

**GREEN AUDIT REPORT**  
of  
**Jayawant Shikshan Prasarak Mandal's**  
**Kautilya Institute of Management & Research,**  
**Wagholi, Pune**



**Year: 2021-22**

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)

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](mailto:eee@mahaurja.com), Web: [www.mahaurja.com](http://www.mahaurja.com)

ECN/2022-23/CR-43/1709

10<sup>th</sup> 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 Mukhtangan 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 **09<sup>th</sup> 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)

## ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society,  
Near Muktang English School, Parvati, Pune 411 009  
Tel: 09890444795 Email: [engress123@gmail.com](mailto:engress123@gmail.com)

Ref: ES/KIMR/21-22/02

Date: 11/5/2022

### CERTIFICATE

This is to certify that we have conducted Green Audit at Jayawant Shikshan Prasarak Mandal's Kautilya Institute of Management & Research, Wagholi, Pune, in the Academic year 2021-22

The Institute has adopted following Green Initiatives:

- Usage of Energy Efficient LED Light Fitting
- Usage of BEE STAR Rated Energy Efficient Equipment
- Maximum Usage of Day Lighting
- Installation of Roof Top Solar PV Plant of Capacity 10 kWp
- Segregation of Waste at Source
- Installation of Organic Converter Unit
- Installation of Sewage Treatment Plant
- Implementation of Rain Water Harvesting Project
- Maintenance of good Internal Road
- Tree Plantation in the campus
- Provision of Ramp for Divyangajan
- Display of Posters on Energy & Water Conservation

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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## **ACKNOWLEDGEMENT**

We Engress Services, Pune, express our sincere gratitude to the management of Jayawant Shikshan Prasarak Mandal's Kautilya Institute of Management & Research, Wagholi, Pune for awarding us the assignment of Green Audit of their Campus for the Year: 2021-22.

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

## EXECUTIVE SUMMARY

1. Jayawant Shikshan Prasarak Mandal's Kautilya Institute of Management & Research, Wagholi, Pune consumes Energy in the form of **Electrical Energy** used for various Electrical Equipment, office & other facilities.

### 2. Present Energy Consumption & CO<sub>2</sub> Emission:

No	Parameter/ Value	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Total	32876	30
2	Maximum	3983	3.58
3	Minimum	1709	1.54
4	Average	2740	2.47

### 3. Various initiatives taken for Energy Conservation:

- Usage of Energy Efficient BEE STAR Rated Equipment
- Usage of Energy Efficient LED Lighting
- Installation of Roof Top Solar PV Plant of Capacity 10 kWp.

### 4. Usage of Renewable Energy & CO<sub>2</sub> Emission Reduction:

- The Institute has installed Roof Top Solar PV Plant of Capacity **10 kWp**.
- The Electrical Energy generated in 21-22 is **12000 kWh**.
- Reduction in CO<sub>2</sub> Emissions in 2021-22 works out to be **10.8 MT**.

### 5. Waste Management:

#### 5.1 Segregation of Waste at Source:

The recyclable waste, like paper, plastic waste is handed over to Authorized waste collecting agent for further recycling.

#### 5.2 Organic Waste Management:

The Institute has installed an Organic Waste Converter unit to convert the Bio degradable waste into compost.

#### 5.3 Liquid Waste Management:

The Institute has installed a Sewage Treatment Plant of Capacity 500 m<sup>3</sup>/Day. The treated water is used for internal gardening purpose.

#### 5.4 E Waste Management:

The E-Waste is disposed of through Authorized E-Waste collecting agency.

### 6. Rain Water Harvesting:

The Institute has installed the Rainwater harvesting project, the rain water falling on the terrace is collected and is used for recharging the bore well.

### 7. Green & Sustainable Initiatives

- Maintenance of good Internal Road
- Maintenance of Internal Garden
- Provision of Ramp for Divyangajan
- Display of Posters on Energy & Water Conservation

### 8. Notes & Assumptions:

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

### 9. References:

- For CO<sub>2</sub> Emissions: [www.tatapower.com](http://www.tatapower.com)
- For Roof Top Solar Energy generation: [www.solarrooftop.gov.in](http://www.solarrooftop.gov.in)

## **ABBREVIATIONS**

BEE	Bureau of Energy Efficiency
kWh	Kilo Watt Hour
LPD	Liters Per Day
Kg	Kilo Gram
MT	Metric Ton
CO <sub>2</sub>	Carbon Di Oxide
Qty	Quantity



## CHAPTER-I INTRODUCTION

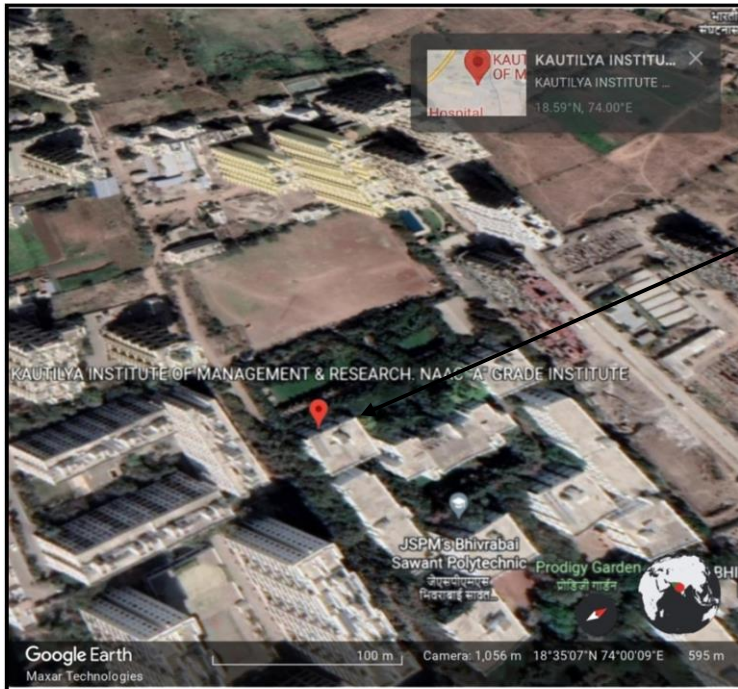
### 1.1 Objectives:

1. To study present Energy Consumption
2. To Study CO<sub>2</sub> emissions
3. To study usage of Renewable Energy
4. Study of Waste Management
5. Study of Rain Water Harvesting
6. Study of Green & Sustainable Practices

### 1.2 Table No 1: General Details of Institute:

No	Head	Particulars
1	Name of Institution	Jayawant Shikshan Prasarak Mandal's Kautilya Institute of Management & Research
2	Address	Wagholi, Pune 411 046
3	Affiliation	Savitribai Phule Pune University

### 1.3 Google Earth Image:



Institute Building

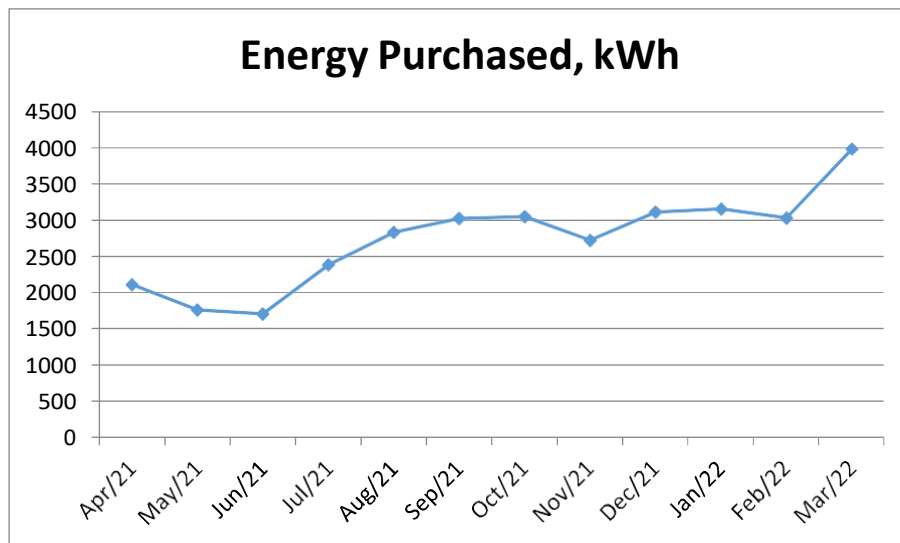
## CHAPTER-II STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of Electricity Bills

**Table No 2: Electrical Bill Analysis- 2021-22:**

No	Month	Energy Purchased, kWh
1	Apr-21	2111
2	May-21	1763
3	Jun-21	1709
4	Jul-21	2384
5	Aug-21	2834
6	Sep-21	3024
7	Oct-21	3048
8	Nov-21	2723
9	Dec-21	3111
10	Jan-22	3156
11	Feb-22	3030
12	Mar-22	3983
13	Total	32876
14	Maximum	3983
15	Minimum	1709
16	Average	2740

**Chart No 1: Variation in Monthly Energy Consumption:**



**Table No 3: Variation in Important Parameters:**

No	Parameter/ Variation	Energy Purchased, kWh
1	Total	32876
2	Maximum	3983
3	Minimum	1709
4	Average	2740

## CHAPTER III

### STUDY OF 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 CO<sub>2</sub> Emissions:**

The basis of Calculation for CO<sub>2</sub> emissions due to Electrical Energy is as under.

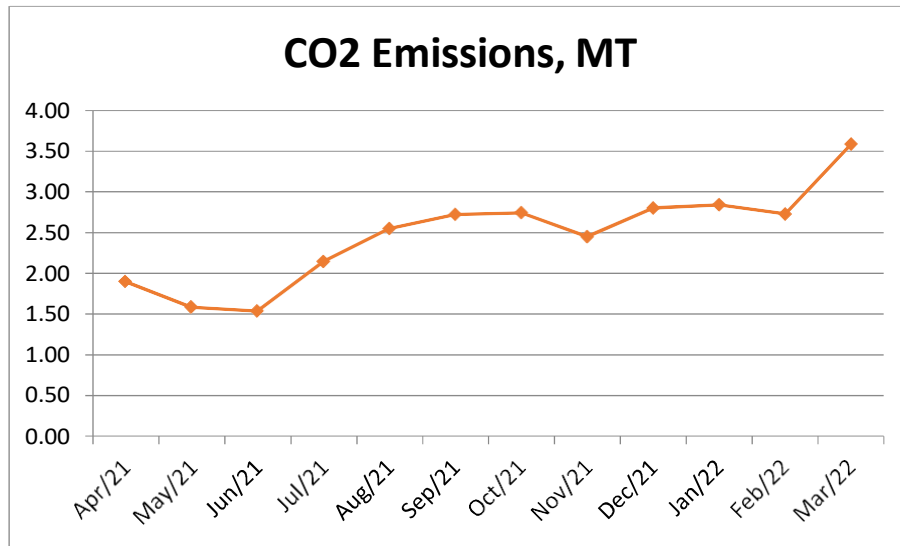
- **1 kWh** of Electrical Energy releases **0.9 Kg of CO<sub>2</sub>** into atmosphere

Based on the above Data we compute the CO<sub>2</sub> emissions which are being released in to the atmosphere by the Institute due to its Day to Day operations

**Table No 4: Month wise CO<sub>2</sub> Emissions:**

No	Month	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Apr-21	2111	1.90
2	May-21	1763	1.59
3	Jun-21	1709	1.54
4	Jul-21	2384	2.15
5	Aug-21	2834	2.55
6	Sep-21	3024	2.72
7	Oct-21	3048	2.74
8	Nov-21	2723	2.45
9	Dec-21	3111	2.80
10	Jan-22	3156	2.84
11	Feb-22	3030	2.73
12	Mar-22	3983	3.58
13	Total	32876	30
14	Maximum	3983	3.58
15	Minimum	1709	1.54
16	Average	2740	2.47

**Chart No 2: Month wise CO<sub>2</sub>Emissions:**



**Table No 5: Variation in Important Parameters:**

No	Parameter/ Value	Energy Purchased, kWh	CO <sub>2</sub> Emissions, MT
1	Total	32876	30
2	Maximum	3983	3.58
3	Minimum	1709	1.54
4	Average	2740	2.47

## CHAPTER IV STUDY OF USAGE OF RENEWABLE ENERGY

The Institute has installed Roof Top Solar PV Plant of Capacity **10 kWp**.

In the following Table, we compute the Annual Reduction in CO<sub>2</sub> Emissions due to installation of Roof Top Solar PV Plant.

**Table No 6: Computation of Annual Reduction in CO<sub>2</sub> Emissions:**

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	10	kWp
2	Energy Generated in per kWp	4	4 kWh/kWp
3	Annual Solar Energy generation Days	300	Nos
4	Energy Generated in the Year: 21-22	12000	kWh
5	1 kWh of Electrical Energy saves	0.9	Kg/kWh
6	<b>Qty of CO<sub>2</sub> Saved by Solar PV Plant = (4)*(5) /1000</b>	<b>10.8</b>	<b>MT of CO<sub>2</sub></b>

### Photograph of Roof Top Solar PV Plant:



## CHAPTER V STUDY OF WASTE MANAGEMENT

### 5.1 Segregation of Waste at Source:

The Waste is segregated at Source and the recyclable waste, like paper waste is handed over to authorized waste collecting agent for further recycling.

#### Photograph of Waste Collection Bin:



### 5.2 Organic Waste Management:

The Institute has installed an Organic Waste Converter unit to converting the Organic Waste into compost.

#### Photograph of Organic Waste Converter Unit:



### 5.3 Liquid Waste Management:

The Institute has installed a Sewage Treatment Plant of Capacity 500 m<sup>3</sup>/Day. The treated water is used for internal gardening purpose.

#### Photograph of Sewage Treatment Plant:



### 5.4 E Waste Management:

The E Waste is disposed of through Authorized Agency.



## CHAPTER-VI STUDY OF RAIN WATER HARVESTING

The Institute has implemented the Rain Water Harvesting Project. The Institute has installed Pipes from the terrace and the Rain water falling on the terrace is gathered and is used to recharge the bore well.

**Photograph of Rain water Harvesting Pipe Section:**



## CHAPTER-VII STUDY OF GREEN & SUSTAINABLE PRACTICES

### 7.1 Pedestrian Friendly Roads:

The Institute has well maintained internal road to facilitate the easy movement of the students within the campus.

#### Photograph of Internal Road:



### 7.2 Internal Tree Plantation:

The Institute has well maintained landscaped garden in the campus.

#### Photograph of Lawn and Tree plantation:



### 7.3 Provision of Ramp:

For easy movement of Divyangajan, the Institute has made provision of Ramp at the main entrance.

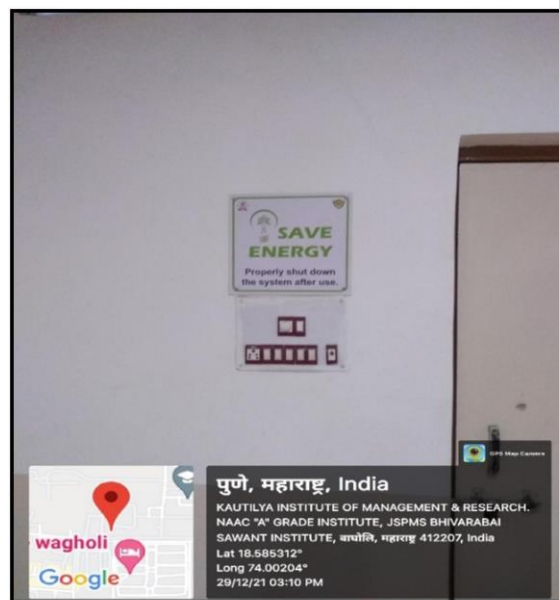
#### Photograph of Ramp:



### 7.4 Creation of Awareness about Energy & Water Conservation:

The Institute has displayed posters emphasizing on importance of Energy & Water Conservation.

#### Photograph of Poster on Energy Conservation:



**ANNEXURE-1:**  
**LIST OF TREES & PLANTS IN THE CAMPUS**

No	Common Name of the tree	Qty
1	GULMOHAR	83
2	ARECAPALM	1938
3	BOTTLEPALM	274
4	JASWAND	64
5	TAGAR	18
6	PERU	16
7	SAPTPARNI	78
8	KADULIMB	53
9	LIMBU	6
10	GULAB	48
11	SHEVAGA	4
12	CHRISTMAS	14
13	UMBAR	6
14	SHEVARI	37
15	AMBA	6
16	PARIJATAK	23
17	RUBBER	8
18	SURU	44
19	KADAMBA	24
20	ASHOK	9
21	BADAM	107
22	TIKUMA	1479
23	MOHAGUNI	79
24	PIMPAL	3
25	KARANJI	16
26	CHANDAN	4
27	CHINCH	5
28	JAMBAL	6
29	MORPANKHI	23
30	SADAFULI	5
31	VAD	2
32	BOR	1
33	UMBAR	4
34	MOGARA	7
35	JANGALJHADE	42
36	BAKUL	1
37	KADIPATA	1
38	ANJIR	1
39	RUI	1
40	MEHANDI	1
41	AAVALA	2

  
**DIRECTOR**  
JSPM's Kautilya Institute of  
Management & Research  
Wagholi, Pune - 412 207

