



Sahayog Sevabhavi Sanstha's

INDIRA COLLEGE OF PHARMACY

Sahayog Educational Campus, Vishnupuri, Nanded-431606

(Approved by PCI, AICTE, New Delhi, Recognized by Govt. of Maharashtra & Affiliated to SRTMU, Nanded.)

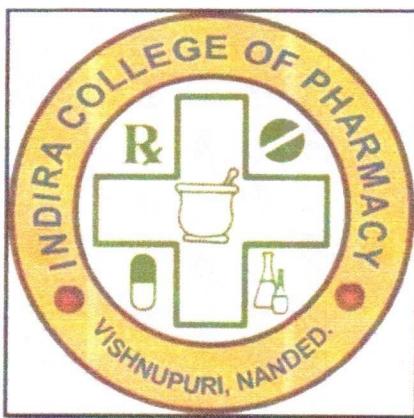


2. Energy Audit



[Signature]
Principal
Indira College of Pharmacy
Vishnupuri, Nanded-06.

ENERGY AUDIT REPORT
of
Sahayog Sevabhavi Sanstha's,
INDIRA COLLEGE OF PHARMACY,
Sahayog Educational Campus, Vishnupuri, Nanded



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



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MAHARASHTRA ENERGY DEVELOPMENT AGENCY



Maharashtra Energy Development Agency

(Government of Maharashtra Institution)

Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandry,
Aundh, Pune, Maharashtra 411067

Ph No: 020-35000450

Email: ecg@mahaerja.com, Web: www.mahaerja.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
Yashishree, 26, Nirmal Bag Society,
Near Muktagan English School,
Parvati, Pune - 411 009

Registration Category : *Empanelled Consultant for Energy Conservation
Programme for Class - I*

Registration Number : MEDA/ECN/2022-23/Class A/E4-32.

- 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 (E.C.)




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Tel: 09890444795 Email: engress123@gmail.com

Ref: ES/SSSICOP/21-22/01

Date: 12/5/2022

CERTIFICATE

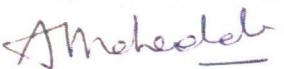
This is to certify that we have conducted Energy Audit at Sahayog Sevabhavi Sanstha's Indira College of Pharmacy, Nanded in the Year 2021-22.

The College has adopted Energy Efficient Practices:

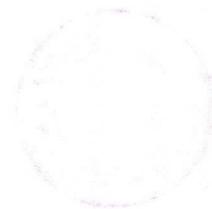
- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Maximum usage of Day Lighting
- Installation of 25 kWp Capacity Roof Top Solar PV Plant

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

For Engress Services,



A Y Mehendale,
Certified Energy Auditor
EA-8192




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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	14
6	Study of Usage Of LED Lighting	15



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ACKNOWLEDGEMENT

We at Engress Services, Pune, express our sincere gratitude to the management of Sahayog Sevabhavi Sanstha's Indira College of Pharmacy, Nanded, for awarding us the assignment of Energy Audit of their Nanded campus for the Year: 2021-22.

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



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EXECUTIVE SUMMARY

1. Sahayog Sevabhavi Sanstha's Indira College of Pharmacy, Nanded, consumes Energy in the form of Electrical Energy; used for various gadgets, office & other facilities

2. Present Energy Consumption & CO₂ Emission:

No	Parameter/ Value	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Total	53386	48.05
2	Maximum	9181.	8.26
3	Minimum	766	0.69
4	Average	4449	4.00

3. Energy Conservation projects already installed:

- Usage of Energy Efficient LED fittings
- Usage of BEE STAR Rated Equipment
- Installation of 25 kWp Solar PV Plant

4. Usage of Alternate Energy:

- The College has installed a Roof Top Solar PV Plant of Capacity 25 kWp.
- The Energy purchased from MSEDC is 53386 kWh.
- The Energy Generated by Roof Top Solar PV Plant in 21-22 is 30000 kWh.
- The Total Energy Requirement is 83386 kWh.
- The percentage of usage of Alternate Energy to Annual Energy Demand is 36 %.

5. Usage of LED Lighting:

- The Total Lighting load of College is 4.11 kW.
- The LED Lighting Load is 4.11 kW.
- The % of LED Lighting to Total Lighting Load is 100 %.

6. Assumptions:

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

7. References:

For CO₂ Emissions: www.tatapower.com

• For Roof Top Solar Energy generation: www.solarrooftop.gov.in


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ABBREVIATIONS

BEE	Bureau of Energy Efficiency
SSS	Sahayog Sevabhavi Sanstha
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
LED	Light Emitting Diode




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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 College:

No	Head	Particulars
1	Name of the Institution	Sahayog Sevabhavi Sanstha's Indira College of Pharmacy
2	Address	Vishnupuri, Nanded, 431 606
3	Year of Establishment	2009
4	Affiliation	Swami Ramanand Teerth Marathwada University, Nanded



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CHAPTER-II

STUDY OF CONNECTED LOAD

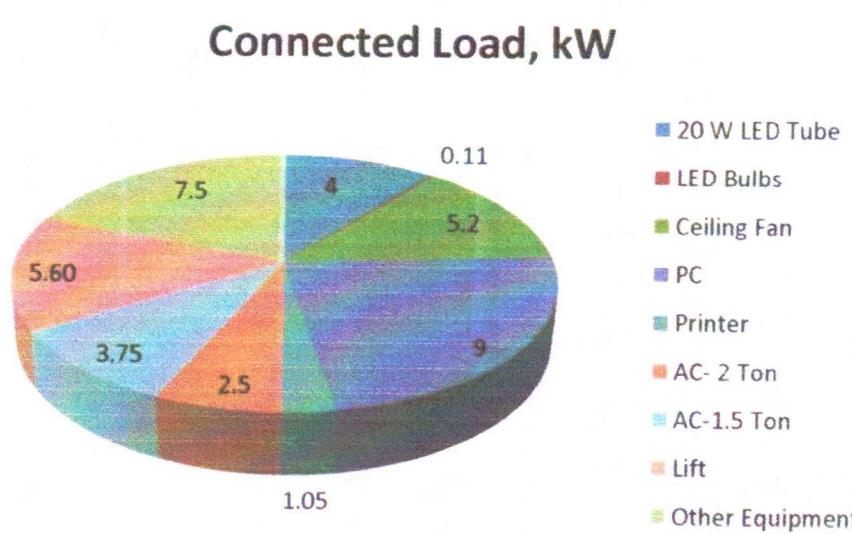
The major contributors to the connected load of the College are as under.

Table No 2: Equipment wise Connected Load:

No	Equipment	Qty	Load, W/Unit	Load, kW
1	20 W LED Tube	200	20	4
2	LED Bulbs	10	11	0.11
3	Ceiling Fan	80	65	5.2
4	PC	60	150	9
5	Printer	6	175	1.05
6	AC- 2 Ton	1	2500	2.5
7	AC-1.5 Ton	2	1875	3.75
8	Lift	1	5595	5.60
9	Other Equipment	30	250	7.5
10	Total			39

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

Chart No1: Connected Load:



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CHAPTER-III

STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of Energy Consumption

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

No	Month	Energy Purchased, kWh
1	Dec-21	1673.1
2	Jan-22	765.7
3	Feb-22	809.9
4	Mar-22	4016.35
5	Apr-22	6210.1
6	May-22	2590.9
7	Jun-22	3784.95
8	Jul-22	8612.5
9	Aug-22	8943.35
10	Sep-22	9181.25
11	Oct-22	4100.85
12	Nov-22	2696.85
13	Total	53386
14	Maximum	9181
15	Minimum	766
16	Average	4449

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

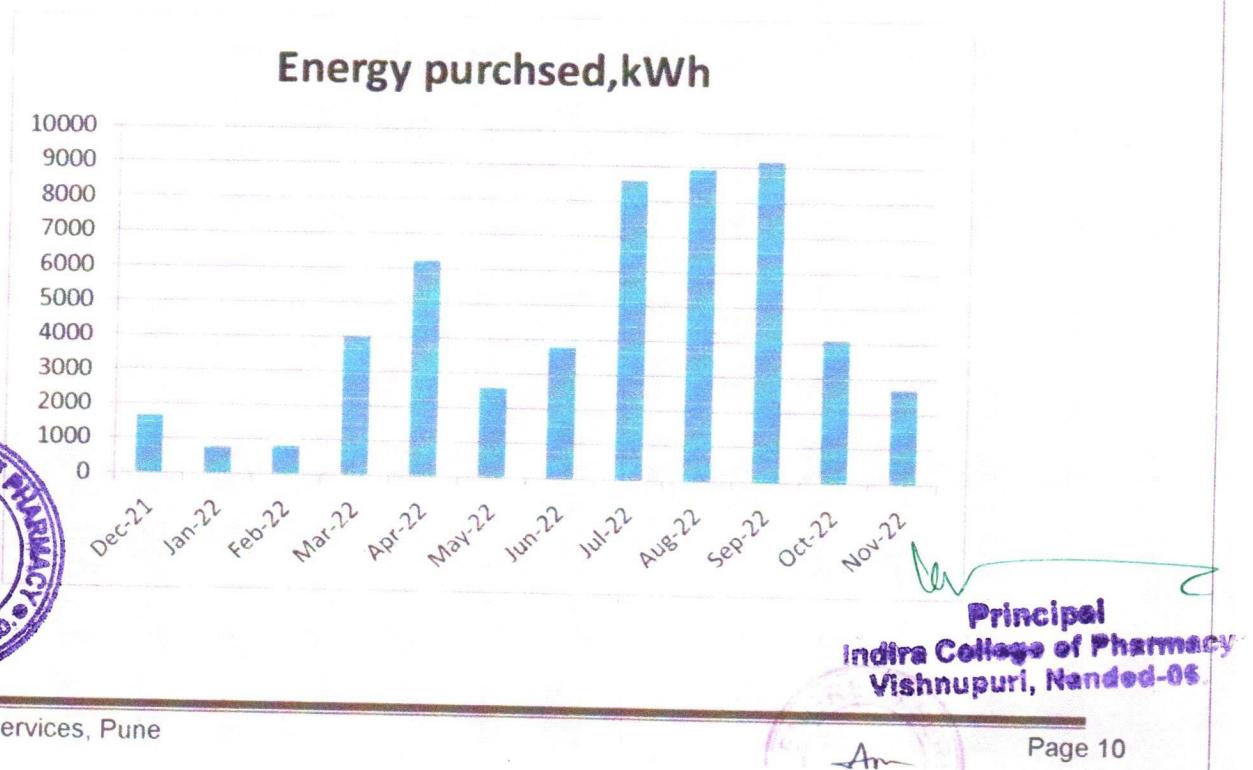


Table No 4: Important Parameters:

No	Parameter/ Variation	Energy Purchased, kWh
1	Total	53386
2	Maximum	9181
3	Minimum	766
4	Average	4449



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CHAPTER-IV

STUDY OF CO₂ EMISSION

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 College for performing its day to day activities

The College uses Electrical Energy for various Electrical gadgets.

Basis for computation of CO₂ Emissions:

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

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

Table No 5: Month wise CO₂ Emissions:

No	Month	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Dec-21	1673.1	1.51
2	Jan-22	765.7	0.69
3	Feb-22	809.9	0.73
4	Mar-22	4016.35	3.61
5	Apr-22	6210.1	5.59
6	May-22	2590.9	2.33
7	Jun-22	3784.95	3.41
8	Jul-22	8612.5	7.75
9	Aug-22	8943.35	8.05
10	Sep-22	9181.25	8.26
11	Oct-22	4100.85	3.69
12	Nov-22	2696.85	2.43
13	Total	53386	48.05
14	Maximum	9181	8.26
15	Minimum	766	0.69
16	Average	4449	4.00



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Chart No 3: Representation of Month wise CO₂ Emissions:

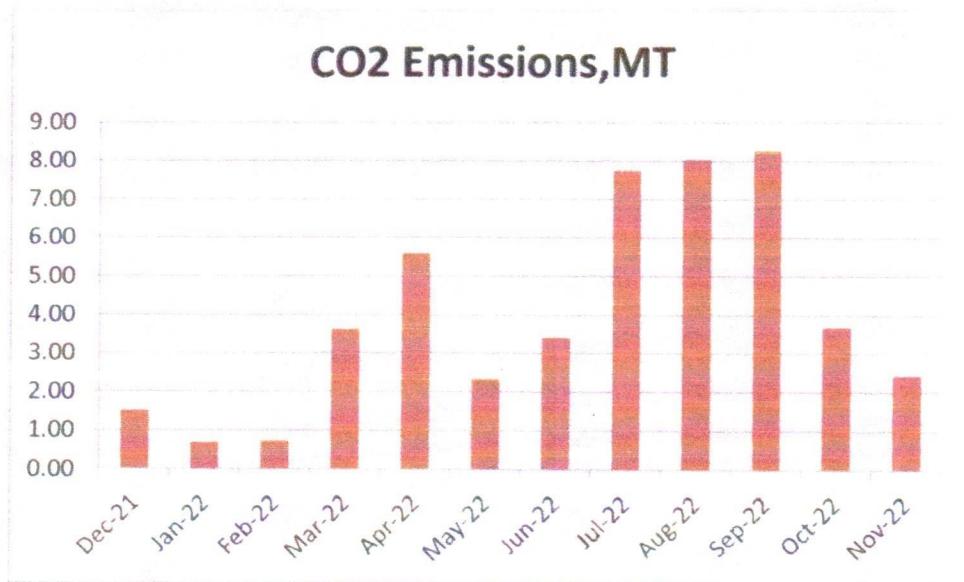


Table No 6: Important Parameters:

No	Parameter/ Value	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Total	533856	48.05
2	Maximum	9181	8.26
3	Minimum	766	0.69
4	Average	4449	4.00



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CHAPTER-V

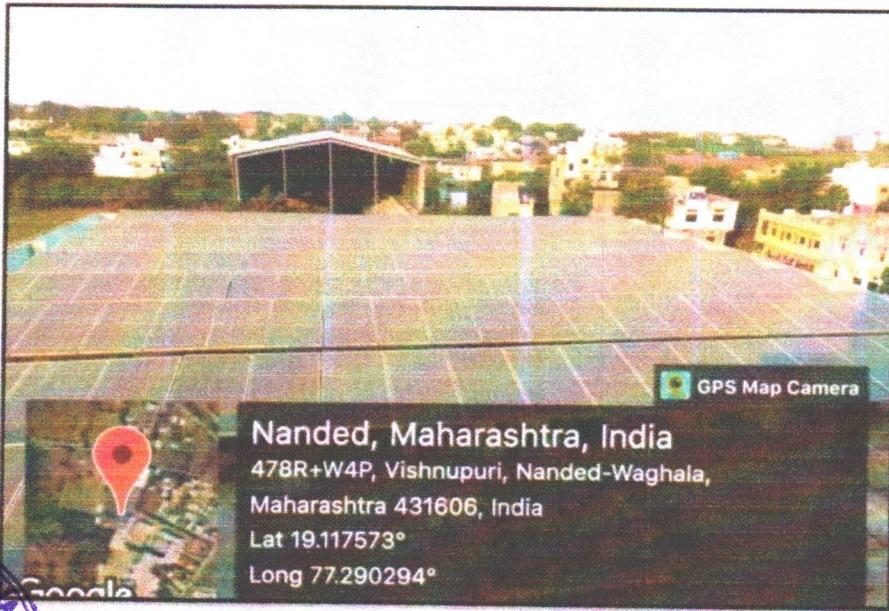
STUDY OF USAGE OF ALTERNATE ENERGY

The College has installed a **25 kWp** capacity Roof top Solar PV Plant. Now we compute the Percentage of Alternate Energy to Annual Energy demand:

Table No 7: Percentage of Usage of Alternate Energy to Annual Energy Demand:

No	Particulars	Value	Unit
1	Energy purchased from MSEDC		kWh/Annum
2	Capacity of Roof Top Solar PV Capacity	25	kWp
3	Average Energy Generated per kWp per Day	4	kWh/kWp
4	Daily Energy Generated	40	kWh/Day
5	Annual Generation Days	300	Nos
6	Annual Energy Generated		kWh/Annum
7	Total Energy Requirement = (1) + (6)		kWh/Annum
8	Percent of Alternate Energy to Annual Energy Requirement = $(6) * 100 / (7)$		%

Photograph of Roof Top Solar PV Plant:



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CHAPTER VI

STUDY OF USAGE OF LED LIGHTING

In this chapter, we compute the percentage of usage of LED Lighting to Total Lighting Load, as under.

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

No	Particulars	Value	Unit
1	No of 20 W LED Fittings	200	Nos
2	Load/Unit of 20 W LED Fittings	20	W/Unit
3	Total Load of 20 W LED Fittings	4.0	kW
4	No of 11 W LED Fittings	10	Nos
5	Load/Unit of 11 W LED Fittings	11	W/Unit
6	Total Load of 11 W LED Fittings	0.11	kW
7	Total LED Lighting Load= 3+6	4.11	kW
8	Total Lighting Load= 3+6	4.11	kW
9	% of Annual LED Lighting to Total Lighting Load= $7*100/8$	100	%



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Certificate of Registration

This is to Certify that
Quality Management System of

SAHAYOG SEVABHAVI SANSTHA'S INDIRA COLLEGE OF PHARMACY

SAHAYOG EDUCATIONAL CAMPUS, VISHNUPURI, NANDED- 431606,
MAHARASHTRA, INDIA

has been assessed and found to conform to the requirements of
ISO 9001:2015
for the following scope :

PROVIDING QUALITY EDUCATION TRAINING AND RESEARCH IN
PHARMACEUTICAL SCIENCES.

Certificate No	: 23EQJY47
Initial Registration Date	: 17/02/2023
Date of Expiry	: 16/02/2026
1st Surv. Due	: 17/01/2024
	2nd Surv. Due : 17/01/2025
	Issuance Date : 17/02/2023



Devak..

Director

Magnitude Management Services Pvt. Ltd.

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