

PROF. DR. T. J. SAWANT B.E. (Elec.), PGDM, PhD Founder Secretary Sr. No. 58, Handewadi Road, Satavnagar, Hadapsar, Pune-411028 Phone: 7722045403 / 9175954032 Email Id: <u>principal@jspmjscocs.edu.in</u> Website: <u>www.jspmjscocs.edu.in</u> Approved by Govt. of Maharashtra & Affiliated to SPPU, Pune-07 College Code: PU/PN/CS/485/2018

JAYAWANT SHIKSHAN PRASARAK MANDAL'S JAYAWANTRAD SAWANT COMMERCE AND SCIENCE COLLEGE



Dr. Vinod R.Kulkarni M.Com.M.A.MBA,M.Phil, PhD Principal

Key indicator: 7.1 Institutional Values and Social Responsibilities

Metric point: 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

- 1. Green audit / Environment audit
- 2. Energy audit
- 3. Clean and green campus initiatives
- 4. Beyond the campus environmental promotion activities

HEI Input

A. All of the above

DVV Clarification:

Kindly share document includes the institution's environmental and energy usage policy, action taken reports and achievements related to green campus initiatives, audit reports, a certificate from an external accredited auditing agency (preferably a government department of the affiliating university), geo-tagged photos with captions and dates, and any other

As per DVV suggestion, the supporting documents are attached below



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PRINCIPAL JSPM's Jayawantrao Sawant Commerce & Science College Hadapsar, Pune - 411 028.



PROF. DR. T. J. SAWANT B.E. (Elec.), PGDM, PhD FOUNDER SECRETARY

JAYAWANT SHIKSHAN PRASARAK MANDAL'S JAYAWANTRAO SAWANT COMMERCE AND SCIENCE COLLEG

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Policy Document on Environment and Energy Usage

JSPM's Jayawantrao Sawant Commerce and science college, Handewadi Road, Hadapsar, Pune focuses and committed to manage the energy resources and monitor the energy usage to minimize its use and impact on the environment. Energy auditing committees conducted an audit to measure the impact of usage. The institute suggests and spread the awareness about renewable energy sources.

Policies:

- To raise awareness in the students as well as teaching non-teaching staff to empower in the skills and knowledge about promoting and improving environmental necessities and its efficient use.
- Use of LED bulb as much as possible.
- Use of fans only it is needed.
- To raise awareness about tree plantation drive periodically.
- Use of solar energy for saving traditional energy resources.
- Promoting use of e-vehicle to reduce air pollution as well as conservation of traditional energy resources.
- Promoting no vehicle day for saving non-renewable resources and reduction of carbon emission.
- Promoting use of bicycle for better environmental growth and fuel management.
- Switch off the light if it is not necessary.
- Switch off the computers if it is not in use.
- To arrange the guest lecture, workshops and awareness program in the students about energy saving and its efficient usage.
- To raise the awareness about solar energy among everyone.
- Switch off every button of electrical equipment when it is not in use.
- Implement as much as solar energy system.
- To monitor energy use periodically to save the resources.
- Replacement of every traditional lighting system with the LED.
- Must conduct the energy audit periodically to identify the use of energy.
- Keeping the record of energy use monthly helps to improve the better energy usage.
- Use of pedestrian friendly pathways.



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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

• Beyond the campus environmental promotion activities





JAYAWANT SHIKSHAN PRASARAK MANDAL'S

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PROF. DR. H. R. KULKARNI M.Sc., PhD, PGDBM, PGDM, MBS, FAZI Principal

Date: 11/03/2023

Notice

All students are hereby informed that the "Tree Plantation" is organized on 15th March, 2023 at 11:00 a.m. in Handewadi. This initiative aims to enhance the greenery of our locality and contribute to a sustainable future. All be present for making green environment.

Principal

PRINCIPAL

JSPM's Jayawantrao Sawant Commerce & Science Colleg Hadapser, Pune 411 025.



Sr. No. 58, Han

B.E. (Elec.), PGDM, PhD Founder Secretary

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PROF. DR. H. R. KULKARNI M.Sc., PhD, PGDBM, PGDM, MBS, FAZI Principal

Report

To,

The Principal,

Subject: Report about the program conducted on "Tree Plantation"

Respected Sir,

I am hereby submitting the report on the program conducted on "Tree Plantation".

Details of the program:

Time: 11:00 a.m.

- Date : 15/03/2023
- · Day : Wednesday
- Place : Handewadi

Particulars of the program:

The program "Tree Plantation" was conducted on 15th March, 2023 from 11:00 a.m. in Handewadi. The purpose of the staff and students leading "Tree Plantation" in Handewadi was to help improve the area's greenery and natural balancing. By planting trees, participants increased the biodiversity of the area and highlighted the value of group action for a greener future.

Thank you.

Prepared by, And Aavin Bobaz



B.E. (Elec.), PGDM, PhD

Founder Secretary

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PROF. DR. H. R. KULKARNI M.Sc., PhD, PGDBM, PGDM, MBS, FAZI Principal

GPS Map Camera



Pune, Maharashtra, India Handewadi Road, Satavnagar, Hadpsar, Long 73.937458° Lat 18.456832° 15/3/2023 11:48 AM



Attendance

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PROF, DR. L.J. SAWANT

B.E. (Elec.), PGDM, PhD

Founder Secretary

JAYAWANT SHIKSHAN PRASARAK MANDAL'S JAYAWANTRAD SAWANT COMMERCE AND SCIENCE COLLEGE

Sr. No. 58, Handewadi Road, Satavnagar, Hadapsar, Pune-411028 Phone: 7722045403 / 9175954032 Email Id: <u>principal@jspmjscocs.edu.in</u> Website: <u>www.jspmjscocs.edu.in</u> Approved by Govt. of Maharashtra & Affiliated to SPPU, Pune-07 College Code: PU/PN/CS/485/2018



PROF. DR. H. R. KULKARNI M.Sc., PhD, PGDBM, PGDM, MBS, FAZI Principal

Date: 15/12/2022

Notice

All students are hereby informed that the "Gram Swachh Abhiyan" is organized on 18th December, 2022 from 10:00 a.m. in Veer gaon. This activity is organized by NSS department for each one of us to come together and contribute towards a cleaner and healthier environment. All be present for this abhiyan.

Principal

PRINCIPAL JSPM's Jayawantrab Sawant Commerce & Science Colleg. Hadapsar, Pune - 411 029.



PROF. DR. 1. J. SAWAN1 B.E. (Elec.), PGDM, PhD Founder Secretary Sr. No. 58, Handewadi Road, Satavnagar, Hadapsar, Pune-411028 Phone: 7722045403 / 9175954032 Email Id: principal@jspmjscocs.edu.in Approved by Govt. of Maharashtra & Affiliated to SPPU, Pune-07 College Code: PU/PN/CS/485/2018



PROF. DR. H. R. KULKARNI M.Sc., PhD, PGDBM, PGDM, MBS, FAZI Principal

Report

To,

The Principal,

Subject: Report about the program conducted on "Gram Swachh Abhiyan"

Respected Sir,

I am hereby submitting the report on the program conducted on "Gram Swachh Abhiyan".

Details of the program:

Time: 10:00 a.m.

- Date : 18/12/2022
- · Day : Sunday
- Place : Veer Gaon

Particulars of the program:

The program "Gram Swachh Abhiyan" was conducted on 18th December, 2022 from 10:00 a.m. in Veer gaon. The Gram Swachh Abhiyan in Veer Gaon involved students who actively cleaned the village, exemplifying community service and environmental stewardship. Their collective efforts not only beautified Veer Gaon but also promoted a culture of cleanliness and pride within the community.

Thank you.

Prepared by, -Psol. Pravin Babor



Sr. No. 58, Handewadi Road, Satavnagar, Hadapsar, Pune-411028 Phone: 7722045403 / 9175954032

PROF DR. 1.J. SAWANT B.E. (Elec.), PGDM, PhD Founder Secretary Phone: 7722045403 / 9175954032 Email Id: principal@jspmjscocs.edu.in Website: www.jspmjscocs.edu.in Approved by Govt. of Maharashtra & Affiliated to SPPU, Pune-07 College Code: PU/PN/CS/485/2018



PROF. DR. H. R. KULKARNI M.Sc., PhD, PGDBM, PGDM, MBS, FAZI Principal



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PROF. DR. L.J. SAWANT

B.E. (Elec.), PGDM, PhD

Founder Secretary

JAYAWANT SHIKSHAN PRASARAK MANDAL'S JAYAWANTRAD SAWANT COMMERCE AND SCIENCE COLLEGE

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Principal

Date: 13/12/2022

Notice

All students are hereby informed that the "Disaster and Water Management" activity is organized on 17th December, 2022 from 10:00 a.m. in Veer gaon. This activity is organized by NSS department. All be present for enhance our understanding of disaster preparedness and efficient water management techniques.

Principal PRINCIPAL JSPM's Jayawantrao Sawant Commerce & Science College Hatopsar, Pune-411 028.



PROF. DR. L.J. SAWANI

B.E. (Elec.), PGDM, PhD

Founder Secretary

JAYAWANT SHIKSHAN PRASARAK MANDAL'S JAYAWANTRAD SAWANT COMMERCE AND SCIENCE COLLEGE

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PROF. DR. H. R. KULKARNI M.Sc., PhD, PGDBM, PGDM, MBS, FAZI Principal

Report

To,

The Principal.

Subject: Report about the program conducted on "Disaster and Water Management"

Respected Sir,

I am hereby submitting the report on the program conducted on "Disaster and Water Management".

Details of the program:

Time: 10:00 a.m.

- Date : 17/12/2022
- Day : Saturday

Place : Veer Gaon

Particulars of the program:

The "Disaster and Water Management" activity in Veer Gaon utilized student-led initiatives to conserve rainwater and enhance its utility. Students constructed rainwater harvesting systems, preventing soil erosion and replenishing groundwater. Their efforts not only improved water management but also fostered a deeper connection with nature, emphasizing sustainable practices. Thank you.

Prepared by, 44048 Prof. Prom Babor



B.E. (Elec.), PGDM, PhD Founder Secretary

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Sr. No. 58, Handewadi Road, Satavnagar, Hadapsar, Pune-411028 Phone: 7722045403 / 9175954032 Email Id: principal@jspmjscocs.edu.in Approved by Govt. of Maharashtra & Affiliated to SPPU, Pune-07 College Code: PU/PN/CS/485/2018



PROF. DR. H. R. KULKARNI M.Sc., PhD, PGDBM, PGDM, MBS, FAZI Principal

Veer, Maharashtra, India 43XR+486, Veer - Wathar Colony Rd, Veer Maharashtra 412102, India Lat 18.1485° Long 74.090825° 17/12/22 10:06 AM GMT +05:30

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PROL DR. L.J. SWUNT

B.E. (Elec.), PGDM, PhD

Founder Secretary

JAYAWANT SHIKSHAN PRASARAK MANDAL'S JAYAWANTRAD SAWANT COMMERCE AND SCIENCE COLLEGE

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Date: 13/12/2022

Notice

All students are hereby informed that the "Environmental Awareness about Plastic & Pesticides" activity is organized on 17th December, 2022 from 2:30 p.m. at Veer gaon. This activity is organized by NSS department. We aim to deepen our understanding of these environmental challenges and explore sustainable solutions. All be present for the nature save.

Principal

PRINCIPAL JSPM's Jayawantrao Sawant Commerce & Science College Hadapsar, Pune-411 028.



Sr. No. 58, Handewadi Road, Satavnagar, Hadapsar, Pune-411028 Phone: 7722045403 / 9175954032 Email Id: <u>principal@jspmjscocs.edu.in</u> Website: <u>www.jspmjscocs.edu.in</u> Approved by Govt. of Maharashtra & Affiliated to SPPU, Pune-07 College Code: PU/PN/CS/485/2018



PROF. DR. H. R. KULKARNI M.Sc., PhD, PGDBM, PGDM, MBS, FAZI Principal

PROF. DR. 1, J. SAWANT B.E. (Elec.), PGDM, PhD Founder Secretary

Report

To,

The Principal,

Subject: Report about the program conducted on "Environmental Awareness about Plastic & Pesticides"

Respected Sir,

I am hereby submitting the report on the program conducted on "Environmental Awareness about Plastic & Pesticides".

Details of the program:

Time: 2:30 p.m.

- Date : 17/12/2022
- Day : Saturday
- Place : Veer Gaon

Particulars of the program:

The "Environmental Awareness about Plastic & Pesticides" program in Veer Gaon saw students actively participating in plastic collection drives throughout the village. Their enthusiastic involvement not only helped clean up the environment but also raised awareness about the importance of proper waste management and the harmful impact of plastic pollution on local ecosystems.

Thank you.

(THE Prepared by, Prof - Provin Babor



B.E. (Elec.), PGDM, PhD

Founder Secretary

JAYAWANT SHIKSHAN PRASARAK MANDAL'S JAYAWANTRAD SAWANT COMMERCE AND SCIENCE COLLEGE

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PROF. DR. H. R. KULKARNI M.Sc., PhD. PGDBM, PGDM, MBS, FAZI Principal



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PROF. DR. F. J. SAWANT B.E. (Elec.), PGDM, PhD Founder Secretary

JAYAWANT SHIKSHAN PRASARAK MANDAL'S JAYAWANTRAD SAWANT COMMERCE AND SCIENCE COLLEGE

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PROF. DR. H. R. KULKARNI M.Sc., PhD, PGDBM, PGDM, MBS, FAZI Principal

Date: 14/10/2022

Notice

All students are hereby informed that the "Bharat Swachh Abhiyan" is organized on 19th October, 2022 from 10:00 a.m. in Veer gaon. This nationwide cleaning initiative desires upon each of us to contribute towards a cleaner and healthier India. All be present for this abhiyan.

PRINCIPAL JSPM's Jayawantrao Sawant Commerce & Science College Hadapsar, Pune - 411 028.





M.Sc., PhD, PGDBM, PGDM,

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Principal

PROF. DR. L.J. SAWANI B.E. (Elec.), PGDM, PhD Founder Secretary Sr. No. 58, Handewadi Road, Satavnagar, Hadapsar, Pune-411028 Phone: 7722045403 / 9175954032 Email Id: <u>principal@jspmjscocs.edu.in</u> Website: <u>www.jspmjscocs.edu.in</u> Approved by Govt. of Maharashtra & Affillated to SPPU, Pune-07 College Code: PU/PN/CS/485/2018

Report

To.

The Principal,

Subject: Report about the program conducted on "Bharat Swachh Abhiyan"

Respected Sir,

I am hereby submitting the report on the program conducted on "Bharat Swachh Abhiyan".

Details of the program:

Time: 10:00 a.m.

- Date : 19/10/2022
- · Day : Wednesday
- · Place : Veer Gaon

Particulars of the program:

The program "Bharat Swachh Abhiyan" was conducted on 19th October, 2022 from 10:00 a.m. in Veer gaon. Students at Veer Gaon participate from the National Service Scheme's Bharat Gram Swachh Abhiyan program, which encourages community-led sanitation and cleanliness initiatives and promotes awareness while nurturing a healthier environment.

Thank you.

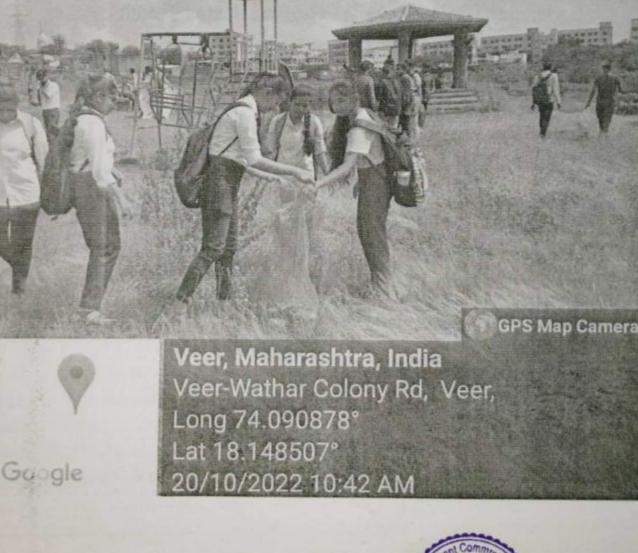
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PROF. DR. T.J. SAWANT B.E. (Elec.), PGDM, PhD Founder Secretary Sr. No. 58, Handewadi Road, Satavnagar, Hadapsar, Pune-411028 Phone: 7722045403 / 9175954032 Email Id: principal@jspmjscocs.edu.in Approved by Govt. of Maharashtra & Affiliated to SPPU, Pune-07 College Code: PU/PN/CS/485/2018



PROF. DR. H. R. KULKARNI M.Sc., PhD, PGDBM, PGDM, MBS, FAZI Principal





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rROL DR, L.J. SAWANI B.E. (Elec.), PGDM, PhD Founder Secretary

JAYAWANT SHIKSHAN PRASARAK MANDAL'S JAYAWANTRAD SAWANT COMMERCE AND SCIENCE COLLEGE

Sr. No. 58, Handewadi Road, Satavnagar, Hadapsar, Puno-411028 Phone: 7722045403 / 9175954032 Email Id: principal@jspmjscocs.edu.in Website: www.jspmjscocs.edu.in Approved by Govt. of Maharashtra & Affiliated to SPPU, Pune-07 College Code: PU/PN/CS/485/2018



1

PROF. DR. H. R. KULKARNI M.Sc., PhD, PGDBM, PGDM, MBS, FAZI Principal

Date: 15/03/2022

Notice

All students are hereby informed that the "Gram Swachh Abhiyan" is organized on 22nd March, 2022 from 10:00 a.m. in Wadki gaon. This program is organized by NSS department. All be present for this abhiyan.

Principal

PRINCIPAL JSPM's Jayawantrao Sawant Commerce & Science College Hadapsar, Pune - 411 028.



PROF. DR. L. E. SAWANT B.E. (Elec.), PGDM, PhD Founder Secretary Sr. No. 58, Handewadi Road, Satavnagar, Hadapsar, Pune-411028 Phone: 7722045403 / 9175954032 Email Id: principal@jspmjscocs.edu.in Approved by Govt. of Maharashtra & Affiliated to SPPU, Pune-07 College Code: PU/PN/CS/485/2018



PROF. DR. H. R. KULKARNI M.Sc., PhD, PGDBM, PGDM, MBS, FAZI Principal

Report

To.

The Principal,

Subject: Report about the program conducted on "Gram Swachh Abhiyan"

Respected Sir,

I am hereby submitting the report on the program conducted on "Gram Swachh Abhiyan".

Details of the program:

Time: 10:00 a.m.

- Date : 22/03/2022
- Day : Tuesday
- Place : Wadki Gaon

Particulars of the program:

The program "Gram Swachh Abhiyan" was conducted on 22nd March, 2022 from 10:00 a.m. in Wadki gaon. The National Service Scheme (NSS) department's student-centered Gram Swachh Abhiyan is beneficial to Wadki Gaon. Students participate in several sanitation and hygiene campaigns around the community as part of NSS-led projects. Students increase awareness and actively participate in bettering sanitation standards. Their initiatives support a healthier and cleaner environment, which is in keeping with the national cleaning campaign's objectives.

Thank you.

Prepared by,

Brof. Bovin Bobor



Sr. No. 58, Handewadi Road, Satavnagar, Hadapsar, Pune-411028 Phone: 7722045403 / 9175954032

PROF. DR. 1. J. SAWANT B.E. (Elec.), PGDM, PhD Founder Secretary Email Id: principal@jspmjscocs.edu.in Website: www.jspmjscocs.edu.in Approved by Govt. of Maharashtra & Affiliated to SPPU, Pune-07 College Code: PU/PN/CS/485/2018



PROF. DR. H. R. KI LKARNI M.Sc., PhD, PGDBM, PGDM, MBS, FAZI Principal

GPS Map Camera



Pune, Maharashtra, India Wadki, Hadapsar- Jejuri road, Maharashtra Long 78.719210° Lat 20.280557° 22/3/2022 12:14 PM





PROID R. L.J. SAWANT

B.E. (Elec.), PGDM, PhD

Founder Secretary

JAYAWANT SHIKSHAN PRASARAK MANDAL'S JAYAWANTRAD SAWANT COMMERCE AND SCIENCE COLLEGE

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Date: 14/03/2022

Notice

All students are hereby informed that the "Jal Savardhan Abhiyan" is organized on 18th March, 2022 from 10:00 a.m. in Wadki gaon, a campaign dedicated to water conservation and management. This program is organized by NSS department. All be present for conserve water resources, promote sustainable usage, and raise awareness about the importance of water preservation.

Principal

PRINCIPAL JSPM's Jayawantrao Sawant Commerce & Science College Hadapsar, Pune - 411 025.



PROF. DR. T. J. SAWANT

B.E. (Elec.), PGDM, PhD

Founder Secretary

JAYAWANT SHIKSHAN PRASARAK MANDAL'S JAYAWANTRAD SAWANT COMMERCE AND SCIENCE COLLEGE

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PROF. DR. H. R. KULKARNI M.Sc., PhD, PGDBM, PGDM, MBS, FAZI Principal

Report

To,

The Principal,

Subject: Report about the program conducted on "Jal Savardhan Abhiyan"

Respected Sir,

I am hereby submitting the report on the program conducted on "Jal Savardhan Abhiyan".

Details of the program:

Time: 10:00 a.m.

- · Date : 18/03/2022
- · Day : Friday
- Place : Wadki Gaon

Particulars of the program:

The program "Jal Savardhan Abhiyan" was conducted on 18th March, 2022 from 10:00 a.m. in Wadki gaon. The National Service Scheme (NSS) department's student-centered Gram Swachh Abhiyan is beneficial to Wadki Gaon. Students participate in several sanitation and hygiene campaigns around the community as part of NSS-led projects. Students increase awareness and actively participate in bettering sanitation standards. Their initiatives support a healthier and cleaner environment, which is in keeping with the national cleaning campaign's objectives.

Thank you.

PEOF Pravin Babar Prepared by,



B.E. (Elec.), PGDM, PhD Founder Secretary Sr. No. 58, Handewadi Road, Satavnagar, Hadapsar, Pune-411028 Phone: 7722045403 / 9175954032 Email Id: principal@jspmjscocs.edu.in Approved by Govt. of Maharashtra & Affiliated to SPPU, Pune-07 College Code: PU/PN/CS/485/2018



PROF. DR. H. R. KULKARNI M.Sc., PhD. PGDBM, PGDM, MBS, FAZI Principal



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PROF. DR. L.J. SAWANI

B.F. (Elec.), PGDM, PhD

Founder Secretary

JAYAWANT SHIKSHAN PRASARAK MANDAL'S JAYAWANTRAD SAWANT COMMERCE AND SCIENCE COLLEGE

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Date: 03/01/2020

Notice

All students are hereby informed that the "Gram Swachh Abhiyan" is organized on 6th January, 2020 from 10:00 a.m. in Pangare gaon. This program is organized by NSS department. All be present for this abhiyan.

Principal

PRINCIPAL JSPM's Jayawantrao Sawar Commerce & Science



PROF. DR. L.J. SAWANI

B.F. (Elec.), PGDM, PhD

Founder Secretary

JAYAWANT SHIKSHAN PRASARAK MANDAL'S JAYAWANTRAD SAWANT COMMERCE AND SCIENCE COLLEGE

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PROF. DR. H. R. KULKARNI M.Sc., PhD, PGDBM, PGDM, MBS, FAZI Principal

Report

To,

The Principal,

Subject: Report about the program conducted on "Gram Swachh Abhiyan"

Respected Sir,

I am hereby submitting the report on the program conducted on "Gram Swachh Abhiyan".

Details of the program:

Time: 10:00 a.m.

- Date : 06/01/2020
- Day : Monday
- Place : Pangare Gaon

Particulars of the program:

The program "Gram Swachh Abhiyan" was conducted on 6th January, 2020 from 10:00 a.m. in Pangare gaon. Major improvement in the cleanliness and general health of the surrounding area were made possible by the students' active participation in garbage removal activities and sanitation awareness initiatives. The occasion showed the dedication the NSS department is to encouraging student participation in society and responsibility.

Thank you.

Prepared by; prof. Peavin Bobon



PROF. DR. T. J. SAWANT B.E. (Elec.), PGDM, PhD

Founder Secretary

JAYAWANT SHIKSHAN PRASARAK MANDAL'S JAYAWANTRAD SAWANT COMMERCE AND SCIENCE COLLEGE

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PROF. DR. H. R. KULKARNI M.Sc., PhD, PGDBM, PGDM, MBS, FAZI Principal



Attendance

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PROF. DR. L. J. SAWANT

B.E. (Elec.), PGDM, PhD

Founder Secretary

JAYAWANT SHIKSHAN PRASARAK MANDAL'S JAYAWANTRAD SAWANT COMMERCE AND SCIENCE COLLEGE

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Date: 20/07/2018

Notice

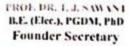
All staff and students are informed that we are organizing a Tree Plantation program scheduled on 24th July, 2018 11:00 a.m., at Aadarshanagar. We all work together to create a more sustainable and greener future.

Principal PRINCIPAL JSPM's Jayawantrao Sawant



JAYAWANT SHIKSHAN PRASARAK MANDAL'S JAYAWANTRAD SAWANT COMMERCE AND SCIENCE COLLEGE

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PROF. DR. H. R. KULKARNI M.Sc., PhD, PGDBM, PGDM, MBS, FAZI Principal

Report

To.

The Principal,

Subject: Report about the program conducted on "Tree Plantation"

Respected Sir,

I am hereby submitting the report on the program conducted on "Tree Plantation".

Details of the program:

Time: 11: 00 a.m.

- Date : 24/07/2018
- Day : Tuesday
- Place : Aadarshanagar

Particulars of the program:

The program "Tree Plantation" was conducted on 24th July, 2018 from 11:00 a.m. at -Aadarshanagar. All witnessed active involvement, leading to the planting of 50 trees. Speakers highlighted the program's significance in promoting environmental sustainability. The event marked a commendable effort towards creating a greener, more resilient community, resonating with the collective commitment to preserving our planet for future generations.

Thank you.

Prepared by, mat - PEavin Babar.



B.E. (Dec.), PGDM, PhD

Founder Secretary

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College Code: PU/PN/CS/485/2018





Attendance

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ENVIRONMENTAL AUDIT REPORT

of

JAYAWANT SHIKSHAN PRASARAK MANDAL'S, JAYAWANTRAO SAWANT COMMERCE & SCIENCE COLLEGE,

Handewadi Road, Hadapsar, Pune



Year: 2022-23

Prepared by:

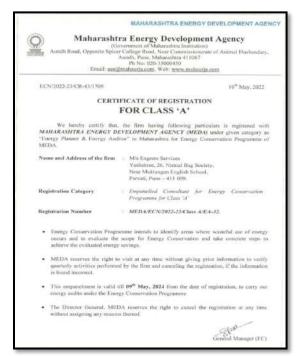
ENGRESS SERVICES

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



Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2022-23

REGISTRATION CERTIFICATES



MEDA REGISTRATION CERTIFICATE



ISO: 9001-2015 CERTIFICATE



ASSOCHAM GEM CP CERTIFICATE



ISO: 14001-2015 CERTIFICATE

Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2022-23

| Sr. No | Particulars | Page No |
|--------|--|---------|
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| 3 | Study of Usage of Renewable Energy | 12 |
| 4 | Study of Indoor Air Quality | 13 |
| 5 | Study of Indoor Comfort Condition Parameters | 14 |
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INDEX

ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College, Handewadi Road, Hadapsar, Pune for awarding us the assignment of Environmental Audit of their Campus for the Year: 2022-23.

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

EXECUTIVE SUMMARY

1. Jayawant Shikshan Prasarak Mandal's, Jayawantrao Sawant Commerce & Science College, Hadapsar, 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 CO₂ on account of Electricity Consumption
- > Solid Waste: Bio degradable Garden Waste
- Liquid Waste: Human liquid waste

3. Present Energy Consumption & CO₂ Emission:

| No | Particulars | Value | Unit |
|----|----------------------------------|-------|------|
| 1 | Annual Energy Purchased | 37463 | kWh |
| 2 | Annual CO ₂ Emissions | 33.72 | MT |

4. Renewable Energy Usage & Reduction in CO₂ Emissions:

- The College has installed Solar PV Plant of capacity 3 KW.
- The Energy generated by Solar PV Plant in 2022-23 is 3600 kWh.
- Reduction in CO₂ Emissions in 2022-23 is 3.24 MT

5. Indoor Air Quality Parameters:

| No | Parameter/Value | AQI | PM-2.5 | PM-10 |
|----|-----------------|-----|--------|-------|
| 1 | Maximum | 53 | 31 | 34 |
| 2 | Minimum | 50 | 29 | 32 |

6. Indoor Comfort Conditions:

| No | Parameter/Value | Temperature, ⁰C | Humidity, % | Lux Level | Noise Level, dB |
|----|-----------------|--------------------|----------------|-----------|--------------------|
| 1 | Maximum | 27.2 | 71 | 132 | 45 |
| 2 | Minimum | 27.1 | 69 | 105 | 40 |

7. Waste Management:

| No | Head | Particulars | |
|----|-----------------|---|--|
| 1 | Solid Waste | Segregation of Waste at source | |
| 2 | Microbial Waste | Provision of Autoclave | |
| 3 | Sanitary Waste | Provision of Sanitary Waste Incinerator | |

Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2022-23

8. Rain Water Management:

The rain water falling on terrace is used for increasing the underground water table.

9. Environment Friendly Initiatives:

- > Tree Plantation in the campus.
- > Creation of awareness on ban Single Use Plastic by Display of Posters

10. Assumptions:

- 1. 1 kWh of Electrical Energy releases 0.9 Kg of CO2 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 CO₂ Emissions: <u>www.tatapower.com</u>
- For Various Indoor Air Parameters: <u>www.ishrae.com</u>
- For AQI Quality Standards: <u>www.cpcb.com</u>
- For Solar PV Energy generation: <u>www.solarrooftop.gov.in</u>

Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2022-23

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:

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:



Engress Services, Pune

Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2022-23

1.3 College Location Image:

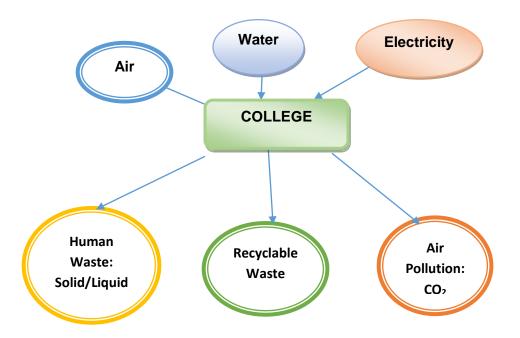


CHAPTER-II STUDY OF RESOURCE CONSUMPTION & CO₂ EMISSION

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 College as System & Study of Resources & Waste



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 CO2 into atmosphere

Table No 1: Study of Purchase of Energy & CO₂ Emissions: 2022-23:

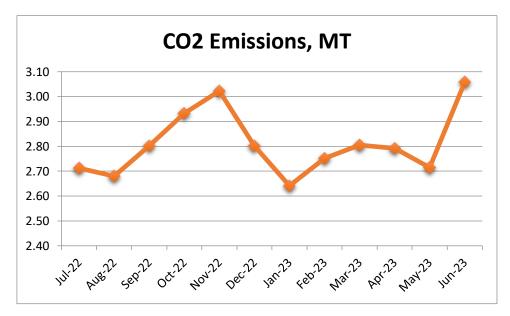
| No | Month | Energy Purchased, kWh | CO₂ Emissions, MT |
|----|--------|-----------------------|----------------------|
| 1 | Jul-22 | 3014 | 2.71 |
| 2 | Aug-22 | 2978 | 2.68 |
| 3 | Sep-22 | 3114 | 2.80 |
| 4 | Oct-22 | 3258 | 2.93 |
| 5 | Nov-22 | 3358 | 3.02 |
| 6 | Dec-22 | 3114 | 2.80 |
| 7 | Jan-23 | 2935 | 2.64 |

Engress Services, Pune

Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2022-23

| 8 | Feb-23 | 3058 | 2.75 |
|----|---------|---------|-------|
| 9 | Mar-23 | 3117 | 2.81 |
| 10 | Apr-23 | 3102 | 2.79 |
| 11 | May-23 | 3017 | 2.72 |
| 12 | Jun-23 | 3398 | 3.06 |
| 13 | Total | 37463 | 33.72 |
| 14 | Maximum | 3398 | 3.06 |
| 15 | Minimum | 2935 | 2.64 |
| 16 | Average | 3121.92 | 2.81 |

Chart No 2: Month wise CO₂ Emissions:



CHAPTER III STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity **3** kWpIn the following Table, we present the reduction in CO₂ emissions due to Solar Energy:

Table No 2: Computation of Reduction in CO₂ Emissions:

| No | Particulars | Value | Unit |
|----|--|-------|-----------------------|
| 1 | Installed Capacity of Roof Top Solar PV Plant Capacity | 3 | kWp |
| 2 | Energy Generated in per kWp | 4 | kWh/kWp |
| 3 | Annual Solar Energy generation Days | 300 | Nos |
| 4 | Energy Generated in the Year: 2022-23 = 1*2*3 | 3600 | kWh |
| 5 | 1 kWh of Electrical Energy saves | 0.9 | Kg/kWh |
| 6 | Qty of CO₂ Saved by Solar PV Plant =(4)*(5) /1000 | 3.24 | MT of CO ₂ |

Photograph of Roof Top Solar PV Plant:



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 livability.

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

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. As the AQI increases, it means that a large percentage of the population will experience severe adverse health effects.

We present herewith following important Parameters.

- 1. AQI- Air Quality Index
- 2. PM-2.5- Particulate Matter of Size 2.5 micron
- 3. PM-10- Particulate Matter of Size 10 micron

Table No 3: Indoor Air Quality Parameters:

| No | Location | AQI | PM-2.5 | PM-10 |
|----|------------------|-----|--------|-------|
| 1 | Classroom | 50 | 30 | 33 |
| 2 | Electronics Dept | 51 | 31 | 34 |
| 3 | Exam Section | 53 | 32 | 34 |
| 4 | NSS Room | 52 | 31 | 33 |
| 5 | Office | 50 | 29 | 32 |
| | Maximum | 53 | 31 | 34 |
| | Minimum | 50 | 29 | 32 |

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.

| No | Location | Temperature, ⁰ C | Humidity, % | Lux Level | Noise Level, dB |
|----|------------------|--------------------------------|----------------|--------------|--------------------|
| 1 | Classroom | 27.1 | 70 | 124 | 44.3 |
| 2 | Electronics Dept | 27.2 | 69 | 105 | 42 |
| 3 | Exam Section | 27.1 | 69 | 132 | 41.9 |
| 4 | NSS Room | 27.1 | 71 | 126 | 45 |
| 5 | Office | 27.2 | 69 | 132 | 40 |
| | Maximum | 27.2 | 71 | 132 | 45 |
| | Minimum | 27.1 | 69 | 105 | 40 |

Table No 4: Study of Indoor Comfort Condition Parameters:

CHAPTER VI STUDY OF WASTE MANAGEMENT

6.1 Segregation of Waste at Source:

The Waste is segregated at source. Waste bins are located at various locations. **Photograph of Separate Waste Collection Bin:**



6.2 Microbial Waste Management:

The Microbial Waste is completely degenerated in an Autoclave, before disposal.

6.3 Sanitary Waste Management:

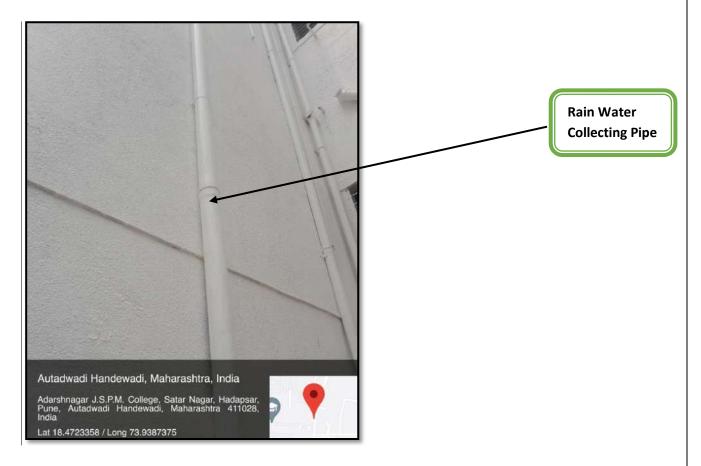
The College has installed Sanitary Waste Incinerator, for Disposal of Sanitary Waste. **Photograph of Sanitary Waste Incinerator:**



CHAPTER-VII STUDY OF RAIN WATER MANAGEMENT

The College has installed Pipes from the terrace. The Rain Water is used to increase the underground water table.

Photograph of Rain water Collecting Pipe:



CHAPTER-VIII STUDY OF ECO FRIENDLY INITIATIVES

8.1 Internal Tree Plantation:

The College has Tree Plantation in the campus. **Photograph of Tree plantation:**



8.2 Creation of Awareness about Resource Conservation:

The College has displayed posters emphasizing on importance of Ban Single Use Plastic.

Photograph of Poster on Ban Single Use Plastic:



ANNEXURE-I: VARIOUS AIR QUALITY, NOISE & COMFORT STANDARDS:

| 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 + |

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

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°C |
| 2 | Humidity | Less Than 70% |

GREEN AUDIT REPORT

of

JAYAWANT SHIKSHAN PRASARAK MANDAL'S, JAYAWANTRAO SAWANT COMMERCE & SCIENCE COLLEGE,

Handewadi Road, Hadapsar, Pune



Year: 2022-23

Prepared by:

ENGRESS SERVICES

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



Green Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2022-23

REGISTRATION CERTIFICATES



MEDA REGISTRATION CERTIFICATE



ISO: 9001-2015 Certificate



ASSOCHAM GEM CP CERTIFICATE



ISO: 14001-2015 Certificate

Green Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2022-23

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| 6 | Study of Green & Sustainable Practices | 12 |

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ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College, Handewadi Road, Hadapsar, Pune for awarding us the assignment of Green Audit of their Campus for the Year: 2022-23.

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

EXECUTIVE SUMMARY

1. Jayawant Shikshan Prasarak Mandal's, Jayawantrao Sawant Commerce & Science College, Hadapsar, Pune consumes Energy in the form of Electrical Energy; used for various Electrical Equipment, office & other facilities.

2. Present Energy Consumption & CO₂ Emission:

| No | Particulars | Value | Unit |
|----|----------------------------------|-------|------|
| 1 | Annual Energy Purchased | 37463 | kWh |
| 2 | Annual CO ₂ Emissions | 33.72 | MT |

3. Renewable Energy Usage & Reduction in CO₂ Emissions:

- The Energy generated by 3 kWp Solar PV Plant in 2022-23 is 3600 kWh.
- Reduction in CO₂ Emissions in 2022-23 is 3.24 MT

4. Waste Management:

| No | Head | Particulars | |
|----|-----------------|---|--|
| 1 | Solid Waste | Segregation of Waste at source | |
| 2 | Microbial Waste | Provision of Autoclave | |
| 3 | Sanitary Waste | Provision of Sanitary Waste Incinerator | |

5. Rain Water Management:

The rain water falling on terrace is used for increasing the underground water table.

6. Green & Sustainable Practices:

- Maintenance of good Internal Road
- Tree Plantation in the campus.
- Provision of Ramp for Divyangajan
- > Creation of awareness on ban Single Use Plastic by Display of Posters

7. Assumptions:

- 1. 1 kWh of Electrical Energy releases 0.9 Kg of CO₂ into atmosphere
- 2. Energy generated by Roof Top Solar PV Plant: 4 kWh/kWp per Day
- 3. Annual Solar Energy generation Days: 300 Nos

8. References:

- For CO₂ Emissions: <u>www.tatapower.com</u>
- For Solar PV Energy generation: <u>www.solarrooftop.gov.in</u>

ABBREVIATIONS

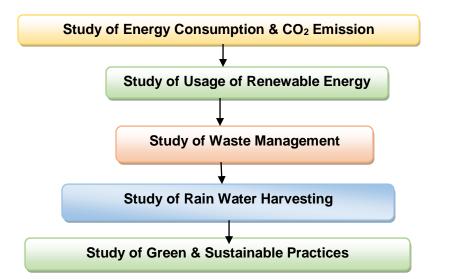
| BEE | Bureau of Energy Efficiency |
|-----------------|-----------------------------------|
| JSPM | Jayawant Shikshan Prasarak Mandal |
| kWh | Kilo Watt Hour |
| LPD | Liters Per Day |
| Kg | Kilo Gram |
| MT | Metric Ton |
| CO ₂ | Carbon Di Oxide |
| Qty | Quantity |

CHAPTER-I INTRODUCTION

1.1 Introduction:

A Green Audit is conducted at Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College, Hadapsar, Pune

1.2 Audit Procedural Steps:



1.3 College Location Image:



CHAPTER-II STUDY OF ENERGY CONSUMPTION & CO₂ EMISSION

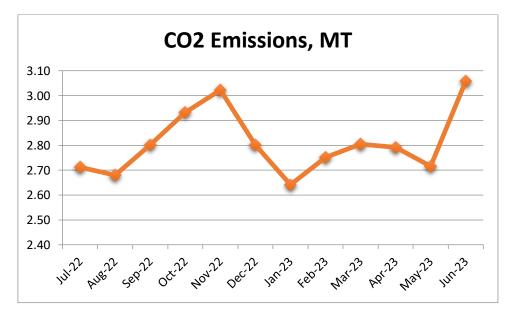
A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities. Basis for computation of CO₂ Emissions:

• 1 kWh of Electrical Energy releases 0.9 Kg of CO2 into atmosphere

| l able No | 1: Month | wise CO ₂ | Emissions: | |
|-----------|----------|----------------------|------------|--|
| | | | | |

| No | Month | Energy Purchased, CO ₂ Emission KWh MT | |
|----|---------|---|-------|
| 1 | Jul-22 | 3014 | 2.71 |
| 2 | Aug-22 | 2978 | 2.68 |
| 3 | Sep-22 | 3114 | 2.80 |
| 4 | Oct-22 | 3258 | 2.93 |
| 5 | Nov-22 | 3358 | 3.02 |
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| 13 | Total | 37463 | 33.72 |
| 14 | Maximum | 3398 | 3.06 |
| 15 | Minimum | 2935 | 2.64 |
| 16 | Average | 3121.92 | 2.81 |

Chart No 1: Month wise CO₂ Emissions:



CHAPTER III STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity **3 kWp** In the following Table, we present the reduction in CO₂ emissions due to Solar Energy:

Table No 3: Computation of Reduction in CO₂ Emissions:

| No | Particulars | | Unit |
|----|---|------|-----------------------|
| 1 | Installed Capacity of Roof Top Solar PV Plant Capacity | | kWp |
| 2 | Energy Generated in per kWp | 4 | kWh/kWp |
| 3 | Annual Solar Energy generation Days | | Nos |
| 4 | Energy Generated in the Year: 2022-23 = 1*2*3 | | kWh |
| 5 | 1 kWh of Electrical Energy saves | | Kg/kWh |
| 6 | Qty of CO ₂ Saved by Solar PV Plant =(4)*(5) /1000 | 3.24 | MT of CO ₂ |

Photograph of Roof Top Solar PV Plant:



CHAPTER IV STUDY OF WASTE MANAGEMENT

4.1 Segregation of Waste at Source:

The Waste is segregated at source. Waste bins are located at various locations. **Photograph of Separate Waste Collection Bin:**



4.2 Microbial Waste Management:

The Microbial Waste is completely degenerated in an Autoclave, before disposal.

4.3 Sanitary Waste Management:

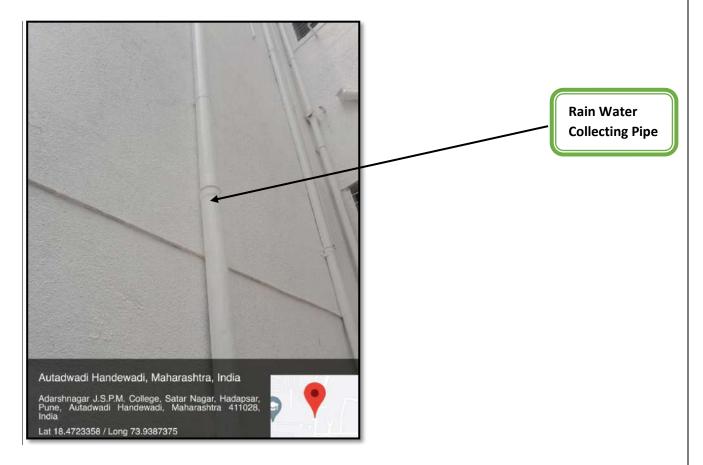
The College has installed Sanitary Waste Incinerator, for Disposal of Sanitary Waste. **Photograph of Sanitary Waste Incinerator:**



CHAPTER V STUDY OF RAIN WATER MANAGEMENT

The College has installed Pipes from the terrace. The Rain Water is used to increase the underground water table.

Photograph of Rain water Collecting Pipe:



CHAPTER VI STUDY OF GREEN & SUSTAINABLE PRACTICES

6.1 Pedestrian Friendly Road & Internal Tree Plantation:

The College has well maintained internal road to facilitate the easy movement of the students within the campus. The College has well maintained landscaped garden in the campus.

Photograph of Internal Road & Tree plantation:

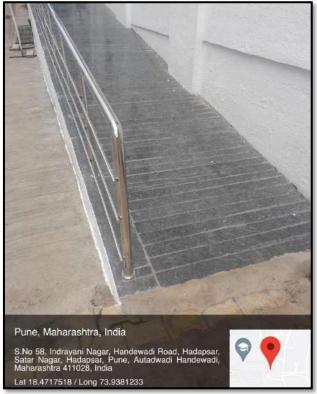




Green Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2022-23

6.2 Provision of Ramp for Divyangajan:

For easy movement of Divyangajan, the College has made provision of Ramp. **Photograph of Ramp:**



6.3 Creation of Awareness about Resource Conservation:

The College has displayed posters emphasizing on importance of Ban Single Use Plastic.

Photograph of Poster on Ban Single Use Plastic:



ENVIRONMENTAL AUDIT REPORT

of

JAYAWANT SHIKSHAN PRASARAK MANDAL'S, JAYAWANTRAO SAWANT COMMERCE & SCIENCE COLLEGE,

Handewadi Road, Hadapsar, Pune



Year: 2021-22

Prepared by:

ENGRESS SERVICES

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





BEE AUDITOR CERTIFICATE

MEDA EMPANELMENT CERTIFICATE



ASSOCHAM GEM CP CERTIFICATE

Engress Services, Pune

Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College:2021-22

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| 8 | Study of Environment Friendly Initiatives | |
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We Engress Services, Pune, express our sincere gratitude to the management of Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College, Handewadi Road, Hadapsar, Pune for awarding us the assignment of Environmental Audit of their Campus for the Year: 2021-22.

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

EXECUTIVE SUMMARY

1. Jayawant Shikshan Prasarak Mandal's, Jayawantrao Sawant Commerce & Science College, Hadapsar, 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 CO₂ on account of Electricity Consumption
- Solid Waste: Bio degradable Garden Waste
- Liquid Waste: Human liquid waste

3. Present Energy Consumption & CO₂ Emissions:

| No | Parameter/ Value | Energy Purchased, kWh | CO ₂ Emissions, MT |
|----|---------------------|--------------------------|----------------------------------|
| 1 | Total | 35308 | 31.78 |
| 2 | Maximum | 3117 | 2.81 |
| 3 | Minimum | 2690 | 2.42 |
| 4 | Average | 2942.33 | 2.65 |

4. Usage of Renewable Energy& Reduction in CO₂ Emissions:

- The College has installed Roof Top Solar PV Plant of Capacity 3kWp.
- The Electrical Energy generated in 21-22 is 3600 kWh.
- Reduction in CO₂ Emissions in 21-22 works out to be 3.24 MT.

5. Indoor Air Quality Parameters:

| No | Parameter/Value | AQI | PM-2.5 | PM-10 |
|----|-----------------|-----|--------|-------|
| 1 | Maximum | 63 | 38 | 42 |
| 2 | Minimum | 56 | 30 | 35 |

6. Indoor Comfort Conditions:

| No | Parameter/Value | Temperature, ⁰C | Humidity, % | Lux Level | Noise Level, dB |
|----|-----------------|--------------------|----------------|-----------|--------------------|
| 1 | Maximum | 25.8 | 86 | 190 | 54 |
| 2 | Minimum | 25.4 | 84 | 115 | 45.6 |

7. Waste Management:

7.1 Solid Waste Management:

Waste is segregated at Source. Waste bins are provided at various locations.

7.2 Microbial Waste Management:

The Microbial Waste is degenerated in an Autoclave before disposal.

7.3 Sanitary Waste Management:

A Sanitary Waste Incinerator is provided in the Campus for Disposal of Sanitary Waste.

8. Rain Water Management:

The rain water falling on the terrace is used for increasing the Underground Water Table.

9. Environment Friendly Initiatives:

- Internal Tree Plantation:
- Creation of Awareness on Energy Conservation by Display of Posters

10. Assumptions:

- 1. 1 kWh of Electrical Energy releases 0.9 Kg of CO2 into atmosphere
- 2. 1 kWp Roof Top Solar PV Plant generates 4 kWh of Electrical Energy per Day
- 3. Annual Solar Energy Generation Days: 300 Nos.

11. References:

- For CO₂ Emissions: <u>www.tatapower.com</u>
- For Solar PV Energy generation: <u>www.solarroftop.gov,in</u>
- For Various Indoor Air Parameters: <u>www.ishrae.com</u>
- For AQI &Water Quality Standards: <u>www.cpcb.com</u>

Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College:2021-22

ABBREVIATIONS

| Kg | : | Kilo Gram |
|--------|---|--|
| JSPM | : | Jayawant Shikshan Prasarak Mandal |
| 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

1.1Important Definitions:

1.1.1 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

1.1.2. 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

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

1.1.4. Table No 1: Relevant Environmental Laws in India:

| 1927 | The Indian Forest Act |
|------|--|
| 1972 | The Wildlife Protection Act |
| 1974 | The Water (Prevention and Control of Pollution) Act |
| 1977 | The Water (Prevention & Control of Pollution) Cess Act |
| 1980 | The Forest (Conservation) Act |
| 1981 | The Air (Prevention and Control of Pollution) Act |
| 1986 | The Environment Protection Act |
| 1991 | The Public Liability Insurance Act |
| 2002 | The Biological Diversity Act |
| 2010 | The National Green Tribunal Act |

1.1.5. Table No 2: Some Important Environmental Rules in India:

| 1989 | Hazardous Waste (Management and Handling) Rules |
|------|---|
| 1989 | Manufacture, Storage and Import of Hazardous Chemical Rules |
| 2000 | Municipal Solid Waste (Management and Handling) Rules |
| 1998 | The Biomedical Waste (Management and Handling) Rules |
| 1999 | The Environment (Sitting for Industrial Projects) Rules |
| 2000 | Noise Pollution (Regulation and Control) Rules |
| 2000 | Ozone Depleting Substances (Regulation and Control) Rules |
| 2011 | E-waste (Management and Handling) Rules |

Engress Services, Pune

Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College:2021-22

| 2011 | National Green Tribunal (Practices and Procedure) Rules |
|------|---|
| 2011 | Plastic Waste (Management and Handling) Rules |

1.1.6 Table No 3: National Environmental Plans & Policy Documents:

| 1. | National Forest Policy, 1988 |
|----|--|
| 2. | National Water Policy, 2002 |
| 3. | National Environment Policy or NEP (2006) |
| 4. | National Conservation Strategy and Policy Statement on Environment and Development, 1992 |
| 5. | Policy Statement for Abatement of Pollution (1992) |
| 6. | National Action Plan on Climate Change |
| 7. | Vision Statement on Environment and Human Health |
| 8. | Technology Vision 2030 (The Energy Research Institute) |
| 9. | Addressing Energy Security and Climate Change (MoEF and Bureau of Energy Efficiency |
| 10 | The Road to Copenhagen; India's Position on Climate Change Issues (MoEF) |

1.2 Objectives:

- 1. To study Resource Consumption & CO₂ Emissions
- 2. To Study Usage of renewable Energy
- 3. To study Indoor Air Quality Parameters
- 4. To study Indoor Comfort Condition Parameters
- 5. To Study of Waste Management
- 6. To Study of Rain Water Management
- 7. To Study of Environment Friendly Initiatives

1.3 Table No 4: General Details of College:

| No | Head | Particulars |
|----|---------------------|--|
| 1 | Name of Institution | Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College |
| 2 | Address | Handewadi Road, Hadapsar, Pune 411 028 |
| 3 | Affiliation | Savitribai Phule Pune University |

Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College:2021-22

1.4 Google Earth Image:

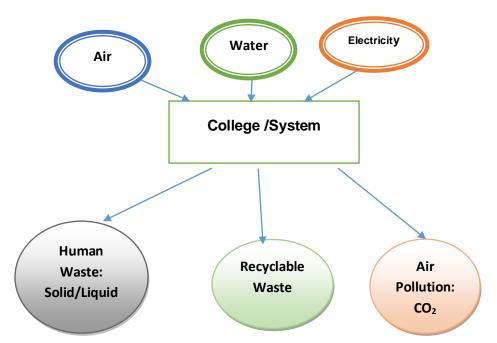


CHAPTER-II STUDY OF CONSUMPTION OF RECOURCES & CO₂ EMISSION

The Institute 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 College as System & Study of Resources & Waste



Now we compute the Generation of CO2 on account of consumption of Electrical Energy.

The basis of Calculation for CO₂ emissions due to Electrical Energy is as under

• 1 kWh of Electrical Energy releases 0.9 Kg of CO2 into atmosphere

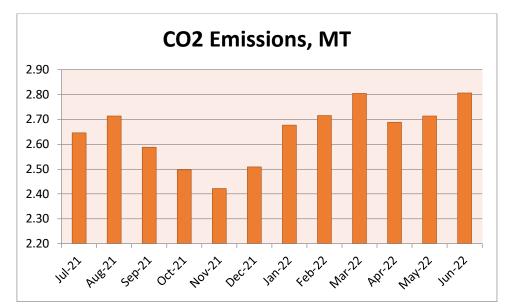
Table No 5: Study of Consumption of Electrical Energy & CO₂ Emissions: 21-22:

| No | Month | Energy Purchased, kWh | CO ₂ Emissions, MT |
|----|--------|--------------------------|----------------------------------|
| 1 | Jul-21 | 2940 | 2.65 |
| 2 | Aug-21 | 3015 | 2.71 |
| 3 | Sep-21 | 2875 | 2.59 |
| 4 | Oct-21 | 2775 | 2.50 |
| 5 | Nov-21 | 2690 | 2.42 |
| 6 | Dec-21 | 2787 | 2.51 |
| 7 | Jan-22 | 2974 | 2.68 |
| 8 | Feb-22 | 3018 | 2.72 |

Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College:2021-22

| 9 | Mar-22 | 3115 | 2.80 |
|----|---------|---------|-------|
| 10 | Apr-22 | 2987 | 2.69 |
| 11 | May-22 | 3015 | 2.71 |
| 12 | Jun-22 | 3117 | 2.81 |
| 13 | Total | 35308 | 31.78 |
| 14 | Maximum | 3117 | 2.81 |
| 15 | Minimum | 2690 | 2.42 |
| 16 | Average | 2942.33 | 2.65 |

Chart No 2: Month wise CO₂ Emissions:



CHAPTER III STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity 3 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 6: Computation of Annual Reduction in CO₂ Emissions:

| No | Particulars | Value | Unit |
|----|---|-------|-----------------------|
| 1 | Installed Capacity of Roof Top Solar PV Plant Capacity | 3 | kWp |
| 2 | Energy Generated in per kWp | 4 | 4 kWh/kWp |
| 3 | Annual Solar Energy generation Days | 300 | Nos |
| 4 | Energy Generated in the Year: 21-22 3600 kWh | | kWh |
| 5 | 1 kWh of Electrical Energy saves | 0.9 | Kg/kWh |
| 6 | Qty of CO ₂ Saved by Solar PV Plant =(4)*(5) /1000 | 3.24 | MT of CO ₂ |

Photograph of Roof Top Solar PV Plant:



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.

Rapid urbanization and industrialization has added other elements/compounds to the pure air and thus caused the increase in pollution. In order to prevent, control and abate air pollution, the Air (Prevention and Control of Pollution) Act was enacted in 1981.

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.

- 1. AQI- Air Quality Index
- 2. PM-2.5- Particulate Matter of Size 2.5 micron
- 3. PM-10- Particulate Matter of Size 10 micron

Table No 7: Indoor Air Quality Parameters:

| No | Location | AQI | PM-2.5 | PM-10 |
|----|---------------|-----|--------|-------|
| 1 | Office | 60 | 36 | 48 |
| 2 | Physics Lab | 56 | 33 | 37 |
| 3 | Chemistry Lab | 63 | 38 | 39 |
| 4 | Class room | 61 | 37 | 42 |
| 5 | Faculty Cabin | 56 | 30 | 35 |
| | Maximum | 63 | 38 | 42 |
| | Minimum | 56 | 30 | 35 |

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 8: Study of Indoor Comfort Condition Parameters: | Table No 8: Stud | ly of Indoor Comfort Condition I | Parameters: |
|---|------------------|----------------------------------|-------------|
|---|------------------|----------------------------------|-------------|

| No | Location | Temperature, ⁰C | Humidity, % | Lux Level | Noise Level, dB |
|----|---------------|--------------------|----------------|--------------|--------------------|
| 1 | Office | 25.8 | 85 | 131 | 45.6 |
| 2 | Physics Lab | 25.4 | 86 | 119 | 46 |
| 3 | Chemistry Lab | 25.5 | 86 | 115 | 52 |
| 4 | Class room | 25.7 | 84 | 182 | 54 |
| 5 | Faculty Cabin | 25.7 | 84 | 190 | 53.6 |
| | Maximum | 25.8 | 86 | 190 | 54 |
| | Minimum | 25.4 | 84 | 115 | 45.6 |

CHAPTER VI STUDY OF WASTE MANAGEMENT

6.1 Solid Waste Management:

The Waste is segregated at Source. Waste Bins are kept at various locations in the Campus.

Photograph of Waste Collection Bin:



6.2 Microbial Waste Management:

The Microbial Waste is completely degenerated in an Autoclave, before disposal.

6.3 Sanitary Waste Management:

For disposal of Sanitary Waste, a Sanitary Waste Incinerator is installed in the campus.

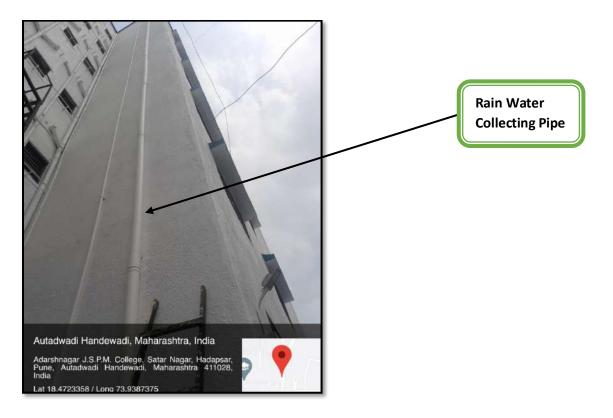
Photograph of Sanitary Waste Incinerator:



CHAPTER-VII STUDY OF RAIN WATER MANAGEMENT

The College has installed Pipes from the terrace. The Rain Water is used to increase the underground water table.

Photograph of Rain water Collecting Pipe:



CHAPTER-VIII STUDY OF ENVIRONMENT FRIENDLY INITIATIVES

8.1 Internal Tree Plantation:

The College has well maintained landscaped garden in the campus.

Photograph of Tree plantation:



8.2 Creation of Awareness on Energy Conservation:

The College has displayed posters emphasizing on importance of Energy Conservation. **Photograph of Poster on Energy Conservation:**



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

| 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 + |

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

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°C |
| 2 | Humidity | Less Than 70% |

GREEN AUDIT REPORT

of

JAYAWANT SHIKSHAN PRASARAK MANDAL'S, JAYAWANTRAO SAWANT COMMERCE & SCIENCE COLLEGE,

Handewadi Road, Hadapsar, Pune



Year: 2021-22

Prepared by:

ENGRESS SERVICES

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







ASSOCHAM GEM CP CERTIFICATE

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| 5 | Study of Waste Management | 12 |
| 6 | Study of Rain water Management | 13 |
| 7 | Study of Green & Sustainable Practices | 14 |

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ACKNOWLEDGEMENT

We Engress Services, Pune, express our sincere gratitude to the management of Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College, Handewadi Road, Hadapsar, Pune for awarding us the assignment of Green Audit of their Campus for the Year: 2021-22.

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

EXECUTIVE SUMMARY

1. Jayawant Shikshan Prasarak Mandal's, Jayawantrao Sawant Commerce & Science College, Hadapsar, Pune consumes Energy in the form of Electrical Energy; used for various Electrical Equipment, office & other facilities.

| No | Parameter/ Value | Energy Purchased, kWh | CO ₂ Emissions, MT |
|----|---------------------|--------------------------|----------------------------------|
| 1 | Total | 35308 | 31.78 |
| 2 | Maximum | 3117 | 2.81 |
| 3 | Minimum | 2690 | 2.42 |
| 4 | Average | 2942.33 | 2.65 |

2. Present Energy Consumption & CO₂ Emissions:

3. Usage of Renewable Energy & Reduction in CO₂ Emissions:

- The College has installed Roof Top Solar PV Plant of Capacity 3 kWp.
- The Electrical Energy generated in 2021-22 is 3600 kWh.
- Reduction in CO₂ Emissions in 2021-22 works out to be **3.24 MT**.

4. Waste Management:

4.1 Solid Waste Management:

Waste is segregated at Source. Waste bins are provided at various locations.

4.2 Microbial Waste Management:

The Microbial Waste is degenerated in an Autoclave before disposal.

4.3 Sanitary Waste Management:

A Sanitary Waste Incinerator is provided in the Campus for Disposal of Sanitary Waste.

5. Rain Water Management:

The rain water falling on terrace is used for increasing the underground water table.

6. Green & Sustainable Initiatives

- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp for Divyangajan
- > Creation of Awareness on Energy Conservation Display of Posters

7. Assumptions:

- 1. 1 kWh of Electrical Energy releases 0.9 Kg of CO2 into atmosphere
- 2. 1 kWp Roof Top Solar PV Plant generates 4 kWh of Electrical Energy per Day
- 3. Annual Solar Energy Generation Days: 300 Nos.

8. References:

- For CO₂ Emissions: <u>www.tatapower.com</u>
- For Solar PV Energy generation: <u>www.solarroftop.gov,in</u>

Green Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2021-22

ABBREVIATIONS

| BEE | Bureau of Energy Efficiency |
|-----------------|-----------------------------------|
| JSPM | Jayawant Shikshan Prasarak Mandal |
| 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 Objectives:

- 1. To study present Energy Consumption
- 2. To compute the CO_2 emissions
- 3. To study usage of Renewable Energy
- 4. Study of Waste Management
- 5. Study of Rain Water Harvesting
- 6. Study of Green & Sustainable Practices

1.2 Table No 1: General Details of College:

| No | Head | Particulars |
|----|---------------------|--|
| 1 | Name of Institution | Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College |
| 2 | Address | Handewadi Road, Hadapsar, Pune 411 028 |
| 3 | Affiliation | Savitribai Phule Pune University |

1.3 Google Earth Image:

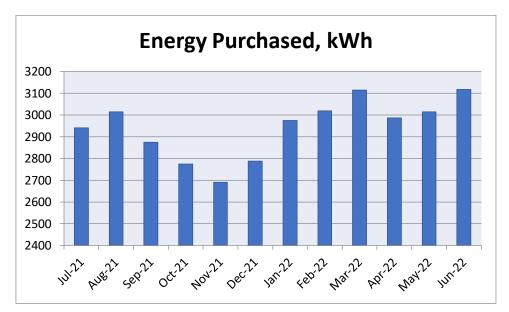


CHAPTER-II STUDY OF PRESENT ENERGY CONSUMPTION

| No | Month | Energy Purchased, kWh |
|----|---------|--------------------------|
| 1 | Jul-21 | 2940 |
| 2 | Aug-21 | 3015 |
| 3 | Sep-21 | 2875 |
| 4 | Oct-21 | 2775 |
| 5 | Nov-21 | 2690 |
| 6 | Dec-21 | 2787 |
| 7 | Jan-22 | 2974 |
| 8 | Feb-22 | 3018 |
| 9 | Mar-22 | 3115 |
| 10 | Apr-22 | 2987 |
| 11 | May-22 | 3015 |
| 12 | Jun-22 | 3117 |
| 13 | Total | 35308 |
| 14 | Maximum | 3117 |
| 15 | Minimum | 2690 |
| 16 | Average | 2942.33 |

In this chapter, we present the analysis of Electrical Energy. Table No 2: Electrical Bill Analysis- 2021-22:

Chart No 1: Variation in Monthly Energy Consumption:



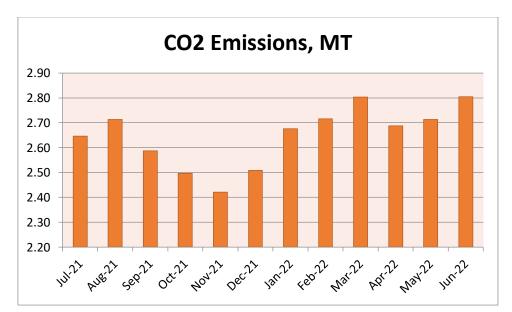
CHAPTER III STUDY OF CARBON FOOTPRINTING

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 4: Month wise CO₂ Emissions:

| No | Month | Energy Purchased, kWh | CO ₂ Emissions, MT |
|----|---------|--------------------------|----------------------------------|
| 1 | Jul-21 | 2940 | 2.65 |
| 2 | Aug-21 | 3015 | 2.71 |
| 3 | Sep-21 | 2875 | 2.59 |
| 4 | Oct-21 | 2775 | 2.50 |
| 5 | Nov-21 | 2690 | 2.42 |
| 6 | Dec-21 | 2787 | 2.51 |
| 7 | Jan-22 | 2974 | 2.68 |
| 8 | Feb-22 | 3018 | 2.72 |
| 9 | Mar-22 | 3115 | 2.80 |
| 10 | Apr-22 | 2987 | 2.69 |
| 11 | May-22 | 3015 | 2.71 |
| 12 | Jun-22 | 3117 | 2.81 |
| 13 | Total | 35308 | 31.78 |
| 14 | Maximum | 3117 | 2.81 |
| 15 | Minimum | 2690 | 2.42 |
| 16 | Average | 2942.33 | 2.65 |

Chart No 2: Month wise CO₂Emissions:



CHAPTER IV STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity 3 kWp.

In the following Table, we compute the Annual Reduction in CO₂ Emissions due to installation of Roof TOP Solar PV Plant.

Table No 6: Computation of Annual Reduction in CO₂ Emissions:

| No | Particulars | Value | Unit |
|----|---|-------|-----------------------|
| 1 | Installed Capacity of Roof Top Solar PV Plant Capacity | 3 | kWp |
| 2 | Energy Generated in per kWp | 4 | 4 kWh/kWp |
| 3 | Annual Solar Energy generation Days | 300 | Nos |
| 4 | Energy Generated in the Year: 21-22 | 3600 | kWh |
| 5 | 1 kWh of Electrical Energy saves | 0.9 | Kg/kWh |
| 6 | Qty of CO ₂ Saved by Solar PV Plant =(4)*(5) /1000 | 3.24 | MT of CO ₂ |

Photograph of Roof Top Solar PV Plant:



CHAPTER V STUDY OF WASTE MANAGEMENT

5.1 Solid Waste Management:

The Waste is segregated at Source. Waste Bins are kept at various locations in the Campus.

Photograph of Waste Collection Bin:



5.2 Microbial Waste Management:

The Microbial Waste is completely degenerated in an Autoclave, before disposal.

5.3 Sanitary Waste Management:

For disposal of Sanitary Waste, a Sanitary Waste Incinerator is installed in the campus.

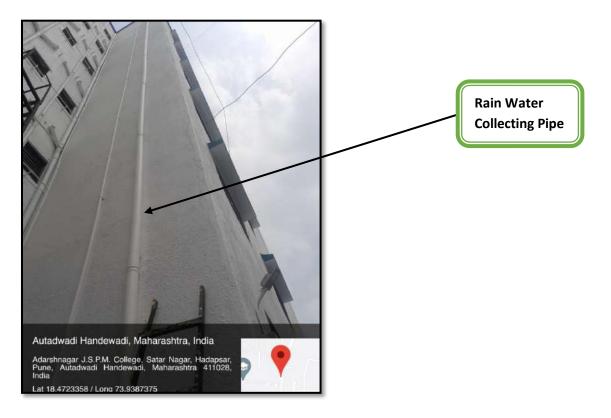
Photograph of Sanitary Waste Incinerator:



CHAPTER-VI STUDY OF RAIN WATER MANAGEMENT

The College has installed Pipes from the terrace. The Rain Water is used to increase the underground water table.

Photograph of Rain water Collecting Pipe:



CHAPTER-VII STUDY OF GREEN & SUSTAINABLE PRACTICES

7.1 Pedestrian Friendly Roads:

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

Photograph of Internal Road:



7.2 Internal Tree Plantation:

The College has well maintained landscaped garden in the campus.

Photograph of Tree plantation:



Green Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2021-22

7.3 Provision of Ramp for Divyangajan:

For easy movement of Divyangajan, the College has made provision of Ramp as well as dedicated wash room.

Photograph of Ramp:



7.4 Creation of Awareness about Energy Conservation:

The College has displayed posters emphasizing on importance of Energy Conservation.

Photograph of Poster on Energy Conservation:



ENVIRONMENTAL AUDIT REPORT

of

JAYAWANT SHIKSHAN PRASARAK MANDAL'S, JAYAWANTRAO SAWANT COMMERCE & SCIENCE COLLEGE,

Handewadi Road, Hadapsar, Pune



Year: 2020-21

Prepared by:

ENRICH CONSULTANTS

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



REGISTRATION CERTIFICATES



BEE ENERGY AUDITOR CERTIFICATE

| | MAHARASHTRA ENERGY DEVELOPMENT AGENCY An ISO 9001 : 2000 Reg. no. : RO 91/ 2462 | | | | |
|---|---|--|--|--|--|
| (Government of Maharashtra Institution) Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary, Aundh, Pune, Maharashtra 411067 Ph No: 020-55000450 Email: eee@mahauria.com, Web: www.mahauria.com | | | | | |
| ECN/2021-22/CR-14/1577 | 22 nd April, 2021 | | | | |
| CERTI | FICATE OF REGISTRATION | | | | |
| | FOR CLASS 'A' | | | | |
| MAHARASHTRA ENERGY D | , the firm having following particulars is registered with EVELOPMENT AGENCY (MEDA) under given category as litor" in Maharashtra for Energy Conservation Programme of | | | | |
| Name and Address of the firm | M/s Enrich Consultants Yashashree, Plot No. 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune - 411009. | | | | |
| Registration Category | : Empanelled Consultant for Energy Conservation Programme for Class 'A' | | | | |
| Registration Number | : MEDA/ECN/2021-22/Class A/EA-03 | | | | |
| | amme intends to identify areas where wasteful use of energy e scope for Energy Conservation and take concrete steps to y 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 21st April, 2023 from the date of registration, to carry out energy audits under the Energy Conservation Programme | | | | |
| The Director General, ME without assigning any reaso | DA reserves the right to cancel the registration at any time ns thereof. General Manager (EC) | | | | |

MEDA EMPANELMENT CERTIFICATE

Enrich Consultants, Pune

Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2020-21

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| 2 | Study of Consumption of Resources & CO ₂ Emission | 10 |
| 3 | Study of Usage of Renewable Energy | 12 |
| 4 | Study of Indoor Air Quality | 13 |
| 5 | Study of Waste Management | 14 |
| 6 | Study of Rain water Management | 15 |
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ACKNOWLEDGEMENT

We Enrich Consultants, Pune, express our sincere gratitude to the management of Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College, Handewadi Road, Hadapsar, Pune for awarding us the assignment of Environmental Audit of their Campus for the Year: 2020-21.

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

EXECUTIVE SUMMARY

1. Jayawant Shikshan Prasarak Mandal's, Jayawantrao Sawant Commerce & Science College, Hadapsar, 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 CO₂ on account of Electricity Consumption
- > Solid Waste: Bio degradable Garden Waste
- Liquid Waste: Human liquid waste

3. Present Energy Consumption & CO₂ Emissions:

| No | Parameter/ Value | Energy Purchased, kWh | CO₂ Emissions, MT | |
|----|---------------------|--------------------------|----------------------|--|
| 1 | Total | 14253 | 12.83 | |
| 2 | Maximum | 2902 | 2.61 | |
| 3 | Minimum | 785 | 0.71 | |
| 4 | Average | 14253 | 12.83 | |

4. Usage of Renewable Energy& Reduction in CO₂ Emissions:

- The College has installed Roof Top Solar PV Plant of Capacity 3kWp.
- The Electrical Energy generated in 2020-21 is 3600 kWh.
- Reduction in CO₂ Emissions in 2020-21 works out to be **3.24 MT**.

5. Indoor Air Quality Parameters:

| No | Parameter/Value | AQI | PM-2.5 | PM-10 |
|----|-----------------|-----|--------|-------|
| 1 | Maximum | 95 | 56 | 69 |
| 2 | Minimum | 86 | 52 | 59 |

6. Waste Management:

6.1 Solid Waste Management:

Waste is segregated at Source. Waste bins are provided at various locations.

6.2 Microbial Waste Management:

The Microbial Waste is degenerated in an Autoclave before disposal.

6.3 Sanitary Waste Management:

A Sanitary Waste Incinerator is provided in the Campus for Disposal of Sanitary Waste.

Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2020-21

7. Rain Water Management:

The rain water falling on the terrace is used for increasing the Underground Water Table.

8. Environment Friendly Initiatives:

- Internal Tree Plantation:
- > Creation of Awareness on 3R's Reduce, Reuse & Recycle by Display of Posters

9. Assumptions:

- 1. 1 kWh of Electrical Energy releases 0.9 Kg of CO2 into atmosphere
- 2. 1 kWp Roof Top Solar PV Plant generates 4 kWh of Electrical Energy per Day
- 3. Annual Solar Energy Generation Days: 300 Nos.

10. References:

- For CO₂ Emissions: <u>www.tatapower.com</u>
- For Solar PV Energy generation: www.solarroftop.gov,in
- For AQI Standards: <u>www.cpcb.com</u>

Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2020-21

ABBREVIATIONS

| Kg | : | Kilo Gram |
|--------|---|---------------------------------------|
| JSPM | : | Jayawant Shikshan Prasarak Mandal |
| 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 |

CHAPTER-I INTRODUCTION

1.1Important Definitions:

1.1.1 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

1.1.2. 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

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

1.1.4. Table No 1: Relevant Environmental Laws in India:

| 1927 | The Indian Forest Act |
|------|--|
| 1972 | The Wildlife Protection Act |
| 1974 | The Water (Prevention and Control of Pollution) Act |
| 1977 | The Water (Prevention & Control of Pollution) Cess Act |
| 1980 | The Forest (Conservation) Act |
| 1981 | The Air (Prevention and Control of Pollution) Act |
| 1986 | The Environment Protection Act |
| 1991 | The Public Liability Insurance Act |
| 2002 | The Biological Diversity Act |
| 2010 | The National Green Tribunal Act |

1.1.5. Table No 2: Some Important Environmental Rules in India:

| 1989 | Hazardous Waste (Management and Handling) Rules |
|------|---|
| 1989 | Manufacture, Storage and Import of Hazardous Chemical Rules |
| 2000 | Municipal Solid Waste (Management and Handling) Rules |
| 1998 | The Biomedical Waste (Management and Handling) Rules |
| 1999 | The Environment (Sitting for Industrial Projects) Rules |
| 2000 | Noise Pollution (Regulation and Control) Rules |
| 2000 | Ozone Depleting Substances (Regulation and Control) Rules |
| 2011 | E-waste (Management and Handling) Rules |

Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2020-21

| 2011 | National Green Tribunal (Practices and Procedure) Rules |
|------|---|
| 2011 | Plastic Waste (Management and Handling) Rules |

1.1.6 Table No 3: National Environmental Plans & Policy Documents:

| 1. | National Forest Policy, 1988 |
|----|--|
| 2. | National Water Policy, 2002 |
| 3. | National Environment Policy or NEP (2006) |
| 4. | National Conservation Strategy and Policy Statement on Environment and Development, 1992 |
| 5. | Policy Statement for Abatement of Pollution (1992) |
| 6. | National Action Plan on Climate Change |
| 7. | Vision Statement on Environment and Human Health |
| 8. | Technology Vision 2030 (The Energy Research Institute) |
| 9. | Addressing Energy Security and Climate Change (MoEF and Bureau of Energy Efficiency |
| 10 | The Road to Copenhagen; India's Position on Climate Change Issues (MoEF) |

1.2 Objectives:

- 1. To study Resource Consumption & CO₂ Emissions
- 2. To Study Usage of renewable Energy
- 3. To study Indoor Air Quality Parameters
- 4. To study Indoor Comfort Condition Parameters
- 5. To Study of Waste Management
- 6. To Study of Rain Water Management
- 7. To Study of Environment Friendly Initiatives

1.3 Table No 4: General Details of College:

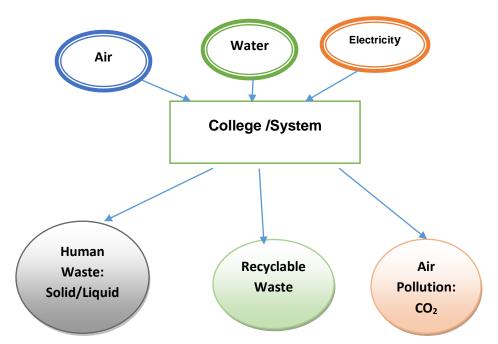
| No | Head Particulars | |
|----|---------------------|--|
| 1 | Name of Institution | Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College |
| 2 | Address | Handewadi Road, Hadapsar, Pune 411 028 |
| 3 | Affiliation | Savitribai Phule Pune University |

CHAPTER-II STUDY OF CONSUMPTION OF RECOURCES & CO₂ EMISSION

The Institute 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 College as System & Study of Resources & Waste



Now we compute the Generation of CO2 on account of consumption of Electrical Energy.

The basis of Calculation for CO₂ emissions due to Electrical Energy is as under

• 1 kWh of Electrical Energy releases 0.9 Kg of CO2 into atmosphere

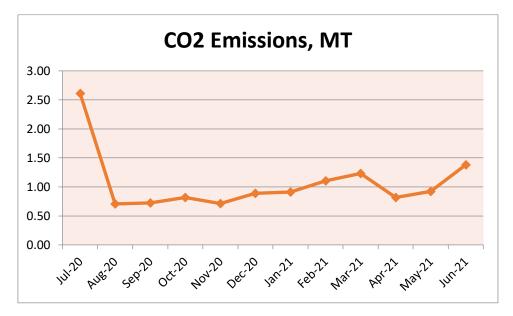
Table No 5: Study of Consumption of Electrical Energy & CO₂ Emissions: 20-21:

| No | Month | Energy Purchased, kWh | CO₂ Emissions, MT |
|----|--------|--------------------------|----------------------|
| 1 | Jul-20 | 2902 | 2.61 |
| 2 | Aug-20 | 785 | 0.71 |
| 3 | Sep-20 | 805 | 0.72 |
| 4 | Oct-20 | 907 | 0.82 |
| 5 | Nov-20 | 789 | 0.71 |
| 6 | Dec-20 | 990 | 0.89 |
| 7 | Jan-21 | 1012 | 0.91 |
| 8 | Feb-21 | 1228 | 1.11 |

Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2020-21

| - | 14 04 | 4000 | 1.00 |
|----|---------|---------|-------|
| 9 | Mar-21 | 1368 | 1.23 |
| 10 | Apr-21 | 907 | 0.82 |
| 11 | May-21 | 1025 | 0.92 |
| 12 | Jun-21 | 1535 | 1.38 |
| 13 | Total | 14253 | 12.83 |
| 14 | Maximum | 2902 | 2.61 |
| 15 | Minimum | 785 | 0.71 |
| 16 | Average | 1187.75 | 1.07 |

Chart No 2: Month wise CO₂ Emissions:



CHAPTER III STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity 3 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 6: C | computation of | Annual Reduction | in CO ₂ Emissions: |
|---------------|----------------|-------------------------|-------------------------------|
|---------------|----------------|-------------------------|-------------------------------|

| No | Particulars | Value | Unit |
|----|---|-------|-----------------------|
| 1 | Installed Capacity of Roof Top Solar PV Plant Capacity | 3 | 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: 20-21 | 3600 | kWh |
| 5 | 1 kWh of Electrical Energy saves | 0.9 | Kg/kWh |
| 6 | Qty of CO ₂ Saved by Solar PV Plant =(4)*(5) /1000 | 3.24 | MT of CO ₂ |

Photograph of Roof Top Solar PV Plant:



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.

Rapid urbanization and industrialization has added other elements/compounds to the pure air and thus caused the increase in pollution. In order to prevent, control and abate air pollution, the Air (Prevention and Control of Pollution) Act was enacted in 1981.

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.

- 1. AQI- Air Quality Index
- 2. PM-2.5- Particulate Matter of Size 2.5 micron
- 3. PM-10- Particulate Matter of Size 10 micron

Table No 7: Indoor Air Quality Parameters:

| No | Location | AQI | PM-2.5 | PM-10 |
|----|-------------------|-----|--------|-------|
| 1 | Faculty Room | 93 | 55 | 67 |
| 2 | Microbiology Dept | 90 | 54 | 64 |
| 3 | Library | 94 | 55 | 68 |
| 4 | Classroom | 86 | 52 | 59 |
| 5 | Physics Dept | 95 | 56 | 69 |
| | Maximum | 95 | 56 | 69 |
| | Minimum | 86 | 52 | 59 |

CHAPTER V STUDY OF WASTE MANAGEMENT

5.1 Solid Waste Management:

The Waste is segregated at Source. Waste Bins are kept at various locations in the Campus.

Photograph of Waste Collection Bin:



5.2 Microbial Waste Management:

The Microbial Waste is completely degenerated in an Autoclave, before disposal.

5.3 Sanitary Waste Management:

For disposal of Sanitary Waste, a Sanitary Waste Incinerator is installed in the campus.

Photograph of Sanitary Waste Incinerator:



CHAPTER-VI STUDY OF RAIN WATER MANAGEMENT

The College has installed Pipes from the terrace. The Rain Water is used to increase the underground water table.

Photograph of Rain water Collecting Pipe:



CHAPTER-VII STUDY OF ENVIRONMENT FRIENDLY INITIATIVES

7.1 Internal Tree Plantation:

The College has well maintained landscaped garden in the campus.

Photograph of Tree plantation:



7.2 Creation of Awareness about 3 R's:

The College has displayed posters emphasizing on importance of 3 R's i.e Reduce, Reuse & Recycle.

Photograph of Poster on importance of 3R's i.e Reduce, Reuse & Recycle:



ANNEXURE-I: INDOOR AIR QUALITY STANDARDS:

| 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 + |

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

GREEN AUDIT REPORT

of

JAYAWANT SHIKSHAN PRASARAK MANDAL'S, JAYAWANTRAO SAWANT COMMERCE & SCIENCE COLLEGE,

Handewadi Road, Hadapsar, Pune



Year: 2020-21

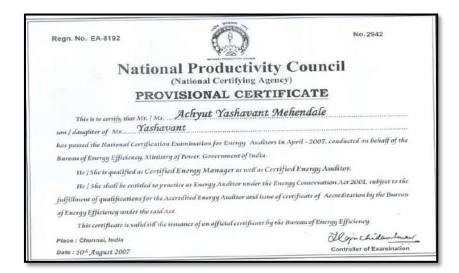
Prepared by:

ENRICH CONSULTANTS

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune 411009 Phone: 09890444795 Email: <u>enrichcons@gmail.com</u>



REGISTRATION CERTIFICATES



BEE ENERGY AUDITOR CERTIFICATE

| | MAHARASHTRA ENERGY DEVELOPMENT AGENCY An ISO 8001 : 2008 Reg. Ho. : R0 91 / 2463 |
|--|---|
| (Go Aundh Road, Opposite Spicer | ra Energy Development Agency vernment of Maharashtra Institution) College Road, Near Commissionerate of Animal Husbandary, Yundh, Pune, Maharashtra 411067 Ph No: 020-35000450 mahauria.com, Web: www.mahauria.com |
| ECN/2021-22/CR-14/1577 | 22 nd April, 2021 |
| CERTI | FICATE OF REGISTRATION |
| | FOR CLASS 'A' |
| MAHARASHTRA ENERGY DE | the firm having following particulars is registered with <i>SVELOPMENT AGENCY (MEDA)</i> under given category as itor" in Maharashtra for Energy Conservation Programme of |
| Name and Address of the firm | M/s Enrich Consultants Yashashree, Plot No. 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune - 411009. |
| Registration Category | : Empanelled Consultant for Energy Conservation Programme for Class 'A' |
| Registration Number | : MEDA/ECN/2021-22/Class A/EA-03 |
| | amme intends to identify areas where wasteful use of energy scope for Energy Conservation and take concrete steps to savings. |
| | visit at any time without giving prior information to verify d by the firm and canceling the registration, if the information |
| | ill 21" April, 2023 from the date of registration, to carry out gy Conservation Programme |
| The Director General, MEI without assigning any reason | DA reserves the right to cancel the registration at any time is thereof. |
| | Contrast international and an an an and an |

MEDA EMPANELMENT CERTIFICATE

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| Ш | Abbreviations | 7 |
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| 2 | Study of Present Energy Consumption | 9 |
| 3 | Study of Carbon Foot printing | 10 |
| 4 | Study of Usage of Renewable Energy | 11 |
| 5 | Study of Waste Management | 12 |
| 6 | Study of Rain water Management | 13 |
| 7 | Study of Green & Sustainable Practices | 14 |

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ACKNOWLEDGEMENT

We Enrich Consultants, Pune, express our sincere gratitude to the management of Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College, Handewadi Road, Hadapsar, Pune for awarding us the assignment of Green Audit of their Campus for the Year: 2020-21.

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

EXECUTIVE SUMMARY

1. Jayawant Shikshan Prasarak Mandal's, Jayawantrao Sawant Commerce & Science College, Hadapsar, Pune consumes Energy in the form of Electrical Energy; used for various Electrical Equipment, office & other facilities.

| No | Parameter/ Value | Energy Purchased, kWh | CO ₂ Emissions, MT |
|----|---------------------|--------------------------|----------------------------------|
| 1 | Total | 14253 | 12.83 |
| 2 | Maximum | 2902 | 2.61 |
| 3 | Minimum | 785 | 0.71 |
| 4 | Average | 1187.75 | 1.07 |

2. Present Energy Consumption & CO₂ Emissions:

3. Usage of Renewable Energy & Reduction in CO₂ Emissions:

- The College has installed Roof Top Solar PV Plant of Capacity 3 kWp.
- The Electrical Energy generated in 2020-21 is 3600 kWh.
- Reduction in CO₂ Emissions in 2020-21 works out to be 3.24 MT.

4. Waste Management:

4.1 Solid Waste Management:

Waste is segregated at Source. Waste bins are provided at various locations.

4.2 Microbial Waste Management:

The Microbial Waste is degenerated in an Autoclave before disposal.

4.3 Sanitary Waste Management:

A Sanitary Waste Incinerator is provided in the Campus for Disposal of Sanitary Waste.

5. Rain Water Management:

The rain water falling on terrace is used for increasing the underground water table.

6. Green & Sustainable Initiatives

- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp for Divyangajan
- > Creation of Awareness on 3R's Reduce, Reuse & Recycle by Display of Posters

7. Assumptions:

- 1. 1 kWh of Electrical Energy releases 0.9 Kg of CO2 into atmosphere
- 2. 1 kWp Roof Top Solar PV Plant generates 4 kWh of Electrical Energy per Day
- 3. Annual Solar Energy Generation Days: 300 Nos.

8. References:

- For CO₂ Emissions: <u>www.tatapower.com</u>
- For Solar PV Energy generation: www.solarroftop.gov,in

Green Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2020-21

ABBREVIATIONS

| BEE | Bureau of Energy Efficiency |
|-----------------|-----------------------------------|
| JSPM | Jayawant Shikshan Prasarak Mandal |
| 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 Objectives:

- 1. To study present Energy Consumption
- 2. To compute the CO_2 emissions
- 3. To study usage of Renewable Energy
- 4. Study of Waste Management
- 5. Study of Rain Water Harvesting
- 6. Study of Green & Sustainable Practices

1.2 Table No 1: General Details of College:

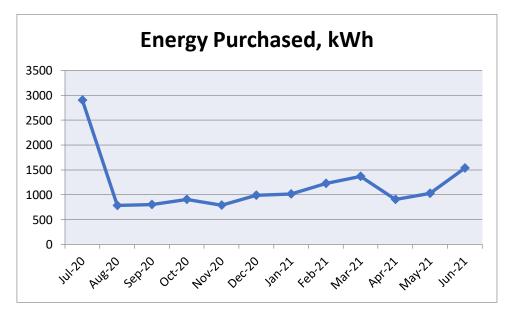
| No | Head | Particulars |
|----|---------------------|--|
| 1 | Name of Institution | Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College |
| 2 | Address | Handewadi Road, Hadapsar, Pune 411 028 |
| 3 | Affiliation | Savitribai Phule Pune University |

CHAPTER-II STUDY OF PRESENT ENERGY CONSUMPTION

| No | Month | Energy Purchased, kWh |
|----|---------|--------------------------|
| 1 | Jul-20 | 2902 |
| 2 | Aug-20 | 785 |
| 3 | Sep-20 | 805 |
| 4 | Oct-20 | 907 |
| 5 | Nov-20 | 789 |
| 6 | Dec-20 | 990 |
| 7 | Jan-21 | 1012 |
| 8 | Feb-21 | 1228 |
| 9 | Mar-21 | 1368 |
| 10 | Apr-21 | 907 |
| 11 | May-21 | 1025 |
| 12 | Jun-21 | 1535 |
| 13 | Total | 14253 |
| 14 | Maximum | 2902 |
| 15 | Minimum | 785 |
| 16 | Average | 1187.75 |

In this chapter, we present the analysis of Electrical Energy. Table No 2: Electrical Bill Analysis- 2020-21:

Chart No 1: Variation in Monthly Energy Consumption:



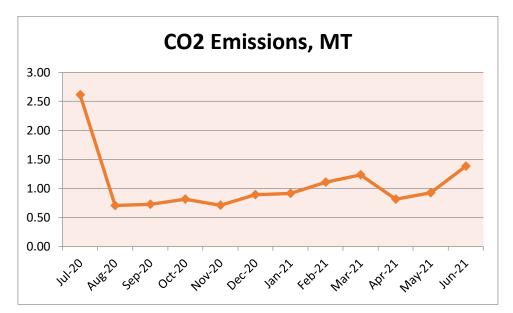
CHAPTER III STUDY OF CARBON FOOTPRINTING

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 4: Month wise CO₂ Emissions:

| No | Month | Energy Purchased, kWh | CO ₂ Emissions, MT |
|----|---------|--------------------------|----------------------------------|
| 1 | Jul-20 | 2902 | 2.61 |
| 2 | Aug-20 | 785 | 0.71 |
| 3 | Sep-20 | 805 | 0.72 |
| 4 | Oct-20 | 907 | 0.82 |
| 5 | Nov-20 | 789 | 0.71 |
| 6 | Dec-20 | 990 | 0.89 |
| 7 | Jan-21 | 1012 | 0.91 |
| 8 | Feb-21 | 1228 | 1.11 |
| 9 | Mar-21 | 1368 | 1.23 |
| 10 | Apr-21 | 907 | 0.82 |
| 11 | May-21 | 1025 | 0.92 |
| 12 | Jun-21 | 1535 | 1.38 |
| 13 | Total | 14253 | 12.83 |
| 14 | Maximum | 2902 | 2.61 |
| 15 | Minimum | 785 | 0.71 |
| 16 | Average | 1187.75 | 1.07 |

Chart No 2: Month wise CO₂Emissions:



CHAPTER IV STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity 3 kWp.

In the following Table, we compute the Annual Reduction in CO₂ Emissions due to installation of Roof TOP Solar PV Plant.

Table No 6: Computation of Annual Reduction in CO₂ Emissions:

| No | Particulars | Value | Unit |
|----|---|-------|-----------------------|
| 1 | Installed Capacity of Roof Top Solar PV Plant Capacity | 3 | 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: 20-21 | 3600 | kWh |
| 5 | 1 kWh of Electrical Energy saves | 0.9 | Kg/kWh |
| 6 | Qty of CO ₂ Saved by Solar PV Plant =(4)*(5) /1000 | 3.24 | MT of CO ₂ |

Photograph of Roof Top Solar PV Plant:



CHAPTER V STUDY OF WASTE MANAGEMENT

5.1 Solid Waste Management:

The Waste is segregated at Source. Waste Bins are kept at various locations in the Campus.

Photograph of Waste Collection Bin:



5.2 Microbial Waste Management:

The Microbial Waste is completely degenerated in an Autoclave, before disposal.

5.3 Sanitary Waste Management:

For disposal of Sanitary Waste, a Sanitary Waste Incinerator is installed in the campus.

Photograph of Sanitary Waste Incinerator:



CHAPTER-VI STUDY OF RAIN WATER MANAGEMENT

The College has installed Pipes from the terrace. The Rain Water is used to increase the underground water table.

Photograph of Rain water Collecting Pipe:



CHAPTER-VII STUDY OF GREEN & SUSTAINABLE PRACTICES

7.1 Pedestrian Friendly Roads:

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

Photograph of Internal Road:



7.2 Internal Tree Plantation:

The College has well maintained landscaped garden in the campus. **Photograph of Tree plantation:**



Green Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2020-21

7.3 Provision of Ramp for Divyangajan:

For easy movement of Divyangajan, the College has made provision of Ramp as well as dedicated wash room.

Photograph of Ramp:



7.4 Creation of Awareness about 3 R's:

The College has displayed posters emphasizing on importance of 3 R's i.e Reduce, Reuse & Recycle.

Photograph of Poster on importance of 3R's i.e Reduce, Reuse & Recycle:



ENVIRONMENTAL AUDIT REPORT

of

JAYAWANT SHIKSHAN PRASARAK MANDAL'S, JAYAWANTRAO SAWANT COMMERCE & SCIENCE COLLEGE,

Handewadi Road, Hadapsar, Pune



Year: 2019-20

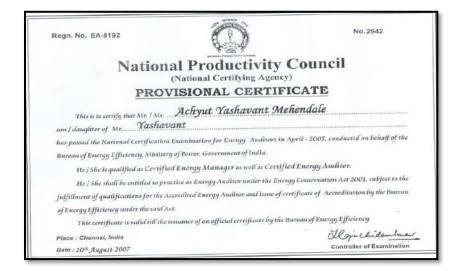
Prepared by:

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REGISTRATION CERTIFICATES



BEE ENERGY AUDITOR CERTIFICATE

| (A 2 nd Floor, MHADA Cor | Governme nmercial C Ph No: 0 | nergy Development Agency nt of Maharashtra undertaking) omplex, Opp. Tridal Nagar, Yerwada, Pune 411 006, 120-26614393/266144403 ja.com, Web: www.mahaurja.com |
|--|------------------------------------|--|
| ECN/2018-19/CR-05/4174 | | 19th September , 2018 |
| CER | TIFICAT | TE OF REGISTRATION |
| | FOR | CLASS 'A' |
| MAHARASHTRA ENERGY | DEVELO | rm having following particulars is registered with PMENT AGENCY (MEDA) under given category as Maharashtra for Energy Conservation Programme of |
| Name and Address of the fire | m : | Enrich Consultants Yashashree, Plot No. 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune - 411009. |
| Registration Category | a a | Empanelled Consultant for Energy Conservation Programme |
| Registration Number | : | MEDA/ECN/CR-05/2018-19/EA-03 |
| Energy Conservation Process and to evaluate achieve the evaluated energy | the scope | ntends to identify areas where wasteful use of energy for Energy Conservation and take concrete steps to s. |
| | | e firm at any time without giving any prior information information is found incorrect. |
| This empanelment is val energy audits under the F | | March 2021 from the date of registration, to carry out servation Programme |
| The Director General, 1 without assigning any rea | | erves the right to cancel the registration at any time of. |
| | | (Smila Kudarikar) General Manager (EC) |

MEDA EMPANELMENT CERTIFICATE

Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2019-20

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| 4 | Study of Waste Management | 13 |
| 5 | Study of Rain water Management | 14 |
| 6 | Study of Environment Friendly Initiatives | 15 |

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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, Jayawantrao Sawant Commerce & Science College, Hadapsar, 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 CO₂ on account of Electricity Consumption
- > Solid Waste: Bio degradable Garden Waste
- Liquid Waste: Human liquid waste

3. Present Energy Consumption & CO₂ Emissions:

| No | Parameter/ Value | Energy Purchased, kWh | CO ₂ Emissions, MT |
|----|---------------------|--------------------------|----------------------------------|
| 1 | Total | 23526 | 21.17 |
| 2 | Maximum | 2557 | 2.30 |
| 3 | Minimum | 1012 | 0.91 |
| 4 | Average | 1960.50 | 1.76 |

4. Usage of Renewable Energy& Reduction in CO₂ Emissions:

- The College has installed Roof Top Solar PV Plant of Capacity 3kWp.
- The Electrical Energy generated in 2019-20 is 3600 kWh.
- Reduction in CO₂ Emissions in 2019-20 works out to be **3.24 MT**.

5. Waste Management:

5.1 Solid Waste Management:

Waste is segregated at Source. Waste bins are provided at various locations.

5.2 Microbial Waste Management:

The Microbial Waste is degenerated in an Autoclave before disposal.

6. Rain Water Management:

The rain water falling on the terrace is used for increasing the Underground Water Table.

7. Environment Friendly Initiatives:

Internal Tree Plantation:

8. Assumptions:

- 1. 1 kWh of Electrical Energy releases 0.9 Kg of CO2 into atmosphere
- 2. 1 kWp Roof Top Solar PV Plant generates 4 kWh of Electrical Energy per Day

Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2019-20

3. Annual Solar Energy Generation Days: 300 Nos.

10. References:

- For CO₂ Emissions: <u>www.tatapower.com</u>
- For Solar PV Energy generation: www.solarroftop.gov,in

Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2019-20

ABBREVIATIONS

| Kg | : | Kilo Gram |
|------|---|-----------------------------------|
| JSPM | : | Jayawant Shikshan Prasarak Mandal |
| MT | : | Metric Ton |
| kWh | : | kilo-Watt Hour |
| LPD | : | Liters per Day |
| LED | : | Light Emitting Diode |

CHAPTER-I INTRODUCTION

1.1Important Definitions:

1.1.1 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

1.1.2. 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

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

1.1.4. Table No 1: Relevant Environmental Laws in India:

| 1927 | The Indian Forest Act |
|------|--|
| 1972 | The Wildlife Protection Act |
| 1974 | The Water (Prevention and Control of Pollution) Act |
| 1977 | The Water (Prevention & Control of Pollution) Cess Act |
| 1980 | The Forest (Conservation) Act |
| 1981 | The Air (Prevention and Control of Pollution) Act |
| 1986 | The Environment Protection Act |
| 1991 | The Public Liability Insurance Act |
| 2002 | The Biological Diversity Act |
| 2010 | The National Green Tribunal Act |

1.1.5. Table No 2: Some Important Environmental Rules in India:

| 1989 | Hazardous Waste (Management and Handling) Rules |
|------|---|
| 1989 | Manufacture, Storage and Import of Hazardous Chemical Rules |
| 2000 | Municipal Solid Waste (Management and Handling) Rules |
| 1998 | The Biomedical Waste (Management and Handling) Rules |
| 1999 | The Environment (Sitting for Industrial Projects) Rules |
| 2000 | Noise Pollution (Regulation and Control) Rules |
| 2000 | Ozone Depleting Substances (Regulation and Control) Rules |
| 2011 | E-waste (Management and Handling) Rules |

Enrich Consultants, Pune

Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2019-20

| 2011 | National Green Tribunal (Practices and Procedure) Rules |
|------|---|
| 2011 | Plastic Waste (Management and Handling) Rules |

1.1.6 Table No 3: National Environmental Plans & Policy Documents:

| 1. | National Forest Policy, 1988 |
|----|--|
| 2. | National Water Policy, 2002 |
| 3. | National Environment Policy or NEP (2006) |
| 4. | National Conservation Strategy and Policy Statement on Environment and Development, 1992 |
| 5. | Policy Statement for Abatement of Pollution (1992) |
| 6. | National Action Plan on Climate Change |
| 7. | Vision Statement on Environment and Human Health |
| 8. | Technology Vision 2030 (The Energy Research Institute) |
| 9. | Addressing Energy Security and Climate Change (MoEF and Bureau of Energy Efficiency |
| 10 | The Road to Copenhagen; India's Position on Climate Change Issues (MoEF) |

1.2 Objectives:

- 1. To study Resource Consumption & CO₂ Emissions
- 2. To Study Usage of renewable Energy
- 3. To study Indoor Air Quality Parameters
- 4. To study Indoor Comfort Condition Parameters
- 5. To Study of Waste Management
- 6. To Study of Rain Water Management
- 7. To Study of Environment Friendly Initiatives

1.3 Table No 4: General Details of College:

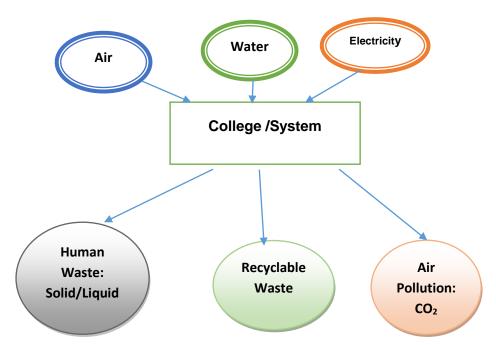
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|----|---------------------|--|--|
| 1 | Name of Institution | Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College | |
| 2 | Address | Handewadi Road, Hadapsar, Pune 411 028 | |
| 3 | Affiliation | Savitribai Phule Pune University | |

CHAPTER-II STUDY OF CONSUMPTION OF RECOURCES & CO₂ EMISSION

The Institute 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 College as System & Study of Resources & Waste



Now we compute the Generation of CO2 on account of consumption of Electrical Energy.

The basis of Calculation for CO2 emissions due to Electrical Energy is as under

• 1 kWh of Electrical Energy releases 0.9 Kg of CO2 into atmosphere

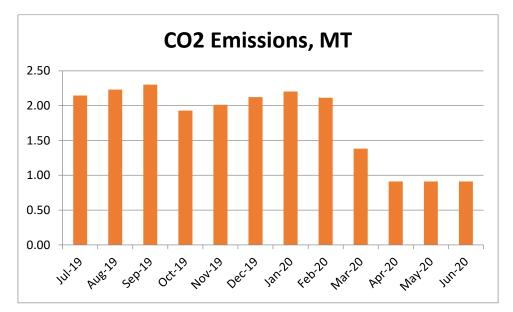
Table No 5: Study of Consumption of Electrical Energy & CO₂ Emissions: 2019-20:

| No | Month | Energy Purchased, kWh | CO ₂ Emissions, MT |
|----|--------|--------------------------|----------------------------------|
| 1 | Jul-19 | 2385 | 2.15 |
| 2 | Aug-19 | 2478 | 2.23 |
| 3 | Sep-19 | 2557 | 2.30 |
| 4 | Oct-19 | 2145 | 1.93 |
| 5 | Nov-19 | 2236 | 2.01 |
| 6 | Dec-19 | 2358 | 2.12 |
| 7 | Jan-20 | 2447 | 2.20 |
| 8 | Feb-20 | 2348 | 2.11 |

Environmental Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2019-20

| 9 | Mar-20 | 1536 | 1.38 |
|----|---------|---------|-------|
| 10 | Apr-20 | 1012 | 0.91 |
| 11 | May-20 | 1012 | 0.91 |
| 12 | Jun-20 | 1012 | 0.91 |
| 13 | Total | 23526 | 21.17 |
| 14 | Maximum | 2557 | 2.30 |
| 15 | Minimum | 1012 | 0.91 |
| 16 | Average | 1960.50 | 1.76 |

Chart No 2: Month wise CO₂ Emissions:



CHAPTER III STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity 3 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 6: Con | nputation of An | nnual Reduction | n in CO ₂ Emission | IS: |
|-----------------|-----------------|-----------------|-------------------------------|-----|
|-----------------|-----------------|-----------------|-------------------------------|-----|

| No | Particulars | Value | Unit |
|----|--|-------|-----------------------|
| 1 | Installed Capacity of Roof Top Solar PV Plant Capacity | 3 | 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: 19-20 | 3600 | kWh |
| 5 | 1 kWh of Electrical Energy saves | 0.9 | Kg/kWh |
| 6 | Qty of CO_2 Saved by Solar PV Plant =(4)*(5) /1000 | 3.24 | MT of CO ₂ |

Photograph of Roof Top Solar PV Plant:



CHAPTER IV STUDY OF WASTE MANAGEMENT

4.1 Solid Waste Management:

The Waste is segregated at Source. Waste Bins are kept at various locations in the Campus.

Photograph of Waste Collection Bin:



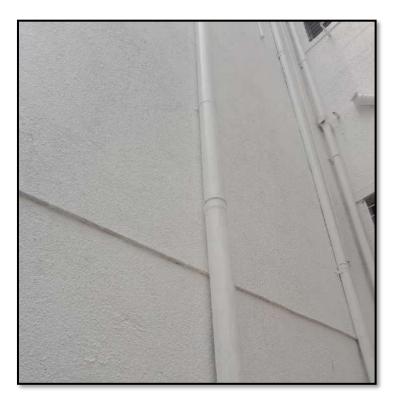
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The College has installed Pipes from the terrace. The Rain Water is used to increase the underground water table.

Photograph of Rain water Collecting Pipe:



CHAPTER-VII STUDY OF ENVIRONMENT FRIENDLY INITIATIVES

7.1 Internal Tree Plantation:

The College has well maintained landscaped garden in the campus.

Photograph of Tree plantation:



GREEN AUDIT REPORT

of

JAYAWANT SHIKSHAN PRASARAK MANDAL'S, JAYAWANTRAO SAWANT COMMERCE & SCIENCE COLLEGE,

Handewadi Road, Hadapsar, Pune



Year: 2019-20

Prepared by:

ENRICH CONSULTANTS

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune 411009 Phone: 09890444795 Email: <u>enrichcons@gmail.com</u>



REGISTRATION CERTIFICATES



BEE ENERGY AUDITOR CERTIFICATE

| (A C 2 nd Floor, MHADA Com | t ra Er lovernme nercial C Ph No: (| AHARASHTRA ENERGY DEVELOPMENT AGENC nergy Development Agency nt of Maharashtra undertaking) omplex, Opp. Tridal Nagar, Yerwada, Pune 411 006, 120-26614393/266144403 ja.com, Web: www.mahaurja.com | |
|---|---|---|--|
| ECN/2018-19/CR-05/4174 | | 19 th September , 2018 | |
| CERT | IFICA | TE OF REGISTRATION | |
| | FOR | R CLASS 'A' | |
| MAHARASHTRA ENERGY I | DEVELO | rm having following particulars is registered with PMENT AGENCY (MEDA) under given category as Maharashtra for Energy Conservation Programme of | |
| Name and Address of the firm | E. | Enrich Consultants Yashashree, Plot No. 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune - 411009. | |
| Registration Category | 4 | Empanelled Consultant for Energy Conservation Programme | |
| Registration Number | : | MEDA/ECN/CR-05/2018-19/EA-03 | |
| Energy Conservation Propoccurs and to evaluate the achieve the evaluated energy | ie scope | ntends to identify areas where wasteful use of energy for Energy Conservation and take concrete steps to is. | |
| | | e firm at any time without giving any prior information information is found incorrect. | |
| This empanelment is valid energy audits under the En | | March 2021 from the date of registration, to carry out servation Programme | |
| | The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof. | | |
| | | (Smila Kudarikar) General Manager (EC) | |

MEDA EMPANELMENT CERTIFICATE

| Sr. No | Particulars | Page No |
|--------|--|---------|
| I | Acknowledgement | 4 |
| П | Executive Summary | 5 |
| 111 | Abbreviations | 6 |
| | | |
| 1 | Introduction | 7 |
| 2 | Study of Present Energy Consumption | 8 |
| 3 | Study of Carbon Foot printing | 9 |
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| 6 | Study of Rain water Management | 12 |
| 7 | Study of Green & Sustainable Practices | 13 |

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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, Jayawantrao Sawant Commerce & Science College, Hadapsar, Pune consumes Energy in the form of **Electrical Energy;** used for various Electrical Equipment, office & other facilities.

2. Present Energy Consumption & CO₂ Emissions:

| No | Parameter/ Value | Energy Purchased, kWh | CO ₂ Emissions, MT |
|----|---------------------|--------------------------|----------------------------------|
| 1 | Total | 23526 | 21.17 |
| 2 | Maximum | 2557 | 2.30 |
| 3 | Minimum | 1012 | 0.91 |
| 4 | Average | 1960.50 | 1.76 |

3. Usage of Renewable Energy & Reduction in CO₂ Emissions:

- The College has installed Roof Top Solar PV Plant of Capacity 3 kWp.
- The Electrical Energy generated in 2019-20 is 3600 kWh.
- Reduction in CO₂ Emissions in 2019-20 works out to be 3.24 MT.

4. Waste Management:

4.1 Solid Waste Management:

Waste is segregated at Source. Waste bins are provided at various locations.

4.2 Microbial Waste Management:

The Microbial Waste is degenerated in an Autoclave before disposal.

5. Rain Water Management:

The rain water falling on terrace is used for increasing the underground water table.

6. Green & Sustainable Initiatives

- Good Internal Road
- Internal Tree Plantation
- Provision of Ramp for Divyangajan

7. Assumptions:

- 1. 1 kWh of Electrical Energy releases 0.9 Kg of CO2 into atmosphere
- 2. 1 kWp Roof Top Solar PV Plant generates 4 kWh of Electrical Energy per Day
- 3. Annual Solar Energy Generation Days: 300 Nos.

8. References:

- For CO₂ Emissions: <u>www.tatapower.com</u>
- For Solar PV Energy generation: www.solarroftop.gov,in

Green Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2019-20

ABBREVIATIONS

| BEE | Bureau of Energy Efficiency | | |
|-----------------|-----------------------------------|--|--|
| JSPM | Jayawant Shikshan Prasarak Mandal | | |
| 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 Objectives:

- 1. To study present Energy Consumption
- 2. To compute the CO_2 emissions
- 3. To study usage of Renewable Energy
- 4. Study of Waste Management
- 5. Study of Rain Water Harvesting
- 6. Study of Green & Sustainable Practices

1.2 Table No 1: General Details of College:

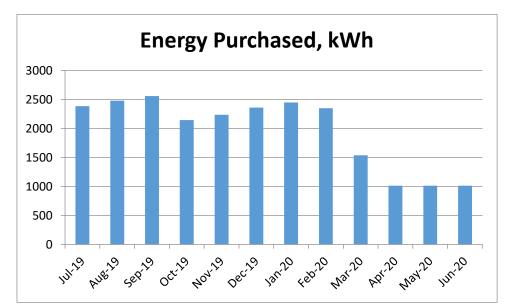
| No | Head | Particulars | |
|----|---------------------|--|--|
| 1 | Name of Institution | Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College | |
| 2 | Address | Handewadi Road, Hadapsar, Pune 411 028 | |
| 3 | Affiliation | Savitribai Phule Pune University | |

CHAPTER-II STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of Electrical Energy. Table No 2: Electrical Bill Analysis- 2019-20:

| No | Month | Energy Purchased, kWh |
|----|---------|--------------------------|
| 1 | Jul-19 | 2385 |
| 2 | Aug-19 | 2478 |
| 3 | Sep-19 | 2557 |
| 4 | Oct-19 | 2145 |
| 5 | Nov-19 | 2236 |
| 6 | Dec-19 | 2358 |
| 7 | Jan-20 | 2447 |
| 8 | Feb-20 | 2348 |
| 9 | Mar-20 | 1536 |
| 10 | Apr-20 | 1012 |
| 11 | May-20 | 1012 |
| 12 | Jun-20 | 1012 |
| 13 | Total | 23526 |
| 14 | Maximum | 2557 |
| 15 | Minimum | 1012 |
| 16 | Average | 1960.50 |

Chart No 1: Variation in Monthly Energy Consumption:



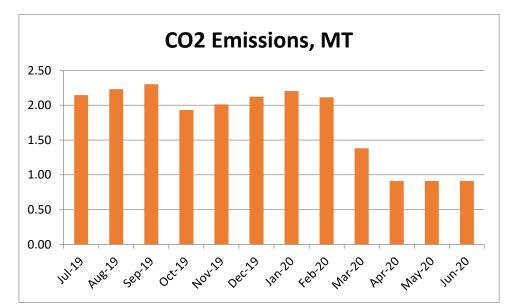
CHAPTER III STUDY OF CARBON FOOTPRINTING

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 4: Month wise CO₂ Emissions:

| No | Month | Energy Purchased, kWh | CO ₂ Emissions, MT |
|----|---------|--------------------------|----------------------------------|
| 1 | Jul-19 | 2385 | 2.15 |
| 2 | Aug-19 | 2478 | 2.23 |
| 3 | Sep-19 | 2557 | 2.30 |
| 4 | Oct-19 | 2145 | 1.93 |
| 5 | Nov-19 | 2236 | 2.01 |
| 6 | Dec-19 | 2358 | 2.12 |
| 7 | Jan-20 | 2447 | 2.20 |
| 8 | Feb-20 | 2348 | 2.11 |
| 9 | Mar-20 | 1536 | 1.38 |
| 10 | Apr-20 | 1012 | 0.91 |
| 11 | May-20 | 1012 | 0.91 |
| 12 | Jun-20 | 1012 | 0.91 |
| 13 | Total | 23526 | 21.17 |
| 14 | Maximum | 2557 | 2.30 |
| 15 | Minimum | 1012 | 0.91 |
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Chart No 2: Month wise CO₂Emissions:



CHAPTER IV STUDY OF USAGE OF RENEWABLE ENERGY

The College has installed Roof Top Solar PV Plant of Capacity 3 kWp.

In the following Table, we compute the Annual Reduction in CO₂ Emissions due to installation of Roof TOP Solar PV Plant.

Table No 6: Computation of Annual Reduction in CO₂ Emissions:

| No | Particulars | Value | Unit |
|----|--|-------|-----------------------|
| 1 | Installed Capacity of Roof Top Solar PV Plant Capacity | 3 | 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: 19-20 | 3600 | kWh |
| 5 | 1 kWh of Electrical Energy saves | | Kg/kWh |
| 6 | Qty of CO₂ Saved by Solar PV Plant =(4)*(5) /1000 | 3.24 | MT of CO ₂ |

Photograph of Roof Top Solar PV Plant:



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5.1 Solid Waste Management:

The Waste is segregated at Source. Waste Bins are kept at various locations in the Campus.

Photograph of Waste Collection Bin:



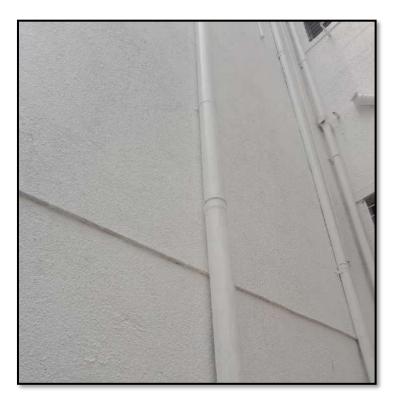
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Photograph of Rain water Collecting Pipe:



CHAPTER-VII STUDY OF GREEN & SUSTAINABLE PRACTICES

7.1 Pedestrian Friendly Roads:

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

Photograph of Internal Road:



7.2 Internal Tree Plantation:

The College has well maintained landscaped garden in the campus.

Photograph of Tree plantation:



Green Audit Report: JSPM's Jayawantrao Sawant Commerce & Science College: 2019-20

7.3 Provision of Ramp for Divyangajan:

For easy movement of Divyangajan, the College has made provision of Ramp as well as dedicated wash room.

Photograph of Ramp:



GREEN AUDIT REPORT

of

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Handewadi Road, Hadapsar, Pune



Year: 2018-19

Prepared by:

ENRICH CONSULTANTS

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune 411009 Phone: 09890444795 Email: <u>enrichcons@gmail.com</u>



REGISTRATION CERTIFICATES



BEE ENERGY AUDITOR CERTIFICATE

| | E | In success & descentions |
|---|---|--|
| | | undertaking) |
| (A Government of Maharashtra undertaking) 2 nd Floor, MHADA Commercial Complex, Opp. Tridal Nagar, Yerwada, Pune 411 006, | | |
| | Ph No: 020-26614393/26 mahaurja.com, Web: ww | |
| | | |
| ECN/2018-19/CR-05/4174 | | 19th September, 2018 |
| CERTI | FICATE OF REGIS | TRATION |
| | FOR CLASS ' | A' |
| MAHARASHTRA ENERGY DI | EVELOPMENT AGENO | wing particulars is registered with CY (MEDA) under given category as Energy Conservation Programme of |
| Name and Address of the firm | | lot No. 26, Nirmal Bag Society, gan English School, |
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| Energy Conservation Progr occurs and to evaluate the achieve the evaluated energy | scope for Energy Con | y areas where wasteful use of energy servation and take concrete steps to |
| MEDA reserves the right to and canceling the registration | | e without giving any prior information und incorrect. |
| This empanelment is valid energy audits under the Energy | | n the date of registration, to carry out nme |
| The Director General, ME without assigning any reaso | | o cancel the registration at any time |
| | | (Smith Kudarikar) |
| | | General Manager (EC) |

MEDA EMPANELMENT CERTIFICATE

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| No | Parameter/ Value | Energy Purchased, kWh | CO ₂ Emissions, MT |
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| 1 | Total | 24970 | 22.47 |
| 2 | Maximum | 2234 | 2.01 |
| 3 | Minimum | 1887 | 1.70 |
| 4 | Average | 2080.83 | 1.87 |

3. Usage of Renewable Energy & Reduction in CO₂ Emissions:

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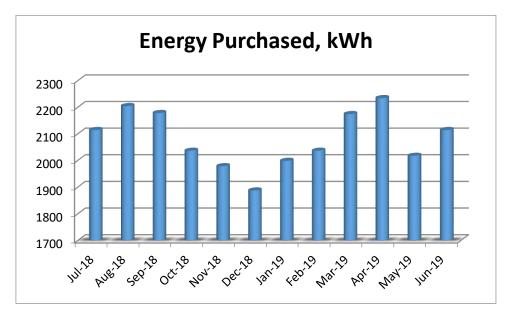
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CHAPTER-II STUDY OF PRESENT ENERGY CONSUMPTION

| No | Month | Energy Purchased, kWh | |
|----|---------|--------------------------|--|
| 1 | Jul-18 | 2114 | |
| 2 | Aug-18 | 2204 | |
| 3 | Sep-18 | 2178 | |
| 4 | Oct-18 | 2036 | |
| 5 | Nov-18 | 1978 | |
| 6 | Dec-18 | 1887 | |
| 7 | Jan-19 | 1998 | |
| 8 | Feb-19 | 2036 | |
| 9 | Mar-19 | 2174 | |
| 10 | Apr-19 | 2234 | |
| 11 | May-19 | 2017 | |
| 12 | Jun-19 | 2114 | |
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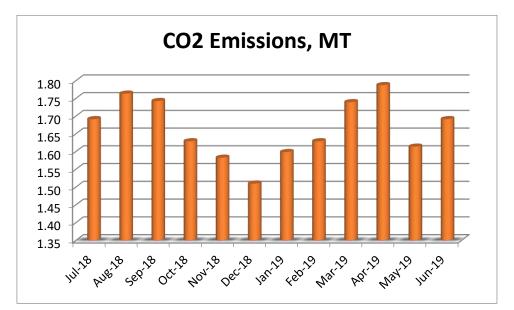
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| 1 | Jul-18 | 2114 | 1.69 |
| 2 | Aug-18 | 2204 | 1.76 |
| 3 | Sep-18 | 2178 | 1.74 |
| 4 | Oct-18 | 2036 | 1.63 |
| 5 | Nov-18 | 1978 | 1.58 |
| 6 | Dec-18 | 1887 | 1.51 |
| 7 | Jan-19 | 1998 | 1.60 |
| 8 | Feb-19 | 2036 | 1.63 |
| 9 | Mar-19 | 2174 | 1.74 |
| 10 | Apr-19 | 2234 | 1.79 |
| 11 | May-19 | 2017 | 1.61 |
| 12 | Jun-19 | 2114 | 1.69 |
| 13 | Total | 24970 | 19.98 |
| 14 | Maximum | 2234 | 1.79 |
| 15 | Minimum | 1887 | 1.51 |
| 16 | Average | 2080.83 | 1.66 |

Chart No 2: Month wise CO₂Emissions:



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Photograph of Roof Top Solar PV Plant:



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

Photograph of Internal Road:



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The College has well maintained landscaped garden in the campus.

Photograph of Tree plantation:









RATING FOR EFFICIENT USE OF ENERGY

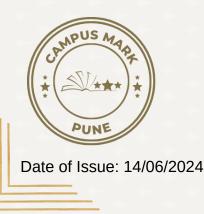
This is to certify that

Tayawant Shikshan Prasarak Mandal's

Jayawantrao Sawant Commerce & Science College

Hadapsar, Pune

has been awarded a **4 STAR RATING** for their Efficient use of Energy in Educational Campus for academic year 2023-24



 $\bigstar \bigstar \bigstar \bigstar \bigstar$



For Campus Mark, Authorized Signatory

Registered with MSME, Govt of India (UDYAM-MH-26-0678953)

ENGRESS SERVICES

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune 411 009 Tel: 09890444795 Email: <u>engress123@gmail.com</u> 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/JSCSC/22-23/01

Date: 10/7/2023

This is to certify that we have conducted Energy Audit at Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College, Handewadi Road, Hadapsar, Pune, in the Academic year 2022-23.

The College has adopted Energy Efficient Practices:

- Usage of Energy Efficient LED Fittings
- Usage of Energy Efficient BEE STAR Rated equipment
- Maximum usage of Day Lighting
- Installation of 3 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,

hehende

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: <u>engress123@gmail.com</u>

Ref: ES/JSCSC/21-22/01

Date: 15/7/2022

CERTIFICATE

This is to certify that we have conducted Energy Audit at Jayawant Shikshan Prasarak Mandal's Jayawantrao Sawant Commerce & Science College, Handewadi Road, Hadapsar, Pune, in the Academic year 2021-22.

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AMeherole

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



Enrich Consultants

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Ref: EC/JSCSC/20-21/01

Date: 14/7/2021

CERTIFICATE

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For Enrich Consultants,

Meherdole

A Y Mehendale, Certified Energy Auditor, EA-8192



Enrich Consultants

Yashashree, 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune 411 009 Tel: 09890444795 Email: <u>enrichcons@gmail.com</u>

Ref: EC/JSCSC/19-20/01

Date: 19/7/2020

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For Enrich Consultants,

Mehendal

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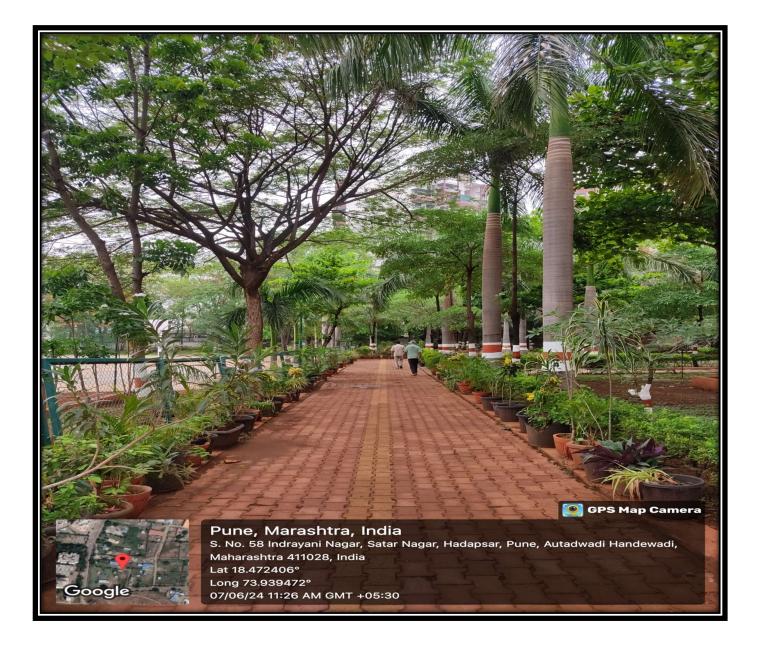
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Amehendel

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Green Campus



cPedestrian Friendly Pathway





Comm

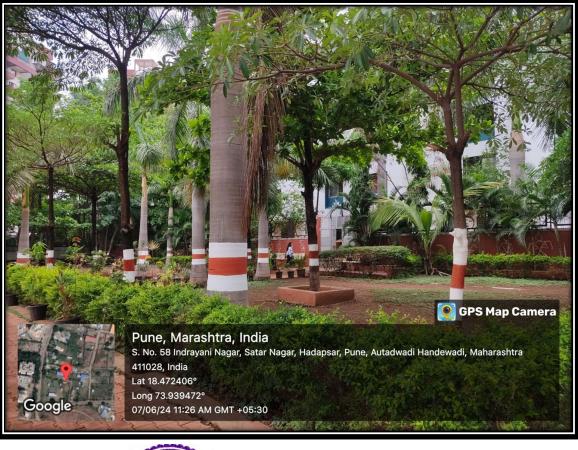
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CS/485/ 2018

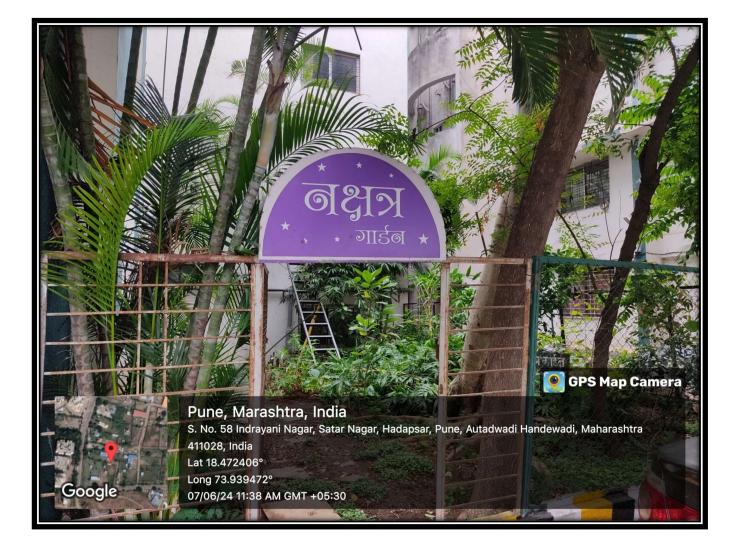


Plastic Ban Awareness





Landscaping with trees and Plants



Nakshtra Garden

