

ENERGY AUDIT REPORT

Priyadarshini College of Engineering,

Priyadarshini Campus, C.R.P.F., Nagpur - 440019 (MH)



Year: 2024-25

Prepared by:

ENGRESS SERVICES

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

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

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

Maharashtra Energy Development Agency
(Government of Maharashtra Institution)
Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandry,
Aundh, Pune, Maharashtra 411067
Ph No: 020-35000450
Email: eee@mahaurja.com, Web: www.mahaurja.com

ECN/2024-25/CR-02/389 8th October, 2024

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

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

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

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

Registration Number : MEDA/ECN/2024-25/Class A/EA-22

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empanelment is valid till 7th October, 2026 from the date of registration, to carry out energy audits under the Energy Conservation Programme.
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

General Manager (EC)

Regn. No. EA-8192 No.2942

National Productivity Council
(National Certifying Agency)

PROVISIONAL CERTIFICATE

This is to certify that Mr./Ms. **Achyut Yashavant Mehendale**
son / daughter of Mr. **Yashavant**
has passed the National Certification Examination for Energy Auditors in April - 2007, conducted on behalf of the Bureau of Energy Efficiency, Ministry of Power, Government of India.

He / She is qualified as Certified Energy Manager as well as Certified Energy Auditor.

He / She shall be entitled to practice as Energy Auditor under the Energy Conservation Act 2001, subject to the fulfilment of qualifications for the Accredited Energy Auditor and issue of certificate of Accreditation by the Bureau of Energy Efficiency under the said Act.

This certificate is valid till the issuance of an official certificate by the Bureau of Energy Efficiency.

Place : Chennai, India
Date : 10th August 2007

Controller of Examination

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

UDYAM REGISTRATION CERTIFICATE

UDYAM REGISTRATION NUMBER UDYAM-MH-26-0135636

NAME OF ENTERPRISE ENGRESS SERVICES

TYPE OF ENTERPRISE *

S.No.	Classification Year	Enterprise Type	Classification Date
1	2023-24	Micro	03/02/2024
2	2022-23	Micro	26/06/2022
3	2021-22	Micro	27/07/2021

MAJOR ACTIVITY SERVICES

SOCIAL CATEGORY OF ENTREPRENEUR GENERAL

NAME OF UNIT(S)

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

OFFICIAL ADDRESS OF ENTERPRISE

Flat/Door/Block No.	26	Name of Premises/ Building	Yashashree
Village/Town	Pune	Block	1
Road/Street/Lane	Lokmanya Nagar, Nirmal Bang Soc	City	Pune
State	MAHARASHTRA	District	PUNE, Pin 411009
Mobile	8767447244	Email:	engress123@gmail.com

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

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

NATIONAL INDUSTRY CLASSIFICATION CODE(S)

S.No.	NIC 2 Digit	NIC 4 Digit	NIC 5 Digit	Activity
1	70 - Activities of head offices; management consultancy activities	7020 - Management consultancy activities	70200 - Management consultancy activities	Services

DATE OF UDYAM REGISTRATION 27/07/2021

Certificate of Registration

This is to Certify that
Environmental Management System of

ENGRESS SERVICES
26, YASHASHREE, BLOCK 1, LOKMANYA NAGAR, NIRMAL BAUG SOC, PARVATI, PUNE- 411009, MAHARASHTRA, INDIA

has been assessed and found to conform to the requirements of
ISO 14001:2015
for the following scope :

CONSULTANCY SERVICES FOR ENERGY AUDIT, GREEN AUDIT & ENVIRONMENTAL AUDIT IN EDUCATIONAL INSTITUTIONS & SUBMISSION OF AUDIT CERTIFICATE AND REPORT.

Certificate No : 23EEKW20
Initial Registration Date : 29/03/2023
Date of Expiry : 28/03/2026
1st Surve. Due : 29/02/2024
2nd Surve. Due : 28/02/2025

Director

Magnitude Management Services Pvt. Ltd.
B-55, Lower Ground Floor, Sector 82, Noida-201301, U.P, India
e-mail: info@mmcs-certification.com, web: www.mmcs-certification.com
* Subject to successful surveillance audit and case surveillance audit is not allowed to be conducted, this certificate shall be suspended/terminated.
Certificate Validity: Please Re-check the validity of certificate on http://www.mmcs-certification.com

Certificate of Registration

This is to Certify that
Quality Management System of

ENGRESS SERVICES
26, YASHASHREE, BLOCK 1, LOKMANYA NAGAR, NIRMAL BAUG SOC, PARVATI, PUNE- 411009, MAHARASHTRA, INDIA

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

CONSULTANCY SERVICES FOR ENERGY AUDIT, GREEN AUDIT & ENVIRONMENTAL AUDIT IN EDUCATIONAL INSTITUTIONS & SUBMISSION OF AUDIT CERTIFICATE AND REPORT.

Certificate No : 23EOKC13
Initial Registration Date : 27/03/2023
Date of Expiry : 26/03/2026
1st Surve. Due : 27/02/2024
2nd Surve. Due : 27/02/2025

Director

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ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Priyadarshini College of Engineering, Nagpur, for awarding us the assignment of Energy Audit of their campus for the Academic Year: 2024-25.

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

EXECUTIVE SUMMARY

1. **Priyadarshini College of Engineering, Nagpur**, consumes Energy in the form of **Electrical Energy and** used for various gadgets, office & other facilities

2. Study of Connected Load & Present Energy Consumption:

No	Particulars	Value	Unit
1	Total Connected Load	367	kW
2	Annual Energy Purchased	111355	kWh

3. Per Capita Energy Consumption:

No	Particulars	Value	Unit
1	Annual Energy Consumed	111355	kWh
2	No of students studying in the Institute	5556	Nos
3	Per Capita Energy Consumption $= (1) / (2)$	20.04	kWh/Annum

4. Study of % Usage of LED Lighting:

No	Particulars	Value	Unit
1	% of Usage of LED Lighting to Total Lighting Load	84.51	%

5. Renewable Energy & Energy Efficiency Projects:

- Usage of Energy Efficient LED fittings
- Usage of BEE STAR Rated Equipment
- Installation of 400 kWp Solar Power Plant on College Building

6. Assumptions:

1. Emission Factor of Electricity: **0.93 Kg of CO₂/kWh**
2. Average Solar PV Energy Generation: **4 kWh/Day**
3. Annual Solar Energy Generation Days: **300 Nos**
4. CO₂ Emissions are computed For **Scope-2**
5. CO₂ Emissions are computed based on Electrical Energy purchased

7. References:

- Audit Methodology: www.mahaurja.com
- Energy Conservation Building Code: ECBC-2017: www.beeindia.gov.in
- For CO₂ Emission Factors: www.ccd.gujarat.gov.in
- For Solar PV Energy Generation: www.rooftopsolar.gov.in

ABBREVIATIONS

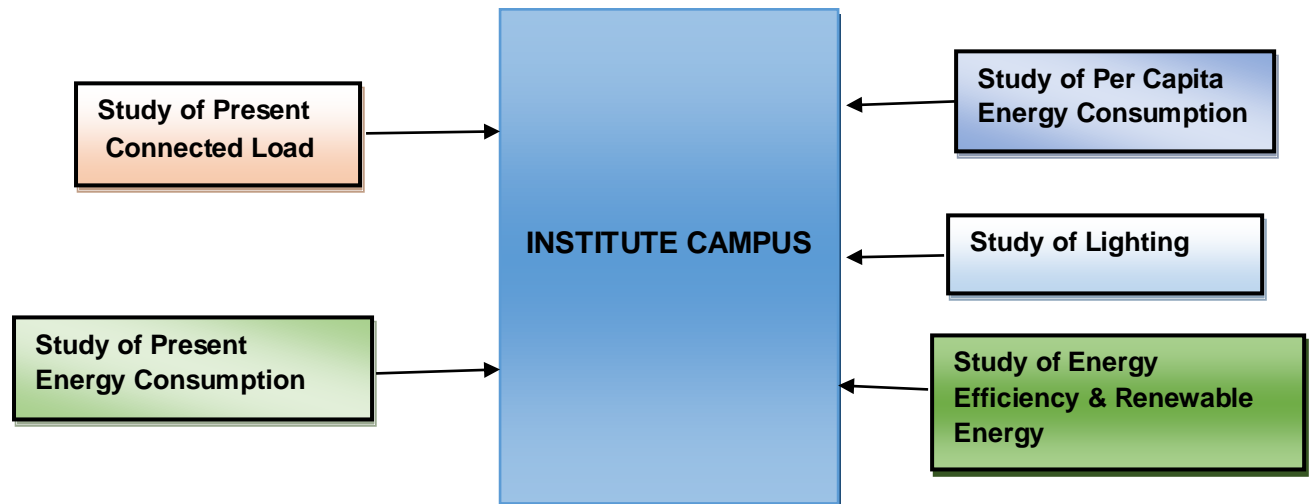
LED	: Light Emitting Diode
MSEDCL	: Maharashtra State Electricity Distribution Company Limited
IQAC	: Internal Quality Assurance Cell
BEE	: Bureau of Energy Efficiency
FTL	: Fluorescent Tube Light
CFL	: Compact Fluorescent Light
PV	: Photo Voltaic
Kg	: Kilo Gram
kWh	: kilo-Watt Hour
CO ₂	: Carbon Di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

CHAPTER-I INTRODUCTION

1.1 Introduction:

An Energy Audit is conducted at **Priyadarshini College of Engineering, Nagpur.**

1.2 Key Study Points:



1.3 Institute Location Image:



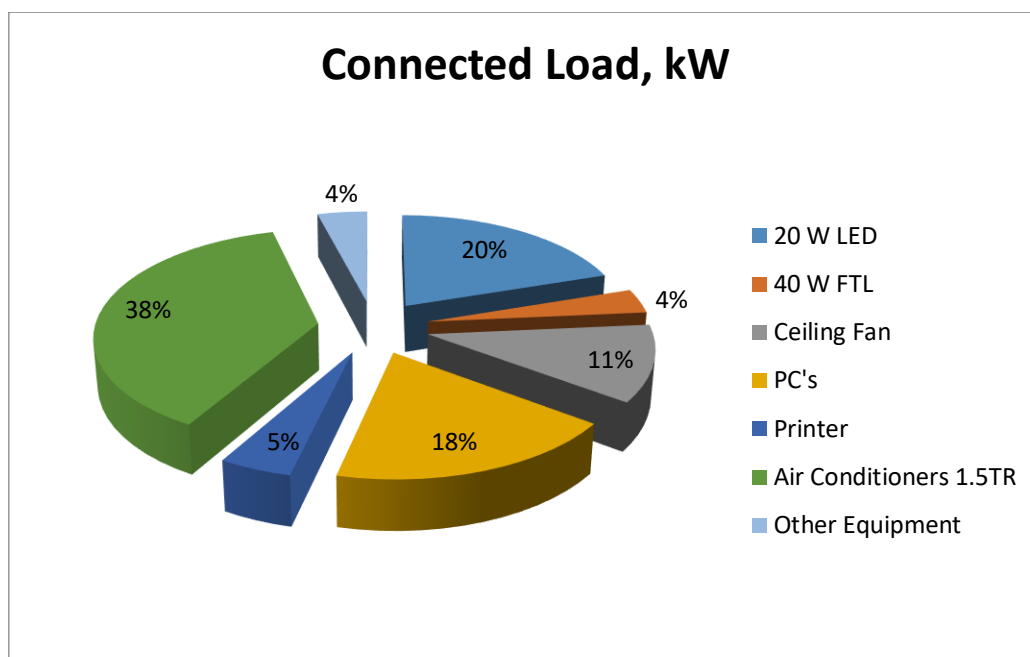
CHAPTER-II STUDY OF CONNECTED LOAD

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

Table No 1: Study of Equipment wise Connected Load:

No	Equipment	Qty	Load, W/Unit	Load, kW
1	20 W LED	3655	20	73.1
2	40 W FTL	335	40	13.4
3	Ceiling Fan	650	65	42.25
4	PC's	455	150	68.25
5	Printer	113	150	16.95
6	Air Conditioners 1.5TR	125	1104	138
8	Other Equipment	150	100	15
9	Total			367

Chart No 1: Study of Connected Load:



CHAPTER-III

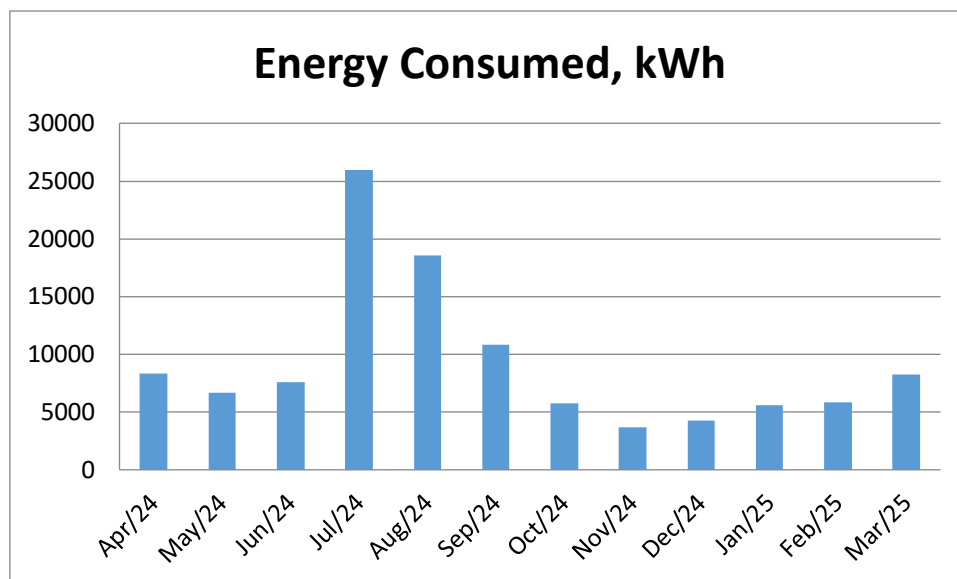
STUDY OF PRESENT ENERGY CONSUMPTION

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

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

No	Month	Energy Purchased, kWh	CO ₂ Emissions, MT
1	Apr-24	8295	7.47
2	May-24	6652	5.99
3	Jun-24	7600	6.84
4	Jul-24	25990	23.39
5	Aug-24	18535	16.68
6	Sep-24	10815	9.73
7	Oct-24	5794	5.21
8	Nov-24	3697	3.33
9	Dec-24	4287	3.86
10	Jan-25	5620	5.06
11	Feb-25	5820	5.24
12	Mar-25	8250	7.42
13	Total	111355	100.22
14	Maximum	25990	23.39
15	Minimum	3697	3.33
16	Average	9280	8.35

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



CHAPTER-IV

STUDY OF PER CAPITA ENERGY CONSUMPTION

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

It is determined by:

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

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

No	Particulars	Value	Unit
1	Total Annual Energy Purchased	111355	kWh
2	No of students studying in the Institute	1870	Nos
3	Per Capita Energy Consumption =(3) / (4)	24.80	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 Institute.



Table No 4: Computation of % Usage of LEDs to Total Lighting Load:

No	Particulars	Value	Unit
1	Total LED Lighting Load	73.10	kW
2	Total Lighting Load	86.50	kW
3	% of LED to Total Lighting Load= $1 \times 100 / 2$	84.51	%

CHAPTER-VI

STUDY OF RENEWABLE ENERGY & ENERGY EFFICIENCY

Usage of Renewable Energy & Energy Conservation Projects:

No	Head	Observation	Photograph
1	Usage of Renewable Energy	Installation of 400 kWp Roof Top Solar PV Plant	<p>Solar Power Plant</p> 
2	Energy Conservation Projects	Usage of LED Tubes	<p>LED Tube</p> 

ENGRESS SERVICES

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Parvati, Pune 411 009 Tel: 09890444795 Email: engress123@gmail.com
UDYAM, MEDA Registered, ISO-9001 & ISO-14001 Certified



ENERGY AUDIT CERTIFICATE

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

Date: 8/5/2025

This is to certify that we have conducted Energy Audit **Priyadarshini College of Engineering, Nagpur**, in the Academic Year 2024-25.

The College has adopted following Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Installation of Solar Power Plant on College Building

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

