

Criteria 7- Institutional Values and Best Practices

Key Indicator 7.1.6- Quality audits on environment and energy are regularly undertaken by the Institution and any awards received for such green campus initiatives

DVV Query

Provide

- 1) Policy document on environment and energy usage
- 2) Certificate from the auditing agency
- 3) Certificates of the awards received from the recognized agency
- 4) Report on environmental promotional activities conducted beyond the campus with geo tagged photographs with caption and date.
- 5) Any other supporting document for the claims made.

DVV Response

- 1) Policy document on environment and energy usage
The environment and energy usage policy is pasted below
- 2) Certificate from the auditing agency
The Green, energy and environment audit certificates are pasted below
- 3) Certificates of the awards received from the recognized agency
We are still in the progress for receiving such an award from a recognized agency
- 4) Report on environmental promotional activities conducted beyond the campus with geo tagged photographs with caption and date.
Two reports of plastic health awareness activity are pasted below. The objective of this event was to spread awareness to reduce pollution by reusing plastic and working together to raise awareness about the harmful effects of single-use plastics and to make best out of waste from it. However, the geo tagged photos are unavailable.
- 5) Any other supporting document for the claims made.
 - *Receipt of auditing agency who carried out the green, energy and environment audit*
 - *Thermographic analysis report*
 - *With help of thermography analysis we can analyze the patterns within the surface temperatures to detect a problem before it manifests itself in a costly system failure and reducing unplanned stoppages. It is an excellent diagnostic maintenance tool that improves both efficiency and reliability of electrical in any organization.*
 - *This analysis is conducted 4 times a year at our institute.*
 - *A sample report is pasted below.*



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Sr. No.	Particulars	Page No.
1	<u>Policy document on environment and energy usage</u>	3
2	Certificate from the auditing agency <ul style="list-style-type: none">• <u>Green audit certificate</u>• <u>Energy audit certificate</u>• <u>Environment audit certificate</u>	5
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Environment and Energy Usage Policy



ENVIRONMENT AND ENERGY USAGE POLICY

VES COLLEGE OF PHARMACY

Hashu Advani Memorial Complex, Behind Collector Colony, Chembur (E), Mumbai - 400 074

SR. No.	Policy Title:	Environment and Energy Usage
1.	Policy Number and Functional Area	VES/ 2019/01 Administrative
2.	Brief Description of the Policy:	To instill values and monitor environment and energy issues among the stakeholders of the institution.
3.	Drafting	Principal, Environment consciousness committee
4.	Policy Applies to:	All stakeholders of the institution
5.	Effective from the Date:	1 st June 2019
6.	Approved by:	IQAC
7.	Responsible Authority	Principal and Environment consciousness committee
8.	Superseding Authority	VES Management
9.	Last Reviewed/ Updated:	NA
10.	Main Objectives of the policy	<ul style="list-style-type: none"> To create awareness and sensitize on energy conservation measures To create awareness on natural resource management
11.	References for the policy	PRME SDG Brochure (Goal #7, Affordable and clean energy) https://d1ngk2wj7yt6d4.cloudfront.net/public/uploads/PDFs/SDGBrochurePrint.pdf

1. Introduction:

Being a signatory member of PRME, The Environment and Energy Usage policy is a conscious effort taken by the college to manage energy in such a systematic way so as to minimize its impact on the environment. The intentions are to judiciously use the energy resources and work towards reduction in their usage and barring any exploitation.

Environment and Energy Usage Policy



ENVIRONMENT AND ENERGY USAGE POLICY

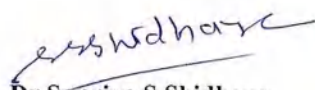
VES COLLEGE OF PHARMACY

Hashu Advani Memorial Complex, Behind Collector Colony, Chembur (E), Mumbai - 400 074

II. Policy Statement:

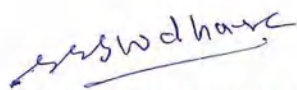
1. To assess our energy usage and measure its impact on the environment by conducting energy audits.
2. To install LED bulbs and sensor based lights and bulbs in the instituteto save energy.
3. To take measures to continuously improve energy conservation.
4. To monitor and respond to emerging environmental and energy issues.
5. To sensitize our employees and students to environmental and energyissues.
6. To provide information and training opportunities on energy saving measures.
7. To offer opportunities for employees and students to engage in initiatives those contribute to environmental protection.

Approved By



Dr Supriya S Shidhaye
Principal





Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

Green Audit Certificate

SENERGY Consultants (P) Ltd

Ref: SCPL-CE-775-161021
Date: October 16, 2021

Certificate

This is to certify that Green Audit was carried out by us at Vivekanand Education Society's College of Pharmacy, Hashu Advani Memorial complex, behind Collector Colony, Mumbai 400 074 during the month of September 2021.

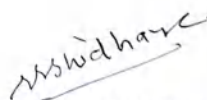
The scope, coverage, findings, and recommendations are submitted vide our report SCPL-PR-775-161021 dated October 16, 2021

For **SENERGY CONSULTANTS PVT LTD**



Tushar Kamble
(Project coordinator)




Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

Page 1 of 3

Helping You to Conserve Energy

3, Aastha II, B S Devshi Road, Govandi East, Mumbai 400 088, India.
Phone: +91 22 2555 3297 Email: scpl@senergy.co.in
Website: <http://www.senergy-india.com>

Energy Audit Certificate

SENERGY Consultants (P) Ltd

Ref: SCPL-CE-775-051021
Date: October 5, 2021

Certificate

This is to certify that Energy Audit was carried out by us at Vivekanand Education Society's College of Pharmacy, Hashu Advani Memorial complex, behind Collector Colony, Mumbai 400 074 during the month of September 2021.

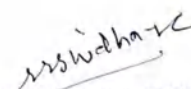
The scope, coverage, findings, and recommendations are submitted vide our report SCPL-PR-775-161021 dated October 16, 2021

For **SENERGY CONSULTANTS PVT LTD**



Tushar Kamble
(Project coordinator)




Dr. (Mfs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

Page 2 of 3

Helping You to Conserve Energy

3, Aastha II, B S Devshi Road, Govandi East, Mumbai 400 088, India.
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For **SENERGY CONSULTANTS PVT LTD**



Tushar Kamble
(Project coordinator)



S. Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

Page 3 of 3

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3, Aastha II, B S Devshi Road, Govandi East, Mumbai 400 088, India.
Phone: +91 22 2555 3297

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Plastic health awareness activity (2020-2021)

Activity Report A.Y. 2020-2021 Student's Council of VES COP

DEPARTMENT/ COMMITTEE/ FACULTY

IQAC ACTIVITY No: (To be included from A.Y. 20-21)

Details of activity:

Name of the Activity	Plastic Health Awareness	Activity No.	IQAC/2020-21/Student council/ 06
Day, Date	Sunday, 25/10/2020	Department/ Committee/Faculty	Student's Council of VES COP
Venue	Online	Time	Till 25 October, 5pm
Nature of activity	Indoor/Outdoor (Tick mark appropriate)	Total no. of participants	11

Activity Information:

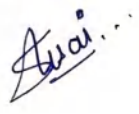
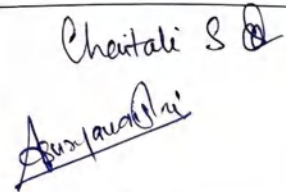
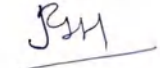
Objectives	The purpose of celebration was to make sure to reduce pollution by reusing plastic and working together to raise awareness about the harmful effects of single use plastics and to make best out of waste from it.
Methodology	A picture along with the PR message was circulated on 15th October 2020 in all the class groups. The students had to make a craft work made out of waste or an art work in accordance to plastic health awareness. After the final date of submission, the entries were given to the judge, who gave points according to the parameters set for the judgement. The results were declared and the First 3 winners were given E-certificates.
Outcomes	It was a successful event. The students were very creative by showcasing their artwork and craftwork and enjoyed a lot.

PROOFS & DOCUMENTS ATTACHED (Tick mark the proofs attached):

<input type="checkbox"/>	Notice and communication	<input type="checkbox"/>	Feedback form
<input type="checkbox"/>	Student list of participation	<input type="checkbox"/>	Feedback analysis
<input type="checkbox"/>	Photos	<input type="checkbox"/>	Media news details
<input type="checkbox"/>	Certificate	<input type="checkbox"/>	Any other

Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.



Name & Signature of Coordinator	Name & Signature of Head/Committee In charge	Name & Signature of IQAC Coordinator
		

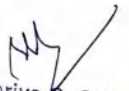


Winners

1st prize- Shruti Patil, Mukta Iele

2nd prize- Glory George, Vaishnavi Thorat

3rd prize- Shrutika Dongre


Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.



Plastic health awareness activity (2019-2020)

8. Plastic Free Campaign

Day: Thursday Date: 24th October, 2019

Venue: VES Campus II

Organizing team/committee: VESOP Student Council

Number of Students Participated: 20

Activity Report along with Photograph: As a part of Swachh Bharat Campaign, the Student Council '19-20 organised a "Plastic Waste Free Campaign", in accordance to the guidelines by AICTE, in our VES Campus II on 24th October, 2019

The following activities were performed for the same:

- Slogan writing and promotion of messages
- Plastic Free Campus:
Cleaning plastic waste in the campus
- Plastic Free India Anthem: for single use plastic ban was carried out in each class
- Poster Making and display



Supriya S. Shidhaye

Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

STUDENT COUNCIL REPORT ACADEMIC YEAR: 2019-20

13



Receipt from auditing agency

B.Pharm.
NGFT.

Tax Invoice

SENERGY CONSULTANTS Pvt Ltd

3, Aastha II, Opp Lakme Ltd, B K S Devashi Road, Govandi (E), Mumbai 400 088,
India
Ph: 91-22-2555 3297
Web Site: www.senergy-india.com
Email: senergy@vsnl.com

B. Pharm / M-Pharm

**** /s Vivekanand Education Society's College of Pharmacy**
Hashu Advani Memorial complex, behind Collector Colony, Mumbai 400 074
GSTN No: 27AAATV2239C1ZP
tate Code: 27


Bill No	SCPL/21-22/041
Date	October 20, 2021
Order No	---
Date	---
Report No	SCPL-PR-775-051021
Date	October 5, 2021

No	Description	Amount	
		Rupees	Paise
01	Professional fees for conducting Green and Energy audit at your premise and submission of the audit report.	20,000	00 ✓
<p>OK checked 21/10/21</p>			
Basic Amount		20,000	00 ✓
CGST @ 9%		1,800	00
SGCT @ 9%		1,800	00
Total Amount		23,600	00

Rupees Twenty-Three Thousand Six Hundred Only

GSTIN: 27AAKCS5167M1ZN w.e.f. 01/07/2017
SAC: 998393 (Scientific & Technical Consulting Services)
PAN: AAKCS5167M w.e.f. 12/03/1999
CIN: U74140MH1999PTC118816
MSME UAN: MH18E0010940

For SENERGY Consultants Pvt Ltd



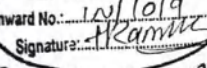
Authorized Signatory

Mr. AS/AS
21/10/21


VES COLLEGE OF PHARMACY

Date: 20/10/21

Inward No: 12/10/19

Signature: 

CHEMBUR, MUMBAI-400 074.



Chembur
Mumbai
400 074.
INDIA

Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

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Audit Reports- Green, energy and environment

SENERGY CONSULTANTS PVT LTD

Green, Energy and Environment Audit Report
Vivekanand Education Society's College of Pharmacy

Ref: SCPL-PR-775-161021
Date: October 16, 2021

Report

On

Green, Energy & Environment Audit

For

Vivekanand Education Society's College of Pharmacy
Chembur

Prepared

By

Senergy Consultants Pvt Ltd
Mumbai

October 2021



Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

Helping You to Conserve Energy

Email: scpl@senergy.co.in

Phone: 022 2555 3297

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Vivekanand Education Society's College of Pharmacy

Hashu Advani Complex, Near Collector's Colony, Chembur (E) Mumbai 400074.

SENERGY CONSULTANTS PVT LTD

Ref: SCPL-PR-775-161021
Date: October 16, 2021

Green, Energy and Environment Audit Report
Vivekanand Education Society's College of Pharmacy

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Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

Helping You to Conserve Energy

Email: scpl@senergy.co.in

Phone: 022 2555 3297

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Hashu Advani Complex, Near Collector's Colony, Chembur (E) Mumbai 400074.

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Date: October 16, 2021

Green, Energy and Environment Audit Report
Vivekanand Education Society's College of Pharmacy

I Introduction

Green, Energy & Environment Audit was undertaken at Vivekanand Education Society's College of Pharmacy (Hashu Advani Memorial complex, behind Collector Colony, Mumbai 400 074) during the month of September 2021.

The organization is very keen to promote green culture wherever possible, as a commitment towards better environment and conservation of energy. A lot of efforts have already been put up to bring down the carbon footprint. To further optimize consumption and identify saving opportunities, M/s Senergy Consultants was assigned to carry out Green & Environment Audit of the premises.

This Audit Report presents the analysis of the data collected, observations made at the facility and is governed by the objectives, scope of work, methodology etc. discussed in the ensuing paragraphs.

Team:

The team members of the audit study.

- Mr. Ravindra Datar
- Mr. Nitesh Kharche
- Mr. Dharmendra Kumar Upadhyay

Acknowledgment:

We wish to express our gratitude towards Dr Supriya Shidhaye for having given us the opportunity for conducting the study and the support provided during the study.



ssidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

Helping You to Conserve Energy

Email: scpl@senergy.co.in

Phone: 022 2555 3297

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Hashu Advani Complex, Near Collector's Colony, Chembur (E) Mumbai 400074.

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Green, Energy and Environment Audit Report
Vivekanand Education Society's College of Pharmacy

II Executive Summary

The premises were evaluated against the various criterions laid down by the National Assessment and Accreditation Council (NAAC). The major observations are.

Renewable Energy

- The college is planning to install Roof-top Solar Photovoltaic System with net metering facility.
- The solar hot water system has been installed at the hostels.
- The quantity of plate waste (organic waste with higher starch contents) is negligible, consequently, there is no potential for biogas generation. The college already has compost pits to convert organic waste in to manure.

Green Campus Initiative

- The movement of vehicle inside the campus is restricted with vehicles of Special Dignitaries, VIP Guests and faculty members are allowed to enter the campus.
- The college has provided pedestrian friendly pathways for in-campus movement.
- There is restriction on the usage of plastic, which may be extended to complete ban plastic usage inside the campus.
- The campus is surrounded with a lot of greenery, trees, with proper landscaping.

Environment & Energy Initiative

- The activities are limited due to COVID 19 pandemic.

Air Quality & Ventilation

- The classrooms and other area are well ventilated to ensure proper air quality.
- The fans are appropriately installed to ensure proper air circulation
- The indoor as well as outdoor plants have also been provided to improve air quality.

Lighting System

- The usage of natural light is optimized through well designed structure and windows.
- The switching of staircase lamps is based on sensors. There are plans to install similar control for washrooms.

Water Quality & Conservation

- The water is supplied by the Municipal Corporation, which is a common practice in and around Mumbai & Navi Mumbai.
- Water purifiers & coolers are provided at convenient locations and on each floor.
- The distribution network and piping are more or less satisfactory and adequate.

Waste Management

- The effluent water is discharged in the common municipal drain, which is a common practice in and around Mumbai & Navi Mumbai.
- The organic waste is segregated and dispose of through Municipal waste.
- Due to pandemic, laboratories are closed because of which there is no generation of waste.
- The electronic gadgets / waste is either donated if useful or handed over to appropriate waste collectors.
- The general solid waste is disposed through municipal corporation.

Air Conditioning System

- The Air Conditioners are operated as required with manual control. The operation is minimal consequently automation may not be economical.
- The room temperature is maintained at 24 to 25 °C, which is well within the recommended values.



ansudhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Collector Colony,
Chembur, Mumbai - 400 074.

Helping You to Conserve Energy

Email: scpl@senergy.co.in

Phone: 022 2555 3297

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Hashu Advani Complex, Near Collector's Colony, Chembur (E) Mumbai 400074.

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Ref: SCPL-PR-775-161021
Date: October 16, 2021

Green, Energy and Environment Audit Report
Vivekanand Education Society's College of Pharmacy

- The Air Conditioners are serviced regularly and properly maintained.
- Most of the Air Conditioners units are energy efficient with star rating of 3 and above.

Infrastructure usage

- Ramps are provided on the ground floor to address the needs of differently abled persons.
- The special toilets are available on the ground floor to address the needs of differently abled persons.
- The on-campus movement is distributed with multiple entrances as well as staircases.
- There are adequate fire extinguishers located at key areas. The college has initiated appropriate measures to meet the safety requirement.
- The draining system for washrooms is efficient and effective.
- No seepages were observed in the building premises.

Green IT culture

- The Energy efficient computers and laptops have been procured.
- The electronic communication is encouraged to minimize usage of papers.
- Most of the papers are reused for doubled sided printing to further minimize usage of paper.



sswadhare
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

Helping You to Conserve Energy

Email: scpl@senergy.co.in

Phone: 022 2555 3297

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Green, Energy and Environment Audit Report
Vivekanand Education Society's College of Pharmacy

III Electrical System

Gadget List

The details are as below:

Lamps:

the details are as below.

Description		Ground Floor	First Floor	Second Floor	Third Floor	Fourth Floor	Fifth Floor	Sixth Floor	Seventh Floor	Total	Operation	
											Hr/D	D/M
LED	20 W	9	53	32	15	12	23	25	4	173	10	25
	22 W	42								42	10	25
	15 W	22		61	4					87	10	25
	10 W	7								7	10	25
	3 W	12								12	10	25
	12 W				6		4			10	10	25
	18 W	2								2	10	25
GLS Bulb	60 W	3						4		7	10	25
PL Light	36 W	8								8	10	25
TL	36 W	37	25	16	48	65	58	63	15	327	10	25

The lamps are being replaced with high efficiency LED lamps, which may be expedited to cover the remaining points.

Fans:

All the fans are of standard rating and efficiency, the details are as below.

Description	Rating	Quantity
	W	No
Ceiling Fans	70	379

Observations & Suggestions:

- The fans may be progressively replaced with energy efficient BLDC fans, especially during replacements and new purchases.

Computers:

Almost all the computers are with energy efficient LCD / LED monitors.



Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

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Vivekanand Education Society's College of Pharmacy

Hashu Advani Complex, Near Collector's Colony, Chembur (E) Mumbai 400074.

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Green, Energy and Environment Audit Report
Vivekanand Education Society's College of Pharmacy

Air Conditioning Units:

The Air Conditioning Units are with star rating of 3 and above, which are intrinsically operate at high energy efficiency, the details are as below.

Location	Type	Capacity	Quantity
Ground Floor			
Office	Split AC	1.5 Ton	2
Trustee Cabin	Split AC	1.5 Ton	1
Principal Cabin	Split AC	1.5 Ton	1
Pilot Plant	Split AC	1.5 Ton	2
Animal House	Split AC	1.5 Ton	9
First Floor			
CIL	Split AC	1.5 Ton	3
Second Floor			
Computer Lab	Split AC	1.5 Ton	4
Boardroom	Split AC	1.5 Ton	3
Seminar Hall	Split AC	1.5 Ton	8
Sixth Floor			
Staffroom-1	Split AC	1.5 Ton	2
Staffroom-2	Split AC	1.5 Ton	1
Seventh Floor			
Classroom-1	Split AC	1.5 Ton	3

Observations & Suggestions:

- Most of the Air Conditioners units are energy efficient with star rating of 3 and above.
- The Air Conditioners are operated as required with manual control. The operation is minimal consequently automation may not be economical.
- The rooms are well ventilated and provided with fans at appropriate location for proper air circulation.
- The temperature is maintained at 24 to 25 °C for air conditioning spaces, which is within the recommended values.
- The gadgets are services properly and maintained in good condition.



Supriya S. Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

Helping You to Conserve Energy

Email: scpl@senergy.co.in

Phone: 022 2555 3297

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Hashu Advani Complex, Near Collector's Colony, Chembur (E) Mumbai 400074.

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Green, Energy and Environment Audit Report
Vivekanand Education Society's College of Pharmacy

Electricity Bill:

Description	Unit	Jan-21	Feb-21	Mar-21	Apr-20	May-20	Jul-21	Average
Energy Consumption	KVAH	5650	4974	7237	3191	2868	6454	5062
	KVARH (Lag)	602	370	666	126	81	583	405
	KVARH (Lead)	716	737	678	826	864	737	760
Power Factor (Lag)		0.972	0.975	0.983	0.955	0.944	0.979	0.968
Demand Charges	Rs	320	320	320	320	320	320	320
Bill	Rs	69600	63710	77920	49730	45140	73570	63278
Cost	Rs/KWH	12.32	12.81	10.77	15.58	15.74	11.40	12.50

Observations & Suggestions:

- The average cost of the power is around Rs 12.50/- per kWh. The actual demand as well as consumption is lower due lockdown restrictions, which has also lead to marginal increase on the power cost. This is expected to be within the normal range, once the restrictions are lifted and activities are normalized.
- The power factor was also observed to be on the lower side which may be improved to avoid penalty also get incentive. The values may be maintained above 0.995 to achieve maximum incentive.

Power Factor Improvement:

The higher power factor entails substantial incentive and reduces maximum demand; while penalty is slapped if the power factor drops below 0.95.

The incentive is paid on the entire current bill amount including charges for energy, maximum demand, fuel adjustment charges (FAC) and reliability charges but excluding taxes and duties.

The incentive structure for power factor is as under.

Sr No	Power factor	Power Factor Range	Incentive
1	0.96	0.955 to 0.964	0.5%
2	0.97	0.965 to 0.974	1.0%
3	0.98	0.975 to 0.984	1.5%
4	0.99	0.985 to 0.994	2.5%
5	1.00	0.995 to 1.000	3.5%

The penalty structure for power factor is as under.

Sr No	Power factor	Power Factor Range	Penalty
1	0.89	0.885 to 0.894	1.0%
2	0.88	0.875 to 0.884	1.5%
3	0.87	0.865 to 0.874	2.0%
4	0.86	0.855 to 0.864	2.5%
5	0.85	0.845 to 0.854	3.0%



Supriya S. Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
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IV Environmental System

Ventilation & Air Quality:

- The air ventilation is adequate.
- Several indoor & outdoor plants have been installed to improve air quality.
- It has been a general practice to switch off the fans & lights in an unoccupied area.



Email: scpl@senergy.co.in

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Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
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V Water Management

Consumption Pattern:

The water supplied by the municipal corporation is used for drinking and other requirements.

The incoming water from the municipal corporation is metered. The details are as under.



Period	Days	Consumption	Bill Amount	Cost
		KL	Rs	Rs/KL
Connection No- 15707				
Apr-20 to Jul-20	93	3401	31547.00	5.64
Jul-20 to Oct-20	88	3724	35975.00	5.64
Oct-20 to Jan-21	92	3025	29274.00	5.64

The consumption pattern was analyzed by the water bills. There are about 560 students and staff members. The specific water consumption was computed based on the number of persons and working days. The details are as under.

Period	Days	Consumption	Total No. Of Person	Water Consumption
		KL		L/Person/Day
Connection No- 15707				
Apr-20 to Jul-20	93	3401	560	65.3
Jul-20 to Oct-20	88	3724	560	75.6
Oct-20 to Jan-21	92	3025	560	58.7

The specific consumption (Liter per person) is on the higher side due to pandemic restrictions. However, it is suggested to analyze the data and plan remedial measures as required.

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PRINCIPAL
Vivekanand Education Society
College of Pharmacy
HAMC, Behind Collector Colony
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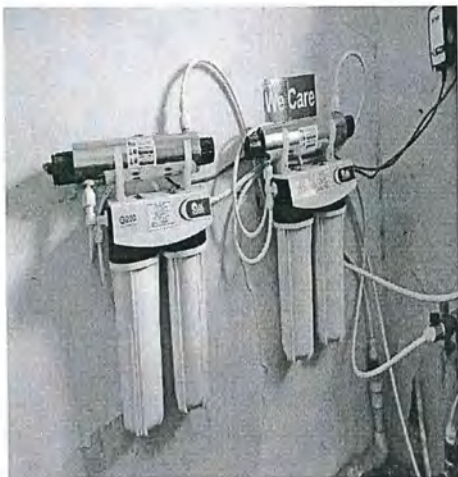
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Water Purifiers:

The water purifiers are installed on each floor.



Water Distribution System:

The distribution network and piping are more or less satisfactory and adequate.

Rainwater Harvesting:

The rain water harvesting system has been installed.



Supriya S. Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
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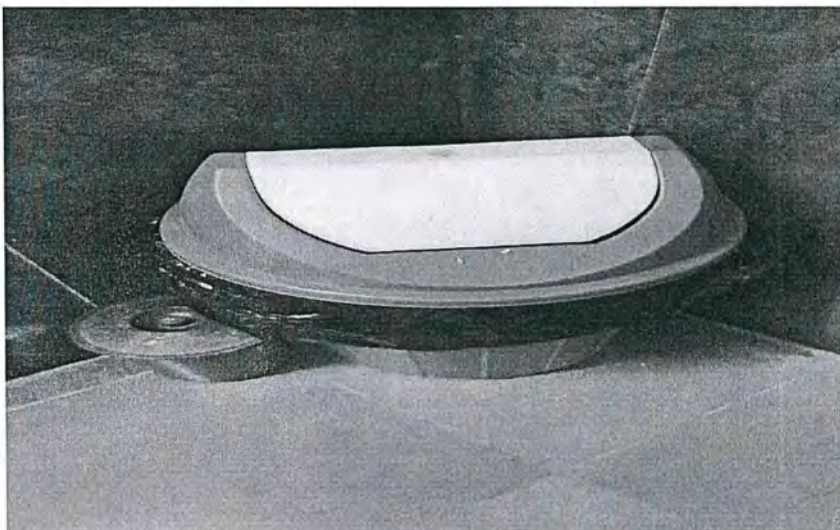
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VI Waste Generation & Management

Solid Waste:

- The organic as well as inorganic waste is segregated in the college premises and disposed of through Municipal system.
- Each Floor is provided with segregated dustbin for Recyclable waste and Non-Recyclable Waste
- The electronic gadgets with residual life are donated while the electronic waste is properly segregated and handed over to appropriate scrap collector.



Sewage & Wastewater:

- The sewage treatment plant has been installed by the college to treat the sewage.



Supriya S. Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

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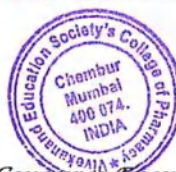
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VII Infrastructure & Safety

Movement on-campus (Distributed / non-distributed leading to crowds)

- The premises are provided with multiple staircases with necessary entrances to ensure quick and effective movement in normal as well as emergency conditions.
- The movement of vehicle inside the campus is restricted with vehicles of Special Dignitaries, VIP Guests and faculty members are allowed to enter the campus.
- The college has provided pedestrian friendly pathways for in-campus movement.
- There is restriction on the usage of plastic, which may be extended to completely ban plastic usage inside the campus.



Supriya S. Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
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Parking space:

- There is adequate parking space for vehicles/four wheelers. However, almost all the students and many of the faculty members avail public transport system which is very convenient due to proximity to railway station and bus services.

Firefighting & fire escape system:

- There are efficient fire extinguishers in the premises, which are checked / refilled as per the stipulated frequency.
- The premise is provided with multiple staircases with requisite entrances to ensure quick and effective movement in emergency conditions.
- Water sprinkler system is provided on 7th floor as per latest government guidelines.



Draining system:

- The drains from the washrooms are connected to the municipal drainage, which is a common practice in the colleges in and around Mumbai.

Seepage in the building:

- The premise was visually inspected for seepages. No seepages were observed in any of the places.



sswdhane
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

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Phone: 022 2555 3297

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VIII Green Culture

- The LED / LCD monitors & Laptops has been procured, which are energy efficient.
- These monitors are not only energy efficient but also generate minimal heat and cut down on air conditioning load.
- The electronic communication is encouraged to minimize usage of papers.
- Most of the papers are reused for doubled sided printing to further minimize usage of paper.

The following steps may be initiated to further enhance efficiency of the systems.

1. An efficient power management system may be incorporated to
 - a. Switch off the display if not in use.
 - b. Put the computer in Sleep mode / switching off the machines, if not used for prolonged period.
2. Optimize brightness of the screen.
3. Discourage use of screen savers, which has similar power consumption.

Paper-less communication:

The major internal as well as external communication is through electronic medium.

Re-using one sided paper for printing:

It was observed that two side printing / printing on the back side of used paper in more than 80% of the cases.

Rainwater Harvesting:

The rain water harvesting system has been installed.



Supriya S. Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

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Email: scpl@senergy.co.in

Phone: 022 2555 3297

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IX Renewable Energy

Solar Photovoltaic:

The college is planning to install Roof-top Solar Photovoltaic System with net metering facility.

Solar Thermal:

The solar hot water system has been installed at the hostels.

Biogas from Kitchen Waste:

The quantity of plate waste (organic waste with higher starch contents) is negligible, consequently, there is no potential for biogas generation.



Supriya S. Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

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Sample Thermographic Analysis report

Thermography Analysis Report

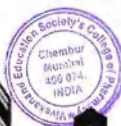
Prepared By



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msidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

Section 1: Introduction

This THERMO GRAPHIC INSPECTION is designed to assess the performance of all switchgears, cable terminations, bus bar joints on site and to highlight any areas which require attention. Recommendations listed within this report are given only within our area of expertise and we recommend you discuss the implementation of remedial works with your maintenance Service provider.

Thermography is a term used to describe a type of photography that uses infrared radiated wavelengths to make pictures as opposed to visible lights as in normal photographs it can be also referred to as "THERMAL IMAGING" or "INFRARED". Objects that have a temperature above absolute zero emit infrared wavelengths.

Thermograph is the production of thermal (heat) pictures from these wavelengths, whereby temperature measurements or comparative analysis can be made.



Supriya S. Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
WAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

Section 2: Scope of Work

Infrared thermal scanning of all electrical switchgear and associated conductors to detect evidence of equipment operating near or above rated temperatures. Load readings are also taken of prospective fault. A detailed log of inspected assets is provided which includes pass or fails status. Those items failing the inspection are reported on through a thermal and visual image, a priority rating and possible recommended action. An initial scan of all items is carried out with the INFRARED

THERMOCAM set to alarm at temperatures above 40°C. Items displaying temperatures above 40°C are further investigated based on application, equipment type, load measurement and spot temperature readings.



Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

Section 3: Report Information

Thermography Test	
Company Name	V.E.S Collage of Pharmacy
Thermographer	Ms.Komal Kadam.
Certification	BE Electrical
Contact Person	Mr. Yogesh
IMAGE & OBJECT PARAMETERS	
Camera model	E-40 Flir Thermography Camera
Camera Calibration Date	1 st July 2019
Thermal scanning date	20 th January 2020
Report Date	24 th January 2020



Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
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Section 4: Table of Temperature level & priority code

Complied with:

BUREAU OF INDIAN STANDARDS Doc: MTD 21 (5044) W. ICS 19.100.
Introspection Institute, Standards for IR inspection of Electrical system. 2008
Edition.

Priority Code	Temperature	Level	Abnormalities Description
0	Up to 40deg c	No	Normal, No action
1	41°C to 60° C	Alert	To be monitored, rescan where recommended
2	61°C to 80° C	Severe	Repair at scheduled shutdown, No longer than 30 days
3	81°C to 100°C	Critical	Repair immediately or as soon as possible
4	Above 100°C	Immediate Action	Shutdown & repair immediately



Shwetha
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
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Section 5: Inspected Log Assets Summary

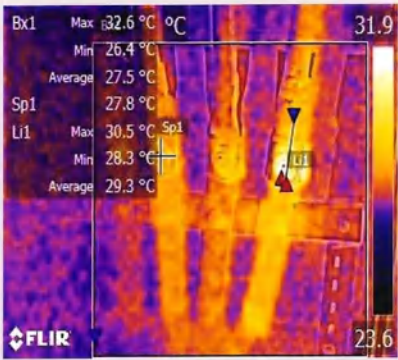
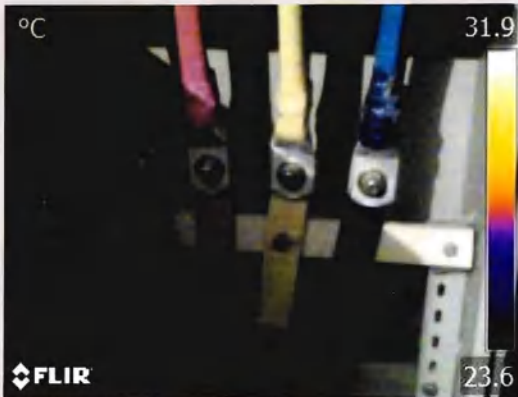
Sr.no	Feeder Details	Maximum Temp	Minimum Temp	Remarks
1	Main Incomer	32.6	26.4	Normal
2	Capacitor Bank	29.6	24.8	Normal
3	Main LT Panel	36.8	24.2	Normal
4	Vacuum Panel	29.3	24.0	Normal
5	Lift Panel	28.1	23.8	Normal
6	Lab Panel	25.8	23.9	Normal
7	Main Light DB	27.0	23.1	Normal
8	Main Power DB.	58.4	24.0	Alert -To be monitored, rescan where recommended
9	Main Light DB-Floor wise	26.2	22.4	Normal
10	Lab DB-Floor wise	27.1	22.6	Normal



Supriya S. Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
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Section 6: Thermography analysis

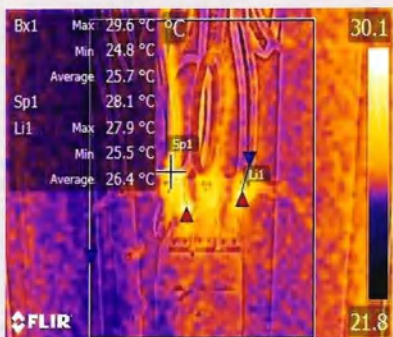
Location: Main Incomer.

Thermal image:	Remarks
	<p>Maximum temperature observed is 32.6 deg. C. and minimum temperature observed is 26.4 deg. C and the average temperature is 27.5 deg. C.</p> <p>General maintenance followed by tightening and lugging of the terminals & cleaning of the panel needs to be done.</p>
Visual image:	
	

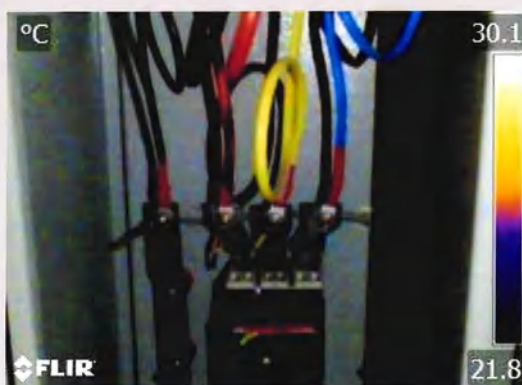


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Dr. (Mrs.) Supriya S. Shidhaye
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Location: Capacitor Bank

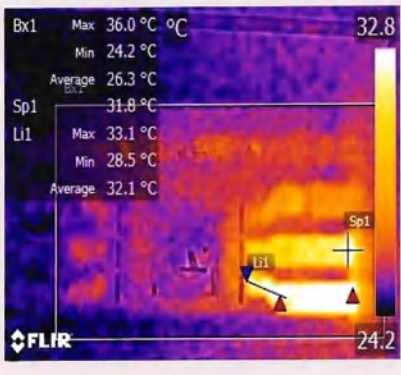
Thermal image:	Remarks
	<p>Maximum temperature observed is 29.6 deg. C. and minimum temperature observed is 24.8 deg. C and the average temperature is 25.7 deg. C.</p> <p>General maintenance followed by tightening and lugging of the terminals & cleaning of the panel needs to be done.</p>

Visual image:

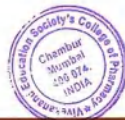


Supriya S. Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
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College of Pharmacy
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Location: Main LT Panel.

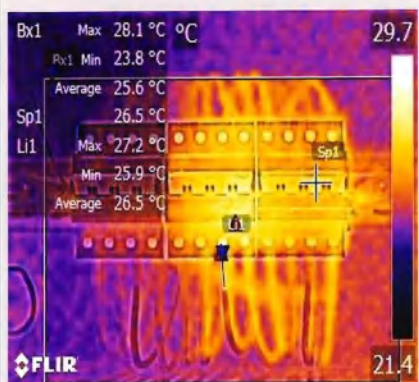
Thermal image:	Remarks
	<p>Maximum temperature observed is 36.0 deg. C. and minimum temperature observed is 24.2 deg. C and the average temperature is 26.3 deg. C.</p> <p>General maintenance followed by tightening and lugging of the terminals & cleaning of the panel needs to be done.</p>

Visual image:

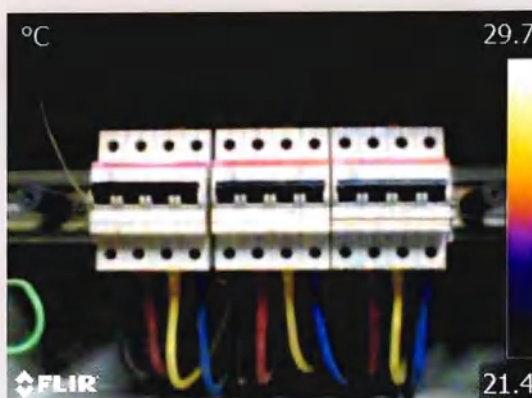


Supriya S. Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

Location: Lift Panel.

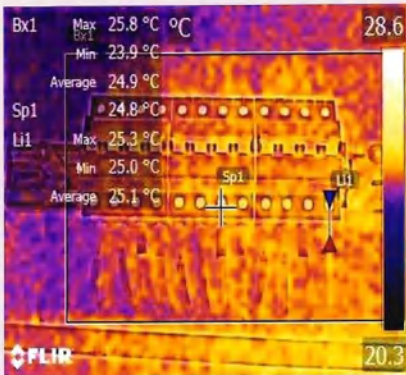
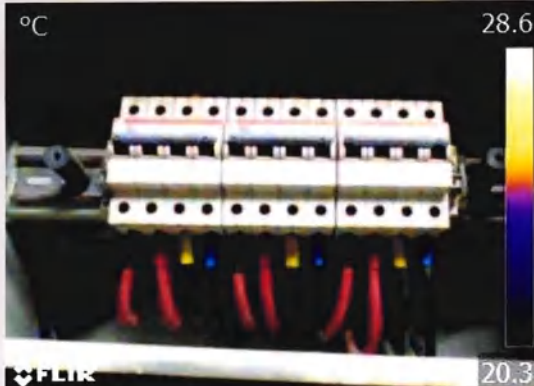
Thermal image:	Remarks
	<p>Maximum temperature observed is 28.1 deg. C. and minimum temperature observed is 23.8 deg. C and the average temperature is 25.6 deg. C.</p> <p>General maintenance followed by tightening and lugging of the terminals & cleaning of the panel needs to be done.</p>

Visual image:



Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

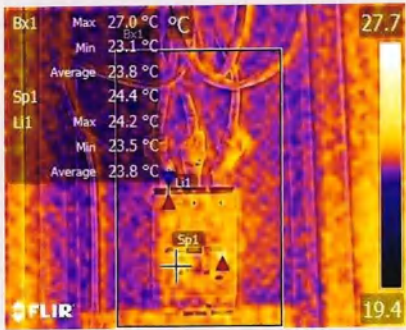
Location: Lab Panels

Thermal image:	Remarks
	<p>Maximum temperature observed is 25.8 deg. C. and minimum temperature observed is 23.9 deg. C and the average temperature is 24.9 deg. C.</p> <p>General maintenance followed by tightening and lugging of the terminals & cleaning of the panel needs to be done.</p>
Visual image:	
	

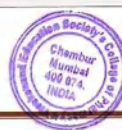


Supriya S. Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

Location: Main Lighting DB.

Thermal image:	Remarks
	<p>Maximum temperature observed is 27.0 deg. C. and minimum temperature observed is 23.1 deg. C and the average temperature is 23.8 deg. C.</p> <p>General maintenance followed by tightening and lugging of the terminals & cleaning of the panel needs to be done.</p>

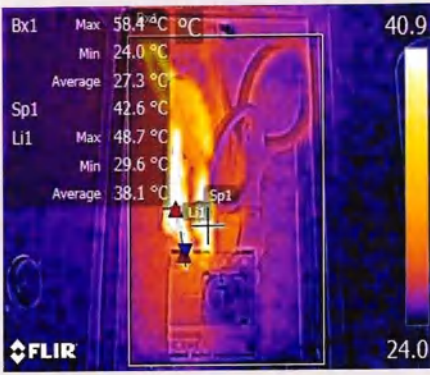
Visual image:



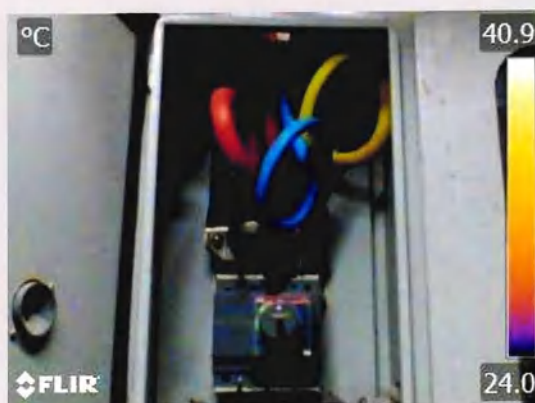
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College of Pharmacy
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Location: Main Power DB.

Thermal image:	Remarks
	<p>Maximum temperature observed is 58.4 deg. C. and minimum temperature observed is 24.0 deg. C and the average temperature is 27.3 deg. C.</p> <p>As per the line analysis L1 it can be observed that temperature is reducing away from the termination, the reason behind the heating in then cable is due to the loose termination. So, it is recommended to tightening the cable termination properly.</p> <p>Tightening of Cable terminal end needs to be done followed by cleaning of panel to reduce heating losses.</p>

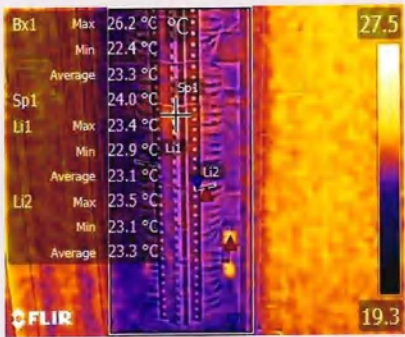
Visual image:



Supriya S. Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

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Location: Main Light DB- Floor wise.

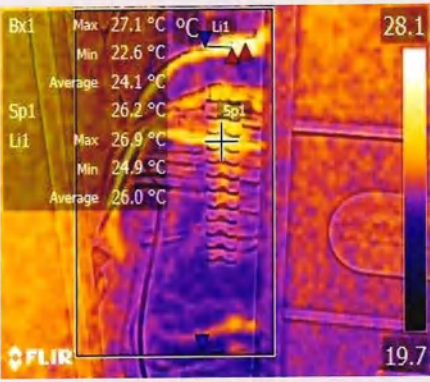
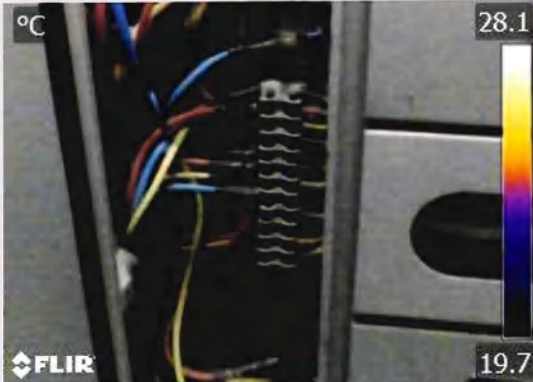
Thermal image:	Remarks
	<p>Maximum temperature observed is 26.2 deg. C. and minimum temperature observed is 22.4 deg. C and the average temperature is 23.3 deg. C.</p> <p>General maintenance followed by tightening and lugging of the terminals & cleaning of the panel needs to be done.</p>

Visual image:



msidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.

Location: Lab DB- Floor wise.

Thermal image:	Remarks
	<p>Maximum temperature observed is 27.1 deg. C. and minimum temperature observed is 22.6 deg. C and the average temperature is 24.1 deg. C.</p> <p>General maintenance followed by tightening and lugging of the terminals & cleaning of the panel needs to be done.</p>
Visual image:	
	



Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
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Section 7: SUMMARY OF THERMOGRAPHIC INSPECTION

This report contains the actual thermographic images of the abnormalities. Only the thermographic scans of the anomalies have been included. Thermographic scans that were judged normal have not been included in this report. For all anomalies, we have included a control photograph identifying the equipment (Visual Image) and a thermographic image of the Equipment where the anomaly was found.

In General, the equipment's, all electrical panels, switchgears and cable & bus bar connections were scanned appeared to be in good condition and good working order. Of the facility, all connections and components that were scanned.

The Infrared inspection was performed with the electrical system in the "as found" condition. It was beyond the scope of this study to determine operating load levels at the time of our Thermographic analysis however; it was noted that almost all equipment found at the site was loaded. It is recommended that annual infrared scan be performed as part of an on-going Predictive maintenance program.



Supriya S. Shidhaye
Dr. (Mrs.) Supriya S. Shidhaye
PRINCIPAL
Vivekanand Education Society's
College of Pharmacy
HAMC, Behind Collector Colony,
Chembur, Mumbai - 400 074.