VASANTDADA SUGAR INSTITUTE

MANJARI BK, TALUKA HAVELI, DISTRICT PUNE-412 307

https://www.vsisugar.com

Criterion 7 - Institutional Values and Best Practices

7.1 Institutional Values and Social Responsibilities

7.1.3 Quality audits on environment and energy regularly undertaken by the Institution. The institutional environment and energy initiatives are confirmed through the following

i. **Green audit/ Environment Audit**
ii. **Energy audit**

Audit reports of Green audit, Environment Audit and Energy

Year 2022-23

ENERGY AUDIT REPORT

of

VASANDADA SUGAR INSTITUTE,

Manjari Budruk, Taluka: Haveli, District: Pune 412 307

संशोधनेन संवृद्धिः

Year: 2022-23

Prepared by:

ENGRESS SERVICES

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

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

ENGRESS SERVICES PUNE

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune 411 009
Tel: 09890444795 Email: engress123@gmail.com
MEDA Registration No: ECN/2022-23/CR-43/1709
ISO: 9001-2015 Certified (Cert No: 23EQKC13),
ISO: 14001-2015 Certified (Cert No: 23EEKW20)

ENERGY AUDIT CERTIFICATE

Certificate No: ES/VSI/22-23/01 **Date: 29/7/2023**

This is to certify that we have conducted an Energy Audit at Vasantdada Sugar Institute, Manjari Budruk, Taluka: Haveli, District: Pune 412 307, in the Year 2022-23.

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 800 kWp Roof Top Solar PV Plant

We appreciate the support of Management, involvement of faculty members and students in the process of Energy Conservation.

For Engress Services,

ENGRESS SERVICES PUNE

A Y Mehendale,
B E-Mechanical, M Tech- Energy
BEE Certified Energy Auditor, EA-8192

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

VSI THE VASANTDADA SUGAR INSTITUTE PUNE

REGISTRATION CERTIFICATES

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 - 2002, conducted on behalf of the Bureau of Energy Efficiency, Ministry of Power, Government of India.

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

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

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

Place : Chennai, India
Date : 10th August 2007

Controller of Examination

AUDITOR CERTIFICATE

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

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

UCN/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/EEC/N/2022-23/A Issn 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 Registration Certificate

Certificate of Registration

This is to Certify that
Quality Management System of

ENGRESS SERVICES

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

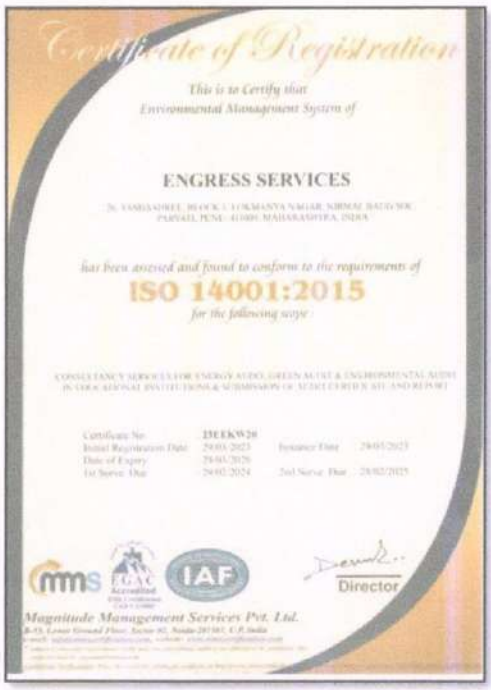
CONSULTANCY SERVICES FOR ENERGY AUDIT, GREEN AUDIT & ENVIRONMENTAL AUDIT IN EDUCATIONAL INSTITUTIONS & SUBMISSION OF AUDIT CERTIFICATE AND REPORT

Certificate No: 23EQSC12
Initial Registration Date: 27/03/2023 Issuance Date: 27/03/2023
Date of Expiry: 26/03/2026
1st Survy. Due: 27/02/2024 2nd Survy. Due: 27/02/2025

Director

Magnitude Management Services Pvt. Ltd.

ISO: 9001-2015 Certificate



Certificate of Registration

This is to Certify that
Environmental Management System of

ENGRESS SERVICES

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: 23EEKW28
Initial Registration Date: 29/03/2023 Issuance Date: 29/03/2023
Date of Expiry: 28/03/2026
1st Survy. Due: 29/02/2024 2nd Survy. Due: 29/02/2025

Director

Magnitude Management Services Pvt. Ltd.

ISO: 14001-2015 Certificate

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

INDEX

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Vasantdada Sugar Institute, Manjari Budruk, Taluka: Haveli, District: Pune, for awarding us the assignment of Energy Audit of their Campus for the Year: 2022-23.

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

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

ENGRESS SERVICES PUNE

EXECUTIVE SUMMARY

1. Vasantdada Sugar Institute Manjari Budruk, Taluka: Haveli, District: 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	**1344**	kW
2	Net Energy Consumed	**1200478**	kWh

3. Energy Performance Index:

No	Particulars	Value	Unit
1	Total Annual Energy Purchased	528549	kWh
2	Annual Energy Generated	1150953	kWh
3	Energy Exported	479024	kWh
4	Net Energy Consumed=1+2-3	1200478	kWh
5	Total Built up area of Institute	69648.07	m^2
6	Energy Performance Index **=(4) / (5)**	**17.24**	kWh/m^2

4. Study of % Usage of LED Lighting:

No	Particulars	Value	Unit
1	% of Usage of LED Lighting to Total Lighting Load	**80.65**	%

5. Renewable Energy & Energy Efficiency Projects:

- Usage of Energy Efficient LED fittings
- Installation of **800 kWp** Roof Top Solar PV Plant

6. Assumption:

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

7. References:

- Audit Methodology: www.mahaurja.com
- Energy Conservation Building Code: ECBC-2017: www.beeindia.gov.in
- For CO_2 Emissions: www.tatapower.com

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

ENGRESS SERVICES PUNE

ABBREVIATIONS

AC	:	Air conditioner
MSEDCL	:	Maharashtra Electricity Distribution Company Limited
LED	:	Light Emitting Diode
kWh	:	kilo-Watt Hour
Qty	:	Quantity
W	:	Watt
kW	:	Kilo Watt
PC	:	Personal Computer
MT	:	Metric Ton

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

CHAPTER-I
INTRODUCTION

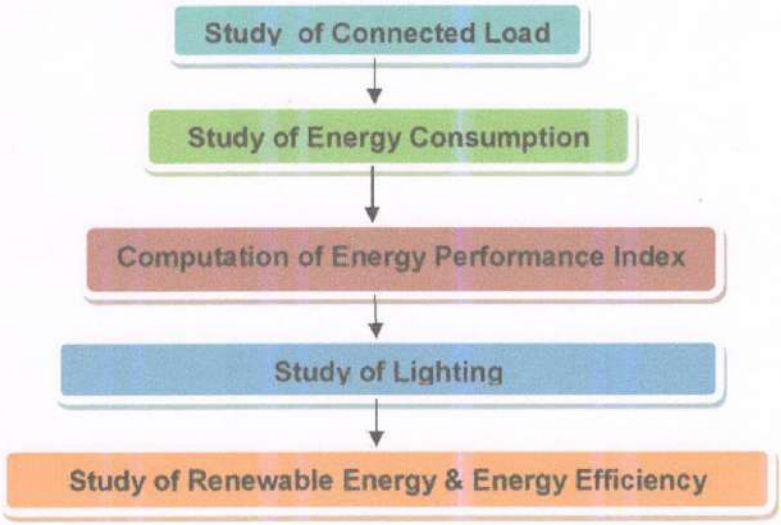
1.1 Introduction:

An Energy Audit is conducted at Vasantdada Sugar Institute, Manjari Budruk, Taluka: Haveli, District: Pune.

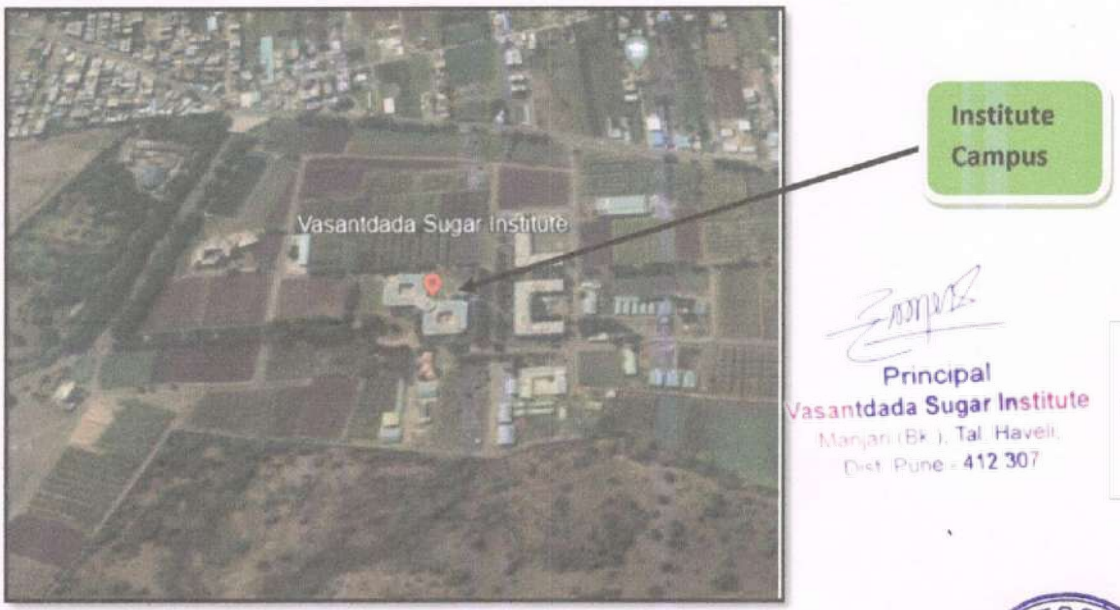
The guidelines followed for conducting the Energy Audit are:

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

1.2 Audit Procedural Steps:



1.3 Google Earth Location Image:



Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

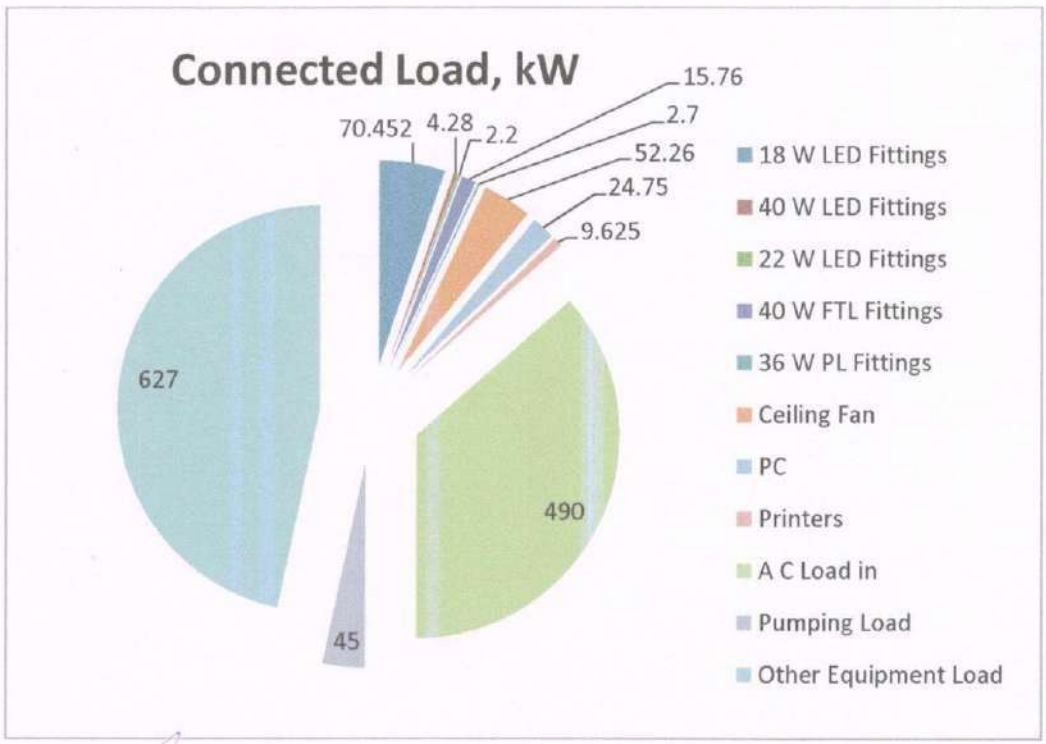
CHAPTER-II
STUDY OF CONNECTED LOAD

In this chapter, we present the details of various Electrical loads as under

Table No 1: Study of Equipment wise Connected Load:

No	Equipment	Qty	Load, W/unit	Load, kW
1	18 W LED Fittings	3914	18	70.452
2	40 W LED Fittings	107	40	4.28
3	22 W LED Fittings	100	22	2.2
4	40 W FTL Fittings	394	40	15.76
5	36 W PL Fittings	75	36	2.7
6	Ceiling Fan	804	65	52.26
7	PC	165	150	24.75
8	Printers	55	175	9.625
9	A C Load	490000	Lot	490
10	Pumping Load	45000	Lot	45
11	Other Equipment Load	627000	1	627
12	**Total**			**1344.0**

Chart No 1: Details of Connected Load:



Principal
Vasantdada Sugar Institute
Manjari Bk. | Tal. Haveli,
Dist. Pune- 412307

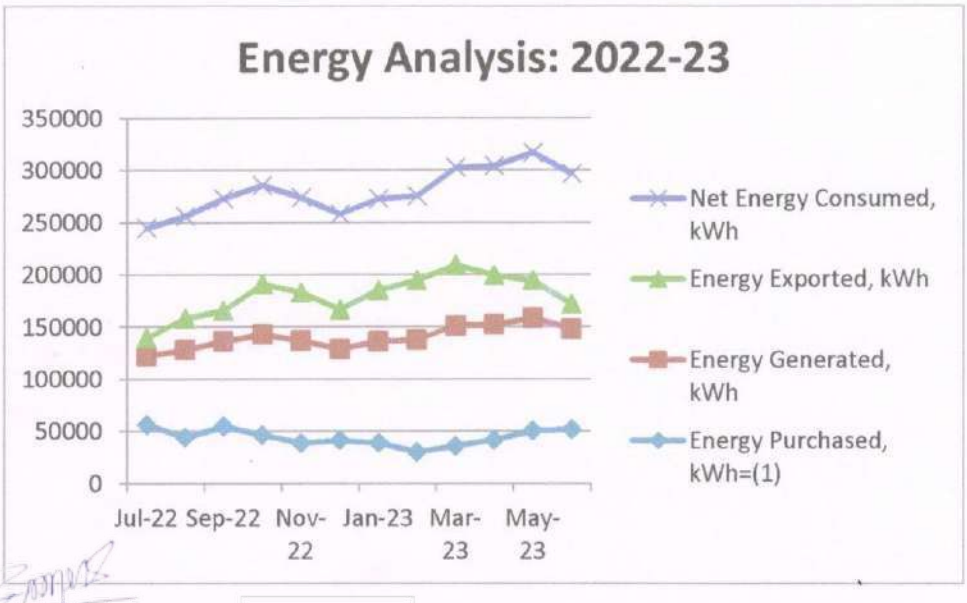
CHAPTER-III
STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of Electricity Energy Consumption

Table No 2: Electrical Energy Purchase Analysis- 2022-23:

No	Month	Energy Purchased, kWh=(1)	Energy Generated, kWh=(2)	Energy Exported, kWh=(3)	Net Energy Consumed, kWh=(4) =(1)+(2)-(3)	CO_2 Emissions, MT
1	Jul-22	56340	65955	16909	105386	94.85
2	Aug-22	43819	84213	30055	97977	88.18
3	Sep-22	54643	81813	29272	107184	96.47
4	Oct-22	46220	96539	48342	94417	84.98
5	Nov-22	38533	98317	46048	90802	81.72
6	Dec-22	41048	87946	37706	91288	82.16
7	Jan-23	38697	97545	48901	87341	78.61
8	Feb-23	29961	107785	56855	80891	72.80
9	Mar-23	35776	115539	57899	93416	84.07
10	Apr-23	41529	110528	47343	104714	94.24
11	May-23	50340	108151	36007	122484	110.24
12	Jun-23	51643	96622	23687	124578	112.12
13	Total	528549	1150953	479024	1200478	1080.43
14	Maximum	56340	115539	57899	124578	112.12
15	Minimum	29961	65955	16909	80891	72.80
16	Average	44045.8	95912.8	39918.7	100040	90.04

Chart No 2: To study the variation of Month wise Energy Purchased, kWh:



Principal
Vasantdada Sugar Institute
Manjari Bk., Tal. Haveli
Dist. Pune 412 307

CHAPTER-IV
STUDY OF ENERGY PERFORMANCE INDEX

Energy Performance Index: Energy Performance Index of a Building is its Annual Energy Consumption in Kilo Watt Hours per square meter of the Building

It is determined by:

$$EPI = \frac{\text{(Annual Energy Consumption in kWh)}}{\text{(Total Built-up area in } m^2\text{)}}$$

Now we compute the EPI for the Institute as under:

Table No 3: Computation of Energy Performance Index:

No	Particulars	Value	Unit
1	Total Annual Energy Purchased	528549	kWh
2	Energy Generated by Solar PV Plant	1150953	kWh
3	Energy Exported	479024	kWh
4	Net Energy Consumed= 1+2-3	**1200478**	kWh
5	Total Built up area of Institute	**69648.1**	m^2
6	Energy Performance Index **=(4) / (5)**	**17.24**	kWh/m^2

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

CHAPTER V
STUDY OF LIGHTING

Terminology:

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

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

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

4. Installed Load Efficacy is the average maintained illuminance provided on a horizontal working plane per circuit watt with general lighting of an interior. Unit: lux per watt per square metre (lux/W/m²)

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

6. Installed Power Density. The installed power density per 100 lux is the power needed per square metre of floor area to achieve 100 lux of average maintained illuminance on a horizontal working plane with general lighting of an interior. Unit: watts per square metre per 100 lux (W/m²/100 lux) 100 Installed power density (W/m²/100 lux)

7. 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.

Table No 4: Percentage Usage of LED Lighting to Total Lighting Load:

No	Particulars	Value	Unit
1	No of 18 W LED Fittings	3914	Nos
2	Load of 18 W LED fitting	18	W/unit
3	Total Load of 18 W LED Fittings	**70.452**	kW
4	No of 22 W LED Fittings	100	Nos

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

5	Load of 22 W LED fitting	22	W/unit
6	Total Load of 22 W LED Fittings	**2.2**	kW
7	No of 40 W LED Fittings	107	Nos
8	Load of 40 W LED fitting	40	W/unit
9	Total Load of 40 W LED Fittings	**4.28**	kW
10	No of 40 W FTL Fittings	394	Nos
11	Load of 40 W FTL fitting	40	W/unit
12	Total Load of 40 W FTL Fittings	**15.76**	kW
13	No of 36 W PL Fittings	75	Nos
14	Load of 36 W PL fitting	36	W/unit
15	Total Load of 36 W PL Fittings	**2.7**	kW
16	Total LED Lighting Load=3+6+9	**76.932**	kW
17	Total Lighting Load=3+6+9+12+15	**95.392**	kW
18	% of LED to Total Lighting Load=16*100/17	**80.65**	%

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

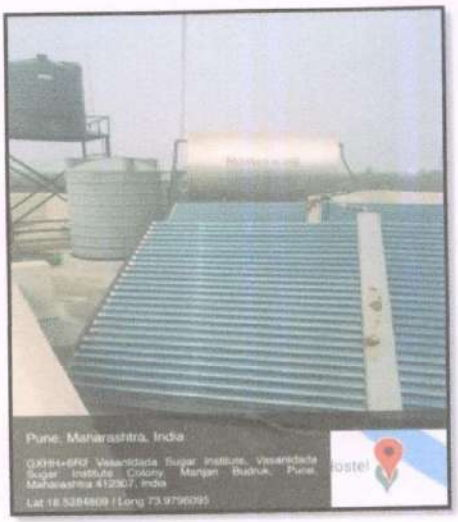
CHAPTER-VI
STUDY OF RENEWABLE ENERGY & ENERGY EFFICIENCY

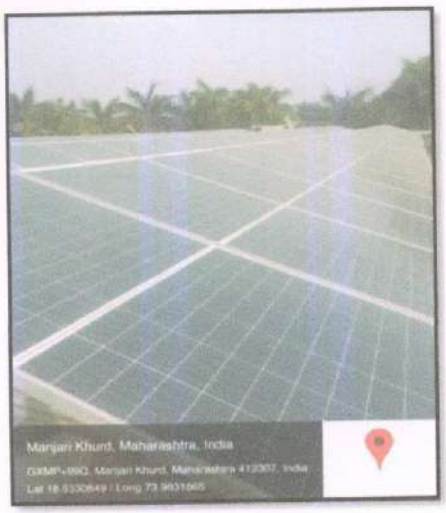
6.1 Usage of Renewable Energy:

The Institute has installed:

- Roof Top Solar PV Plant of Capacity **800 kWp**

Photograph of Roof Top Solar PV Plant:

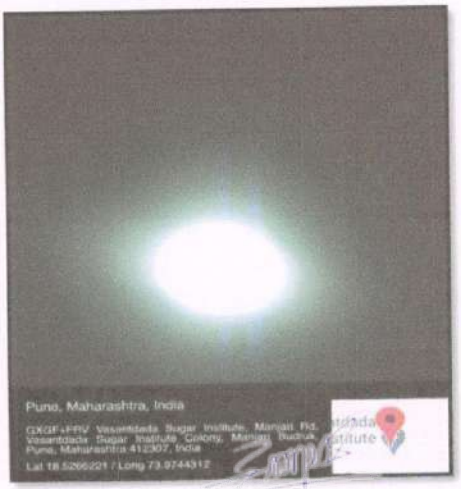


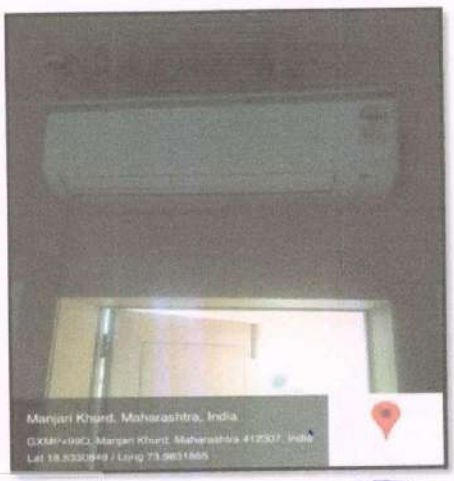


6.2 Energy Efficiency Measures adopted:

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

Photographs of STAR Rated AC & LED Lighting:





Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

GREEN AUDIT REPORT

of

VASANDADA SUGAR INSTITUTE,

Manjari Budruk, Taluka: Haveli, District: Pune 412 307

संशोधनेन संवृद्धिः

Year: 2022-23

Prepared by

ENGRESS SERVICES

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

ENGRESS SERVICES PUNE

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School,
Parvati, Pune 411 009 Tel: 09890444795 Email: engress123@gmail.com
MEDA Registration No: ECN/2022-23/CR-43/1709
ISO: 9001-2015 Certified (Cert No: 23EQKC13),
ISO: 14001-2015 Certified (Cert No: 23EEKW20)

GREEN AUDIT CERTIFICATE

Certificate No: ES/VSI/22-23/02 **Date: 29/7/2023**

This is to certify that we have conducted Green Audit at Vasantdada Sugar Institute, Manjari Budruk, Taluka: Haveli, District: Pune 412 307, in the Year 2022-23.

The Institute has adopted following Energy Efficient & Green Practices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Maximum usage of Day Lighting
- Installation of 800 kWp Roof Top Solar PV Plant
- Segregation of Waste at source
- Provision of Bio Composting Unit, for conversion of Organic Waste
- Provision of Septic Tanks for Liquid Waste Management
- Implementation of Rain Water Management Project
- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp for Divyangajan
- Creation of awareness about 3 Rs: Reduce, Recycle & Reuse by Display of Posters

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

For Engress Services,

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

ENGRESS SERVICES PUNE

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

REGISTRATION CERTIFICATES

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

Maharashtra Energy Development Agency

(Government of Maharashtra Institution)

Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandry, Aundh, Pune, Maharashtra 411067

Ph No: 020-35000450

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

MEDA/ECN/2022-23/Class-A/EA-12/709 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 Mukhangan 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-12.*

- 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 cancelling 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 (EA)

MEDA REGISTRATION CERTIFICATE

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 22/798

Deepak Sood
Secretary General, ASSOCHAM

ASSOCHAM GEM CP CERTIFICATE

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

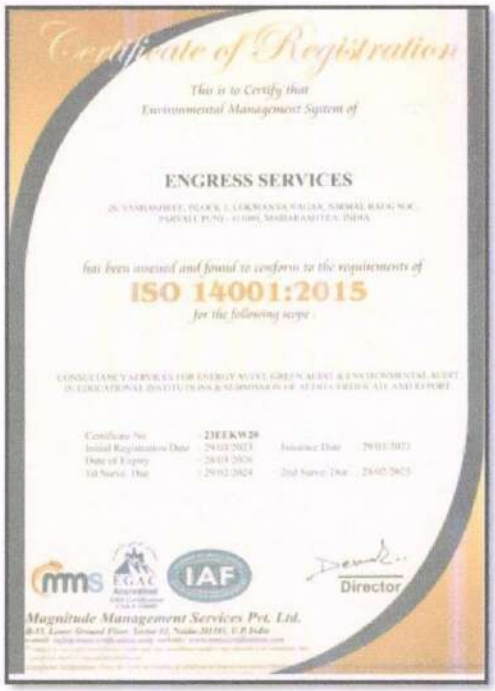
Certificate No : 23EQ&C13
Initial Registration Date : 27/04/2023 Issuance Date : 27/05/2023
Date of Expiry : 26/05/2026
1st Surve. Due : 27/02/2024 2nd Surve. Due : 27/02/2025

IAF

Director

Magnitude Management Services Pvt. Ltd.

ISO: 9001-2015 Certificate



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

IAF

Director

Magnitude Management Services Pvt. Ltd.

ISO: 14001-2015 Certificate

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

THE VASANTDADA SUGAR INSTITUTE PUNE

ENGRESS SERVICES PUNE

INDEX

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Vasantdada Sugar Institute, Manjari Budruk, Taluka: Haveli, District: Pune 412 307, for awarding us the assignment of Green Audit of their Campus for the Year: 2022-23.

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

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

EXECUTIVE SUMMARY

1. Vasantdada Sugar Institute Manjari Budruk, Taluka: Haveli, District: Pune, consumes Energy in the form of **Electrical Energy; used** for various Electrical Equipment.

2. Present Energy Consumption & CO_2 Emission:

No	Particulars	Value	Unit
1	Net Energy Consumed	**1200478**	kWh
2	Annual CO_2 Emissions	**1080.43**	MT

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

- The Institute has installed Roof Top Solar PV Plant of Capacity **800 kWp.**
- The Energy generated by Solar PV Plant in 2022-23 is **1150953 kWh.**
- Reduction in CO_2 Emissions in 2022-23 is **1035.86 MT**

4. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Organic Waste	Bio Composting Unit installed
3	Liquid Waste	Septic Tank installed & cleaned periodically

5. Rain Water Management:

The Institute has installed Pipes from the terrace and the Rain water falling on the terrace is stored in an underground Tank and is further used for domestic purpose after treatment.

6. Green & Sustainable Practices:

- Maintenance of good Internal Road
- Tree Plantation in the campus.
- Provision of Ramp for Divyangajan
- Creation of awareness about 3 Rs: Reduce, Recycle & Reuse by Display of Posters

7. Assumptions:

1. **1 kWh** of Electrical Energy releases **0.9 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**

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

8. References:

- For CO_2 Emissions: www.tatapower.com
- For Solar PV Energy generation: www.solarrooftop.gov.in

ENGRESS SERVICES PUNE

ABBREVIATIONS

LED	:	Light Emitting Diode
kWh	:	kilo-Watt Hour
Qty	:	Quantity
W	:	Watt
kW	:	Kilo Watt
MT	:	Metric Ton

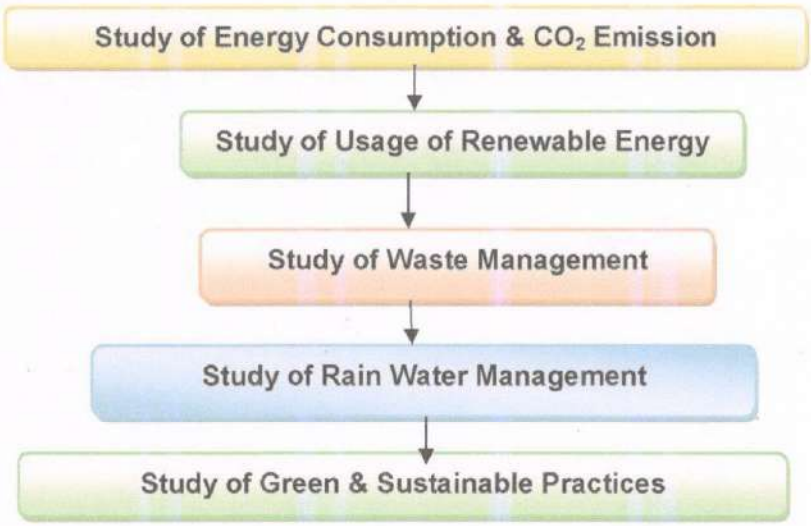
Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

CHAPTER-I
INTRODUCTION

1.1 Introduction:

A Green Audit is conducted at Vasantdada Sugar Institute, Manjari Budruk, Taluka: Haveli, District: Pune.

1.2 Audit Procedural Steps:



1.3 Google Earth Location Image:

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

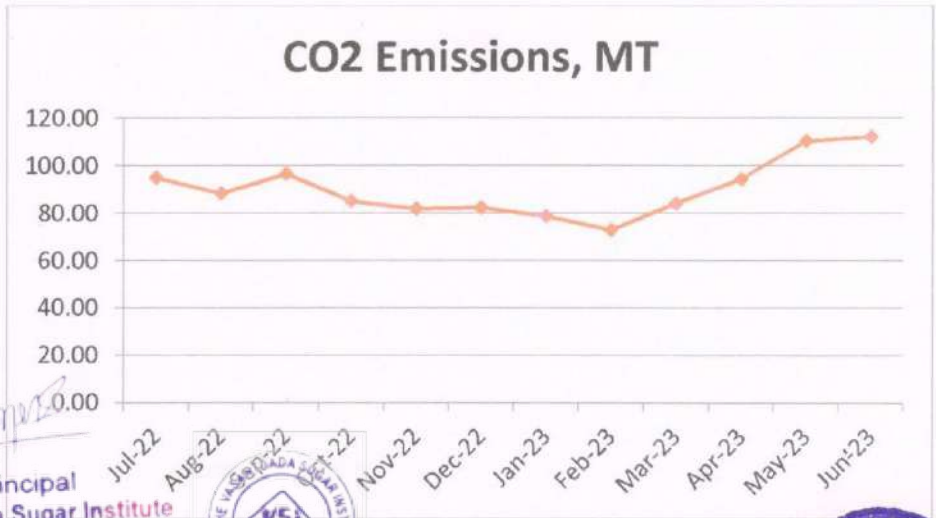
CHAPTER-II
STUDY OF ENERGY CONSUMPTION & CO_2 EMISSION

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 **0.9 Kg of CO_2** into atmosphere.

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

No	Month	Energy Purchased, kWh=(1)	Energy Generated, kWh=(2)	Energy Exported, kWh=(3)	Net Energy Consumed, kWh=(4) =(1)+(2)-(3)	CO_2 Emissions, MT
1	Jul-22	56340	65955	16909	105386	94.85
2	Aug-22	43819	84213	30055	97977	88.18
3	Sep-22	54643	81813	29272	107184	96.47
4	Oct-22	46220	96539	48342	94417	84.98
5	Nov-22	38533	98317	46048	90802	81.72
6	Dec-22	41048	87946	37706	91288	82.16
7	Jan-23	38697	97545	48901	87341	78.61
8	Feb-23	29961	107785	56855	80891	72.80
9	Mar-23	35776	115539	57899	93416	84.07
10	Apr-23	41529	110528	47343	104714	94.24
11	May-23	50340	108151	36007	122484	110.24
12	Jun-23	51643	96622	23687	124578	112.12
13	Total	528549	1150953	479024	1200478	1080.43
14	Maximum	56340	115539	57899	124578	112.12
15	Minimum	29961	65955	16909	80891	72.80
16	Average	44045.8	95912.8	39918.7	100040	90.04

Chart No 1: Month wise CO_2 Emissions:



Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

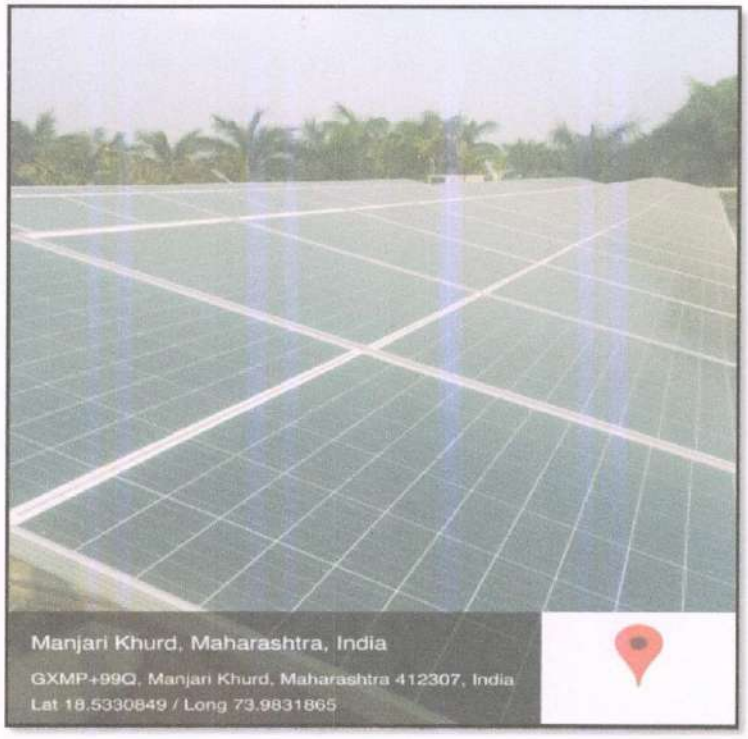
CHAPTER III
STUDY OF USAGE OF RENEWABLE ENERGY

The Institute has installed Roof Top Solar PV Plant of Capacity **800 kWp**
In the following Table, we present the reduction in CO_2 emissions due to Solar Energy:

Table No 3: Computation of Reduction in CO_2 Emissions:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	800	kWp
2	Energy Generated in the Year: 2022-23	1150953	4 kWh
3	1 kWh of Electrical Energy saves	0.9	Kg/kWh
4	**Qty of CO_2 Saved by Solar PV Plant =(2)*(3) /1000**	**1035.86**	**MT of CO_2**

Photograph of Roof Top Solar PV Plant:



Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

CHAPTER IV
STUDY OF WASTE MANAGEMENT

4.1 Segregation of Waste at Source:

The Institute has good housekeeping practices. The Waste is segregated at source. Waste collection Bins are placed at strategic locations.

Photograph of Waste Collection Bin:

4.2 Organic Waste Management:

The Institute has a Bio Composting Unit, for conversion of Organic Waste into Bio Compost.

Photograph of Bio Composting Unit:

4.3 Liquid Waste Management:

The Institute has installed Septic Tanks and the tanks are cleaned periodically.

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

CHAPTER-V
STUDY OF RAIN WATER MANAGEMENT

The Institute has installed Pipes from the terrace and the Rain water falling on the terrace is stored in an open well and is used for watering the farm.

Photograph of Rain Water Carrying Pipe:

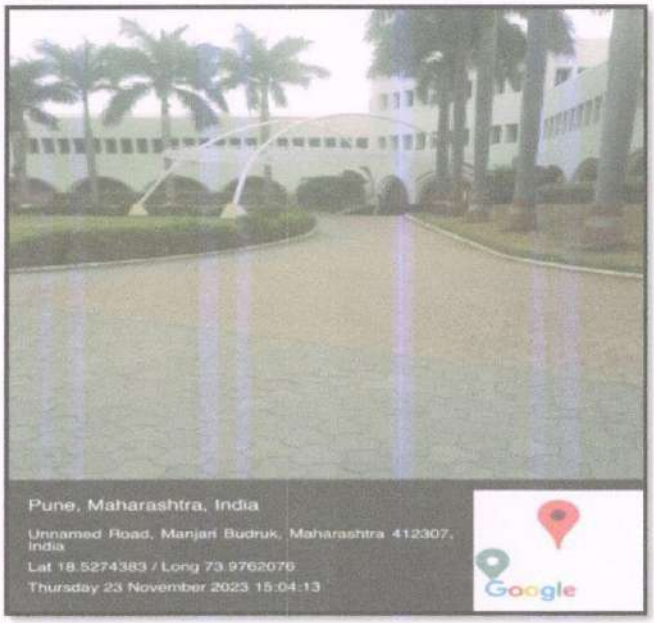
Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

CHAPTER-VI
STUDY OF GREEN & SUSTAINABLE PRACTICES

7.1 Pedestrian Friendly Internal Road:

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

Photograph of Internal Road:



7.2 Tree Plantation:

The Institute has Tree Plantation in the campus.

Photograph of Internal Tree Plantation:

Principal
Vasantdada Sugar Institute
Manjari Bk. Tal. Haveli
Dist. Pune - 412 307

ENGRESS SERVICES PUNE

7.3 Provision of Ramp for Divyangajan:

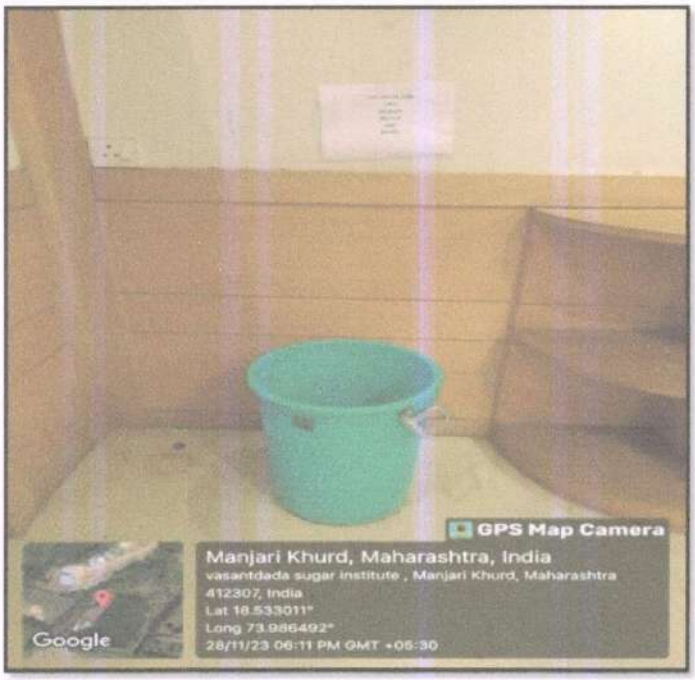
The Institute has made provision of Ramp for easy movement of Divyangajan.

Photograph of Ramp:

7.4 Creation of awareness about 3 Rs: Reduce, Recycle & Reuse by Display of Posters

The Institute has displayed Posters on Importance of 3 Rs: Reduce, Recycle & Reuse.

Photograph of Poster on importance of 3 Rs: Reduce, Recycle & Reuse:



Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

ENVIRONMENTAL AUDIT REPORT

of

VASANDADA SUGAR INSTITUTE,

Manjari Budruk, Taluka: Haveli, District: Pune 412 307

संशोधनेन संवृद्धिः

Year: 2022-23

Prepared by

ENGRESS SERVICES

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

ENGRESS SERVICES PUNE

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School,
Parvati, Pune 411 009 Tel: 09890444795 Email: engress123@gmail.com
MEDA Registration No: ECN/2022-23/CR-43/1709
ISO: 9001-2015 Certified (Cert No: 23EQKC13),
ISO: 14001-2015 Certified (Cert No: 23EEKW20)

ENVIRONMENTAL AUDIT CERTIFICATE

Certificate No: ES/VSI/22-23/03 **Date: 29/7/2023**

This is to certify that we have conducted Environmental Audit at Vasantdada Sugar Institute, Manjari Budruk, Taluka: Haveli, District: Pune 412 307, in the Year 2022-23.

The Institute has adopted following Environment Friendly Practices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Maximum usage of Day Lighting
- Installation of 800 kWp Roof Top Solar PV Plant
- Segregation of Waste at source
- Provision of Bio Composting Unit, for conversion of Organic Waste
- Provision of Septic Tanks for Liquid Waste Management
- Implementation of Rain Water Management Project
- Internal Tree Plantation
- Creation of awareness about 3 Rs: Reduce, Recycle & Reuse by Display of Posters

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

For Engress Services,

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

ENGRESS SERVICES PUNE

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

REGISTRATION CERTIFICATES

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 411007

Ph No: 020-25806450

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

MEDA/EC/V/2022-23/Class-A/E-A-42/1709 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 Mukhtangan English School,
Parvati, Pune - 411 009.

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

Registration Number : *MEDA/EC/V/2022-23/Class-A/E-A-42.*

- 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)

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 22/758

Deepak Sood
Secretary General, ASSOCHAM

MEDA REGISTRATION CERTIFICATE

ASSOCHAM GEM CP CERTIFICATE

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

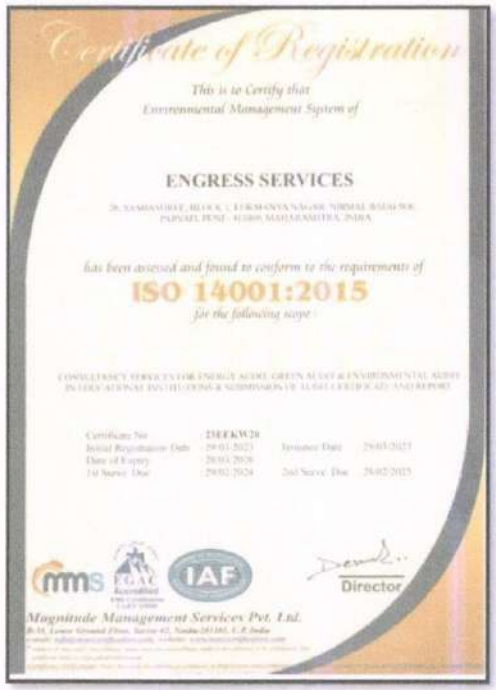
for the following scope :

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

Certificate No. : 21EQSC13
Initial Registration Date : 27/03/2021 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.



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. : 21EEKW20
Initial Registration Date : 29/01/2021 Issuance Date : 29/03/2023
Date of Expiry : 28/01/2026
1st Surve. Due : 29/01/2024 2nd Surve. Due : 29/01/2025

Director

Magnitude Management Services Pvt. Ltd.

ISO: 9001-2015 CERTIFICATE

ISO: 14001-2015 CERTIFICATE

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

ENGRESS SERVICES PUNE

INDEX

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Vasantdada Sugar Institute, Manjari Budruk, Taluka: Haveli, District: Pune 412 307, for awarding us the assignment of Environmental Audit of their Campus for the Year: 2022-23.

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

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

EXECUTIVE SUMMARY

1. Vasantdada Sugar Institute Manjari Budruk, Taluka: Haveli, District: Pune, consumes Energy in the form of **Electrical Energy; used** for various Electrical Equipment.

2. Pollution caused due to Institute Activities:

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

3. Present Energy Consumption & CO_2 Emissions:

No	Particulars	Value	Unit
1	Net Energy Consumed	**1200478**	kWh
2	Annual CO_2 Emissions	**1080.43**	MT

4. Projects implemented for Environmental Conservation:

- Usage of Energy efficient LED fittings
- Usage of BEE STAR Rated Equipment
- Installation of **800 kWp** Roof Top Solar PV Plant

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

- The Institute has installed Roof Top Solar PV Plant of Capacity **800 kWp.**
- The Energy generated by Solar PV Plant in 2022-23 is **1150953 kWh.**
- Reduction in CO_2 Emissions in 2022-23 is **1035.86 MT**

6. Indoor Air Quality:

No	Parameter/Value	AQI	PM-2.5	PM-10
1	Maximum	**65**	**39**	**50**
2	Minimum	**60**	**36**	**42**

7. Indoor Comfort Condition Parameters:

No	Parameter/Value	Temperature, ^0C	Humidity, %	Lux Level	Noise Level, dB
1	Maximum	**28.6**	**68**	**138**	**45**
2	Minimum	**28.3**	**65**	**98**	**42**

ENGRESS SERVICES PUNE

8. Waste Management:

No	Head	Particulars
1	Solid Waste	Segregation of Waste at source
2	Organic Waste	Bio Composting Unit installed
3	Liquid Waste	Septic Tank installed & cleaned periodically

9. Rain Water Management:

The Institute has installed Pipes from the terrace and the Rain water falling on the terrace is stored in an Open well and is further used for watering the farm.

10. Environment Friendly Initiatives:

- Tree Plantation and Well maintained Garden.
- Creation of Awareness on 3 Rs: Reduce, Recycle & Reuse by displaying posters

11. Assumption:

1. 1 kWh of Electrical Energy releases 0.9 Kg of CO_2 into atmosphere

12. References:

- For CO_2 Emission computation: www.tatapower.com
- For Various Indoor Air Parameters: www.ishrae.com
- For AQI Standards: www.cpcb.com

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

ENGRESS SERVICES PUNE

ABBREVIATIONS

kWh	:	kilo-Watt Hour
Qty	:	Quantity
MT	:	Metric Ton
CO_2	:	Carbon Di Oxide
LPD	:	Liters per Day
AQI	:	Air Quality Index
PM2.5	:	Particulate Matter of Size 2.5 microns
PM 10	:	Particulate Matter of Size 10 microns
CPCB	:	Central Pollution Control Board
ISHARE	:	The Indian Society of Heating & Refrigerating & Air Conditioning Engineers

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

ENGRESS SERVICES PUNE

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:

An audit which aims at verification and validation to ensure that various environmental laws are compiled with and adequate care has been taken towards environmental protection and preservation

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

1.3. Environmental Pollutant: means any solid, liquid and gaseous substance present in the concentration as may be, or tend to be, injurious to Environment.

1.4 Audit Procedural Steps:

1.5 Google Earth Image:

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

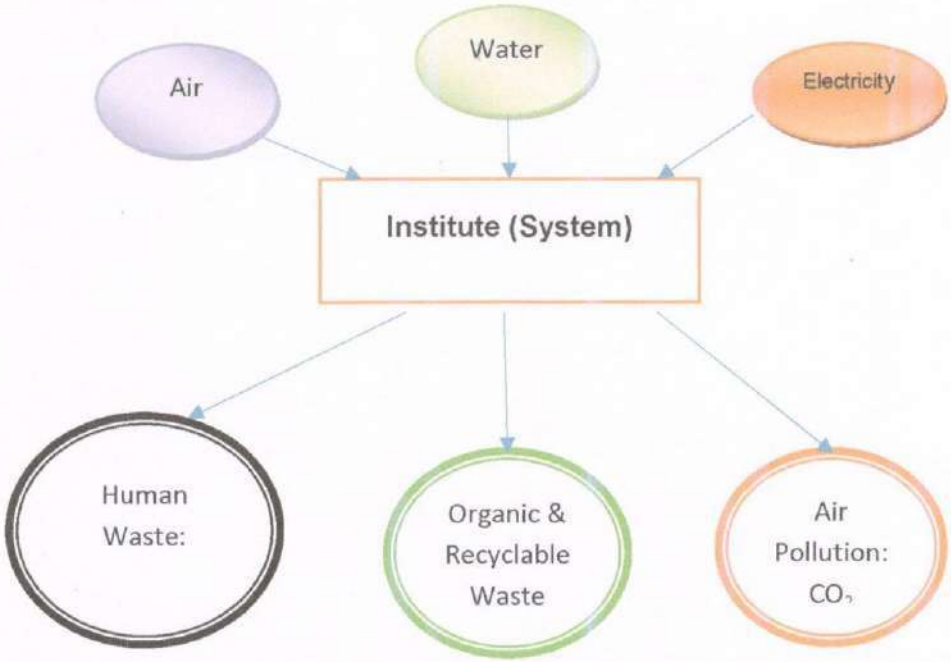
CHAPTER-II
STUDY OF RESOURCE CONSUMPTION & CO_2 EMISSION

The Institute consumes following Natural/derived Resources:

1. Air
2. Water
3. Electrical Energy

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

Chart No 1: Representation of Institute as System:



A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. Here we compute the emissions of Carbon-Di-Oxide, by usage of Electrical Energy. The basis of Calculation for CO_2 emissions due to Electrical Energy is **1 kWh** of Electrical Energy releases **0.9 Kg of CO_2** into atmosphere.

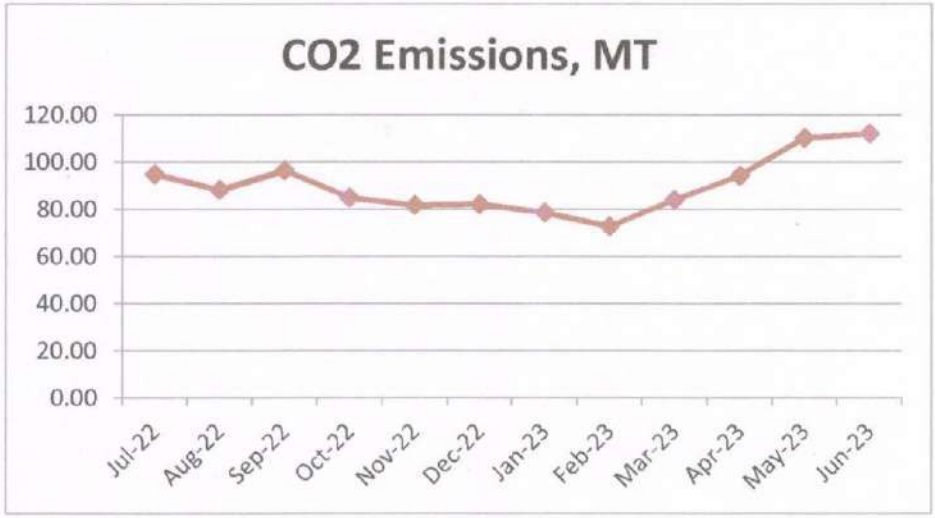
Table No 1: Study of Energy Purchased & CO_2 Emission: 2022-23:

No	Month	Energy Purchased, kWh=(1)	Energy Generated, kWh=(2)	Energy Exported, kWh=(3)	Net Energy Consumed, kWh=(4) =(1)+(2)-(3)	CO_2 Emissions, MT
1	Jul-22	56340	65955	16909	105386	94.85
2	Aug-22	43819	84213	30055	97977	88.18
3	Sep-22	54643	81813	29272	107184	96.47
4	Oct-22	46220	96539	48342	94417	84.98
5	Nov-22	38533	98317	46048	90802	81.72
6	Dec-22	41048	87946	37706	91288	82.16

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

7	Jan-23	38697	97545	48901	87341	78.61
8	Feb-23	29961	107785	56855	80891	72.80
9	Mar-23	35776	115539	57899	93416	84.07
10	Apr-23	41529	110528	47343	104714	94.24
11	May-23	50340	108151	36007	122484	110.24
12	Jun-23	51643	96622	23687	124578	112.12
13	Total	528549	1150953	479024	1200478	1080.43
14	Maximum	56340	115539	57899	124578	112.12
15	Minimum	29961	65955	16909	80891	72.80
16	Average	44045.8	95912.8	39918.7	100040	90.04

Chart No 2: Representation of Month wise CO_2 emissions:



Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

ENGRESS SERVICES PUNE

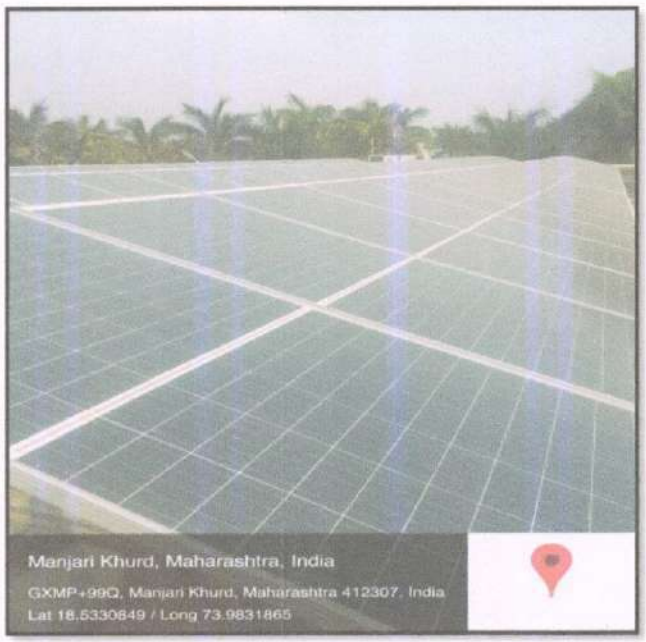
CHAPTER-III
STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity **800 kWp**
We now calculate the reduction in CO_2 Emission due to Solar PV Plant.

Table No 2: Computation of Reduction in CO_2 Emission:

No	Particulars	Value	Unit
1	Installed Capacity of Roof Top Solar PV Plant Capacity	800	kWp
2	Energy Generated in the Year: 2022-23	1150953	4 kWh
3	1 kWh of Electrical Energy saves	0.9	Kg/kWh
4	**Qty of CO_2 Saved by Solar PV Plant =(2)*(3) /1000**	**1035.86**	**MT of CO_2**

Photograph of Roof Top Solar PV Plant:



Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

ENGRESS SERVICES PUNE

CHAPTER IV
STUDY OF INDOOR AIR QUALITY

4.1 Importance of Air Quality:

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

By volume, Dry Air contains 78.09% Nitrogen, 20.95% Oxygen, 0.93% Argon, 0.039% carbon dioxide, and small amounts of other gases.

On average, a person inhales about **14,000 liters** of air every day. Therefore, poor air quality may affect the quality of life now and for future generations by affecting the health, the environment, the economy and the city's liveability.

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

According to Section 2(b) of Air (Prevention and control of pollution) Act, 1981 '**air pollution**' has been defined as **'the presence in the atmosphere of any air pollutant**.'

As per Section 2(a) of Air (Prevention and control of pollution) Act, 1981 '**air pollutant**' has been defined as **'any solid, liquid or gaseous substance [(including noise)] present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment**

4.2 Air Quality Index:

An **Air Quality Index (AQI)** is a number used by government agencies to measure the **air pollution** levels and communicate it to the population.

We present herewith following 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	PM-2.5	PM-10
1	Admin Office	63	38	46
2	Plant Breeding	65	39	50
3	Instrumentation	61	36	42
4	Sugar Engineering	60	36	50
5	Environmental Science Lab	64	39	46
6	Computer Department	65	39	46
	Maximum	**65**	**39**	**50**
	Minimum	**60**	**36**	**42**

Principal
Vasantdada Sugar Institute
Manjari (BK.), Tal. Haveli,
Dist. Pune - 412 307

GREEN AUDIT REPORT

of

VASANDADA SUGAR INSTITUTE,

Manjari Budruk, Taluka: Haveli, District: Pune 412 307

संशोधनेन संवृद्धिः

Year: 2022-23

Prepared by

ENGRESS SERVICES

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

ENGRESS SERVICES PUNE

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

CHAPTER V
STUDY OF INDOOR COMFORT CONDITION PARAMETERS

In this Chapter, we present the various Indoor Comfort Parameters measured during the Audit.

The Parameters include:

1. Temperature
2. Humidity
3. Lux Level
4. Noise Level.

Table No 4: Study of Indoor Comfort Parameters:

No	Location	Temperature, ^0C	Humidity, %	Lux Level	Noise Level, dB
1	Admin Office	28.4	65	138	44
2	Plant Breeding	28.3	68	112	45
3	Instrumentation	28.3	67	110	43
4	Sugar Engineering	28.4	67	98	42
5	Environmental Science Lab	28.3	68	102	44
6	Computer Department	28.6	65	117	43
	Maximum	**28.6**	**68**	**138**	**45**
	Minimum	**28.3**	**65**	**98**	**42**

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

CHAPTER VI
STUDY OF WASTE MANAGEMENT

6.1 Segregation of Waste at Source:

The Institute has good housekeeping practices. The Waste is segregated at source. Waste collection Bins are placed at strategic locations.

Photograph of Waste Collection Bin:

6.2 Organic Waste Management:

The Institute has a Bio Composting Unit, for conversion of Organic Waste into Bio Compost.

Photograph of Bio Composting Unit:

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

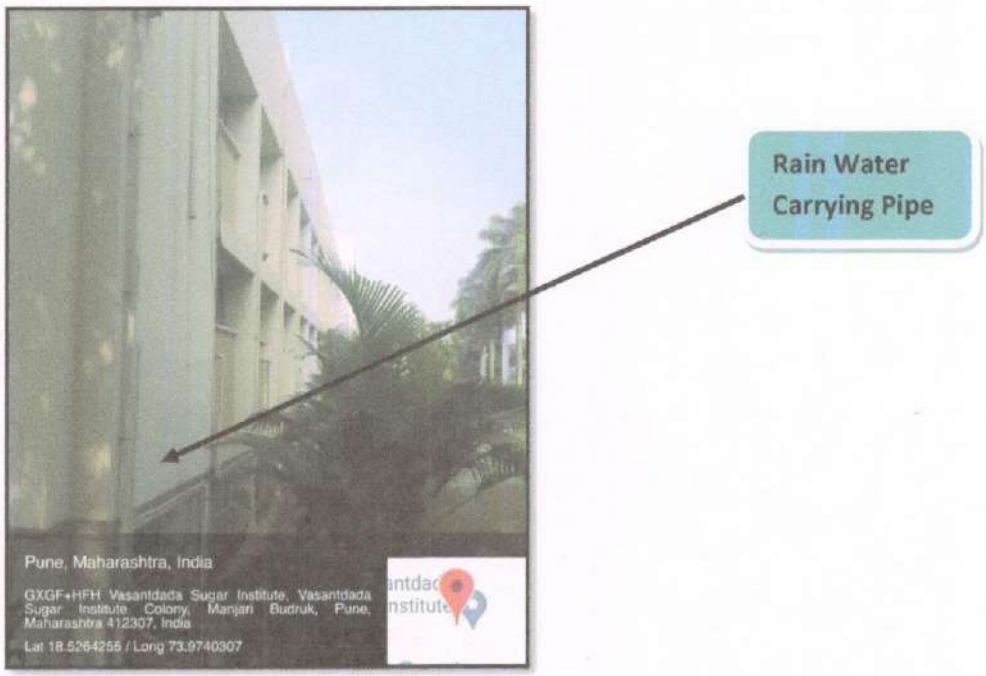
6.3 Liquid Waste Management:

The Institute has installed Septic Tanks and the tanks are cleaned periodically.

CHAPTER-VII
STUDY OF RAIN WATER MANAGEMENT

The Institute has installed Pipes from the terrace and the Rain water falling on the terrace is stored in an open well and is used for watering the farm.

Photograph of Rain Water Carrying Pipe:



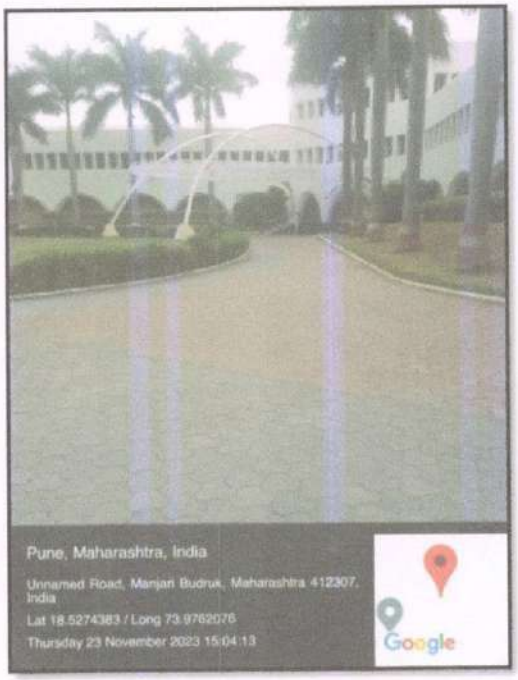
Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

CHAPTER-VIII
STUDY OF ENVIRONMENT FRIENDLY PRACTICES

8.1Tree Plantation in the Campus:

The Institute has landscaped Lawn and well maintained Tree Plantation in the campus.

Photograph of Tree Plantation:



8.2 Creation of awareness about 3 Rs: Reduce, Recycle & Reuse by Display of Posters

The Institute has displayed Posters on Importance of 3 Rs: Reduce, Recycle & Reuse.

Photograph of Poster on importance of 3 Rs: Reduce, Recycle & Reuse:

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli,
Dist. Pune - 412 307

ANNEXURE-I:
INDOOR AIR QUALITY, NOISE & INDOOR COMFORT PARAMETER STANDARDS:

1. Category Wise Air Quality Index Values & Concentration of PM 2.5 & PM10:

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 +

2. Recommended Noise Level Standards:

No	Location	Noise Level dB
1	Auditoriums	20-25
2	Outdoor Playground	55
3	Occupied Class Room	40-45
4	Un occupied Class Room	35
5	Apartment, Homes	35-40
6	Offices	45-50
7	Libraries	35-40
8	Restaurants	50-55

3. Thermal Comfort Conditions: For Non-conditioned Buildings:

No	Parameter	Value
1	Temperature	Less Than 33^{0}C
2	Humidity	Less Than 70%

Principal
Vasantdada Sugar Institute
Manjari (Bk.), Tal. Haveli