



Vidya Vikas Shikashan Sanstha, Hinganghat. (College Code : - 707)

MATOSHRI ASHATAI KUNAWAR

ARTS, COMMERCE & SCIENCE WOMENS COLLEGE

Sant Tukadoji Ward, Nandori Road, Hinganghat, Dist Wardha - 442301

(Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur)

E - Mail Id: - makm.college@gmail.com

Mobile No.: - 9850808807 (Office No.: - 8483922491) (Estd. 2018)

Principal
Dr. Umesh Tulaskar

Ref: NAAC 2023/ MLD/Cr-7.1.3

Date-12/10/2023

Criteria 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
Findings of DVV	Provide Policy document on environment and energy usage Provide Action taken reports and achievement report as clear and Green campus initiatives. Provide Reports of the Audits.
Response/ Clarification	As per the clarification, 1. Copy of green audit is attached (Appendix I) 2. Policy document on environment and energy usage (Appendix II) 3. Award certificate for clean and green campus initiatives (Appendix III) 4. Detailed activity report for environmental promotion activity beyond the campus is attached (Appendix IV)



Matoshri Ashatai Kunawar
Arts, Commerce & Science
Women's College, Hinganghat

Appendix I



This is to certify that

**Matoshri Ashatai Kunawar Arts, Commerce & Science
Woman's College**

Hinganghat 442301, Wardha, Maharashtra, India
has conducted detailed

GREEN AUDIT

of their college campus and provided necessary data and
right credentials for **SCRUTINY**.

The relevant activities and appropriate measures
carried out by college on the basis of submitted responses of
questionnaire and presented report

Have been **CHECKED & REVIEWED** and found to be
SATISFACTORY.

The initiatives taken by faculty and students towards
a better **UNDERSTANDING** of environment and
a sensitive awareness towards its
CONSERVATION & SUSTAINABILITY
are highly acknowledged & commendable.

This audit process included College Internal Audit Report for **2021-2022**
Assessed & Certificated on **February 08, 2022**
Certificate, # **EIZ/2022/02/AUD/GRN1/008**



Matankar

Director
ENVINZOA
Nagpur



(Certificate issued on February 08, 2022 at Nagpur)

Note : The validity of this certificate is determined by the organization's compliance with Green Audit
recommendations as well as the system's maintenance and the surveillance audit.

envinzoa
com

environmentalists | entomologists | consultants

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RECEIPT/ACKNOWLEDGEMENT

Received ₹5000.00 (five-zero-zero-zero)

From The Principal, M A K Arts Comm. & Sci, Womens College, Hinganghat

Against **EIZ QT 2023020808** **08.02.2023**

In cheque #/Date XXXXXXXXXXXX

Online Mode NEFT / RTGS / **UPI** / Other on **envinzoa@sbi** (Ref. Dr Nayana Tulaskar)

Ref ID #/Date 303811984704 on **07.02.2023**

Remarks Advance part payment received

Thank you.



Date : 08.02.2023

A handwritten signature in dark ink, appearing to read 'Nayana Tulaskar'.

Authorised Signatory
For ENVINZOA

envinzoa

2

Royal Assessments Pvt. Ltd.

AUDIT FINDINGS - CORRECTIVE ACTION REPORT

Company:		Date:		01 of 01
AF-CAR No.: 01		NC Category (Minor / Major)		Clause Ref.: IMS
Details of Non-Compliance:				
Acceptance by the Client:				
Root Cause Analysis:				
Correction:				
Corrective Action:				
Target Date		Responsibility		
Verification of action taken / Remark:				
<u>Objective Evidence:</u>				
Date:		Closed / Not Closed	Sign (Auditor)	
Remarks (if not closed)				




 Principal

Matoshri Ashatai Kunawar Art's,
 Commerce & Science Women's College,
 Hinganghat - 442 301, Dist. Wardha

Sign (Auditor)

information verified	
30. Findings & NCs	
31. Auditor Recommendation	
32. Is client ready for stage 2 audit?	
33. Is the allocation of resources for stage 2 audit adequate	

RAPL Declaration

This assessment is conducted according to the requirements of Royal Assessments Pvt. Ltd. policies and procedures for the assessment of Management Systems.

The report is subject to review by authorized management personnel of RAPL. The contents of this report are confidential between the client and RAPL. No information contained herein will be disclosed by RAPL to any third party except where required by a recognized accreditation body in order to establish compliance with accreditation requirements.

The audit is conducted on random sampling basis. Nonconformities may exist in the system which may not have been identified.

You are required to promptly inform RAPL about any intended changes to the Management or other changes which may affect conformity to the Management System. This includes but not limited to :

1. The legal, commercial, organizational status or ownership
2. Organization and management (e.g. key managerial, decision-making or technical staff),
3. Contact address and sites
4. Scope of operations under the certified management system,

RAPL, on examination, shall take appropriate decision including additional visit, if necessary. If you wish to distribute copies of this report to anyone outside the organization then complete report must be distributed.

Auditor Signature	
Client Signature with Seal	 Principal Matoshri Ashatai Kunawar Art's, Commerce & Science Women's College, Hinganghat - 442 301, Dist. Wardha 

9.3 - Management Review

10.1 Improvement – General

10.2 NC / Incident & Corrective action

10.3 Continual Improvement

AUDIT CONCLUSION (Tick the applicable)

- | | |
|---|---|
| ✓ | Send corrective action within 10 days to RAPL. |
| ✓ | Recommend certification subject to effective closure of non conformities. |

NOTE:

1. Issue / Reissue of certificate is subject to taking effective corrective action on identified nonconformities. It is mandatory that all nonconformities must be closed / resolved within 90 days from the last date of this audit. Accordingly the recommendation shall be made. The recommendation will be independently verified by Director / CEO of RAPL before issue of certificate.
2. It is mandatory that all non conformities must be closed/ resolved within 90 days from the last date of this audit.

SIGN OFF

This assessment is conducted according to the requirements of RAPL policies and procedures for the assessment of Management Systems. The report is subject to review by technical committee personnel of RAPL.

The contents of this report are confidential between the client and RAPL. No information contained herein will be disclosed by RAPL to any third party except where required by a recognized accreditation body in order to establish compliance with accreditation requirements. The audit is conducted on random sampling basis. Nonconformities may exist in the system which may not have been identified. You are required to promptly inform RAPL about any intended changes to the Management or other changes which may affect conformity to the Management System. This includes but not limited to :

1. The legal, commercial, organizational status or ownership
2. Organization and management (e.g. key managerial, decision-making or technical staff),
3. Contact address and sites
4. Scope of operations under the certified management system, RAPL, on examination, shall take appropriate decision including additional visit, if necessary.

If you wish to distribute copies of this report to anyone outside the organization then complete report must be distributed. On completion of each three year cycle, a re-assessment of complete Management System, covering all areas will be conducted. If found satisfactory, new certificate shall be issued.

Signed :

Auditor.




Principal

Matoshri Ashotei Kunawar Art's,
Commerce & Science Women's College,
Hinganga, Dist. Wardha

24	Does your organization require noc from state pollution control board? If yes, status of registration.	Yes
25	Have you ever had a major accident due to safety failure or death due to occupational health occurred in the last 1 year?	No
26	Do you have a full time safety officer? If yes, Name and Contact details	Yes
27	Have you designated an assembly point in case of any emergency?	Yes
28	Do you have a First Aid Post / Attendant?	Yes



[Signature]
Principal

Matoshri Ashatai Kunawar Art's,
Commerce & Science Women's College,
Hinganghat - 442 301, Dist. Wardha

Signed By (with Company Stamp / Seal):

Date:

For Office Use	Remarks	Initials of Reviewing Authority
Application Reviewed and forwarded for Contract Review		

Appendix II

Date: 18 January 2023

Certificate of Energy Audit

This is to certify that M/S. PPS Energy Solutions Pvt. Ltd., Pune has conducted Energy Audit at **Matoshri Ashatai Kunawar Art, Commerce and Science Womens College, Hinganghat, Dist. Wardha** in **January – 2023** for knowing existing electrical energy consumption, Identification of energy conservation and saving opportunities for environmental protection. This Energy Audit is also carried out to assess impact of Installed renewable energy applications and submitted the Report.

For PPS Energy Solutions Pvt. Ltd, Pune



Dr. Ravi. G. Deshmukh
Director, PPS Energy Solutions Pvt. Ltd, Pune
Accredited Energy Auditor (AEA – 0243)
Bureau of Energy Efficiency Govt. of India
Energy Auditor Class - A
MEDA/ECN/2021-22/EA-11



DETAILED ENERGY AUDIT REPORT



MATOSHRI ASHATAI KUNAWAR ART, COMMERCE AND SCIENCE WOMENS COLLEGE, HINGANGHAT

SANT TUKDOJI WARD, NANDORI ROAD, NEAR SURBHI TYPING, HINGANGHAT,
MAHARASHTRA WARDHA (442301) MAHARASHTRA

January 2023

Conducted By

PPS Energy Solutions Pvt. Ltd.

Plot No-18, Girish Housing Society
Warje, Pune – 411058, Maharashtra, India.

For PPS Energy Solutions Pvt. Ltd.

Ravi



Dr. Ravi G. Deshmukh
Energy Auditor Class - A
MEDA/ECN/2021-22/EA-11





MAHARASHTRA ENERGY DEVELOPMENT AGENCY



Maharashtra Energy Development Agency

(Government of Maharashtra Institution)

Aundh Road, Opposite Spicer College Road, Near Commissionerate of Animal Husbandary,

Aundh, Pune, Maharashtra 411067

Ph No: 020-35000450

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

ECN/2021-22/CR-28/3412

06th July, 2021

**CERTIFICATE OF REGISTRATION
FOR CLASS 'A'**

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

Name and Address of the firm : M/s PPS Energy Solutions Pvt. Ltd.
B-403, Bharat Vihar, S.No-78,
Bharti Vidyapith, Campus,
Katraj, Pune-411043.

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

Registration Number : MEDA/ECN/2021-22/Class A/EA-11

- Energy Conservation Programme intends to identify areas where wasteful use of energy occurs and to evaluate the scope for Energy Conservation and take concrete steps to achieve the evaluated energy savings.
- MEDA reserves the right to visit at any time without giving prior information to verify quarterly activities performed by the firm and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **05th July, 2023** from the date of registration, to carry out energy audits under the Energy Conservation Programme
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

General Manager (EC)





PREFACE

Energy Audit is a key parameter of systematic approach for decision-making in the area of energy management. It attempts to determine how and where energy is used and to identify methods for energy savings. There is now a universal recognition of the fact that new technologies and much greater use of some that already exists provide the most hopeful prospects for the future. The opportunities lie in the use of existing renewable energy technologies, greater efforts at energy efficiency and the dissemination of these technologies and options.

As per the Energy Conservation Act, 2001, Energy Audit is defined as "the verification, monitoring and analysis of use of energy including submission of technical report containing recommendations for improving energy efficiency with cost benefit analysis and an action plan to reduce energy consumption".

Present energy audit is a mare mile marker towards destination of achieving safe, healthy and energy efficient unit. We would like to emphasize that an energy audit is a continuous process. We have compiled a list of possible actions to conserve and efficiently utilize our scarce resources and identified their savings potential. The next step would be to prioritize their implementation. Implementation of recommended measures can help consumes to achieve significant reduction in their energy consumption levels.





WHY ENERGY AUDIT?

An energy audit determines the amount of energy consumption affiliated with a facility and the potential savings associated with that energy consumption. Additionally, an energy audit is designed to understand the specific conditions that are influencing the performance and comfort in your facility to maximize the overall impact of energy-focused building improvements.

An energy audit is a systematic review of the energy consuming installations in a facility to ensure that energy is being used sensibly and efficiently. An energy audit usually commences with the collection and analysis of all information that may affect the energy consumption of the facility, then follows with reviewing and analyzing the condition and performance of various installations and facility management, with an aim at identifying areas of inefficiency and suggesting means for improvement.

Through implementation of the suggested improvement measures, facility owners can get the immediate benefit for paying less energy bills. On the other hand, lowering of energy consumption in facility will lead to the chain effect that the power supply companies will burn less fossil fuel for electricity generation and relatively less pollutants and greenhouse gases will be introduced into the atmosphere, thus contributing to conserve the environment and to enhance sustainable development.





ACKNOWLEDGEMENT

We express our sincere gratitude to the authorities of Matoshri Ashatai Kunawar Art, Commerce and Science Womens College, Hinganghat, Wardha For entrusting and offering the opportunity. It is our immense pleasure to present the detailed energy audit report.

We acknowledge the positive support from management in undertaking the task of Detailed Energy Audit of all electrical system, thermal systems, utilities and other area and for continuous help and support before and during the Detailed Energy Audit.

We are also thankful to all field staff and agencies working with whom we interacted during the field studies for their wholehearted support in undertaking measurements and eagerness to assess the system / equipment performance and saving potential. We admire the help of all concerned staff for their active participation in completing official documentations.

We express our sincere gratitude to the authorities of Matoshri Ashatai Kunawar Art, Commerce and Science Women's College, Hinganghat, Wardha for entrusting PPS Energy Solutions Pvt. Ltd.

We appreciate the co-operation and support extended to our team members during the entire tenure of field study.

We express our thanks to

M/s. Matoshri Ashatai Kunawar Art, Commerce and Science Women's College, Hinganghat, Wardha.

1. Sapna J. Jaiswal, Vice-Principal.

For PPS Energy Solutions Pvt. Ltd.

Ravi



Dr. Ravi G. Deshmukh
Energy Auditor Class - A
MEDA/ECN/2021-22/EA-11





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This report was prepared for Matoshri Ashatai Kunawar Art, Commerce and Sciences Women's College, Hinganghat, Wardha. The information herein is confidential and shall not be divulged to a third party without the prior written permission of PPS Energy Solutions Pvt. Ltd, Pune, its affiliates and subsidiaries, including PPS Energy Solutions Pvt. Ltd, and their respective officers, employees or agents, individually and collectively, referred to in this clause as 'PPSES'. PPS Energy assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant PPSES entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.





About PPSES

M/s. PPS Energy Solutions Pvt. Ltd (PPSES) is an ambitious company, established by enterprising engineering professionals in the year 2009. The company offers services pertaining to Energy and Engineering to clients across the globe. Our team is based in Pune, a city known for its Software and Engineering talent in India. We are a rapidly growing company with a team of about 100 people, which includes highly trained and experienced Techno-Managers, Analysts, and Engineers & Detailers.

We are presently working in India (Maharashtra, Assam, Madhya Pradesh, Gujarat, Andhra Pradesh, Delhi, Orissa, Chhattisgarh, Bihar, Andhra Pradesh, Telangana and Jharkhand) and Abroad (Bahrain, Stanford)

➤ We serve in majorly four areas,

- Energy Audit, Management and System Evaluations
- Power Distribution System Design, Evaluations and Monitoring
- MEP Design and Project management
- Research and Training

PPSES Team Members

Name	Role	Academics and Expertise
Dr. Ravi Deshmukh	ECM verification, Report verification and presentation	Accredited Energy Auditor, PhD, M tech, MBA (Power), Graduate E&TC Engineer with over 18 years of experience in Energy Management, Management of Power System, street light projects, Power Exchange Operations, Power Trading and Analysis, Electrical Automation. Has worked as Expert in Iron & Steel sector and Energy
Mr .Nilesh Saraf	Co-ordination with officers, project status review.	Expert in Energy sector with 16 years of experience in Energy efficiency assessment, Industrial engineering sector & Renewable Energy.
Mr. Vinayak Apte	Energy Audit Expert And Report Preparation	Graduate Electrical Engineer with more than 10 years of experience in various sectors. He handled Energy Audits, Energy Conservation and Energy Efficiency projects in Industries, Commercial and Residential Buildings, Pump House
Mr. Akash Patil	Field study, data tabulation and analysis	Graduate Electrical Engineer with 3 years of experience in energy efficiency assessment





1. EXECUTIVE SUMMARY

1. Detailed Energy Audit was undertaken in order to evaluate energy performance and identify potential energy conservation measures. Detailed Energy Audit was undertaken in three steps, i.e. document review of data and information initially provided by facility, site visit and preparation of this report.
2. Energy Audit team conducted the site visit. The site visit includes interaction with staff, electricians of facility, the collection/review of further data and a field inspection of the facility and equipment.

The salient observations and recommendations are given below.

1. The Total Cost of Energy is around **Rs. 60,031/-** per Annum
2. Average monthly units consumed are **421 kWh** equivalent to **Rs. 5,003/-**
3. Average electricity charges works out to be **Rs. 11.87/-**
3. This brief report has therefore sought to provide a high-level overview of the status of energy efficiency at facility, combined with an illustration of areas where further, previously unidentified savings opportunities may exist.
4. Our survey has identified further potential opportunities, ranging from “no & low cost” measures, through to those that will require significant capital expenditure.

Note: Investment figures mentioned in are only indicative, further detailed study is recommended.

Summary of Recommended Energy Conservation Measures:

Sr. No.	Equipment Name	ECM Details	Investment (Rs. In Lacs)	Savings (kWh/year)	Carbon credit (Tons of Co2)	Saving (Rs. In Lacs /Year)	Payback (Years)
1	Tube Lights	Replacement of conventional lights with suitable LEDs	0.32	204.80	0.17	0.02	11.81
2	Fans	Replacement of existing fans with energy efficient Super fans	0.87	524.16	0.45	0.06	13.94
3	Water Cooler	Optimisation of Water Cooler	0.00	144.00	0.12	0.02	0.18
Total			1.19	872.96	0.74	0.10	11.50

Note: Estimated savings may base on operating conditions





During the Energy Audit, Total Estimated Investment of Rs. 1,19,000/- yields Total Estimated Savings of Rs. 10,000/- which 17% of the Total Annual Energy Cost of Rs. 60,031/- with an overall payback period of 11.5 Years.

Other Recommendations:

- A. Regular cleaning and maintenance of equipment's is important to reduce energy losses.
- B. Use of 5 star rated equipment's is also strongly recommended specially in case of Fans and Air conditioning.
- C. Cleaning of ceiling fan and exhaust fan blades will reduce the drag on the fan and intern will reduce energy loss.
- D. Awareness amongst energy users is very essential step to reduce wastage of electricity
- E. Energy conservation awareness programs can be conducted once a year. Increasing energy awareness of energy users motivates them to work as a team can lead to reductions in energy consumption and save the money.

Year	Investment (Rs. In Lacs)	Saving (Rs. In Lacs /Year)	Cum Savings(Rs Lakh)	Net savings (Rs Lakh)
0	-1	0	0	-1
1	0	0	0	-1
2	0	0	0	-1
3	0	0	0	-1
4	0	0	0	-1
5	0	0	1	-1
6	0	0	1	-1
7	0	0	1	0
8	0	0	1	0
9	0	0	1	0
10	0	0	1	0
11	0	0	1	0
12	0	0	1	0
13	0	0	1	0
14	0	0	1	0
15	0	0	2	0



Year Wise Net Savings (Rs.Lakh)

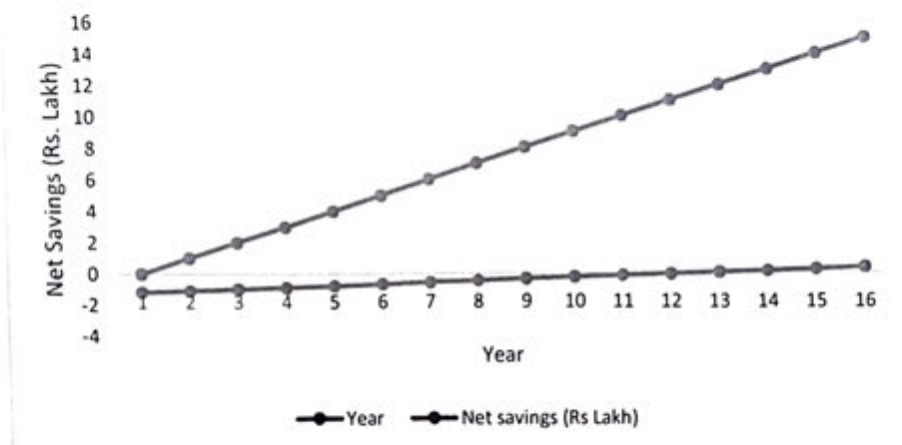


Figure 1 Net Savings (Rs. Lakhs) Vs Year

For PPS Energy Solutions Pvt. Ltd.

Ravi



Dr. Ravi G. Deshmukh
Energy Auditor Class - A
MEDA/ECN/2021-22/EA-11





2. GENERAL AUDIT REVIEW

Facility can implement faster payback energy conservation measures (ECMs) which have already been considered and for which the ECMs are fully developed.

Other General Points:

1. Energy conservation awareness programs can be conducted once a year. Increasing energy awareness of staff, students and motivating them to work as a team can lead to reductions in energy consumption and save the money. Savings estimates range in the order of 5 to 10%. When implemented effectively these savings can be realized quickly and cost effectively.
2. Most of the fans are of older design and not energy inefficient.
3. Most of the places the tube light installed are energy efficient and fittings are in healthy condition.
4. Natural day light is efficiently used in corridor and few classrooms and labs areas.

It is believed that with the current approach and organization of energy management, energy can be reduced in a systematic, cost effective manner. We hope that this report will help facility to implement these changes and provide direction to the Energy Management Team.





3. ABOUT ENERGY AUDIT

Objective

The overall objective of the assignment is to quantify energy saving in existing system and achieve reduction in energy consumption pattern.

Hence, the detail objectives are as under,

1. To calculate the energy consumption
2. To evaluate the performance of the equipment
3. To find out the energy saving opportunities
4. To quantify the total energy savings
5. To find out the ways to achieve energy efficiency

3.1. Scope of Work

Following is the scope of work envisaged for this assignment,

Data Collection

To collect the details of various electrical and mechanical system and their ratings, the available drawings and details shall be studied. Detail load list shall be prepared and checked.

A, B, C Analysis

With the details available from load list, analysis shall be carried out depending on the present usage trends. All the power consuming equipment's shall be classified in three categories depending on their ratings, condition and operating time. The area for larger potentials for savings shall be identified.

Field Study

The detail field study on site shall include the following as well as all other measures required for energy audit study,

- a. Lay out the system and study of Electrical distribution
- b. Study of area wise power distribution and Measurement of power consumption
- c. Study of instrumentation provided
- d. Measurement of motor currents, voltages, power etc. parameters by energy analyzer and measurement of water flow, pressures etc. parameters of pumps simultaneously and



other measurements as needed to characterize the system and required for calculating efficiency at various combinations

- e. Study of air conditioner operations and system requirements
- f. Analysis of readings obtained from field with the standard consumption.

3.2. Approach and Methodology

1. Understanding the Scope of Work and Resource Planning
2. Identification of Key Personnel for the assignment/ project
3. Structured Organization Matrix
4. Steps in preparing and implementing energy audit assignment
 - a) Discussions with key facility personnel
 - b) Site visits and conducting “walk-through audit”.
 - c) Preliminary Data Collection through questionnaire before audit team’s site visit
 - d) Steps for conducting the detailed audit
 - Plan the activities of site data collection in coordination with the facility in-charge.
 - Study the existing operations involving energy consumption
 - Collect and collate the energy consumption data with respect to electricity consumption
 - Conduct performance tests to assess the efficiency of the system equipment/ electricity distribution, lighting, and identify energy losses.
 - Discuss with facility personnel about identified energy losses.
5. List proposed efficiency measures
 - Develop a set of potential efficiency improvement proposals
 - Baseline parameters
 - Data presentation
 - System mapping
 - List of potential Energy Savings proposals with cost benefit analysis.
 - Review of current operation & maintenance practices
6. Preparation of the Draft Energy Audit Report, Preparation and submission of final Energy Audit Report after discussion with concerned persons





4. ENERGY DETAILS

Maharashtra State Electricity Distribution Company Limited (MSEDCL) provides the electricity supply for facility. Billing is carried out with the help of meter according to 90/LT I Res 1- Phase Tariff.

Detailed Energy Audit was conducted for the load connected to the mains supply used.

Mainly energy is used on this facility for the following purposes:

- 1) Lighting Load
- 2) Ceiling Fans
- 3) Water Cooler
- 4) Computers, PCs
- 5) Other Appliances

Based on above it is clear that followings equipment's have highest potential for energy savings

Table 1 Name of Equipment

Sr. No.	Name of the Equipment
1	Lighting Load
2	Ceiling Fan
3	Water Cooler
4	Computers, PCs

4.1. Electricity Bill Analysis

4.1.1. Details of Consumer No.: 396010146969

Consumer Details

Table 2 Consumer Details

Parameter	Details
Consumer No.	396010146969
Consumer Name	M/S VIDYA VIKAS SHIKSHAN SANSTHA HIGHANGHAT
Address	Sant Tukdoji Ward, Nandori Road, Near Surbhi Typing, Hinganghat, Maharashtra
Pin Code	442301
Date of Connection	25-03-1999
Sanctioned load (KW)	0.40
Tariff	90/LT I Res 1- Phase
Bu/ Circle No	1830/ Hinganghat





Consumption Details

Table 3 Billing Data

Month	kWH	Commercial Unit rate (Rs/kWh)	Demand Charges (Rs)	Wheeling Charges (Rs)	Other charges	Energy Charges (Rs)	Total Current Bill (Rs)	Total Unit Rate (INR)
Jan-22	212	3.44	102	288.42	255.00	1142.00	1790.9	8.45
Feb-22	209	3.44	102	288.32	255.00	1132.00	1780.8	8.52
Mar-22	347	3.22	102	478.86	490.00	2389.64	3463.7	9.98
Apr-22	452	3.36	102	618.60	782.00	3345.00	4851.0	10.73
May-22	358	3.36	102	488.00	476.00	2480.00	3549.4	9.91
Jun-22	294	3.36	105	397.00	442.00	1748.00	2695.4	9.17
Jul-22	470	3.36	105	634.00	1539.00	3566.00	5847.4	12.44
Aug-22	578	3.36	105	780.00	1981.00	4741.00	7610.4	13.17
Sep-22	606	3.36	105	818.00	2743.00	5073.00	8742.4	14.43
Oct-22	721	3.36	105	973.00	2699.00	6499.00	10279.4	14.26
Nov-22	372	3.36	105	502.00	1070.00	2511.00	4191.4	11.27
Dec-22	437	3.36	105	590.00	1346.00	3185.00	5229.4	11.97
Avg	421	3.36	104	571	1173	3151	5003	11.87
Max	721	3.44	105	973	2743	6499	10279	14.43
Min	209	3.22	102	288	255	1132	1781	8.45
Sum	5056		1245	6856	14078	37812	60031	





Monthly Kwh Consumption

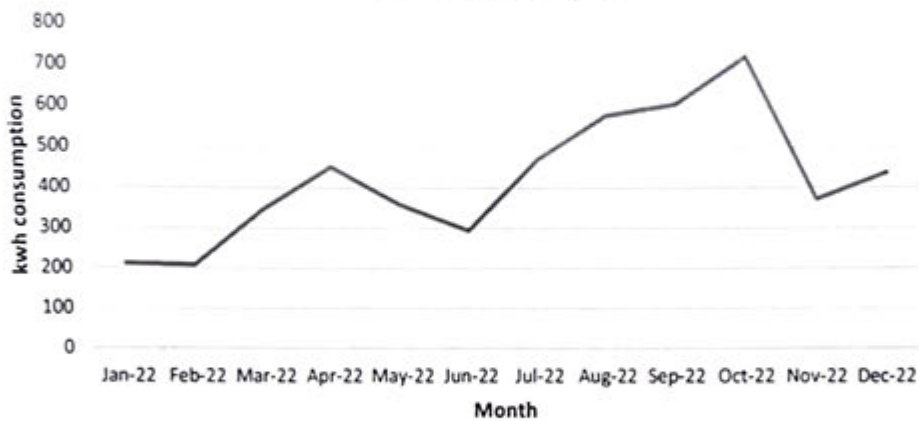


Figure 2 Monthly kWh Consumption

Total Current Bill (Rs)

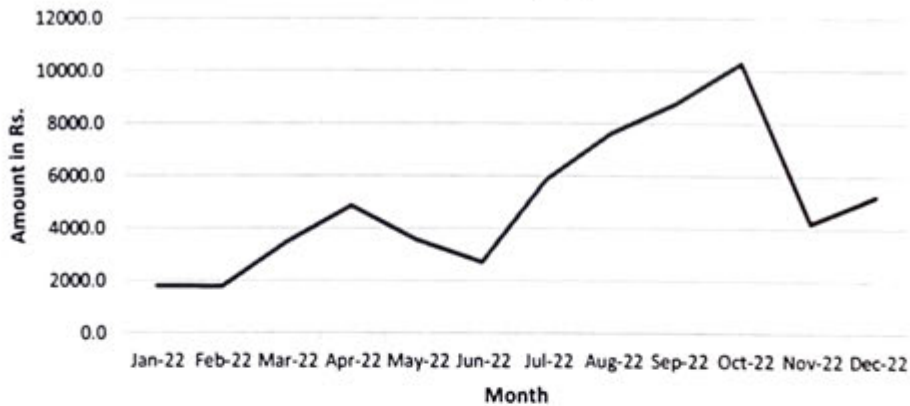


Figure 3 Monthly Electricity Bill





4.2. Connected Load Quantity of Buildings

Table 4 Connected Load of Facility

Fixtures	Wattage	Ground Floor	First Floor	Total Qty	Total Connected Load In KW
Ceiling Fan	75	22	17	39	2.93
T-8 Tube light	36	11	5	16	0.58
LED Tube Light	18	7	8	15	0.27
LED Square Panel Light	12	8	-	8	0.10
PC's	150	10	1	11	1.65
Printer	60	3	-	3	0.18
Exhaust Fan	60	3	2	5	0.30
LED Screen	150	3	-	3	0.45
Wall Fan	55	2	-	2	0.11
LED Bulb	12	3	-	3	0.04
RO Water cooler	600	1	-	1	0.60
Xerox Machine	800	1	-	1	0.80
LED Flood Light	50	-	2	2	0.10
Total				109	8.09

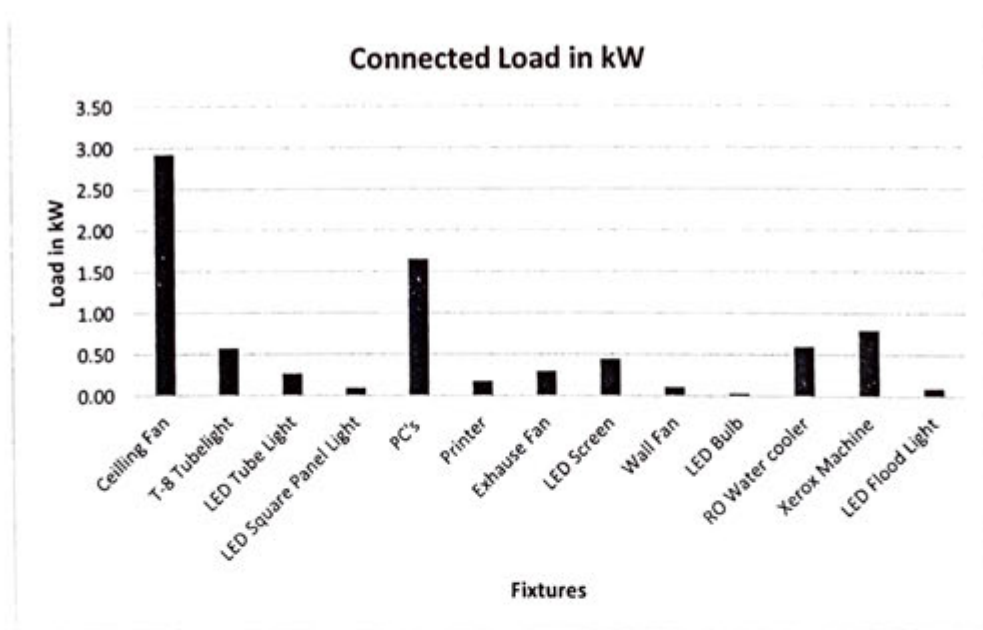


Figure 4 Connected Load in kW





5. ENERGY CONSERVATION MEASURES

ECM 1: Replacement of CFL Tube Lights with More Efficient Lights

ECM No.	Energy efficiency improvement measures	Investment Rs. In Lakh	Estimated Saving		Estimated Savings Rs. In Lacs	Estimated Payback Years
			Electricity kWh	Carbon credit (Tons of CO ₂)		
1	Replacement of conventional lights with suitable LEDs	0.32	204.80	0.17	0.02	11.81



Figure 5 Lighting Fixture

Observations:

Facility has installed T-8 CFL Tube Lights of 36 W in their premises

Recommendations:

During energy audit, it is observed that facility has installed T-8 CFL Tube Light of 36 W at some of the places in the facility. Also, the energy team at facility has already replaced some of the CFLs with LEDs. The operating hours for these lightings are around 4 hours. T-8 CFL Tube Light of 36 W with equivalent LED fixture thereby achieving significant reduction in energy consumption. The LEDs could be replaced in such a manner that it has the same fixture so there will not be retrofitting cost attached to the replacement. The replacement could be done in a phased manner. LED lights have better efficiency as well as better lifetime than conventional lights.





Particular	Unit	Value
Energy Saving Calculation		
Power consumption of existing lights	KW	0.58
Power consumption of suitable LED light	KW	0.32
Average power saving after replacement with LED light	KW	0.26
Replacement of conventional lights with suitable LEDs	Nos	16
Average working hour per day	Hrs	4
No. of working days in a year	Days	200
Cost Benefit Calculation		
Annual Energy Saving potential	kWh	205
Electricity tariff	Rs/unit	11.87
Annual Cost Saving	Rs. Lakh	0.02
Total investment cost	Rs. Lakh	0.29
Annual Saving	Rs. Lakh	0.02
Simple Payback Period	Years	11.81





Investment Details:

Type of Existing Fitting	Wattage	Qty	Proposed LED W	CSR NO	Price - Rs/Unit	Dismantling cost	TOTAL COST	Existing KW	Proposed KW	Saved kW	Investment Rs Lakh	GST 12%	Total Investment
Tube Light	36	16	20	2-1-23	926	15	0.29	0.58	0.32	0.26	0.29		
TOTAL		16.00			926.00	15.00	0.29	0.58	0.32	0.26	0.29	0.03	0.32

Investment Details:

CSR no	Description	Material	Labour	Total	Dismantling cost	Quantity	Total Cost
2-1-23	Supplying & erecting LED 20W tube light fitting (4 feet) with aluminium housing, heat sink, integrated HF electronic driver complete.	881	45	926	15	16	28706
	Total						0.29
	12% GST on total Investment cost						0.03
	Total cost						0.32





ECM 2: Replacement of Old Fan with Energy Efficient Super Fan

ECM No.	Energy efficiency improvement measures	Investment Rs. In Lakh	Estimated Saving		Estimated Savings Rs. In Lacs	Estimated Payback Years
			Electricity kWh	Carbon credit (Tons of CO ₂)		
2	Replacement of existing fans with energy efficient Super fans	0.87	524.16	0.45	0.06	13.94



Figure 6 Ceiling Fans

Observations:

During energy audit, it is observed that facility has old 75 W fan and its energy consumption is on higher side.

Recommendations:

During energy audit, it is observed that facility has installed non star rated fan of 75 W so we recommend to replace energy consuming fan with energy efficient super fan.





Particular	Unit	value
Existing energy consumption of Fan	kWh/year	1404
Wattage of Energy Efficient Super Fan	Watt	35
Energy consumption after replacing with Energy Efficient Super Fan	kWh/year	655
Operating hrs/day	Hrs/day	4
No. of working days in a year	Days	120
Diversity factor	%	70%
Annual Saving	kWh/year	524
Unit rate	Rs/kWh	11.87
Annual Saving	Rs. In Lacs	0.06

Fixture Details:

AC category	Nos	Estimated Running kW
Ceiling Fan 75 W	39	2.93
Total	39	2.93

Investment Details:

CSR No	Description	Material	Labour	Total	Quantity	Total Cost
2-14-4	Dismantling the existing ceiling fan /exhaust fan / cabin fan / bracket fan complete with accessories, G.I. down rod, frame etc. and making the site clear.	0	37	37	39	1443
2-12-21.	Supplying and erecting five star rated energy saving Ceiling fan 230 V A.C. 50 cycles 1200 mm complete erected in position as per specification no. FG-FN/CF	1858	91	1949	39	76011
	Total					0.77
	12% GST on total Investment cost					0.09
	Total cost					0.87

Power Consumption in Watts		
Speed	Ordinary Ceiling Fan	Super Fan*
Low	12	4
Medium	39	14
High	75	35



ECM 3: Optimization of Water Cooler

ECM No.	Energy efficiency improvement measures	Investment Rs. In Lakh	Estimated Saving		Estimated Savings Rs. In Lacs	Estimated Payback Years
			Electricity kWh	Carbon credit (Tons of CO ₂)		
3	Optimisation of Water Cooler	0.003	144.00	0.12	0.02	0.18



Figure 7 Water Cooler

Observations:

Facility has 1 nos. of Water Cooler of 600 W and power of Water coolers is continuously On for 4 hours per day.

Recommendation:

It is recommended to install Temperature control circuit which will turn on power of Water cooler at 21 deg C and turn off power when temperature of water reaches to 16 Deg C. Calculations are done for Energy saving considering automatic power ON of water cooler for 2 hours per day.





Particular	Unit	Value
Energy Saving Calculation		
Power consumption of RO and Water Cooler	KW	0.60
Supply Water Temperature	Deg C	26.00
Inlet Temperature T1	Deg C	21.00
Outlet Temperature T2	Deg C	16.00
Average working hour per day	Hrs	4
No. of working days in a year	Days	120
Existing consumption of Water cooler without automation	kWh/year	288.00
Energy consumption of of water cooler with control circuit	kWh/year	144.00
Cost Benefit Calculation		
Annual Energy Saving potential	kWh/year	144
Electricity tariff	Rs/unit	11.87
Annual Cost Saving	Rs. Lakh	0.02
Total investment cost	Rs. Lakh	0.003
Annual Saving	Rs. Lakh	0.02
Simple Payback Period	Years	0.18

Fixture Details:

Name of Equipment	Wattage	Qty	Existing KW
Water Cooler (150Ltr)	600	1	0.6
TOTAL		1.00	0.6





Other Recommendation:

1. It was recommended to increase the set point for all refrigerators by 1 °C to achieve energy gain of 3% as per guideline of BEE.
2. it is recommended to increase set temperature setting by 1 °C. Also set the temperature for each AC in the range of 22 °C to 23 °C and schedule the maintenance of AC as per manufactures guidelines. It is known that, a 1°C raise in evaporator temperature can help to save almost 3% on power consumption (this also can be verified from BEE guideline: Chapter 4. HVAC and Refrigeration System).



6. List of Instruments

POWER ANALYSER



Picture 1 ALM 20 Power Analyzer

ALM 20 Power Analyzer is designed for measuring power network parameters

TECHNICAL SPECIFICATIONS

Number of channels	3U/3I
Voltage (TRMS AC + DC)	100V to 2000V ph-ph / 50V to 1000V ph-N
Voltage ratio	Up to 650 kV
Current (TRMS AC + DC)	5mA to 10,000 Aac / 50 mA to 5,000 Adc (depending on Clamp)
Current ratio	Up to 25 kA
Frequency	42.5 - 69 Hz, 340 - 460Hz
Power values	W, VA, VAr, VAD, PF, DPF, $\cos \phi$, $\tan \phi$
Energy values	Wh, VAh, VArh
Harmonics, THD	on V, U, I & In up to 50th order
Electrical safety	IEC 61010, 1000V CAT III / 600V CAT IV
Protection	IP54



Picture 2 MECO 3150 DIGITAL CLAMP METER

Power Clamp meter is a Portable Digital multi-functional measuring instrument. Designed for Measuring selected power network parameters, AC/DC Voltage, AC/DC current, Resistance, Continuity, Diode and Frequency.

TECHNICAL SPECIFICATIONS

DC VOLTAGE (Auto Ranging)	
Ranges	4V, 40V, 400V, 1000V
Overload Protection	1200V DC/800V AC
AC VOLTAGE (Auto Ranging) 40-500Hz	
Range	4V, 40V, 400V, 750V
Overload Protection	1200V DC/800V AC
RESISTANCE (Auto Ranging)	
Range	400Ω, 4KΩ, 40KΩ, 400KΩ, 4MΩ, 40MΩ
Test Current	0.7mA on 400Ω, 0.1mA on 4KΩ
Diode Test	
Measurement Current	1.0 ± 0.6 mA Approx
Open Circuit Voltage	0.4V Approx
Overload Protection	500V DC / AC
Frequency (Auto Ranging)	
Range	10.00Hz, 50.00Hz, 500.0Hz, 5.000kHz, 50.00kHz, 500.0kHz
Sensitivity	3V
Overvoltage Protection	200V DC or AC peak



DIGITAL CLAMP METER



Picture 3 RISHI POWER CLAMP 1000 A/400 A AC-DC

Power Clamp meter is a Portable Digital multi-functional measuring instrument. Designed for Measuring selected power network parameters, AC/DC Voltage, AC/DC current, Resistance, Continuity, Diode and Frequency.

TECHNICAL SPECIFICATIONS

Measuring function	Measuring range
kWh	9.999 kWh
	99.99 kWh
	999.9 kWh
	9999 kWh
Ahr	999.9 Ahr
Phase angle	0.0°...360.0°
Power Factor	-1...0...1
Harmonics (RMS & %)	1...13
	14...49
THD	0...99.9%
Crest Factor	1.0...2.9
	3.0...5.0
Power Clamp 1000A peak	1400 A/ 1400 V
Power Clamp 400A peak	100 A
	560 A/ 1000 V
Power Clamp 1000A INRUSH	999.9 A
Power Clamp 400A INRUSH	99.99 A
	400 A
Resistance	9999 Ohm
Continuity	Below 40 Ohm





THERMAL IMAGER



Picture 4 FLIR TG 167 Thermal imager

FLIR TG 167 Thermal imager is designed to easily find unseen hot and cold spots in electrical cabinets or switch boxes, giving you quality image detail on even small connectors and wires.

TECHNICAL SPECIFICATIONS

Accuracy	±1.5% or 1.5°C (2.7°F)
Detector Type	Focal plane array (FPA), uncooled micro bolometer
IR Resolution	80 × 60 pixels
Laser	Dual diverging lasers indicate the temperature measurement area, activated by pulling the trigger
Memory Type	Micro SD card
Object Temperature Range	-25°C to 380°C (-13°F to 716°F)
Thermal Sensitivity/NETD	<150 mK
Display	2.0 in TFT LCD



INFRARED THERMOMETER



Picture 5 HTC IRX 64 Infrared thermometer

HTC IRX 64 infrared thermometer is useful instrument to measure the surface temperature. Infrared thermometers are ideal for taking temperatures need to be tested from a distance. They provide accurate temperatures without ever having to touch the object you're measuring (and even if your subject is in motion).

TECHNICAL SPECIFICATIONS

Specification	Range
IR	-50°C~1050 °C
Contact	-50°C~1370 °C
IR Temp. Resolution	0.1°C
Basic Accuracy	+/- 1.5% of reading
Emissivity	Adjustable 0.10 ~ 1.0
Optical resolution	30 : 1



LUX METER



Picture 6 Nishant NE 1010 Lux meter
Nishant NE 1010 Lux meter is used to measure the lux levels.

TECHNICAL SPECIFICATIONS

Measuring range	0 Lux ~200, 000 Lux/0 Fc~185, 806 Fc
Accuracy	$\pm 3\% \text{ rdg} \pm 0.5\% \text{ f.s.} (<10,000 \text{ Lux})$
	$\pm 4\% \text{ rdg} \pm 10\% \text{ f.s.} (>10,000 \text{ Lux})$
Digital Updates	2 times/s
Photometric sensor	Silicon diode
Battery life	18 hours (continuous operation)
Operating temperature and humidity	0°C ~ 40°C, 10% RH ~ 90% RH
Storage temperature and humidity	-20°C ~ 50°C, 10% RH ~ 90% RH
Power	9V battery
Unit Size	52.5 x 52.5 x 166 mm
Auto power off	After 5 minutes



7. Solar PV System

1) Introduction

The solar energy has a great potential as future source of energy. With its availability in large quantity almost in every corner of the country, solar power has the distinctive advantage of generating power at local and decentralized levels and being one of the prime factors for empowering people at grassroots level. The solar mission, which is part of the National Action Plan on Climate change has been set up to promote the development and use of solar energy for power generation and other uses with the ultimate objective of making solar energy competitive with fossil-based energy options. The solar photovoltaic device systems for power generation had been deployed in the various parts in the country for electrification where the grid connectivity is either not feasible or not cost effective as also some times in conjunction with diesel based generating stations in isolated places, communication transmitters at remote locations. With the downward trend in the cost of solar energy and appreciation for the need for development of solar power, solar power projects have recently been implemented. A significant part of the large potential of solar energy in the country could be developed by promoting solar photovoltaic power systems of varying sizes as per the need and affordability coupled with ensuring adequate return on investment.

2) Benefits of Solar Energy

- a. Power from the sun is clean, silent, limitless and free.
- b. Photovoltaic process releases no CO₂, SO₂, or NO₂ gases which are normally associated with burning finite fossil fuel reserves and don't contribute to global warming.
- c. Photovoltaic are now a proven technology which is inherently safe as opposed to other fossil fuel based electricity generating technologies.
- d. Solar power shall augment the needs of peak power needs.
- e. provides a potential revenue source in a diverse energy portfolio
- f. Assists in meeting renewable portfolio standards goals.

This proposal is prepared for design, engineering, procurement / manufacture and installation of solar power generating system. The grid-tie solar photovoltaic power generation system is mainly composed of PV array, String Inverter, and PV mounting structure.

It also consists of supporting devices like AC / DC switchgears, Lighting Arrestor, Earth Electrodes, AC / DC cables. As there is no any battery, it's maintenance cost is negligible and initial investment per KW is very low.





1) Objective

- Provide reliable, clean, regulated, un-interrupted power on demand to the pre-identified critical loads
- System to provide low life cycle cost and maximize savings to the beneficiaries.
- To save diesel in institutions and other commercial establishments including industry facing huge power cuts especially during daytime.

2) Design Assumptions

General

- a. The Solar Radiation Data's are based on standard books & simulation software as NASA and Metronome. The Mean Hourly Radiation Data is considered.
- b. The module rating considered is tentative. The exact module sizing and rating will depend on the availability of cell grade and site suitability.
- c. Solar Panels are roof/ground mounted in one location. Environmentally protected, closed, ventilated, inverter room at minimum distance from PV modules.
- d. Application: Self consumption, captive grid or NET metering.
- e. Emergency Backup: Generator or any other source in absence of Grid.

3) System Description:

Solar Power Plant comprises of the main equipment and components listed below:

1. Solar PV Modules
2. String Inverter with MPPT
3. Module mounting system
4. Monitoring system
5. Cables & connectors

Each of the sub systems has been described for the functionality and operation modes. The physical construction of the system follows a modular approach, which is field-tested and is regularly used for delivery of power systems.

5.1 Solar PV Module (Electrical Features)

The PV modules convert the light reaching them into DC power. The amount of power they produce is roughly proportional to the intensity and the angle of the light reaching them. They are therefore required to be positioned to take maximum advantage of available sunlight within sitting constraints.





5.2 Solar PV Module (Mechanical Features)

Solar Module design will conform to following Mechanical requirements:

- Toughened,
- low iron content,
- High transmissivity from glass.
- Anodized Aluminum Frame.
- Ethyl Vinyl Acetate (EVA) encapsulating.
- Tedlar/Polyester trilaminate back surface.
- ABS plastic terminal box for the module output termination with gasket to prevent water & moisture.
- Resistant to water, abrasion hail impact, humidity & other environment of actors for the worst situation at site.

5.3 Module Mounting Structure

The structure shall be designed to allow easy replacement of any module and shall be in line with site requirement. Structure shall be designed for simple mechanical and electrical installation. It shall support SPV modules at a given orientation, absorb and transfer the mechanical loads to the ground properly. There shall be no requirement of welding or complex machinery at site. The array structure shall have tilt arrangement to adjust the plane of the solar array for optimum tilt.

5.4 Junction Box

The junction boxes shall be dust, vermin and waterproof and made of FRP/ABS Plastic with IP65 protection. The terminals shall be connected to copper bus bar arrangement of proper sizes. The junction boxes shall have suitable cable entry points fitted with cable glands of appropriate sizes for both incoming and outgoing cables. Suitable marking shall be provided on the bus bar for easy identification and cable ferrules shall be fitted at the cable termination points for identification

5.5 String Inverter

The STRING INVERTER is A combination of Solar Charger (MPPT), Inverter and synchronization unit for two different AC supplies, all housed in a single unit. Maximum power point tracker (MPPT) shall be integrated into it to maximize energy drawn from the solar array. The Inverter converts the DC available from the array into an AC output. The output of the inverter is filtered to reduce the harmonics to an acceptable level (less than 5%). MPPT shall be microprocessor/micro controller based to minimize power losses and maximize energy utilization. The efficiency of MPPT shall not be less than 90% and shall be designed to meet the solar PV Array capacity.





5.6 AC /DC Cables

We use DC & AC cables of Lap, Apar, Polycab, Havels, Finolex or equivalent make to ensure minimum losses in transmission.

In order to complete the energy study that leads to the construction of a photovoltaic installation, hourly series of global horizontal irradiation values for a complete year are used, which resume the irradiation and other meteorological parameters behavior over a long term. We use PV. SYST. Software to workout optimum power production at site with minimum losses.

5.7 Grounding and Lighting Protection

- A protective earth (PE) connection ensures that all exposed conductive surfaces are at the same electrical potential as the surface of the Earth, to avoid the risk of electrical shock. It ensures that in the case of an insulation fault (a "short circuit"), a very high current flows, which will trigger an over current protection device as fuses and circuit breakers that disconnects the power supply.
- A functional earth connection serves a purpose other than providing protection against electrical shock. In contrast to a protective earth connection, a functional earth connection may carry a current during the normal operation of a device.
- Lightning protection is a very specialized form of grounding used in an attempt to divert the huge currents from lightning strikes. A ground conductor on a lightning arrester system is used to dissipate the strike into the earth.
- Lightning ground conductors must carry heavy currents for a short period of time. To limit inductance and the resulting voltage due to the fast pulse nature of lightning currents, lightning ground conductors may be wide flat strips of metal, usually run as directly as possible to electrodes in contact with the earth.
- In proposal, the entire system is fully provided with the required lighting and grounding protection.

6) Capacity Evaluation

Calculation for Required Solar Capacity plant to fulfill In-house Requirement

Calculation to Fulfill Building Total Load Requirement			
Sr. No.	Details	Value	Unit
1	Total electrical consumption per year	5056	KWh
2	Units generated per day per KWp	4.5	KWh/KWp/day
3	Units generated per Year per KWp (330 days / Year)	1485	KWh/KWp/Year
4	Solar KW capacity For 8028 KWh consumption / year	3.4	KWp

As per electrical consumption (Building Load), capacity of Solar Power Plant required is 3 KWp. As per shadow free space available on building approximately more than 3 KWp plant can be installed which is more than the actual requirement of full Electrical load per MSEDCL bill total Sanctioned load is 0.40 kW.





It is suggested to install Solar Plant of Capacity 3 KWp, which can be installed & it covers all required load.

The SPV power plant with proposed capacity of 3 KWp would be connected to the main electrical distribution panel. The system would meet full load requirement of the connected load during the day. Advance control mechanism in the Power Conditioning Unit will ensure that the maximum power generated by PV modules will be utilized first and the balance requirement of power will be met by either grid or DG set

The 80 KWp SPV Power Plant is estimated to afford annual energy feed of 4,455 KWh/year (After considering all losses) considering efficiency of the solar module as 15.16%, Power Conditioning Unit (PCU) efficiency as 98.3% and losses in the DC and AC system as 3%.

6) Budgetary Estimation of the Project

Details	Value	Unit
Shadow free space required for approx. 1 KWp Solar Plant	80	Sq.Ft
Shadow free space available at Facility	-	Sq.Ft.
Solar Plant capacity to be Installed at Facility	-	KWp
Solar Plant Requirement as per actual consumption	3	KWp
Installation Cost Per KW for 1 KWp Solar Plant	0.57	Rs. In Lakh
Gross Estimated System cost (For 3 KWp Grid Connected Solar Plant)	2	Rs. In Lakh
Unit generated per day per kWp	4.5	KWh
Electricity generation per day for 3 KWp Grid Connected Solar Plant	14	KWh/day
Electricity generation per year for 3 KWp Grid Connected Solar Plant (330 days/year)	4455	KWh/year
Average Electricity Unit Cost	11.87	Rs./KWh
Electricity cost saved per year	0.53	Rs. In Lakh
Simple payback period	3.23	Years

For PPS Energy Solutions Pvt. Ltd.

Ravi

Dr. Ravi G. Deshmukh
Energy Auditor Class - A
MEDA/ECN/2021-22/EA-11





8. Site Photos





Figure 8 Site Photos





Vidya Vikas Shikashan Sanstha, Hinganghat. (College Code : - 707)

MATOSHRI ASHATAI KUNAWAR

ARTS, COMMERCE & SCIENCE WOMENS COLLEGE

Sant Tukadoji Ward, Nandori Road, Hinganghat, Dist Wardha - 442301

(Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur)

E - Mail Id: - makm.college@gmail.com

Mobile No.: - 9850808807 (Office No.: - 8483922491) (Estd. 2018)

Principal
Dr. Umesh Tulaskar

Green and Environment Policy

Introduction:

At MAK Arts, Commerce & Science Women's College, we recognize our responsibility to contribute to the preservation and protection of the environment. We are committed to adopting sustainable practices, reducing our environmental impact, and promoting a culture of environmental responsibility among our employees, stakeholders, and communities.

Our Commitment:

- 1) Sustainability:** We are dedicated to conducting our operations in an environmentally sustainable manner that respects the delicate balance of ecosystems and the planet's finite resources.
- 2) Environmental Compliance:** We commit to complying with all relevant environmental laws, regulations, and standards in our operations.
- 3) Continuous Improvement:** We will continually assess and improve our environmental performance by setting measurable goals and objectives.

Our Goals:

- 1) Resource Conservation:** We will minimize our consumption of energy, water, and raw materials through efficient practices and technologies.
- 2) Waste Reduction:** We aim to reduce waste generation and promote recycling and responsible disposal methods.
- 3) Carbon Footprint:** We will work towards reducing our carbon emissions through energy-efficient practices and exploring renewable energy sources.
- 4) Biodiversity:** We will protect and enhance biodiversity by minimizing habitat disruption and supporting conservation efforts.
- 5) Green Procurement:** We will prioritize the procurement of environmentally friendly products and services.



Vidya Vikas Shikashan Sanstha, Hinganghat. (College Code : - 707)

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Principal
Dr. Umesh Tulaskar

Our Strategies:

- 1) **Employee Engagement:** We will educate and engage our employees in environmentally responsible practices, fostering a sense of ownership in our sustainability efforts.
- 2) **Stakeholder Collaboration:** We will collaborate with suppliers, customers, and partners to promote shared environmental values and goals.
- 3) **Community Involvement:** We will actively participate in community environmental initiatives and support local sustainability efforts.
- 4) **Transparency:** We will communicate openly and transparently about our environmental initiatives, progress, and challenges.

Reporting and Accountability:

We will regularly monitor and report on our environmental performance, seeking opportunities for improvement. Our leadership team is responsible for ensuring the effective implementation of this Green and Environment Policy across all levels of the organization.

Conclusion:

By adopting this Green and Environment Policy, MAK Arts, Commerce & Science Women's College reaffirms its commitment to environmental stewardship and sustainable practices. Together, we can contribute to a greener and healthier future for current and future generations.

Matoshri Ashatai Kunawar
Arts, Commerce & Science
Women's College, Hinganghat



Appendix III

निसर्गसाथी फाउंडेशन

हिंगणघाट

Email : pravinkadu455@gmail.com

रजि. क्र. महा/७२/२१

पत्ता : प्रविण कडू, राम मंदिर वार्ड, हिंगणघाट, जि. वर्धा (महा.) मो.: 7769026796

To,
The Principal
M. A .K. Women's College
Hinganghat.

Respected Sir,

We are extremely thankful to you for participating your B.Sc. students in Butterfly Month program on dated 29 September 2022 organised by Nisargsathi Foundation Hinganghat. The program was held at Chatrapati Shivaji Park, Hinganghat. Due to that, Nisargsathi Foundation got opportunity to shared Butterfly knowledge, importance of butterfly for Nature and biodiversity conservation. Very special thanks to M.A.K. Women's College team to make this event successful.

We highly appreciate to all the members of Women's College for accepting our request and becoming part of us. We hope this organisation will keep up with this highly valued and commendable.

Thanking You !


अध्यक्ष,
निसर्गसाथी फाउंडेशन, हिंगणघाट

Snehal Kisan Nursery

Near River Bridge, National Highway 7, Hinganghat - 442 301, Dist. Wardha (M.S.)
Email : snehalkisannursery@gmail.com

Digambar M. Khandre

(M.H.State VANSRI AWARD Holder)
(Vice President, INA Maharashtra Chapter)
(Executive Member, Indian Nursery Man Ass.)
M. 9422141822, 9657887822

Ref. No. :

Date : 07/08/21

To,

The Principal,

Matoshri Ashatai Kunawar

Arts, Commerce and Science Women's College

Sant Tukdoji Ward, Nandori Road,

Hinganghat, Wardha

Respected Sir,

We are extremely thankful to you for arranging plantation program Dated on 07 August 2021 by M.A.K. Women's college and gave us an opportunity to be a part of it. Our Special thanks to all the team of M.A.K. Women's College exerted lot to make this event successful.

We highly appreciate all the members in arranging the event for the sake of environment. We hope this organization will keep up with this highly Valued and Commendable work

THANKING YOU!

Snehal Kisan Nursery

Snehal Khandre
Proprietor

Appendix IV



Vidya Vikas Shikashan Sanstha, Hinganghat

MATOSHRI ASHATAI KUNAWAR ARTS, COMMERCE & SCIENCE WOMENS COLLEGE

Sant Tukadoji Ward, Nandori Road, Hinganghat, Dist Wardha -442301

(Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur)

E-Mail ID : makm.college@gmail.com

Mobile No. 9850808807, (Office No. 8483922491) (Estd. 2018)

Name of activity: Tree Plantation
Name of Programme Organizer : Department of Botany Prof. D. S. Rendhe. Prof. A. A. Thakare
Details of organization with Address : Matoshri Ashatai Kunawar Arts, Commerce & Science women's college, Hinganghat
Date of Conduction : 10 July 2018
Participant Count : Students :- 30 Faculty :- 2
Brief Description : Botany department of Matoshri Ashatai Kunawar Arts, Commerce & Science women's college, Hinganghat. Organized Tree Plantation day program. The program presided over by principal Dr Umesh Tulaskar of M.A.K college of Hinganghat and Prof. Dr. Nayana Shirbhate, Vice Principal Vidya Vikas College samudrapur. Prof. Sapna Jaiswal also provided timely guidance in Program. Students celebrated program by planting plants in Plastic bottles were used as pots. Students that created waste from best. Department of Botany faculty members conducting the program Prof. Ankita A. Thakare did the introduction while Prof. Darshana Rendhe did Thank you to the dignity of program.
Outcomes of the activity : 1. Conservation is the care and protection of these resources so that they can persist for future generation. 2. Promotes pollination and continuity of native plant species.



Hinganghat, Maharashtra, India
HV22+MR6, Shahalangadi, Hinganghat,
Maharashtra 442301, India
Lat 20.55172°
Long 78.852055°
10/07/18 10:11 AM GMT +05:30



Hinganghat, Maharashtra, India
HV22+MR6, Shahalangadi, Hinganghat,
Maharashtra 442301, India
Lat 20.55172°
Long 78.852055°
10/07/18 10:10 AM GMT +05:30



Hinganghat, Maharashtra, India
HV22+MR6, Shahalangadi, Hinganghat,
Maharashtra 442301, India
Lat 20.55172°
Long 78.852055°
10/07/18 10:11 AM GMT +05:30



[Signature]
PRINCIPAL
BLAKWomans College
Hinganghat

~ S ~



Vidya Vikas Shikashan Sanstha, Hinganghat.

(College Code : - 707)

MATOSHRI ASHATAI KUNAWAR

ARTS, COMMERCE & SCIENCE WOMENS COLLEGE

Sant Tukadoji Ward, Nandori Road, Hinganghat, Dist Wardha -442301

(Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur)

E- Mail Id: - makm.college@gmail.com Mobile No.: - 9850808807 (Office No.: - 8483922491) (Estd. 2018)

Name of Activity: Tree plantation
Name of Student: Komal Aril Umak
Class with Section: BSc. Final year.
Date of Programme/Activity: 10/07/2018
Mobile No.: 7821086606

1. How did you feel about this event?

- Excellent
- ✓ • Very good
- Good
- Average

2. The talk/activity was relevant with the topic?

- Strongly agree
- ✓ • Agree
- Neutral
- Disagree

3. Was this program/activity beneficial to you?

- ✓ • Yes
- No
- May be

4. Should such events be re-organized?

- Yes
- ✓ • No

5. Suggestion If any

No suggestion

Komal
Signature

~ S ~



Vidya Vikas Shikashan Sanstha, Hinganghat.

(College Code : - 707)

MATOSHRI ASHATAI KUNAWAR

ARTS, COMMERCE & SCIENCE WOMENS COLLEGE

Sant Tukadoji Ward, Nandori Road, Hinganghat, Dist Wardha -442301

(Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur)

E- Mail Id: - makm.college@gmail.com Mobile No.: - 9850808807 (Office No.: - 8483922491) (Estd. 2018)

Name of Activity: *Tree plantation*
Name of Student: *Ku. Vaishnavi Bhimrao Khekar*
Class with Section: *BSC. IIIrd year*
Date of Programme/Activity: *10/07/2018*
Mobile No.: *8180044766*

1. How did you feel about this event?

- ☒ Excellent
- Very good
 - Good
 - Average

2. The talk/activity was relevant with the topic?

- ☒ Strongly agree
- Agree
 - Neutral
 - Disagree

3. Was this program/activity beneficial to you?

- ☒ Yes
- No
 - May be

4. Should such events be re-organized?

- ☒ Yes
- No

5. Suggestion If any

[Signature]
Signature

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Vidya Vikas Shikashan Sanstha, Hinganghat.

(College Code : - 707)

MATOSHRI ASHATAI KUNAWAR

ARTS, COMMERCE & SCIENCE WOMENS COLLEGE

Sant Tukadoji Ward, Nandori Road, Hinganghat, Dist Wardha -442301

(Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur)

E- Mail Id: - makm.college@gmail.com Mobile No.: - 9850808807 (Office No.: - 8483922491) (Estd. 2018)

Name of Activity: Tree plantation.
Name of Student: Ku. Vaishnavi D. Yekontkar
Class with Section: BSc. IIIrd year.
Date of Programme/Activity: 10/07/2018.
Mobile No.: 7499015720

1. How did you feel about this event?

- ☒ Excellent
- ☐ Very good
- ☐ Good
- ☐ Average

2. The talk/activity was relevant with the topic?

- ☒ Strongly agree
- ☐ Agree
- ☐ Neutral
- ☐ Disagree

3. Was this program/activity beneficial to you?

- ☒ Yes
- ☐ No
- ☐ May be

4. Should such events be re-organized?

- ☒ Yes
- ☐ No

5. Suggestion If any

Signature

~ S ~



Vidya Vikas Shikashan Sanstha, Hinganghat.

(College Code : - 707)

MATOSHRI ASHATAI KUNAWAR

ARTS, COMMERCE & SCIENCE WOMENS COLLEGE

Sant Tukadoji Ward, Nandori Road, Hinganghat, Dist Wardha -442301

(Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur)

E- Mail Id: - makm.college@gmail.com Mobile No.: - 9850808807 (Office No.: - 8483922491) (Estd. 2018)

Name of Activity: Tree plantation
Name of Student: Palak C. Deodhe
Class with Section: Bsc 1st year (2nd sem)
Date of Programme/Activity: 10/07/18
Mobile No.: _____

1. How did you feel about this event?
 - ☒ Excellent
 - ☐ Very good
 - ☐ Good
 - ☐ Average
2. The talk/activity was relevant with the topic?
 - ☐ Strongly agree
 - ☒ Agree
 - ☐ Neutral
 - ☐ Disagree
3. Was this program/activity beneficial to you?
 - ☒ Yes
 - ☐ No
 - ☐ May be
4. Should such events be re-organized?
 - ☒ Yes
 - ☐ No
5. Suggestion If any
NO suggestion.

Signature

~ 5 ~



Vidya Vikas Shikashan Sanstha, Hinganghat.

(College Code : - 707)

MATOSHRI ASHATAI KUNAWAR

ARTS, COMMERCE & SCIENCE WOMENS COLLEGE

Sant Tukadoji Ward, Nandori Road, Hinganghat, Dist Wardha - 442301

(Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur)

E- Mail Id: - makm.college@gmail.com Mobile No.: - 9850808807 (Office No.: - 8483922491) (Estd. 2018)

Name of Activity: Tree plantation
Name of Student: Mayuri Manohar Supare
Class with Section: B.Sc 1st year (II sem)
Date of Programme/Activity: 10/07/18
Mobile No.:

1. How did you feel about this event?
 - Excellent
 - ☒ Very good
 - Good
 - Average
2. The talk/activity was relevant with the topic?
 - Strongly agree
 - ☒ Agree
 - Neutral
 - Disagree
3. Was this program/activity beneficial to you?
 - ☒ Yes
 - No
 - May be
4. Should such events be re-organized?
 - ☒ Yes
 - No
5. Suggestion If any

No Suggestion


Signature

**Matoshri Ashatai Kunawar Arts, Commerce & Science
Women's college, Hinganghat, Dist. Wardha**

PROGRAM / EVENT: Tree plantation
 DATE: 10 July 2018 TIME: Morning : 8:00
 VENUE: At. Matoshri Ashatai Kunawar women's college 484
 ORGANIZED BY / DEPARTMENT: Department of Botany
Miss D.S. Rendhe, Miss A.A. Thakare

SR. NO.	NAME OF STUDENT	SIGNATURE
1)	Snehal Vitthal Wadhai	Wadhai
2)	Durgakaitas Kashiresagar	Dkshresagar
3)	Dhanyani A. Rokade	D.A. Rokade
4)	Sneha G. Madavi	S. G. Madavi
5)	Samiksha V. Rokade	S. V. Rokade
6)	Samiksha R. Dole	S.R. Dole
7)	Pooja R. Chinchulkar	Phinchulkar
8)	Achal D. Chandurkar	A. D. Chandurkar
9)	Payal A. Patwa	P. A. Patwa
10)	Ananya P. Dhote	A. P. Dhote
11)	Rafiya . Y. Ali	Rafiya
12)	Shruti . P. Patil	S.P. Patil
13)	Vaishnavi D. Kolhe	Kolhe
14)	Snehal S. Durge	Saurje
15)	Safiya N. Sheikh	Safiya
16)	Afsheen Kar. S. Ali	Afsheen
17)	Vina Chaudhari	Chaudhari
18)	Tejaswi . D. Kumbhar	T.D.K
19)	Lavanya Daulat Telkojwar	L.D. Telkojwar
20)	Manjusha Pandhari Meshram	M. P. Meshram
21)	Vaishnavi Gajanan Talase	V. G. Talase
22)	Komal S. Bawane	K.S. Bawane
23)	Shruti Vitthal Bawane	Shruti V. Bawane

**Matoshri Ashatai Kunawar Arts, Commerce & Science
Women's college, Hinganghat, Dist. Wardha**

PROGRAM / EVENT: Tree plantation

DATE: 10 July 2018 TIME: Morning 8:00

VENUE: MAK women's college, Hinganghat

ORGANIZED BY / DEPARTMENT : Department of Botany
Miss D.S. Rendhe Miss A.A. Thakare

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