

# ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School,  
Parvati, Pune 411 009 Tel: 09890444795 Email: [engress123@gmail.com](mailto:engress123@gmail.com)  
UDYAM, MEDA Registered, ISO-9001 & 14001 Certified



## GREEN AUDIT CERTIFICATE

Certificate No: ES/NKC/24-25/02

Date: 24/04/2025

This is to certify that we have conducted Green Audit at **Malad Kandivli Education Society's Nagindas Khandwala College of Commerce, Arts & Management Studies and Shantaben Nagindas Khandwala College of Science**, Bhavishya Bharat Campus, S. V. Road, Malad (W), Mumbai 400 064 in the year 2024-25.

The College has adopted following Green & Sustainable Practices:

- Usage of Energy Efficient Equipment
- Installation of Roof Top Solar PV Plant of Capacity 1 kWp
- Segregation of Waste at source
- Bio Tumbler Unit for conversion of Organic Waste
- Installation of Grey Water Treatment Plant for treatment of Waste Water
- Implementation of Rain Water Management Project
- Internal Tree Plantation & Tree Plantation Drive outside Campus
- Conductance of National Level Conference on Environment & Humna Health
- Creation of awareness on Minimum Usage of Plastic
- Conductance of Beach Cleanliness Drive, Dry Leaves & E Waste Collection Drive
- Provision of Ramp and Lift for Divyangajan

We appreciate the support of Management, involvement of faculty members and students in the process of 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

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Parvati, Pune 411 009 Tel: 09890444795 Email: [engress123@gmail.com](mailto:engress123@gmail.com)  
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## ENERGY AUDIT CERTIFICATE

Certificate No: ES/NKC/24-25/01

Date: 24/04/2025

This is to certify that we have conducted Energy Audit at **Malad Kandivli Education Society's Nagindas Khandwala College of Commerce, Arts & Management Studies and Shantaben Nagindas Khandwala College of Science**, Bhavishya Bharat Campus, S. V. Road, Malad (W), Mumbai 400 064 in the year 2024-25.

The College has adopted following Energy Efficient Practices:

- Usage of Energy Efficient LED Lighting
- Usage of BEE STAR Rated Energy Efficient Equipment
- Installation of Roof Top Solar PV Plant of Capacity 1 kWp
- Sensor Based Operation of Lighting in Wash Rooms

We appreciate the support of Management, involvement of faculty members and students in the process of 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

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UDYAM, MEDA Registered, ISO-9001 & 14001 Certified



## ENVIRONMENTAL AUDIT CERTIFICATE

Certificate No: ES/NKC24-25/03

Date: 24/04/2025

This is to certify that we have conducted Environmental Audit at **Malad Kandivli Education Society's Nagindas Khandwala College of Commerce, Arts & Management Studies and Shantaben Nagindas Khandwala College of Science**, Bhavishya Bharat Campus, S. V. Road, Malad (W), Mumbai 400 064 in the year 2024-25.

The College has adopted following Environment Friendly Practices:

- Usage of Energy Efficient Equipment
- Installation of Roof Top Solar PV Plant of Capacity 1 kWp
- Segregation of Waste at source
- Bio Tumbler Unit for conversion of Organic Waste
- Installation of Grey Water Treatment Plant for treatment of Waste Water
- Implementation of Rain Water Management Project
- Internal Tree Plantation & Tree Plantation Drive outside Campus
- Conductance of National Level Conference on Environment & Humna Health
- Creation of awareness on Minimum Usage of Plastic
- Conductance of Beach Cleanliness Drive, Dry Leaves & E Waste Collection Drive

We appreciate the support of Management, involvement of faculty members and students in the process of making the Campus Eco-Friendly.

For Engress Services,

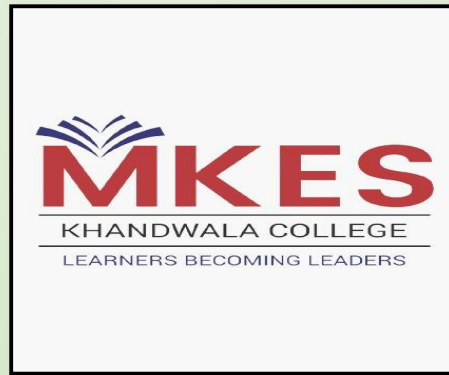
**A Y Mehendale,**

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



# GREEN AUDIT REPORT

Malad Kandivli Education Society's,  
**NAGINDAS KHANDWALA COLLEGE OF COMMERCE, ARTS & MANAGEMENT STUDIES  
AND SHANTABEN NAGINDAS KHANDWALA COLLEGE OF SCIENCE,**  
Bhavishya Bharat Campus, S V Road, Malad (West), Mumbai 400 064



**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](mailto:engress123@gmail.com)



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

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

**UDYAM REGISTRATION CERTIFICATE**

UDYAM REGISTRATION NUMBER: UDYAM-MH-26-0135636

NAME OF ENTERPRISE: ENGRESS SERVICES

S.No.	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

TYPE OF ENTERPRISE: SERVICES

MAJOR ACTIVITY: SERVICES

SOCIAL CATEGORY OF ENTREPRENEUR: GENERAL

NAME OF UNIT(S):

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

OFFICIAL ADDRESS OF ENTERPRISE:

Flat/Door/Block No.	Name of Premises/Building	Village/Town	Block
26	Yashashree	Pune	1

Road/Street/Lane: Lokmanya Nagar/Nirmal Bag Soc  
City: Pune  
State: MAHARASHTRA District: PUNE, Pin 411009  
Mobile: 8767447244 Email: engress12@gmail.com

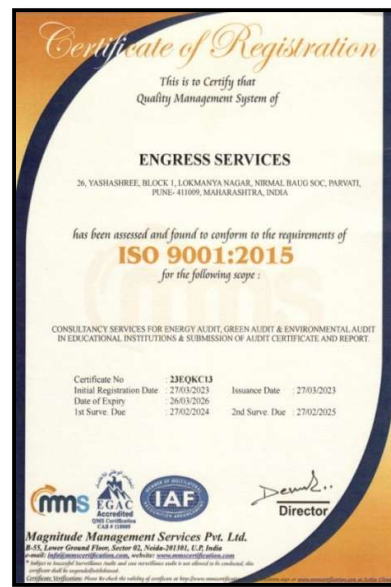
DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE: 13/04/2021

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

S.No.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
1	79 - Activities of head offices; management consultancy activities	7920 - Management consultancy activities	79200 - Management consultancy activities	Services

NATIONAL INDUSTRY CLASSIFICATION CODE(S):

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@mahauria.com, Web: www.mahauria.com

ECN/2024-25/CR-02/389 8<sup>th</sup> 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.

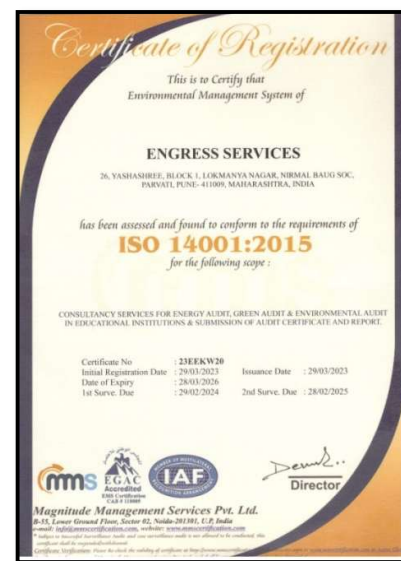
Name and Address of the firm : M/s Engress Services  
Yashshree, 26, Nirmal Bag Society,  
Near Muktangan English School,  
Parvati, Pune - 411 009.

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 **7<sup>th</sup> 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 (FC)



## INDEX

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## **ACKNOWLEDGEMENT**

We Engress Services, Pune, express our sincere gratitude to the management of Malad Kandivli Education Society's Nagindas Khandwala College of Commerce, Arts & Management Studies and Shantaben Nagindas Khandwala College of Science, Bhavishya Bharat Campus, S. V. Road, Malad (W), Mumbai for awarding us the assignment of Green 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. A **Green Audit** is conducted at Nagindas Khandwala College of Commerce, Arts & Management Studies and Shantaben Nagindas Khandwala College of Science, Bhavishya Bharat Campus, S. V. Road, Malad (W), Mumbai.

### 2. Present Energy Consumption & CO<sub>2</sub> Emission:

No	Particulars	Value	Unit
1	Total Energy Purchased	<b>145144</b>	kWh
2	Annual CO <sub>2</sub> Emissions	<b>134.98</b>	tCO <sub>2</sub> e

### 3. Usage of Renewable Energy & Reduction in CO<sub>2</sub> Emissions:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant	<b>1</b>	kWp
2	Total Energy Generated by kWp Plant in 24-25	<b>1200</b>	kWh
3	Annual Reduction in CO <sub>2</sub> Emissions in 24-25	<b>1.12</b>	tCO <sub>2</sub> e

### 4. Study of Green Cover:

No	Particulars	Value	Unit
1	Total Green Cover Area	<b>1250</b>	m <sup>2</sup>
2	Total Plot Area	<b>9011</b>	m <sup>2</sup>
3	% of Green Cover to Total Plot Area	<b>14</b>	%

### 5. Study of Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Organic Waste	Installation of Bio Tumbler Unit
3	Waste Water	Installation of Effluent Treatment Plant
4	E Waste	Provision of Dedicated E Waste Collection Bin

### 6. Study of Water Management:

**6.1 Water Source:** The Main sources of Water are: Municipal Supply and Bore Well

#### 6.2 Rain Water Management:

- The College has installed the Rain water Management Project. The Rain Water falling on the terrace is stored in an underground Storage Tank and further used for domestic purpose.
- The Rain Water is also used for recharging the underground Water Table

## 7. Sustainable Living Practices:

No	Head	Particulars
1	<b>Initiatives on National Mission for Green India</b>	1. Internal Tree Plantation 2. Conductance of Tree Plantation Drive outside the College Campus
2	<b>Initiatives on Environment Conservation/Awareness</b>	1. Conductance of National Level Conference on Environment & Humna Health 2. Creation of Awareness on Ban on Plastic by Display of Posters
3	<b>Initiatives on Swatchh Bharat Abhiyan</b>	1. Conductance of Beach Cleanliness Drive 2. Conductance of Dry Leaves Collection Program 3. Conductance of E Waste Collection Drive
4	<b>Facilities for Divyangajan</b>	1. Provision of Ramp 2. Provision of Lift

## 8. Assumptions:

1. Emission Fator of Electrical Energy: **0.93 Kg of CO<sub>2</sub>/ kWh**
2. Average Solar PV Energy Generation: **4 kWh/Day**
3. Annual Solar Energy Generation Days: **300 Nos**
4. CO<sub>2</sub> Emissions are computed For **Scope- 2**
5. CO<sub>2</sub> Emissions are computed based on Electrical Energy purchased
6. The Green Cover is calculated from Google Earth Image & the value is indicative

## 9. References:

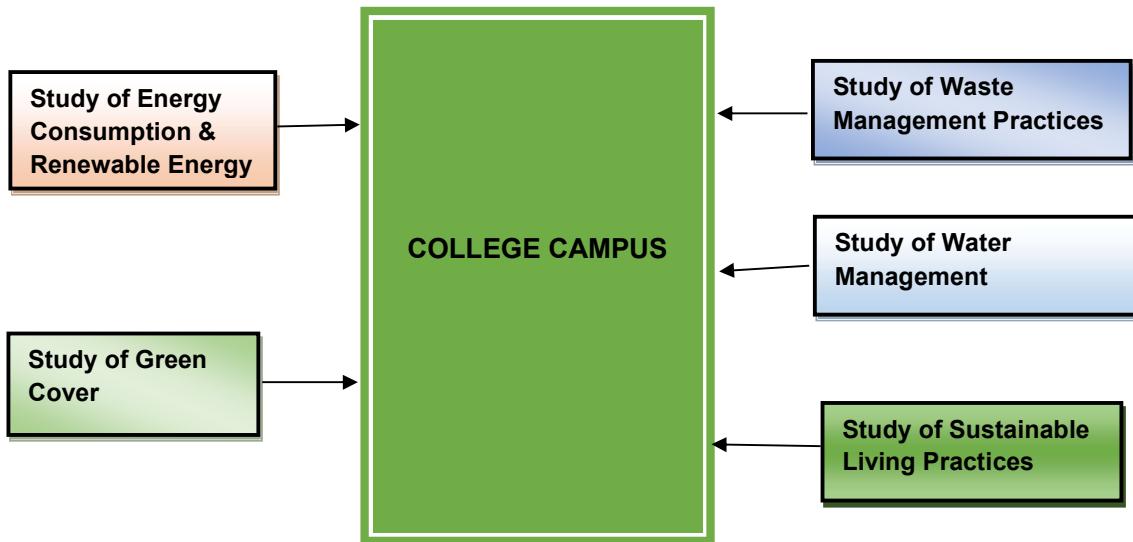
- For CO<sub>2</sub> Emissions: [www.ccd.gujarat.gov.in](http://www.ccd.gujarat.gov.in)
- For Solar PV Energy Generation: [www.rooftopsolar.gov.in](http://www.rooftopsolar.gov.in)

## CHAPTER-I INTRODUCTION

### 1.1 Introduction:

A Green Audit is conducted at Malad Kandivli Education Society's Nagindas Khandwala College of Commerce, Arts & Management Studies and Shantaben Nagindas Khandwala College of Science, Bhavishya Bharat Campus, S. V. Road, Malad (W), Mumbai.

### 2 Key Study Points:



### 1.3 College Location:



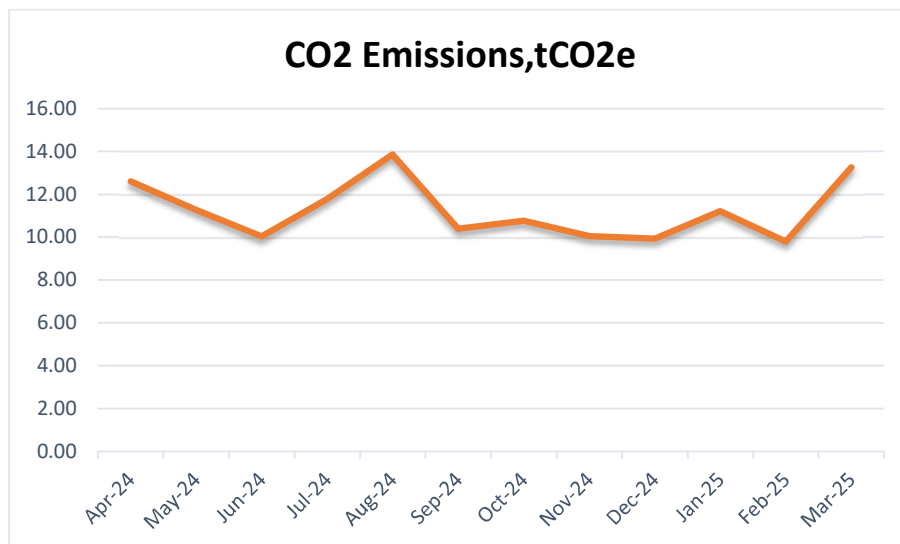
## CHAPTER-II STUDY OF ENERGY CONSUMPTION & RENEWABLE ENERGY

In this Chapter, we present the Energy Consumption, CO<sub>2</sub> Emission and Usage of Renewable Energy. A **Carbon Foot print** is defined as the Total Greenhouse Gas emissions, emitted due to various activities. The CO<sub>2</sub> Emission is computed for **Scope-2. Emission Factor:** Emission Fator of Electricity: **0.93 Kg of CO<sub>2</sub> / kWh**

**Table No 1: Month wise CO<sub>2</sub> Emissions: For Scope-2:**

No	Month	Energy Purchased, kWh	CO <sub>2</sub> Emissions, tCO <sub>2</sub> e
1	Apr-24	13545	12.60
2	May-24	12122	11.27
3	Jun-24	10782	10.03
4	Jul-24	12671	11.78
5	Aug-24	14902	13.86
6	Sep-24	11176	10.39
7	Oct-24	11589	10.78
8	Nov-24	10819	10.06
9	Dec-24	10672	9.92
10	Jan-25	12072	11.23
11	Feb-25	10540	9.80
12	Mar-25	14254	13.26
13	Total	145144	134.98

**Chart No 1: Month wise CO<sub>2</sub> Emissions:**



## 2.2 Study of Usage of Renewable Energy & Reduction in CO<sub>2</sub> Emission:

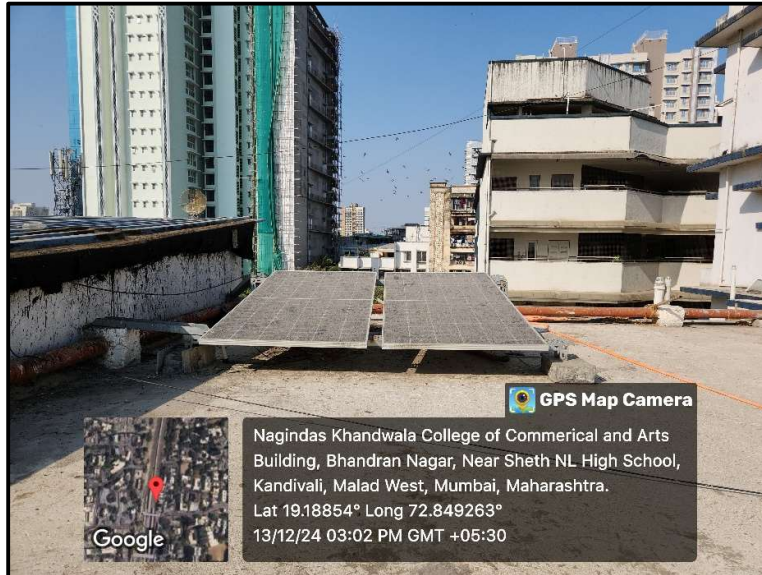
The College has installed Roof Top Solar PV Plant of Capacity **1 kWp**

In the following Table, we present the reduction in CO<sub>2</sub> emissions due to Solar Energy:

**Table No 2: Computation of Reduction in CO<sub>2</sub> Emissions:**

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	1	kWp
2	Energy Generated in the Year: 24-25	1200	kWh
3	1 kWh of Electrical Energy saves	0.93	Kg/kWh
4	<b>Qty of CO<sub>2</sub> Saved by Solar PV Plant = (2) *(3) /1000</b>	<b>1.12</b>	<b>MT of CO<sub>2</sub></b>

### Photograph of Roof Top Solar PV Plant:

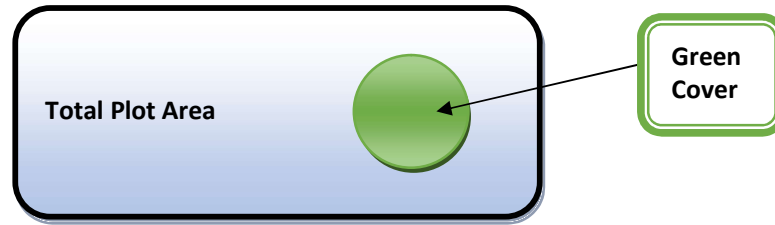


## CHAPTER III STUDY OF GREEN COVER

In this Chapter, we present the **Green Cover** of the Total Campus.

**Green Cover** of an Institution is the Ratio of Area covered by Trees to Total Plot Area. To compute the Green Cover, we use the Google Earth Image of the Campus. The Area calculated is approximate.

### Schematic of Green Cover:






**Table No 2: Computation of Green Cover:**

No	Particulars	Value	Unit
1	Total Green Cover Area	1250	m <sup>2</sup>
2	Total Plot Area	9011	m <sup>2</sup>
3	% of Green Cover to Total Plot Area	14	%

## 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	<b>Solid Waste</b>	Segregation of Waste at Source: Provision of Waste Collection Bins	<p><b>Waste Collection Bin:</b></p>  <p>Mumbai, Maharashtra, India A-5/1, Bhandran Nagar, Swami Vivekananda Rd, Malad, Dardwala Compound, Malad West, Mumbai, Maharashtra 400054, India Lat 19.1924852 / Long 72.848049 / Thursday 24 April 2025 11:23:38</p>
2	<b>Organic Waste</b>	Provision of Bio Tumbler Units or conversion of Organic Waste, into Bio Compost	<p><b>Bio Composting Tumbler Unit:</b></p>  <p>Nagindas Khandwala College of Commerical and Arts Building, Bhandran Nagar, Near Sheth NL High School, Kandivali, Malad West, Mumbai, Maharashtra. Lat 19.18854° Long 72.849263° 13/12/24 03:09 PM GMT +05:30</p>
3	<b>Waste Water</b>	Provision of Effluent Treatment Plant	<p><b>Grey Water Treatment Plant:</b></p>  <p>Nagindas Khandwala College of Commerical and Arts Building, Bhandran Nagar, Near Sheth NL High School, Kandivali, Malad West, Mumbai, Maharashtra. Lat 19.18854° Long 72.849263° 16/12/24 02:14 PM GMT +05:30</p>

<p>4</p>	<p><b>E Waste</b></p>	<p>Provision of Dedicated E Waste Collection Bin &amp; Disposal through Authorized Agency</p>	<p><b>Dedicated E Waste Collection Bin</b></p> 
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## CHAPTER-V STUDY OF WATER MANAGEMENT

### 1. Water Resource Details:

There are two Resources of Water, namely:

- Municipal Water
- Bore well

### 2. Water Storage Details:

There are 2 underground & 2 Overhead Water Tanks, for Domestic & Flushing purpose respectively.

### 3. Rain Water Management:

The College has installed the Rain water Management Project. The Rain Water falling on the terrace is stored in an underground Storage Tank and further used for domestic purpose.

### Photograph of Bore Well recharge Point:



Bore Well  
Recharge Point



## CHAPTER-VI INITIATIVES ON NATIONAL MISSION FOR GREEN INDIA

### Initiatives on National Mission for Green India:

No	Head	Action Taken	Photograph
1	Initiatives on National Mission for Green India	1. Internal tree Plantation in the College Campus	<p style="text-align: center;"><b>Internal Tree Plantation:</b></p>  <p>Mumbai, Maharashtra, India A-5/1, Bhadran Nagar, Swami Vivekananda Rd, Malad Daruwalla Compound, Malad West, Mumbai, Maharashtra 400064, India Lat 19.1924697 / Long 72.848082 Thursday 24 April 2025 11:23:17</p>
		2. Tree Plantation Drive outside the College Campus	<p style="text-align: center;"><b>Tree Plantation Drive:</b></p>  <p>Mumbai, Maharashtra, India B Wing, SHREE NAMAN TOWERS, 303, Kandivali, Bhadran Nagar, Kandivali West, Mumbai, Maharashtra 400067, India Lat 19.197835° Long 72.850023° 06/09/24 11:14 AM GMT +05:30</p>




## CHAPTER-VII INITIATIVES ON ENVIRONMENT CONSERVATION

### Initiatives on Environment Conservation/Awareness:

No	Head	Action Taken	Photograph
1	Initiatives on Environment Conservation & Awareness	1. Conductance of National Conference on Environment & Human Health	<p><b>National Conference on Environment &amp; Human Health:</b></p>  <p>Mumbai, Maharashtra, India Chunnial Girdharlal Marg, Malad West, Mumbai, Maharashtra 400064, India Lat 19.192494, Long 72.839168 02/28/2025 10:48 GMT-05:30 Note : Captured by GPS Map Camera</p>
		2. Creation of Awareness on Minimum Usage of Plastic	<p><b>Poster Minimum on Usage of Plastic</b></p>  <p>Nagindas Khandwala College of Commerical and Arts Building, Bhandran Nagar, Near Sheth NL High School, Kandivali, Malad West, Mumbai, Maharashtra. Lat 19.18854° Long 72.849263° 19/12/24 01:57 PM GMT +05:30</p>



## CHAPTER-VIII INITIATIVES ON SWACHH BHARAT MISSION

### Initiatives on Swachh Bharat Mission:

No	Head	Action Taken	Photograph
1	Initiatives on Swachh Bharat Mission	Conductance of Beach Cleanliness Drive, Dry Leaves Collection Drive & E Waste Collection Drive	<p><b>Program on Beach Cleanliness Drive:</b></p>  <p><b>Dry Leaves Collection Drive:</b></p>  <p><b>E Waste Collection Drive</b></p> 

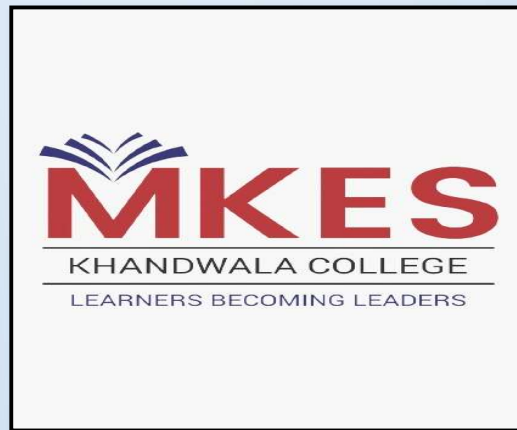
## CHAPTER-IX STUDY OF FACILITIES FOR DIVYANGAJAN

### Facilities for Divyangajan:

No	Head	Action Taken	Photograph
1	Facilities for Divyangajan	1 Provision of Ramp	<p style="text-align: center;"><b>Ramp:</b></p>  <p>Mumbai, Maharashtra, India Room no.13, B/8, Bhadran Nagar Rd, near Ram Mandir, Malad, Daruwala Compound, Malad West, Mumbai, Maharashtra 400064, India Lat 19.1925033 / Long 72.8477178 Thursday 24 April 2025 11:21:57</p> 
		2 Provision of Dedicated Washroom	
		3 Provision of Lift	

# ENERGY AUDIT REPORT

Malad Kandivli Education Society's,  
**NAGINDAS KHANDWALA COLLEGE OF COMMERCE, ARTS & MANAGEMENT STUDIES  
AND SHANTABEN NAGINDAS KHANDWALA COLLEGE OF SCIENCE,**  
Bhavishya Bharat Campus, S V Road, Malad (West), Mumbai 400 064



Year: 2024-25

Prepared by:

## ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society  
Near Mukhtangan English School, Parvati, Pune 411009  
Phone: 09890444795 Email: [engress123@gmail.com](mailto:engress123@gmail.com)



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

**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  
PIN No: 420-33009450  
Email: eeaa@mahauria.com, Web: www.mahauria.com

ECN/2024-25/CR-02/385 8<sup>th</sup> 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 Mukangan 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 7<sup>th</sup> 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 (E.C.)

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 : 10<sup>th</sup> August 2007

*Chaitanya*  
Controller of Examination

भारत सरकार  
Government of India  
मूक, 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**

S.No.	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

**OFFICIAL ADDRESS OF ENTERPRISE**

Flat/Door/Block No.	26	Name of Premises/ Building	Yashshree
Village/Town	Pune	Block	1
Road/Street/Lane	Lokmanya Nagar/Nirmal Bag 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)**

S.No.	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

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

Director

**Magnitude Management Services Pvt. Ltd.**  
B-55, Lower Ground Floor, Sector 82, Noida-201301, U.P, India  
www.magnitudecertification.com, website: www.magnitudecertification.com  
\* Subject to successful surveillance audits and surveillance audits to be allowed to be conducted, this certificate shall be suspended/terminated.  
Certificate Validity: Please be alert the validity of certificate on the Bureau website.

*Certificate of Registration*

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Quality Management System of

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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 : 23EQK13  
Initial Registration Date : 27/03/2023  
Date of Expiry : 26/03/2026  
1st Surve. Due : 27/02/2024  
2nd Surve. Due : 27/02/2025

Director

**Magnitude Management Services Pvt. Ltd.**  
B-55, Lower Ground Floor, Sector 82, Noida-201301, U.P, India  
www.magnitudecertification.com, website: www.magnitudecertification.com  
\* Subject to successful surveillance audits and surveillance audits to be allowed to be conducted, this certificate shall be suspended/terminated.  
Certificate Validity: Please be alert the validity of certificate on the Bureau website.

## INDEX

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## **ACKNOWLEDGEMENT**

We Engress Services, Pune, express our sincere gratitude to the management of Malad Kandivli Education Society's Nagindas Khandwala College of Commerce, Arts & Management Studies and Shantaben Nagindas Khandwala College of Science, Bhavishya Bharat Campus, S. V. Road, Malad (W), Mumbai for awarding us the assignment of Energy 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 Energy Audit was conducted at Nagindas Khandwala College of Commerce, Arts & Management Studies and Shantaben Nagindas Khandwala College of Science, Bhavishya Bharat Campus, S. V. Road, Malad (W), Mumbai

### 2. Connected Load & Present Energy Consumption:

No	Particulars	Value	Unit
1	Total Connected Load	303	kW
2	Annual Energy Purchased	145144	kWh

### 3. Per Capita Energy Consumption:

No	Particulars	Value	Unit
1	Total Annual Energy Purchased	145144	kWh
2	Annual Energy Generated	1200	kWh
3	Annual Energy Consumed=1+2	146344	kWh
4	No of students studying in the College	6835	Nos
5	Per Capita Energy Consumption = (1) / (2)	21.41	kWh/Annum

### 4. % Usage of LED Lighting:

No	Particulars	Value	Unit
1	Lighting Power Density	1.92	W/m <sup>2</sup>
2	% of Usage of LED Lighting to Total Lighting Load	100	%

### 5. Renewable Energy & Energy Efficiency Projects:

- Usage of Energy Efficient LED fittings & BEE STAR Rated Equipment
- Sensor based operation of lights in Washrooms
- Installation of Roof Top Solar PV Plant of Capacity **1 kWp**

### 6. Assumptions:

1. Emission Fator of Electrical Energy: **0.93 Kg of CO<sub>2</sub> / kWh**
2. Average Solar PV Energy Generation: **4 kWh/Day**
3. Annual Solar Energy Generation Days: **300 Nos**
4. CO<sub>2</sub> Emissions are computed For **Scope-2**

### 7. References:

- Audit Methodology: [www.mahaurja.com](http://www.mahaurja.com)
- Energy Conservation Building Code: ECBC-2017: [www.beeindia.gov.in](http://www.beeindia.gov.in)
- For CO<sub>2</sub> Emission Factors: [www.ccd.gujarat.gov.in](http://www.ccd.gujarat.gov.in)
- For Solar PV Energy Generation: [www.rooftopsolar.gov.in](http://www.rooftopsolar.gov.in)

## **ABBREVIATIONS**

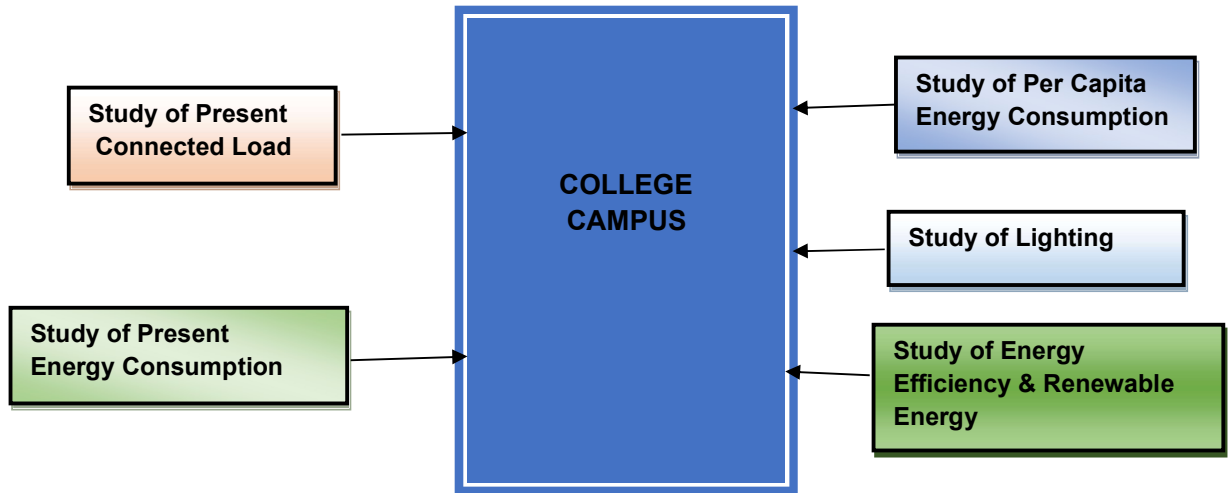
LED	:	Light Emitting Diode
MSEDCL	:	Maharashtra State Electricity Distribution Company Limited
IQAC	:	Internal Quality Assurance Cell
BEE	:	Bureau of Energy Efficiency
FTL	:	Fluorescent Tube Light
CFL	:	Compact Fluorescent Light
PV	:	Photo Voltaic
Kg	:	Kilo Gram
kWh	:	kilo-Watt Hour
CO <sub>2</sub>	:	Carbon Di Oxide
MT	:	Metric Ton

## CHAPTER-I INTRODUCTION

### 1.1 Introduction:

An Energy Audit is conducted at Malad Kandivli Education Society's Nagindas Khandwala College of Commerce, Arts & Management Studies and Shantaben Nagindas Khandwala College of Science, Bhavishya Bharat Campus, S. V. Road, Malad (W), Mumbai.

### 1.2 Key Study Points:



### 1.3 College Location:



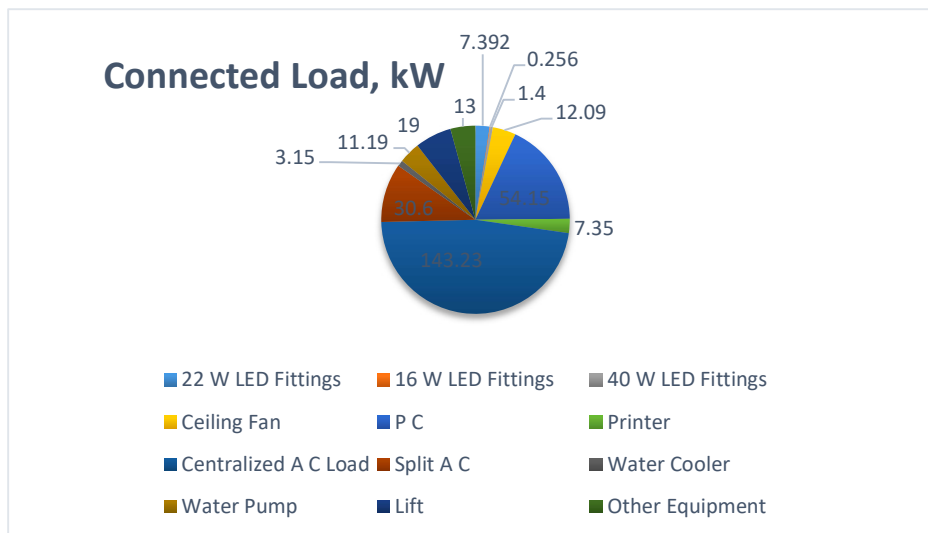
## CHAPTER-II STUDY OF CONNECTED LOAD

In this Chapter we present the major contributors to the connected load.

**Table No 1: Study of Equipment wise Connected Load:**

No	Equipment	Qty	Load, W/unit	Load, kW
1	22 W LED Fittings	336	22	7.392
2	16 W LED Fittings	16	16	0.256
3	40 W LED Fittings	35	40	1.4
4	Ceiling Fan	186	65	12.09
5	P C	361	150	54.15
6	Printer	42	175	7.35
7	Centralized A C Load	1	143232	143.23
8	Split A C	17	1800	30.6
8	Water Cooler	9	350	3.15
9	Water Pump	2	5595	11.19
10	Lift	2	9500	19
11	Other Equipment	52	250	13
<b>12</b>	<b>Total</b>			<b>303</b>

**Chart No 1: Study of Connected Load:**



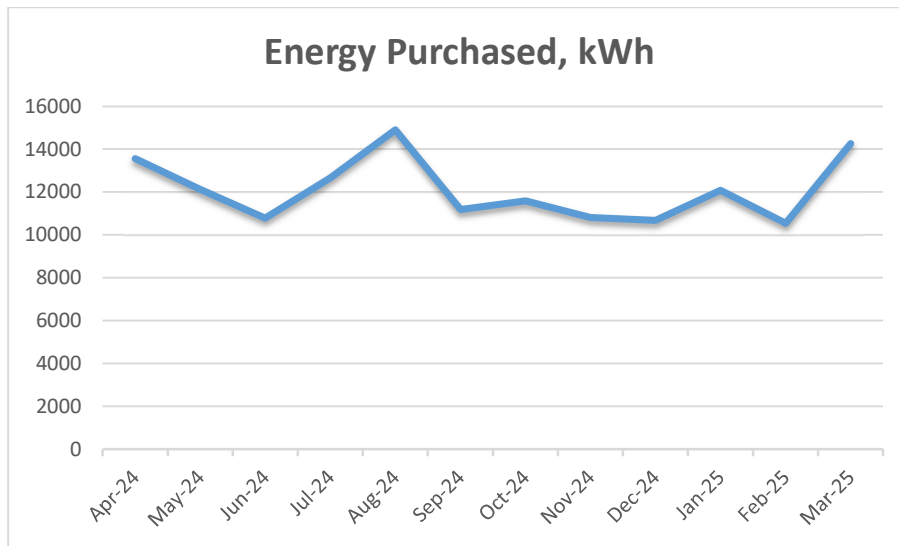
### CHAPTER-III STUDY OF PRESENT ENERGY CONSUMPTION

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

**Table No 2: Study of Energy Consumption: 2024-25:**

No	Month	Energy Purchased, kWh	CO2 Emissions, tCO2e
1	Apr-24	13545	12.60
2	May-24	12122	11.27
3	Jun-24	10782	10.03
4	Jul-24	12671	11.78
5	Aug-24	14902	13.86
6	Sep-24	11176	10.39
7	Oct-24	11589	10.78
8	Nov-24	10819	10.06
9	Dec-24	10672	9.92
10	Jan-25	12072	11.23
11	Feb-25	10540	9.80
12	Mar-25	14254	13.26
<b>13</b>	<b>Total</b>	<b>145144</b>	<b>134.98</b>

**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:

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

**Table No 3: Computation of Per Capita Energy Consumption Index:**

<b>No</b>	<b>Particulars</b>	<b>Value</b>	<b>Unit</b>
1	Total Annual Energy Purchased	<b>145144</b>	kWh
2	Annual Energy Generated	<b>1200</b>	kWh
3	Annual Energy Consumed=1+2	<b>146344</b>	kWh
4	No of students studying in the College	<b>6835</b>	Nos
5	Per Capita Energy Consumption = (1) / (2)	<b>21.41</b>	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/m<sup>2</sup>)

**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 Lighting Power density and the percentage usage of LED Lighting to total Lighting Load of the College.

**Table No 4: Computation of Lighting Power Density:**

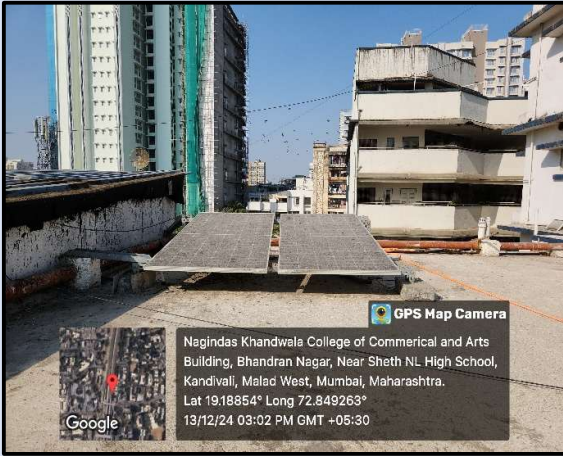

No	Particulars	Value	Unit
1	No of 22 W LED Tube Lights in Class Room	08	Nos
2	Demand of 22 W LED Tube Lights	22	W/Unit
3	Lighting Load in the Class Room= (1) * (2)	176	W
4	Area of Class Room	91.55	m <sup>2</sup>
5	Lighting Power Density = (3)/ (4)	1.92	W/m <sup>2</sup>

**Table No 5: Computation of % Usage of LEDs to Total Lighting Load:**

No	Particulars	Value	Unit
1	Total LED Lighting Load	9.048	kW
2	Other Lighting Load	0	kW
3	Total Lighting Load =1+2	9.048	kW
4	% of LED to Total Lighting Load=1*100/3	100	%

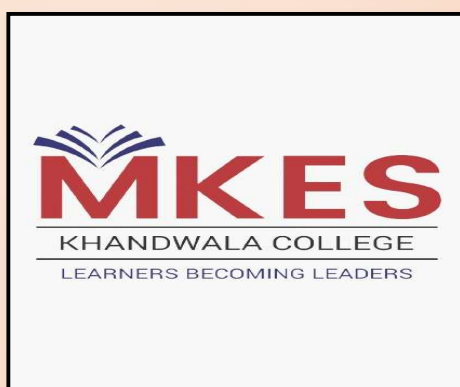
## CHAPTER-VI STUDY OF RENEWABLE ENERGY & ENERGY EFFICIENCY

### Usage of Renewable Energy & Energy Conservation Projects:

No	Head	Observation	Photograph
1	Usage of Renewable Energy	Installation of 1 kWp Roof Top Solar PV Plant	<p style="text-align: center;"><b>Solar PV Plant</b></p> 
2	Energy Conservation Projects	2.1 Usage of LED Lights,	<p style="text-align: center;"><b>LED Light</b></p> 
		2.2 Usage of Sensor based Lighting in Wash Rooms	

# ENVIRONMENTAL AUDIT REPORT

Malad Kandivli Education Society's,  
**NAGINDAS KHANDWALA COLLEGE OF COMMERCE, ARTS & MANAGEMENT STUDIES  
AND SHANTABEN NAGINDAS KHANDWALA COLLEGE OF SCIENCE,**  
Bhavishya Bharat Campus, S V Road, Malad (West), Mumbai 400 064

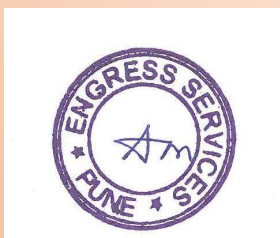


**Year: 2024-25**

Prepared by:

## **ENGRESS SERVICES**

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



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

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

**UDYAM REGISTRATION CERTIFICATE**

UDYAM REGISTRATION NUMBER: UDYAM-MH-26-0135636

NAME OF ENTERPRISE: ENGRESS SERVICES

S.No.	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

TYPE OF ENTERPRISE: SERVICES

MAJOR ACTIVITY: SERVICES

SOCIAL CATEGORY OF ENTREPRENEUR: GENERAL

NAME OF UNIT(S):

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

OFFICIAL ADDRESS OF ENTERPRISE:

Flat/Door/Block No.	Name of Premises/Building	Village/Town	Block
26	Yashashree	Pune	1

Road/Street/Lane: Lokmanya Nagar/Nirmal Bag Soc  
City: Pune  
State: MAHARASHTRA District: PUNE, Pin 411009  
Mobile: 8767447244 Email: engress123@gmail.com

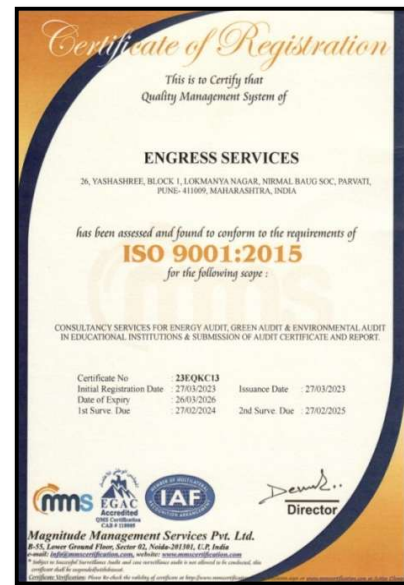
DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE: 13/04/2021

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

S.No.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
1	79 - Activities of head offices; management consultancy activities	7920 - Management consultancy activities	79200 - Management consultancy activities	Services

NATIONAL INDUSTRY CLASSIFICATION CODE(S):

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@mahauria.com, Web: www.mahauria.com

ECN/2024-25/CR-02/388 8<sup>th</sup> 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.

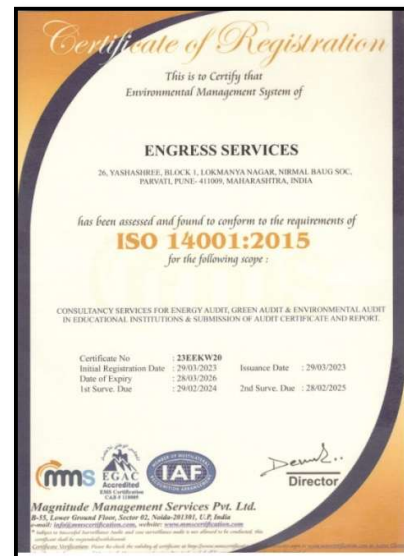
Name and Address of the firm : M/s Engress Services  
Yashashree, 26, Nirmal Bag Society,  
Near Muktiangan English School,  
Parvati, Pune - 411 009.

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 7<sup>th</sup> 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 (I.C)



## INDEX

Sr. No	Particulars	Page No
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3	Study of Usage of Renewable Energy	11
4	Study of Indoor Air Quality Index	12
5	Study of Indoor Carbon-Di-Oxide Level	13
6	Study of Indoor Lux & Noise Level	14
7	Study of Water Quality	15
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## **ACKNOWLEDGEMENT**

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

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1. An Environmental Audit is conducted at Nagindas Khandwala College of Commerce, Arts & Management Studies and Shantaben Nagindas Khandwala College of Science, Bhavishya Bharat Campus, S. V. Road, Malad (W), Mumbai

### 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 <sub>2</sub> : On Account of Electricity Consumption

### 3. Present Energy Consumption & CO<sub>2</sub> Emission:

No	Particulars	Value	Unit
1	Total Energy Consumed	145144	kWh
2	Annual CO <sub>2</sub> Emissions	134.98	tCO <sub>2</sub> e

### 4. Usage of Renewable Energy & Reduction in CO<sub>2</sub> Emissions:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant	1	kWp
2	Total Energy Generated by kWp Plant in 24-25	1200	kWh
3	Annual Reduction in CO <sub>2</sub> Emissions in 24-25	1.12	tCO <sub>2</sub> e

### 5. Indoor Air Quality:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	65	39	54
2	Minimum	60	35	45

### 6. Indoor CO<sub>2</sub> Level:

No	Parameter/Value	CO <sub>2</sub> , in ppm
1	Maximum	634
2	Minimum	587

### 7. Indoor Lux & Noise Level Parameters:

No	Parameter/Value	Lux Level	Noise Level, dB
1	Maximum	234	49.8
2	Minimum	219	46

### 8. Water Quality Parameters:

No	Parameter	Value
1	pH Level	7.39
2	Total Dissolved Salts	56

### 9. Initiatives on Climate Change:

No	Head	Particulars
1	Promotion of Renewable Energy	Installation of 1 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
4	Initiatives on Green India Mission	Internal Tree Plantation & Conductance of Tree Plantation Drive outside the Campus
5	Environment Conservation/Awareness	1. Conductance of Beach Cleanliness Drive 2. Conductance of Dry Leaves Collection Program 3. Conductance of E Waste Collection Drive

### 10. Assumptions:

1. Emission Fator of Electrical Energy: **0.93 Kg of CO<sub>2</sub>/ kWh**
2. Average Solar PV Energy Generation: **4 kWh/Day**
3. Annual Solar Energy Generation Days: **300 Nos**
4. CO<sub>2</sub> Emissions are computed For **Scope- 2**
5. CO<sub>2</sub> Emissions are computed based on Electrical Energy purchased

### 11. References:

- For CO<sub>2</sub> Emissions: [www.ccd.gujarat.gov.in](http://www.ccd.gujarat.gov.in)
- For Various Indoor Air Parameters: [www.ishrae.com](http://www.ishrae.com)
- For AQI Quality Standards: [www.cpcb.com](http://www.cpcb.com)
- For Solar PV Energy Generation: [www.rooftopsolar.gov.in](http://www.rooftopsolar.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

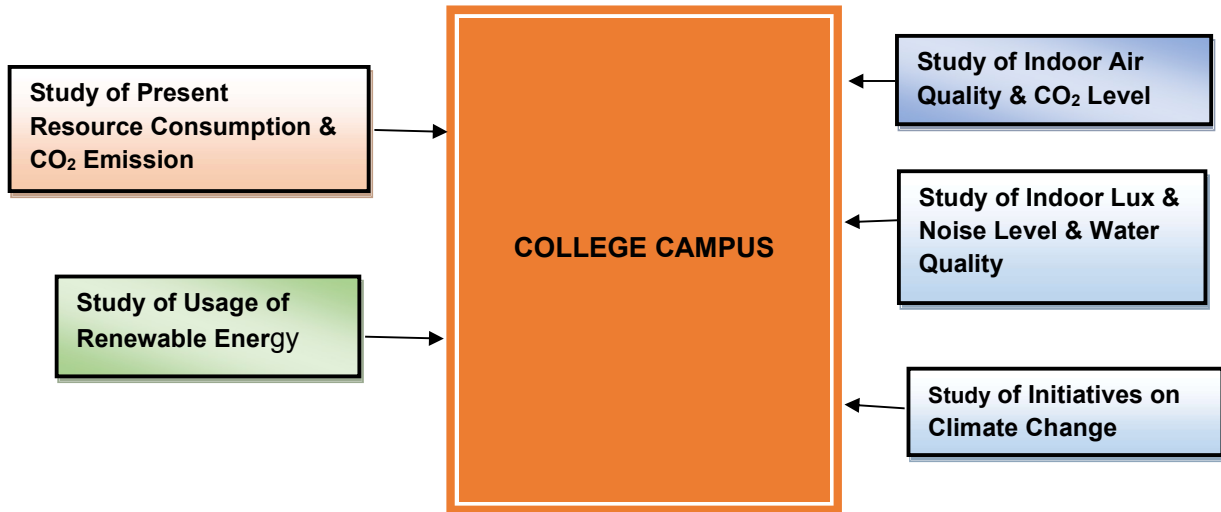
## CHAPTER-I INTRODUCTION

### 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:



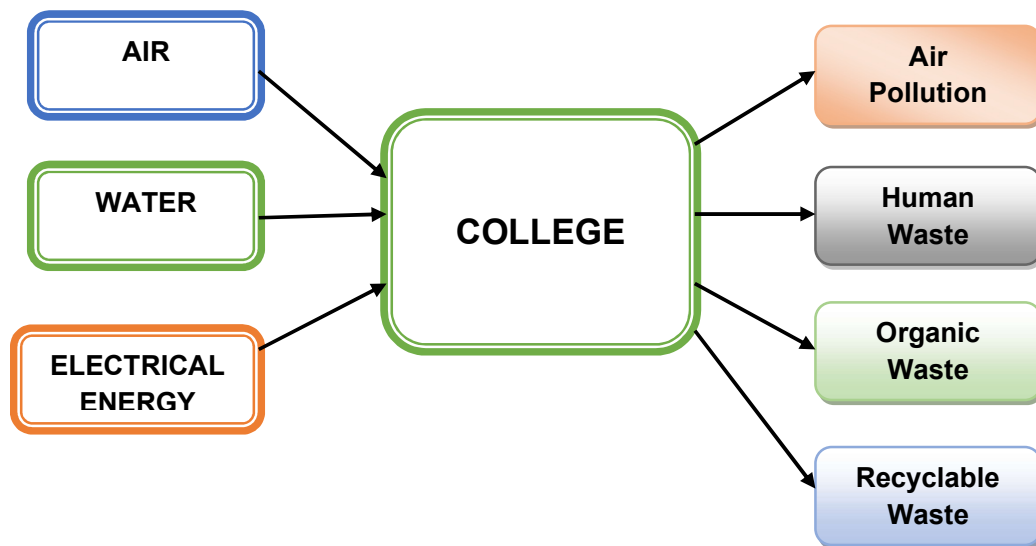
## CHAPTER-II STUDY OF RESOURCE CONSUMPTION & CO<sub>2</sub> EMISSION

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<sub>2</sub> Emission is computed for **Scope-2**

### Emission Factor:

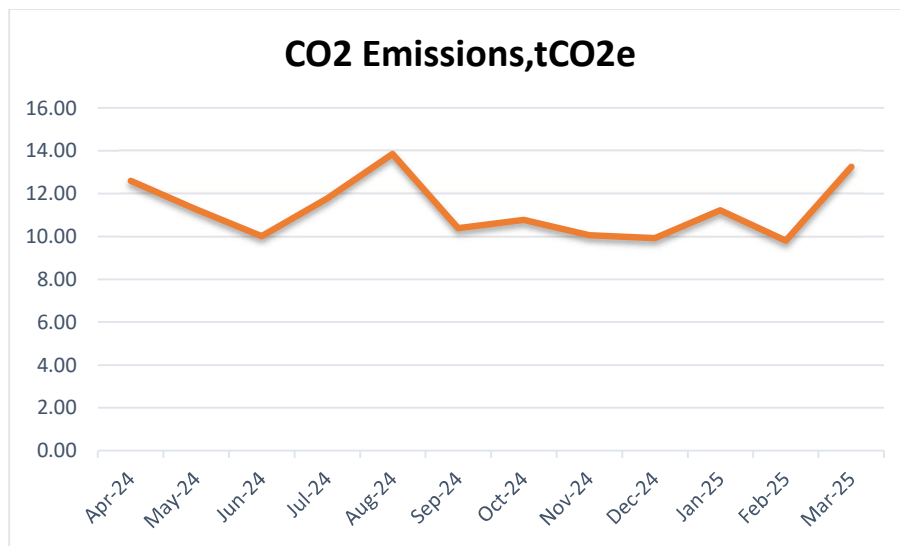
- Emission Fator of Electrical Energy: **0.93 Kg of CO<sub>2</sub>/ kWh**

**Table No 1: Study of Purchase of Energy & CO<sub>2</sub> Emissions: 24-25:**

No	Month	Energy Purchased, kWh	CO <sub>2</sub> Emissions, tCO <sub>2</sub> e
1	Apr-24	13545	12.60
2	May-24	12122	11.27
3	Jun-24	10782	10.03
4	Jul-24	12671	11.78
5	Aug-24	14902	13.86
6	Sep-24	11176	10.39

7	Oct-24	11589	10.78
8	Nov-24	10819	10.06
9	Dec-24	10672	9.92
10	Jan-25	12072	11.23
11	Feb-25	10540	9.80
12	Mar-25	14254	13.26
13	Total	145144	134.98

**Chart No 2: Month wise CO<sub>2</sub> Emissions:**



### CHAPTER III

## STUDY OF USAGE OF RENEWABLE ENERGY

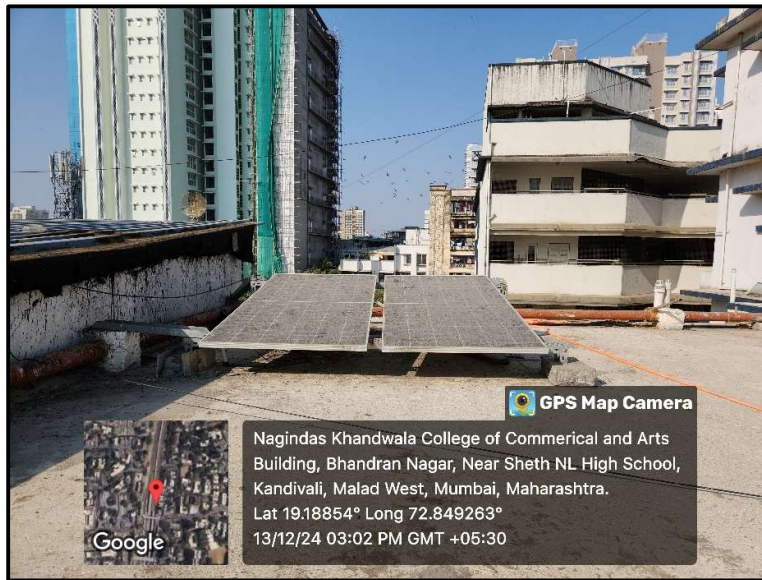
The College has installed Roof Top Solar PV Plant of Capacity **1 kWp**

In the following Table, we present the reduction in CO<sub>2</sub> emissions due to Solar Energy:

**Table No 2: Computation of Reduction in CO<sub>2</sub> Emissions:**

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	1	kWp
2	Energy Generated in the Year: 24-25	1200	kWh
3	1 kWh of Electrical Energy saves	0.93	Kg/kWh
4	Qty of CO <sub>2</sub> Saved by Solar PV Plant = (2) *(3) /1000	1.12	MT of CO <sub>2</sub>

**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	Office	65	39	54
2	Classroom	63	39	52
3	Computer Lab	63	35	53
4	Library	61	36	46
5	Staff room	60	36	45
	Maximum	<b>65</b>	<b>39</b>	<b>54</b>
	Minimum	<b>60</b>	<b>35</b>	<b>45</b>

**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<sub>2</sub> Level in the Campus.

**Table No 5: Study of CO<sub>2</sub> Level:**

<b>No</b>	<b>Location</b>	<b>CO<sub>2</sub> Level in ppm</b>
1	Office	623
2	Classroom	618
3	Computer Lab	589
4	Library	634
5	Staff room	587
	Maximum	<b>634</b>
	Minimum	<b>587</b>

**Acceptable Level** of CO<sub>2</sub> Level as per **World Health Organization** Standard is 1000 ppm

#### **Conclusion:**

From the above measured values, we conclude that the observed values of CO<sub>2</sub> 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 6: Study of Indoor Lux Level and Noise Level Parameters:**

No	Location	Lux Level	Noise Level, dB
1	Office	219	48
2	Classroom	226	46
3	Computer Lab	223	49
4	Library	234	49.8
5	Staff room	220	48
	Maximum	<b>234</b>	<b>49.8</b>
	Minimum	<b>219</b>	<b>46</b>

**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	<b>200 Plus</b>
2	For Reading Rooms	<b>200 Plus</b>

### 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 7: Study of Water pH and TDS:**

No	Parameter	Value
1	pH Level	7.39
2	Total Dissolved Salts	56

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

<b>A) Reference:</b>		
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	<b>Promotion of Solar Energy</b>	Installation of Roof Top Solar PV Plant of Capacity 1 kWp	<p><b>Solar PV Plant:</b></p> 
2	<b>Promotion of Energy Efficiency</b>	Usage of LED Lights	<p><b>LED Lights</b></p> 
3	<b>Water Conservation</b>	Usage of rain Water for Recharging the Bore well & Underground Water Table	<p><b>Bore Well recharge Point :</b></p> 

<p>4</p>	<p><b>Mission for Green India</b></p>	<p>Tree Plantation outside the Campus</p>	<p style="text-align: center;"><b>Tree Plantation Drive</b></p> 
<p>5</p>	<p><b>Environment Conservation</b></p>	<p>Conductance of Beach Cleanliness Drive, Dry Leaves Collection Drive &amp; E Waste Collection Drive</p>	<p style="text-align: center;"><b>Program on Beach Cleanliness Drive:</b></p>  <p style="text-align: center;"><b>Dry Leaves Collection Drive:</b></p>  <p style="text-align: center;"><b>E Waste Collection Drive</b></p> 