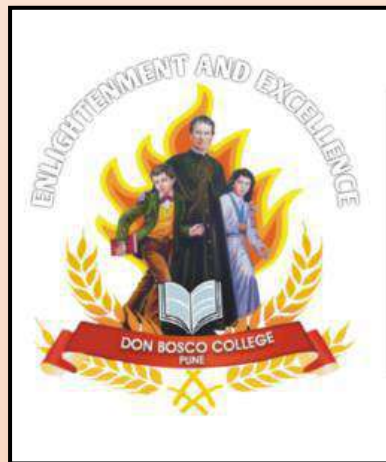


ENVIRONMENTAL AUDIT REPORT

Bombay Salesian Society's,
DON BOSCO COLLEGE OF ARTS & COMMERCE (EVENING)

Don Bosco Marg, Yerawada, Pune 411 006



Year: 2023-24

Prepared by:

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society
Near Mukhtangan 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-26-0135636

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): Engress Services

Flat/Door/Block No.	26	Name of Premises/ Building	Yashahree
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

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

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 411007.
Ph No: 020-35000450
Email: ee@maharaja.com, Web: www.maharaja.com

ECN/2022-23/CR-43/1709 10th May, 2022

CERTIFICATE OF REGISTRATION FOR CLASS 'A'

We hereby certify that, the firm having following particulars is registered with **MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)** under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

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

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

Registration Number: MEDA/ECN/2022-23/Class A/E-A-32.

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **09th May, 2024** from the date of registration, to carry out energy audits under the Energy Conservation Programme.
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

General Manager (EC)



INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	4
II	Executive Summary	5
III	Abbreviations	7
1	Introduction	8
2	Study of Resource Consumption & CO ₂ Emission	9
3	Study of Usage of Renewable Energy	11
4	Study of Indoor Air Quality	12
5	Study of Indoor Lux & Noise 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 Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune for awarding us the assignment of Environmental Audit of their Yerawada Campus for the Year: 2023-24

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

EXECUTIVE SUMMARY

1. Don Bosco College of Arts & Commerce (Evening), Pune consumes Energy in the form of **Electrical Energy**; used for various office equipment.

2. Pollution due to College 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 Purchased	33856	kWh
2	Annual CO ₂ Emissions	31.49	MT

4. Usage of Renewable Energy:

- The College has installed Roof Top Solar PV Plant of Capacity **31 kWp**.
- The Energy generated by Solar PV Plant in 2023-24 is **37200 kWh**.
- Reduction in CO₂ Emissions in 2023-24 is **33.48 MT**

5. Indoor Air Quality Parameters:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	95	57	73
2	Minimum	89	52	70

6. Indoor Lux & Noise Level Parameters:

No	Parameter/Value	Lux Level	Noise Level, dB
1	Maximum	140	45.9
2	Minimum	111	41.3

7. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Organic Waste	Installed Bio Composting Unit
3	E Waste	Disposed of through Authorized Agency

8. Rain Water Management:

The College has installed Rainwater Management project; the rain water falling on the terrace is collected and is stored in an underground Storage tank and is further used for Gardening.

9. Environment Friendly Initiatives:

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

10. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.93 Kg of CO₂** into atmosphere
2. **1 kWp** Solar PV system generates **4 kWh** of Electrical Energy per Day
3. Annual Solar Energy Generation Days: **300 Nos**

11. References:

- For CO₂ Emissions: www.ccd.gujarat.gov.in
- For Solar PV Energy Generation: www.rooftopsolar.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
ISHRAE	: The Indian Society of Heating & Refrigerating & Air Conditioning Engineers

CHAPTER-I INTRODUCTION

1. Important Definitions:

1.1. Environment: Definition as per environment Protection Act: 1986

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

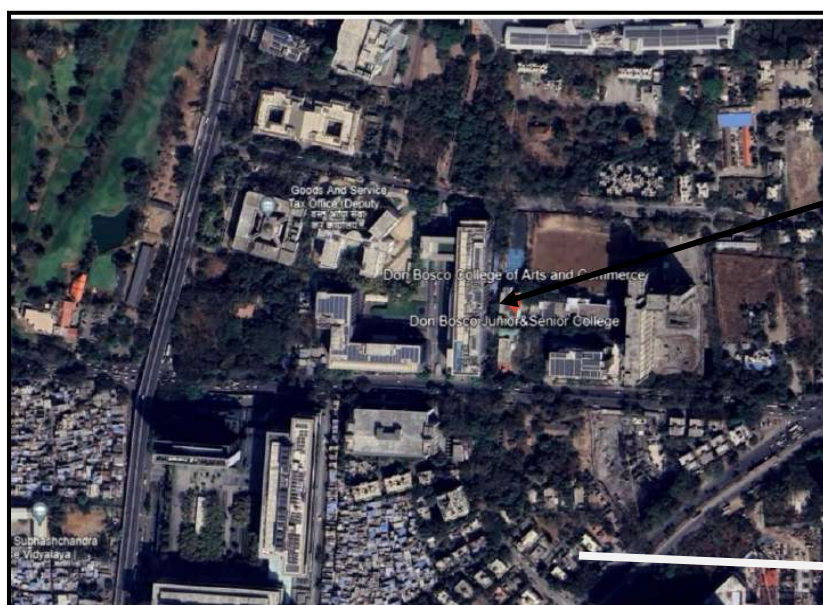
1.2. Environmental Audit: Definition:

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

1.2 Key Study Points:

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

1.3 College Location Image:



College
Campus

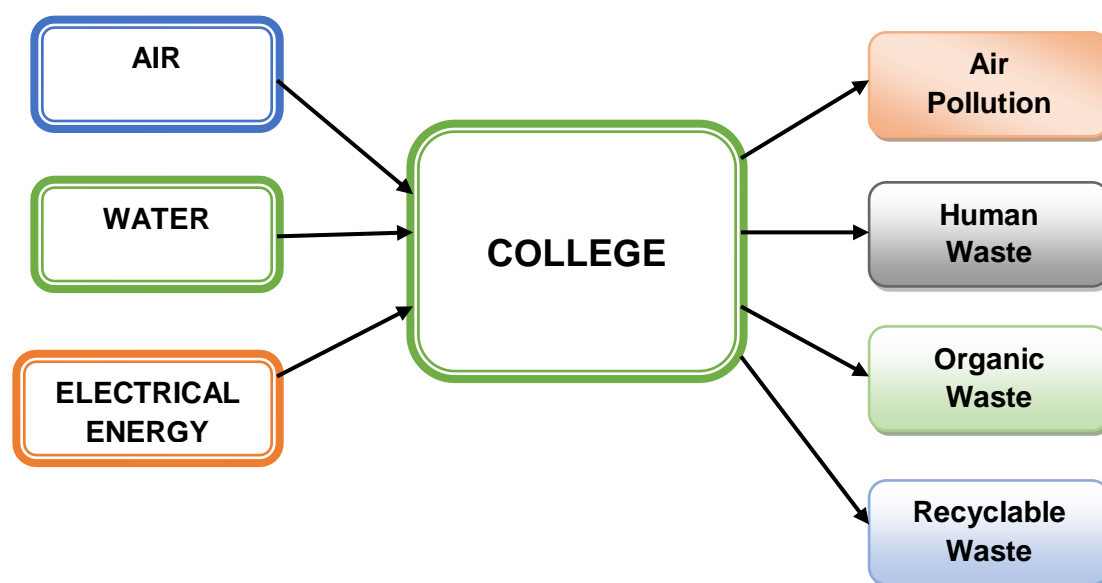
CHAPTER-II STUDY OF RESOURCE CONSUMPTION & CO₂ EMISSION

The College consumes following basic/derived Resources:

1. Air
2. Water
3. Electrical Energy

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

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



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

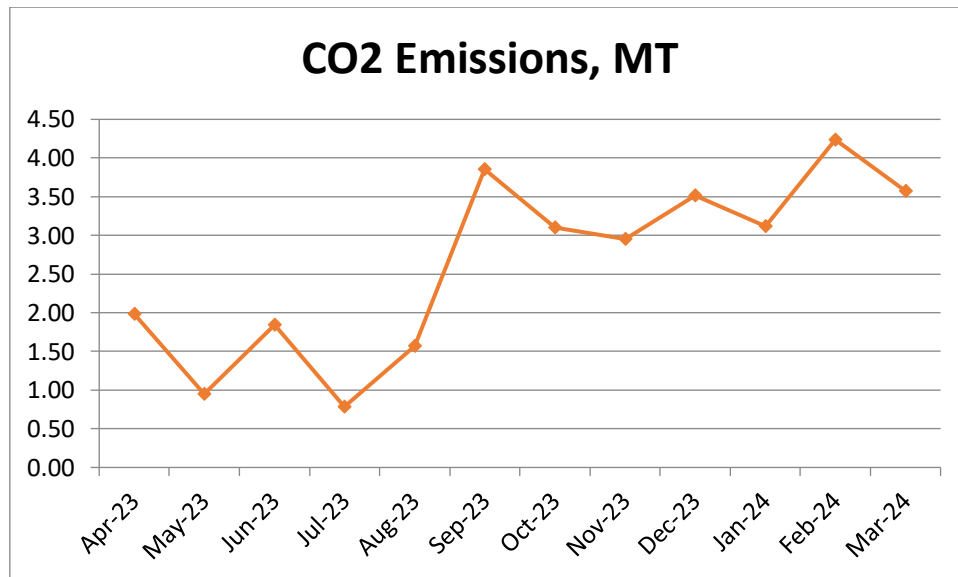
- **1 kWh** of Electrical Energy releases **0.93 Kg of CO₂** into atmosphere

Table No 1: Study of Purchase of Energy & CO₂ Emissions: 23-24:

No	Month	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Apr-23	2130	1.98
2	May-23	1019	0.95
3	Jun-23	1981	1.84
4	Jul-23	844	0.78
5	Aug-23	1692	1.57
6	Sep-23	4149	3.86
7	Oct-23	3335	3.10

8	Nov-23	3179	2.96
9	Dec-23	3779	3.51
10	Jan-24	3349	3.11
11	Feb-24	4557	4.24
12	Mar-24	3842	3.57
13	Total	33856	31.49
14	Maximum	4557	4.24
15	Minimum	844	0.78
16	Average	2821.33	2.62

Chart No 2: Month wise CO₂ Emissions:



CHAPTER III STUDY OF USAGE OF RENEWABLE ENERGY

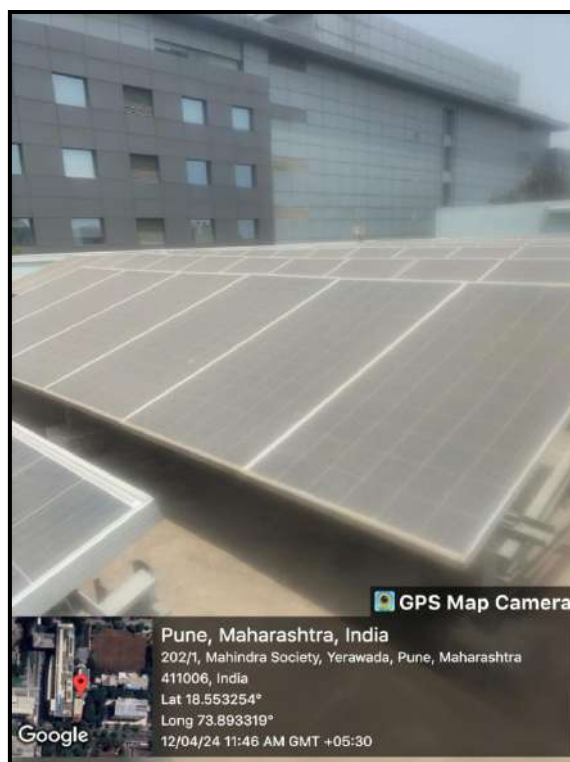
The College has installed Roof Top Solar PV Plant of Capacity **31 kWp**.

In the following Table, we compute the Annual Reduction in CO₂ Emissions due to installation of Roof Top Solar PV Plant.

Table No 2: Computation of CO₂ Emission Reduction by 31 kWp Solar PV Plant:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	31	kWp
2	Energy Generated in per kWp	4	4 kWh/kWp
3	Annual Solar Energy generation Days	300	Nos
4	Energy Generated in the Year: 21-22	37000	kWh
5	1 kWh of Electrical Energy saves	0.93	Kg/kWh
6	Qty of CO₂ Saved by Solar PV Plant = (4)*(5) /1000	34.60	MT of CO₂

Photograph of 31 kWp 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	90	52	71
2	Seminar hall	95	57	73
3	GYM	93	56	72
4	C-17 B.A.	94	56	73
5	C-16 Staff Room	89	52	70
	Maximum	95	57	73
	Minimum	89	52	70

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 5: Study of Indoor Comfort Condition Parameters:

No	Location	Lux Level, Lumen	Noise Level, dB
1	Office	140	44.6
2	Seminar hall	120	41.3
3	GYM	111	44
4	C-17 B.A.	113	45.9
5	C-16 Staff Room	125	44.3
	Maximum	140	45.9
	Minimum	111	41.3

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

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

Conclusion:

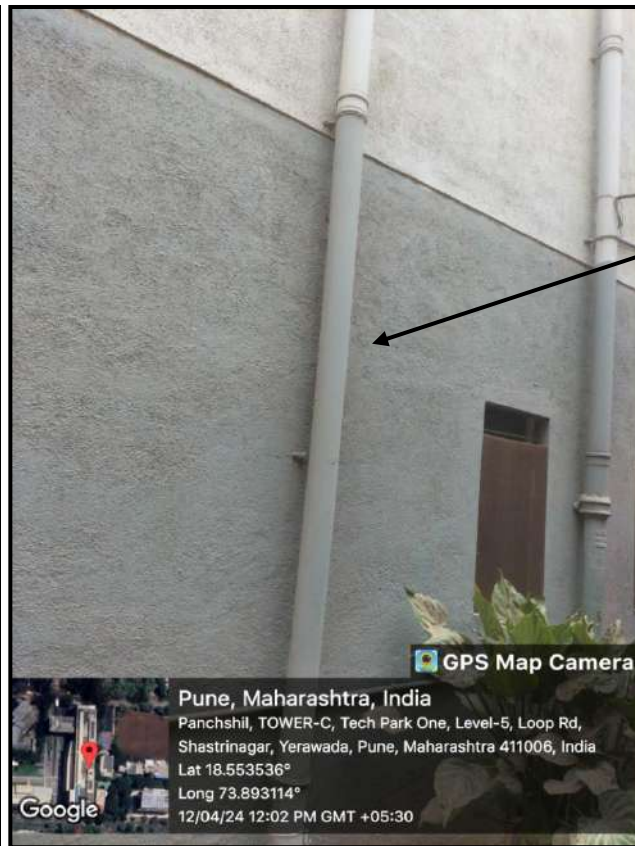
From the above measured values, we conclude that:

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

CHAPTER VI STUDY OF RAIN WATER MANAGEMENT

The College has implemented the Rain Water Management Project. The College has installed Pipes from the terrace and the Rain water falling on the terrace is stored in an underground Water tank and is used for gardening purpose.

Photograph of Rain Water Collecting Pipe:



Rain Water
Collecting Pipe

CHAPTER-VII STUDY OF WASTE MANAGEMENT

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



Details of Waste Management Practices:

No	Head	Observation	Photograph
1	Solid Waste	Segregation of Waste at Source: Provision of Waste Collection Bins	<p>Waste Collection Bin:</p>  <p>GPS Map Camera Pune, Maharashtra, India 202/1, Mahindra Society, Yerawada, Pune, Maharashtra 411006, India Lat:18.553819° Long:73.859746° 12/04/24 12:04 PM GMT +05:30</p>
2	Organic Waste	Provision of Bio Composting Bed: For conversion into Bio Compost	<p>Bio Composting Bed:</p>  <p>GPS Map Camera Pune, Maharashtra, India Chowk, Loop Rd, Shastrinagar, Yerawada, Pune, Maharashtra 411006, India Lat:18.552971° Long:73.893891° 12/04/24 12:06 PM GMT +05:30</p>
3	E Waste	Disposed of through Authorized Agency	

CHAPTER-VIII STUDY OF ECO FRIENDLY PRACTICES

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

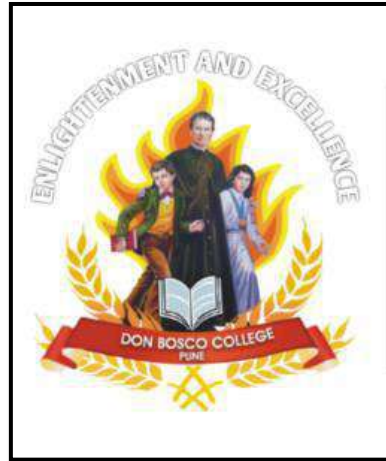
Details of Eco Friendly Practices:

No	Head	Observation	Photograph
1	Tree Plantation	Tree Plantation in the Campus	<p>Internal Tree Plantation:</p> 
2	Creation of Awareness among Stake Holders	Display of Poster on Water Conservation	<p>Poster on Water Conservation:</p> 

ENVIRONMENTAL AUDIT REPORT

of
Bombay Salesian Society's,
DON BOSCO COLLEGE OF ARTS & COMMERCE
(EVENING)

Don Bosco Marg, Yerawada, Pune 411 006



Year: 2022-23

Prepared by

ENGRESS SERVICES

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

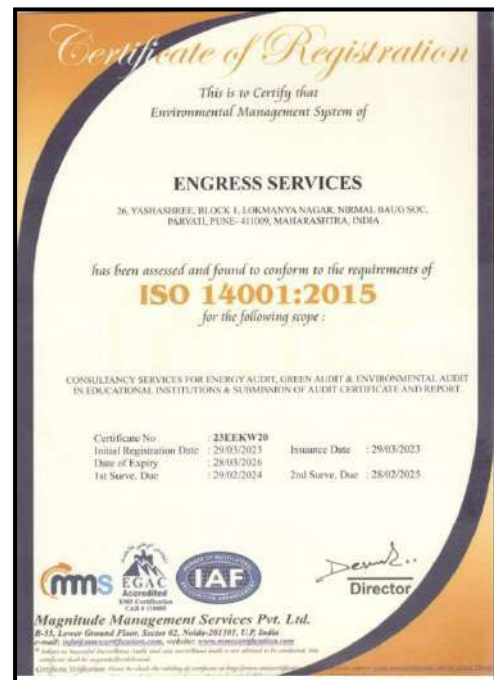


REGISTRATION CERTIFICATES



MEDA REGISTRATION CERTIFICATE

ASSOCHAM GEM CP CERTIFICATE



ISO: 9001-2015 CERTIFICATE

ISO: 14001-2015 CERTIFICATE

INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	4
II	Executive Summary	5
III	Abbreviations	7
1	Introduction	8
2	Study of Resource Consumption & CO ₂ Emission	10
3	Study of Usage of Renewable Energy	12
4	Study of Indoor Air Quality	13
5	Study of Indoor Comfort Condition Parameters	14
6	Study of Waste Management	15
7	Study of Rain Water Management	16
8	Study of Eco Friendly Practices	17
	Annexure	
I	Indoor Air Quality, Noise, & Comfort Standards	18

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune for awarding us the assignment of Environmental Audit of their Yerawada Campus for the Year: 2022-23

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

EXECUTIVE SUMMARY

1. Don Bosco College of Arts & Commerce (Evening), Pune consumes Energy in the form of **Electrical Energy**; used for various office equipment.

2. Pollution caused due to College Activities:

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

3. Present Energy Consumption & CO₂ Emission:

No	Particulars	Value	Unit
1	Annual Energy Consumed	21879	kWh
2	Annual CO ₂ Emissions	19.69	MT

4. Usage of Renewable Energy & CO₂ Emission Reduction:

- The College has installed Roof Top Solar PV Plant of Capacity **31 kWp**.
- The Energy generated by Solar PV Plant in 2022-23 is **37200 kWh**.
- Reduction in CO₂ Emissions in 2022-23 is **33.48 MT**

5. Indoor Air Quality Parameters:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	67	41	49
2	Minimum	49	29	31

6. Indoor Comfort Conditions:

No	Parameter/Value	Temperature, °C	Humidity, %	Lux Level	Noise Level, dB
1	Maximum	30.5	74	127	45
2	Minimum	30.3	72	103	42

7. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Organic Waste	Installed Bio Composting Unit
3	E Waste	Dispose of through Authorized Agency

8. Rain Water Management:

The College has installed Rainwater harvesting project; the rain water falling on the terrace is collected and is stored in an underground Storage tank and is further used for Gardening.

9. Environment Friendly Practices:

- Internal Tree Plantation.
- Creation of awareness on Water Conservation by Display of Posters

10. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere
2. Average Energy generated by Solar PV Plant is **4 kWh/kWp/Day**
3. Annual Solar Energy Generation Days in 2022-23 is **300 Nos**

11. References:

1. For CO₂ calculations: www.tatapower.com
2. For Various Indoor Air Parameters: www.ishrae.com
3. For AQI Standards: www.cpcb.com
4. Solar Energy Generated: www.solarrooftop.gov.in

ABBREVIATIONS

AQI	:	Air Quality Index
LED	:	Light Emitting Diode
kWh	:	kilo-Watt Hour
MT	:	Metric Ton
CO ₂	:	Carbon Di Oxide
MEDA	:	Maharashtra Energy Development Agency
ISHRAE	:	The Indian Society of Heating, Refrigerating & Air conditioning Engineers
CPCB	:	Central Pollution Control Board
LPD	:	Liters Per Day
PM	:	Particulate Matter

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 compiled with and adequate care has been taken towards environmental protection and preservation

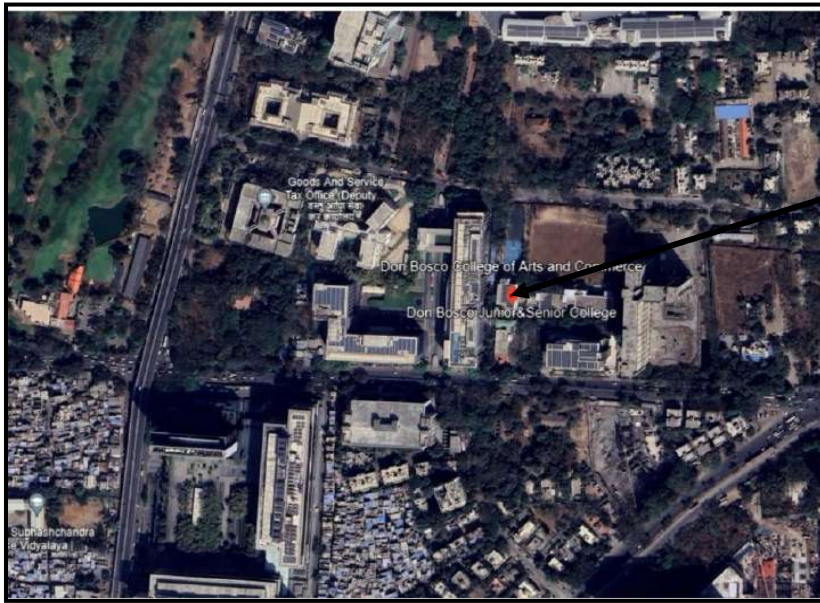
According to UNEP, 1990, "Environmental audit can be defined as a management tool comprising systematic, documented and periodic evaluation of how well environmental organization management and equipment are performing with an aim of helping to regularize the environment"

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 College Location Image:



**Institute
Campus**

CHAPTER-II STUDY OF RESOURCE CONSUMPTION & CO₂ EMISSION

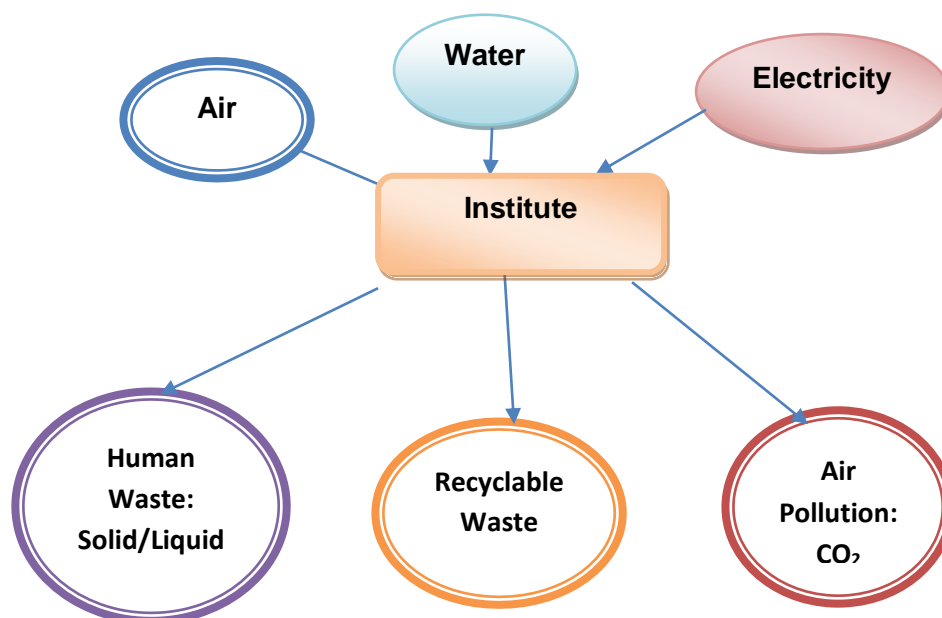
The College consumes following Natural/derived Resources:

1. Air
2. Water
3. Electrical Energy

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

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

Chart No 1: Representation of College 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.

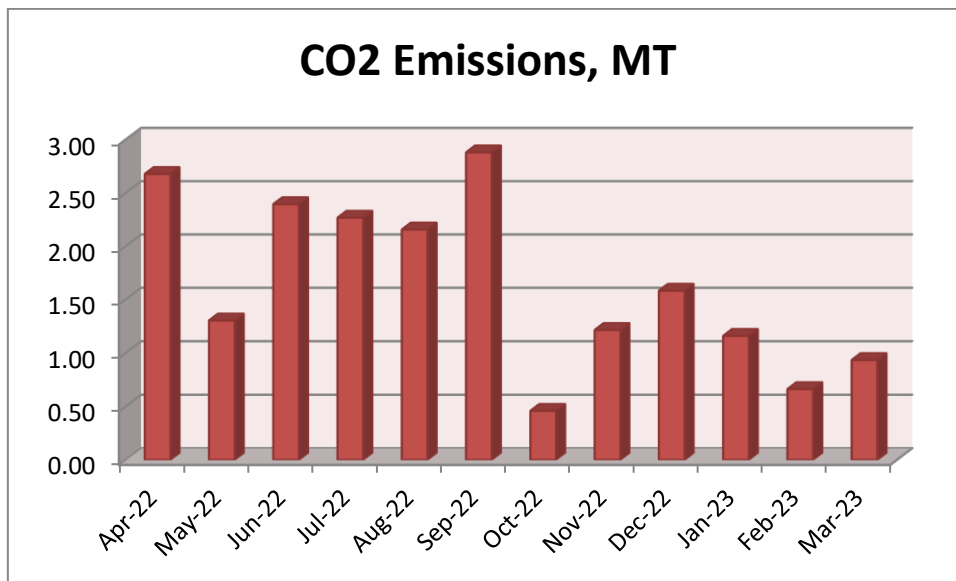
- **1 kWh** of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere

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

No	Month	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Apr-22	2975	2.68
2	May-22	1448	1.30
3	Jun-22	2660	2.39
4	Jul-22	2519	2.27
5	Aug-22	2396	2.16
6	Sep-22	3200	2.88
7	Oct-22	510	0.46

8	Nov-22	1350	1.22
9	Dec-22	1758	1.58
10	Jan-23	1289	1.16
11	Feb-23	736	0.66
12	Mar-23	1038	0.93
13	Total	21879	19.69
14	Maximum	3200	2.88
15	Minimum	510	0.46
16	Average	1823.25	1.64

Chart No 2: Month wise CO₂Emissions:



CHAPTER III

STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity **31 kWp**.

In the following Table, we compute the Annual Reduction in CO₂ Emissions due to installation of Roof Top Solar PV Plant.

Table No 2: Computation of CO₂ Emission Reduction by 31 kWp Solar PV Plant:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	31	kWp
2	Energy Generated in per kWp	4	4 kWh/kWp
3	Annual Solar Energy generation Days	300	Nos
4	Energy Generated in the Year: 21-22	37000	kWh
5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	Qty of CO₂ Saved by Solar PV Plant =(4)*(5) /1000	33.48	MT of CO₂

Photograph of 31 kWp 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.

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.

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 3: Indoor Air Quality Parameters:

No	Location	AQI	PM-2.5	PM-10
1	Principal Sir Cabin	67	41	49
2	Seminar Hall	50	30	32
3	Staff Room	66	39	46
4	Computer Lab	49	29	31
5	Classroom	60	36	42
	Maximum	67	41	49
	Minimum	49	29	31

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 4: Study of Indoor Comfort Condition Parameters:

No	Location	Temperature, °C	Humidity, %	Lux Level	Noise Level, dB
1	Principal Sir Cabin	30.5	74	113	42.6
2	Seminar Hall	30.4	72	127	42
3	Staff Room	30.5	74	123	44.3
4	Computer Lab	30.3	74	103	45
5	Classroom	30.4	73	119	44
	Maximum	30.5	74	127	45
	Minimum	30.3	72	103	42

CHAPTER VI STUDY OF WASTE MANAGEMENT

6.1 Segregation of Waste at Source:

The Waste is segregated at source. Waste bins are located at various points in the campus.

Photograph of Waste Collection Bins:



6.2 Organic Waste Management:

The Organic Waste is composted in a Bio Composting Arrangement.

Photograph of Bio composting arrangement:



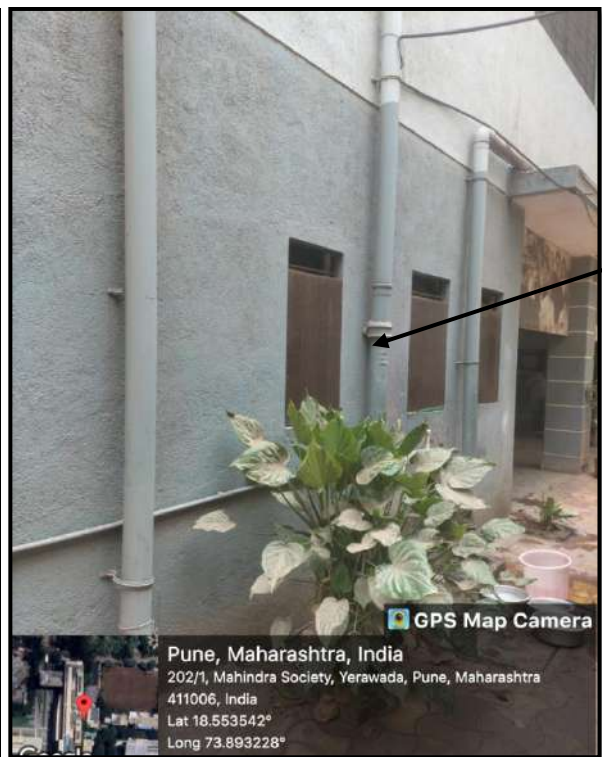
6.4 E Waste Management:

The E Waste is disposed of through Authorized Agency

CHAPTER VII STUDY OF RAIN WATER MANAGEMENT

The College has implemented the Rain Water Management Project. The College has installed Pipes from the terrace and the Rain water falling on the terrace is stored in an underground Water tank and is used for gardening purpose.

Photograph of Rain Water Collecting Pipe:



Rain Water
Collecting Pipe

CHAPTER VIII

STUDY OF ECO FRIENDLY PRACTICES

8.1 Green Landscaping and Tree Plantation:

The College has maintained plantation in the campus.

Photograph of Tree Plantation in the College campus:



8.2 Creation of Awareness about Water Conservation:

The College has displayed posters emphasizing on importance of Water Conservation.

Photograph of Display Board on Water Conservation:



**ANNEXURE:
AIR QUALITY, NOISE & INDOOR COMFORT STANDARDS:**

1. Category Wise Air Quality Index Values & Concentration of PM-2.5 & PM-10:

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:

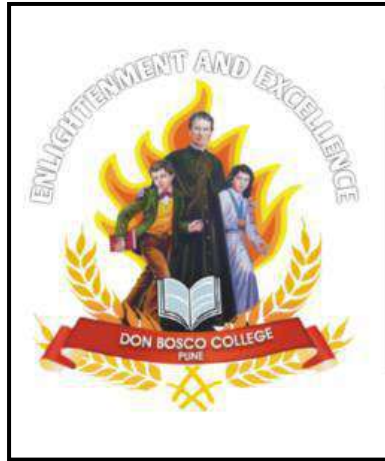
No	Parameter	Value
1	Temperature	Less Than 33°C
2	Humidity	Less Than 70%

ENVIRONMENTAL AUDIT REPORT

of

Bombay Salesian Society's,
DON BOSCO COLLEGE OF ARTS & COMMERCE
(EVENING)

Don Bosco Marg, Yerawada, Pune 411 006



Year: 2021-22

Prepared by

ENGRESS SERVICES

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



REGISTRATION CERTIFICATES



BEE AUDITOR CERTIFICATE

MEDA EMPANELMENT CERTIFICATE



ASSOCHAM GEM CP CERTIFICATE

INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	4
II	Executive Summary	5
III	Abbreviations	7
1	Introduction	8
2	Study of Resource Consumption & CO ₂ Emission	11
3	Study of Usage of Renewable Energy	13
4	Study of Indoor Air Quality	14
5	Study of Indoor Comfort Parameters	15
6	Study of Waste Management	16
7	Study of Rain Water Management	17
8	Study of Environment Friendly Initiatives	18
	Annexure-I	
I	Air Quality, Noise & Comfort Condition Standards	19

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune for awarding us the assignment of Environmental Audit of their Yerawada Campus for the Year: 2021-22.

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

EXECUTIVE SUMMARY

1. Don Bosco College of Arts & Commerce (Evening), Pune consumes Energy in the form of **Electrical Energy**; used for various office equipment.

2. Pollution due to College Activities:

- **Air pollution:** Mainly CO₂ on account of Electrical Energy Consumption
- **Solid Waste:** Bio degradable Kitchen Waste, Garden Waste
- **Liquid Waste:** Human liquid waste

3. Present Level of Energy Consumption & CO₂ Emission:

No	Parameter/Value	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Total	6484	5.84
2	Maximum	1112	1.00
3	Minimum	210	0.19
4	Average	540.33	0.49

4. Usage of Renewable Energy & CO₂ Emission Reduction:

- The College has installed **31 kWp** Roof Top Solar PV Plant.
- The Energy generated by the Solar PV Plant is **37200 kWh**.
- The reduction in Annual CO₂ Emission due to Solar PV Plant in 2021-22 is **33.48 MT**.

5. Indoor Air Quality Parameters:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	56	52	69
2	Minimum	51	45	57

6. Indoor Comfort Conditions:

No	Parameter/Value	Temperature, °C	Humidity, %	Lux Level	Noise Level, dB
1	Maximum	31.6	39.6	210	45
2	Minimum	31.2	39.4	125	40

7. Waste Management:

7.1 Solid Waste Management:

The recyclable waste, like paper waste is segregated at source and then handed over to Authorized Agency for further action.

7.2 Organic Waste Management:

The College has made provision of a Bio Composting Bed, for conversion of Organic Waste.

7.3 E Waste Management:

The E Waste is disposed of through Authorized Agency.

8. Rain Water Management:

The College has installed Rainwater harvesting project; the rain water falling on the terrace is collected and is stored in an underground Storage tank and is further used for Gardening.

9. Environment Friendly Initiatives:

- Tree Plantation in the campus
- Creation of Awareness on Water Conservation by Display of Posters

10. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere
2. Average Energy generated by Solar PV Plant is **4 kWh/kWp/Day**
3. Annual Solar Energy Generation Days in 2021-22 is **300 Nos**

12. References:

- For CO₂ Emissions: www.tatapower.com
- For Various Indoor Air Parameters: www.ishrae.com
- For AQI Quality Standards: www.cpcb.com
- For Solar PV Energy generation: www.solarrooftop.gov.in

ABBREVIATIONS

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

CHAPTER-I INTRODUCTION

1.1 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 compiled 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 College)
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)

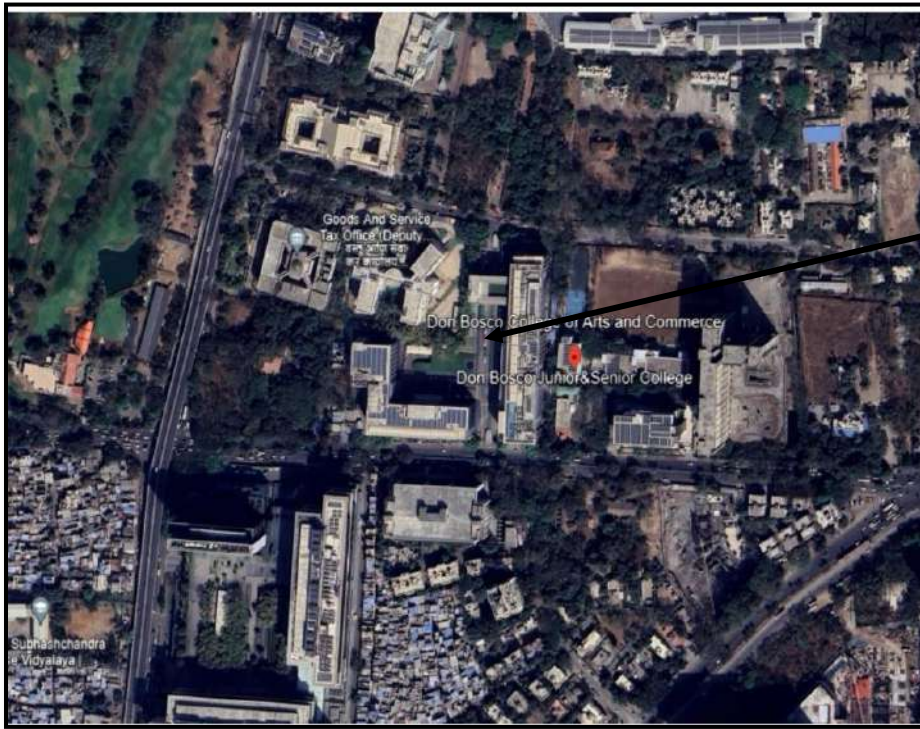
1.2 Objectives:

1. To study Resource Consumption & CO₂ Emissions
2. To study CO₂ Emission Reduction
3. To study Indoor Air Quality Parameters
4. To study Indoor Comfort Condition Parameters
5. To study Waste Management Practices
6. To study Rain Water Management
7. To study Environment friendly Initiatives

1.3 General Details of College: Table No-4:

No	Head	Particulars
1	Name of Institution	Don Bosco College of Arts & Commerce (Evening)
2	Address	Don Bosco Marg, Yerawada, Pune 411 006
3	Year of Establishment	2012
4	Affiliation	Savitribai Phule Pune University

1.4 Google Earth Image:



College Campus

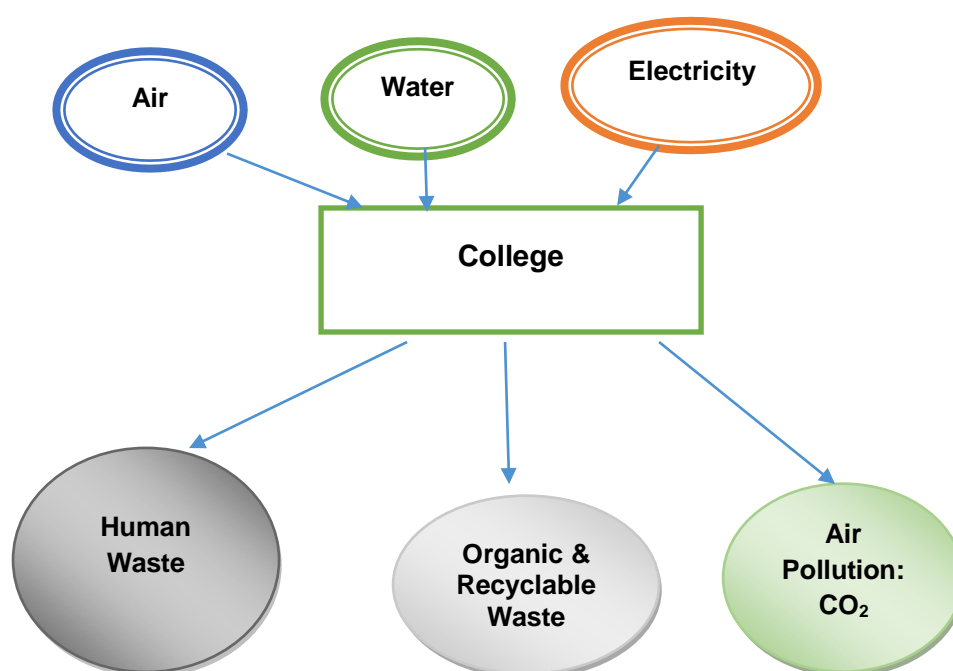
CHAPTER-II STUDY OF RESOURCE CONSUMPTION & CO₂ EMISSION

2.1 The College consumes following Natural/derived Resources:

1. Air
2. Water
3. Electrical Energy

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

2.2 Chart No 1: Representation of College as a System:



2.3 Computation of CO₂ Emissions :A Carbon Foot print is defined as the Total Greenhouse Gas Emissions, emitted due to various activities. The College uses Electrical Energy for various Electrical gadgets& day to day activities.

Basis for computation of CO₂ Emissions:

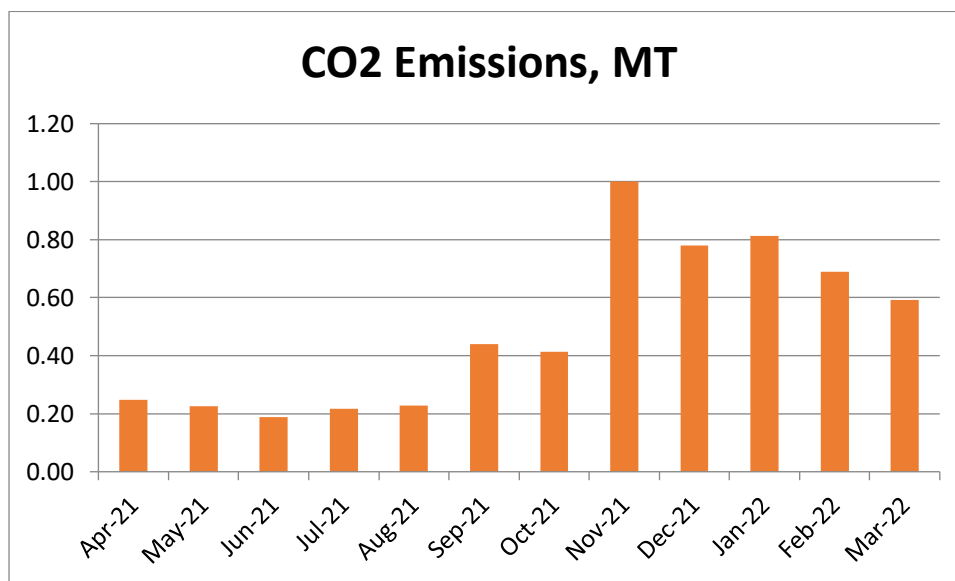
- 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere

Table No 5: Month wise CO₂ Emissions:

No	Month	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Apr-21	276	0.25
2	May-21	250	0.23

3	Jun-21	210	0.19
4	Jul-21	241	0.22
5	Aug-21	254	0.23
6	Sep-21	488	0.44
7	Oct-21	460	0.41
8	Nov-21	1112	1.00
9	Dec-21	866	0.78
10	Jan-22	903	0.81
11	Feb-22	765	0.69
12	Mar-22	659	0.59
13	Total	6484	5.84
14	Maximum	1112	1.00
15	Minimum	210	0.19
16	Average	540.33	0.49

Chart No 2: Representation of Month wise CO₂ emissions:



CHAPTER-III STUDY OF USAGE OF RENEWABLE ENERGY

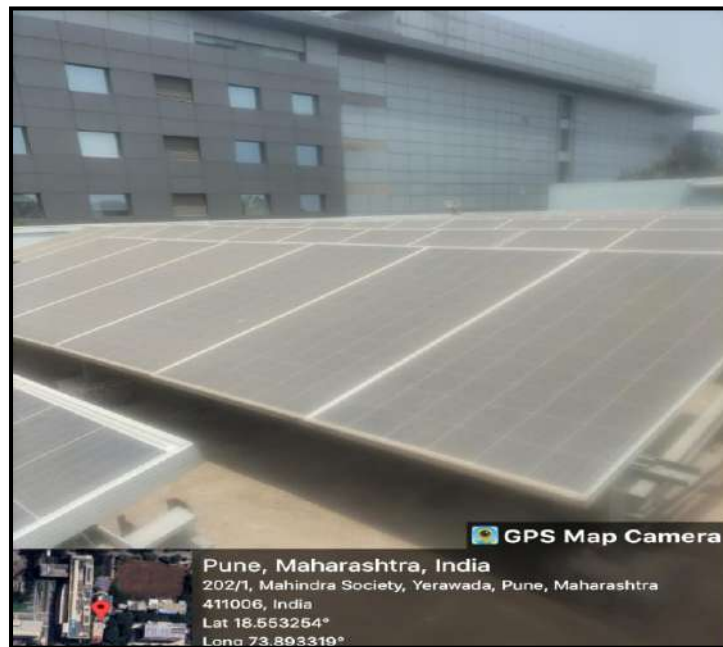
The College has installed Roof Top Solar PV Plant of Capacity **31kWp**.

In the following Table, we compute the Annual Reduction in CO₂ Emissions due to installation of Roof Top Solar PV Plant.

Table No 6: Computation of CO₂ Emission Reduction by 31 kWp Solar PV Plant:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	31	kWp
2	Energy Generated in per kWp	4	4 kWh/kWp
3	Annual Solar Energy generation Days	300	Nos
4	Energy Generated in the Year: 21-22	37000	kWh
5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	Qty of CO₂ Saved by Solar PV Plant = (4)*(5) /1000	33.48	MT of CO₂

Photograph of 31 kWp 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. 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.'**

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.

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
1	Director Office	54	45	58
2	GYM	55	52	64
3	C-13 S.Y.B.Com	54	45	57
4	Sr. College Record	51	49	69
5	Computer Room C-23	56	46	57
	Maximum	56	52	69
	Minimum	51	45	57

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, °C	Humidity, %	Lux Level	Noise Level, dB
1	Director Office	31.5	39.4	198	40
2	GYM	31.2	39.5	125	42
3	C-13 S.Y.B.Com	31.3	39.5	210	45
4	Sr. College Record	31.4	39.6	178	42
5	Computer Room C-23	31.6	39.4	165	45
	Maximum	31.6	39.6	210	45
	Minimum	31.2	39.4	125	40

CHAPTER VI STUDY OF WASTE MANAGEMENT

6.1 Solid Waste Management:

The recyclable waste, like paper waste is segregated at source and then handed over to Authorized Agency for further action.

Photograph of Waste Collection Bin:



6.2 Organic Waste Management:

The College has made provision of a Bio Composting Bed, for conversion of Organic Waste.

Photograph of Bio Composting Bed:



6.3 E-Waste Management:

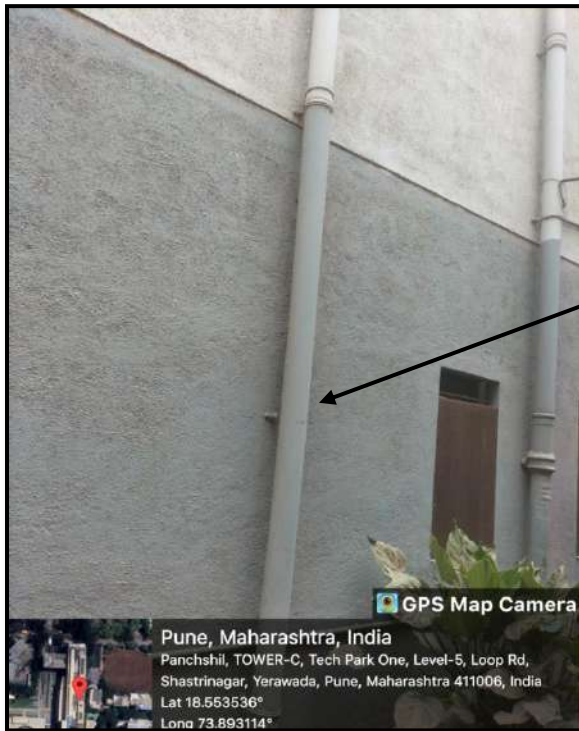
The E Waste is disposed of through Authorized Agency.

CHAPTER-VII

STUDY OF RAIN WATER MANAGEMENT

The College has implemented the Rain Water Management Project. The College has installed Pipes from the terrace and the Rain water falling on the terrace is stored in an underground Water tank and is used for gardening purpose.

Photograph of Rain Water Collecting Pipe:



Rain Water
Collecting Pipe

CHAPTER-VIII

STUDY OF ENVIRONMENT FRIENDLY INITIATIVES

8.1 Tree Plantation:

The College has well Tree Plantation in the campus.

Photograph of Garden/Tree plantation in the campus:



8.2 Creation of Awareness about Water Conservation:

The College has displayed posters emphasizing on importance of Water Conservation.

Photograph of Display Board on Water Conservation:



**ANNEXURE-I:
AIR 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 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:

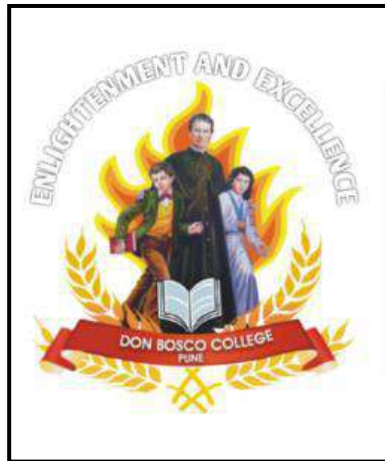
No	Parameter	Value
1	Temperature	Less Than 33 ⁰ C
2	Humidity	Less Than 70%

ENVIRONMENTAL AUDIT REPORT

of

Bombay Salesian Society's,
DON BOSCO COLLEGE OF ARTS & COMMERCE
(EVENING)

Don Bosco Marg, Yerawada, Pune 411 006



Year: 2020-21

Prepared by

ENRICH CONSULTANTS



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



REGISTRATION CERTIFICATES

Regn. No. EA-8192		No. 2942
National Productivity Council (National Certifying Agency)		
PROVISIONAL CERTIFICATE		
This is to certify that Mr. / Ms. <u>Achyut Yashavant Mehendale</u> son / daughter of Mr. <u>Yashavant</u> 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		 Controller of Examination
Date : 10 th August 2007		

BEE ENERGY AUDITOR CERTIFICATE

MAHARASHTRA ENERGY DEVELOPMENT AGENCY <small>An ISO 9001 : 2000 Reg. no. : RO 91 / 2462</small>	
 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-14/1577	22 nd April, 2021
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 Enrich Consultants Yashashree, Plot No. 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune - 411009.
Registration Category	: Empanelled Consultant for Energy Conservation Programme for Class 'A'
Registration Number	: MEDA/ECN/2021-22/Class A/EA-03
<ul style="list-style-type: none">• 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 21st April, 2023 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)	

MEDA EMPANELMENT CERTIFICATE

INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	4
II	Executive Summary	5
III	Abbreviations	7
1	Introduction	8
2	Study of Resource Consumption & CO ₂ Emission	10
3	Study of Usage of Renewable Energy	12
4	Study of Indoor Air Quality	13
5	Study of Waste Management	14
6	Study of Rain Water Management	15
7	Study of Environment Friendly Initiatives	16
	Annexure-I	
I	Indoor Air Quality Standards	17

ACKNOWLEDGEMENT

We Enrich Consultants, Pune, express our sincere gratitude to the management of Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune for awarding us the assignment of Environmental Audit of their Yerawada Campus for the Year: 2020-21.

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

EXECUTIVE SUMMARY

1. Don Bosco College of Arts & Commerce (Evening), Pune consumes Energy in the form of **Electrical Energy**; used for various office equipment.

2. Pollution due to College Activities:

- **Air pollution:** Mainly CO₂ on account of Electrical Energy Consumption
- **Solid Waste:** Bio degradable Kitchen Waste, Garden Waste
- **Liquid Waste:** Human liquid waste

3. Present Level of Energy Consumption & CO₂ Emission:

No	Parameter/Value	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Total	7375	6.64
2	Maximum	1406	1.27
3	Minimum	193	0.17
4	Average	614.58	0.55

4. Usage of Renewable Energy & CO₂ Emission Reduction:

- The College has installed **31 kWp** Roof Top Solar PV Plant.
- The Energy generated by the Solar PV Plant is **37200 kWh**.
- The reduction in Annual CO₂ Emission due to Solar PV Plant in 2020-21 is **33.48 MT**.

5. Indoor Air Quality Parameters:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	121	68	81
2	Minimum	106	62	79

6. Waste Management:

6.1 Solid Waste Management:

The recyclable waste, like paper waste is segregated at source and then handed over to Authorized Agency for further action.

6.2 Organic Waste Management:

The College has made provision of a Bio Composting Bed, for conversion of Organic Waste.

6.3 E Waste Management:

The E Waste is disposed of through Authorized Agency.

7. Rain Water Management:

The College has installed Rainwater harvesting project; the rain water falling on the terrace is collected and is stored in an underground Storage tank and is further used for Gardening.

8. Environment Friendly Initiatives:

- Tree Plantation in the campus

9. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere
2. Average Energy generated by Solar PV Plant is **4 kWh/kWp/Day**
3. Annual Solar Energy Generation Days in 2020-21 is **300 Nos**

10. References:

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

ABBREVIATIONS

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

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 compiled 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 College)
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 Objectives:

1. To study Resource Consumption & CO₂ Emissions
2. To study CO₂ Emission Reduction
3. To study Indoor Air Quality Parameters
4. To study Indoor Comfort Condition Parameters
5. To study Waste Management Practices
6. To study Rain Water Management
7. To study Environment friendly Initiatives

1.3 General Details of College: Table No-4:

No	Head	Particulars
1	Name of Institution	Don Bosco College of Arts & Commerce (Evening)
2	Address	Don Bosco Marg, Yerawada, Pune 411 006
3	Year of Establishment	2012
4	Affiliation	Savitribai Phule Pune University

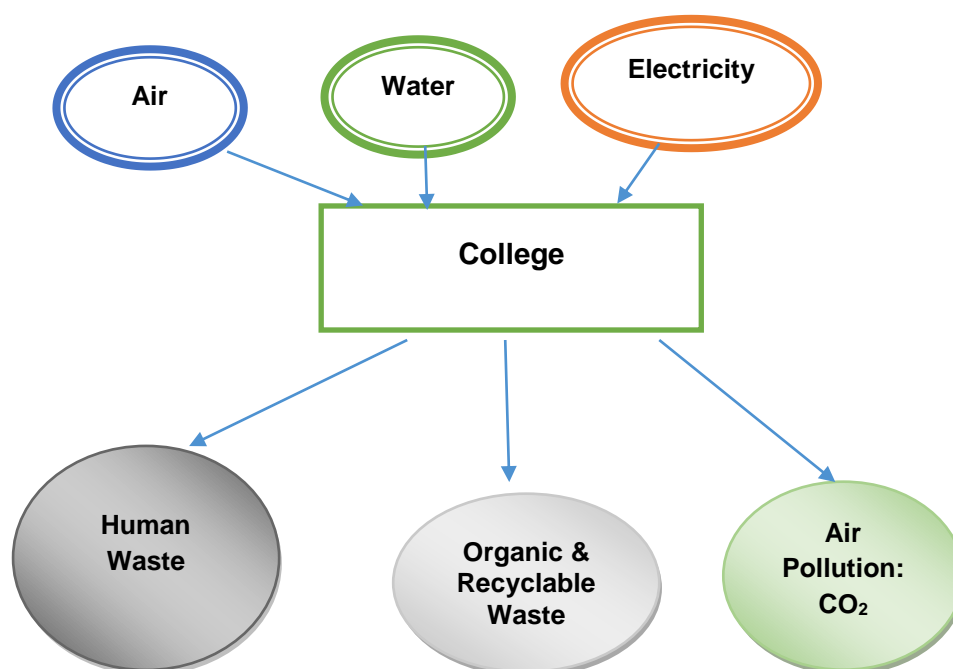
CHAPTER-II STUDY OF RESOURCE CONSUMPTION & CO₂ EMISSION

2.1 The College consumes following Natural/derived Resources:

1. Air
2. Water
3. Electrical Energy

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

2.2 Chart No 1: Representation of College as a System:



2.3 Computation of CO₂ Emissions: A Carbon Foot print is defined as the Total Greenhouse Gas Emissions, emitted due to various activities. The College uses Electrical Energy for various Electrical gadgets & day to day activities.

Basis for computation of CO₂ Emissions:

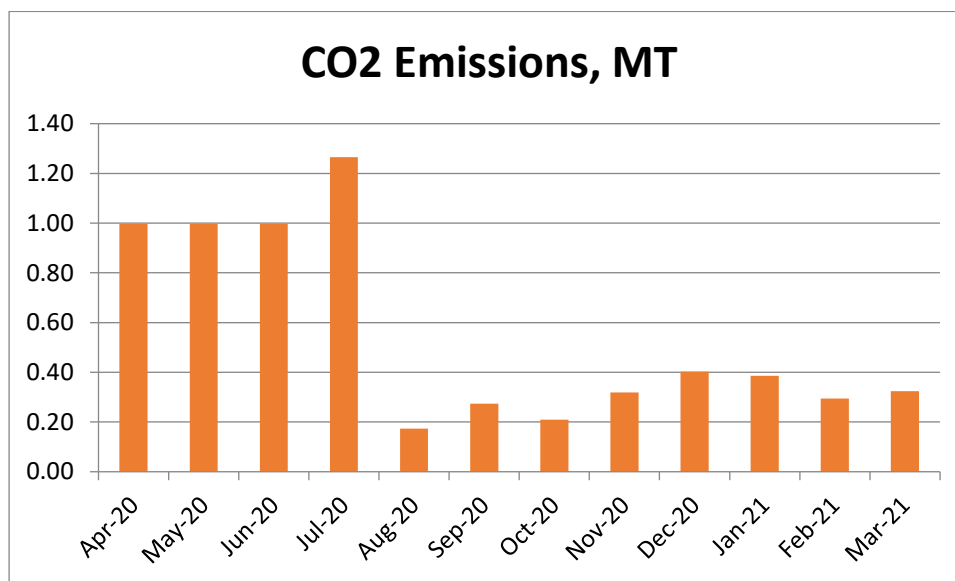
- 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere

Table No 5: Month wise CO₂ Emissions:

No	Month	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Apr-20	1108	1.00
2	May-20	1108	1.00

3	Jun-20	1108	1.00
4	Jul-20	1406	1.27
5	Aug-20	193	0.17
6	Sep-20	304	0.27
7	Oct-20	232	0.21
8	Nov-20	354	0.32
9	Dec-20	447	0.40
10	Jan-21	428	0.39
11	Feb-21	327	0.29
12	Mar-21	360	0.32
13	Total	7375	6.64
14	Maximum	1406	1.27
15	Minimum	193	0.17
16	Average	614.58	0.55

Chart No 2: Representation of Month wise CO₂ emissions:



CHAPTER-III

STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity **31kWp**.

In the following Table, we compute the Annual Reduction in CO₂ Emissions due to installation of Roof Top Solar PV Plant.

Table No 6: Computation of CO₂ Emission Reduction by 31 kWp Solar PV Plant:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	31	kWp
2	Energy Generated in per kWp	4	4 kWh/kWp
3	Annual Solar Energy generation Days	300	Nos
4	Energy Generated in the Year: 20-21	37000	kWh
5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	Qty of CO₂ Saved by Solar PV Plant =(4)*(5) /1000	33.48	MT of CO₂

Photograph of 31 kWp 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. 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.'

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.

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
1	Seminar hall	113	61	81
2	Director Office	120	66	81
3	C-14 T.Y.B.Com	110	63	80
4	Sr. College Record	106	62	79
5	Computer Room C-23	114	64	79
6	F.Y.B.A.	121	68	81
	Maximum	121	68	81
	Minimum	106	62	79

CHAPTER V STUDY OF WASTE MANAGEMENT

5.1 Solid Waste Management:

The recyclable waste, like paper waste is segregated at source and then handed over to Authorized Agency for further action.

Photograph of Waste Collection Bin:



5.2 Organic Waste Management:

The College has made provision of a Bio Composting Bed, for conversion of Organic Waste.

Photograph of Bio Composting Bed:



5.3 E-Waste Management:

The E Waste is disposed of through Authorized Agency.

CHAPTER-VI

STUDY OF RAIN WATER MANAGEMENT

The College has implemented the Rain Water Management Project. The College has installed Pipes from the terrace and the Rain water falling on the terrace is stored in an underground Water tank and is used for gardening purpose.

Photograph of Rain Water Collecting Pipe:



CHAPTER-VII

STUDY OF ENVIRONMENT FRIENDLY INITIATIVES

7.1 Tree Plantation:

The College has well Tree Plantation in the campus.

Photograph of Garden/Tree plantation in the campus:



**ANNEXURE-I:
INDOOR AIR QUALITY STANDARDS:**

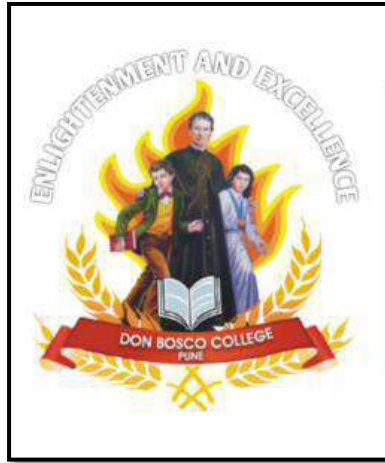
1. Category Wise Air Quality Index Values & Concentration of PM 2.5 & PM10:

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 +

ENVIRONMENTAL AUDIT REPORT

of
Bombay Salesian Society's,
DON BOSCO COLLEGE OF ARTS & COMMERCE
(EVENING)

Don Bosco Marg, Yerawada, Pune 411 006



Year: 2019-20

Prepared by

ENRICH CONSULTANTS

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



REGISTRATION CERTIFICATES

Regn. No. EA-8192		No. 2942
National Productivity Council (National Certifying Agency)		
PROVISIONAL CERTIFICATE		
This is to certify that Mr. / Ms. <u>Achyut Yashavant Mehendale</u> son / daughter of Mr. <u>Yashavant</u> 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		 Controller of Examination
Date : 10 th August 2007		

BEE ENERGY AUDITOR CERTIFICATE

MAHARASHTRA ENERGY DEVELOPMENT AGENCY	
Maharashtra Energy Development Agency (A Government of Maharashtra undertaking) 2 nd Floor, MHADA Commercial Complex, Opp. Tridal Nagar, Yerwada, Pune 411 006, Ph No: 020-26614393/266144403 Email: eec@mahaurja.com, Web: www.mahaurja.com	
ECN/2018-19/CR-05/4174	19 th September, 2018
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	: Enrich Consultants Yashashree, Plot No. 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune - 411009.
Registration Category	: Empanelled Consultant for Energy Conservation Programme
Registration Number	: MEDA/ECN/CR-05/2018-19/EA-03
<ul style="list-style-type: none">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 the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.This empanelment is valid till 31st March 2021 from the date of registration, to carry out energy audits under the Energy Conservation ProgrammeThe Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.	
 (Smita Kudarikar) General Manager (EC)	

MEDA REGISTRATION CERTIFICATE

INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	4
II	Executive Summary	5
III	Abbreviations	7
1	Introduction	8
2	Study of Resource Consumption & CO ₂ Emission	10
3	Study of Usage of Renewable Energy	12
4	Study of Waste Management	13
5	Study of Rain Water Management	14
6	Study of Environment Friendly Initiatives	15

ACKNOWLEDGEMENT

We Enrich Consultants, Pune, express our sincere gratitude to the management of Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune for awarding us the assignment of Environmental Audit of their Yerawada Campus for the Year: 2019-20.

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

EXECUTIVE SUMMARY

1. Don Bosco College of Arts & Commerce (Evening), Pune consumes Energy in the form of **Electrical Energy**; used for various office equipment.

2. Pollution due to College Activities:

- **Air pollution:** Mainly CO₂ on account of Electrical Energy Consumption
- **Solid Waste:** Bio degradable Kitchen Waste, Garden Waste
- **Liquid Waste:** Human liquid waste

3. Present Level of Energy Consumption & CO₂ Emission:

No	Parameter/ Value	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Total	14729	13.26
2	Maximum	3197	2.88
3	Minimum	486	0.44
4	Average	1227.42	1.10

4. Usage of Renewable Energy & CO₂ Emission Reduction:

- The College has installed **31 kWp** Roof Top Solar PV Plant.
- The Energy generated by the Solar PV Plant is **37200 kWh**.
- The reduction in Annual CO₂ Emission due to Solar PV Plant in 2019-20 is **33.48 MT**.

5. Waste Management:

5.1 Solid Waste Management:

The recyclable waste, like paper waste is segregated at source and then handed over to Authorized Agency for further action.

5.2 Organic Waste Management:

The College has made provision of a Bio Composting Bed, for conversion of Organic Waste.

5.3 E Waste Management:

The E Waste is disposed of through Authorized Agency.

6. Rain Water Management:

The College has installed Rainwater harvesting project; the rain water falling on the terrace is collected and is stored in an underground Storage tank and is further used for Gardening.

7. Environment Friendly Initiatives:

- Tree Plantation in the campus

8. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere
2. Average Energy generated by Solar PV Plant is **4 kWh/kWp/Day**
3. Annual Solar Energy Generation Days in 2019-20 is **300 Nos**

9. References:

- For CO₂ Emissions: www.tatapower.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

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 compiled 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 College)
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 Objectives:

1. To study Resource Consumption & CO₂ Emissions
2. To study CO₂ Emission Reduction
3. To study Waste Management Practices
4. To study Rain Water Management
5. To study Environment friendly Initiatives

1.3 General Details of College: Table No-4:

No	Head	Particulars
1	Name of Institution	Don Bosco College of Arts & Commerce (Evening)
2	Address	Don Bosco Marg, Yerawada, Pune 411 006
3	Year of Establishment	2012
4	Affiliation	Savitribai Phule Pune University

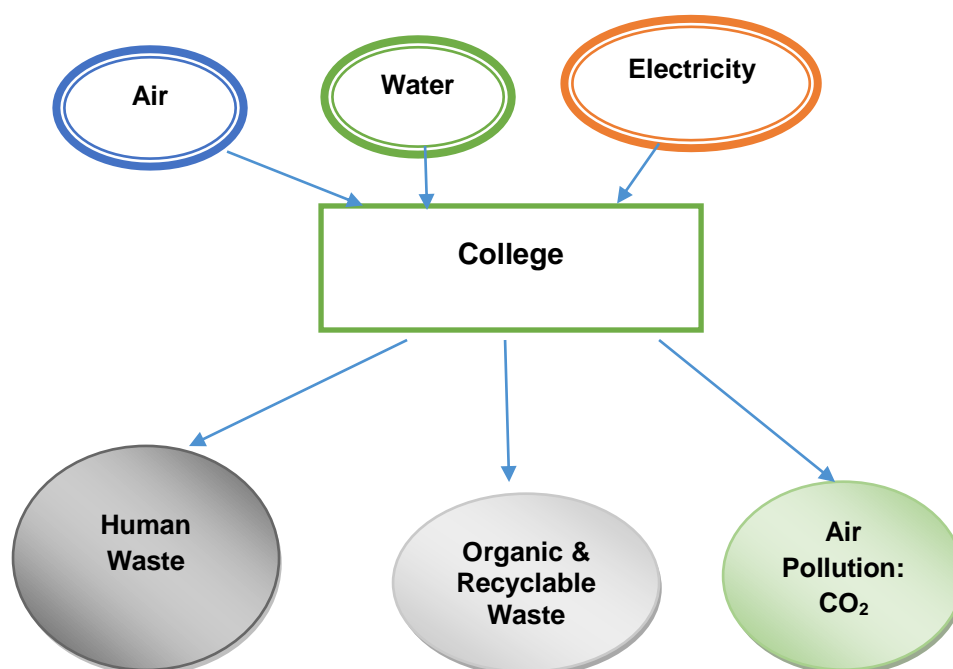
CHAPTER-II STUDY OF RESOURCE CONSUMPTION & CO₂ EMISSION

2.1 The College consumes following Natural/derived Resources:

1. Air
2. Water
3. Electrical Energy

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

2.2 Chart No 1: Representation of College as a System:



2.3 Computation of CO₂ Emissions: A Carbon Foot print is defined as the Total Greenhouse Gas Emissions, emitted due to various activities. The College uses Electrical Energy for various Electrical gadgets & day to day activities.

Basis for computation of CO₂ Emissions:

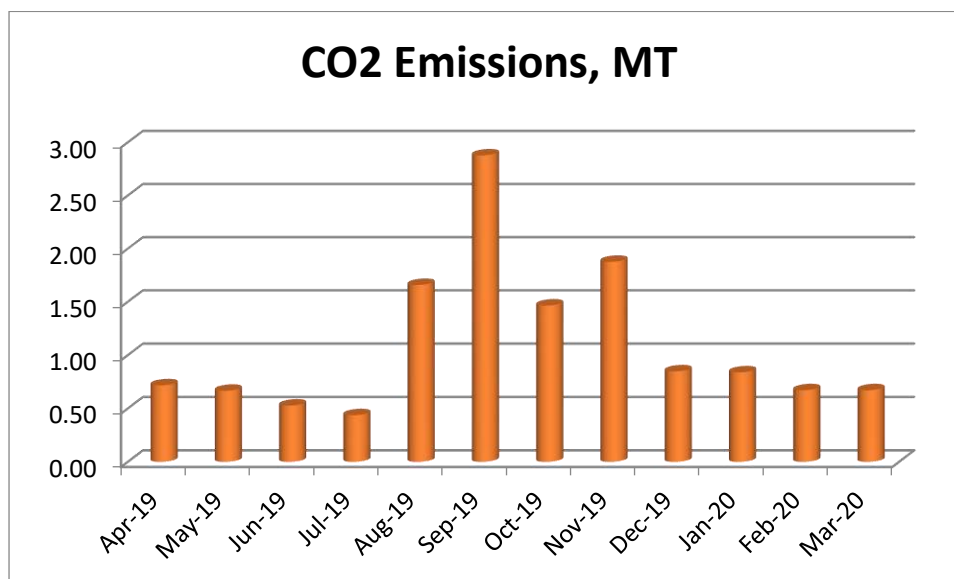
- 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere

Table No 5: Month wise CO₂ Emissions:

No	Month	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Apr-19	797	0.72
2	May-19	740	0.67

3	Jun-19	586	0.53
4	Jul-19	486	0.44
5	Aug-19	1843	1.66
6	Sep-19	3197	2.88
7	Oct-19	1628	1.47
8	Nov-19	2085	1.88
9	Dec-19	943	0.85
10	Jan-20	932	0.84
11	Feb-20	746	0.67
12	Mar-20	746	0.67
13	Total	14729	13.26
14	Maximum	3197	2.88
15	Minimum	486	0.44
16	Average	1227.42	1.10

Chart No 2: Representation of Month wise CO₂ emissions:



CHAPTER-III

STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity **31kWp**.

In the following Table, we compute the Annual Reduction in CO₂ Emissions due to installation of Roof Top Solar PV Plant.

Table No 6: Computation of CO₂ Emission Reduction by 31 kWp Solar PV Plant:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	31	kWp
2	Energy Generated in per kWp	4	4 kWh/kWp
3	Annual Solar Energy generation Days	300	Nos
4	Energy Generated in the Year: 19-20	37000	kWh
5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	Qty of CO₂ Saved by Solar PV Plant =(4)*(5) /1000	33.48	MT of CO₂

Photograph of 31 kWp Roof Top Solar PV Plant:



CHAPTER IV STUDY OF WASTE MANAGEMENT

4.1 Solid Waste Management:

The recyclable waste, like paper waste is segregated at source and then handed over to Authorized Agency for further action.

Photograph of Waste Collection Bin:



4.2 Organic Waste Management:

The College has made provision of a Bio Composting Bed, for conversion of Organic Waste.

Photograph of Bio Composting Bed:



4.3 E-Waste Management:

The E Waste is disposed of through Authorized Agency.

CHAPTER-V

STUDY OF RAIN WATER MANAGEMENT

The College has implemented the Rain Water Management Project. The College has installed Pipes from the terrace and the Rain water falling on the terrace is stored in an underground Water tank and is used for gardening purpose.

Photograph of Rain Water Collecting Pipe:



CHAPTER-VI

STUDY OF ENVIRONMENT FRIENDLY INITIATIVES

6.1 Tree Plantation:

The College has well Tree Plantation in the campus.

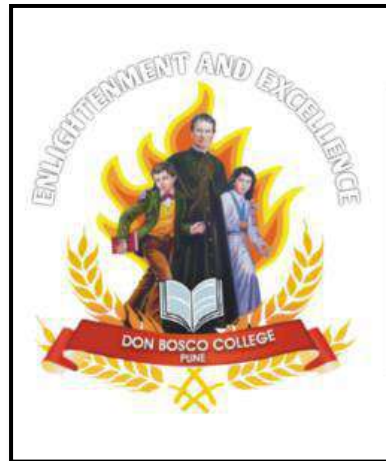
Photograph of Garden/Tree plantation in the campus:



ENERGY AUDIT REPORT

of
Bombay Salesian Society's,
DON BOSCO COLLEGE OF ARTS & COMMERCE
(EVENING)

Don Bosco Marg, Yerawada, Pune 411 006



Year: 2018-19

Prepared by:

ENRICH CONSULTANTS


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



REGISTRATION CERTIFICATES

Regn. No. EA-8192		No. 2942
National Productivity Council (National Certifying Agency)		
PROVISIONAL CERTIFICATE		
This is to certify that Mr. / Ms. <u>Achyut Yashavant Mehendale</u> son / daughter of Mr. <u>Yashavant</u> 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		 Controller of Examination
Date : 10 th August 2007		

BEE ENERGY AUDITOR CERTIFICATE

MAHARASHTRA ENERGY DEVELOPMENT AGENCY	
 Maharashtra Energy Development Agency (A Government of Maharashtra undertaking) 2 nd Floor, MHADA Commercial Complex, Opp. Tridal Nagar, Yerwada, Pune 411 006, Ph No: 020-26614393/266144403 Email: eec@mahaurja.com, Web: www.mahaurja.com	
ECN/2018-19/CR-05/4174	19 th September, 2018
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	: Enrich Consultants Yashashree, Plot No. 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune - 411009.
Registration Category	: Empanelled Consultant for Energy Conservation Programme
Registration Number	: MEDA/ECN/CR-05/2018-19/EA-03
<ul style="list-style-type: none">• 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 the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.• This empanelment is valid till 31st March 2021 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.	
 (Smita Kudarikar) General Manager (EC)	

MEDA REGISTRATION CERTIFICATE

INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	4
II	Executive Summary	5
III	Abbreviations	6
1	Introduction	7
2	Study of Connected Load	8
3	Study of Present Energy Consumption	9
4	Study of Carbon Foot Printing	10
5	Study of Usage of Alternate Energy	11
6	Study of LED Lighting	12

ACKNOWLEDGEMENT

We Enrich Consultants, Pune, express our sincere gratitude to the management of Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune for awarding us the assignment of Energy Audit of their Yerawada Campus for the Year: 2018-19.

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

EXECUTIVE SUMMARY

1. Don Bosco College of Arts & Commerce (Evening), Pune consumes Energy in the form of Electrical Energy; used for various office equipment.

2. Present Energy Consumption & CO₂ Emission:

No	Parameter/ Value	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Total	10388	9.35
2	Maximum	2824	2.54
3	Minimum	423	0.38
4	Average	865.67	0.78

3. Energy Conservation projects Installed:

- Usage of Energy Efficient LED fittings
- Usage of BEE STAR Rated Equipment
- In Process of Installation of **31 kWp** Solar PV Plant

4. Usage of Alternate/Renewable Energy:

- The College is in process of installation **31 kWp** Roof Top Solar PV Plant.

5. Usage of LED Lighting:

- The Total Lighting load of College is **4.482 kW**.
- The Total LED Lighting Load of the College is **1.482 kW**.
- The percentage of LED Lighting Load to Total Lighting Load is **33.07 %**.

6. Assumption:

1. **1 kWh** of Electrical Energy releases **0.8 Kg of CO₂** into atmosphere

ABBREVIATIONS

LED	:	Light Emitting Diode
MSEDCL	:	Maharashtra State Electricity Distribution Company Ltd
kWp	:	Kilo Watt peak
kWh	:	kilo-Watt Hour
CO ₂	:	Carbon Di Oxide
Kg	:	Kilo Gram
MT	:	Metric Ton

CHAPTER-I INTRODUCTION

1.1 Objectives:

1. To study Connected Load
2. To study Present Energy Consumption
3. To compute CO₂ emissions
4. To study Usage of Renewable Energy
5. To study usage of LED Lighting

1.2 Table No 1: General Details of the College:

No	Head	Particulars
1	Name of Institution	Don Bosco College of Arts & Commerce (Evening)
2	Address	Don Bosco Marg, Yerawada, Pune 411 006
3	Year of Establishment	2012
4	Affiliation	Savitribai Phule Pune University

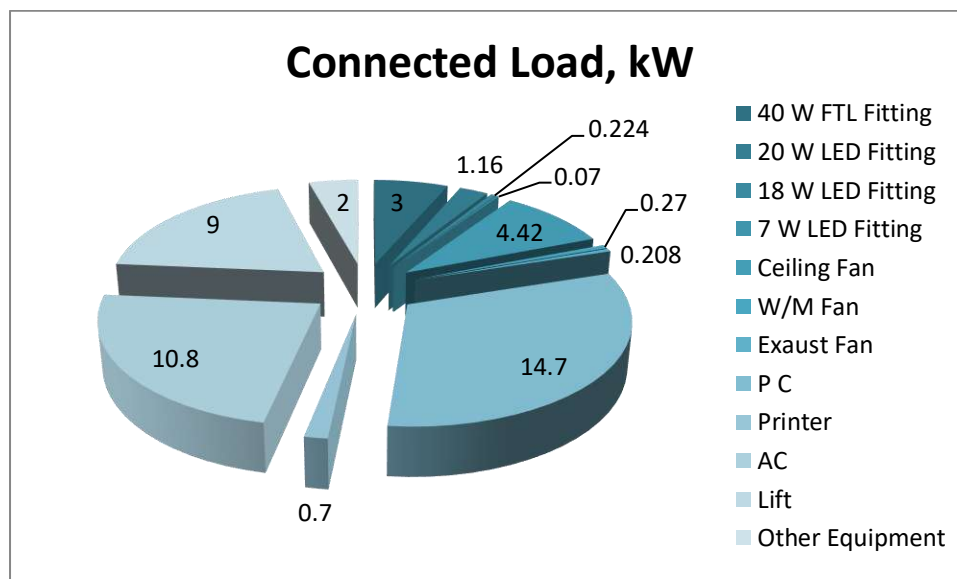
CHAPTER-II STUDY OF CONNECTED LOAD

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

Table No 2: Study of Connected Load:

No	Equipment	Qty	Load, W/unit	Load, kW
1	40 W FTL Fitting	75	40	3
2	20 W LED Fitting	58	20	1.16
3	18 W LED Fitting	14	16	0.224
4	7 W LED Fitting	10	7	0.07
5	Ceiling Fan	68	65	4.42
6	W/M Fan	5	54	0.27
7	Exhaust Fan	4	52	0.208
8	P C	98	150	14.7
9	Printer	4	175	0.7
10	AC	6	1800	10.8
11	Lift	1	9000	9
12	Other Equipment	8	250	2
13	Total			46.55

Chart No 1: Study of Connected Load:



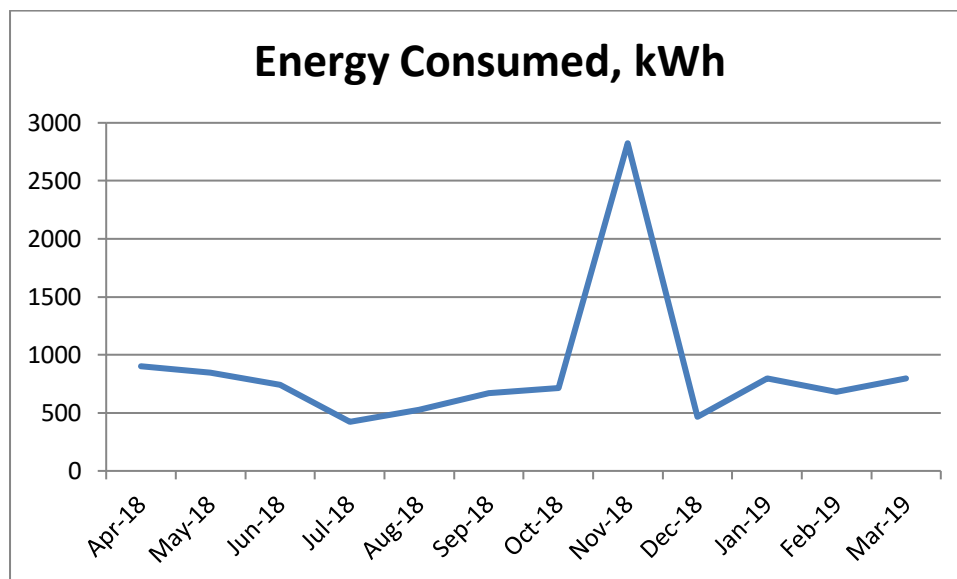
CHAPTER-III STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No 3: Electrical Bill Analysis- 2018-19:

No	Month	Energy Consumed, kWh
1	Apr-18	903
2	May-18	845
3	Jun-18	743
4	Jul-18	423
5	Aug-18	526
6	Sep-18	669
7	Oct-18	712
8	Nov-18	2824
9	Dec-18	467
10	Jan-19	799
11	Feb-19	680
12	Mar-19	797
13	Total	10388
14	Maximum	2824
15	Minimum	423
16	Average	865.67

Chart No 2: To study the variation of Month wise Energy Consumption, kWh:



CHAPTER-IV STUDY OF CARBON FOOTPRINTING

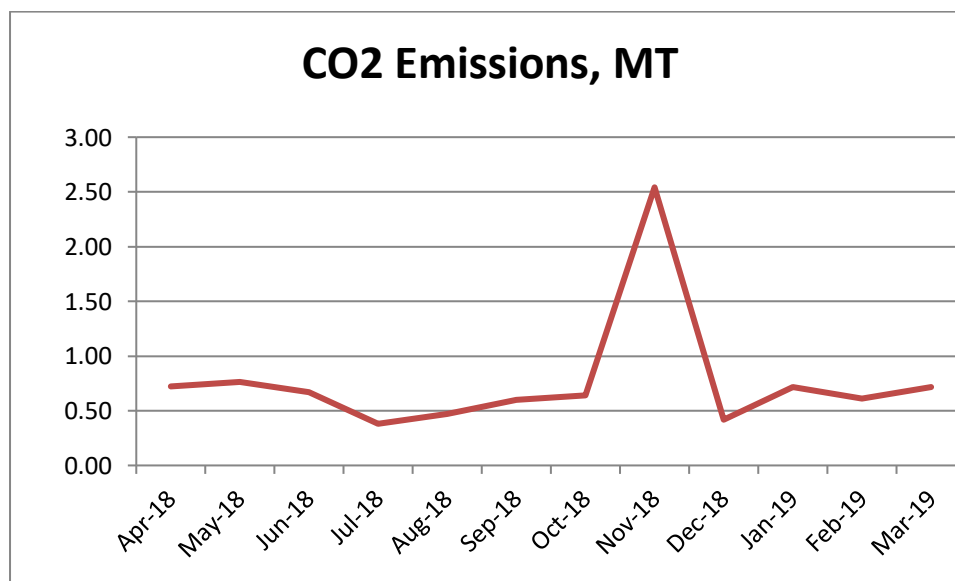
A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO₂ Emissions:**

- 1 kWh of Electrical Energy releases **0.8 Kg of CO₂** into atmosphere

Table No 4: Month wise CO₂ Emissions:

No	Month	Energy Consumed, kWh	CO2 Emissions, MT
1	Apr-18	903	0.72
2	May-18	845	0.76
3	Jun-18	743	0.67
4	Jul-18	423	0.38
5	Aug-18	526	0.47
6	Sep-18	669	0.60
7	Oct-18	712	0.64
8	Nov-18	2824	2.54
9	Dec-18	467	0.42
10	Jan-19	799	0.72
11	Feb-19	680	0.61
12	Mar-19	797	0.72
13	Total	10388	9.35
14	Maximum	2824	2.54
15	Minimum	423	0.38
16	Average	865.67	0.78

Chart No 3: Representation of Month wise CO₂ emissions:



CHAPTER-V

STUDY OF USAGE OF ALTERNATE ENERGY

The College is in a process of installation of 31kWp Roof Top Solar PV Plant.

CHAPTER VI

STUDY OF USAGE OF LED LIGHTING

In this chapter, we compute the percentage of usage of LEDs to Total Lighting Load.

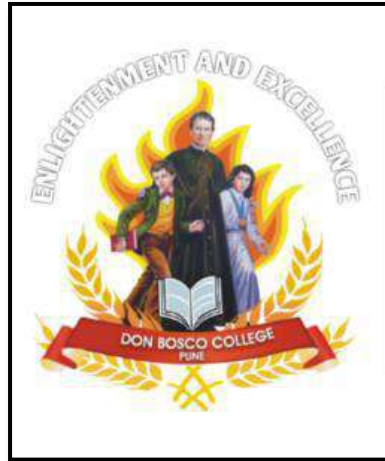
Table No 6: Percentage of Usage of LEDs to Total Lighting Load:

No	Particulars	Value	Unit
1	No of 40 W FTL Fitting	75	Nos
2	Load/unit of 40 W FTL Fitting	40	W/unit
3	Total Load of 40 W FTL Fittings	3	kW
4	No of 20 W LED Fitting	58	Nos
5	Load/unit of 20 W LED Fitting	20	W/unit
6	Total Load of 20 W LED Fittings	1.16	kW
7	No of 18 W LED Fitting	14	Nos
8	Load/unit of 18 W LED Fitting	18	W/unit
9	Total Load of 18 W LED Fittings	0.252	kW
10	No of 7 W LED Fitting	10	Nos
11	Load/unit of 7 W LED Fitting	7	W/unit
12	Total Load of 7 W LED Fittings	0.07	kW
13	Total LED Lighting Load=6+9+12	1.482	kW
14	Total LED Lighting Load=3+6+9+12	4.482	kW
15	% of LED to Total Lighting Load=13*100/14	33.07	%

ENERGY AUDIT REPORT

of
Bombay Salesian Society's,
DON BOSCO COLLEGE OF ARTS & COMMERCE
(EVENING)

Don Bosco Marg, Yerawada, Pune 411 006



Year: 2019-20

Prepared by:

ENRICH CONSULTANTS

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



REGISTRATION CERTIFICATES

Regn. No. EA-8192		No. 2942
National Productivity Council (National Certifying Agency)		
PROVISIONAL CERTIFICATE		
This is to certify that Mr. / Ms. <u>Achyut Yashavant Mehendale</u> son / daughter of Mr. <u>Yashavant</u> 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		 Controller of Examination
Date : 10 th August 2007		

BEE ENERGY AUDITOR CERTIFICATE

MAHARASHTRA ENERGY DEVELOPMENT AGENCY	
 Maharashtra Energy Development Agency (A Government of Maharashtra undertaking) 2 nd Floor, MHADA Commercial Complex, Opp. Tridal Nagar, Yerwada, Pune 411 006, Ph No: 020-26614393/266144403 Email: eec@mahaurja.com, Web: www.mahaurja.com	
ECN/2018-19/CR-05/4174	19 th September, 2018
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	: Enrich Consultants Yashashree, Plot No. 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune - 411009.
Registration Category	: Empanelled Consultant for Energy Conservation Programme
Registration Number	: MEDA/ECN/CR-05/2018-19/EA-03
<ul style="list-style-type: none">• 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 the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.• This empanelment is valid till 31st March 2021 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.	
 (Smita Kudarikar) General Manager (EC)	

MEDA REGISTRATION CERTIFICATE

INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	4
II	Executive Summary	5
III	Abbreviations	6
1	Introduction	7
2	Study of Connected Load	8
3	Study of Present Energy Consumption	9
4	Study of Carbon Foot Printing	10
5	Study of Usage of Alternate Energy	11
6	Study of LED Lighting	12

ACKNOWLEDGEMENT

We Enrich Consultants, Pune, express our sincere gratitude to the management of Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune for awarding us the assignment of Energy Audit of their Yerawada Campus for the Year: 2019-20.

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

EXECUTIVE SUMMARY

1. Don Bosco College of Arts & Commerce (Evening), Pune consumes Energy in the form of **Electrical Energy**; used for various office equipment.

2. Present Energy Consumption & CO₂ Emission:

No	Parameter/ Value	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Total	14729	13.26
2	Maximum	3197	2.88
3	Minimum	486	0.44
4	Average	1227.42	1.10

3. Energy Conservation projects Installed:

- Usage of Energy Efficient LED fittings
- Usage of BEE STAR Rated Equipment
- Installation of **31 kWp** Solar PV Plant

4. Usage of Alternate/Renewable Energy:

- The College has installed **31 kWp** Roof Top Solar PV Plant.
- Energy generated by Solar PV Plant is **37200 kWh**
- Energy Purchased in 2019-20 is **14729 kWh**
- Total Energy Requirement in 2019-20 is **51929 kWh**
- % of Usage of Alternate Energy to Total Energy Demand in 2019-20 is **71.64 %**

5. Usage of LED Lighting:

- The Total Lighting load of College is **4.494 kW**.
- The Total LED Lighting Load of the College is **1.654 kW**.
- The percentage of LED Lighting Load to Total Lighting Load is **36.80 %**.

6. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere
2. Average Energy generated by Solar PV Plant is **4 kWh/kWp/Day**
3. Annual Solar Energy Generation Days in 2019-20 is **300 Nos**

7. References:

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

ABBREVIATIONS

LED	:	Light Emitting Diode
MSEDCL	:	Maharashtra State Electricity Distribution Company Ltd
kWp	:	Kilo Watt peak
kWh	:	kilo-Watt Hour
CO ₂	:	Carbon Di Oxide
Kg	:	Kilo Gram
MT	:	Metric Ton

CHAPTER-I INTRODUCTION

1.1 Objectives:

1. To study Connected Load
2. To study Present Energy Consumption
3. To compute CO₂ emissions
4. To study Usage of Renewable Energy
5. To study usage of LED Lighting

1.2 Table No 1: General Details of the College:

No	Head	Particulars
1	Name of Institution	Don Bosco College of Arts & Commerce (Evening)
2	Address	Don Bosco Marg, Yerawada, Pune 411 006
3	Year of Establishment	2012
4	Affiliation	Savitribai Phule Pune University

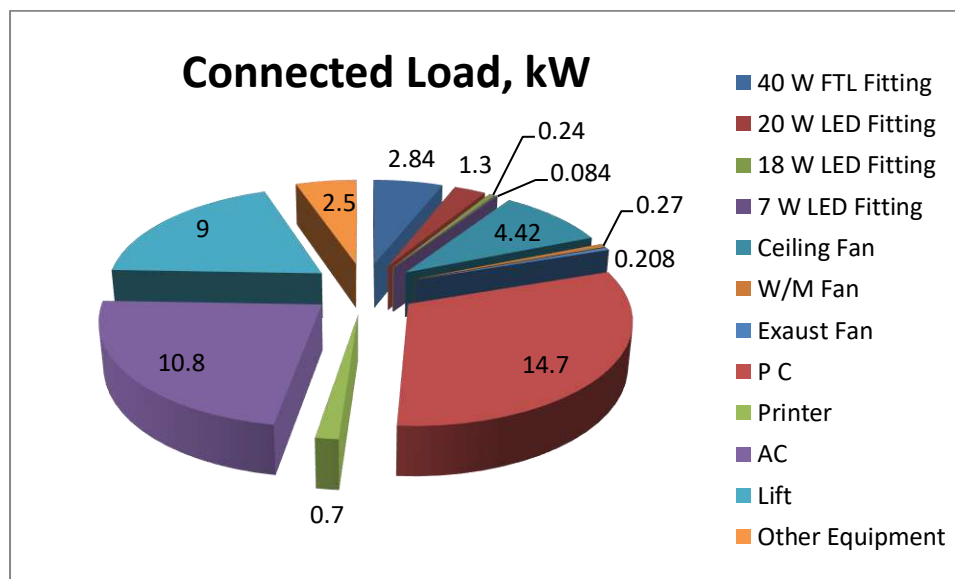
CHAPTER-II STUDY OF CONNECTED LOAD

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

Table No 2: Connected Load:

No	Equipment	Qty	Load, W/unit	Load, kW
1	40 W FTL Fitting	71	40	2.84
2	20 W LED Fitting	65	20	1.3
3	18 W LED Fitting	15	16	0.24
4	7 W LED Fitting	12	7	0.084
5	Ceiling Fan	68	65	4.42
6	W/M Fan	5	54	0.27
7	Exhaust Fan	4	52	0.208
8	P C	98	150	14.7
9	Printer	4	175	0.7
10	AC	6	1800	10.8
11	Lift	1	9000	9
12	Other Equipment	10	250	2.5
13	Total			47.06

Chart No 1: Study of Connected Load:



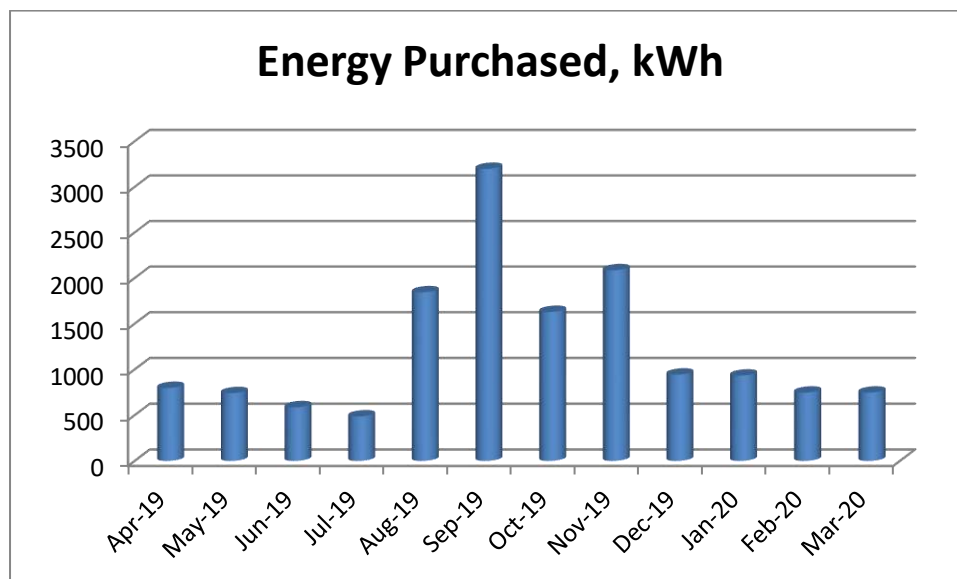
CHAPTER-III STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No 3: Electrical Bill Analysis- 2019-20:

No	Month	Energy Purchased, kWh
1	Apr-19	797
2	May-19	740
3	Jun-19	586
4	Jul-19	486
5	Aug-19	1843
6	Sep-19	3197
7	Oct-19	1628
8	Nov-19	2085
9	Dec-19	943
10	Jan-20	932
11	Feb-20	746
12	Mar-20	746
13	Total	14729
14	Maximum	3197
15	Minimum	486
16	Average	1227.42

Chart No 2: To study the variation of Month wise Energy Consumption, kWh:



CHAPTER-IV STUDY OF CARBON FOOTPRINTING

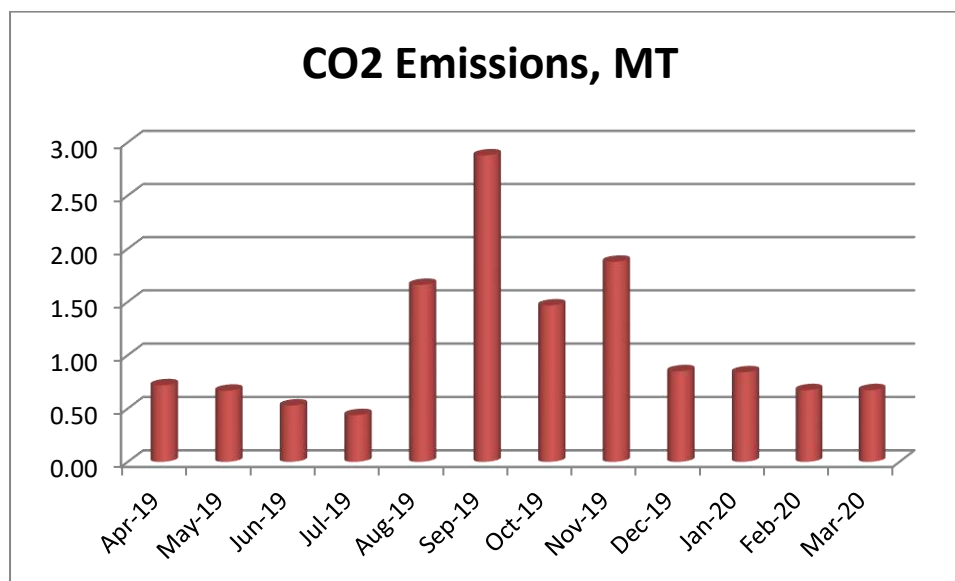
A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO₂ Emissions:**

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

Table No 4: Month wise CO₂ Emissions:

No	Month	Energy Purchased, kWh	CO2 Emissions, MT
1	Apr-19	797	0.72
2	May-19	740	0.67
3	Jun-19	586	0.53
4	Jul-19	486	0.44
5	Aug-19	1843	1.66
6	Sep-19	3197	2.88
7	Oct-19	1628	1.47
8	Nov-19	2085	1.88
9	Dec-19	943	0.85
10	Jan-20	932	0.84
11	Feb-20	746	0.67
12	Mar-20	746	0.67
13	Total	14729	13.26
14	Maximum	3197	2.88
15	Minimum	486	0.44
16	Average	1227.42	1.10

Chart No 3: Representation of Month wise CO₂ emissions:



CHAPTER-V STUDY OF USAGE OF ALTERNATE ENERGY

The College has installed 31 kWp Roof Top Solar PV Plant.

Now we compute the % of Usage of Alternate Energy to Annual Energy Demand of the College.

Table No 5: Computation of % Usage of Alternate Energy:

No	Particulars	Value	Unit
1	Energy Purchased from MSEDCL	14729	kWh
2	Installed Roof Top Solar PV Plant Capacity	31	kWp
3	Average Daily Energy Generated	4	kWh/kWp
4	Annual Generation Days	300	Nos
5	Annual Solar Energy Generated	37200	kWh
6	Total Energy Demand = (1) + (5)	51929	kWh
7	Usage of Alternate Energy to Annual Energy Demand = $5 \times 100 / 6$	71.64	%

Photograph of Roof Top Solar PV Plant:



CHAPTER VI

STUDY OF USAGE OF LED LIGHTING

In this chapter, we compute the percentage of usage of LEDs to Total Lighting Load.

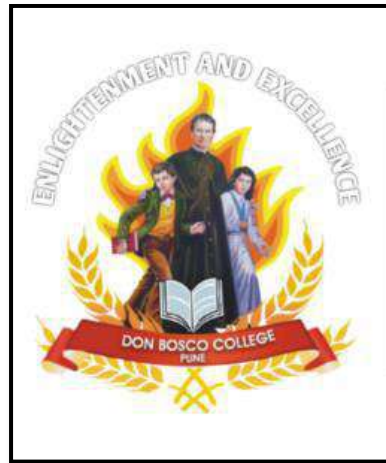
Table No 6: Percentage of Usage of LEDs to Total Lighting Load:

No	Particulars	Value	Unit
1	No of 40 W FTL Fitting	71	Nos
2	Load/unit of 40 W FTL Fitting	40	W/unit
3	Total Load of 40 W FTL Fittings	2.84	kW
4	No of 20 W LED Fitting	65	Nos
5	Load/unit of 20 W LED Fitting	20	W/unit
6	Total Load of 20 W LED Fittings	1.3	kW
7	No of 18 W LED Fitting	15	Nos
8	Load/unit of 18 W LED Fitting	18	W/unit
9	Total Load of 18 W LED Fittings	0.27	kW
10	No of 7 W LED Fitting	12	Nos
11	Load/unit of 7 W LED Fitting	7	W/unit
12	Total Load of 7 W LED Fittings	0.084	kW
13	Total LED Lighting Load=6+9+12	1.654	kW
14	Total LED Lighting Load=3+6+9+12	4.494	kW
15	% of LED to Total Lighting Load=13*100/14	36.80	%

ENERGY AUDIT REPORT

of
Bombay Salesian Society's,
DON BOSCO COLLEGE OF ARTS & COMMERCE
(EVENING)

Don Bosco Marg, Yerawada, Pune 411 006



Year: 2020-21

Prepared by:

ENRICH CONSULTANTS


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



REGISTRATION CERTIFICATES

Regn. No. EA-8192		No. 2942
National Productivity Council (National Certifying Agency)		
PROVISIONAL CERTIFICATE		
This is to certify that Mr. / Ms. <u>Achyut Yashavant Mehendale</u> son / daughter of Mr. <u>Yashavant</u> 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		 Controller of Examination
Date : 10 th August 2007		

BEE ENERGY AUDITOR CERTIFICATE

MAHARASHTRA ENERGY DEVELOPMENT AGENCY <small>An ISO 9001 : 2000 Reg. no. : RD 91 / 2462</small>	
	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-14/1577	22 nd April, 2021
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 Enrich Consultants Yashashree, Plot No. 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune - 411009.
Registration Category	: Empanelled Consultant for Energy Conservation Programme for Class 'A'
Registration Number	: MEDA/ECN/2021-22/Class A/EA-03
<ul style="list-style-type: none">• 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 21st April, 2023 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)

MEDA EMPANELMENT CERTIFICATE

INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	4
II	Executive Summary	5
III	Abbreviations	6
1	Introduction	7
2	Study of Connected Load	8
3	Study of Present Energy Consumption	9
4	Study of Carbon Foot Printing	10
5	Study of Usage of Alternate Energy	11
6	Study of LED Lighting	12

ACKNOWLEDGEMENT

We Enrich Consultants, Pune, express our sincere gratitude to the management of Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune for awarding us the assignment of Energy Audit of their Yerawada Campus for the Year: 2020-21.

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

EXECUTIVE SUMMARY

1. Don Bosco College of Arts & Commerce (Evening), Pune consumes Energy in the form of Electrical Energy; used for various office equipment.

2. Present Energy Consumption & CO₂ Emission:

No	Parameter/ Value	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Total	7375	6.64
2	Maximum	1406	1.27
3	Minimum	193	0.17
4	Average	614.58	0.55

3. Energy Conservation projects Installed:

- Usage of Energy Efficient LED fittings
- Usage of BEE STAR Rated Equipment
- Installation of **31 kWp** Solar PV Plant

4. Usage of Alternate/Renewable Energy:

- The College has installed **31 kWp** Roof Top Solar PV Plant.
- Energy generated by Solar PV Plant is **37200 kWh**
- Energy Purchased in 2020-21 is **7375 kWh**
- Total Energy Requirement in 2020-21 is **44575 kWh**
- % of Usage of Alternate Energy to Total Energy Demand in 2020-21 is **83.45 %**

5. Usage of LED Lighting:

- The Total Lighting load of College is **4.394 kW**.
- The Total LED Lighting Load of the College is **1.714 kW**.
- The percentage of LED Lighting Load to Total Lighting Load is **39.01 %**.

6. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere
2. Average Energy generated by Solar PV Plant is **4 kWh/kWp/Day**
3. Annual Solar Energy Generation Days in 2020-21 is **300 Nos**

7. References:

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

ABBREVIATIONS

LED	:	Light Emitting Diode
MSEDCL	:	Maharashtra State Electricity Distribution Company Ltd
kWp	:	Kilo Watt peak
kWh	:	kilo-Watt Hour
CO ₂	:	Carbon Di Oxide
Kg	:	Kilo Gram
MT	:	Metric Ton

CHAPTER-I INTRODUCTION

1.1 Objectives:

1. To study Connected Load
2. To study Present Energy Consumption
3. To compute CO₂ emissions
4. To study Usage of Renewable Energy
5. To study usage of LED Lighting

1.2 Table No 1: General Details of the College:

No	Head	Particulars
1	Name of Institution	Don Bosco College of Arts & Commerce (Evening)
2	Address	Don Bosco Marg, Yerawada, Pune 411 006
3	Year of Establishment	2012
4	Affiliation	Savitribai Phule Pune University

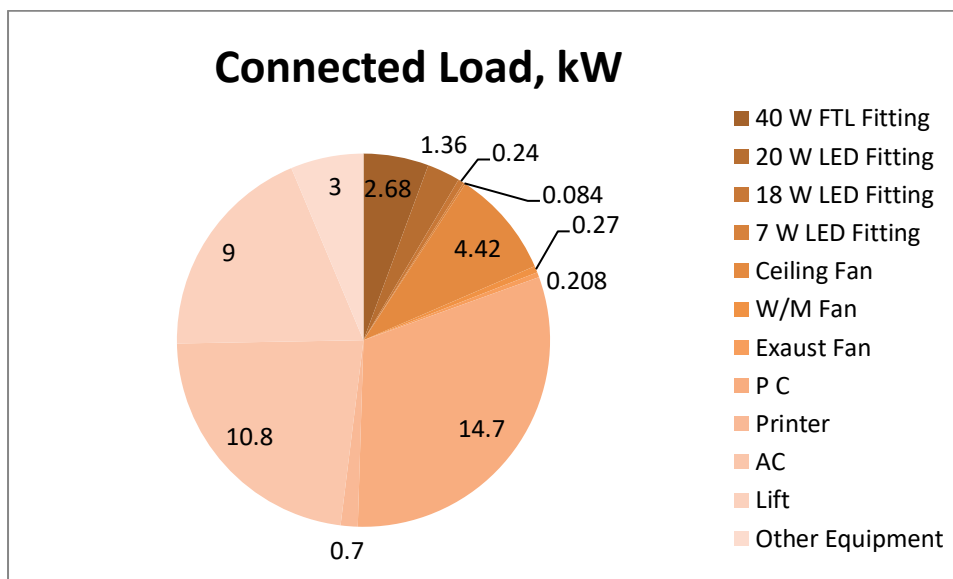
CHAPTER-II STUDY OF CONNECTED LOAD

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

Table No 2: Connected Load Study:

No	Equipment	Qty	Load, W/unit	Load, kW
1	40 W FTL Fitting	67	40	2.68
2	20 W LED Fitting	68	20	1.36
3	18 W LED Fitting	15	16	0.24
4	7 W LED Fitting	12	7	0.084
5	Ceiling Fan	68	65	4.42
6	W/M Fan	5	54	0.27
7	Exhaust Fan	4	52	0.208
8	P C	98	150	14.7
9	Printer	4	175	0.7
10	AC	6	1800	10.8
11	Lift	1	9000	9
12	Other Equipment	12	250	3
13	Total			47.46

Chart No 1: Study of Connected Load:



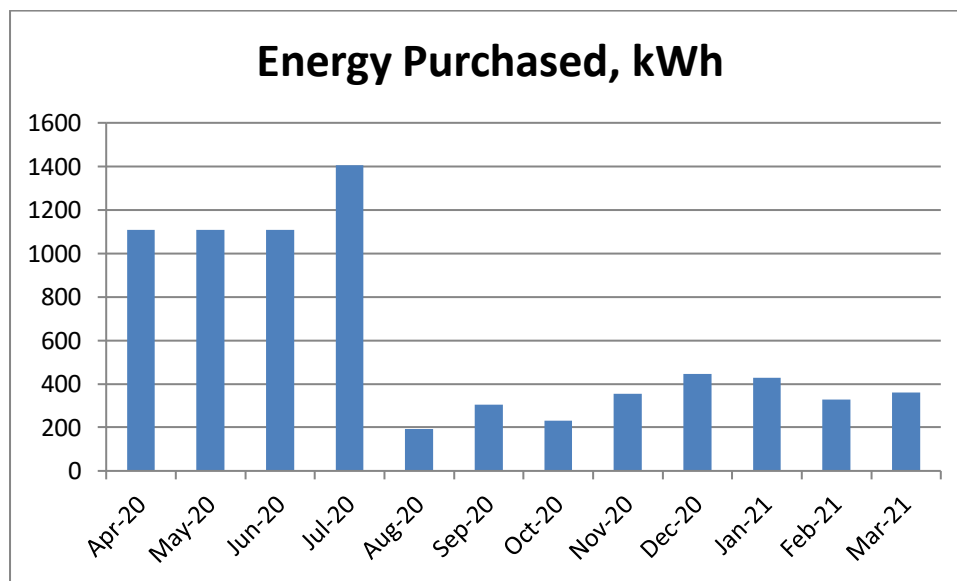
CHAPTER-III STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No 3: Electrical Bill Analysis- 2020-21:

No	Month	Energy Purchased, kWh
1	Apr-20	1108
2	May-20	1108
3	Jun-20	1108
4	Jul-20	1406
5	Aug-20	193
6	Sep-20	304
7	Oct-20	232
8	Nov-20	354
9	Dec-20	447
10	Jan-21	428
11	Feb-21	327
12	Mar-21	360
13	Total	7375
14	Maximum	1406
15	Minimum	193
16	Average	614.58

Chart No 2: To study the variation of Month wise Energy Consumption, kWh:



CHAPTER-IV STUDY OF CARBON FOOTPRINTING

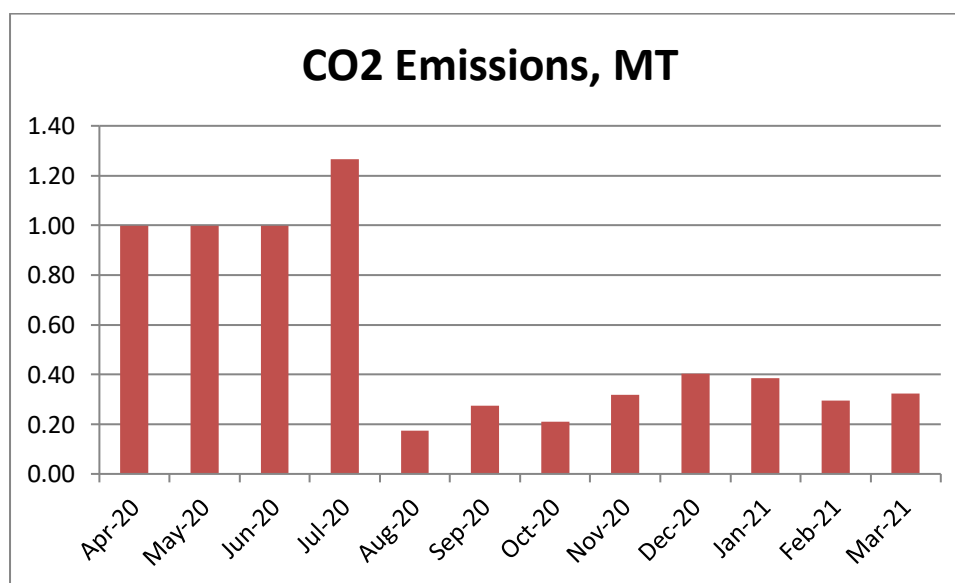
A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO₂ Emissions:**

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

Table No 4: Month wise CO₂ Emissions:

No	Month	Energy Purchased, kWh	CO2 Emissions, MT
1	Apr-20	1108	1.00
2	May-20	1108	1.00
3	Jun-20	1108	1.00
4	Jul-20	1406	1.27
5	Aug-20	193	0.17
6	Sep-20	304	0.27
7	Oct-20	232	0.21
8	Nov-20	354	0.32
9	Dec-20	447	0.40
10	Jan-21	428	0.39
11	Feb-21	327	0.29
12	Mar-21	360	0.32
13	Total	7375	6.64
14	Maximum	1406	1.27
15	Minimum	193	0.17
16	Average	614.58	0.55

Chart No 3: Representation of Month wise CO₂ emissions:



CHAPTER-V STUDY OF USAGE OF ALTERNATE ENERGY

The College has installed 31 kWp Roof Top Solar PV Plant.
Now we compute the % of Usage of Alternate Energy to Annual Energy Demand of the College.

Table No 5: Computation of % Usage of Alternate Energy:

No	Particulars	Value	Unit
1	Energy Purchased from MSEDCL	7375	kWh
2	Installed Roof Top Solar PV Plant Capacity	31	kWp
3	Average Daily Energy Generated	4	kWh/kWp
4	Annual Generation Days	300	Nos
5	Annual Solar Energy Generated	37200	kWh
6	Total Energy Demand = (1) + (5)	44575	kWh
7	Usage of Alternate Energy to Annual Energy Demand = $5 \times 100 / 6$	83.45	%

Photograph of Roof Top Solar PV Plant:



CHAPTER VI

STUDY OF USAGE OF LED LIGHTING

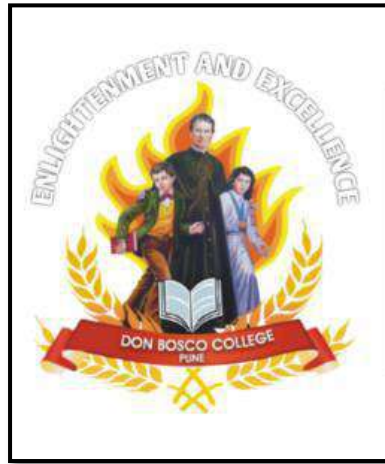
In this chapter, we compute the percentage of usage of LEDs to Total Lighting Load.

Table No 6: Percentage of Usage of LEDs to Total Lighting Load:

No	Particulars	Value	Unit
1	No of 40 W FTL Fitting	67	Nos
2	Load/unit of 40 W FTL Fitting	40	W/unit
3	Total Load of 40 W FTL Fittings	2.68	kW
4	No of 20 W LED Fitting	68	Nos
5	Load/unit of 20 W LED Fitting	20	W/unit
6	Total Load of 20 W LED Fittings	1.36	kW
7	No of 18 W LED Fitting	15	Nos
8	Load/unit of 18 W LED Fitting	18	W/unit
9	Total Load of 18 W LED Fittings	0.27	kW
10	No of 7 W LED Fitting	12	Nos
11	Load/unit of 7 W LED Fitting	7	W/unit
12	Total Load of 7 W LED Fittings	0.084	kW
13	Total LED Lighting Load=6+9+12	1.714	kW
14	Total LED Lighting Load=3+6+9+12	4.394	kW
15	% of LED to Total Lighting Load=13*100/14	39.01	%

ENERGY AUDIT REPORT

of
Bombay Salesian Society's,
DON BOSCO COLLEGE OF ARTS & COMMERCE (EVENING)
Don Bosco Marg, Yerawada, Pune 411 006



Year: 2021-22

Prepared by:

ENGRESS SERVICES


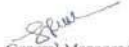
Yashashree, 26, Nirmal Bag Society,
Near Mukhtangan English School, Parvati, Pune 411009
Phone: 09890444795, Email: engress123@gmail.com



REGISTRATION CERTIFICATES

Regn. No. EA-8192		No.2942
National Productivity Council (National Certifying Agency)		
PROVISIONAL CERTIFICATE		
This is to certify that Mr. / Ms. <u>Achyut Yashavant Mehendale</u> son / daughter of Mr. <u>Yashavant</u> 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		 Controller of Examination
Date : 10 th August 2007		

BEE AUDITOR CERTIFICATE

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/2022-23/CR-43/1709	10 th May, 2022
CERTIFICATE OF REGISTRATION FOR CLASS 'A'	
We hereby certify that, the firm having following particulars is registered with MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA) under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.	
Name and Address of the firm	: M/s Engress Services Yashshree, 26, Nirmal Bag Society, Near Muktangam English School, Parvati, Pune - 411 009.
Registration Category	: Empanelled Consultant for Energy Conservation Programme for Class 'A'
Registration Number	: MEDA/ECN/2022-23/Class A/EA-32.
<ul style="list-style-type: none">• Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.• MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.• This empanelment is valid till 09th May, 2024 from the date of registration, to carry out energy audits under the Energy Conservation Programme• The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.	
	 General Manager (EC)

MEDA EMPANELMENT CERTIFICATE

INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	4
II	Executive Summary	5
III	Abbreviations	6
1	Introduction	7
2	Study of Connected Load	8
3	Study of Present Energy Consumption	9
4	Study of Carbon Foot Printing	10
5	Study of Usage of Alternate Energy	11
6	Study of LED Lighting	12

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune for awarding us the assignment of Energy Audit of their Yerawada Campus for the Year: 2021-22.

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

EXECUTIVE SUMMARY

1. Don Bosco College of Arts & Commerce (Evening), Pune consumes Energy in the form of Electrical Energy; used for various office equipment.

2. Present Energy Consumption & CO₂ Emission:

No	Parameter/ Value	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Total	6484	5.84
2	Maximum	1112	1.00
3	Minimum	210	0.19
4	Average	540.33	0.49

3. Energy Conservation projects Installed:

- Usage of Energy Efficient LED fittings
- Usage of BEE STAR Rated Equipment
- Installation of **31 kWp** Solar PV Plant

4. Usage of Alternate/Renewable Energy:

- The College has installed **31 kWp** Roof Top Solar PV Plant.
- Energy generated by Solar PV Plant is **37200 kWh**
- Energy Purchased in 2021-22 is **6484 kWh**
- Total Energy Requirement in 2021-22 is **43684 kWh**
- % of Usage of Alternate Energy to Total Energy Demand in 2021-22 is **85.16 %**

5. Usage of LED Lighting:

- The Total Lighting load of College is **4.394 kW**.
- The Total LED Lighting Load of the College is **1.714 kW**.
- The percentage of LED Lighting Load to Total Lighting Load is **39.01 %**.

6. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere
2. Average Energy generated by Solar PV Plant is **4 kWh/kWp/Day**
3. Annual Solar Energy Generation Days in 2021-22 is **300 Nos**

7. Reference:

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

ABBREVIATIONS

LED	:	Light Emitting Diode
MSEDCL	:	Maharashtra State Electricity Distribution Company Ltd
kWp	:	Kilo Watt peak
kWh	:	kilo-Watt Hour
CO ₂	:	Carbon Di Oxide
Kg	:	Kilo Gram
MT	:	Metric Ton

CHAPTER-I INTRODUCTION

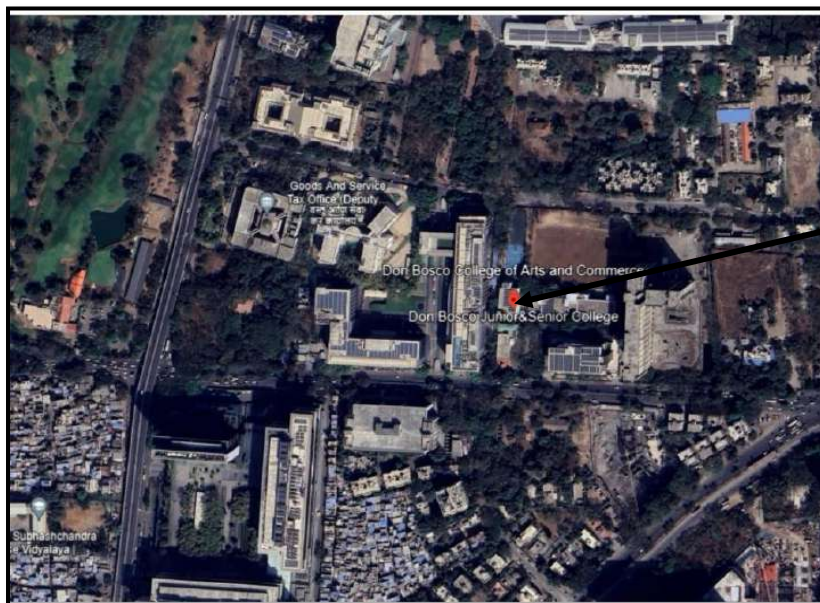
1.1 Objectives:

1. To study Connected Load
2. To study Present Energy Consumption
3. To compute CO₂ emissions
4. To study Usage of Renewable Energy
5. To study usage of LED Lighting

1.2 Table No 1: General Details of the College:

No	Head	Particulars
1	Name of Institution	Don Bosco College of Arts & Commerce (Evening)
2	Address	Don Bosco Marg, Yerawada, Pune 411 006
3	Year of Establishment	2012
4	Affiliation	Savitribai Phule Pune University

1.3 Google Earth Image:



College
Campus

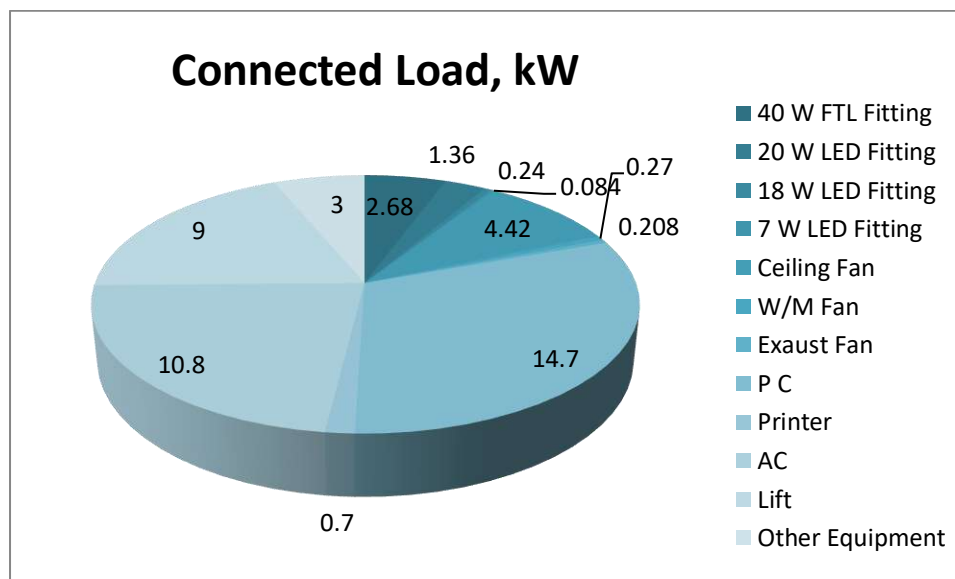
CHAPTER-II STUDY OF CONNECTED LOAD

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

Table No 2: Connected Load Study:

No	Equipment	Qty	Load, W/unit	Load, kW
1	40 W FTL Fitting	67	40	2.68
2	20 W LED Fitting	68	20	1.36
3	18 W LED Fitting	15	16	0.24
4	7 W LED Fitting	12	7	0.084
5	Ceiling Fan	68	65	4.42
6	W/M Fan	5	54	0.27
7	Exhaust Fan	4	52	0.208
8	P C	98	150	14.7
9	Printer	4	175	0.7
10	AC	6	1800	10.8
11	Lift	1	9000	9
12	Other Equipment	12	250	3
13	Total			47.46

Chart No 1: Study of Connected Load:



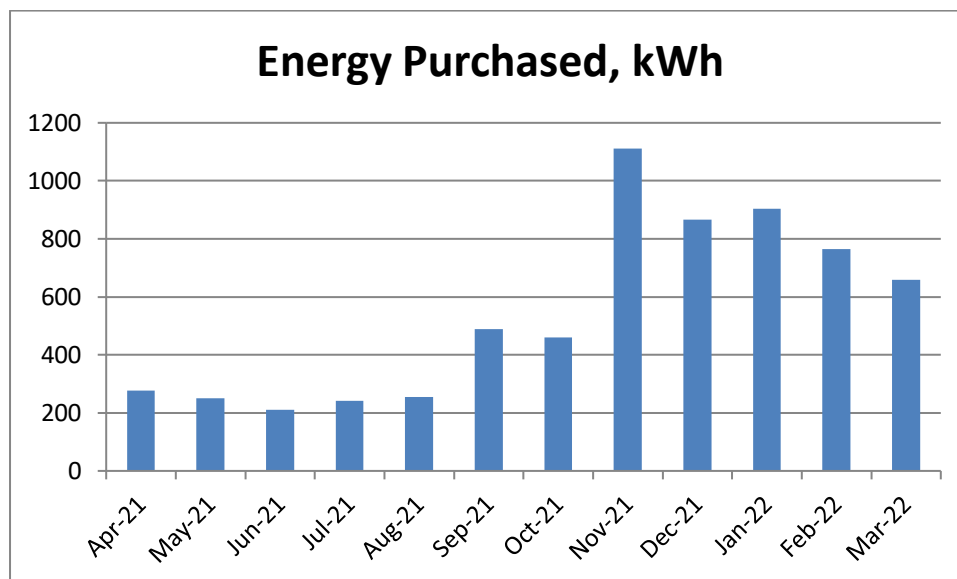
CHAPTER-III STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No 3: Electrical Bill Analysis- 2021-22:

No	Month	Energy Purchased, kWh
1	Apr-21	276
2	May-21	250
3	Jun-21	210
4	Jul-21	241
5	Aug-21	254
6	Sep-21	488
7	Oct-21	460
8	Nov-21	1112
9	Dec-21	866
10	Jan-22	903
11	Feb-22	765
12	Mar-22	659
13	Total	6484
14	Maximum	1112
15	Minimum	210
16	Average	540.33

Chart No 2: To study the variation of Month wise Energy Consumption, kWh:



CHAPTER-IV STUDY OF CARBON FOOTPRINTING

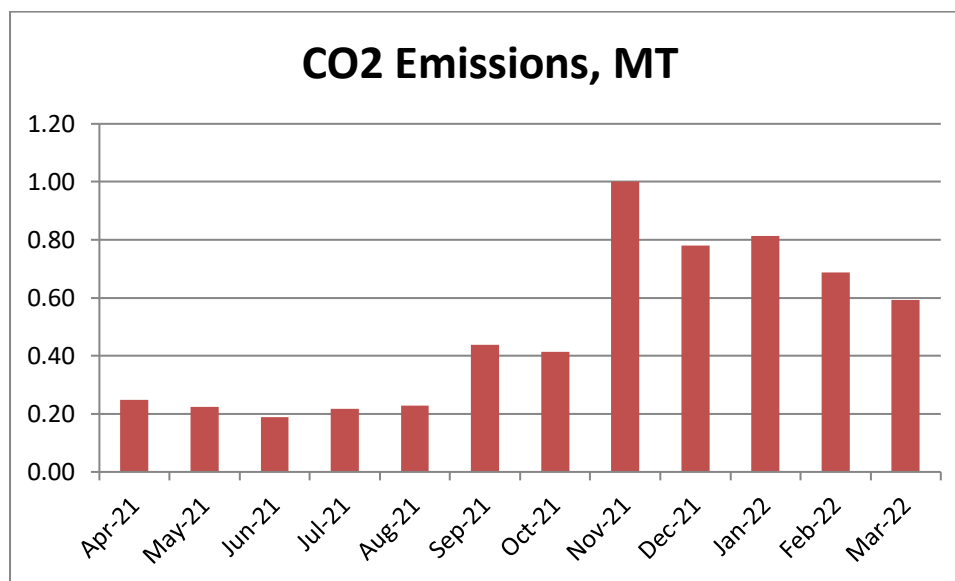
A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO₂ Emissions:**

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

Table No 4: Month wise CO₂ Emissions:

No	Month	Energy Purchased, kWh	CO2 Emissions, MT
1	Apr-21	276	0.25
2	May-21	250	0.23
3	Jun-21	210	0.19
4	Jul-21	241	0.22
5	Aug-21	254	0.23
6	Sep-21	488	0.44
7	Oct-21	460	0.41
8	Nov-21	1112	1.00
9	Dec-21	866	0.78
10	Jan-22	903	0.81
11	Feb-22	765	0.69
12	Mar-22	659	0.59
13	Total	6484	5.84
14	Maximum	1112	1.00
15	Minimum	210	0.19
16	Average	540.33	0.49

Chart No 3: Representation of Month wise CO₂ emissions:



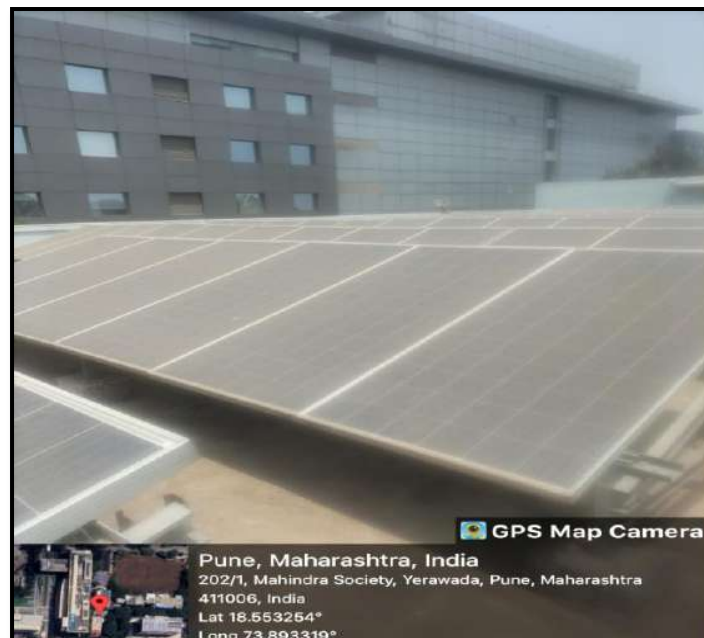
CHAPTER-V STUDY OF USAGE OF ALTERNATE ENERGY

The College has installed 31 kWp Roof Top Solar PV Plant.
Now we compute the % of Usage of Alternate Energy to Annual Energy Demand of the College.

Table No 5: Computation of % Usage of Alternate Energy:

No	Particulars	Value	Unit
1	Energy Purchased from MSEDCL	6484	kWh
2	Installed Roof Top Solar PV Plant Capacity	31	kWp
3	Average Daily Energy Generated	4	kWh/kWp
4	Annual Generation Days	300	Nos
5	Annual Solar Energy Generated	37200	kWh
6	Total Energy Demand = (1) + (5)	43684	kWh
7	Usage of Alternate Energy to Annual Energy Demand = $5 \times 100 / 6$	85.16	%

Photograph of Roof Top Solar PV Plant:



CHAPTER VI

STUDY OF USAGE OF LED LIGHTING

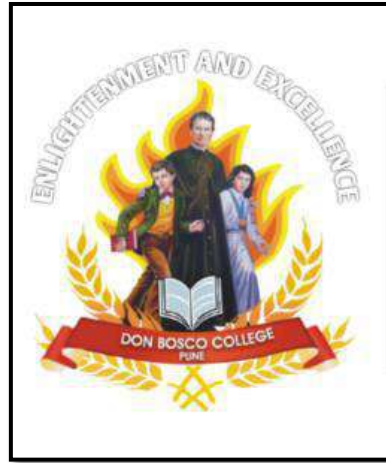
In this chapter, we compute the percentage of usage of LEDs to Total Lighting Load.

Table No 6: Percentage of Usage of LEDs to Total Lighting Load:

No	Particulars	Value	Unit
1	No of 40 W FTL Fitting	67	Nos
2	Load/unit of 40 W FTL Fitting	40	W/unit
3	Total Load of 40 W FTL Fittings	2.68	kW
4	No of 20 W LED Fitting	68	Nos
5	Load/unit of 20 W LED Fitting	20	W/unit
6	Total Load of 20 W LED Fittings	1.36	kW
7	No of 18 W LED Fitting	15	Nos
8	Load/unit of 18 W LED Fitting	18	W/unit
9	Total Load of 18 W LED Fittings	0.27	kW
10	No of 7 W LED Fitting	12	Nos
11	Load/unit of 7 W LED Fitting	7	W/unit
12	Total Load of 7 W LED Fittings	0.084	kW
13	Total LED Lighting Load=6+9+12	1.714	kW
14	Total LED Lighting Load=3+6+9+12	4.394	kW
15	% of LED to Total Lighting Load=13*100/14	39.01	%

ENERGY AUDIT REPORT
of
Bombay Salesian Society's,
DON BOSCO COLLEGE OF ARTS & COMMERCE
(EVENING)

Don Bosco Marg, Yerawada, Pune 411 006



Year: 2022-23

Prepared by

ENGRESS SERVICES

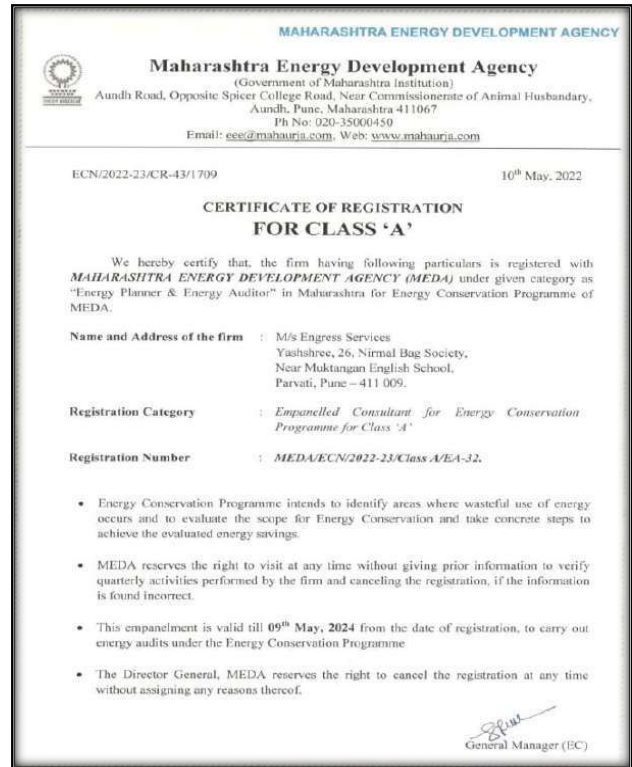
Yashashree, 26, Nirmal Bag Society,
Near Mukhtangan English School, Parvati, Pune 411009
Phone: 09890444795 Email: engress123@gmail.com



REGISTRATION CERTIFICATES



AUDITOR CERTIFICATE



MEDA Registration Certificate



ISO: 9001-2015 Certificate



ISO: 14001-2015 Certificate

INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	4
II	Executive Summary	5
III	Abbreviations	6
1	Introduction	7
2	Study of Connected Load	8
3	Study of Present Energy Consumption	9
4	Study of Energy Performance Index	10
5	Study of Lighting	11
6	Study of Renewable Energy & Energy Efficiency	13

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune for awarding us the assignment of Energy Audit of their Yerawada Campus for the Year: 2022-23

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

EXECUTIVE SUMMARY

1. Don Bosco College of Arts & Commerce (Evening), Pune consumes Energy in the form of **Electrical Energy**; used for various office equipment.

2. Present Connected Load & Energy Consumption:

No	Particulars	Value	Unit
1	Total Connected Load	48.13	kW
2	Annual Energy Purchased	21879	kWh

3. Energy Performance Index:

No	Particulars	Value	Unit
1	Total Annual Energy Purchased	21879	kWh
2	Annual Energy Generated	37200	kWh
3	Annual Energy Consumed=1+2	59079	kWh
4	Total Built up area of College	2415.48	m ²
5	Energy Performance Index =(3) / (4)	24.46	kWh/m ²

4. Study of Lighting Power Density & % Usage of LED Lighting:

No	Particulars	Value	Unit
1	Lighting Power Density	2.79	W/m ²
2	% of Usage of LED Lighting to Total Lighting Load	41.59	%

5. Renewable Energy & Energy Efficiency:

- Usage of Energy Efficient LED fittings
- Installed Roof Top Solar PV Plant of Capacity **31 kWp**

6. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere
2. Average Energy generated by Solar PV Plant is **4 kWh/kWp/Day**
3. Annual Solar Energy Generation Days in 2022-23 is **300 Nos**

7. References:

- Audit Methodology: www.mahaurja.com
- Energy Conservation Building Code: ECBC-2017: www.beeindia.gov.in
- For CO₂ Emissions: www.tatapower.com
- Solar Energy Generated: www.solarrooftop.gov.in

ABBREVIATIONS

LED	:	Light Emitting Diode
MSEDCL	:	Maharashtra State Electricity Distribution Company Ltd
kWp	:	Kilo Watt peak
kWh	:	kilo-Watt Hour
CO ₂	:	Carbon Di Oxide
Kg	:	Kilo Gram
MT	:	Metric Ton

CHAPTER-I INTRODUCTION

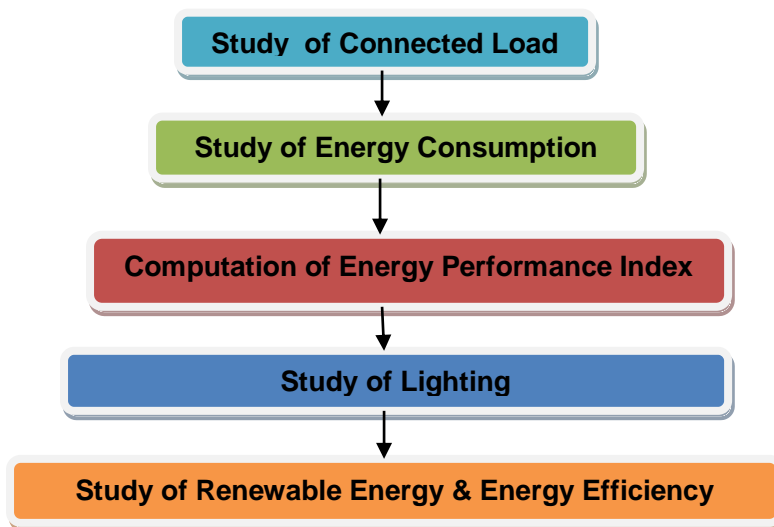
1.1 Introduction:

An Energy Audit is conducted at Don Bosco College of Arts & Commerce (Evening), Pune

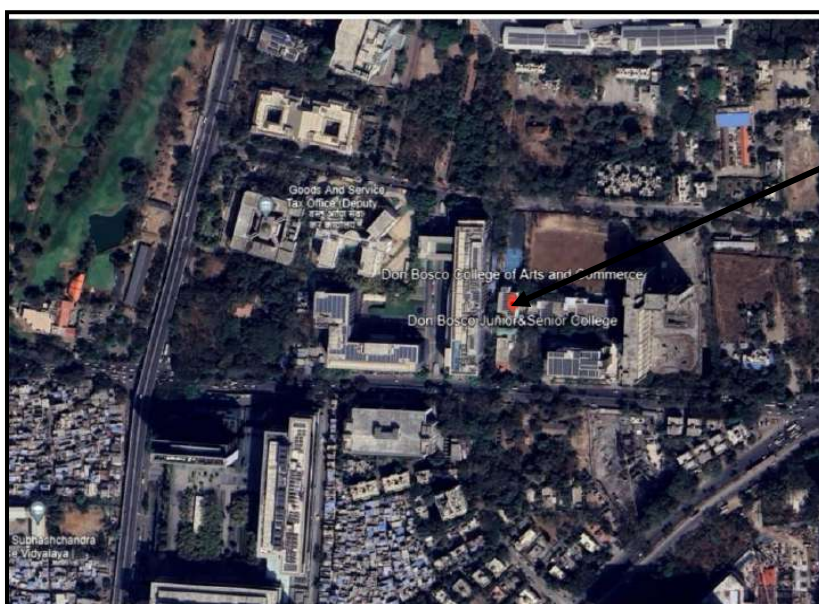
The guidelines followed for conducting the Energy Audit are:

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

1.2 Audit Procedural Steps:



1.3 College Location Image:



College
Campus

CHAPTER-II STUDY OF CONNECTED LOAD

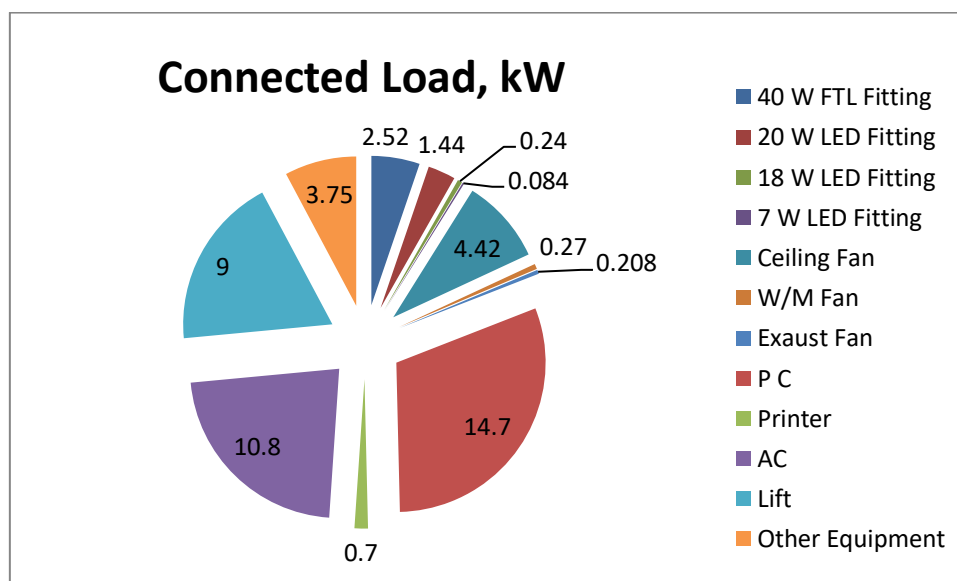
In this chapter, we present the details of various Electrical loads as under

Table No 1: Details of Electrical Equipment wise Connected Load:

No	Equipment	Qty	Load, W/unit	Load, kW
1	40 W FTL Fitting	63	40	2.52
2	20 W LED Fitting	72	20	1.44
3	18 W LED Fitting	15	16	0.24
4	7 W LED Fitting	12	7	0.084
5	Ceiling Fan	68	65	4.42
6	W/M Fan	5	54	0.27
7	Exhaust Fan	4	52	0.208
8	P C	98	150	14.7
9	Printer	4	175	0.7
10	AC	6	1800	10.8
11	Lift	1	9000	9
12	Other Equipment	15	250	3.75
13	Total			48.13

We present the same in a PIE Chart as under:

Chart No 1: Overall Connected Load:



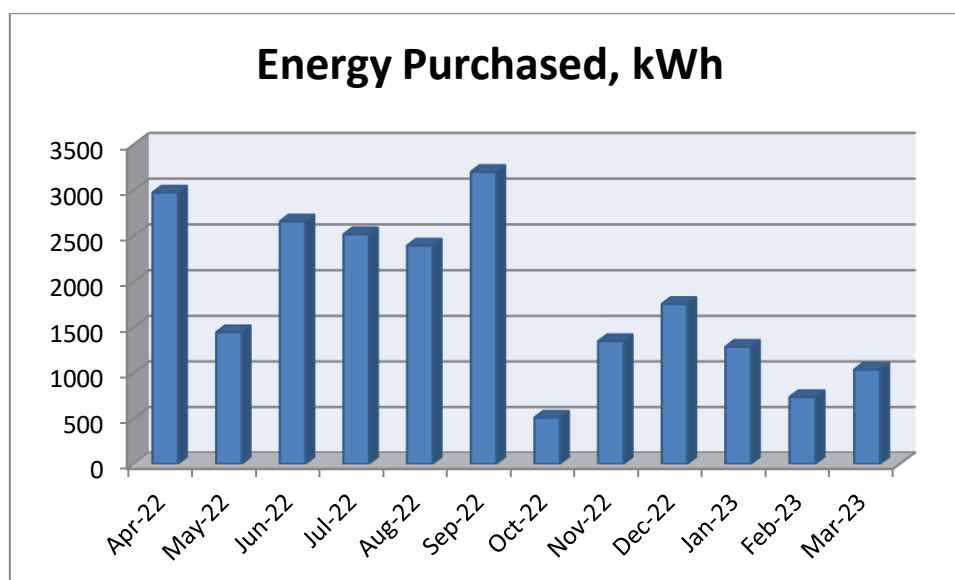
CHAPTER-III STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills.

Table No 2: Electrical Bill Analysis- 2022-23:

No	Month	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Apr-22	2975	2.68
2	May-22	1448	1.30
3	Jun-22	2660	2.39
4	Jul-22	2519	2.27
5	Aug-22	2396	2.16
6	Sep-22	3200	2.88
7	Oct-22	510	0.46
8	Nov-22	1350	1.22
9	Dec-22	1758	1.58
10	Jan-23	1289	1.16
11	Feb-23	736	0.66
12	Mar-23	1038	0.93
13	Total	21879	19.69
14	Maximum	3200	2.88
15	Minimum	510	0.46
16	Average	1823.25	1.64

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



CHAPTER-IV

STUDY OF ENERGY PERFORMANCE INDEX

Energy Performance Index: Energy Performance Index of a Building is its Annual Energy Consumption in Kilo Watt Hours per square meter of the Building

It is determined by:

$$\text{EPI} = \frac{\text{(Annual Energy Consumption in kWh)}}{\text{(Total Built-up area in m}^2\text{)}}$$

Now we compute the EPI for the College as under:

Table No 3: Computation of Energy Performance Index:

No	Particulars	Value	Unit
1	Total Annual Energy Purchased	21879	kWh
2	Annual Energy Generated	37200	kWh
3	Annual Energy Consumed=1+2	59079	kWh
4	Total Built up area of College	2415.48	m ²
5	Energy Performance Index =(3) / (4)	24.46	kWh/m ²

CHAPTER-V STUDY OF LIGHTING

Terminology:

- 1. Lumen** is a unit of light flow or luminous flux. The lumen rating of a lamp is a measure of the total light output of the lamp. The most common measurement of light output (or luminous flux) is the lumen. Light sources are labeled with an output rating in lumens.
- 2. Lux** is the metric unit of measure for illuminance of a surface. One lux is equal to one lumen per square meter.
- 3. Circuit Watts** is the total power drawn by lamps and ballasts in a lighting circuit under assessment.
- 4. Installed Load Efficacy** is the average maintained illuminance provided on a horizontal working plane per circuit watt with general lighting of an interior. Unit: lux per watt per square metre (lux/W/m²)
- 5. Lamp Circuit Efficacy** is the amount of light (lumens) emitted by a lamp for each watt of power consumed by the lamp circuit, i.e. including control gear losses. This is a more meaningful measure for those lamps that require control gear. Unit: lumens per circuit watt (lm/W)
- 6. Installed Power Density.** The installed power density per 100 lux is the power needed per square metre of floor area to achieve 100 lux of average maintained illuminance on a horizontal working plane with general lighting of an interior. Unit: watts per square metre per 100 lux (W/m²/100 lux) 100 Installed power density (W/m²/100 lux)
- 7. 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 of Class Room and the percentage usage of LED Lighting to total Lighting Load of the College.

Now, we compute the Lighting Power Density, as under.

Table No 4: Computation of Lighting Power Density: Class Room:

No	Particulars	Value	Unit
1	Qty of 40 W FTL Fittings in Class Room:	5	Nos
2	Load of 40 W FTL Fitting	40	W/unit
3	Total Load of 5 Nos, 40 W Fittings	200	W
4	Built up area of Class Room:	71.74	m ²
5	Lighting Power Density = (3)/(4)	2.79	W/m ²

Now we compute the percentage of usage of LEDs to Total Lighting Load

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

No	Particulars	Value	Unit
1	No of 40 W FTL Fitting	63	Nos
2	Load/unit of 40 W FTL Fitting	40	W/unit
3	Total Load of 40 W FTL Fittings	2.52	kW
4	No of 20 W LED Fitting	72	Nos
5	Load/unit of 20 W LED Fitting	20	W/unit
6	Total Load of 20 W LED Fittings	1.44	kW
7	No of 18 W LED Fitting	15	Nos
8	Load/unit of 18 W LED Fitting	18	W/unit
9	Total Load of 18 W LED Fittings	0.27	kW
10	No of 7 W LED Fitting	12	Nos
11	Load/unit of 7 W LED Fitting	7	W/unit
12	Total Load of 7 W LED Fittings	0.084	kW
13	Total LED Lighting Load=6+9+12	1.794	kW
14	Total Lighting Load=3+6+9+12	4.314	kW
15	% of LED to Total Lighting Load=13*100/14	41.59	%

CHAPTER-VI

STUDY OF RENEWABLE ENERGY & ENERGY EFFICIENCY

6.1 Usage of Renewable Energy:

The College has installed Roof Top Solar PV Plant of **31kWp**.

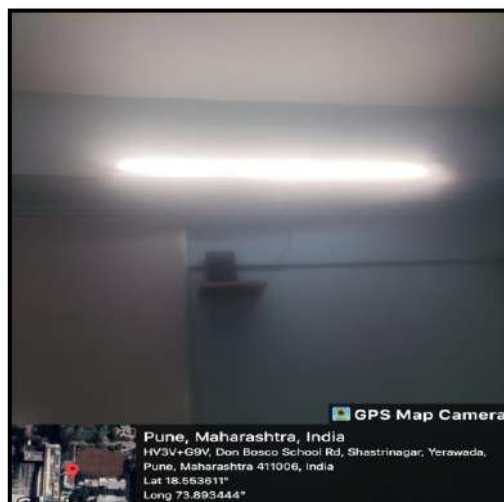
Photograph of Roof Top Solar PV Plant:



6.2 Energy Efficiency Measures adopted:

- The College has Energy Efficient LED Fittings & BEE STAR Rated AC

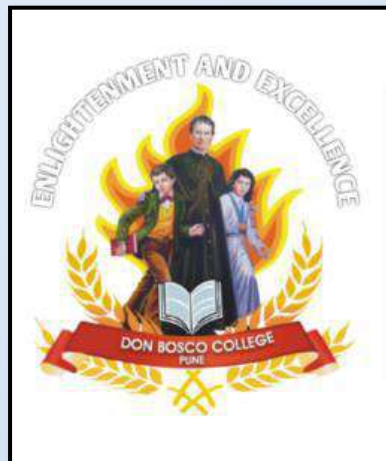
Photograph of LED Tube Light Fitting:



ENERGY AUDIT REPORT

Bombay Salesian Society's,
DON BOSCO COLLEGE OF ARTS & COMMERCE (EVENING)

Don Bosco Marg, Yerawada, Pune 411 006



Year: 2023-24

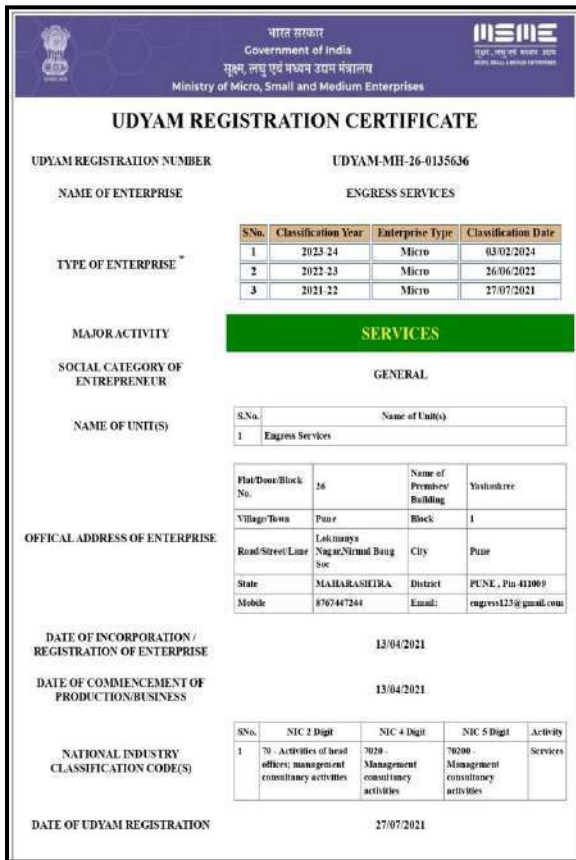
Prepared by:

ENGRESS SERVICES

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



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



INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	4
II	Executive Summary	5
III	Abbreviations	6
1	Introduction	7
2	Study of Connected Load	8
3	Study of Present Energy Consumption	9
4	Study of Energy Performance Index	10
5	Study of Lighting	11
6	Study of Renewable Energy & Energy Efficiency	12

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune for awarding us the assignment of Energy Audit of their Yerawada Campus for the Year: 2023-24.

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

EXECUTIVE SUMMARY

1. Don Bosco College of Arts & Commerce (Evening), Pune consumes Energy in the form of **Electrical Energy**; used for various office equipment.

2. Present Connected Load & Energy Consumption:

No	Particulars	Value	Unit
1	Total Connected Load	48.13	kW
2	Annual Energy Consumed	33856	kWh

3. Per Capita Energy Consumption:

No	Particulars	Value	Unit
1	Total Annual Energy Purchased	33856	kWh
2	Energy Generated by Solar PV Plant	37200	kWh
3	Total Energy Consumed= 1+2	71056	kWh
4	Total No of Students	100	Nos
5	Per Capita Energy Consumption =(3) / (4)	710.56	kWh/Annum

4. Study of Lighting Power Density & % Usage of LED Lighting:

No	Particulars	Value	Unit
1	Lighting Power density	2.79	W/m ²
2	% of Usage of LED Lighting to Total Lighting Load	41.59	%

5. Renewable Energy & Energy Efficiency Projects:

- Usage of Energy Efficient LED fittings
- Installed Roof Top Solar PV Plant of Capacity **31 kWp**

6. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.93 Kg of CO₂** into atmosphere
2. Average Energy generated by Solar PV Plant is **4 kWh/kWp/Day**
3. Annual Solar Energy Generation Days in 2023-24 is **300 Nos**

7. References:

- Audit Methodology: www.mahaurja.com
- Energy Conservation Building Code: ECBC-2017: www.beeindia.gov.in
- For CO₂ Emissions: www.ccd.gujarat.gov.in
- For Solar PV Energy Generation: 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 ₂	:	Carbon Di Oxide
MT	:	Metric Ton

CHAPTER-I INTRODUCTION

1.1 Introduction:

An Energy Audit is conducted at Don Bosco College of Arts & Commerce (Evening), Pune

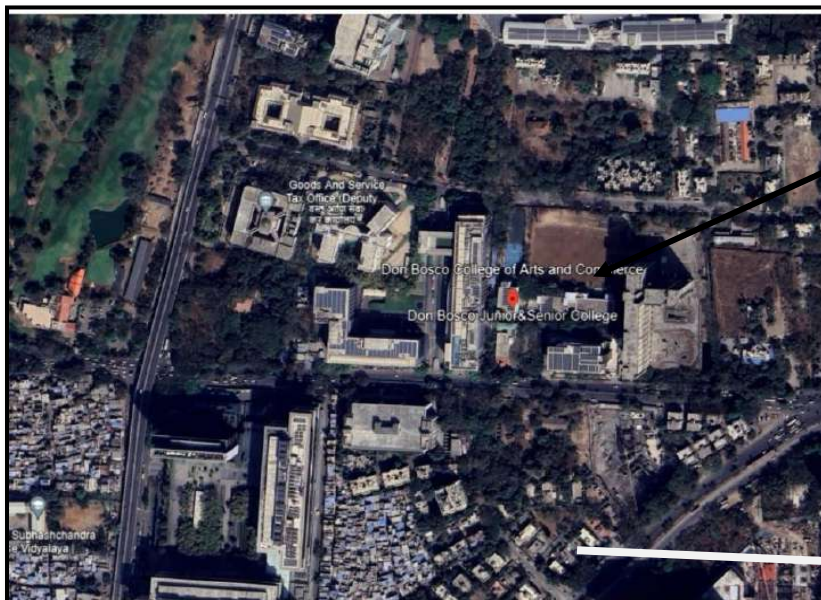
The guidelines followed for conducting the Energy Audit are:

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

1.2 Key Study Points:

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

1.3 College Location Image:



College
Campus

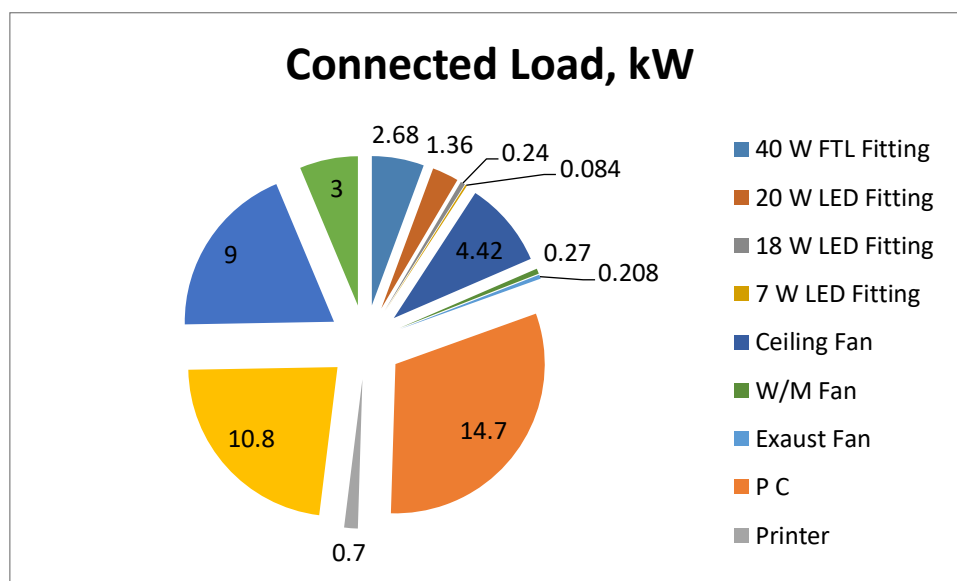
CHAPTER-II STUDY OF CONNECTED LOAD

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

Table No 1: Study of Equipment wise Connected Load:

No	Equipment	Qty	Load, W/unit	Load, kW
1	40 W FTL Fitting	63	40	2.52
2	20 W LED Fitting	72	20	1.44
3	18 W LED Fitting	15	16	0.24
4	7 W LED Fitting	12	7	0.084
5	Ceiling Fan	68	65	4.42
6	W/M Fan	5	54	0.27
7	Exhaust Fan	4	52	0.208
8	P C	98	150	14.7
9	Printer	4	175	0.7
10	AC	6	1800	10.8
11	Lift	1	9000	9
12	Other Equipment	15	250	3.75
13	Total			48.13

Chart No 1: Study of Connected Load:



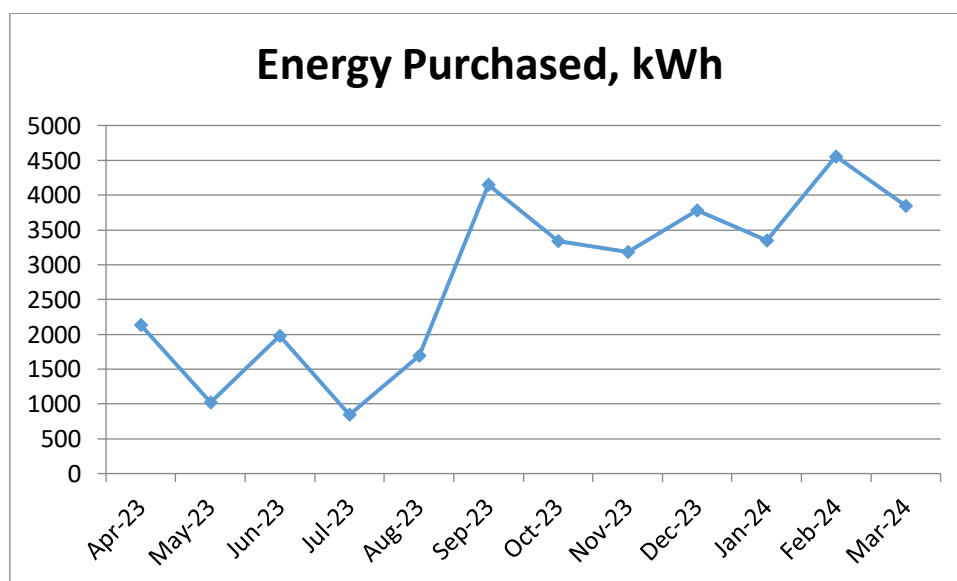
CHAPTER-III STUDY OF PRESENT ENERGY CONSUMPTION

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

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

No	Month	Energy Purchased, kWh	CO2 Emissions, MT
1	Apr-23	2130	1.98
2	May-23	1019	0.95
3	Jun-23	1981	1.84
4	Jul-23	844	0.78
5	Aug-23	1692	1.57
6	Sep-23	4149	3.86
7	Oct-23	3335	3.10
8	Nov-23	3179	2.96
9	Dec-23	3779	3.51
10	Jan-24	3349	3.11
11	Feb-24	4557	4.24
12	Mar-24	3842	3.57
13	Total	33856	31.49
14	Maximum	4557	4.24
15	Minimum	844	0.78
16	Average	2821.33	2.62

Chart No 2: Variation in Monthly Energy Consumed, kWh:



CHAPTER-IV

STUDY OF PER CAPITA ENERGY CONSUMPTION

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

It is determined by:

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

Now we compute the EPI for the College as under:

Table No 3: Computation of Energy Performance Index:

No	Particulars	Value	Unit
1	Total Annual Energy Purchased	33856	kWh
2	Energy Generated by Solar PV Plant	37200	kWh
3	Total Energy Consumed= 1+2	71056	kWh
4	Total No of students	100	Nos
5	Per Capita Energy Consumption =(3) / (4)	710.56	kWh/Annum

CHAPTER-V STUDY OF LIGHTING

Terminology:

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

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

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

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

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

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

In this Chapter we compute the 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: Class Room:

No	Particulars	Value	Unit
1	Qty of 40 W FTL Fittings in Class Room:	5	Nos
2	Load of 40 W FTL Fitting	40	W/unit
3	Total Load of 5 Nos, 40 W Fittings	200	W
4	Built up area of Class Room:	71.74	m ²
5	Lighting Power Density = (3)/(4)	2.79	W/m ²

Table No 5: Percentage Usage of LED Lighting to Total Lighting Load:

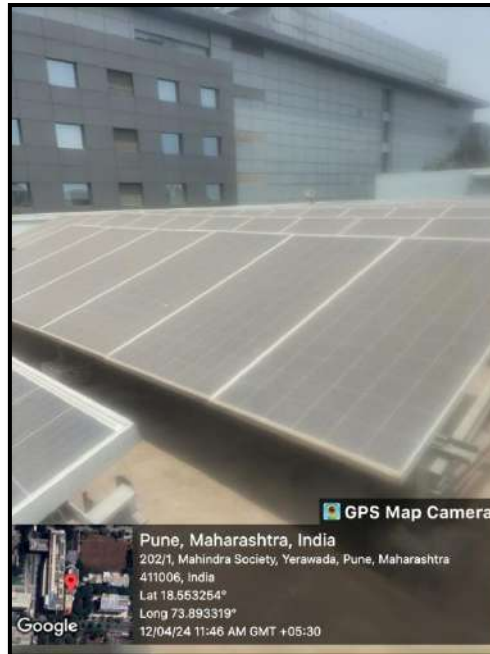
No	Particulars	Value	Unit
1	No of 40 W FTL Fitting	63	Nos
2	Load/unit of 40 W FTL Fitting	40	W/unit
3	Total Load of 40 W FTL Fittings	2.52	kW
4	No of 20 W LED Fitting	72	Nos
5	Load/unit of 20 W LED Fitting	20	W/unit
6	Total Load of 20 W LED Fittings	1.44	kW
7	No of 18 W LED Fitting	15	Nos
8	Load/unit of 18 W LED Fitting	18	W/unit
9	Total Load of 18 W LED Fittings	0.27	kW
10	No of 7 W LED Fitting	12	Nos
11	Load/unit of 7 W LED Fitting	7	W/unit
12	Total Load of 7 W LED Fittings	0.084	kW
13	Total LED Lighting Load=6+9+12	1.794	kW
14	Total Lighting Load=3+6+9+12	4.314	kW
15	% of LED to Total Lighting Load=13*100/14	41.59	%

CHAPTER-VI STUDY OF RENEWABLE ENERGY & ENERGY EFFICIENCY

6.1 Usage of Renewable Energy:

The College has installed Roof Top Solar PV Plant of **31kWp**.

Photograph of Roof Top Solar PV Plant:



6.2 Energy Efficiency Measures adopted:

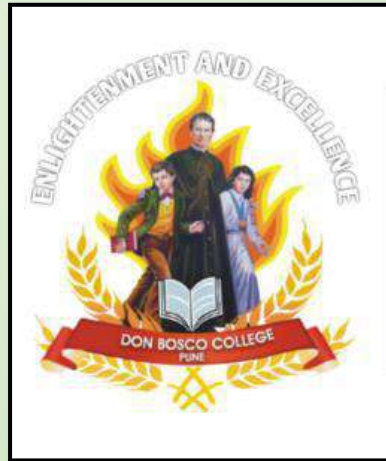
- The College has Energy Efficient LED Fittings & BEE STAR Rated AC



GREEN AUDIT REPORT

Bombay Salesian Society's,
DON BOSCO COLLEGE OF ARTS & COMMERCE (EVENING)

Don Bosco Marg, Yerawada, Pune 411 006



Year: 2023-24

Prepared by:

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society
Near Mukhtangan 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-26-0135636

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): Engress Services

Flat/Door/Block No.	26	Name of Premises/ Building	Yashashree
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

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

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 411007
Ph No: 020-35000450
Email: ee@maharaja.com, Web: www.maharaja.com

ECN/2022-23/CR-43/1709 10th May, 2022

CERTIFICATE OF REGISTRATION FOR CLASS 'A'

We hereby certify that, the firm having following particulars is registered with MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA) under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

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

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

Registration Number: MEDA/ECN/2022-23/Class A/E-A-32.

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empanelment is valid till 09th May, 2024 from the date of registration, to carry out energy audits under the Energy Conservation Programme.
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

General Manager (EC)



INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	4
II	Executive Summary	5
III	Abbreviations	6
1	Introduction	7
2	Study of Energy Consumption & CO ₂ Emission	8
3	Study of Usage of Renewable Energy	9
4	Study of Waste Management	10
5	Study of Rain Water Management	11
6	Study of Green & Sustainable Practices	12
	Annexure	
I	List of Trees & Plants	14

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune for awarding us the assignment of Green Audit of their Yerawada Campus for the Year: 2023-24.

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

EXECUTIVE SUMMARY

1. 1. Don Bosco College of Arts & Commerce (Evening), Pune consumes Energy in the form of **Electrical Energy**; used for various office equipment.

2. Present Energy Consumption & CO₂ Emission:

No	Particulars	Value	Unit
1	Annual Energy Purchased	33856	kWh
2	Annual CO ₂ Emissions	31.49	MT

3. Usage of Renewable Energy:

- The College has installed Roof Top Solar PV Plant of Capacity **31 kWp**.
- The Energy generated by Solar PV Plant in 2023-24 is **37200 kWh**.
- Reduction in CO₂ Emissions in 2023-24 is **33.48 MT**

4. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Organic Waste	Installed Bio Composting Unit
3	E Waste	Dispose of through Authorized Agency

5. Rain Water Management:

The College has installed Rainwater harvesting project; the rain water falling on the terrace is collected and is stored in an underground Storage tank and is further used for Gardening.

6. Green & Sustainable Practices:

- Maintenance of good Internal Road
- Tree Plantation in the campus.
- Provision of Ramp for Divyangajan
- Creation of awareness on Water Conservation Display of Posters

7. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.93 Kg of CO₂** into atmosphere
2. **1 kWp** Solar PV system generates **4 kWh** of Electrical Energy per Day
3. Annual Solar Energy Generation Days: **300 Nos**

8. References:

- For CO₂ Emissions: www.ccd.gujarat.gov.in
- For Solar PV Energy Generation: www.rooftopsolar.gov.in

ABBREVIATIONS

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

CHAPTER-I INTRODUCTION

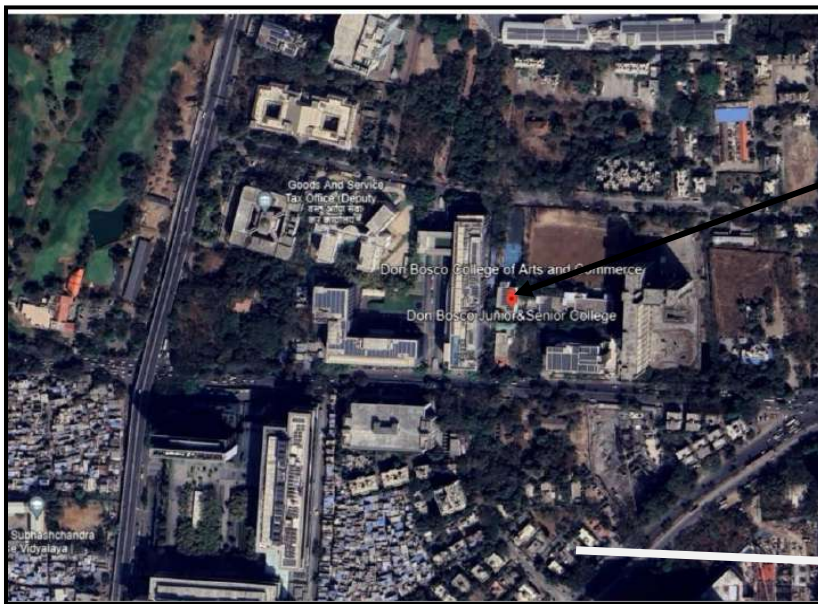
1.1 Introduction:

A Green Audit is conducted at Don Bosco College of Arts & Commerce (Evening), Pune

1.2 Key Study Points:

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

1.3 College Location Image:



College
Campus

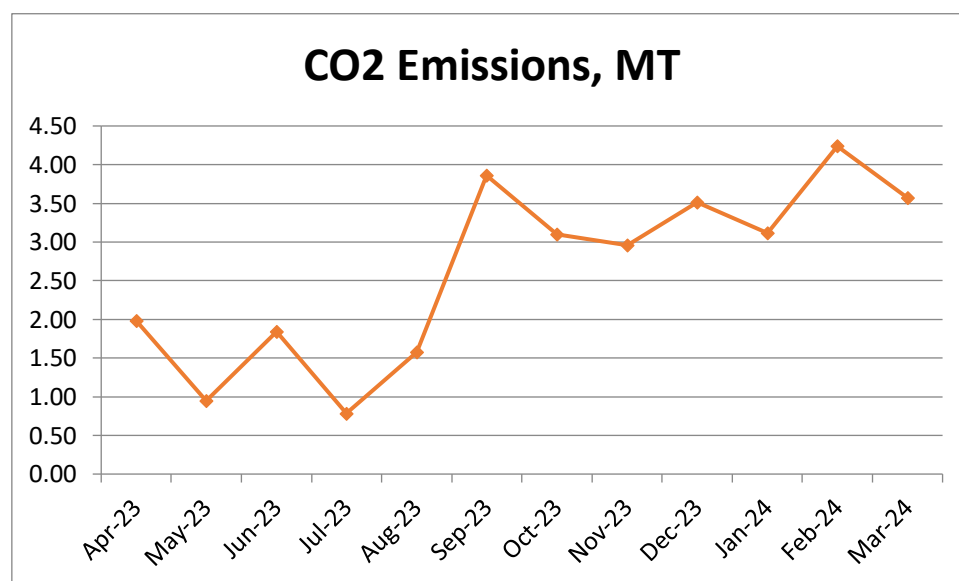
CHAPTER-II STUDY OF ENERGY CONSUMPTION & CO₂ EMISSION

A **Carbon Foot print** is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO₂ Emissions: 1 kWh of Electrical Energy releases 0.93 Kg of CO₂ into atmosphere.**

Table No 1: Month wise Energy Consumption & CO₂ Emissions:

No	Month	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Apr-23	2130	1.98
2	May-23	1019	0.95
3	Jun-23	1981	1.84
4	Jul-23	844	0.78
5	Aug-23	1692	1.57
6	Sep-23	4149	3.86
7	Oct-23	3335	3.10
8	Nov-23	3179	2.96
9	Dec-23	3779	3.51
10	Jan-24	3349	3.11
11	Feb-24	4557	4.24
12	Mar-24	3842	3.57
13	Total	33856	31.49
14	Maximum	4557	4.24
15	Minimum	844	0.78
16	Average	2821.33	2.62

Chart No 1: Month wise CO₂ Emissions:



CHAPTER III STUDY OF USAGE OF RENEWABLE ENERGY

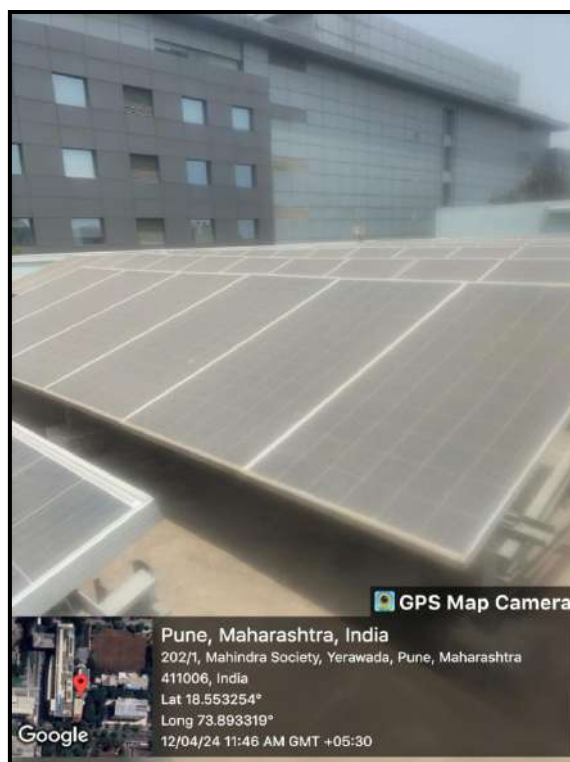
The College has installed Roof Top Solar PV Plant of Capacity **31 kWp**.

In the following Table, we compute the Annual Reduction in CO₂ Emissions due to installation of Roof Top Solar PV Plant.

Table No 2: Computation of CO₂ Emission Reduction by 31 kWp Solar PV Plant:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	31	kWp
2	Energy Generated in per kWp	4	4 kWh/kWp
3	Annual Solar Energy generation Days	300	Nos
4	Energy Generated in the Year: 21-22	37000	kWh
5	1 kWh of Electrical Energy saves	0.93	Kg/kWh
6	Qty of CO₂ Saved by Solar PV Plant = (4)*(5) /1000	34.60	MT of CO₂

Photograph of 31 kWp Roof Top Solar PV Plant:



CHAPTER IV STUDY OF WASTE MANAGEMENT

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

Details of Waste Management Practices:

No	Head	Observation	Photograph
1	Solid Waste	Segregation of Waste at Source: Provision of Waste Collection Bins	<p>Waste Collection Bin:</p>  <p>Pune, Maharashtra, India 202/1, Mahindra Society, Yerawada, Pune, Maharashtra 411006, India Lat 18.553819° Long 73.893746° 12/04/24 12:04 PM GMT +05:30</p>
2	Organic Waste	Provision of Bio Composting Bed: For conversion into Bio Compost	<p>Bio Composting Bed:</p>  <p>Pune, Maharashtra, India Chowk, Loop Rd, Shastrinagar, Yerawada, Pune, Maharashtra 411006, India Lat 18.552971° Long 73.893891° 12/04/24 12:06 PM GMT +05:30</p>
3	E Waste	Disposed of through Authorized Agency	

CHAPTER-V

STUDY OF RAIN WATER MANAGEMENT

The College has implemented the Rain Water Management Project. The College has installed Pipes from the terrace and the Rain water falling on the terrace is stored in an underground Water tank and is used for gardening purpose.

Photograph of Rain Water Collecting Pipe:





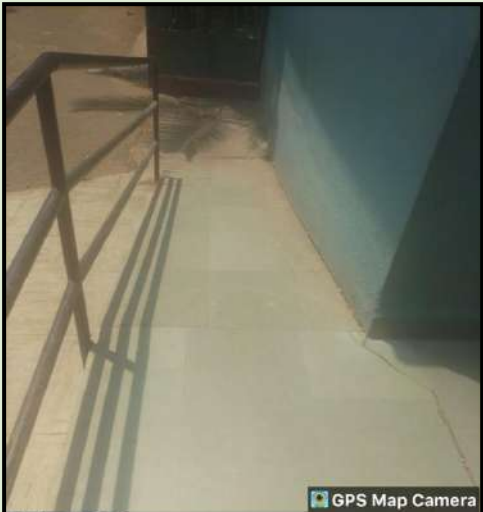



Rain Water Collecting Pipe

CHAPTER-VI STUDY OF GREEN & SUSTAINABLE PRACTICES

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

Green & Sustainable Practices:

No	Head	Observation	Photograph
1	Easy Movement of Stake Holders	Provision of Good Internal Road within the Campus	<p style="text-align: center;">Internal Road:</p>  <p style="text-align: right; font-size: small;">GPS Map Camera Pune, Maharashtra, India HV3V+MJ3, Shastrinagar, Yerawada, Pune, Maharashtra 411006, India Lat 18.553943° Long 73.89447° 12/04/24 12:08 PM GMT +05:30</p>
2	Tree Plantation	Internal Tree Plantation in the Campus	<p style="text-align: center;">Internal Tree Plantation:</p>  <p style="text-align: right; font-size: small;">GPS Map Camera Pune, Maharashtra, India 20271, Mahindra Society, Yerawada, Pune, Maharashtra 411006, India Lat 18.553289° Long 73.893318° 12/04/24 01:25 PM GMT +05:30</p>

<p>3</p>	<p>Facilities for Divyangajan</p>	<p>Provision of Ramp & Lift for Divyangajan</p>	<p>Ramp for Divyangajan:</p>  <p>Ramp for Divyangajan:</p> 
<p>4</p>	<p>Creation of Awareness among Stake Holders</p>	<p>Display of Poster on Water Conservation</p>	<p>Poster on water Conservation:</p>  <p>Poster on water Conservation:</p> 

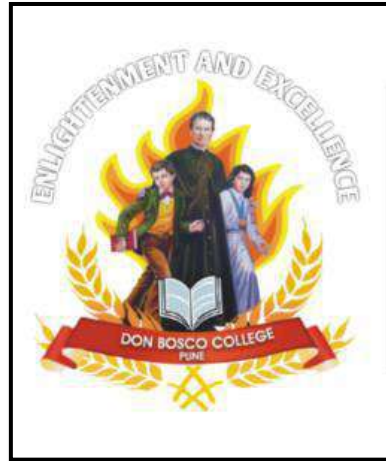
ANNEXURE-1:
LIST OF TREES& PLANTS IN THE CAMPUS:

No	Name of Tree/Plant	Quantity
1	Pelta Forum	15
2	Silver Oak	12
3	Bottle Brush	1
4	Gulmohor	17
5	Subabhul	24
6	Kaduneem	29
7	Ashok	38
8	Coconut	2
9	Nilgiri	5
10	Karanj	6
11	Glaricidia	19
12	Rain Tree	22
13	Apta	1
14	Chendufali	2
15	Reetha	3
16	Pangara	2
17	bahava	1
18	Suru	1
19	Casia	8
20	Mahogani	2
21	Badam	5
22	Umbar	1
23	Palm	5
24	Bakul	1
25	Buch	1
26	Jamun	3
27	Rubber	1
28	Guava	1
	Total	228

GREEN AUDIT REPORT

of
Bombay Salesian Society's,
DON BOSCO COLLEGE OF ARTS & COMMERCE
(EVENING)

Don Bosco Marg, Yerawada, Pune 411 006



Year: 2022-23

Prepared by

ENGRESS SERVICES

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



REGISTRATION CERTIFICATES



MEDA REGISTRATION CERTIFICATE



ASSOCHAM GEM CP CERTIFICATE



ISO: 9001-2015 CERTIFICATE



ISO: 14001-2015 CERTIFICATE

INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	4
II	Executive Summary	5
III	Abbreviations	6
1	Introduction	7
2	Study of Energy Consumption & CO ₂ Emission	8
3	Study of Usage of Renewable Energy	9
4	Study of Waste Management	10
5	Study of Rain Water Management	12
6	Study of Green & Sustainable Practices	13
	ANNEXURE	
I	List of Trees	14

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune for awarding us the assignment of Green Audit of their Yerawada Campus for the Year: 2022-23

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

EXECUTIVE SUMMARY

1. Don Bosco College of Arts & Commerce (Evening), Pune consumes Energy in the form of **Electrical Energy**; used for various office equipment.

2. Present Energy Consumption & CO₂ Emission:

No	Particulars	Value	Unit
1	Annual Energy Purchased	21879	kWh
2	Annual CO ₂ Emissions	19.69	MT

3. Usage of Renewable Energy & CO₂ Emission Reduction:

- The College has installed Roof Top Solar PV Plant of Capacity **31 kWp**.
- The Energy generated by Solar PV Plant in 2022-23 is **37200 kWh**.
- Reduction in CO₂ Emissions in 2022-23 is **33.48 MT**

4. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Organic Waste	Installed Bio Composting Unit
3	E Waste	Dispose of through Authorized Agency

5. Rain Water Management:

The College has installed Rainwater harvesting project; the rain water falling on the terrace is collected and is stored in an underground Storage tank and is further used for Gardening.

6. Green & Sustainable Practices:

- Maintenance of good Internal Road
- Tree Plantation in the campus.
- Provision of Ramp & Lift for Divyangajan
- Creation of awareness on Water Conservation by Display of Posters

7. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere
2. Average Energy generated by Solar PV Plant is **4 kWh/kWp/Day**
3. Annual Solar Energy Generation Days in 2022-23 is **300 Nos**

8. References:

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

ABBREVIATIONS

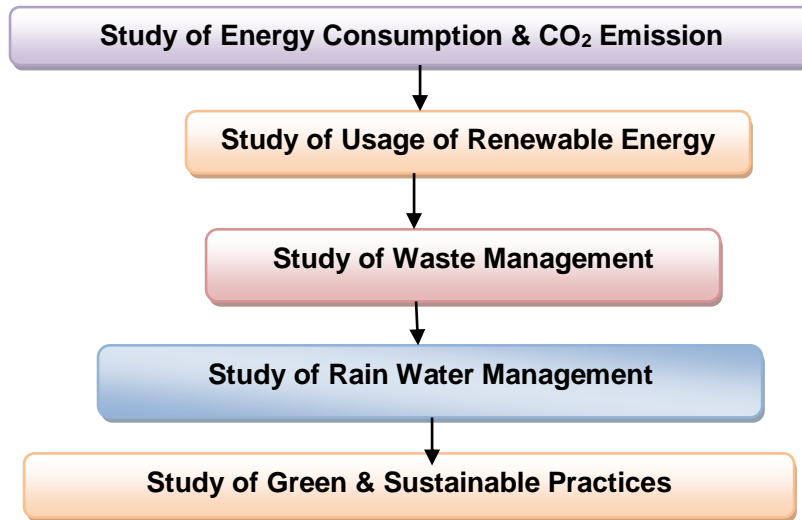
LED	:	Light Emitting Diode
Kg	:	Kilo Gram
kWh	:	kilo-Watt Hour
kWp	:	Kilo Watt Peak
Qty	:	Quantity
MT	:	Metric Ton
CO2	:	Carbon Di Oxide

CHAPTER-I INTRODUCTION

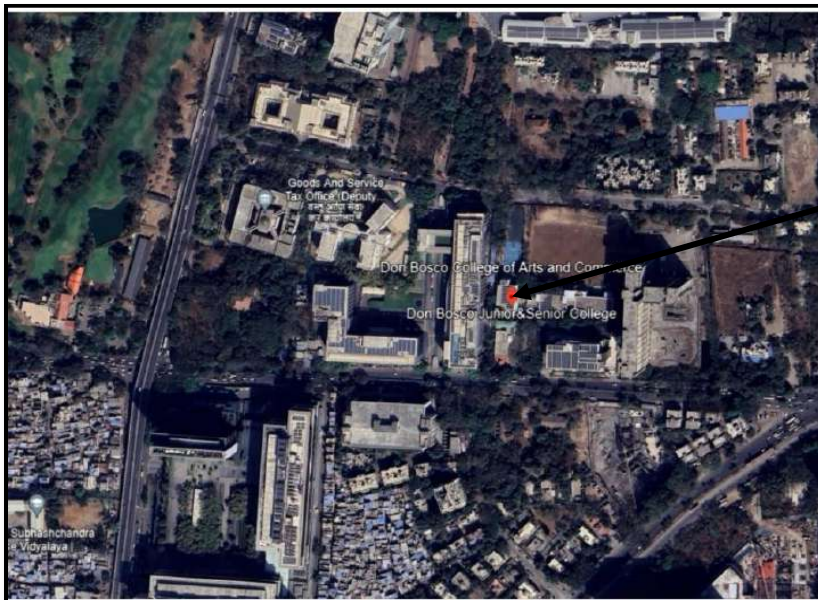
1.1 Introduction:

A Green Audit is conducted at Don Bosco College of Arts & Commerce (Evening), Pune

1.2 Audit Procedural Steps:



1.3 Google Earth Image:



Institute
Campus

CHAPTER-II

STUDY OF ENERGY CONSUMPTION & CO₂ EMISSION

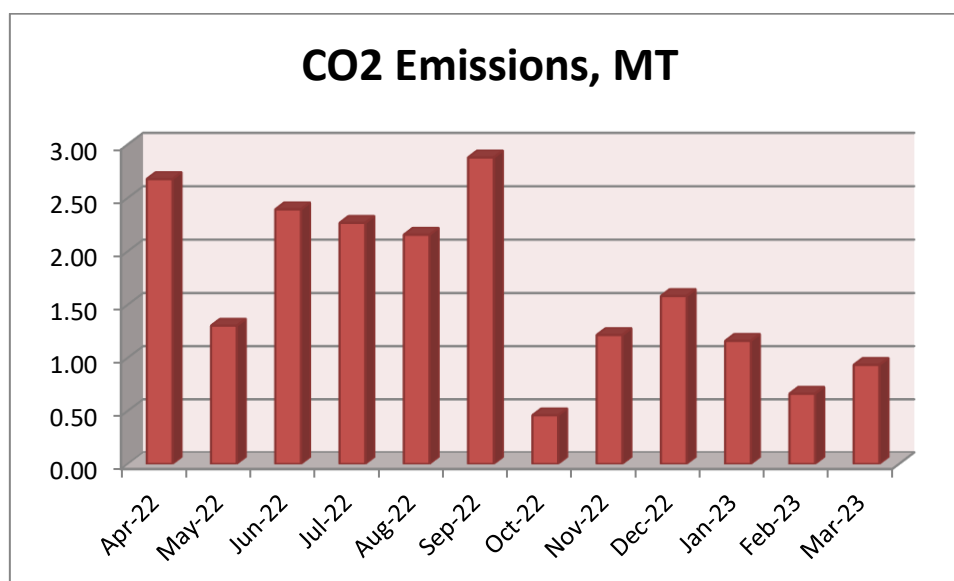
A **Carbon Foot print** is defined as the Total Greenhouse Gas emissions, emitted due to various activities.. The College uses Electrical Energy for various Electrical gadgets.

Basis for computation of CO₂ Emissions: 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere

Table No 1: Month wise CO₂ Emissions:

No	Month	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Apr-22	2975	2.68
2	May-22	1448	1.30
3	Jun-22	2660	2.39
4	Jul-22	2519	2.27
5	Aug-22	2396	2.16
6	Sep-22	3200	2.88
7	Oct-22	510	0.46
8	Nov-22	1350	1.22
9	Dec-22	1758	1.58
10	Jan-23	1289	1.16
11	Feb-23	736	0.66
12	Mar-23	1038	0.93
13	Total	21879	19.69
14	Maximum	3200	2.88
15	Minimum	510	0.46
16	Average	1823.25	1.64

Chart No 1: Month wise CO₂ Emissions:



CHAPTER III

STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity **31 kWp**.

In the following Table, we compute the Annual Reduction in CO₂ Emissions due to installation of Roof Top Solar PV Plant.

Table No 2: Computation of CO₂ Emission Reduction by 31 kWp Solar PV Plant:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	31	kWp
2	Energy Generated in per kWp	4	4 kWh/kWp
3	Annual Solar Energy generation Days	300	Nos
4	Energy Generated in the Year: 21-22	37000	kWh
5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	Qty of CO₂ Saved by Solar PV Plant =(4)*(5) /1000	33.48	MT of CO₂

Photograph of 31 kWp Roof Top Solar PV Plant:



CHAPTER IV STUDY OF WASTE MANAGEMENT

4.1 Segregation of Waste at Source:

The Waste is segregated at source. Waste bins are located at various points in the campus.

Photograph of Waste Collection Bins:



4.2 Organic Waste Management:

The College has made provision of a Bio Composting Bed, for conversion of Organic Waste.

Photograph of Bio Composting Bed:



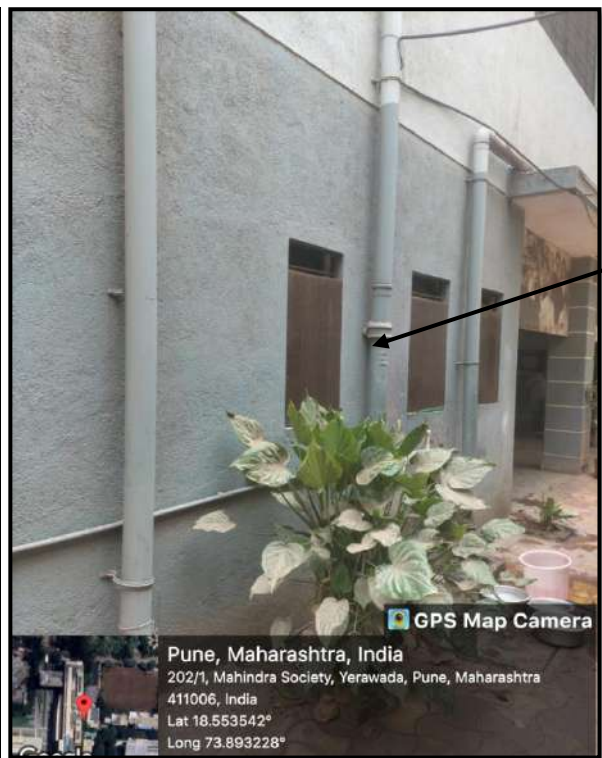
4.3 E Waste Management:

The E Waste is disposed of through Authorized Agency

CHAPTER V STUDY OF RAIN WATER MANAGEMENT

The College has implemented the Rain Water Management Project. The College has installed Pipes from the terrace and the Rain water falling on the terrace is stored in an underground Water tank and is used for gardening purpose.

Photograph of Rain Water Collecting Pipe:



Rain Water
Collecting Pipe

CHAPTER VI

STUDY OF GREEN & SUSTAINABLE PRACTICES

6.1 Pedestrian Friendly Road:

The College has well defined pedestrian roads to facilitate the easy movement of the students within the campus.

Photograph of Internal Road:



6.2 Tree Plantation:

The College has well Tree Plantation in the campus.

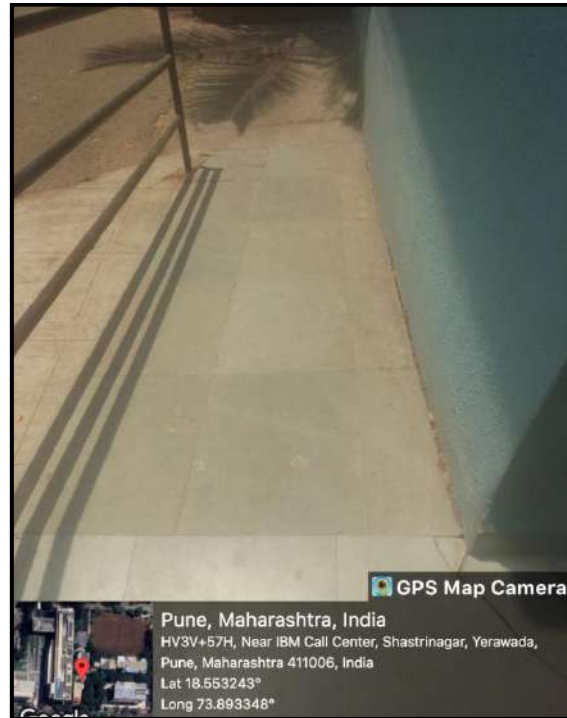
Photograph of Garden/Tree plantation in the campus:



6.3 Provision of Ramp for Divyangajan:

The College has made provision of Ramp at the main entrance of the College for the Divyangajan

Photograph of Ramp for Divyangajan:



6.4 Creation of Awareness about Water Conservation:

The College has displayed posters emphasizing on importance of Water Conservation.

Photograph of Display Board on Water Conservation:



ANNEXURE

DETAILS OF TREES & PLANTS IN THE CAMPUS

1. List of Trees:

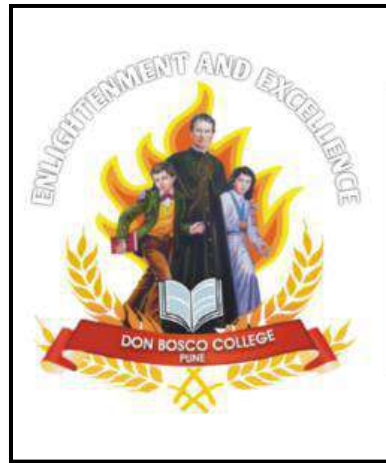
No	Name of Tree/Plant	Quantity
1	Pelta Forum	15
2	Silver Oak	12
3	Bottle Brush	1
4	Gulmohor	17
5	Subabhul	24
6	Kaduneem	29
7	Ashok	38
8	Coconut	2
9	Nilgiri	5
10	Karanj	6
11	Glaricidia	19
12	Rain Tree	22
13	Apta	1
14	Chendufali	2
15	Reetha	3
16	Pangara	2
17	bahava	1
18	Suru	1
19	Casia	8
20	Mahogani	2
21	Badam	5
22	Umbar	1
23	Palm	5
24	Bakul	1
25	Buch	1
26	Jamun	3
27	Rubber	1
28	Guava	1
	Total	228

GREEN AUDIT REPORT

of

Bombay Salesian Society's, DON BOSCO COLLEGE OF ARTS & COMMERCE (EVENING)

Don Bosco Marg, Yerawada, Pune 411 006



Year: 2021-22

Prepared by:

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society,
Near Muktangn English School, Parvati, Pune 411009
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/2022-23/CR-43/1709 10th May, 2022

**CERTIFICATE OF REGISTRATION
FOR CLASS 'A'**

We hereby certify that, the firm having following particulars is registered with **MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)** under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

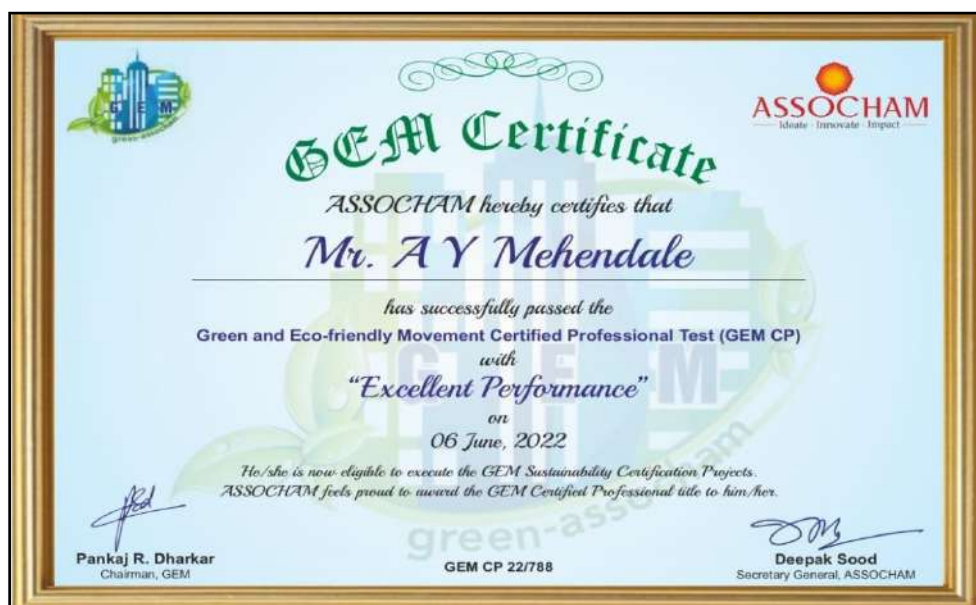
Name and Address of the firm : M/s Engress Services
Yashshree, 26, Nirmal Bag Society,
Near Muktangan English School,
Parvati, Pune –411 009.

Registration Category : *Empanelled Consultant for Energy Conservation Programme for Class 'A'*

Registration Number : *MEDA/ECN/2022-23/Class A/EA-32.*

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **09th May, 2024** from the date of registration, to carry out energy audits under the Energy Conservation Programme
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.


General Manager (EC)



INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	4
II	Executive Summary	5
III	Abbreviations	7
1	Introduction	8
2	Study of Present Energy Consumption	9
3	Study of Carbon Foot printing	10
4	Study of Usage of Alternate Energy	11
5	Study of Waste Management	12
6	Study of Rain water Management	13
7	Study of Green & Sustainable Practices	14

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune for awarding us the assignment of Green Audit of their Yerawada Campus for the Year: 2021-22.

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

EXECUTIVE SUMMARY

1. Don Bosco College of Arts & Commerce (Evening), Pune consumes Energy in the form of **Electrical Energy**; used for various office equipment.

2. Present Energy Consumption & CO₂ Emission:

No	Parameter/ Value	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Total	6484	5.84
2	Maximum	1112	1.00
3	Minimum	210	0.19
4	Average	540.33	0.49

3. Projects implemented for Energy Conservation:

- Usage of Energy Efficient BEE STAR Rated ACs
- Installation of 31 kWp Roof top Solar PV Plant.

4. Usage of Renewable Energy & CO₂ Emission Reduction:

- The College has installed **31 kWp** Roof Top Solar PV Plant.
- The Energy generated by the Solar PV Plant is **37200 kWh**.
- The reduction in Annual CO₂ Emission due to Solar PV Plant in 2021-22 is **33.48 MT**.

5. Waste Management:

5.1 Solid Waste Management:

The recyclable waste, like paper waste is segregated at source and then handed over to Authorized Agency for further action.

5.2 Organic Waste Management:

The College has made provision of a Bio Composting Bed, for conversion of Organic Waste.

5.3 E Waste Management:

The E Waste is disposed of through Authorized Agency.

6. Rain Water Management:

The College has installed Rainwater harvesting project; the rain water falling on the terrace is collected and is stored in an underground Storage tank and is further used for Gardening.

7. Green & Sustainable Initiatives:

- Good internal road
- Tree Plantation in the campus
- Provision of Ramp and Lift for Divyangajan
- Creation of Awareness on Water Conservation, by Display of Posters

8. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere
2. Average Energy generated by Solar PV Plant is **4 kWh/kWp/Day**
3. Annual Solar Energy Generation Days in 2021-22 is **300 Nos**

9. References:

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

ABBREVIATIONS

LED	:	Light Emitting Diode
Kg	:	Kilo Gram
kWh	:	kilo-Watt Hour
kWp	:	Kilo Watt Peak
Qty	:	Quantity
MT	:	Metric Ton
CO ₂	:	Carbon Di Oxide

CHAPTER-I INTRODUCTION

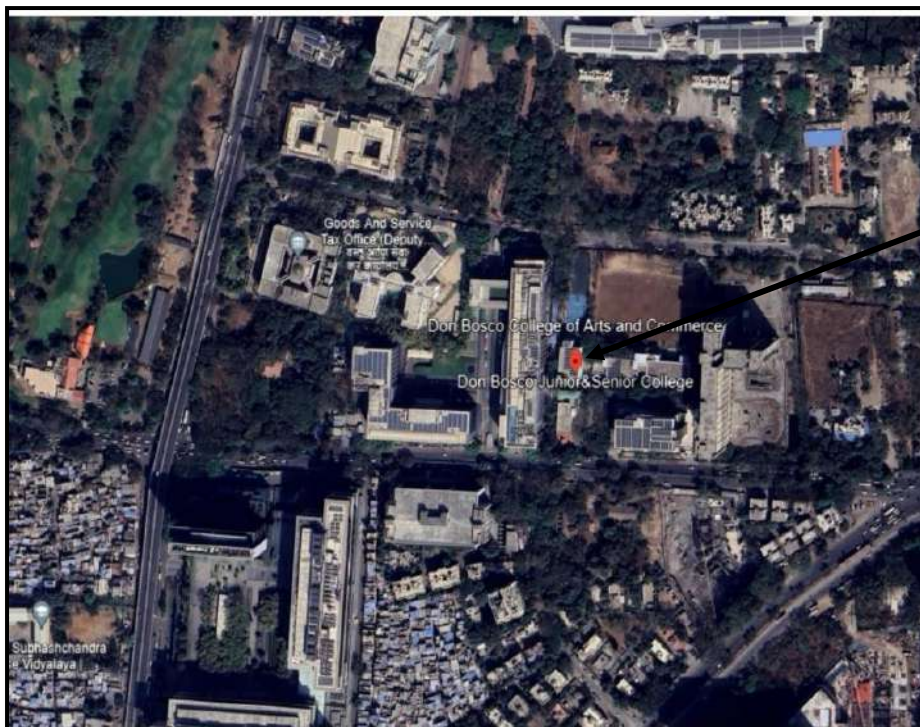
1.1 Objectives:

1. To study present Energy Consumption
2. To study the present CO₂ emissions
3. To study usage of Renewable Energy
4. To study Waste Management Practices
5. To study Rain Water Management
6. To study Green & Sustainable Initiatives

1.2 General Details of College: Table No 1:

No	Head	Particulars
1	Name of Institution	Don Bosco College of Arts & Commerce (Evening)
2	Address	Don Bosco Marg, Yerawada, Pune 411 006
3	Year of Establishment	2012
4	Affiliation	Savitribai Phule Pune University

1.3 Google Earth Image:



College
Campus

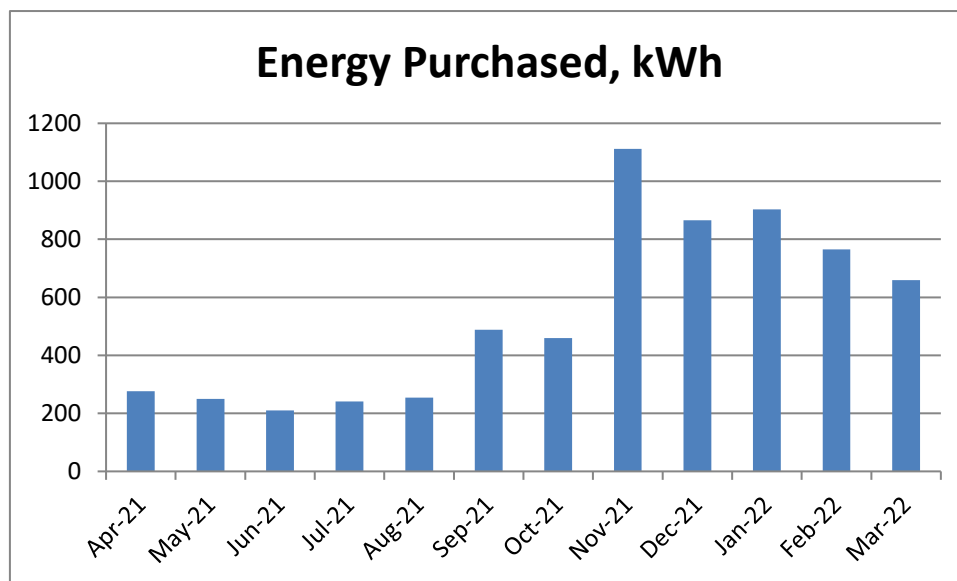
CHAPTER-II STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No2: Electrical Bill Analysis- 2021-22:

No	Month	Energy Purchased, kWh
1	Apr-21	276
2	May-21	250
3	Jun-21	210
4	Jul-21	241
5	Aug-21	254
6	Sep-21	488
7	Oct-21	460
8	Nov-21	1112
9	Dec-21	866
10	Jan-22	903
11	Feb-22	765
12	Mar-22	659
13	Total	6484
14	Maximum	1112
15	Minimum	210
16	Average	540.33

Chart No 1: To study the variation of Month wise Energy Consumption, kWh:



CHAPTER III

STUDY OF CARBON FOOTPRINTING

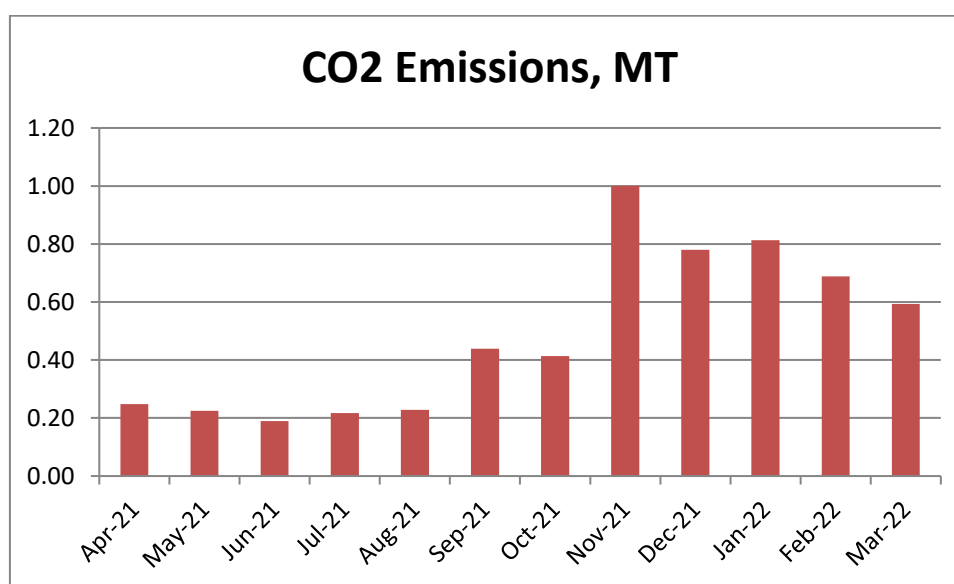
A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO₂ Emissions:**

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

Table No 3: Month wise CO₂ Emissions:

No	Month	Energy Purchased, kWh	CO2 Emissions, MT
1	Apr-21	276	0.25
2	May-21	250	0.23
3	Jun-21	210	0.19
4	Jul-21	241	0.22
5	Aug-21	254	0.23
6	Sep-21	488	0.44
7	Oct-21	460	0.41
8	Nov-21	1112	1.00
9	Dec-21	866	0.78
10	Jan-22	903	0.81
11	Feb-22	765	0.69
12	Mar-22	659	0.59
13	Total	6484	5.84
14	Maximum	1112	1.00
15	Minimum	210	0.19
16	Average	540.33	0.49

Chart No 3: Representation of Month wise CO₂ emissions:



CHAPTER IV STUDY OF USAGE OF ALTERNATE ENERGY

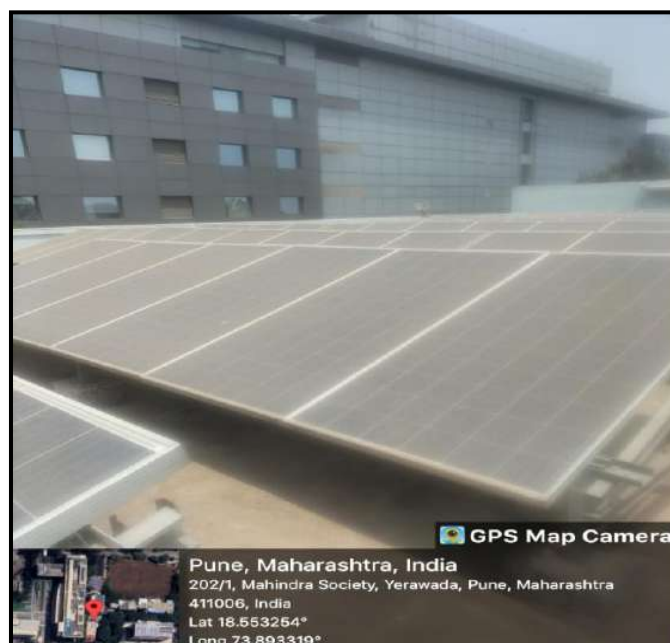
The College has installed Roof Top Solar PV Plant of Capacity **31 kWp**.

In the following Table, we compute the Annual Reduction in CO₂ Emissions due to installation of Roof Top Solar PV Plant.

Table No 4: Computation of CO₂ Emission Reduction by 31 kWp Solar PV Plant:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	31	kWp
2	Energy Generated in per kWp	4	4 kWh/kWp
3	Annual Solar Energy generation Days	300	Nos
4	Energy Generated in the Year: 21-22	37000	kWh
5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	Qty of CO₂ Saved by Solar PV Plant = (4)*(5) /1000	33.48	MT of CO₂

Photograph of 31 kWp Roof Top Solar PV Plant:



CHAPTER V STUDY OF WASTE MANAGEMENT

5.1 Solid Waste Management:

The recyclable waste, like paper waste is segregated at source and then handed over to Authorized Agency for further action.

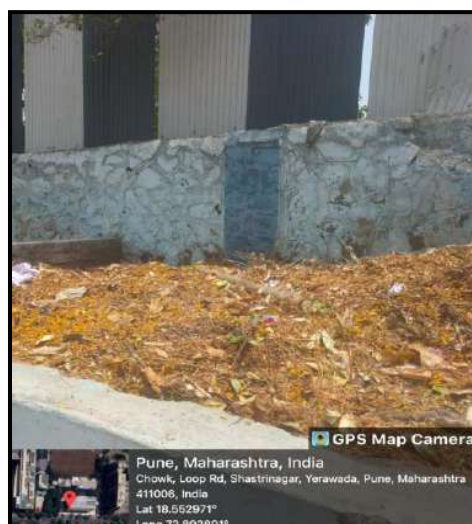
Photograph of Waste Collection Bin:



5.2 Organic Waste Management:

The College has made provision of a Bio Composting Bed, for conversion of Organic Waste.

Photograph of Bio Composting Bed:



5.3 E-Waste Management:

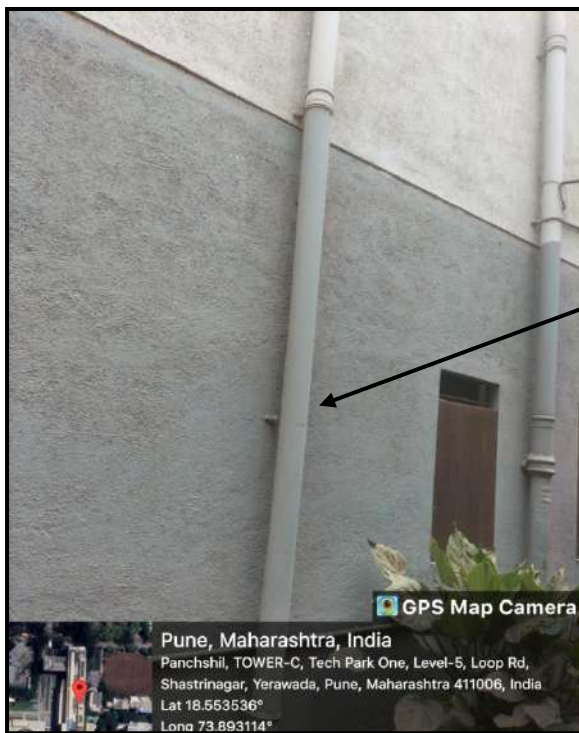
The E Waste is disposed of through Authorized Agency.

CHAPTER-VI

STUDY OF RAIN WATER MANAGEMENT

The College has implemented the Rain Water Management Project. The College has installed Pipes from the terrace and the Rain water falling on the terrace is stored in an underground Water tank and is used for gardening purpose.

Photograph of Rain Water Collecting Pipe:



**Rain Water
Collecting Pipe**

CHAPTER-VII

STUDY OF GREEN & SUSTAINABLE PRACTICES

7.1 Pedestrian Friendly Road:

The College has well defined pedestrian roads to facilitate the easy movement of the students within the campus.

Photograph of Internal Road:



7.2 Tree Plantation:

The College has well Tree Plantation in the campus.

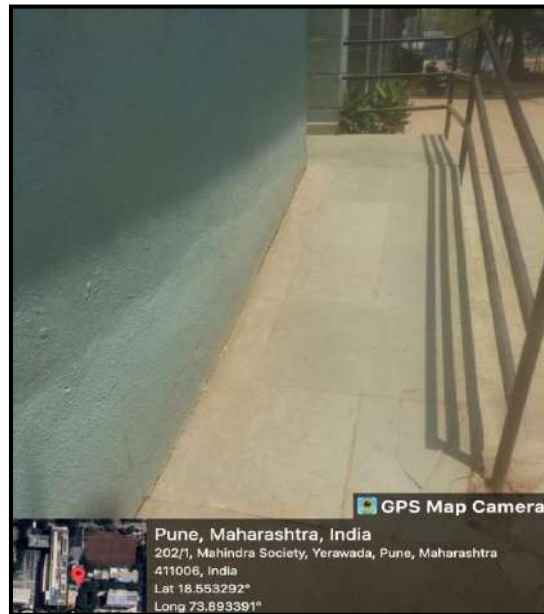
Photograph of Garden/Tree plantation in the campus:



7.3 Provision of Ramp for Divyangajan:

The College has made provision of Ramp at the main entrance of the College for the Divyangajan

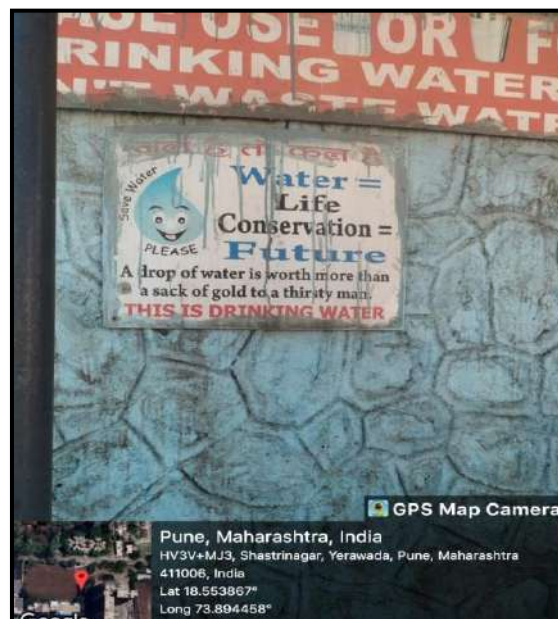
Photograph of Ramp for Divyangajan:



7.4 Creation of Awareness about Water Conservation:

The College has displayed posters emphasizing on importance of Water Conservation.

Photograph of Display Board on Water Conservation:

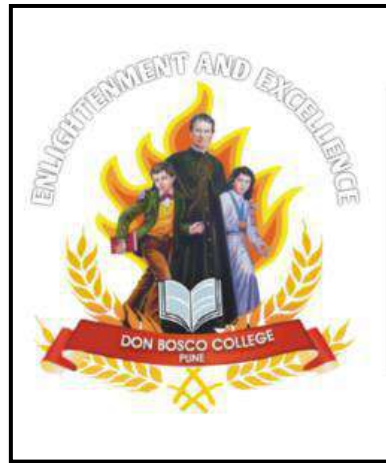


GREEN AUDIT REPORT

of

Bombay Salesian Society's, DON BOSCO COLLEGE OF ARTS & COMMERCE (EVENING)

Don Bosco Marg, Yerawada, Pune 411 006



Year: 2020-21

Prepared by:

ENRICH CONSULTANTS

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



REGISTRATION CERTIFICATES

Regn. No. EA-8192		No. 2942
National Productivity Council (National Certifying Agency)		
PROVISIONAL CERTIFICATE		
This is to certify that Mr. / Ms. <u>Achyut Yashavant Mehendale</u> son / daughter of Mr. <u>Yashavant</u> 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		 Controller of Examination
Date : 10 th August 2007		

BEE ENERGY AUDITOR CERTIFICATE

MAHARASHTRA ENERGY DEVELOPMENT AGENCY <small>An ISO 9001 : 2000 Reg. no. : RO 91 / 2482</small>	
 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-14/1577	22 nd April, 2021
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 Enrich Consultants Yashashree, Plot No. 26, Nirmal Bag Society, Near Mukhtangan English School, Parvati, Pune - 411009.
Registration Category	: Empanelled Consultant for Energy Conservation Programme for Class 'A'
Registration Number	: MEDA/ECN/2021-22/Class A/EA-03
<ul style="list-style-type: none">• 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 21st April, 2023 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)	

MEDA EMPANELMENT CERTIFICATE

INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	4
II	Executive Summary	5
III	Abbreviations	7
1	Introduction	8
2	Study of Present Energy Consumption	9
3	Study of Carbon Foot printing	10
4	Study of Usage of Alternate Energy	11
5	Study of Waste Management	12
6	Study of Rain water Management	13
7	Study of Green & Sustainable Practices	14

ACKNOWLEDGEMENT

We Enrich Consultants, Pune, express our sincere gratitude to the management of Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune for awarding us the assignment of Green Audit of their Yerawada Campus for the Year: 2020-21.

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

EXECUTIVE SUMMARY

1. Don Bosco College of Arts & Commerce (Evening), Pune consumes Energy in the form of Electrical Energy; used for various office equipment.

2. Present Energy Consumption & CO₂ Emission:

No	Parameter/ Value	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Total	7375	6.64
2	Maximum	1406	1.27
3	Minimum	193	0.17
4	Average	614.58	0.55

3. Projects implemented for Energy Conservation:

- Usage of Energy Efficient BEE STAR Rated ACs
- Installation of 31 kWp Roof top Solar PV Plant.

4. Usage of Renewable Energy & CO₂ Emission Reduction:

- The College has installed **31 kWp** Roof Top Solar PV Plant.
- The Energy generated by the Solar PV Plant is **37200 kWh**.
- The reduction in Annual CO₂ Emission due to Solar PV Plant in 20-21 is **33.48 MT**.

5. Waste Management:

5.1 Solid Waste Management:

The recyclable waste, like paper waste is segregated at source and then handed over to Authorized Agency for further action.

5.2 Organic Waste Management:

The College has made provision of a Bio Composting Bed, for conversion of Organic Waste.

5.3 E Waste Management:

The E Waste is disposed of through Authorized Agency.

6. Rain Water Management:

The College has installed Rainwater harvesting project; the rain water falling on the terrace is collected and is stored in an underground Storage tank and is further used for Gardening.

7. Green & Sustainable Initiatives:

- Good internal road
- Tree Plantation in the campus
- Provision of Ramp and Lift for Divyangajan

8. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere
2. Average Energy generated by Solar PV Plant is **4 kWh/kWp/Day**
3. Annual Solar Energy Generation Days in 2020-21 is **300 Nos**

9. References:

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

ABBREVIATIONS

LED	:	Light Emitting Diode
Kg	:	Kilo Gram
kWh	:	kilo-Watt Hour
kWp	:	Kilo Watt Peak
Qty	:	Quantity
MT	:	Metric Ton
CO ₂	:	Carbon Di Oxide

CHAPTER-I INTRODUCTION

1.1 Objectives:

1. To study present Energy Consumption
2. To study the present CO₂ emissions
3. To study usage of Renewable Energy
4. To study Waste Management Practices
5. To study Rain Water Management
6. To study Green & Sustainable Initiatives

1.2 General Details of College: Table No 1:

No	Head	Particulars
1	Name of Institution	Don Bosco College of Arts & Commerce (Evening)
2	Address	Don Bosco Marg, Yerawada, Pune 411 006
3	Year of Establishment	2012
4	Affiliation	Savitribai Phule Pune University

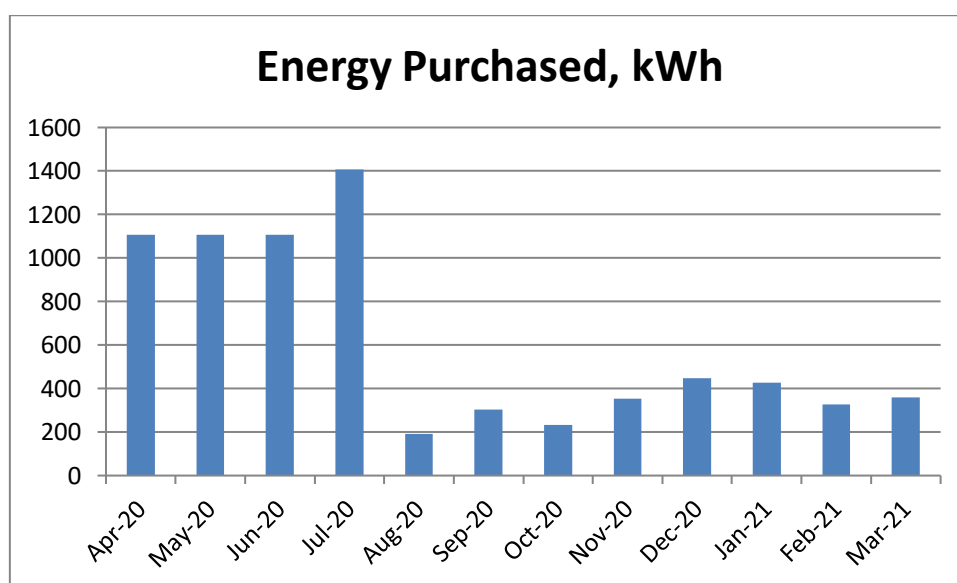
CHAPTER-II STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No2: Electrical Bill Analysis- 2020-21:

No	Month	Energy Purchased, kWh
1	Apr-20	1108
2	May-20	1108
3	Jun-20	1108
4	Jul-20	1406
5	Aug-20	193
6	Sep-20	304
7	Oct-20	232
8	Nov-20	354
9	Dec-20	447
10	Jan-21	428
11	Feb-21	327
12	Mar-21	360
13	Total	7375
14	Maximum	1406
15	Minimum	193
16	Average	614.58

Chart No 1: To study the variation of Month wise Energy Consumption, kWh:



CHAPTER III

STUDY OF CARBON FOOTPRINTING

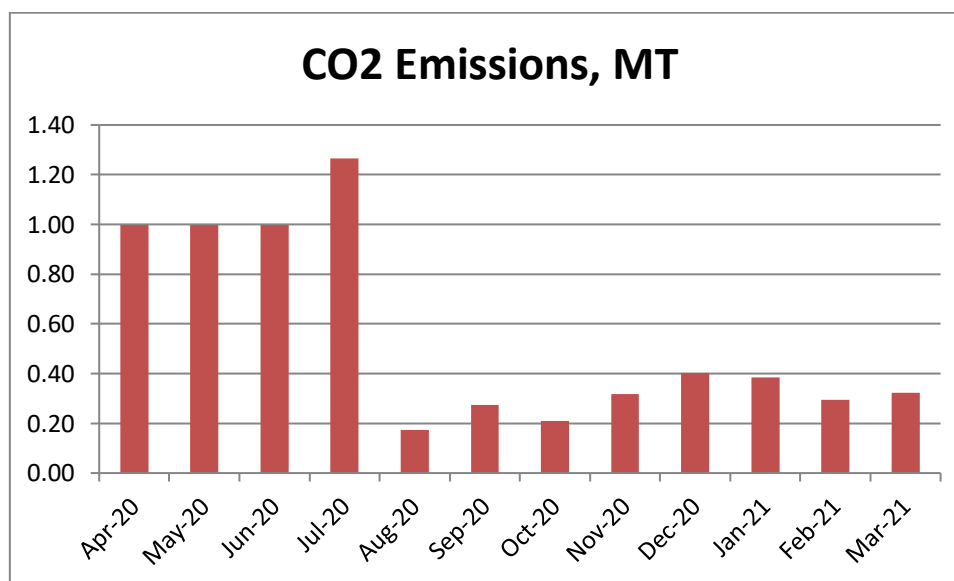
A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO₂ Emissions:**

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

Table No 3: Month wise CO₂ Emissions:

No	Month	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Apr-20	1108	1.00
2	May-20	1108	1.00
3	Jun-20	1108	1.00
4	Jul-20	1406	1.27
5	Aug-20	193	0.17
6	Sep-20	304	0.27
7	Oct-20	232	0.21
8	Nov-20	354	0.32
9	Dec-20	447	0.40
10	Jan-21	428	0.39
11	Feb-21	327	0.29
12	Mar-21	360	0.32
13	Total	7375	6.64
14	Maximum	1406	1.27
15	Minimum	193	0.17
16	Average	614.58	0.55

Chart No 2: Representation of Month wise CO₂ emissions:



CHAPTER IV STUDY OF USAGE OF ALTERNATE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity **31 kWp**.

In the following Table, we compute the Annual Reduction in CO₂ Emissions due to installation of Roof Top Solar PV Plant.

Table No 4: Computation of CO₂ Emission Reduction by 31 kWp Solar PV Plant:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	31	kWp
2	Energy Generated in per kWp	4	4 kWh/kWp
3	Annual Solar Energy generation Days	300	Nos
4	Energy Generated in the Year: 20-21	37000	kWh
5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	Qty of CO₂ Saved by Solar PV Plant = (4)*(5) /1000	33.48	MT of CO₂

Photograph of 31 kWp Roof Top Solar PV Plant:



CHAPTER V STUDY OF WASTE MANAGEMENT

5.1 Solid Waste Management:

The recyclable waste, like paper waste is segregated at source and then handed over to Authorized Agency for further action.

Photograph of Waste Collection Bin:



5.2 Organic Waste Management:

The College has made provision of a Bio Composting Bed, for conversion of Organic Waste.

Photograph of Bio Composting Bed:



5.3 E-Waste Management:

The E Waste is disposed of through Authorized Agency.

CHAPTER-VI

STUDY OF RAIN WATER MANAGEMENT

The College has implemented the Rain Water Management Project. The College has installed Pipes from the terrace and the Rain water falling on the terrace is stored in an underground Water tank and is used for gardening purpose.

Photograph of Rain Water Collecting Pipe:



CHAPTER-VII

STUDY OF GREEN & SUSTAINABLE PRACTICES

7.1 Pedestrian Friendly Road:

The College has well defined pedestrian roads to facilitate the easy movement of the students within the campus.

Photograph of Internal Road:



7.2 Tree Plantation:

The College has well Tree Plantation in the campus.

Photograph of Garden/Tree plantation in the campus:



7.3 Provision of Ramp for Divyangajan:

The College has made provision of Ramp at the main entrance of the College for the Divyangajan

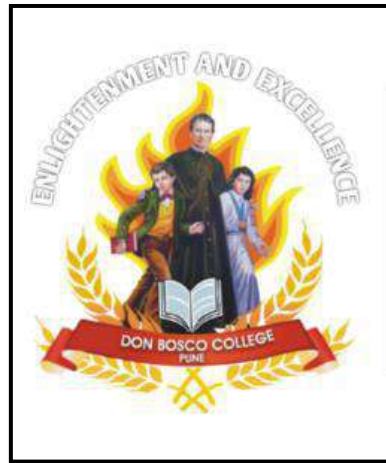
Photograph of Ramp for Divyangajan:



GREEN AUDIT REPORT

of
Bombay Salesian Society's,
DON BOSCO COLLEGE OF ARTS & COMMERCE
(EVENING)

Don Bosco Marg, Yerawada, Pune 411 006



Year: 2019-20

Prepared by:

ENRICH CONSULTANTS



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



REGISTRATION CERTIFICATES

Regn. No. EA-8192		No. 2942
National Productivity Council (National Certifying Agency)		
PROVISIONAL CERTIFICATE		
This is to certify that Mr. / Ms. <u>Achyut Yashavant Mehendale</u> son / daughter of Mr. <u>Yashavant</u> 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		 Controller of Examination
Date : 10 th August 2007		

BEE ENERGY AUDITOR CERTIFICATE

	
MAHARASHTRA ENERGY DEVELOPMENT AGENCY	
Maharashtra Energy Development Agency (A Government of Maharashtra undertaking) 2 nd Floor, MHADA Commercial Complex, Opp. Tridal Nagar, Yerwada, Pune 411 006, Ph No: 020-26614393/266144403 Email: eee@mahaurja.com, Web: www.mahaurja.com	
ECN/2018-19/CR-05/4174	19 th September, 2018
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	: Enrich Consultants Yashashree, Plot No. 26, Nirmal Bag Society, Near Mukangan English School, Parvati, Pune - 411009.
Registration Category	: Empanelled Consultant for Energy Conservation Programme
Registration Number	: MEDA/ECN/CR-05/2018-19/EA-03
<ul style="list-style-type: none">• 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 the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.• This empanelment is valid till 31st March 2021 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.	
 (Smita Kudarikar) General Manager (EC)	

MEDA REGISTRATION CERTIFICATE

INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	4
II	Executive Summary	5
III	Abbreviations	7
1	Introduction	8
2	Study of Present Energy Consumption	9
3	Study of Carbon Foot printing	10
4	Study of Usage of Renewable Energy	11
5	Study of Waste Management	12
6	Study of Rain water Management	13
7	Study of Green & Sustainable Practices	14

ACKNOWLEDGEMENT

We Enrich Consultants, Pune, express our sincere gratitude to the management of Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune for awarding us the assignment of Green Audit of their Yerawada Campus for the Year: 2019-20.

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

EXECUTIVE SUMMARY

1. Don Bosco College of Arts & Commerce (Evening), Pune consumes Energy in the form of Electrical Energy; used for various office equipment.

2. Present Energy Consumption & CO₂ Emission:

No	Parameter/ Value	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Total	14729	13.26
2	Maximum	3197	2.88
3	Minimum	486	0.44
4	Average	1227.42	1.10

3. Projects implemented for Energy Conservation:

- Usage of Energy Efficient BEE STAR Rated ACs
- Installation of 31 kWp Roof top Solar PV Plant.

4. Usage of Renewable Energy & CO₂ Emission Reduction:

- The College has installed **31 kWp** Roof Top Solar PV Plant.
- The Energy generated by the Solar PV Plant is **37200 kWh**.
- The reduction in Annual CO₂ Emission due to Solar PV Plant in 2019-20 is **33.48 MT**.

5. Waste Management:

5.1 Solid Waste Management:

The recyclable waste, like paper waste is segregated at source and then handed over to Authorized Agency for further action.

5.2 Organic Waste Management:

The College has made provision of a Bio Composting Bed, for conversion of Organic Waste.

5.3 E Waste Management:

The E Waste is disposed of through Authorized Agency.

6. Rain Water Management:

The College has installed Rainwater harvesting project; the rain water falling on the terrace is collected and is stored in an underground Storage tank and is further used for Gardening.

7. Green & Sustainable Initiatives:

- Good internal road
- Tree Plantation in the campus
- Provision of Ramp and Lift for Divyangajan

8. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere
2. Average Energy generated by Solar PV Plant is **4 kWh/kWp/Day**
3. Annual Solar Energy Generation Days in 2019-20 is **300 Nos**

9. References:

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

ABBREVIATIONS

LED	:	Light Emitting Diode
Kg	:	Kilo Gram
kWh	:	kilo-Watt Hour
kWp	:	Kilo Watt Peak
Qty	:	Quantity
MT	:	Metric Ton
CO ₂	:	Carbon Di Oxide

CHAPTER-I INTRODUCTION

1.1 Objectives:

1. To study present Energy Consumption
2. To study the present CO₂ emissions
3. To study usage of Renewable Energy
4. To study Waste Management Practices
5. To study Rain Water Management
6. To study Green & Sustainable Initiatives

1.2 General Details of College: Table No 1:

No	Head	Particulars
1	Name of Institution	Don Bosco College of Arts & Commerce (Evening)
2	Address	Don Bosco Marg, Yerawada, Pune 411 006
3	Year of Establishment	2012
4	Affiliation	Savitribai Phule Pune University

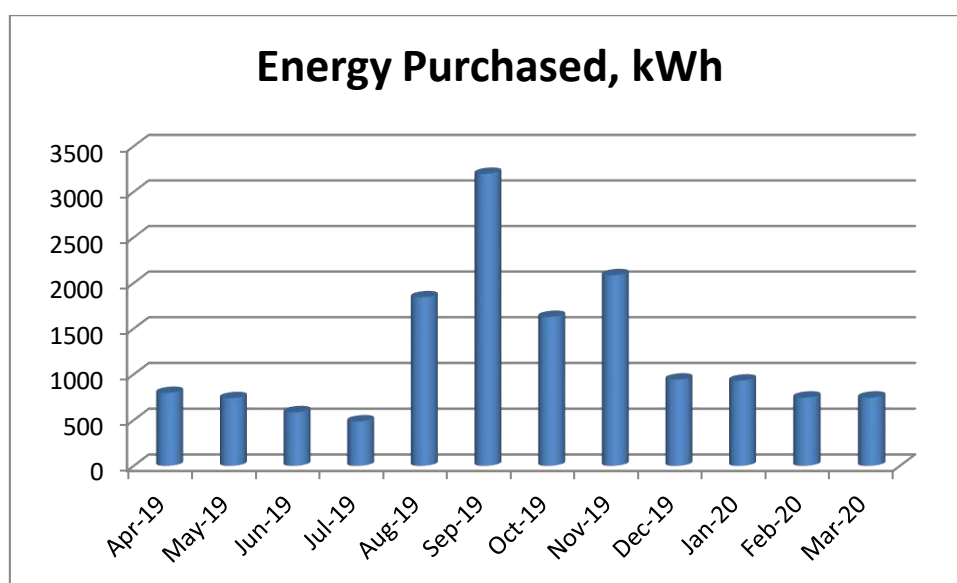
CHAPTER-II STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No2: Electrical Bill Analysis- 2019-20:

No	Month	Energy Purchased, kWh
1	Apr-19	797
2	May-19	740
3	Jun-19	586
4	Jul-19	486
5	Aug-19	1843
6	Sep-19	3197
7	Oct-19	1628
8	Nov-19	2085
9	Dec-19	943
10	Jan-20	932
11	Feb-20	746
12	Mar-20	746
13	Total	14729
14	Maximum	3197
15	Minimum	486
16	Average	1227.42

Chart No 1: To study the variation of Month wise Energy Consumption, kWh:



CHAPTER III STUDY OF CARBON FOOTPRINTING

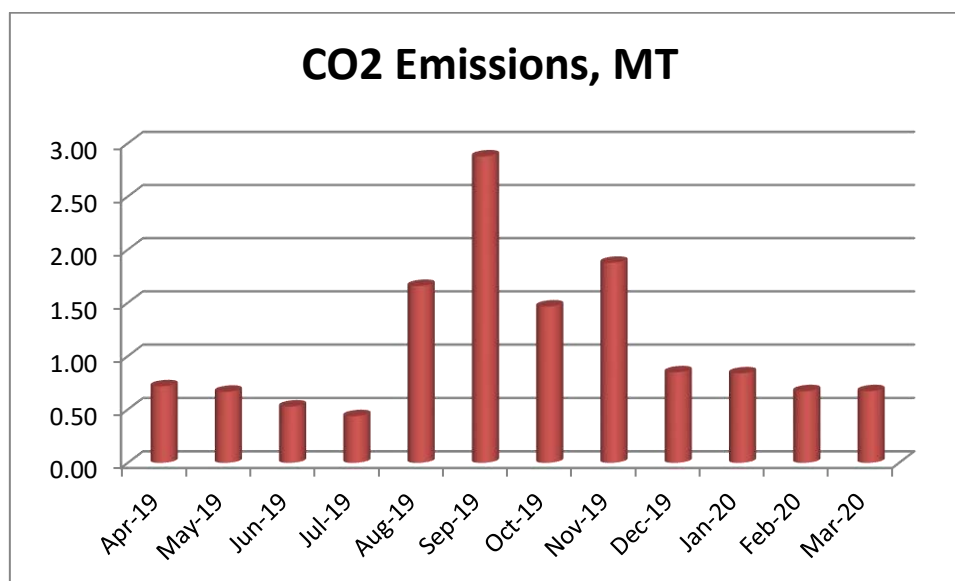
A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO₂ Emissions:**

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

Table No 3: Month wise CO₂ Emissions:

No	Month	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Apr-19	797	0.72
2	May-19	740	0.67
3	Jun-19	586	0.53
4	Jul-19	486	0.44
5	Aug-19	1843	1.66
6	Sep-19	3197	2.88
7	Oct-19	1628	1.47
8	Nov-19	2085	1.88
9	Dec-19	943	0.85
10	Jan-20	932	0.84
11	Feb-20	746	0.67
12	Mar-20	746	0.67
13	Total	14729	13.26
14	Maximum	3197	2.88
15	Minimum	486	0.44
16	Average	1227.42	1.10

Chart No 2: Representation of Month wise CO₂ emissions:



CHAPTER IV STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity **31 kWp**.

In the following Table, we compute the Annual Reduction in CO₂ Emissions due to installation of Roof Top Solar PV Plant.

Table No 4: Computation of CO₂ Emission Reduction by 31 kWp Solar PV Plant:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	31	kWp
2	Energy Generated in per kWp	4	4 kWh/kWp
3	Annual Solar Energy generation Days	300	Nos
4	Energy Generated in the Year: 19-20	37000	kWh
5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	Qty of CO₂ Saved by Solar PV Plant = (4)*(5) /1000	33.48	MT of CO₂

Photograph of 31 kWp Roof Top Solar PV Plant:



CHAPTER V STUDY OF WASTE MANAGEMENT

5.1 Solid Waste Management:

The recyclable waste, like paper waste is segregated at source and then handed over to Authorized Agency for further action.

Photograph of Waste Collection Bin:



5.2 Organic Waste Management:

The College has made provision of a Bio Composting Bed, for conversion of Organic Waste.

Photograph of Bio Composting Bed:



5.3 E-Waste Management:

The E Waste is disposed of through Authorized Agency.

CHAPTER-VI

STUDY OF RAIN WATER MANAGEMENT

The College has implemented the Rain Water Management Project. The College has installed Pipes from the terrace and the Rain water falling on the terrace is stored in an underground Water tank and is used for gardening purpose.

Photograph of Rain Water Collecting Pipe:



CHAPTER-VII

STUDY OF GREEN & SUSTAINABLE PRACTICES

7.1 Pedestrian Friendly Road:

The College has well defined pedestrian roads to facilitate the easy movement of the students within the campus.

Photograph of Internal Road:



7.2 Tree Plantation:

The College has well Tree Plantation in the campus.

Photograph of Garden/Tree plantation in the campus:



7.3 Provision of Ramp for Divyangajan:

The College has made provision of Ramp at the main entrance of the College for the Divyangajan

Photograph of Ramp for Divyangajan:

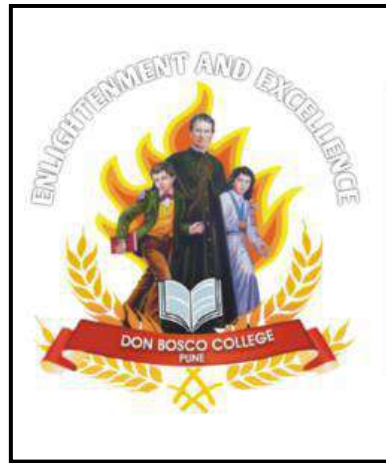


GREEN AUDIT REPORT

of

Bombay Salesian Society's, DON BOSCO COLLEGE OF ARTS & COMMERCE (EVENING)

Don Bosco Marg, Yerawada, Pune 411 006



Year: 2018-19

Prepared by:

ENRICH CONSULTANTS

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



REGISTRATION CERTIFICATES

Regn. No. EA-8192		No. 2942
National Productivity Council (National Certifying Agency)		
PROVISIONAL CERTIFICATE		
This is to certify that Mr. / Ms. <u>Achyut Yashavant Mehendale</u> son / daughter of Mr. <u>Yashavant</u> 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		 Controller of Examination
Date : 10 th August 2007		

BEE ENERGY AUDITOR CERTIFICATE

	
MAHARASHTRA ENERGY DEVELOPMENT AGENCY	
Maharashtra Energy Development Agency (A Government of Maharashtra undertaking)	
2 nd Floor, MHADA Commercial Complex, Opp. Tridal Nagar, Yerwada, Pune 411 006, Ph No: 020-26614393/266144403 Email: eee@mahaurja.com, Web: www.mahaurja.com	
ECN/2018-19/CR-05/4174	19 th September, 2018
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	: Enrich Consultants Yashashree, Plot No. 26, Nirmal Bag Society, Near Mukangan English School, Parvati, Pune - 411009.
Registration Category	: Empanelled Consultant for Energy Conservation Programme
Registration Number	: MEDA/ECN/CR-05/2018-19/EA-03
<ul style="list-style-type: none">• 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 the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.• This empanelment is valid till 31st March 2021 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.	
 (Smita Kudarikar) General Manager (EC)	

MEDA REGISTRATION CERTIFICATE

INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	4
II	Executive Summary	5
III	Abbreviations	7
1	Introduction	8
2	Study of Present Energy Consumption	9
3	Study of Carbon Foot printing	10
4	Study of Usage of Alternate Energy	11
5	Study of Waste Management	12
6	Study of Rain water Management	13
7	Study of Green & Sustainable Practices	14

ACKNOWLEDGEMENT

We Enrich Consultants, Pune, express our sincere gratitude to the management of Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune for awarding us the assignment of Green Audit of their Yerawada Campus for the Year: 2018-19.

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

EXECUTIVE SUMMARY

1. Don Bosco College of Arts & Commerce (Evening), Pune consumes Energy in the form of **Electrical Energy**; used for various office equipment.

2. Present Energy Consumption & CO₂ Emission:

No	Parameter/ Value	Energy Consumed, kWh	CO ₂ Emissions, MT
1	Total	10388	9.35
2	Maximum	2824	2.54
3	Minimum	423	0.38
4	Average	865.67	0.78

3. Projects implemented for Energy Conservation:

- Usage of Energy Efficient BEE STAR Rated ACs
- Installation of 31 kWp Roof top Solar PV Plant.

4. Usage of Renewable Energy & CO₂ Emission Reduction:

- The College is in process of installation of **31 kWp** Roof Top Solar PV Plant.

5. Waste Management:

5.1 Solid Waste Management:

The recyclable waste, like paper waste is segregated at source and then handed over to Authorized Agency for further action.

5.2 Organic Waste Management:

The College has made provision of a Bio Composting Bed, for conversion of Organic Waste.

6. Rain Water Management:

The College has installed Rainwater harvesting project; the rain water falling on the terrace is collected and is stored in an underground Storage tank and is further used for Gardening.

7. Green & Sustainable Initiatives:

- Good internal road
- Tree Plantation in the campus

8. Assumption:

1. **1 kWh** of Electrical Energy releases **0.8 Kg of CO₂** into atmosphere

ABBREVIATIONS

LED	:	Light Emitting Diode
Kg	:	Kilo Gram
kWh	:	kilo-Watt Hour
kWp	:	Kilo Watt Peak
Qty	:	Quantity
MT	:	Metric Ton
CO ₂	:	Carbon Di Oxide

CHAPTER-I INTRODUCTION

1.1 Objectives:

1. To study present Energy Consumption
2. To study the present CO₂ emissions
3. To study usage of Renewable Energy
4. To study Waste Management Practices
5. To study Rain Water Management
6. To study Green & Sustainable Initiatives

1.2 General Details of College: Table No 1:

No	Head	Particulars
1	Name of Institution	Don Bosco College of Arts & Commerce (Evening)
2	Address	Don Bosco Marg, Yerawada, Pune 411 006
3	Year of Establishment	2012
4	Affiliation	Savitribai Phule Pune University

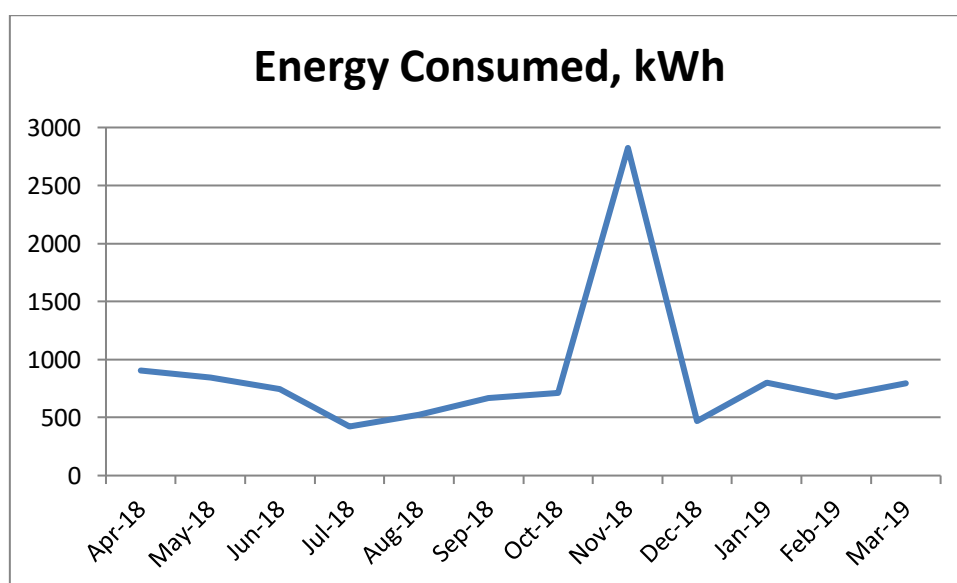
CHAPTER-II STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No2: Electrical Bill Analysis- 2018-19:

No	Month	Energy Consumed, kWh
1	Apr-18	903
2	May-18	845
3	Jun-18	743
4	Jul-18	423
5	Aug-18	526
6	Sep-18	669
7	Oct-18	712
8	Nov-18	2824
9	Dec-18	467
10	Jan-19	799
11	Feb-19	680
12	Mar-19	797
13	Total	10388
14	Maximum	2824
15	Minimum	423
16	Average	865.67

Chart No 1: To study the variation of Month wise Energy Consumption, kWh:



CHAPTER III STUDY OF CARBON FOOTPRINTING

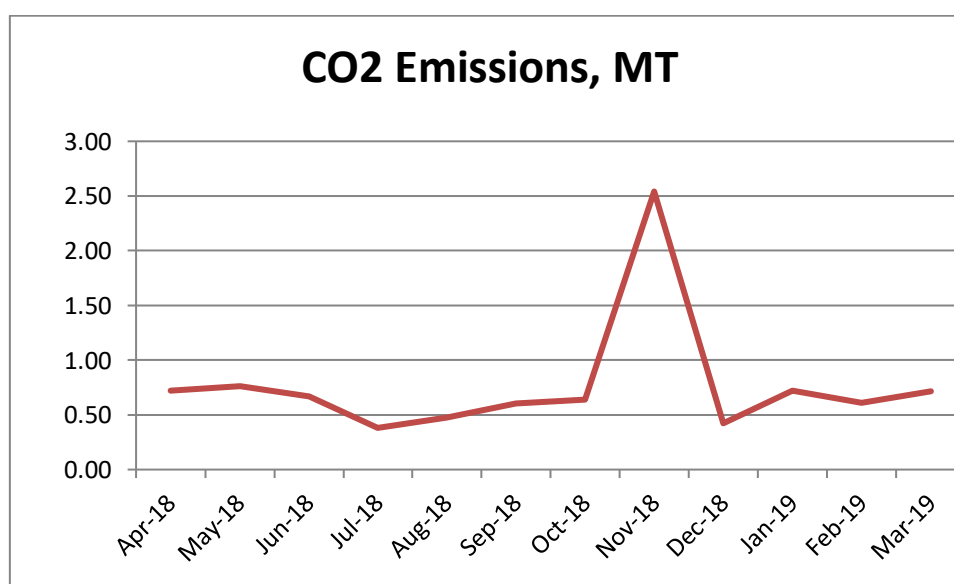
A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO₂ Emissions:**

- 1 kWh of Electrical Energy releases **0.8 Kg of CO₂** into atmosphere

Table No 3: Month wise CO₂ Emissions:

No	Month	Energy Consumed, kWh	CO2 Emissions, MT
1	Apr-18	903	0.72
2	May-18	845	0.76
3	Jun-18	743	0.67
4	Jul-18	423	0.38
5	Aug-18	526	0.47
6	Sep-18	669	0.60
7	Oct-18	712	0.64
8	Nov-18	2824	2.54
9	Dec-18	467	0.42
10	Jan-19	799	0.72
11	Feb-19	680	0.61
12	Mar-19	797	0.72
13	Total	10388	9.35
14	Maximum	2824	2.54
15	Minimum	423	0.38
16	Average	865.67	0.78

Chart No 2: Representation of Month wise CO₂ emissions:



CHAPTER IV

STUDY OF USAGE OF ALTERNATE ENERGY

The College is in a process of installation of 31kWp Roof Top Solar PV Plant

CHAPTER V STUDY OF WASTE MANAGEMENT

5.1 Solid Waste Management:

The recyclable waste, like paper waste is segregated at source and then handed over to Authorized Agency for further action.

Photograph of Waste Collection Bin:



5.2 Organic Waste Management:

The College has made provision of a Bio Composting Bed, for conversion of Organic Waste.

Photograph of Bio Composting Bed:



CHAPTER-VI

STUDY OF RAIN WATER MANAGEMENT

The College has implemented the Rain Water Management Project. The College has installed Pipes from the terrace and the Rain water falling on the terrace is stored in an underground Water tank and is used for gardening purpose.

Photograph of Rain Water Collecting Pipe:



CHAPTER-VII STUDY OF GREEN PRACTICES

7.1 Pedestrian Friendly Road:

The College has well defined pedestrian roads to facilitate the easy movement of the students within the campus.

Photograph of Internal Road:



7.2 Tree Plantation:

The College has well Tree Plantation in the campus.

Photograph of Garden/Tree plantation in the campus:



ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Mukhtangan English School, Parvati, Pune 411 009

Tel: 09890444795 Email: engress123@gmail.com

UDYAM Regn. No: UDYAM-MH-26-0135636,

MEDA Regn. No: ECN/2023-24/CR-43/1709

ISO: 9001-2015 Certified (Cert No: 23EQKC13),

ISO: 14001-2015 Certified (Cert No: 23EEKW20)

ENVIRONMENTAL AUDIT CERTIFICATE

Certificate No: ES/DBCAC/23-24/03

Date: 12/6/2024

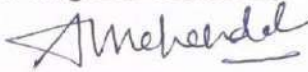
This is to certify that we have conducted Environmental Audit at Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune in the year 2023-24.

The Institute has adopted following Environment Friendly Practices:

- Usage of Energy Efficient LED Light Fittings
- Usage of BEE STAR Rated Equipment
- Installation of 31 kWp Roof Top Solar PV Plant.
- Segregation of Waste at source
- Installation of Bio Composting Bed for conversion of Leafy Waste
- Implementation of Rain Water Management Project
- Internal Tree Plantation
- Creation of Awareness on Water Conservation by Display of Poster

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

For Engress Services,



A Y Mehendale,

B E- Mech, M Tech-Energy, Certified Energy Auditor, EA-8192

ASSOCHAM GEM Certified Professional: GEM: 22/788



ENGRESS SERVICES

Yashashree, 26, Nimal 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/DBCAC/22-23/03

Date: 10/6/2023

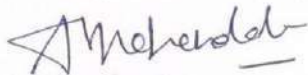
This is to certify that we have conducted Environmental Audit at Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune in the year 2022-23.

The Institute has adopted following Environment Friendly Practices:

- Usage of Energy Efficient LED Light Fittings
- Usage of BEE STAR Rated Equipment
- Installation of 31 kWp Roof Top Solar PV Plant.
- Segregation of Waste at source
- Installation of Bio Composting Bed for conversion of Leafy Waste
- Implementation of Rain Water Management Project
- Internal Tree Plantation
- Creation of Awareness on Water Conservation by Display of Poster

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

For Engress Services,



A Y Mehendale,

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



ENGRESS SERVICES

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

Ref: ES/ DBCAC/21-22/03

Date: 11/6/2022

CERTIFICATE

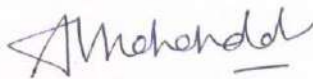
This is to certify that we have conducted Environmental Audit at Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune in the year 2021-22.

The College has adopted following Environmental Friendly Practices:

- Usage of Energy Efficient LED Light Fittings
- Usage of BEE STAR Rated Equipment
- Installation of 31 kWp Roof Top Solar PV Plant.
- Segregation of Waste at source
- Installation of Bio Composting Bed for conversion of Leafy Waste
- Implementation of Rain Water Management Project
- Internal Tree Plantation
- Creation of Awareness on Water Conservation by Display of Poster

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

For Engress Services,



A Y Mehendale,

Certified Energy Auditor, EA-8192

ASSOCHAM GEM Certified Professional: GEM: 22/788



ENRICH CONSULTANTS

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

Ref: EC/ DBCAC/20-21/03

Date: 14/6/2021

CERTIFICATE

This is to certify that we have conducted Environmental Audit at Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune in the year 2020-21.

The College has adopted following Environmental Friendly Practices:

- Usage of Energy Efficient LED Light Fittings
- Usage of BEE STAR Rated Equipment
- Installation of 31 kWp Roof Top Solar PV Plant.
- Segregation of Waste at source
- Installation of Bio Composting Bed for conversion of Leafy Waste
- Implementation of Rain Water Management Project
- Internal Tree Plantation

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

For Enrich Consultants,



A Y Mehendale,
Certified Energy Auditor,
EA-8192



ENRICH CONSULTANTS

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

Ref: EC/ DBCAC/19-20/03

Date: 8/6/2020

CERTIFICATE

This is to certify that we have conducted Environmental Audit at Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune in the year 2019-20.

The College has adopted following Environmental Friendly Practices:

- Usage of Energy Efficient LED Light Fittings
- Usage of BEE STAR Rated Equipment
- Installation of 31 kWp Roof Top Solar PV Plant.
- Segregation of Waste at source
- Installation of Bio Composting Bed for conversion of Leafy Waste
- Implementation of Rain Water Management Project
- Internal Tree Plantation

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

For Enrich Consultants,



A Y Mehendale,
Certified Energy Auditor,
EA-8192



ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Mukhtangan English School, Parvati, Pune 411 009

Tel: 09890444795 Email: engress123@gmail.com

UDYAM Regn. No: UDYAM-MH-26-0135636,

MEDA Regn. No: ECN/2023-24/CR-43/1709

ISO: 9001-2015 Certified (Cert No: 23EQKC13),

ISO: 14001-2015 Certified (Cert No: 23EEKW20)

ENERGY AUDIT CERTIFICATE

Certificate No: ES/DBCAC/23-24/01

Date: 12/6/2024

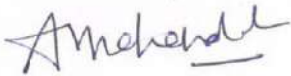
This is to certify that we have conducted Energy Audit at Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune in the year 2023-24.

The Institute has adopted following Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Installation of 31 kWp Capacity Roof Top Solar PV Plant

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

For Engress Services,



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



ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Mukhtangan 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)

ENERGY AUDIT CERTIFICATE

Certificate No: ES/DBCAC/22-23/01

Date: 10/6/2023

This is to certify that we have conducted Energy Audit at Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune in the year 2022-23.

The Institute has adopted following Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Installation of 31 kWp Capacity Roof Top Solar PV Plant

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

For Engress Services,



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



ENGRESS SERVICES

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

Ref: ES/DBCAC/21-22/01

Date: 11/6/2022

CERTIFICATE

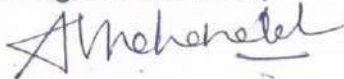
This is to certify that we have conducted Energy Audit at Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune in the year 2021-22.

The College has adopted following Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Installation of 31 kWp Capacity Roof Top Solar PV Plant

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,
Certified Energy Auditor
EA-8192



ENRICH CONSULTANTS

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

Ref: EC/DBCAC/20-21/01

Date: 14/6/2021

CERTIFICATE

This is to certify that we have conducted Energy Audit at Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune in the year 2020-21.

The College has adopted following Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Installation of 31 kWp Capacity Roof Top Solar PV Plant

We appreciate the support of Management, involvement of faculty members and students in the process of making the Campus Energy Efficient.

For Enrich Consultants,



A Y Mehendale,
Certified Energy Auditor,
EA-8192



ENRICH CONSULTANTS

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

Ref: EC/DBCAC/19-20/01

Date: 8/6/2020

CERTIFICATE

This is to certify that we have conducted Energy Audit at Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune in the year 2019-20.

The College has adopted following Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Installation of 31 kWp Capacity Roof Top Solar PV Plant

We appreciate the support of Management, involvement of faculty members and students in the process of making the Campus Energy Efficient.

For Enrich Consultants,



A Y Mehendale,
Certified Energy Auditor,
EA-8192



ENRICH CONSULTANTS

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

Ref: EC/DBCAC/18-19/01

Date: 12/6/2019

CERTIFICATE

This is to certify that we have conducted Energy Audit at Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune in the year 2018-19.

The College has adopted following Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- In Process of Installation of 31 kWp Capacity Roof Top Solar PV Plant

We appreciate the support of Management, involvement of faculty members and students in the process of making the Campus Energy Efficient.

For Enrich Consultants,



A Y Mehendale,
Certified Energy Auditor,
EA-8192



ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Mukhtangan English School, Parvati, Pune 411 009

Tel: 09890444795 Email: engress123@gmail.com

UDYAM Regn. No: UDYAM-MH-26-0135636,

MEDA Regn. No: ECN/2023-24/CR-43/1709

ISO: 9001-2015 Certified (Cert No: 23EQKC13),

ISO: 14001-2015 Certified (Cert No: 23EEKW20)

GREEN AUDIT CERTIFICATE

Certificate No: ES/DBCAC/23-24/02

Date: 12/6/2024

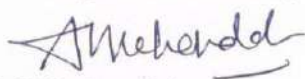
This is to certify that we have conducted Green Audit at Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune in the year 2023-24.

The Institute has adopted following Green & Sustainable Practices:

- Usage of Energy Efficient LED Light Fittings
- Usage of BEE STAR Rated Equipment
- Installation of 31 kWp Roof Top Solar PV Plant.
- Segregation of Waste at source
- Installation of Bio Composting Bed for conversion of Leafy Waste
- Implementation of Rain Water Management Project
- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp & Lift for Divyangajan
- Creation of Awareness on Water Conservation by Display of Poster

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

For Engress Services,



A Y Mehendale,

B E- Mech, M Tech-Energy, Certified Energy Auditor, EA-8192

ASSOCHAM GEM Certified Professional: GEM: 22/788



ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Mukhtangan 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)

GREEN AUDIT CERTIFICATE

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

Date: 10/6/2023

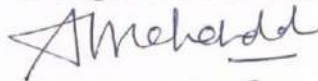
This is to certify that we have conducted Green Audit at Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune in the year 2022-23.

The Institute has adopted following Green & Sustainable Practices:

- Usage of Energy Efficient LED Light Fittings
- Usage of BEE STAR Rated Equipment
- Installation of 31 kWp Roof Top Solar PV Plant.
- Segregation of Waste at source
- Installation of Bio Composting Bed for conversion of Leafy Waste
- Implementation of Rain Water Management Project
- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp & Lift for Divyangajan
- Creation of Awareness on Water Conservation by Display of Poster

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

For Engress Services,



A Y Mehendale,

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



ENGRESS SERVICES

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

Ref: ES/ DBCAC/21-22/02

Date: 11/6/2022

CERTIFICATE

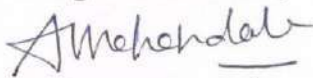
This is to certify that we have conducted Green Audit at Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune in the year 2021-22.

The College has adopted following Green & Sustainable Practices:

- Usage of Energy Efficient LED Light Fittings
- Usage of BEE STAR Rated Equipment
- Installation of 31 kWp Roof Top Solar PV Plant.
- Segregation of Waste at source
- Installation of Bio Composting Bed for conversion of Leafy Waste
- Implementation of Rain Water Management Project
- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp & Lift for Divyangajan
- Creation of Awareness on Water Conservation by Display of Poster

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

For Engress Services,



A Y Mehendale,

Certified Energy Auditor, EA-8192

ASSOCHAM GEM Certified Professional: GEM: 22/788



ENRICH CONSULTANTS

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

Ref: EC/ DBCAC/20-21/02

Date: 14/6/2021

CERTIFICATE

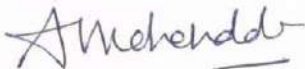
This is to certify that we have conducted Green Audit at Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune in the year 2020-21.

The College has adopted following Green & Sustainable Practices:

- Usage of Energy Efficient LED Light Fittings
- Usage of BEE STAR Rated Equipment
- Installation of 31 kWp Roof Top Solar PV Plant.
- Segregation of Waste at source
- Installation of Bio Composting Bed for conversion of Leafy Waste
- Implementation of Rain Water Management Project
- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp & Lift for Divyangajan

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

For Enrich Consultants,



A Y Mehendale,
Certified Energy Auditor,
EA-8192



ENRICH CONSULTANTS

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

Ref: EC/ DBCAC/19-20/02

Date: 8/6/2020

CERTIFICATE

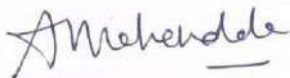
This is to certify that we have conducted Green Audit at Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune in the year 2019-20.

The College has adopted following Green Practices:

- Usage of Energy Efficient LED Light Fittings
- Usage of BEE STAR Rated Equipment
- Installation of 31 kWp Roof Top Solar PV Plant.
- Segregation of Waste at source
- Installation of Bio Composting Bed for conversion of Leafy Waste
- Implementation of Rain Water Management Project
- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp & Lift for Divyangajan

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

For Enrich Consultants,



A Y Mehendale,
Certified Energy Auditor,
EA-8192



ENRICH CONSULTANTS

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

Ref: EC/ DBCAC/18-19/02

Date: 12/6/2019

CERTIFICATE

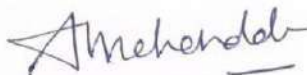
This is to certify that we have conducted Green Audit at Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune in the year 2018-19.

The College has adopted following Green Practices:

- Usage of Energy Efficient LED Light Fittings
- Usage of BEE STAR Rated Equipment
- In Process of Installation of 31 kWp Roof Top Solar PV Plant.
- Segregation of Waste at source
- Installation of Bio Composting Bed for conversion of Leafy Waste
- Implementation of Rain Water Management Project
- Good Internal Road
- Internal Tree Plantation

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

For Enrich Consultants,



A Y Mehendale,
Certified Energy Auditor,
EA-8192





THE BOMBAY SALESIAN SOCIETY

DON BOSCO COLLEGE OF ARTS & COMMERCE (NIGHT COLLEGE)

DON BOSCO MARG,
YERVADA, PUNE 411 006
Ph: 020 26615646
Fax: 020 26615646

E-mail: donboscoyervada@yahoo.com

Affiliated to University of Pune
ID NO. PU/PN/AC/453/2013

Report on Tree Plantation Event near Mhalunge, Pune

Date: July 20, 2019

Venue: Mhalunge, Pune

Organized by: Don Bosco College of Arts and Commerce (Evening), Pune

Initiative by: Officiating Principal, Teaching and Non-Teaching Staff

On July 20, 2019, Don Bosco College of Arts and Commerce (Evening), Pune, organized a tree plantation event near Mhalunge, Pune. This initiative was driven by the Officiating Principal Mis Pearl Fernandes, along with enthusiastic participation from teaching and non-teaching staff, as well as over 40 students.

The primary objective of the event was to contribute to environmental conservation and sustainability by planting trees in an area near Mhalunge, Pune. The event aimed to enhance green cover, promote biodiversity, and raise awareness about the importance of trees in mitigating climate change. The day began with a brief inauguration ceremony led by the Officiating Principal, highlighting the significance of tree plantation and the college's commitment to environmental stewardship. Following this, the participants, including teaching and non-teaching staff along with students, enthusiastically took part in planting 400 saplings of various native species suitable for the local ecosystem. Following activities are included.

1. Digging pits and preparing the soil for planting.
2. Planting saplings with care and ensuring proper watering and mulching.
3. Conducting demonstrations on correct planting techniques and nurturing young trees.

The event was organized in collaboration with local environmental organizations and experts who provided guidance and expertise throughout the planting process. By the end of the day, all 400 saplings were successfully planted, marking a significant contribution towards increasing the green cover in the vicinity of Mhalunge, Pune. The event not only achieved its environmental goals but also fostered a sense of community and environmental responsibility among all participants.

We extend our sincere thanks to the Officiating Principal, teaching and non-teaching staff, students, and volunteers whose dedication and hard work made this event possible. Special thanks also go to the local community and environmental experts for their invaluable support and guidance.




Ms Pearl Fernandes
Officiating Principal

PRINCIPAL
DON BOSCO COLLEGE OF ARTS AND COMMERCE
EVENING COLLEGE
Don Bosco Marg., Yervada, Pune - 411006



Non Bio-degradable Waste
▶ Plastic
▶ Rubber
▶ Nylon
▶ Water Bottles
नॉन बायोडिग्रेडेबल कचरा

CLEAN & GREEN
IS
OUR DREAM

Bio-degradable Waste
▶ Food
▶ Paper
▶ Leaves
बायोडिग्रेडेबल कचरा

Don Bosco Road, Yerwada, Pune,
India, 411006

Lat 18.552905 Long 73.893582

2024/06/23

 76 °F

 4° N

 77%





THE BOMBAY SALESIAN SOCIETY
DON BOSCO COLLEGE OF ARTS & COMMERCE (NIGHT COLLEGE)

DON BOSCO MARG,
YERVADA, PUNE 411 006
Ph: 020 26615646
Fax: 020 26615646

E-mail: donboscoyervada@yahoo.com

Affiliated to University of Pune
ID NO. PU/PN/AC/453/2013

Report on Mula Mutha River Cleaning Initiative

Date: July 27, 2019

Venue: Yervada Ghat, Pune

Organized by: Don Bosco College of Arts and Commerce (Evening), Pune

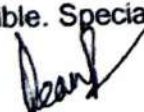
On July 27, 2019, Don Bosco College of Arts and Commerce (Evening), Pune, undertook a significant initiative to clean the banks of the Mula Mutha river at Yervada Ghat. This effort was driven by Officiating Principal Ms. Pearl Fernandes, In-charge Sir Leo, and actively supported by senior college teaching and non-teaching staff, alongside dedicated students. The objective of this initiative was two-fold:

1. **Environmental Cleanup:** To remove accumulated garbage and debris from the river banks, thereby enhancing the aesthetic appeal and cleanliness of Yervada Ghat.
2. **Community Education:** To raise awareness among local residents about the importance of maintaining cleanliness and hygiene, and to encourage responsible waste disposal practices.

The day commenced with an inaugural session led by Ms. Pearl Fernandes and Sir Leo, where the significance of the initiative was emphasized. Volunteers were briefed on safety measures and proper waste handling techniques before commencing the cleanup activities. Volunteers, including students, faculty, and staff, worked diligently to remove approximately 2 tons of waste from the river banks. This included plastic waste, debris, and other pollutants that had accumulated over time. Concurrently, efforts were made to educate local residents about the importance of maintaining cleanliness. Waste bins were strategically placed and local residents were encouraged to use them for proper waste disposal. Significant progress was achieved in restoring the cleanliness of Yervada Ghat. The removal of 2 tons of waste not only improved the visual appeal of the area but also contributed to the overall environmental health of the river ecosystem. The setup of waste bins aimed to promote sustainable waste management practices among the local community.

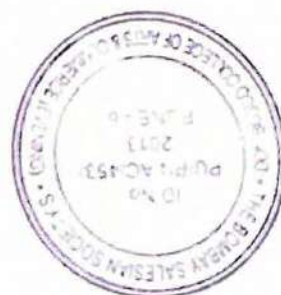
The Mula Mutha River Cleaning initiative led by Don Bosco College of Arts and Commerce (Evening), Pune, under the guidance of Ms. Pearl Fernandes, In-charge Sir Leo, and with the active participation of senior college teaching and non-teaching staff, was a resounding success. It underscored our commitment to environmental stewardship and community welfare.

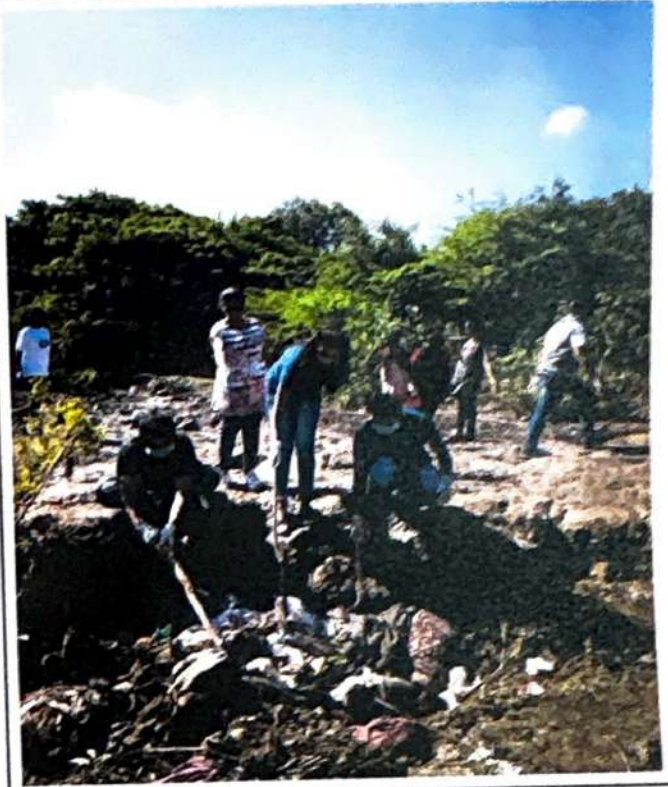
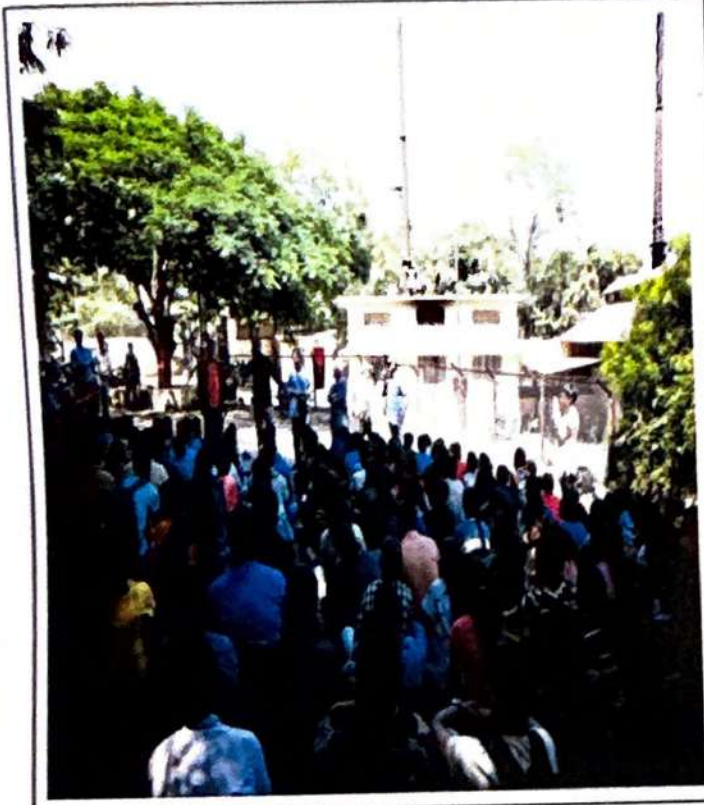
We extend our heartfelt gratitude to all participants, including students, faculty, staff, and local residents, whose dedication and hard work made this initiative possible. Special thanks to the local bodies for their cooperation and support throughout the event.


Ms Pearl Fernandes
Officiating Principal



PRINCIPAL
DON BOSCO COLLEGE OF ARTS AND COMMERCE
EVENING COLLEGE
Don Bosco Marg., Yervada, Pune - 411006





ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Mukhtangan English School, Parvati, Pune 411 009

Tel: 09890444795 Email: engress123@gmail.com

UDYAM Regn. No: UDYAM-MH-26-0135636,

MEDA Regn. No: ECN/2023-24/CR-43/1709

ISO: 9001-2015 Certified (Cert No: 23EQKC13),

ISO: 14001-2015 Certified (Cert No: 23EEKW20)

GREEN AUDIT CERTIFICATE

Certificate No: ES/DBCAC/23-24/02

Date: 12/6/2024

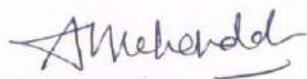
This is to certify that we have conducted Green Audit at Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune in the year 2023-24.

The Institute has adopted following Green & Sustainable Practices:

- Usage of Energy Efficient LED Light Fittings
- Usage of BEE STAR Rated Equipment
- Installation of 31 kWp Roof Top Solar PV Plant.
- Segregation of Waste at source
- Installation of Bio Composting Bed for conversion of Leafy Waste
- Implementation of Rain Water Management Project
- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp & Lift for Divyangajan
- Creation of Awareness on Water Conservation by Display of Poster

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

For Engress Services,



A Y Mehendale,

B E- Mech, M Tech-Energy, Certified Energy Auditor, EA-8192

ASSOCHAM GEM Certified Professional: GEM: 22/788



ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Mukhtangan English School, Parvati, Pune 411 009

Tel: 09890444795 Email: engress123@gmail.com

UDYAM Regn. No: UDYAM-MH-26-0135636,

MEDA Regn. No: ECN/2023-24/CR-43/1709

ISO: 9001-2015 Certified (Cert No: 23EQKC13),

ISO: 14001-2015 Certified (Cert No: 23EEKW20)

ENERGY AUDIT CERTIFICATE

Certificate No: ES/DBCAC/23-24/01

Date: 12/6/2024

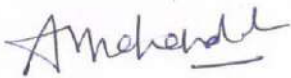
This is to certify that we have conducted Energy Audit at Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune in the year 2023-24.

The Institute has adopted following Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Installation of 31 kWp Capacity Roof Top Solar PV Plant

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

For Engress Services,



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



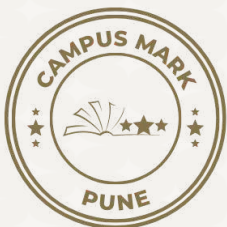


ENERGY EFFICIENT CAMPUS CERTIFICATE

This is to certify that

m e f A f

has been awarded a 4 **STAR RATING** for their Efficient use of Energy in Educational Campus for academic year 2023-24



Date of Issue: 21/06/2024



S. S. Chaudhary

**For Campus Mark,
Authorized Signatory**



GREEN & ECO-FRIENDLY CAMPUS CERTIFICATE

This is to certify that

m e p A p

has been awarded a 4 **STAR RATING** for maintaining a **Green and Eco-Friendly Campus** through various efforts and initiatives for the academic year 2023-24



S. Srinivasulu

For Campus Mark,
Authorized Signatory

Date of Issue: 21/06/2024

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Mukhtangan English School, Parvati, Pune 411 009

Tel: 09890444795 Email: engress123@gmail.com

UDYAM Regn. No: UDYAM-MH-26-0135636,

MEDA Regn. No: ECN/2023-24/CR-43/1709

ISO: 9001-2015 Certified (Cert No: 23EQKC13),

ISO: 14001-2015 Certified (Cert No: 23EEKW20)

ENVIRONMENTAL AUDIT CERTIFICATE

Certificate No: ES/DBCAC/23-24/03

Date: 12/6/2024

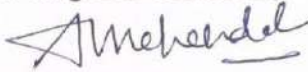
This is to certify that we have conducted Environmental Audit at Don Bosco College of Arts & Commerce (Evening), Don Bosco Marg, Yerawada, Pune in the year 2023-24.

The Institute has adopted following Environment Friendly Practices:

- Usage of Energy Efficient LED Light Fittings
- Usage of BEE STAR Rated Equipment
- Installation of 31 kWp Roof Top Solar PV Plant.
- Segregation of Waste at source
- Installation of Bio Composting Bed for conversion of Leafy Waste
- Implementation of Rain Water Management Project
- Internal Tree Plantation
- Creation of Awareness on Water Conservation by Display of Poster

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

For Engress Services,



A Y Mehendale,

B E- Mech, M Tech-Energy, Certified Energy Auditor, EA-8192

ASSOCHAM GEM Certified Professional: GEM: 22/788

