

ENERGY AUDIT REPORT

of

NAVSAHYADRI GROUP OF INSTITUTE

Naigaon, Taluka: Bhor, Dist: Pune 412 213



Year: 2023-24

Prepared by:


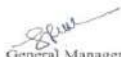
ENGRESS SERVICES

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

REGISTRATION CERTIFICATES

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 Muktagan 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 ProgrammeThe Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.	
 General Manager (EC)	

MEDA Empanelment Certificate

ENGRESS SERVICES

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

Ref: ES/NIP/21-22/01

Date: 18/5/2024

ENERGY AUDIT CERTIFICATE

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

This is to certify that we have conducted Energy Audit at Navsahyadri Group Of Institute, Naigaon, Taluka: Bhore, District: Pune in the Year 2023-24.

The Institute has adopted Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment.
- Usage of BEE STAR Rated Equipment
- Installation of 15 kWp Roof Top Solar PV Plant
- Installation of Solar Thermal Water Heating System at Hostel Blocks.

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

ENGRESS SERVICES

Yashashree, 26, Nimtal Bag Society, Near Muktaganj English School,
Parvati, Pune 411 009 Tel: 0989044795 Email: engress123@gmail.com
UDYAM Regn. No: UDYAM-MH-26-0135836,
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/NEG01/23-24/01

Date: 18/5/2024

This is to certify that we have conducted Energy Audit at Navsahyadri Education Society's Group of Institutes, Naigaon, Pune in the Academic 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 15 kWp Roof Top Solar PV Plant
- Installation of Solar Thermal Water Heating System, at Hostel Blocks

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

For Engress Services,

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



INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	5
II	Executive Summary	6
III	Abbreviations	7
1	Introduction	8
2	Study of Connected Load	9
3	Study of Present Energy Consumption	10
4	Study of CO ₂ Emission	12
5	Study of Usage of Alternate Energy	13
6	Study of Usage of LED Lighting	14

ACKNOWLEDGEMENT

We at Engress Services, Pune, express our sincere gratitude to the management of Navsahyadri Group Of Institute, Naigaon, Taluka: Bhor, District: Pune for awarding us the assignment of Energy Audit of their Campus, for the Academic Year: 2021-22.

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

EXECUTIVE SUMMARY

1. Navsahyadri Group Of Institute, Naigaon, Taluka: Bhor, District: Pune consumes Energy in the form of **Electrical Energy and LPG** used for various gadgets, office & other facilities.

2. Present Energy Consumption:

No	Parameter/ Value	Energy Purchased, kWh	LPG Consumed, Kg	CO ₂ Emissions, MT
1	Total	36813	112	33.43
2	Maximum	3236	18	2.93
3	Minimum	2875	6	2.64
4	Average	3067.75	9.33	2.79

3. Energy Conservation projects already installed:

- Usage of Energy Efficient LED fittings
- Usage of BEE STAR Rated Equipment
- Installation of **5 kWp** Roof Top Solar PV Plant

4. Usage of Alternate Energy:

- The Institute has installed Roof Top Solar PV Plant of Capacity **5 kWp**.
- Annual Energy generated by Solar PV Plant is **6000 kWh**
- Energy Purchased in 21-22 is **36813 kWh**
- Total Annual Energy Demand of the Institute is **42813 kWh**
- Percentage of Usage of Alternated Energy to Total Energy Demand is **14 %**.

5. Usage of LED Lighting:

- The Total LED Lighting load of Institute is **2.4 kW**.
- The Total Lighting Load of the Institute is **5.48 kW**.
- The % of LED Lighting to Total Lighting Load is **43.80 %**.

6. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere
2. **1 Kg** of LPG releases **2.68 Kg of CO₂** into atmosphere
3. **1 kWp** of Solar PV Plant generates **4 kWh** of Energy per Day
4. Annual Solar Energy generation Days: **300 Nos**

7. References:

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

ABBREVIATIONS

BEE	Bureau of Energy Efficiency
MSEDCL	Maharashtra Electricity Distribution Company Limited
kWh	Kilo Watt Hour
kWp	Kilo Watt Peak
Kg	Kilo Gram
MT	Metric Ton
CO ₂	Carbon Di Oxide
LPG	Liquefied Petroleum Gas
FTL	Fluorescent Tube Light
LED	Light Emitting Diode

CHAPTER-I INTRODUCTION

1.1 Objectives:

1. To study Connected Load
2. To study Present Energy Consumption
3. To compute the CO₂ Emissions
4. To study usage of Alternate Energy
5. To study usage of LED Lighting

1.2 Table No 1: General Details of the Institute:

No	Head	Particulars
1	Name of Institute	Navsahyadri Group Of Institute
2	Address	Naigaon, Taluka: Bhor, District: Pune 412 213
3	Year of Establishment	2017

1.3 Google Earth Image:



Institute
Campus

CHAPTER-II STUDY OF CONNECTED LOAD

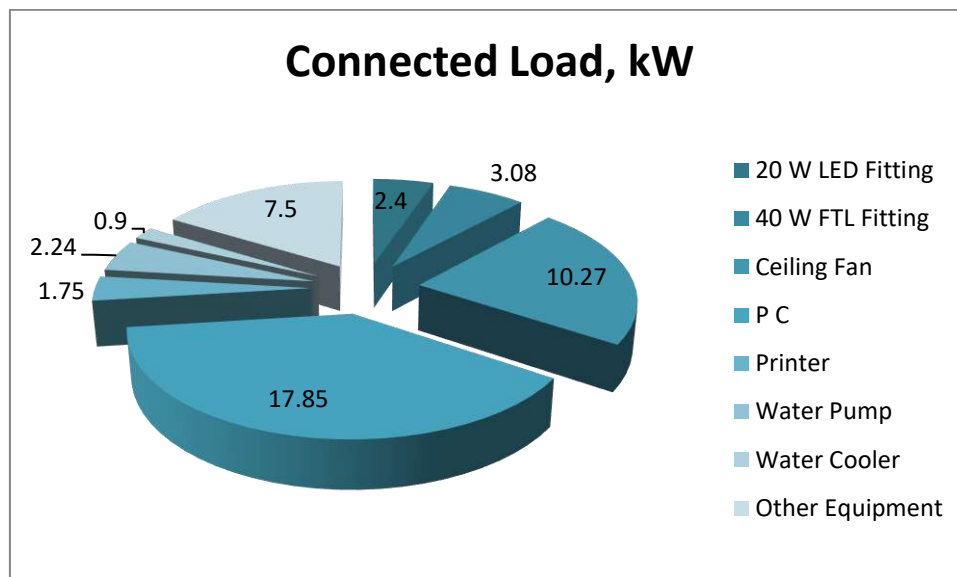
The major contributors to the connected load of the Institute are as under.

Table No 2: Equipment wise Connected Load:

No	Equipment	Qty	Load/unit	Load, kW
1	20 W LED Fitting	120	20	2.4
2	40 W FTL Fitting	77	40	3.08
3	Ceiling Fan	158	65	10.27
4	P C	119	150	17.85
5	Printer	10	175	1.75
6	Water Pump	1	2238	2.24
7	Water Cooler	2	450	0.9
8	Other Equipment	30	250	7.5
9	Total			46

We present the above Data in a PIE Chart as under.

Chart No1: Connected Load:



CHAPTER-III STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of Energy Consumption

Table No 3: Study of Electrical Energy & LPG Consumption: 21-22:

No	Month	Energy Purchased, kWh	LPG Consumed, Kg
1	Apr-21	2998	6
2	May-21	3009	8
3	Jun-21	3114	10
4	Jul-21	3218	12
5	Aug-21	3069	8
6	Sep-21	3189	6
7	Oct-21	2978	12
8	Nov-21	2875	18
9	Dec-21	2998	10
10	Jan-22	3004	8
11	Feb-22	3125	6
12	Mar-22	3236	8
13	Total	36813	112
14	Maximum	3236	18
15	Minimum	2875	6
16	Average	3067.75	9.33

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

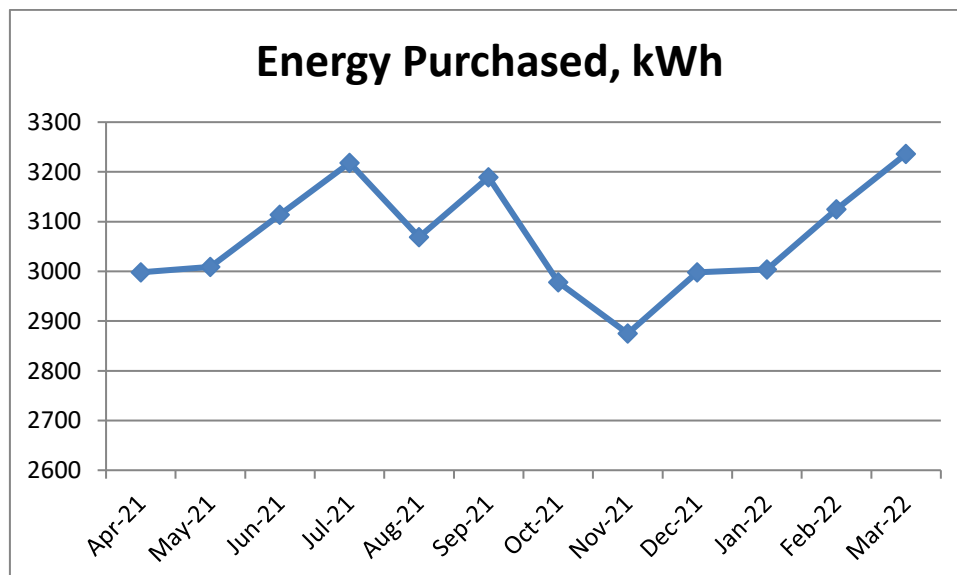
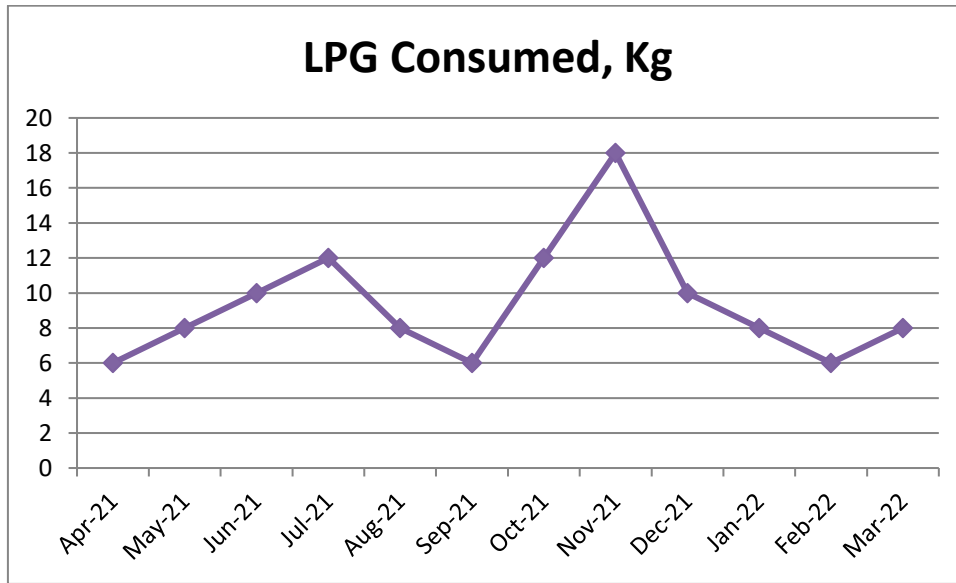


Chart No 3: Study of Month wise LPG Consumption:



CHAPTER-IV STUDY OF CO₂ EMISSION

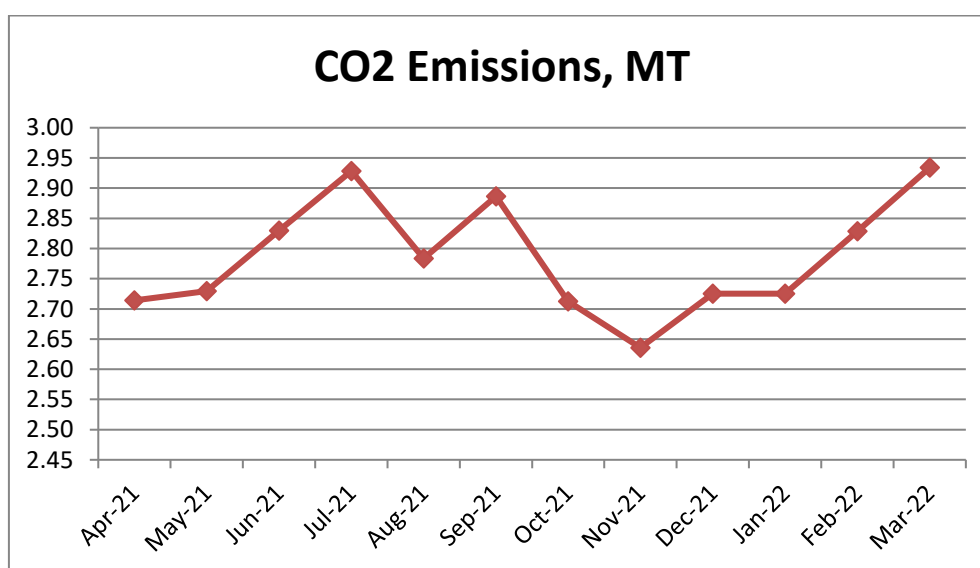
A **Carbon Foot print** is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO₂ Emissions:**

- 1 kWh of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere
- 1 Kg of **LPG** releases **2.68 Kg** of CO₂ into atmosphere.

Table No 4: Month wise CO₂ Emissions:

No	Month	Energy Purchased, kWh	LPG Consumed, Kg	CO ₂ Emissions, MT
1	Apr-21	2998	6	2.71
2	May-21	3009	8	2.73
3	Jun-21	3114	10	2.83
4	Jul-21	3218	12	2.93
5	Aug-21	3069	8	2.78
6	Sep-21	3189	6	2.89
7	Oct-21	2978	12	2.71
8	Nov-21	2875	18	2.64
9	Dec-21	2998	10	2.73
10	Jan-22	3004	8	2.73
11	Feb-22	3125	6	2.83
12	Mar-22	3236	8	2.93
13	Total	36813	112	33.43
14	Maximum	3236	18	2.93
15	Minimum	2875	6	2.64
16	Average	3067.75	9.33	2.79

Chart No 4: Representation of Month wise CO₂ Emissions:



CHAPTER-V STUDY OF USAGE OF ALTERNATE ENERGY

The Institute has installed Roof Top Solar PV Plant of Capacity **5 kWp**.

In the following Table, we present the percent usage of Renewable Energy to Total Annual Energy Demand of the Institute.

Table No 5: Computation of % of Alternate Energy to Total Annual Energy Demand:

No	Particulars	Value	Unit
1	Energy Purchased from MSEDCL	36813	kWh
2	Installed Roof Top Solar PV Plant Capacity	5	kWp
3	Average Daily Energy Generated	4	kWh/kWp
4	Annual Generation Days	300	Nos
5	Annual Solar Energy Generated	6000	kWh
6	Total Energy Demand = (1) + (5)	42813	kWh
7	% of Usage of Alternate Energy to Total Energy Demand= (5)*100/ (6)	14	%

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 LED Lighting to Total Lighting Load..

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

No	Particulars	Value	Unit
1	No of 40 W FTL Fittings	77	Nos
2	Load/unit of 40 W FTL Fitting	40	W
3	Total Load for 40 W FTL Fittings	3.08	kW
4	No of 20 W LED Fittings	120	Nos
5	Load/unit of 20 W LED Fitting	20	W
6	Total Load for 20 W LED Fittings	2.4	kW
7	Total LED Lighting Load = 6	2.4	kW
8	Total LED Lighting Load = 3+6	5.48	kW
9	% of LED to Total Lighting Load= $7*100/8$	43.80	%

ENERGY AUDIT REPORT
of
Navsahyadri Education Society's Group of Institutions
Naigaon (Nasarapur), Pune



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



MAHARASHTRA ENERGY DEVELOPMENT AGENCY

An ISO 9001 : 2000 Reg. no. : RQ 91 / 2462



Maharashtra Energy Development Agency

(Government of Maharashtra Institution)

Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary,

Aundh, Pune, Maharashtra 411067

Ph No: 020-35000450

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

ECN/2021-22/CR-14/1577

22nd 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*

- 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)



Enrich Consultants

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

Ref: EC/NESGOI/20-21/01

Date: 10/9/2021

CERTIFICATE

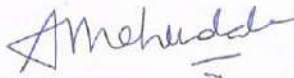
This is to certify that we have conducted Energy Audit at Navsahyadri Education Society's Group of Institutions in the Academic year 2020-21.

The Institute has adopted following Energy Efficient practices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Maximum usage of Day Lighting
- Installation of 20 kWp Roof Top Solar PV Plant
- Installation of 4000 LPD Solar Thermal Water Heating System, at Hostel Blocks

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



INDEX

Sr. No	Particulars	Page No
I	Acknowledgement	5
II	Executive Summary	6
III	Abbreviations	7
1	Introduction	8
2	Study of Connected Load	9
3	Study of Present Energy Consumption	10
4	Carbon Foot Printing	12
5	Study of Usage of Alternate Energy	14
6	Study of LED Lighting	15



ACKNOWLEDGEMENT

We Enrich Consultants, Pune, express our sincere gratitude to the management of Navsahyadri Education Society's Group Of Institutions for awarding us the assignment of Energy Audit of their Campus for the Year: 2020-21.

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



EXECUTIVE SUMMARY

1. **Navsahyadri Education Society's Group of Institutions**, uses Energy in the form of **Electrical Energy** used for various Electrical Equipment, office & other facilities.

2. Present Energy Consumption & CO₂ Emission:

No	Parameter/ Value	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Total	15813	14.23
2	Maximum	4655	4.19
3	Minimum	0	0.00
4	Average	1317.75	1.19

3. Energy Conservation projects already installed:

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

4. Usage of Alternate Energy:

- The Institute has installed Roof Top Solar PV Plant of Capacity **20 kWp**.
- Energy purchased from MSEDCL is **15813 kWh**.
- Energy generated by Roof Top Solar PV Plant is **24000 kWh**.
- The percentage of Usage of Alternate Energy to Annual Energy Demand is **60.28 %**.

5. Usage of LED Lighting:

- The Total Annual Lighting Demand of the Institute is **3055.4 kWh**.
- The Total Annual LED Lighting Demand is **272.8 kWh**.
- The percentage of Annual LED Lighting to Annual Lighting Demand is **9 %**.

6. Assumptions:

1. 1 kWh of Electrical Energy releases **0.9 Kg of CO₂** into atmosphere
2. Daily working hours-**2 Nos** (For Lighting Calculations)
3. Annual working Days-**100 Nos** (For Lighting Calculations)
4. Annual Solar Energy Generation Days: **300 Nos**.

7. References:

- For CO₂ Emissions: www.tatapower.com
- For Roof Top Solar PV Plant Energy generation: www.solarroftop.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 Objectives:

1. To study present Energy Consumption
2. To Study the present CO₂ emissions
3. To study usage of Alternate Energy
4. To study usage of LED Lighting

1.2 Table No 1: General Details of the Institute:

No	Head	Particulars
1	Name of Institution	Navsahyadri Education Society's Group of Institutions
2	Address	Naigaon, Nasarapur, Pune 412213
3	Year of Establishment	2010



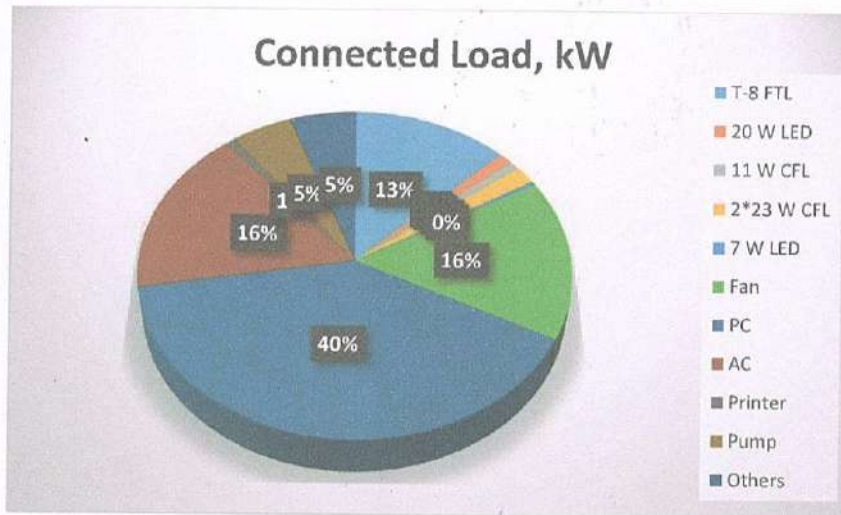
CHAPTER-II STUDY OF CONNECTED LOAD

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

Table No 2: Study of Equipment wise Connected Load:

No	Equipment	Qty	Load, W/Unit	Load, kW
1	T-8 FTL	288	40	11.52
2	20 W LED	50	20	1
3	11 W CFL	61	13	0.793
4	2*23 W CFL	32	50	1.6
5	7 W LED	52	7	0.364
6	Fan	222	65	14.43
7	PC	331	110	36.41
8	AC	11	1375	15.125
9	Printer	5	150	0.75
10	Pump	2	2238	4.476
11	Others	100	50	5
12	Total			92

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	Jul-20	0
2	Aug-20	1277
3	Sep-20	1277
4	Oct-20	1277
5	Nov-20	1277
6	Dec-20	4655
7	Jan-21	488
8	Feb-21	507
9	Mar-21	507
10	Apr-21	2323
11	May-21	1277
12	Jun-21	948
13	Total	15813
14	Maximum	4655
15	Minimum	0
16	Average	1317.75

Chart No 2: Variation in Monthly Energy Consumption:

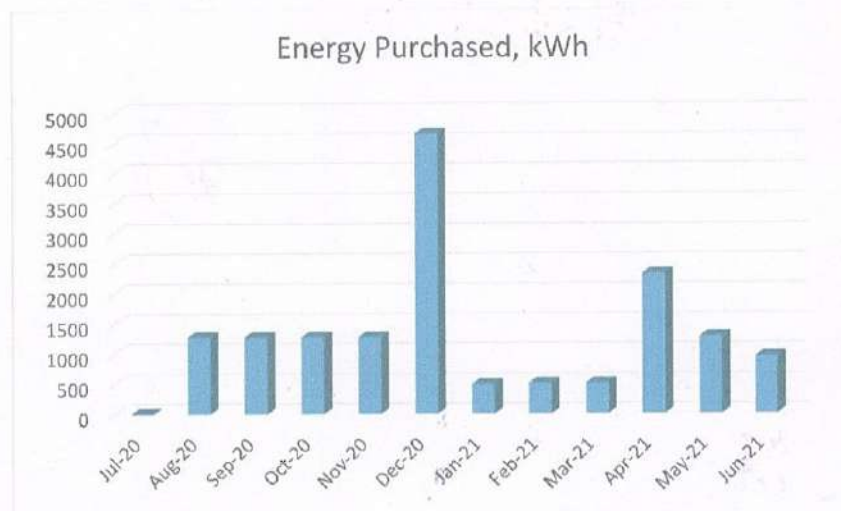


Table No 4: Important Parameters:

No	Parameter/ Variation	Energy Purchased, kWh
1	Total	15813
2	Maximum	4655
3	Minimum	0
4	Average	1317.75



CHAPTER-IV CARBON FOOTPRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the Institute for performing its day to day activities

The Institute 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

Based on the above Data we compute the CO₂ emissions which are being released in to the atmosphere by the Institute due to its Day to Day operations

Table No 5: Month wise CO₂ Emissions:

No	Month	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Jul-20	0	0.00
2	Aug-20	1277	1.15
3	Sep-20	1277	1.15
4	Oct-20	1277	1.15
5	Nov-20	1277	1.15
6	Dec-20	4655	4.19
7	Jan-21	488	0.44
8	Feb-21	507	0.46
9	Mar-21	507	0.46
10	Apr-21	2323	2.09
11	May-21	1277	1.15
12	Jun-21	948	0.85
13	Total	15813	14.23
14	Maximum	4655	4.19
15	Minimum	0	0.00
16	Average	1317.75	1.19



Chart No 3: Month wise CO₂ Emissions:

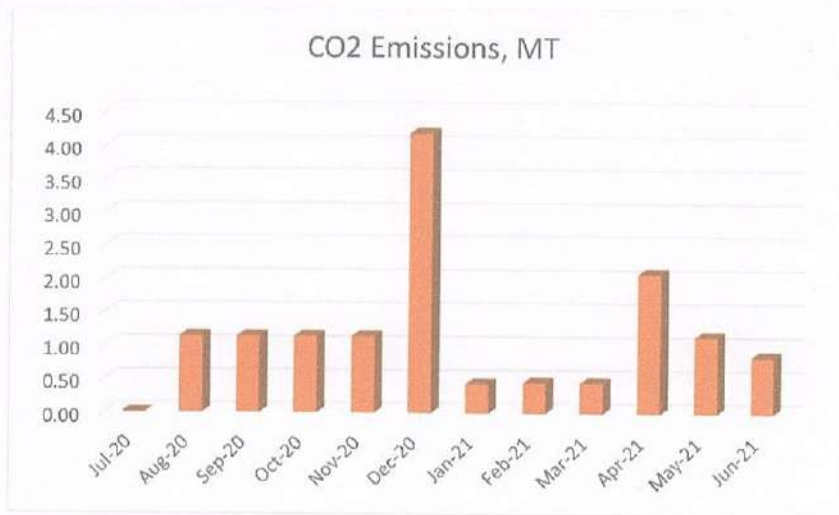


Table No 6: Important Parameters:

No	Parameter/ Variation	Energy Purchased, kWh	CO2 Emissions, MT
1	Total	15813	14.23
2	Maximum	4655	4.19
3	Minimum	0	0.00
4	Average	1317.75	1.19



CHAPTER-V STUDY OF USAGE OF ALTERNATE ENERGY

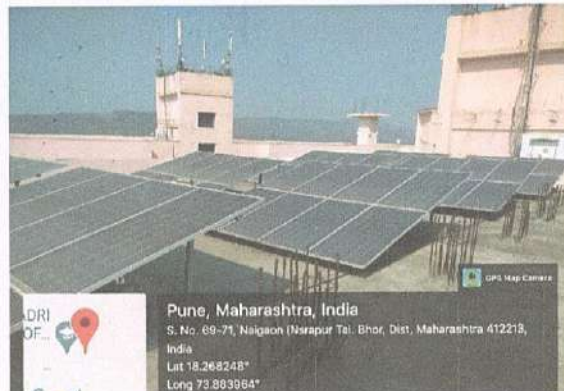
The Institute has installed Roof Top Solar PV Plant of Capacity **20 kWp**. The Institute has also installed **4000 LPD Solar Thermal Water Heating System**, at the Hostel Blocks. But due to COVID-19, Lockdown, the Solar Thermal Plant was not in operation. Hence we do not consider the same for Calculation purpose.

In the following Table, we compute the percentage of Usage of Alternate Energy to Annual Energy Demand of the Institute.

Table No 7: Computation of % Annual Energy Demand met by Alternate Energy:

No	Particulars	Value	Unit
1	Roof Top Solar PV Plant Capacity	20	kWp
2	Average Energy generated per kWp	4	kWh
3	Annual Energy Generation Days	300	Nos
4	Energy generated by Solar PV Plant in 20-21= 1*2*3	24000	kWh
5	Energy purchased from MSEDCL	15813	kWh
6	Total Energy Requirement = 4+5	39813	kWh
7	% of Usage of Alternate Energy = (4)*100/(6)	60.28	%

Photograph of Solar PV Plant & Solar Thermal Water Heating System:



CHAPTER VI STUDY OF USAGE OF LED LIGHTING

In this chapter, we compute the percentage of usage of LED Lighting to Annual Lighting power requirement.

Table No 8: Percentage of Usage of LED Lighting to Annual Lighting Load

No	Particulars	Value	Unit
1	Number of T-8 FTLs in the campus	288	Nos
2	Number of 11 W CFLs in the campus	61	Nos
3	Number of 2*23 W CFLs in the campus	32	Nos
4	Number of 7 W LEDs in the campus	52	Nos
5	Number of 20 W LED fittings	50	Nos
6	Individual Load of T-8 FTL	40	W/Unit
7	Individual load of 11 W CFL	13	W/Unit
8	Individual load of 2*23W CFL	50	W/Unit
9	Individual load of 7 W LED	7	W/Unit
10	Individual load of 20 W LED	20	W/Unit
11	Total Electrical load of 288 Nos T-8 fittings	11.52	kW
12	Total Electrical load of 61 Nos 11 W CFLs	0.793	kW
13	Total Electrical load of 32 Nos 2*23 W CFLs	1.6	kW
14	Total Electrical load of 52 Nos 7 W LEDs	0.364	kW
15	Total Electrical load of 50 Nos 20 W LEDs	1	kW
16	Total Lighting Load of the campus=(11)+(12)+(13)+(14)+(15)	15.277	kW
17	Total LED Lighting Load = 14+15	1.364	kW
18	Average Daily Usage Period	2	Hrs/Day
19	Annual Operation Days	100	Nos
20	Annual Total Lighting Demand= 16*18*19	3055.4	kWh
21	Annual LED Lighting Demand = 17*18*19	272.8	
22	% of LED Demand to Total Annual Lighting Demand = 21*100/20	9	%

