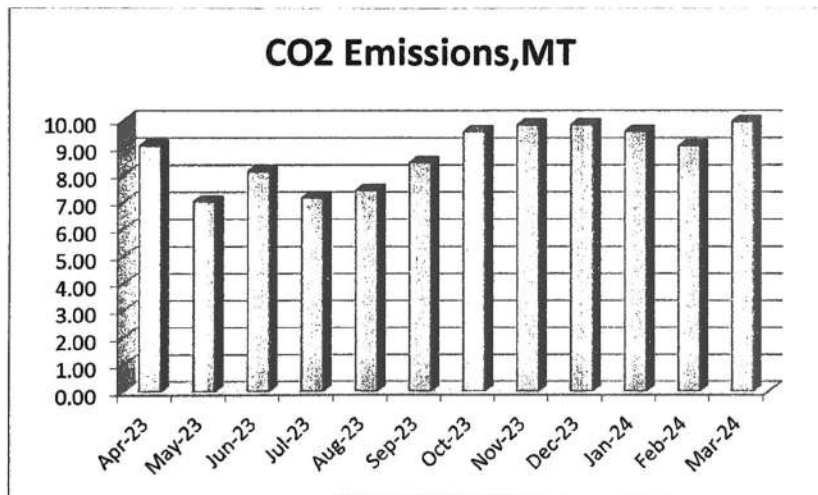
- 1 kWh of Electrical Energy releases 0.93 Kg of CO₂ into atmosphere

Table No 1: Study of Purchase of Energy & CO₂ Emissions: 2023-24:

No	Month	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Apr-23	9746	9.06
2	May-23	7542	7.01
3	Jun-23	8741	8.13
4	Jul-23	7694	7.16
5	Aug-23	7985	7.43
6	Sep-23	9087	8.45
7	Oct-23	10304	9.58

8	Nov-23	10575	9.83
9	Dec-23	10583	9.84
10	Jan-24	10325	9.60
11	Feb-24	9750	9.07
12	Mar-24	10716	9.97
13	Total	113048	105.13
14	Maximum	10716	9.97
15	Minimum	7542	7.01
16	Average	9420.67	8.76

Chart No 2: Month wise CO₂ Emissions:



CHAPTER III

STUDY OF USAGE OF RENEWABLE ENERGY

The Institute 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 3: Indoor Air Quality Parameters:

No	Location	AQI	PM2.5	PM10
1	Director Cabin	75	45	54
2	Exam Control Room	76	46	56
3	Senate	80	48	60
4	Computer lab	70	42	53
5	Classroom	71	43	53
	Maximum	80	48	60
	Minimum	70	42	53

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 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 Comfort Condition Parameters:

No	Location	Lux Level, Lumen	Noise Level, dB
1	Director Cabin	241	43.6
2	Exam Control Room	219	41.2
3	Senate	226	42
4	Computer lab	216	45.6
5	Classroom	232	47
	Maximum	241	47
	Minimum	216	41.2

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:

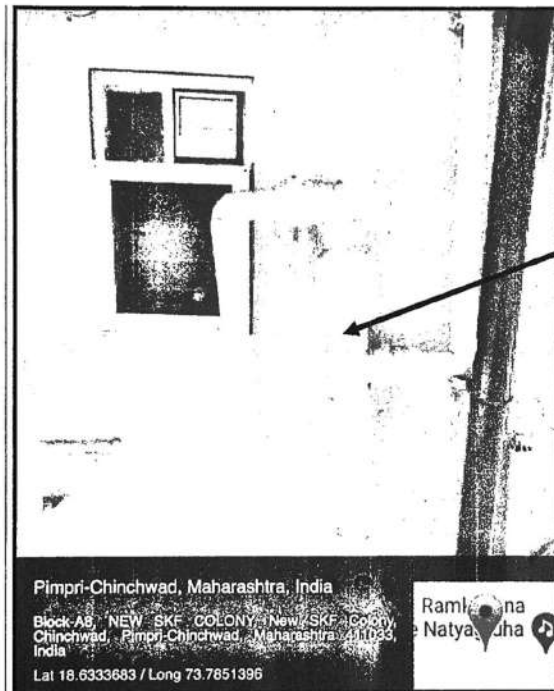
From the above measured values, we conclude that:

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

CHAPTER VI STUDY OF RAIN WATER MANAGEMENT

The Institute has implemented the Rain Water Management Project. The Institute has installed Pipes from the terrace and the Rain water falling on the terrace is gathered, filtered and is used to increase the underground water table.

Photograph of Rain water Carrying Pipe and Filter Unit:




Rain Water
Carrying pipe
& Filter Unit

CHAPTER-VII STUDY OF WASTE MANAGEMENT

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


Details of Waste Management Practices:

No	Head	Observation	Photograph
1	Solid Waste	Segregation of Waste at Source: Provision of Waste Collection Bins	<p style="text-align: center;">Photo of Waste Collection Bin:</p> 
2	E Waste	Recommended to dispose of through Authorized Agency	
3	Organic Waste	Recommended to follow Bio Composting Route	

CHAPTER-VIII STUDY OF ENVIRONMENT FRIENDLY PRACTICES

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

Details of Eco Friendly Practices:

No	Head	Observation	Photograph
1	Tree Plantation	Tree Plantation in the Campus	<p style="text-align: center;">Photograph Internal Tree Plantation:</p> 
2	Creation of Awareness among Stake Holders	Display of Poster on Energy Conservation	<p style="text-align: center;">Poster on Energy Conservation:</p> 