

GREEN AUDIT REPORT

of
MIT ART, DESIGN AND TECHNOLOGY UNIVERSITY
Loni Kalbhor, Pune 412201



Year: 2021-22

Prepared by

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society
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REGISTRATION CERTIFICATES

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'**

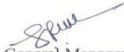
We hereby certify that, the firm having following particulars is registered with **MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)** under given category as "Energy Planner & Energy Auditor" in Maharashtra for Energy Conservation Programme of MEDA.

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)

MEDA REGIATRATION CERTIFICATE



ASSOCHAM GEM CP CERTIFICATE

ENGRESS SERVICES

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

Ref: ES/MITADT/21-22/02

Date: 19/7/2022

GREEN AUDIT CERTIFICATE

This is to certify that we have conducted Green Audit at MIT Art, Design and Technology University, Loni Kalbhor, Pune 412 201, in the year 2021-22.

The University has adopted following Green & Sustainable Practices:

- Usage of Energy Efficient LED Fittings.
- Installation of 752.95 kWp Roof Top Solar PV Plant.
- Installation of 77500 LPD Solar Thermal Water Heating System at Hostel blocks.
- Usage of BEE STAR Rated Equipment
- Segregation of Waste at source
- Installation of Organic Composting Unit
- Good Internal Roads
- Tree Plantation in the Campus
- Provision of Ramp for Divyangajan
- Usage of Battery Operated Vehicles in the campus
- Creation of awareness about Resource Conservation by displaying Posters

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

For Engress Services,

A Y Mehendale,
Certified Energy Auditor, EA-8192
ASSOCHAM GEM Certified Professional: GEM: 22/788

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ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of MIT Art, Design and Technology University, Loni Kalbhor, Pune, for awarding us the assignment of Green Audit of their Loni Kalbhor Campus for the Year: 2021-22.

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

EXECUTIVE SUMMARY

1. MIT Art, Design and Technology University, Loni Kalbhor, Pune consumes Energy in the form of **Electrical Energy**; used for various Equipment.

2. Present Energy Consumption & CO₂ Emission:

| No | Parameter/ Value | Energy Purchased, kWh | CO ₂ Emissions, MT |
|----|---------------------|--------------------------|----------------------------------|
| 1 | Total | 3615957 | 3254.36 |
| 2 | Maximum | 448101 | 403.29 |
| 3 | Minimum | 166305 | 149.67 |
| 4 | Average | 301329.75 | 271.20 |

3. Initiatives adopted for Energy Conservation:

- Usage of LED Lights
- Installation of **752.95 kWp** Roof Top Solar PV Plant.
- Installation of **77500 LPD** Solar Thermal Water Heating System.

4. Usage of Renewable Energy:

- The University has installed Roof Top Solar PV Plant of Capacity **752.95 kWp**.
- Energy generated by Solar PV Plant in 21-22 is **826534 kWh**.
- Total Annual Reduction in CO₂ Emissions in 21-22 is **743.88 MT**.

5. Waste Management:

5.1 Segregation of Waste at Source:

The Waste is segregated at source by provision of Waste Bins at various locations.

5.2 Organic Waste Management:

The University has installed Organic Waste converting Unit, to convert the Bio Degradable Waste into Bio Compost.

5.3 Liquid Waste Management:

The University is constructing Sewage Treatment Plant for treatment of Black Water.

5.4 E Waste Management:

It is recommended to dispose of the E Waste through Authorized Agency

6. Rain Water Management:

The University is in process of installation of Rain Water Management Project

7. Green & Sustainable Practices:

- The University has well maintained internal roads for easy movement in the campus.
- The University has well maintained lawn and landscaped garden.
- There are about **4000 plus** Trees in the campus
- Provision of Ramp for Divyangajan.
- Usage of Battery operated vehicles for transportation within the campus.
- Creation of awareness on Resource Conservation, by Display of Posters

8. Assumption:

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

9. Reference:

1. For Computation of CO₂ Emissions: www.tatapower.com

ABBREVIATIONS

LED : Light Emitting Diode

kWh : kilo-Watt Hour

MT : Metric Ton

CO₂ : Carbon Di Oxide

CHAPTER-I INTRODUCTION

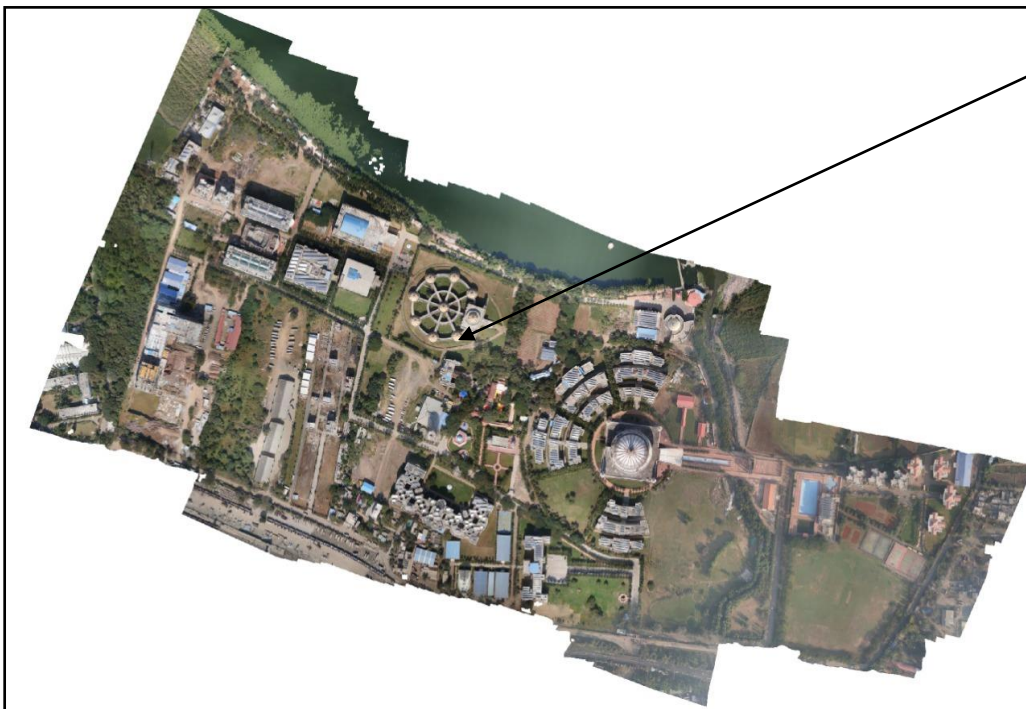
1.1 Objectives:

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 Practices

1.2 Table No 1: General Details

| No | Head | Particulars |
|----|----------------------|--|
| 1 | Name of Institution | MIT Art Design and Technology University |
| 2 | Address | Loni Kalbhor, Pune 412 201 |
| 3 | Latitude / Longitude | 18.49 ⁰ / 74.02 ⁰ |

1.3 Goggle Earth Image of the University:



University
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.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the University for performing its day to day activities. The University uses Electrical Energy for various Equipment.

Basis for computation of CO₂ Emissions:

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

Table No 2: Month wise CO₂ Emissions:

| No | Month | Energy Purchased-Meter-1, kWh | Energy Purchased, Meter-2, kWh | Total Energy Purchased, kWh | CO ₂ Emissions, MT |
|----|---------|-------------------------------|--------------------------------|-----------------------------|-------------------------------|
| 1 | Jul-21 | 92001 | 74304 | 166305 | 149.67 |
| 2 | Aug-21 | 97300 | 76268 | 173568 | 156.21 |
| 3 | Sep-21 | 109147 | 90151 | 199298 | 179.37 |
| 4 | Oct-21 | 126712 | 113742 | 240454 | 216.41 |
| 5 | Nov-21 | 137671 | 143775 | 281446 | 253.30 |
| 6 | Dec-21 | 160813 | 172813 | 333626 | 300.26 |
| 7 | Jan-22 | 171943 | 146826 | 318769 | 286.89 |
| 8 | Feb-22 | 121060 | 142599 | 263659 | 237.29 |
| 9 | Mar-22 | 193201 | 216964 | 410165 | 369.15 |
| 10 | Apr-22 | 184975 | 245146 | 430121 | 387.11 |
| 11 | May-22 | 223056 | 225045 | 448101 | 403.29 |
| 12 | Jun-22 | 164420 | 186025 | 350445 | 315.40 |
| 13 | Total | 1782299 | 1833658 | 3615957 | 3254.36 |
| 14 | Maximum | 223056 | 245146 | 448101 | 403.29 |
| 15 | Minimum | 92001 | 74304 | 166305 | 149.67 |
| 16 | Average | 148524.9167 | 152804.83 | 301329.75 | 271.20 |

Chart No 1: Representation of Month wise CO₂ Emissions:

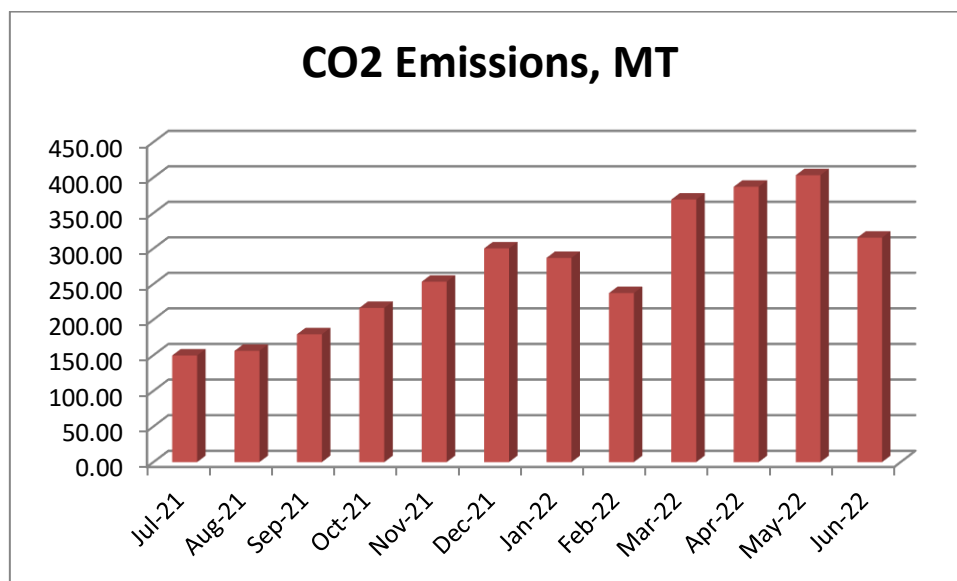


Table No 3: Various Important Parameters:

| No | Parameter/ Value | Energy Purchased, kWh | CO ₂ Emissions, MT |
|----|---------------------|--------------------------|-------------------------------------|
| 1 | Total | 3615957 | 3254.36 |
| 2 | Maximum | 448101 | 403.29 |
| 3 | Minimum | 166305 | 149.67 |
| 4 | Average | 301329.75 | 271.20 |

CHAPTER-III

STUDY OF USAGE OF RENEWABLE ENERGY

The University has installed Roof Top Solar PV Plant, on various buildings as well as Solar Water Heating System on Hostel Blocks. In the following Table, we present the details of Building wise Solar PV Plants installed and Solar Thermal Water Heating Systems installed.

Table No 4: Details of Building wise Roof Top Solar PV Plant:

| No. | Building Name | Installed Capacity, kW | Average Energy Generation, (Per year) KWh |
|--------------|--|------------------------|---|
| 1 | MANET Administration Building | 108.0 | 118,389.60 |
| 2 | MANET Hostel Building (ABC Block) | 80.8 | 88,740.00 |
| | MANET Hostel Building (DEF Block) | 80.8 | 88,740.00 |
| 4 | MITSOER Building | 54.0 | 59,194.80 |
| 5 | Boat club Building | 54.0 | 59,194.80 |
| 6 | Carpenter Shed | 27.0 | 29,649.60 |
| 7 | Health Club or Sports Complex | 54.0 | 59,194.80 |
| 8 | Raj Auditorium or Amphi Theatre | 54.0 | 59,194.80 |
| 9 | School of Film and Television Building (1st Floor & 2nd Floor) | 66.5 | 73,080.00 |
| | MIT ISBJ (3rd Floor & 4th Floor) | 66.5 | 73,080.00 |
| 10 | IT Establishment SOE (Gr to 6th | 35.2 | 38,628.00 |
| | MIT COM (7 & 8 Floor) | 8.6 | 9,500.40 |
| 10 | Bakery Shade | 47.5 | 52,200.00 |
| 11 | Staff Quarter Loni | 16.2 | 17,748.00 |
| Total | | 752.95 | 826,534.80 |

Table No 5: Details of Solar Thermal Water Heating Systems installed:

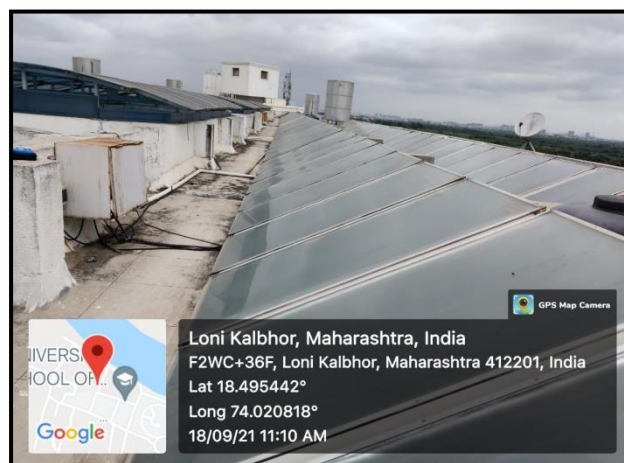
| No | Location | Capacity in LPD |
|----------|------------------------------|-----------------|
| 1 | MANET-Hostel- G | 6000 |
| 2 | MANET-Hostel- E | 5000 |
| 3 | MANET-Hostel- F | 5000 |
| 4 | Guest House Building | 2500 |
| 5 | Staff Quarter-1 | 5000 |
| 6 | Design College- Girls Hostel | 36000 |
| 7 | Design College- Boys Hostel | 18000 |
| 8 | Total | 77500 |

In the following Table, we present the reduction in Annual CO₂ Emissions due to Solar Energy.

Table No 6: Computation of Reduction in CO₂ Emissions:

| No | Particulars | Value | Unit |
|----|---|---------------|-----------------------------|
| 1 | Installed Solar PV Plant Capacity | 752.95 | kWp |
| 2 | Annual Electrical Energy generated by Solar PV Plant | 826534 | kWh |
| 3 | 1 kWh of Electrical Energy is equivalent to | 0.9 | Kg of CO₂ |
| 4 | Reduction in CO₂ Emissions = (2)*(3)/1000 | 743.88 | MT |

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



CHAPTER IV STUDY OF WASTE MANAGEMENT

4.1 Segregation of Waste at Source:

At important locations, Waste collections Bins are placed in order to segregate the Waste at source. The University has dedicated House Keeping Department.

Photograph of Waste Collection Bins:



4.2 Organic Waste Management:

The University has installed Organic Waste Converter to convert the Bio Degradable / Organic Waste into Bio fertilizer. This is either sold to adjacent farmers and or used in the own garden.

Photograph of Organic Waste Converter Unit:



4.3 Liquid Waste Management:

The University is in a process of installing Sewage Treatment Plant near the Staff Quarter.

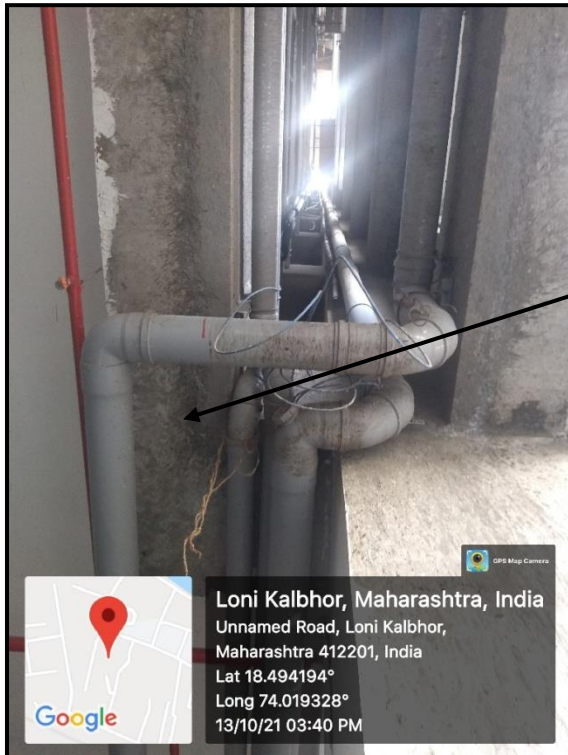
4.4 E-Waste Management:

It is recommended to dispose of the E-Waste generated through Authorized Vendors.

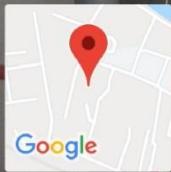
CHAPTER V STUDY OF RAIN WATER MANAGEMENT

The University is installing Rain Water management project at the Engineering & I T Building.

Photograph of Rain Water Collecting Pipe at I T Building:



Rain Water Collecting
Pipe under installation



Loni Kalbhor, Maharashtra, India
Unnamed Road, Loni Kalbhor,
Maharashtra 412201, India
Lat 18.494194°
Long 74.019328°
13/10/21 03:40 PM

CHAPTER VI STUDY OF GREENAND SUSTAINABLE PRACTICES

6.1 Internal Roads:

For easy movement of commuters, in the campus, the University has maintained good internal roads, within the campus. For pedestrians, separate foot paths are constructed.

Photograph of Internal Road:



6.2 Internal Lawn & Tree Plantation:

The University has well maintained Lawn & internal Tree Plantation. There are about 4000 Plus Trees in the Campus.

Photograph of Lawn & Tree Plantation:



6.3 Provision of Ramp for Divyangajan:

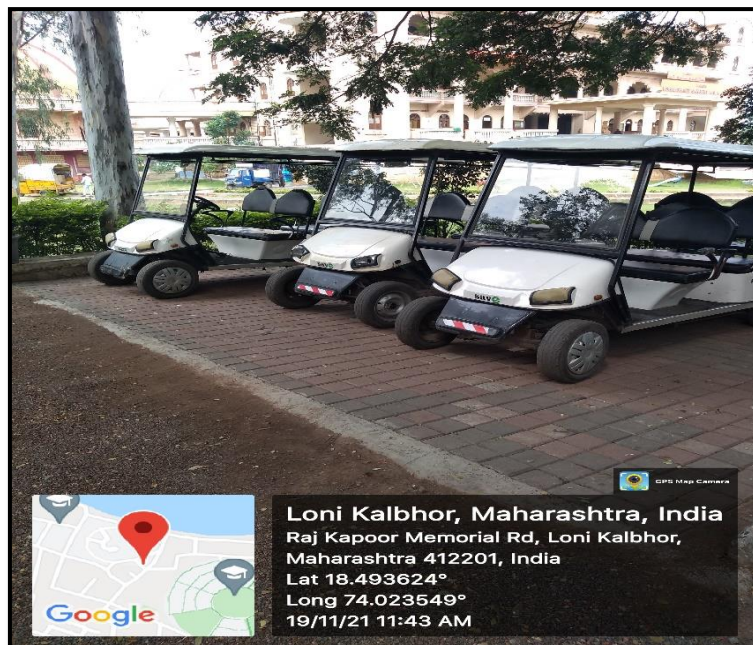
The University has made provision of Ramp, for easy movement of Divyangajan.

Photograph of Ramp:



6.4 Usage of Battery Operated Vehicles:

The University is making use of Battery Operated Vehicles for transportation in the campus.



6.5 Creation of Awareness about Importance of Resource Conservation:

In order to create awareness among the stake holders about the Conservation of various resources like Electricity, posters are displayed at various locations.

Photograph of Poster on Energy Conservation:

