JSPM's Bhivarabai Sawant Institute of Technology & Research, Wagholi, (412207) Pune

CRITERION 7 - INSTITUTIONAL VALUES AND BEST PRACTICES

7.1

Institutional Values and Social Responsibilities

7.1.6

Quality audits on environment and energy are regularly undertaken by the institution

TREE PLANTATION, GREEN AUDIT REPORT, ENVIRONMENTAL AUDIT REPORT, ENERGY AUDIT REPORT, ENERGY AUDIT CERTIFICATE

Nagaraj Kalyanappa Timalapur

Digitally signed by Nagaraj Kalyanappa Timalapur
DN: CN = Nagaraj Kalyanappa Timalapur, C = IN, S = Maharashtra, O = JSPM'S Bhivarabai Sawant Institute of Technology & Research, OU = OTHERS
Reason: I attest to the accuracy and integrity of this document
Date: 2025.02.02 16:33:21 +05'30'

Jayawant Shikshan Prasarak Mandal's
Bhivarabai Sawant Institute of Technology & Research
(Approved by AICTE, New Delhi and Govt. of Maha & affiliated to Pune University)
GAT No : 720 (1) Wagholi Pune-Nagar –Road, Pune 412207
Phone No. 020-67335102 website: www.jspmbsiotr.edu.in

PROF. DR.T.J.SAWANT
FOUNDER SECRETARY

DR.T. K. NAGARAJ
PRINCIPAL

NATIONAL SERVICE SCHEME [NSS A-98]

Ref No:- JSPM's/BSIOTR/NSS/23-24/003 Date: 18/08/2023

NOTICE

All NSS volunteers are hereby informed that under the BSD and NSS A-98 unit we are going to organize the **Tree Plantation Program** at **Siddhegavhan**, Tal-khed, Pune on **23rd August 2023**. The detail schedules of program are as follow.

Sr.No	Activity	Time
1	Reporting to College	8.00 am
2	College to Siddhegavhan	8.30 To 9.30 am
3	Cleanliness drive	10.00 To 11.00 am
4	Tree plantation	11.00 am To 01.00 pm
5	Lunch	01.00 To 02.00 pm
6	Toward College	02.00 To 03.00 pm
7	Report Writing	03.00 To 04.00 pm

So those who are interested for this program, submit your name to NSS Program Officer Mr. Vijay Sonawane on or before **22/08/2023 up to 03.00 pm**

18/8/2023

Prof. Sonawane Vijay. D
NSS Program Officer

Prof. Patil Shrishail S.
Student Development Officer

Dr. T. K. Nagaraj
Principal

PRINCIPAL
J.M.'S Bhivarabai Sawant Institute of Technology & Research
Wagholi, Pune- 412207

Bhivarabai Sawant Institute Of Technology & Research
BSIOTR
EN: 6311
Wagholi
Wagholi, Pune-412207

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B.E. (Elec.) PGDM, Ph.D
Founder Secretary

Dr. T.K. Nagaraj
ME. (Civil Engg), Ph.D (Civil Engg)
LMISTE, LMIGS, LMIRC
LMISRMTT, LMIE
Principal

Date: 16/08/2023

Action Taken Report

On

Tree Plantation Program

Organized By

BSD & NSS Unit

In association with SPPU, Pune

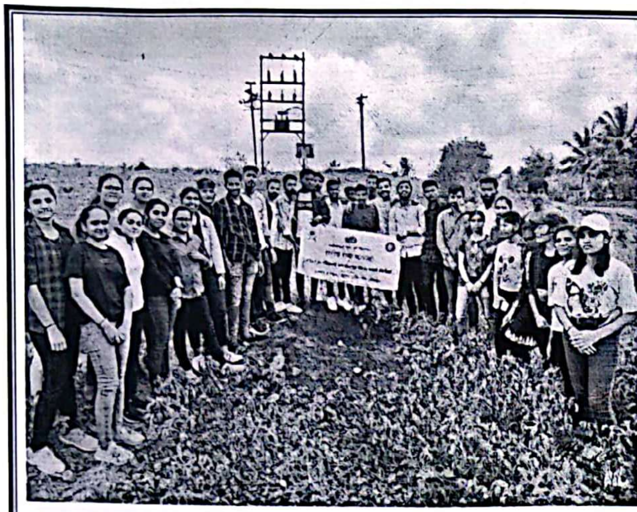
The **NSS/BSD Unit A-98** of JSPM's Bhivarabai Sawant Institute of Technology & Research participated in "Tree Plantation " at Siddhegavhan Tal: Khed Dist: Pune organized by SPPU. The National Forest Policy aims and emphasizes at maintaining 33% of the country's geographical area under forest and green cover.

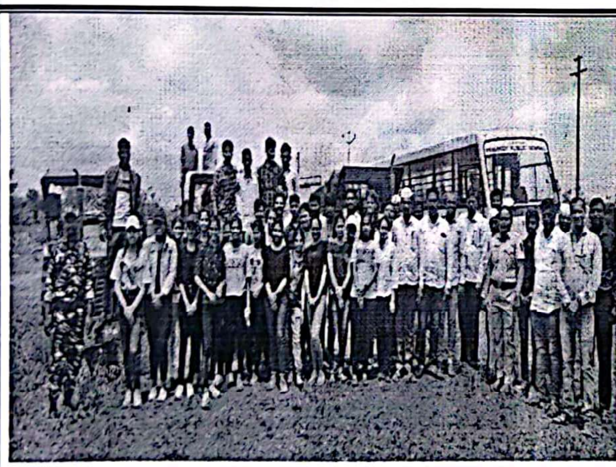
JSPM's BSIOTR National Service Scheme unit A-98/BSD along with Sarpanch Mr. Daulat More & his Team on **23rd August 2023** conducted tree plantation under the able guidance of Dr. T. K. Nagaraj, Principal of the college and Dr. Admane S. Director JSPM's Wagholi Campus.

A team of **Fifty** NSS volunteers of Jaywant Shishan Prasarak Mandal's Bhivarabai Sawant Institute of Technology & Research, College participated in **"Tree Plantation"** on a massive scale under the guidance of Prof. Shrishail Patil, Student Welfare Officer, and Mr. Nitin Shivale, Prof. Vijay Sonawane NSS Programme Officers.

Following work is done on the day of Tree Plantation at Siddhegavhan.

1. With the help of NSS volunteers took 500 different plants
2. Removed dead leaves from trees and cleaned few areas.
3. All NSS/BSD volunteers along with teachers joined this Tree Plantation very actively with great fervor and joy.





लोकमत

सिद्धेगव्हाण भैरवनाथ मंदिर परिसरात देशी वृक्षांची लागवड

लोकमत न्यूज नेटवर्क

शेलपिंपळगाव : सिद्धेगव्हाण (ता. खेड) येथे पिंपरीबाई सावंत इन्स्टिट्यूट ऑफ टेक्नॉलॉजी अँड रिसर्च या महाविद्यालयातील राष्ट्रीय सेवा योजनेच्या स्वयंसेवकांनी चाळीस देशी वृक्षांची लागवड केली.

गावातील भैरवनाथ मंदिर परिसर, वैकुंठ घाट, स्मशानभूमी परिसरात साग, पिंपळ, चिंच, कावळा या वृक्षांची लागवड करण्यात आली. या उपक्रमासाठी सरपंच दौलत मोरे व चिंचोशीच्या सरपंच उज्ज्वला गोकुळे यांनी मोफत झाडांची रोपे उपलब्ध करून दिली. या झाडांमुळे गावच्या वैभवात भर पडणार आहे.

यावेळी महाराष्ट्र राज्य सरपंच परिषदेचे उपाध्यक्ष शशिकांत मोरे, उद्योजक उमेश मोरे, माजी चेअरमन अनिल साबळे, दौंडकरवाडीचे सरपंच सीताराम मुजर, उपसरपंच राजेंद्र गाडे, संतोष साबळे, ग्रामपंचायत सदस्य मनोज मोरे, अविनाश मोरे, स्वाती मोरे, ज्योती साबळे, कांचन थोरात, अच्युत पवार, धनंजय धाडगे, संतोष मोरे, जयसिंग धाडगे, रणजित मोरे, आत्माराम गाडे, संजय साबळे, रमेश मोरे, राजेंद्र फाकडे, राजू दुधवडे, अनिल पेरकर, नितीन कावरे, [illegible] कार्यक्रम अधिकारी विजय सोनवणे, विद्यार्थी विकास मंडळाचे श्रीशैल पाटील, नितीन शिंदे, ऋषिकेश मोरे आदी ग्रामस्थ उपस्थित होते.

कार्यक्रमाचे आयोजन ग्रामपंचायत सदस्य मनोज मोरे यांनी केले व सरपंच दौलत मोरे यांनी आभार मानले.

सिद्धेगव्हाण येथे देशी वृक्षांची लागवड करताना उपस्थित विद्यार्थी

Pune Gramin
Page No. 5 Aug 29 2023
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Prof. Sonawane V.D
NSS Program Officer

Prof. Patil S.S
Student Development Officer

Dr. T. K. Nagaraj
Principal
JSPM's Bhivarabai Sawant Institute of Technology & Research
Wagholi, Pune- 412 207

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FOUNDER SECRETARY

DR.T. K. NAGARAJ
PRINCIPAL

NATIONAL SERVICE SCHEME [NSS A-98]

Tree Plantation Program

Sr.No	Name Of Students	Class	Branch	Contact No.	Out	IN
1	Aman Kumar	TE-A	Comp	9307083721		
2	Aastha Dhokale	TE-B	Comp	7083814518		
3	Saee Kulkarni	TE-B	Comp	9975117096		
4	Roshani Mulla	TE-B	Comp	8766929575		
5	Pranali Jadhav	TE-B	Comp	8788337581		
6	Shreeya Shinde	TE-B	Comp	7083727166		
7	Harshali Madake	TE-B	Comp	9860203398		
8	Shrutika Patil	TE-	I.T	9529400401		
9	PRAJAKTA RAMDAS BORHADE	TE-B	Comp	8225528391		
10	Samrudhi Biradawade	TE-B	Comp	7083290680		
11	Anagha Patil.	TE-B	comp	9075609554		
12	Chaitali Payghan	TE-B	Comp	7620936865		
13	Chetana Bahale	TE	IT	7875009714		
14	Anuja chavan	TE	IT	8459472596		
15	Prerana Indore	TE	IT	8766679575		
16	Dipti Dake	TE	IT	8767434722		
17	Swarnini chavan	TE	IT	9527667529		
18	Archana Ambure	TE	IT	9699602755		
19	Neha Dhumal	TE	IT	9922268950		
20	Ashwin Kumar Khadatare	TE	comp	8830605636		
21	Sanket Laxman Chaudhari	TE	Comp	9145204542		
22	Sai. A. Dattkar	TE	comp	8975546886		
23	Borude Harshad	TE	Elec	9356915869		
24	Ankush D. Falke	TE	comp	9921676764		
25	Harshal N. Mane	TE	Comp	8010250968		
26	Sahil. S. Sheth	TE	Elect	7020393574		
27	Shubham A. Utkar	TE	Elect	7020582581		
28	Viraj V. Sutce	TE	Elec	9834697820		
29	Rohan Randhave	TE	comp	9309525101		
30	Shrihansh J. Deshmukh	TE	comp	9730819084		
31	Abhishek Chavan	TE	Comp	9834112820		
32	Om Raut	TE	Comp	9527380716		
33	Pravin Bagdawe	TE	Comp	8805282943		
34	Kiragad Venkat	TE	Comp	7020081487		
35	Sukare Abhishek Ganesh	T.E	I.T	7744952974		
36	Rohan Ganesh Lokhande	TE	IT	9308858498		
37	Aishwarya Sunil Chaudhari	SE	Comp	9028860062		

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DR.T. K. NAGARAJ
PRINCIPAL

NATIONAL SERVICE SCHEME [NSS A-98]

Tree Plantation Program

Sr.No	Name Of Students	Class	Branch	Contact No.	Out	IN
38	Rushita Panicker	TE	Comp	9922213250		
39	Akash Wakte	TE	Comp	7057398718		
40	Neha Gadge	BE	comp	9370188925		
41	Bansali Gaikwad	BE	MECH	7624804201		
42	Sonawane Pradnya	TE	Ele	9404727387		
43	Anagha Patil	BE	comp.	9075609554		
44	Wakude Sandeep	TE	COMP	9665346245		
45	Purushottam Bhande	TE	Ele	9022109102		
46	Pawan Panjak	B.E	Mech	9834112920		
47	Dake Deepti	T.E	I.T	8767434722		
48	Sainath Sahu	T.E	Ele	7249246836		
49	Gavhane Saurabh	T.E	Mech	9765975326		
50	Yenge Anteshwar	T.E	TETC	8446430256		

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B.E. (Elec.) PGDM, Ph.D
Founder Secretary

Dr. T.K. Nagaraj
ME. (Civil Engg), Ph.D (Civil Engg)
LMISTE, LMIGS, LMIRC
LMISRMTT, LMIE
Principal

Ref: JSPM/BSIOTR/NSS & BSD/ /2023-24

Date: 25/08/2023

NOTICE

All the NSS volunteers and faculty of JSPM's BSIOTR are hereby informed that BSD/NSS Unit A-98 of our college is going to organize the **"Tree plantation Program"** on 26 August at 10AM in college campus. All interested faculty and students are appealed to take part in this noble activity.

Prof. Vijay Sonawane
NSS

Prof. S. S. Patil
SDO

Dr. T. K. Nagaraj
Principal

PRINCIPAL
JSPM's Bhivarabai Sawant Institute of Technology & Research
Wagholi, Pune-412 207

Wagholi, Pune-412 207

CC to –

HOD Comp
HOD IT
HOD Mech
HOD E&TC
HOD Electrical
HOD FE

B++ NAAC

Vision: - "To Satisfy the aspirations of youth force, who want to lead the nation towards prosperity through techno-economic development."

Mission:- "To provide, nurture and maintain an environment of high academic excellence, research and entrepreneurship for all aspiring Students, which will prepare them to face global challenges maintaining high ethical and moral standards."

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LMISRMTT, LMIE
Principal

Date: 27/08/2023

Action Taken Report

On

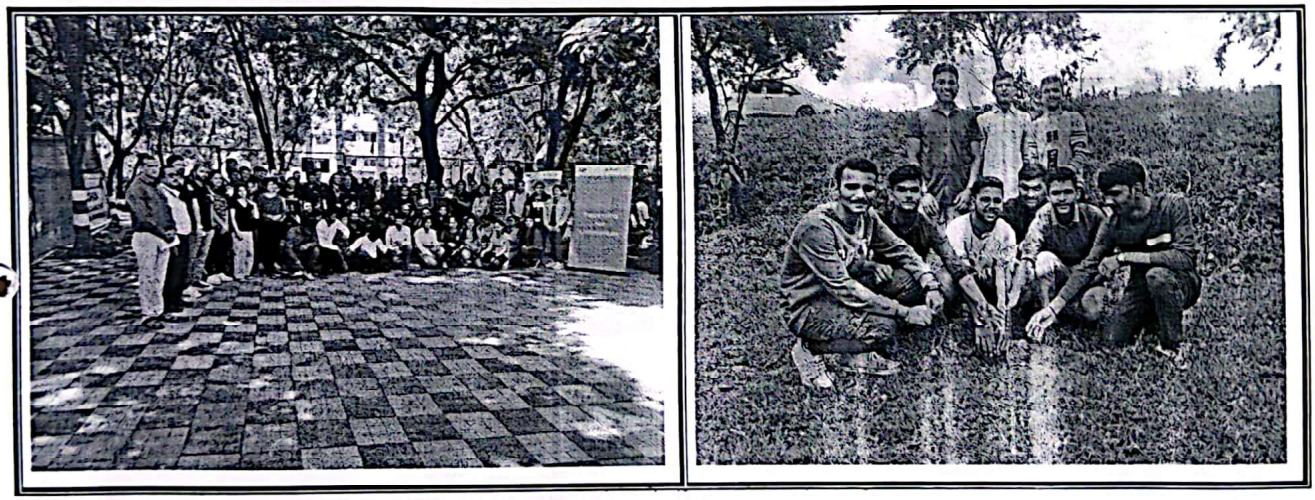
Tree Plantation Program

Organized By

BSD & NSS Unit

In association with BARCLAYS, Pune

Jayawant Shikshan Prasarak Mandal, **Bhivarabai Sawant Institute of Technology & Research,** SDO & **NSS Unit** has organized **"Tree Plantation Program** "on 26/08/2023. More than 50 Students and Staff are Participate in this event. In the light of the above following photocopy are arranged.



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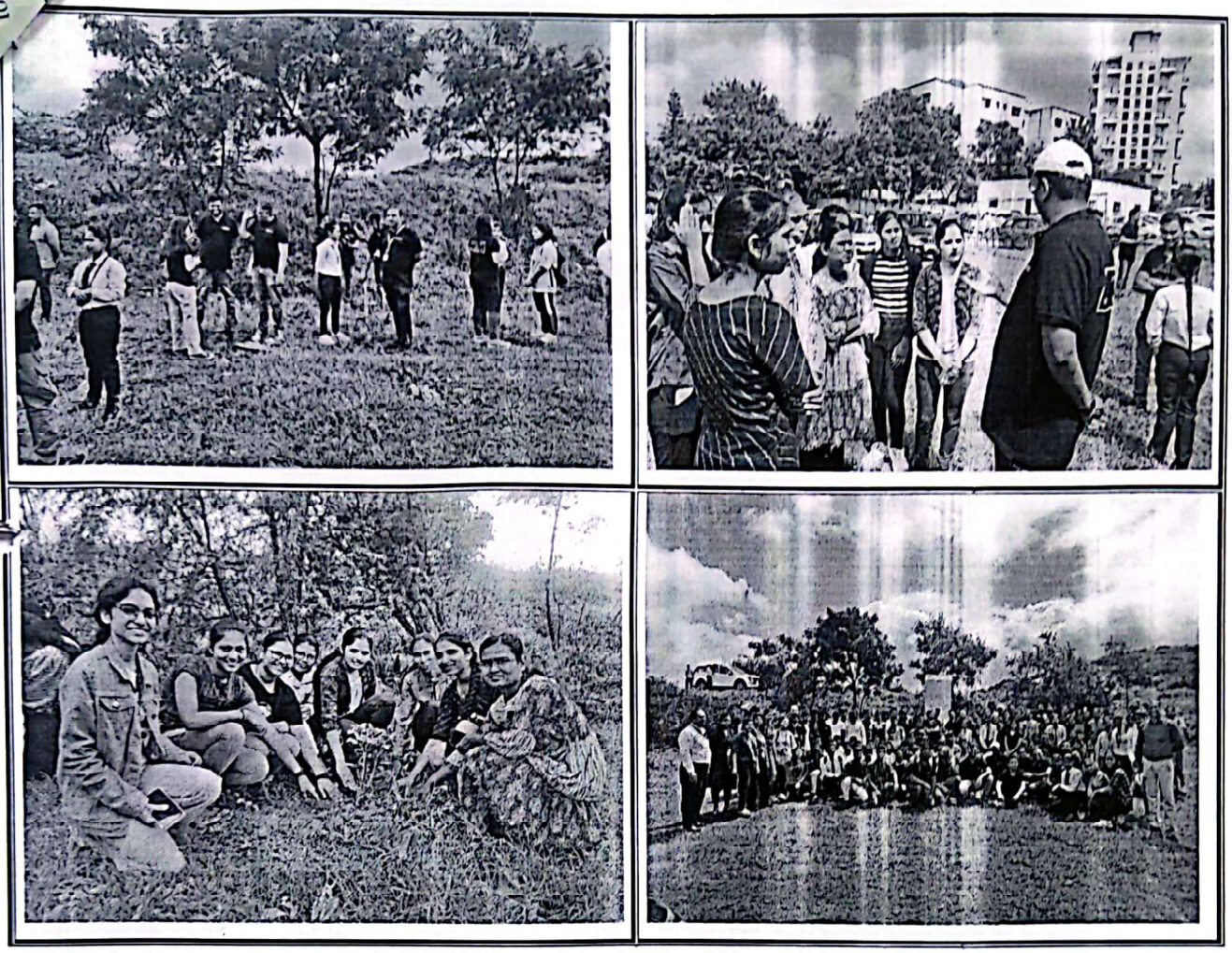

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LMISRMTT, LMIE
Principal

Name of the Activity : Tree plantation.

Organizer : Barclay's pune

Date : 26/8/23

Time : 10.30 Am

Venue : Jspm's campus ground

Sr. No.	Name of the student	Class	Branch	Sign
1	Disha Digambar kolhe	SE	CS	Kolhe D.D
2	Sakshi Dnyandeo Londhe	SE	CS	Londhe
3	Sakshi Dattatray kanase	SE	CS	Kanase
4	Sonal Avinash Jagtap	SE	CS	Jagtap
5)	Sanika Amol Kanade	SE	CS	Kanade
6)	Payal Kalyram Daphal	SE	CS	Payal.
7	Aayushi Kapoor	SE	CS	
8	Kanchan Navnath Aher	SE	CS	
9	Sharayu Dinkar Gosavi	SE	CS	Gosavi
10.	Ankita Hanamant Khot	SE	CS	Akhot.
11.	Aishwarya Sunil Choudhary	SE	CS	Aish.
12.	Gajare Swarajali Maruti	-1-	-1-1	Gajare.
13.	Sanskruti Gadekar	SE	CS	
14.	Wabadane Tejal	SE	CS	Tejal
15.	Kawade Samiksha Sanjay	SE	CS	Kawade.
16	Mane Harshal Navnath	TE	CS	
17	Ankush Dnyandeo Falke	TE	CS	Falke.
18.	Sai Abhimanyu Deitkar	TE	CS	Sai.
19.	Sanika Digambar khamkar	TE	CS	Sanika.
20.	Mandar Vilas Aglave	SE	CS	

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LMISRMTT, LMIE
Principal

Name of the Activity : Tree plantation

Organizer : Barclays pune

Date : 26/8/23

Time : 10.30 am

Venue : JSPM's campus ground

Sr. No.	Name	Class	Branch	Sign
1	Aniket Ashok Sirsat	SE	comp	Aniket.
2	Atharva Anil Gat	SE-'A'	comp	~~Atharva~~.
3	Aditya Avinash Yadav	SE-'A'	comp	Yadav
4	Tanmay kishor Dalvi	SE 'A'	COMP	Dalvi't
5	Ayush Bhimrao Khandare	SE 'A'	Comp	
6	Yash Santosh Jadkar	SE 'A'	Comp	Yash
7	Bhushan Rajendra Gosavi	SE A	comp	Gosavi.
8	Abhijit Bharat Dalvi	SE A	comp	Dalvi
9	Akhilesh Shahaji Salke	SE A	comp	Salke.
10	Pawan Tanaydan Kai	SE A	Comp	Pawan
11	Kiran kalyram Jakhande	SEA	Comp	
12	Alpesh Rajendra Kumawat	SEA	comp	
13	Vikas Vishwanath Bhandare	SEA	comp	Vikas
14	Adhav Sani Rahul	SEA	COMP	
15	Atharv Satish Gujare	SE 'A'	Comp.	A. S. Gujare
16)	Rohit Rajesh Bagwale	SE A	comp	Rohit
17)	Akash Govind Jadhav	SE A	COMP	
18)	Vaibhav Sunil Ahire	SE-A	comp	Vaibhav

GREEN AUDIT REPORT

Jayawant Shikshan Prasarak Mandal's,

BHIVARABAI SAWANT INSTITUTE OF TECHNOLOGY & RESEARCH,

Wagholi, Pune

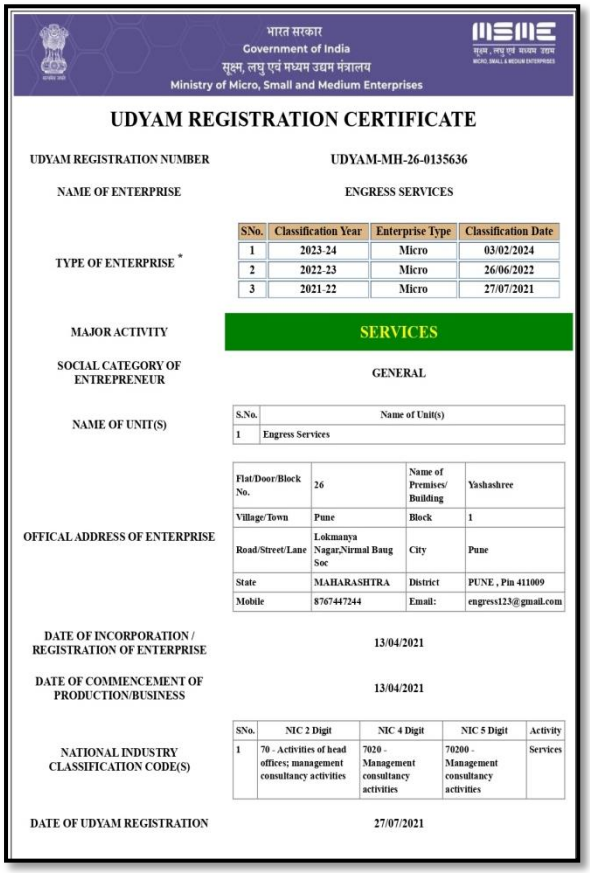
Year: 2023-24

Prepared by:

ENGRESS SERVICES

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

Registration Certificates: UDYAM, MEDA, ASSOCHAM GEM-CP, ISO: 9001 & 14001:



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 *

SNo.	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

OFFICAL ADDRESS OF ENTERPRISE

Flat/Door/Block No.	26	Name of Premises/ Building	Yashashree
Village/Town	Pune	Block	1
Road/Street/Lane	Lokmanya Nagar,Nirmal Baug 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)

SNo.	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

ASSOCHAM

GEM Certificate

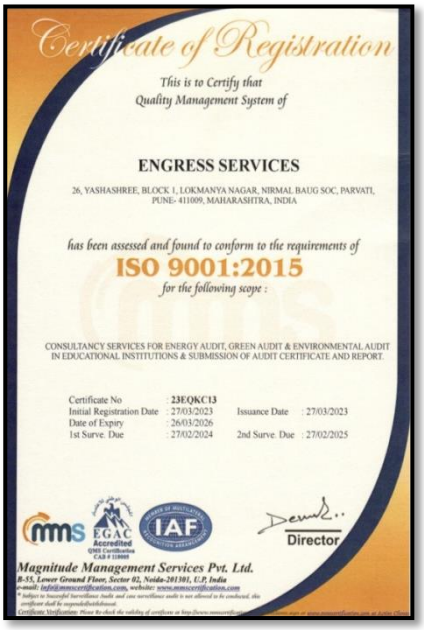
ASSOCHAM hereby certifies that

Mr. A Y Mehendale

has successfully passed the
Green and Eco-friendly Movement Certified Professional Test (GEM CP)
with
"Excellent Performance"
on
06 June, 2022

He/she is now eligible to execute the GEM Sustainability Certification Projects. ASSOCHAM feels proud to award the GEM Certified Professional title to him/her.

Pankaj R. Dharkar, Chairman, GEM
GEM CP 22/788
Deepak Sood, Secretary General, ASSOCHAM



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	: 23EQKC13		
Initial Registration Date	: 27/03/2023	Issuance Date	: 27/03/2023
Date of Expiry	: 26/03/2026		
1st Surve. Due	: 27/02/2024	2nd Surve. Due	: 27/02/2025

Director

Magnitude Management Services Pvt. Ltd.
B-55, Lower Ground Floor, Sector 02, Noida-201301, U.P, India

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: eec@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)

Certificate of Registration

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Environmental Management System of

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

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Certificate No	: 23EEKW20		
Initial Registration Date	: 29/03/2023	Issuance 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 02, Noida-201301, U.P, India

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ACKNOWLEDGEMENT

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

EXECUTIVE SUMMARY

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

2. Present Energy Consumption & CO_2 Emission:

No	Particulars	Value	Unit
1	Annual Energy Purchased	**74141**	kWh
2	Annual CO_2 Emissions	**68.95**	MT

3. Usage of Renewable Energy & CO_2 Emission Reduction:

- The Institute has installed Roof Top Solar PV Plant of Capacity **13 kWp.**
- The Energy generated by Solar PV Plant in 2023-24 is **15600 kWh**.
- Reduction in CO_2 Emissions in 2023-24 is **14.51 MT**

4. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Organic Waste	Installed Organic Converter Unit
3	Liquid Waste	Installed Sewage Treatment Plant
4	E Waste	Recommended to dispose of through Authorized Agency

5. Rain Water Management:

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.

6. Green & Sustainable Practices:

- Maintenance of good Internal Road
- Tree Plantation in the campus.
- Provision of Ramp for Divyangajan
- Creation of awareness on Water Conservation Display of Posters

7. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.93 Kg** of **CO_2** into atmosphere
2. Energy consumption is computed based on Load Utilization Factor
3. Energy generated by Roof Top Solar PV Plant: **4 kWh/kWp per Day**
4. Annual Solar Energy Generation Days: **300 Nos**

8. References:

- For CO_2 Emissions: www.ccd.gujarat.gov.in
- For Solar Energy Generation: 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_2	Carbon Di Oxide
Qty	Quantity

CHAPTER-I
INTRODUCTION

1.1 Introduction:

A Green Audit is conducted at Jayawant Shikshan Prasarak Mandal's Bhivarabai Sawant Institute of Technology & Research Wagholi, Pune.

1.2 Key Study Points:

No	Particulars
1	Study of Present Energy Consumption & CO_2 Emission
2	Study of Usage of Renewable Energy
3	Study of Waste Management Practices
4	Study of Rain Water Management
5	Study of Green & Sustainable Initiatives

1.3 Institute Location Image:

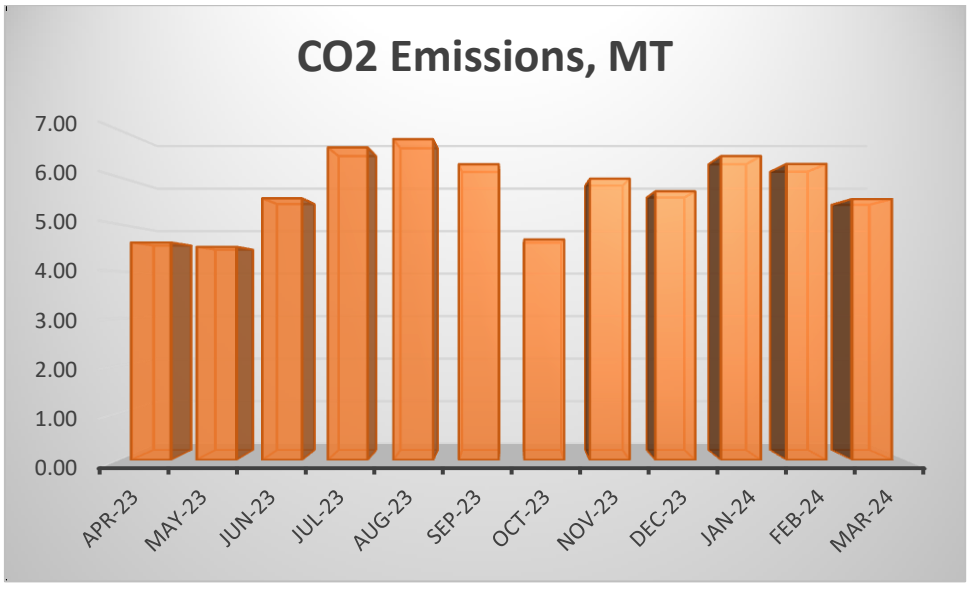
CHAPTER-II
STUDY OF ENERGY CONSUMPTION & CO_2 EMISSION

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. **Basis for computation of CO_2 Emissions: 1 kWh** of Electrical Energy releases **0.93 Kg of CO_2** into atmosphere.

Table No 1: Month wise Energy Purchase & CO_2 Emissions:

No	Month	Energy Purchased, kWh	CO_2 Emissions, MT
1	Apr-23	4958	4.61
2	May-23	4859	4.52
3	Jun-23	5964	5.55
4	Jul-23	7124	6.63
5	Aug-23	7314	6.80
6	Sep-23	6741	6.27
7	Oct-23	5026	4.67
8	Nov-23	6411	5.96
9	Dec-23	6123	5.69
10	Jan-24	6926	6.44
11	Feb-24	6748	6.28
12	Mar-24	5947	5.53
13	Total	74141	68.95
14	Maximum	7314	6.80
15	Minimum	4859	4.52
16	Average	6178.42	5.75

Chart No 1: Month wise CO_2 Emissions:



CHAPTER III
STUDY OF USAGE OF RENEWABLE ENERGY

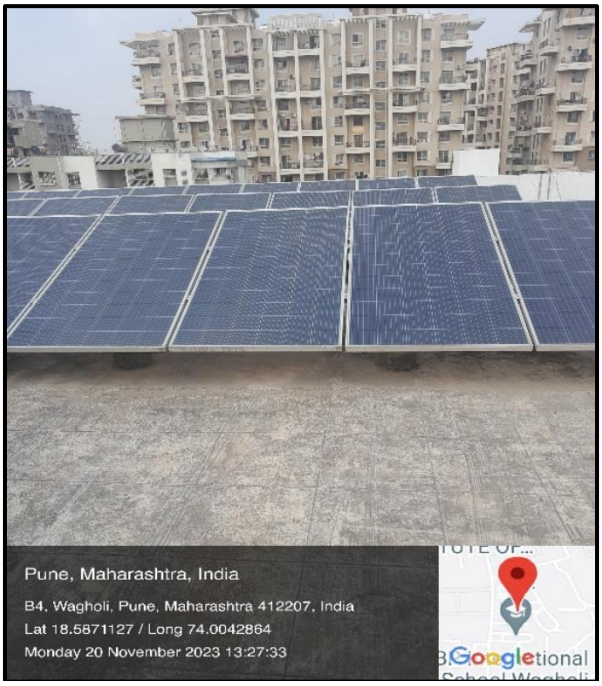
The Institute has installed Roof Top Solar PV Plant of Capacity **13 kWp**.

In the following Table, we compute the Annual Reduction in CO_2 Emissions due to installation of Roof Top Solar PV Plant.

Table No 2: Computation of Annual Reduction in CO_2 Emissions:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	13	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: 23-24	15600	kWh
5	1 kWh of Electrical Energy saves	0.93	Kg/kWh
6	**Qty of CO_2 Saved by Solar PV Plant = (4)*(5) /1000**	**14.51**	**MT of CO_2**

Photograph of Roof Top Solar PV Plant:



CHAPTER IV
STUDY OF WASTE MANAGEMENT

In this Chapter, we present the Waste Management Practices, followed by the Institute.

Details of Waste Management Practices:

No	Head	Observation	Photograph
1	**Solid Waste**	Segregation of Waste at Source: Provision of Waste Collection Bins	**Waste Collection Bin:** 
2	**Organic Waste**	Provision of Organic Converter Unit	**Organic Converter Unit:** 

3	**Liquid Waste**	Provision of Sewage Treatment Plant for treatment of Liquid waste	**Sewage Treatment Plant:** 
4	**E Waste**	Recommended to dispose of through Authorized Agency	

CHAPTER-V
STUDY OF RAIN WATER MANAGEMENT

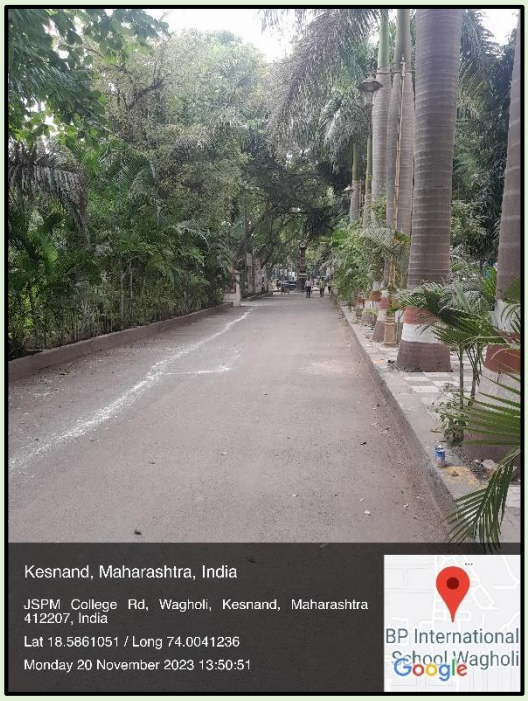
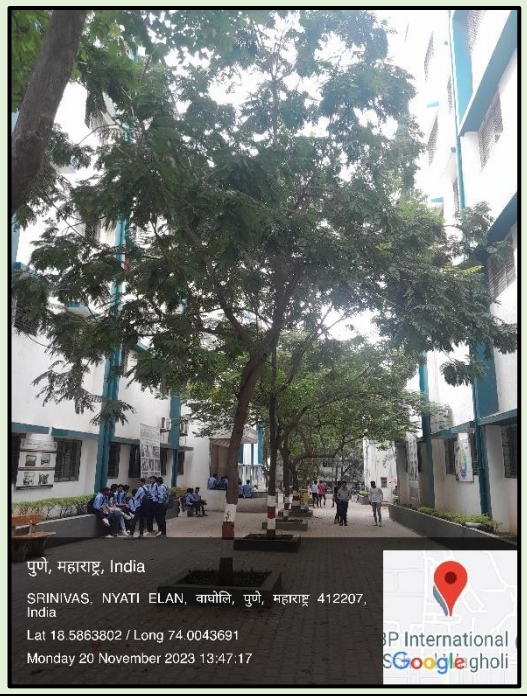
The Institute has implemented the Rain Water Harvesting Project. The Institute has installed Pipes from the terrace and the Rain water falling on the terrace is gathered and is used to recharge the bore well.

Photograph of Rain water Collecting Pipe and Bore well Recharge Section:

CHAPTER-VI
STUDY OF GREEN & SUSTAINABLE PRACTICES

In this Chapter, we present the Green & Sustainable Practices followed by the Institute.

Green & Sustainable Practices:

No	Head	Observation	Photograph
1	**Easy Movement of Stake Holders**	Provision of Good Internal Road within the Campus	**Internal Road:** 
2	**Tree Plantation**	Internal Tree Plantation in the Campus	**Internal Tree Plantation:** 

3	**Facilities for Divyangajan**	Provision of Ramp for Divyangajan	**Ramp for Divyangajan:** 
4	**Creation of Awareness among Stake Holders**	Display of Poster on Water Conservation	**Poster on Water Conservation:** 

ANNEXURE-1:
LIST OF TREES & PLANTS:

No	Name of the Tree	Biological Name of Tree	Qty
1	GULMOHAR	PEACOCKFLOWER	83
2	ARECAPALM	ARECAPALM	1938
3	BOTTLEPALM	BOTTLEPALM/ROYALPALM	274
4	JASWAND	HIBISCUS	64
5	TAGAR	CRAPEJASMIN/PINWHEEL	18
6	PERU	GUAVA	16
7	SAPTPARNI	DEVILTREE	78
8	KADULIMB	NEEMTREE	53
9	LIMBU	LEMONTREE	6
10	GULAB	ROSE	48
11	SHEVAGA	DRUMSTICKTREE/HORSERADIH	4
12	CHRISTMAS	CHRISTMASTREE	14
13	UMBAR	CLUSTERFIG TREE	6
14	SHEVARI	SILKCOTTONTREE	37
15	AMBA	MANGOTREE	6
16	PARIJATAK	CORALJASMIN	23
17	RUBBER	RUBBERFIG	8
18	SURU	BEEFWOOD/SURU	44
19	KADAMBA	BURFLOWERTREE	24
20	ASHOK	MASTTREE	9
21	BADAM	ALMOND	107
22	TIKUMA	SALTREE	1479
23	MOHAGUNI	MAHOGANY	79
24	PIMPAL	SACREDFIG	3
25	KARANJI	KARANJITREE	16
26	CHANDAN	SANDALWOOD	4
27	CHINCH	TAMARINDTREE	5
28	JAMBAL	JAVAPLUM	6
29	MORPANKHI	THUJA	23
30	SADAFULI	PERIWINKLE	5
31	VAD	BANYANTREE	2
32	BOR	JAJUBETREE	1
33	UMBAR	CLUSTERFIG TREE	4
34	MOGARA	JASMIN	7
35	JANGALIJHADE	JUNGLETREE	42
36	BAKUL	BULLETWOOD/INDIANMEDALLAR	1
37	KADIPATA	CURRYTREE	1
38	ANJIR	FIG	1
39	RUI	GIANTMILKWOOD	1
40	MEHANDI	HENNATREE	1
41	AAVALA	INDIANGOOSEBERRY	2

ENVIRONMENTAL AUDIT REPORT

Jayawant Shikshan Prasarak Mandal's,

BHIVARABAI SAWANT INSTITUTE OF TECHNOLOGY & RESEARCH,

Wagholi, Pune

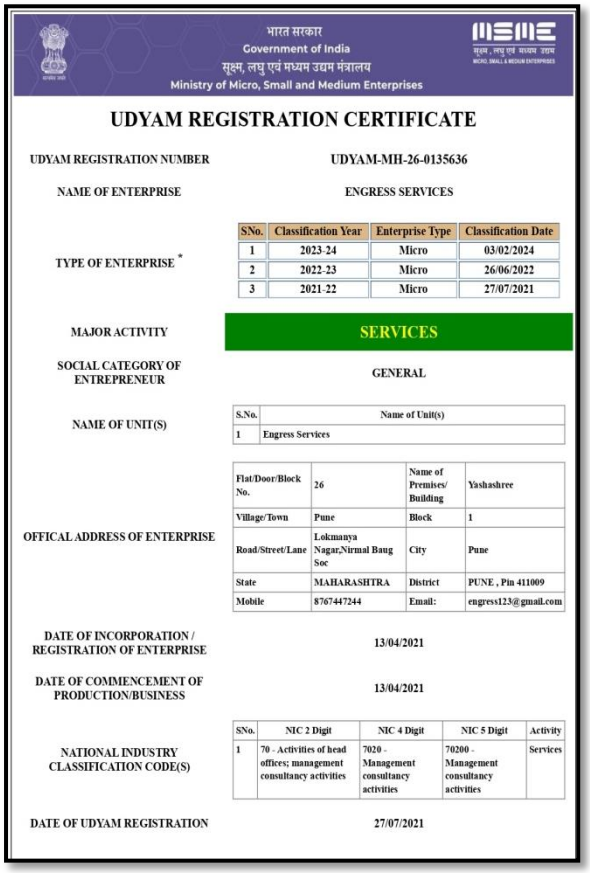
Year: 2023-24

Prepared by:

ENGRESS SERVICES

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

Registration Certificates: UDYAM, MEDA, ASSOCHAM GEM-CP, ISO: 9001 & 14001:



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 *

SNo.	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

OFFICAL ADDRESS OF ENTERPRISE

Flat/Door/Block No.	26	Name of Premises/ Building	Yashashree
Village/Town	Pune	Block	1
Road/Street/Lane	Lokmanya Nagar,Nirmal Baug 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)

SNo.	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

ASSOCHAM

GEM Certificate

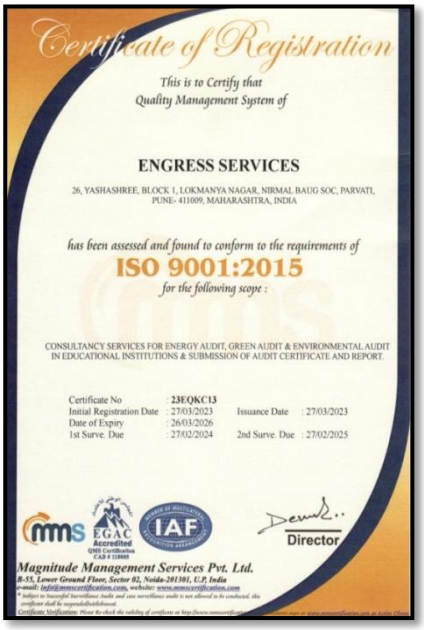
ASSOCHAM hereby certifies that

Mr. A Y Mehendale

has successfully passed the
Green and Eco-friendly Movement Certified Professional Test (GEM CP)
with
"Excellent Performance"
on
06 June, 2022

He/she is now eligible to execute the GEM Sustainability Certification Projects. ASSOCHAM feels proud to award the GEM Certified Professional title to him/her.

Pankaj R. Dharkar, Chairman, GEM
GEM CP 22/788
Deepak Sood, Secretary General, ASSOCHAM



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Email: eec@mahaurja.com, Web: www.mahaurja.com

ECN/2022-23/CR-43/1709 10th May, 2022

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

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

2. Pollution due to College Activities:

- **Air pollution:** Mainly CO_2 on account of Electricity Consumption
- **Solid Waste:** Bio degradable Garden Waste, Paper & Plastic Waste
- **Liquid Waste:** Human liquid waste

3. Present Energy Consumption & CO_2 Emission:

No	Particulars	Value	Unit
1	Annual Energy Purchased	**74141**	kWh
2	Annual CO_2 Emissions	**68.95**	MT

4. Usage of Renewable Energy & Reduction in CO_2 Emissions:

- The Institute has installed Roof Top Solar PV Plant of Capacity **13 kWp.**
- The Energy generated by Solar PV Plant in 2023-24 is **15600 kWh**.
- Reduction in CO_2 Emissions in 2023-24 is **14.51 MT**

5. Indoor Air Quality Parameters:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	**60**	**37**	**49**
2	Minimum	**51**	**31**	**41**

6. Indoor Lux & Noise Level Parameters:

No	Parameter/Value	Lux Level	Noise Level, dB
1	Maximum	**256**	**49**
2	Minimum	**224**	**42.6**

7. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Organic Waste	Installed Organic Converter Unit
3	Liquid Waste	Installed Sewage Treatment Plant
4	E Waste	Recommended to dispose of through Authorized Agency

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

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- Tree Plantation in the campus.
- Creation of awareness on Water Conservation Display of Posters

10. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.93 Kg** of **CO_2** into atmosphere
2. Energy generated by Roof Top Solar PV Plant: **4 kWh/kWp per Day**
3. Annual Solar Energy Generation Days: **300 Nos**

11. References:

- For CO_2 Emissions: www.ccd.gujarat.gov.in
- For Various Indoor Air Parameters: www.ishrae.com
- For AQI Quality Standards: www.cpcb.com
- For Solar Energy Generation: www.solarrooftop.gov.in

ABBREVIATIONS

Kg	:	Kilo Gram
MSEDCL	:	Maharashtra State Distribution Company Limited
MT	:	Metric Ton
kWh	:	kilo-Watt Hour
LPD	:	Liters per Day
LED	:	Light Emitting Diode
AQI	:	Air Quality Index
PM-2.5	:	Particulate Matter of Size 2.5 Micron
PM-10	:	Particulate Matter of Size 10 Micron
CPCB	:	Central Pollution Control Board
ISHRAE	:	The Indian Society of Heating & Refrigerating & Air Conditioning Engineers

CHAPTER-I
INTRODUCTION

1. Important Definitions:

1.1. Environment: Definition as per environment Protection Act: 1986

Environment includes water, air and land and the inter-relationship which exists among and between Water, Air, Land and Human beings, other living creatures, plants microorganism and property

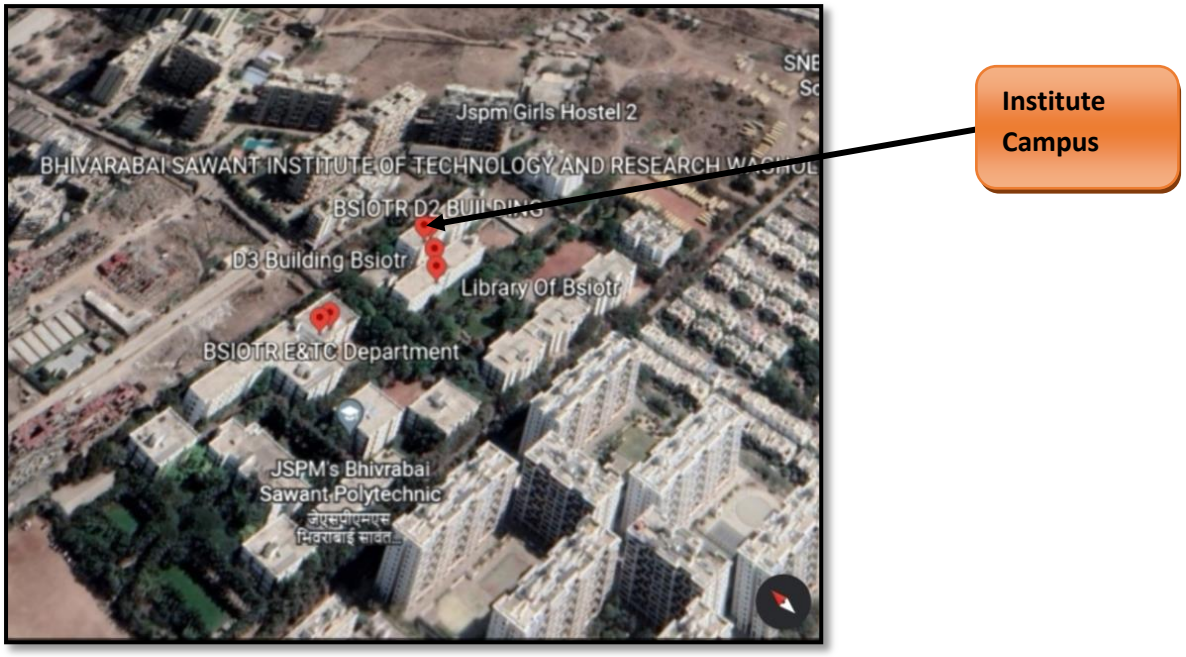
1.2. Environmental Audit: Definition:

According to UNEP, 1990, "Environmental audit can be defined as a management tool comprising systematic, documented and periodic evaluation of how well environmental organization management and equipment are performing with an aim of helping to regularize the environment

1.2 Key Study Points:

No	Particulars
1	Study of Present Resource Consumption & CO_2 Emission
2	Study of Usage of Renewable Energy
3	Study of Indoor Air Quality
4	Study of Indoor Lux & Noise Level
5	Study of Water Management
6	Study of Waste Management Practices
7	Study of Environment Friendly Practices

1.3 Institute Location Image:



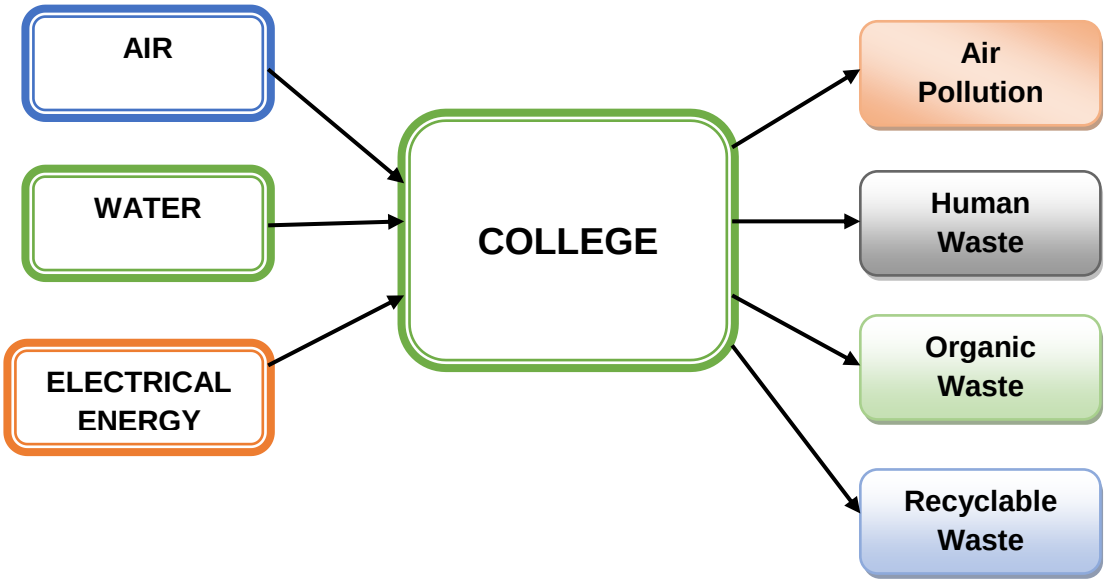
CHAPTER-II
STUDY OF RESOURCE CONSUMPTION & CO_2 EMISSION

The College consumes following basic/derived Resources:

1. Air
2. Water
3. Electrical Energy

We try to draw a schematic diagram for the College System & Environment as under.

Chart No 1: Representation of Resource Requirement & Waste of a College:



Now we compute the Generation of CO_2 on account of consumption of Electrical Energy. The basis of Calculation for CO_2 emissions due to Electrical Energy is as under.

- **1 kWh** of Electrical Energy releases **0.9 Kg of CO_2** into atmosphere

Table No 1: Study of Purchase of Energy & CO_2 Emissions: 23-24:

No	Month	Energy Purchased, kWh	CO_2 Emissions, MT
1	Apr-23	4958	4.61
2	May-23	4859	4.52
3	Jun-23	5964	5.55
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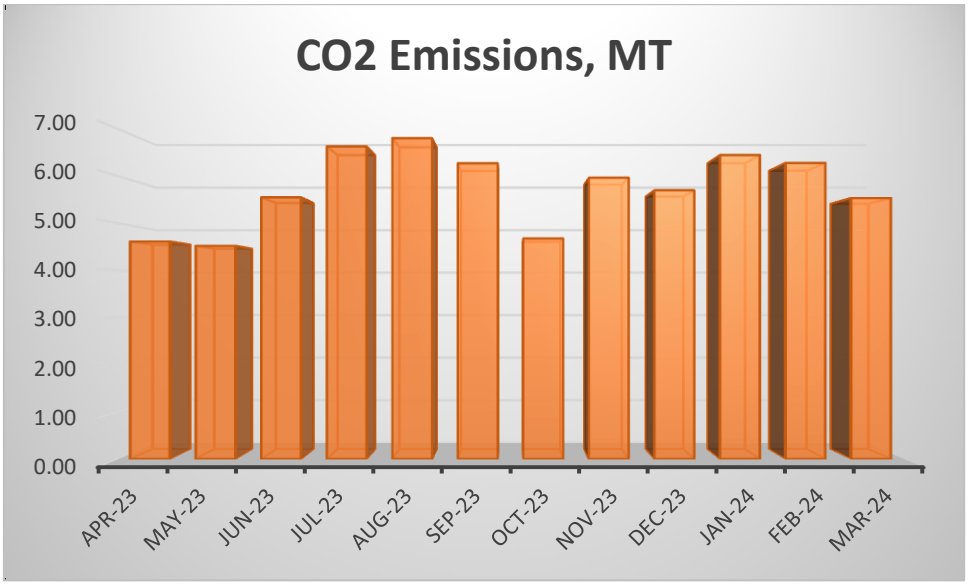
11	Feb-24	6748	6.28
12	Mar-24	5947	5.53
13	Total	74141	68.95
14	Maximum	7314	6.80
15	Minimum	4859	4.52
16	Average	6178.42	5.75

Chart No 2: Month wise CO_2 Emissions:



CHAPTER III
STUDY OF USAGE OF RENEWABLE ENERGY

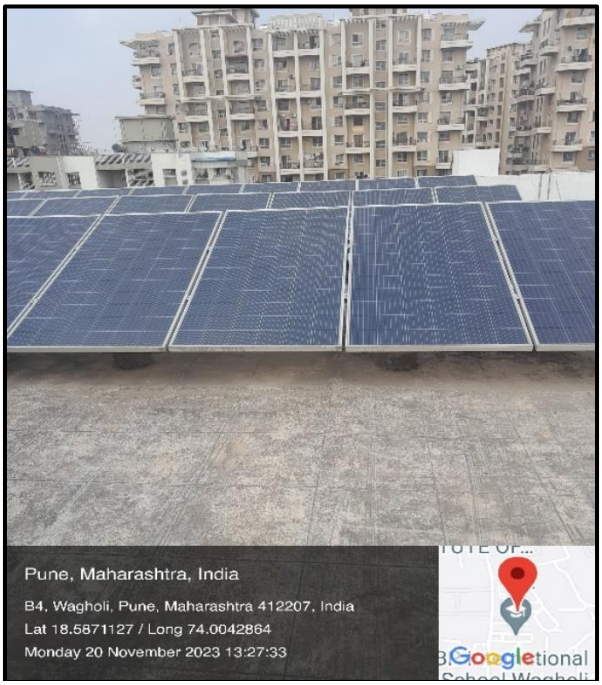
The College has installed Roof Top Solar PV Plant of Capacity **13 kWp**.

In the following Table, we compute the Annual Reduction in CO_2 Emissions due to installation of Roof Top Solar PV Plant.

Table No 2: Computation of Annual Reduction in CO_2 Emissions:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	13	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: 23-24	15600	kWh
5	1 kWh of Electrical Energy saves	0.93	Kg/kWh
6	**Qty of CO_2 Saved by Solar PV Plant =(4)*(5) /1000**	**14.51**	**MT of CO_2**

Photograph of Roof Top Solar PV Plant:



CHAPTER IV
STUDY OF INDOOR AIR QUALITY

1. Air: The common name given to the atmospheric gases used in breathing and photosynthesis.

2. Air quality is a measure of the suitability of air for breathing by people, plants and animals.

3. Air Quality Index: Air Quality Index (AQI) is a number used by government agencies to measure the **Air Pollution** levels and communicate it to the population.

In this Chapter, we present three important Parameters: **AQI**- Air Quality Index, **PM-2.5**- Particulate Matter of Size 2.5 micron and **PM-10**- Particulate Matter of Size 10 micron

Table No 3: Indoor Air Quality Parameters:

No	Location	AQI	PM2.5	PM10
1	Office	56	33	44
2	Principal cabin	51	31	41
3	Library	57	34	45
4	Lab	60	37	49
5	Faculty Room	58	35	46
	Maximum	**60**	**37**	**49**
	Minimum	**51**	**31**	**41**

Table No 4: Air Quality Index Values & Concentration of PM 2.5 & PM10: (By CPCB):

No	Category	AQI Value	Concentration Range, PM 2.5	Concentration Range, PM 10
1	Good	0 to 50	0 to 30	0 to 50
2	Satisfactory	51 to 100	31 to 60	51 to 100
3	Moderately Polluted	101 to 200	61 to 90	101 to 250
4	Poor	201 to 300	91 to 120	251 to 350
5	Very Poor	301 to 400	121 to 250	351 to 430
6	Severe	401 to 500	250 +	430 +

Conclusion:

From the above measured values, we conclude that the observed values of AQI, PM-2.5 & PM-10 are in the **Satisfactory Range**, as per the guidelines given by Central Pollution Control Board.

CHAPTER V
STUDY OF INDOOR LUX & NOISE PARAMETERS

In this Chapter, we present the various Indoor Comfort Parameters measured during the Audit. The Parameters include: **Lux Level and Noise Level.**

Table No 5: Study of Indoor Comfort Condition Parameters:

No	Location	Lux Level, Lumen	Noise Level, dB
1	Office	235	45
2	Principal cabin	256	42.6
3	Library	241	44
4	Lab	249	47
5	Faculty Room	224	49
	Maximum	**256**	**49**
	Minimum	**224**	**42.6**

Recommended Lux & Noise Level: As per BEE & ISHRAE Guidelines:

A) Noise Level Reference:		
No	**Location**	**Noise Level Range, dB**
1	Offices	45-50
2	Occupied Class Room	40-45
3	Libraries	35-40
B) Reference Lux Level, Lumens:		
1	For Class Rooms	**200 Plus**
2	For Reading Rooms	**200 Plus**

Conclusion:

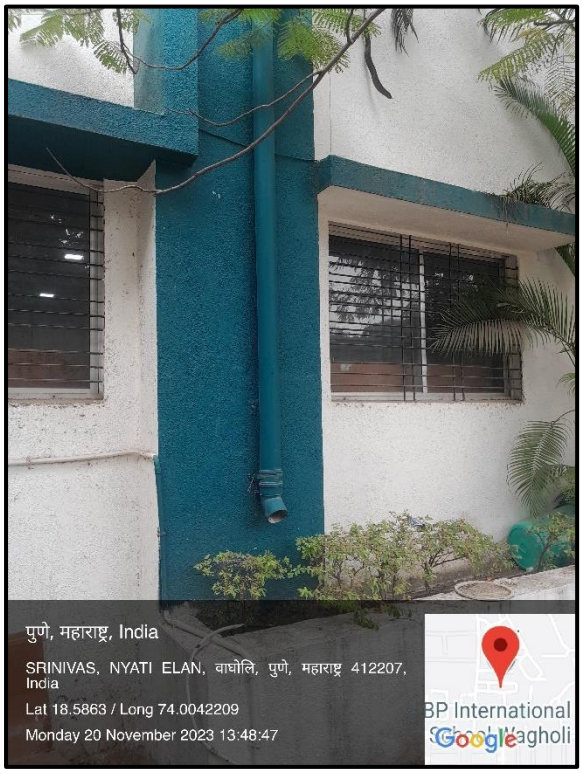
From the above measured values, we conclude that:

- The Noise Level is within the prescribed Limit
- The Lux Level at various locations is Okay

CHAPTER VI
STUDY OF RAIN WATER MANAGEMENT

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 Collecting Pipe and Bore well Recharge Section:



CHAPTER-VII
STUDY OF WASTE MANAGEMENT

In this Chapter, we present the Waste Management Practices, followed by the College.

Details of Waste Management Practices:

No	Head	Observation	Photograph
1	**Solid Waste**	Segregation of Waste at Source: Provision of Waste Collection Bins	**Waste Collection Bin:** 
2	**Organic Waste**	Provision of Organic Converter Unit	**Organic Converter Unit:** 

3	**Liquid Waste**	Provision of Sewage Treatment Plant for treatment of Liquid waste	**Sewage Treatment Plant:** 
4	**E Waste**	Recommended to dispose of through Authorized Agency	

CHAPTER-VIII
STUDY OF ECO-FRIENDLY PRACTICES

In this Chapter, we present the Eco-Friendly Practices, followed by the College.

Details of Eco-Friendly Practices:

No	Head	Observation	Photograph
1	**Tree Plantation**	Tree Plantation in the Campus	**Internal Tree Plantation:** 
2	**Creation of Awareness among Stake Holders**	Display of Poster on Water Conservation	**Poster on Water Conservation:** 

ENERGY AUDIT REPORT

Jayawant Shikshan Prasarak Mandal's,

BHIVARABAI SAWANT INSTITUTE OF TECHNOLOGY & RESEARCH,

Wagholi, Pune

Year: 2023-24

Prepared by:

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society
Near Muktangan 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 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)

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 : 10st 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 *

SNo.	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

OFFICAL ADDRESS OF ENTERPRISE

Flat/Door/Block No.	26	Name of Premises/ Building	Yashashree
Village/Town	Pune	Block	1
Road/Street/Lane	Lokmanya Nagar,Nirmal Baug 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)

SNo.	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 — Issuance 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 02, Noida-201301, U.P. India

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 : 23EQKC13
Initial Registration Date : 27/03/2023 — Issuance Date : 27/03/2023
Date of Expiry : 26/03/2026
1st Surve. Due : 27/02/2024 — 2nd Surve. Due : 27/02/2025

Director

Magnitude Management Services Pvt. Ltd.
B-55, Lower Ground Floor, Sector 02, Noida-201301, U.P. India

INDEX

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Jayawant Shikshan Prasarak Mandal's, Bhivarabai Sawant Institute of Technology & Research Wagholi. Pune for awarding us the assignment of Energy Audit of their Campus for the Year:2023-24.

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

EXECUTIVE SUMMARY

1. Jayawant Shikshan Prasarak Mandal's Bhivarabai Sawant Institute of Technology & Research, Wagholi, Pune consumes Energy in the form of **Electrical Energy;** used for various Electrical Equipment.

2. Present Connected Load & Energy Consumption:

No	Particulars	Value	Unit
1	Total Connected Load	**222**	kW
2	Annual Energy Purchased	**74141**	kWh

3. Per Capita Energy Consumption:

No	Particulars	Value	Unit
1	Annual Energy Purchased	74141	kWh
2	Annual Energy Generated by Solar PV Plant	15600	kWh
3	Total Annual Energy Consumed = 1+2	89741	kWh
4	No of students studying in the Institute	1633	Nos
5	Per Capita Energy Consumption **= (3) / (4)**	**54.95**	kWh/Annum

4. Study of Lighting Power Density & % Usage of LED Lighting:

No	Particulars	Value	Unit
1	Lighting Power density	**1.52**	W/m^2
2	% of Usage of LED Lighting to Total Lighting Load	**84**	%

5. Renewable Energy & Energy Efficiency Projects:

- Usage of Energy Efficient LED fittings
- Installation of **13 kWp** Roof Top Solar PV Plant

6. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.93 Kg** of **CO_2** into atmosphere
2. Energy consumption is computed based on Load Utilization Factor
3. Energy generated by Roof Top Solar PV Plant: **4 kWh/kWp per Day**
4. Annual Solar Energy Generation Days: **300 Nos**

7. References:

- Audit Methodology: www.mahaurja.com
- Energy Conservation Building Code: ECBC-2017: www.beeindia.gov.in
- For CO_2 Emissions: www.ccd.gujarat.gov.in
- For Solar Energy Generation: 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_2	:	Carbon Di Oxide
MT	:	Metric Ton

CHAPTER-I
INTRODUCTION

1.1 Introduction:

An Energy Audit is conducted at Jayawant Shikshan Prasarak Mandal's Bhivarabai Sawant Institute of Technology & Research Wagholi, Pune.

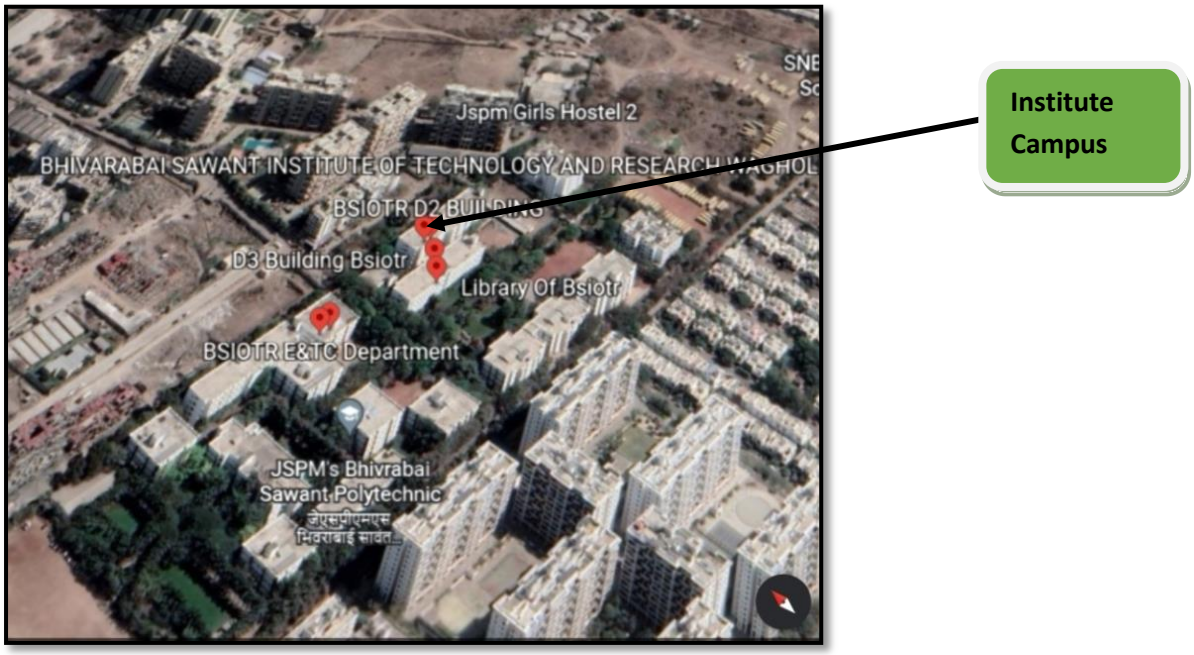
The guidelines followed for conducting the Energy Audit are:

- BEE India's Energy Conservation Building Code: ECBC-2017
- Maharashtra Energy Development Agency (www.mahaurja.com)
- Tata Power: www.tatapower.com

1.2 Key Study Points:

No	Particulars
1	Study of Present Connected Load
2	Study of Present Energy Consumption
3	Study of Per Capita Energy Consumption
4	Study of Lighting
5	Study of Energy Efficiency & Renewable Energy

1.3 Institute Location Image:



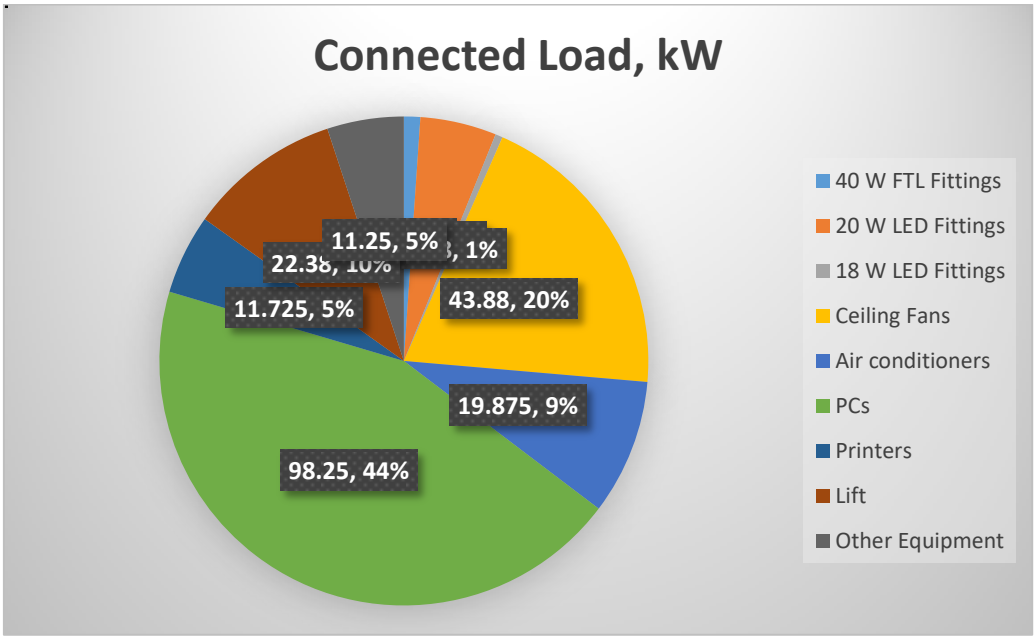
CHAPTER-II
STUDY OF CONNECTED LOAD

The major contributors to the connected load of the Institute are presented below.

Table No 1: Study of Equipment wise Connected Load:

No	Equipment	Qty	Load, W/Unit	Load, kW
1	40 W FTL Fittings	60	40	2.4
2	20 W LED Fittings	560	20	11.2
3	18 W LED Fittings	60	18	1.08
4	Ceiling Fans	675	65	43.88
5	Air conditioners	15	1325	19.875
6	PCs	655	150	98.25
7	Printers	67	175	11.725
8	Lift	2	11190	22.38
9	Other Equipment	75	150	11.25
10	**Total**			**222**

Chart No 1: Study of Connected Load:



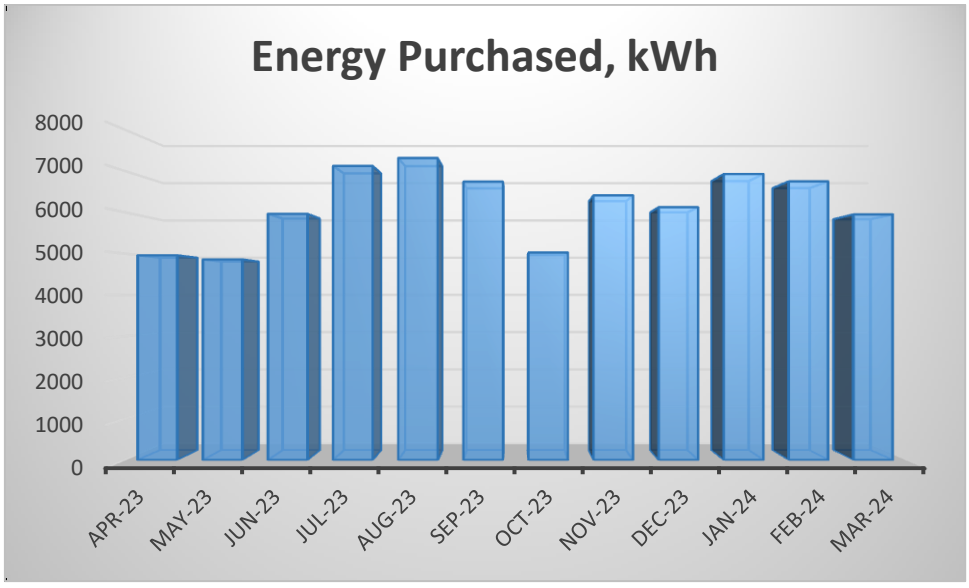
CHAPTER-III
STUDY OF PRESENT ENERGY CONSUMPTION

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

Table No 2: Electrical Energy Consumption Analysis- 2023-24:

No	Month	Energy Purchased, kWh	CO_2 Emissions, MT
1	Apr-23	4958	4.61
2	May-23	4859	4.52
3	Jun-23	5964	5.55
4	Jul-23	7124	6.63
5	Aug-23	7314	6.80
6	Sep-23	6741	6.27
7	Oct-23	5026	4.67
8	Nov-23	6411	5.96
9	Dec-23	6123	5.69
10	Jan-24	6926	6.44
11	Feb-24	6748	6.28
12	Mar-24	5947	5.53
13	Total	74141	68.95
14	Maximum	7314	6.80
15	Minimum	4859	4.52
16	Average	6178.42	5.75

Chart No 2: Variation in Monthly Energy Purchased, kWh:



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:

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

Table No 3: Computation of Energy Consumption:

No	Particulars	Value	Unit
1	Annual Energy Purchased	74141	kWh
2	Annual Energy Generated by Solar PV Plant	15600	kWh
3	Total Annual Energy Consumed = 1+2	89741	kWh
4	No of students studying in the Institute	1633	Nos
5	Per Capita Energy Consumption **=(3) / (4)**	**54.95**	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^2)

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 of Class Room and the percentage usage of LED Lighting to total Lighting Load of the Institute.
Now, we compute the usage of LED Lighting to Total Lighting Load, as under.

Table No 4: Computation of Lighting Power Density: Class Room:

No	Particulars	Value	Unit
1	Qty of 20 W LED Fittings in Class Room: R-405	5	Nos
2	Load of 20 W LED Fitting	20	W/unit
3	Total Load of 6 Nos, 40 W Fittings	**100**	W
4	Built up area of Class Room: R-405	**66**	m^2
5	**Lighting Power Density = (3)/(4)**	**1.52**	W/m^2

Table No 5: Percentage Usage of LED Lighting to Total Lighting Load:

No	Particulars	Value	Unit
1	Qty of 40 W FTL Fittings	60	Nos
2	Qty of 20 W LED Tube Lights	560	Nos
3	Qty of 18 W LED Fittings	60	Nos
4	Demand of 40 WFTL Fitting	40	W/Unit
5	Demand of 20 W LED Tube Light	20	W/Unit
6	Demand of 18 W LED Fitting	18	W/Unit
7	Total Electrical Load of FTL Fittings	**2.4**	kW
8	Total Electrical Load of 20 W LED Fittings	**11.2**	kW
9	Total Electrical Load of 18 W LED Fittings	**1.08**	kW
10	Total LED Lighting Load= 8+9	**12.28**	kW
11	Total Lighting Load=7+8+9	**14.68**	kW
12	% of LED Lighting to Total Lighting = **10*100/11**	**84**	%

CHAPTER-VI
STUDY OF RENEWABLE ENERGY & ENERGY EFFICIENCY

6.1 Usage of Renewable Energy:

The Institute has installed:

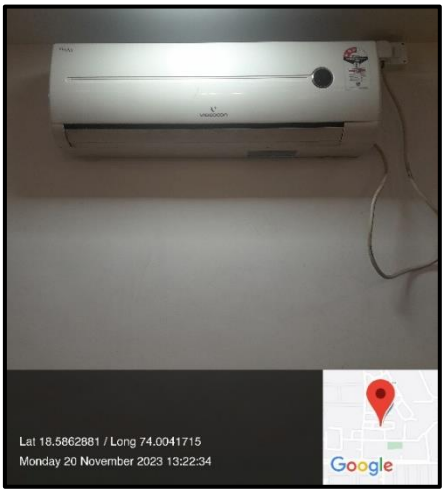
- Roof Top Solar PV Plant of Capacity **13 kWp**

Photograph of Roof Top Solar PV Plant:

6.2 Energy Efficiency Measures adopted:

- The Institute has Energy Efficient LED Fittings.
- Usage of BEE STAR Rated Equipment

Photographs of LED Lighting & STAR Rated AC:



ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School,
Parvati, Pune 411 009 Tel: 09890444795 Email: engress123@gmail.com
UDYAM Regn. No: UDYAM-MH-26-0135636,
MEDA Regn. No: ECN/2023-24/CR-43/1709
ISO: 9001-2015 Certified (Cert No: 23EQKC13),
ISO: 14001-2015 Certified (Cert No: 23EEKW20)

ENERGY AUDIT CERTIFICATE

Certificate No: ES/BSIOTR/23-24/01 **Date: 19/5/2024**

This is to certify that we have conducted Energy Audit at, **Jayawant Shikshan Prasarak Mandal's Bhivarabai Sawant Institute of Technology & Research**, Wagholi. Pune, in the Academic Year **2023-24.**

The Institute has adopted following Energy Efficient practices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Maximum usage of Day Lighting
- Installation of 13 kWp Roof Top Solar PV Plant

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

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School,
Parvati, Pune 411 009 Tel: 09890444795 Email: engress123@gmail.com
UDYAM Regn. No: UDYAM-MH-26-0135636,
MEDA Regn. No: ECN/2023-24/CR-43/1709
ISO: 9001-2015 Certified (Cert No: 23EQKC13),
ISO: 14001-2015 Certified (Cert No: 23EEKW20)

GREEN AUDIT CERTIFICATE

Certificate No: ES/BSIOTR/23-24/02 **Date: 19/5/2024**

This is to certify that we have conducted Green Audit at, **Jayawant Shikshan Prasarak Mandal's Bhivarabai Sawant Institute of Technology & Research**, Wagholi, Pune, in the Academic Year **2023-24.**

The Institute has adopted following Green & Sustainable Practices:

- 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 13 kWp
- Segregation of Waste at Source
- Installation of Organic Converter Unit for conversion of Organic Waste
- Installation of Sewage Treatment Plant of Capacity
- Implementation of Rain Water Harvesting Project
- Maintenance of Good Internal Road
- Tree Plantation in the campus
- Provision of Ramp for Divyangajan
- Creation of Awareness on Water Conservation, by Display of Poster

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,
B E- Mech, M Tech-Energy, Certified Energy Auditor, EA-8192
ASSOCHAM GEM Certified Professional: GEM: 22/788

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School,
Parvati, Pune 411 009 Tel: 09890444795 Email: engress123@gmail.com
UDYAM Regn. No: UDYAM-MH-26-0135636,
MEDA Regn. No: ECN/2023-24/CR-43/1709
ISO: 9001-2015 Certified (Cert No: 23EQKC13),
ISO: 14001-2015 Certified (Cert No: 23EEKW20)

ENVIRONMENTAL AUDIT CERTIFICATE

Certificate No: ES/BSIOTR/23-24/03 **Date: 19/5/2024**

This is to certify that we have conducted Environmental Audit at, **Jayawant Shikshan Prasarak Mandal's Bhivarabai Sawant Institute of Technology & Research**, Wagholi. Pune, in the Academic Year **2023-24.**

The Institute has adopted following Environment Friendly Practices:

- 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 13 kWp
- Segregation of Waste at Source
- Installation of Organic Converter Unit for conversion of Organic Waste
- Installation of Sewage Treatment Plant
- Implementation of Rain Water Harvesting Project
- Tree Plantation in the campus
- Provision of Ramp for Divyangajan
- Creation of Awareness on Water Conservation, by Display of Poster

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

For Engress Services,

Nagaraj Kalyanappa Timalapur

Digitally signed by Nagaraj Kalyanappa Timalapur
DN: CN = Nagaraj Kalyanappa Timalapur, C = IN, S = Maharashtra, O = JSPM'S Bhivarabai Sawant Institute of Technology & Research, OU = OTHERS
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