

# ENERGY AUDIT REPORT

Modern Education Society's,  
**WADIA COLLEGE OF ENGINEERING,**  
Off Bund Garden Road, Pune 411 001



Year: 2024-25

Prepared by:

## ENGRESS SERVICES

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



## REGISTRATION CERTIFICATES: BEE, UDYAM, MEDA, ISO-9001 &amp; 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: 020-36004350  
 Email: eecc@mahauria.com, Web: www.mahauria.com

ECN/2024-25/CR-02/385 8<sup>th</sup> October, 2024

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

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

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

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

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

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

General Manager (E.C.)

Regn. No. EA-8192 No.2942

**National Productivity Council**  
 (National Certifying Agency)  
**PROVISIONAL CERTIFICATE**

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

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

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

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

Place : Chennai, India  
 Date : 10<sup>th</sup> August 2007

*Dr. J. Chidambaram*  
 Controller of Examination

**भारत सरकार**  
**Government of India**  
**महान, 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 Bag Soc | City                      | Pune                 |
| State               | MAHARASHTRA                   | District                  | PUNE, Pin-411009     |
| Mobile              | 8767447244                    | Email:                    | engress123@gmail.com |

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

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

**NATIONAL INDUSTRY CLASSIFICATION CODE(S)**

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

**DATE OF UDYAM REGISTRATION** 27/07/2021

**Certificate of Registration**

This is to Certify that  
**Environmental Management System of**

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

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

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

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

Issue Date : 29/03/2023

*Dr. J. Chidambaram*  
 Director

**Magnitude Management Services Pvt. Ltd.**  
 B-55, Lower Ground Floor, Sector 82, Noida-201301, U.P, India  
 e-mail: info@mmcservices.com, website: www.mmcservices.com  
 \* Subject to successful surveillance audits and surveillance audits is not allowed to be conducted, this certificate shall be suspended/terminated.  
 Certificate Validity: Please do check the validity of certificate on <http://www.mmcservices.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  
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CONSULTANCY SERVICES FOR ENERGY AUDIT, GREEN AUDIT & ENVIRONMENTAL AUDIT IN EDUCATIONAL INSTITUTIONS & SUBMISSION OF AUDIT CERTIFICATE AND REPORT.

Certificate No : 23EQK13  
 Initial Registration Date : 27/03/2023  
 Date of Expiry : 26/03/2026  
 1st Surve. Due : 27/02/2024  
 2nd Surve. Due : 27/02/2025

Issue Date : 27/03/2023

*Dr. J. Chidambaram*  
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## **ACKNOWLEDGEMENT**

We Engress Services, Pune, express our sincere gratitude to the management of Modern Education Society's, Wadia College of Engineering, Off Bund Garden Road, Pune 411 001 for awarding us the assignment of Energy Audit of their Campus for the Year: 2024-25.

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

## EXECUTIVE SUMMARY

1. An Energy Audit is conducted at Modern Education Society's, Wadia College of Engineering, Pune 411001

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

| No | Particulars             | Value  | Unit |
|----|-------------------------|--------|------|
| 1  | Total Connected Load    | 180    | kW   |
| 2  | Annual Energy Purchased | 127337 | kWh  |

### 3. Per Capita Energy Consumption:

| No | Particulars                               | Value  | Unit      |
|----|-------------------------------------------|--------|-----------|
| 1  | Annual Energy Purchased                   | 127337 | kWh       |
| 2  | Energy generated by Solar PV Plant        | 9600   | kWh       |
| 3  | Total Annual Energy Demand = 1+2          | 136937 | kWh       |
| 4  | No of students studying in the College    | 2093   | Nos       |
| 5  | Per Capita Energy Consumption = (1) / (2) | 65.43  | kWh/Annum |

### 4. Usage of LED Lighting:

| No | Particulars                                       | Value | Unit |
|----|---------------------------------------------------|-------|------|
| 1  | % of Usage of LED Lighting to Total Lighting Load | 45.45 | %    |

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

- Usage of Energy Efficient LED fittings
- Sensor based Lighting Operation
- Installation of 8 kWp Roof Top Solar PV Plant

### 6. Assumptions:

1. Emission Factor of Electrical Energy: 0.93 Kg of CO<sub>2</sub> / kWh
2. Energy generated by Roof Top Solar PV Plant: 4 kWh/kWp per Day
3. Annual Solar Energy Generation Days: 300 Nos
4. CO<sub>2</sub> Emissions are computed For Scope-2

### 7. References:

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

## **ABBREVIATIONS**

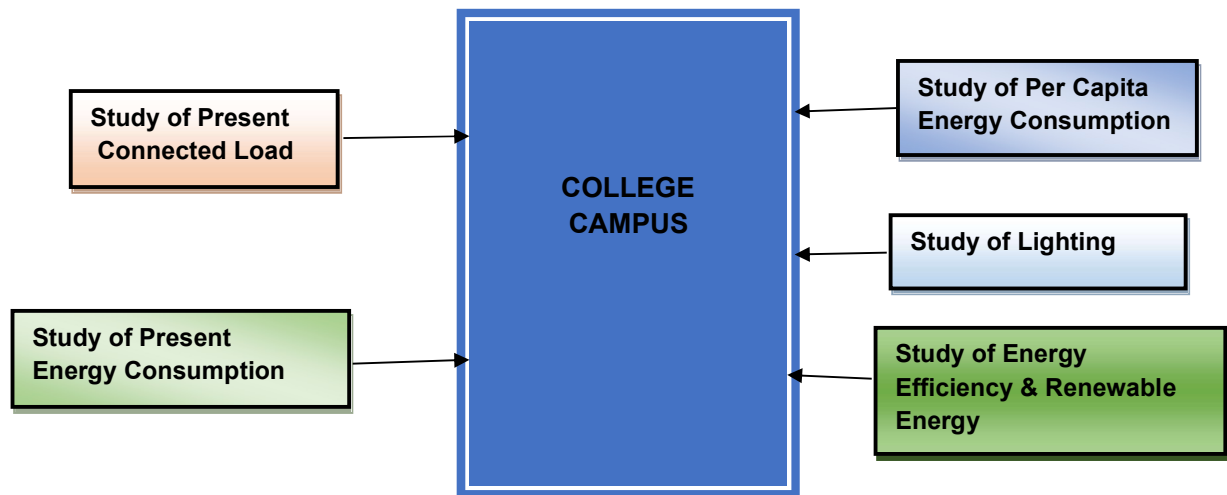
|                 |                                                              |
|-----------------|--------------------------------------------------------------|
| LED             | : Light Emitting Diode                                       |
| MSEDCL          | : Maharashtra State Electricity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

## CHAPTER-I INTRODUCTION

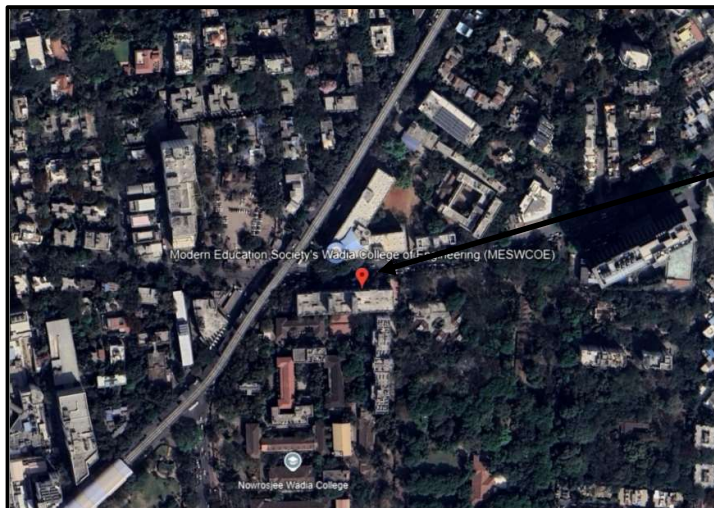
### 1.1 Introduction:

An Energy Audit is conducted at Wadia College of Engineering, Pune.

### 1.2 Key Study Points:



### 1.3 College Location:



College  
Campus

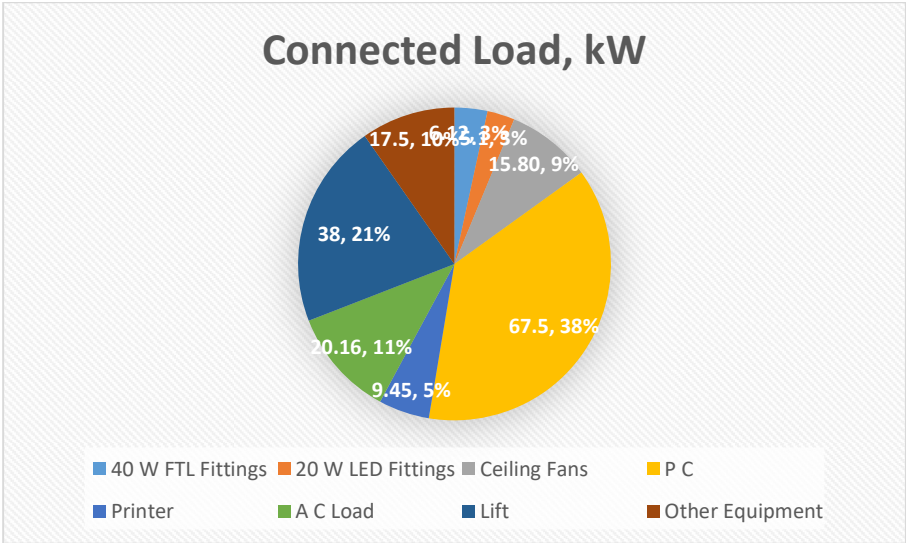
**CHAPTER-II**  
**STUDY OF CONNECTED LOAD**

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  | 40 W FTL Fittings | 153 | 40           | 6.12       |
| 2  | 20 W LED Fittings | 255 | 20           | 5.1        |
| 3  | Ceiling Fans      | 243 | 65           | 15.80      |
| 4  | P C               | 450 | 150          | 67.5       |
| 5  | Printer           | 54  | 175          | 9.45       |
| 6  | A C Load          | 12  | 1680         | 20.16      |
| 7  | Lift              | 4   | 9500         | 38         |
| 8  | Other Equipment   | 50  | 350          | 17.5       |
| 9  | <b>Total</b>      |     |              | <b>180</b> |

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





### CHAPTER-III

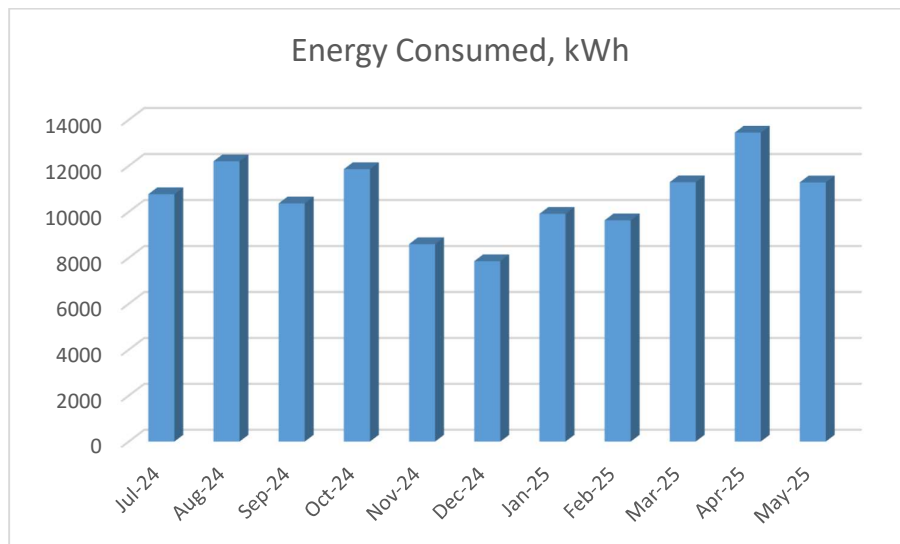
## STUDY OF PRESENT ENERGY CONSUMPTION

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

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

| No | Month  | Energy Purchased, kWh | CO <sub>2</sub> Emissions, tCO <sub>2</sub> e |
|----|--------|-----------------------|-----------------------------------------------|
| 1  | Jul-24 | 10768                 | 10.01                                         |
| 2  | Aug-24 | 12200                 | 11.35                                         |
| 3  | Sep-24 | 10370                 | 9.64                                          |
| 4  | Oct-24 | 11857                 | 11.03                                         |
| 5  | Nov-24 | 8600                  | 8.00                                          |
| 6  | Dec-24 | 7857                  | 7.31                                          |
| 7  | Jan-25 | 9915                  | 9.22                                          |
| 8  | Feb-25 | 9633                  | 8.96                                          |
| 9  | Mar-25 | 11291                 | 10.50                                         |
| 10 | Apr-25 | 13447                 | 12.51                                         |
| 11 | May-25 | 11284                 | 10.49                                         |
| 12 | Jun-25 | 10115                 | 9.41                                          |
| 13 | Total  | 127337                | 118.42                                        |

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



## CHAPTER-IV

### STUDY OF PER CAPITA ENERGY CONSUMPTION

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

It is determined by:

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

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

| No | Particulars                               | Value  | Unit      |
|----|-------------------------------------------|--------|-----------|
| 1  | Annual Energy Purchased                   | 127337 | kWh       |
| 2  | Energy generated by Solar PV Plant        | 9600   | kWh       |
| 3  | Total Annual Energy Demand = 1+2          | 136937 | kWh       |
| 4  | No of students studying in the College    | 2093   | Nos       |
| 5  | Per Capita Energy Consumption = (1) / (2) | 65.43  | kWh/Annum |

## CHAPTER-V

### STUDY OF LIGHTING

#### Terminology:

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

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

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

**4. Installed Load Efficacy** is the average-maintained illuminance provided on a horizontal working plane per circuit watt with general lighting of an interior. Unit: lux per watt per square metre (lux/W/m<sup>2</sup>)

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

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

In this Chapter we compute the Lighting Power density and the percentage usage of LED Lighting to total Lighting Load of the College.

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

| No | Particulars                             | Value | Unit |
|----|-----------------------------------------|-------|------|
| 1  | Total LED Lighting Load                 | 5.1   | kW   |
| 2  | Other Lighting Load                     | 6.12  | kW   |
| 3  | Total Lighting Load =1+2                | 11.22 | kW   |
| 4  | % of LED to Total Lighting Load=1*100/3 | 45.45 | %    |

## CHAPTER-VI

### STUDY OF RENEWABLE ENERGY & ENERGY EFFICIENCY

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

| No | Head                         | Observation                                                                | Photograph                                                                                                                                                                                                                      |
|----|------------------------------|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Usage of Renewable Energy    | The College has installed Roof Top Solar PV Plant of Capacity <b>8 kWp</b> | <b>Roof Top Solar PV Plant:</b><br> <p>Latitude: 18.532777<br/>Longitude: 73.879459<br/>Elevation: 561.8233 m<br/>Accuracy: 11.8 m</p>        |
| 2  | Energy Conservation Projects | Usage of LED Lights                                                        | <b>LED Light</b><br> <p>Lat 18.5352871 / Long 73.8799463<br/>Wednesday 03 September 2026 13:20:01</p> <p>Google Maps<br/>KRDY Sun Clinic</p> |