SINHGAD TECHNICAL EDUCATION SOCIETY'S®

SMT. KASHIBAI NAVALE COLLEGE OF ENGINEERING®

Approved by AICTE Vide F. No. 740-89-004 (NDEGAPR/ET/2000) &
Affiliated to Savitribai Phule Pune University ID. No. PU/PN/ENGG/155/2001
Accrediated by NBA & NACC
Recognized by UGC under Section 2 (f) & 12 (B) of UGC Act 1956

Sinhgad Institutes

S. No. 44/1, Vadgaon (Budruk), Off Sinhgad Road, Pune - 411041.
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M.E. (Elect.), MIE, MBA.
FOUNDER - PRESIDENT

DR. (MRS.) SUNANDA M. NAVALE
B. A., M. P. M., Ph.D.
FOUNDER - SECRETARY

DR. A. V. DESHPANDE
B. E., M. E. (Computer Engg.), Ph. D.
PRINCIPAL

Date: 11/05/2022

To,
The Director
National Assessment and Accreditation Council (NAAC)
P.O. Box No. 1075, Nagarbhavi,
Bengaluru- 560 072

Subject: Proofs of Metric No. 7.1.6
Reference: Metric No. 7.1.6: Quality audits on environment and energy regularly undertaken by the Institution.

DearSir/Madam,

As per said subject kindly find below the indexof File Descriptions/Documents for your valuable information.

Sr. No.	Year	The institutional environment and energy initiatives are confirmed througb the following	YES OR NO	
1	2020-2016	**Green audit**	YES	√
2	2020-2016	**Energy audit**	YES	√
3	2020-2016	**Environment audit**	YES	√
4	2020-2016	**Clean and green campus recognitions / awards**	NO	×
5	2020-2016	**Beyond the campus environmental promotion activities**	YES	√
5.1	2020-2021	Tree Plantation Activity	NSS Unit	26-Jan-21
5.2	2020-2021	Tree Plantation Activity	NSS Unit	1 to 3 October 2020
5.3	2020-2021	Tree Plantation Activity	NSS Unit	26-Jan-21

Thanking You,

Smt. Kashibai Navale College of Engineering ★ Vadgaon(Bk.) Pune - 41.

Principal
(Dr. A. V. Deshpande)
Principal
Smt. Kashibai Navale
College of Engineering
Vadgoan(Bk.), Pune - 41.

Details of Supporting documents of Iudexing is as follows:

Sr. No.	Description of Documents Available	Page No.
1	Green audit: 2020-2021	3-24
2	Energy audit: 2020-2021	25-47
3	Environment audit: 2020-2021	48-73
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5	Energy audit: 2019-2020	93-115
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7	Green audit: 2018-2019	134-153
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9	Green audit: 2017-2018	169-189
10	Energy audit: 2017-2018	190-205
11	Green audit: 2016-17	206-225
12	Energy audit: 2016-17	226-240
13	Beyond the campus environmental promotion activities	241-258
14	Tree Plantation Activity	259-364

Thanking You,

Smt. Kashibai Navale College of Engineering
Vadgaon(Bk.)
Pune - 41.

Principal
(Dr. A. V. Deshpande)

Principal
Smt. Kashibai Navale
College of Engineering
Vadgoan(Bk.), Pune - 41.

GREEN AUDIT REPORT

of

Sinhgad Technical Education Society's
SMT. KASHIBAI NAVALE COLLEGE OF ENGINEERING,
S. 44/1, Vadgaon (Bk.), Pune 411 041

Sinhgad Institutes

Year: 2020-21

Prepared by

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

ENRICH CONSULTANTS * Pune *

MAHARASHTRA ENERGY DEVELOPMENT AGENCY
An ISO 9001 : 2000 Reg. no. : RQ 91 / 2462

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-14/1577 22nd April, 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 Enrich Consultants** Yashashree, Plot No. 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune - 411009.
Registration Category	:	*Empanelled Consultant for Energy Conservation Programme for Class 'A'*
Registration Number	:	***MEDA/ECN/2021-22/Class A/EA-03***

- 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 **21st April, 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)

ENRICH CONSULTANTS * Pune *

Enrich Consultants

Yashashree, 26, Nirmal Bag Society,
Near Muktangan English School, Parvati, Pune 411 009
Tel: 020-24220747 Email: enrichcons@gmail.com

Ref: EC/SKNCOE/02

Date: 8/9/2021

CERTIFICATE

This is to certify that we have conducted Green Audit at Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, S. No. 44/1, Vadgaon (Bk.), Pune 411 041 in the year 2020-21.

The College has already adopted **Green** practices like:

- Usage of Energy Efficient LED Fittings
- Installation of Roof Top **34000 LPD Solar Thermal** Water Heating System
- Installation of **275 KLPD** Sewage Treatment Plant
- Segregation of Waste at source
- Installation of Rain Water Harvesting Project
- Tree Plantation in the campus
- Maintenance of good internal roads in the campus

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

For Enrich Consultants,

A Y Mehendale,
Certified Energy Auditor
EA-8192

ENRICH CONSULTANTS * Pune *

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ACKNOWLEDGEMENT

We at Enrich Consultants, Pune, express our sincere gratitude to the management of Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.), Pune, for awarding us the assignment of Green Audit of their Vadgaon Campus for the Year: 2020-21

We are thankful to:

- Dr. A. V. Deshpande, Principal
- Mrs. K. S. Borgave, Registrar
- Dr. Sanket Charkha, Assistant Professor

We are also thankful to various Head of Departments & other Staff members for helping us during the field study.

EXECUTIVE SUMMARY

After the Field measurements & analysis, we present herewith important observations made during the assignment of Green Audit.

1. STES's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.) Pune consumes Energy in the form of **Electrical Energy** used for various gadgets, Office & other facilities.

2. Present Energy Consumption & CO_2 Emission:

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	135849	122.26
2	Maximum	14035	12.63
3	Minimum	9048	8.14
4	Average	11272	10.14

3. Various measures adopted for Energy Conservation:

The various projects already implemented by the College are

- Usage of LED Lights
- Installation of **34000 LPD** Solar Thermal Water Heating System

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

The College has installed Roof Top **34000 LPD Solar Thermal Water Heating System** at the Hostel Blocks. The Equivalent Electrical Energy Saved due to usage of Solar Thermal Water Heating System is **17000 kWh**, in the Year: 2020-21.

Due to installation of Solar Water Heating System, the Annual Reduction in CO_2 Emissions is **15.30 MT.**

5. Waste Management:

5.1 Solid Waste Management: The Dry and Wet waste is segregated at the source and is handed over to Authorized Agency for further disposal/recycling.

5.2 Liquid Waste Management: The College has installed **275 KLPD** Sewage Treatment Plant. The treated Water is used for Gardening purpose.

5.3 E-Waste Management: All the internal communication is through emails and hardly any E-Waste is generated in the Day to Day operation of the College. Any E Waste generated is handed over to Authorized Agency for further disposal.

6. Rain Water Harvesting: The College has already installed **Rainwater Harvesting System** to collect the Rain Water collected at the Terrace. The Rain water collected is used to increase the underground Water level.

7. Green Practices:

- **Good Internal Roads:** The internal roads are good for easy movement of pedestrians
- **Internal Garden:** The College has a well maintained garden with various medicinal plants.

8. Innovative & Sustainable Initiatives:

- **Provision of Ramp:** The College has a ramp, for easy movement of physically disabled students.
- **Tree Plantation:** The College took an initiative of Tree Plantation on the occasion of Mahatma Gandhi Jayanti & Republic Day.

9. Notes & Assumptions:

1. **1 Unit** of Electrical Energy releases **0.9 Kg of CO_2** into atmosphere
2. Daily working hours-**6 Nos** (For Lighting Calculations)
3. Annual working Days-**180 Nos**

10. References:

- For Energy Saved by Solar Thermal Water Heating System: www.mahaurja.com
- For CO_2 calculations: www.tatapower.com

ABBREVIATIONS

STES	:	Sinhgad Technical Education Society
AQI	:	Air Quality Index
LED	:	Light Emitting Diode
kWh	:	kilo-Watt Hour
MT	:	Metric Ton
CO_2	:	Carbon Di Oxide
MEDA	:	Maharashtra Energy Development Agency
ISHRAE	:	The Indian Society of Heating, Refrigerating & Air conditioning Engineers
CPCB	:	Central Pollution Control Board
LPD	:	Liters Per Day
NSS	:	National Service Scheme
PM	:	Particulate Matter

CHAPTER-I
INTRODUCTION

1.1 Objectives:

1. To study present level of Energy Consumption
2. To Study the present CO_2 emissions
3. To Study Usage of Renewable Energy
4. To Study Waste Management Practices
5. To Study Rain Water Harvesting
6. To Study Green Practices
7. To study Innovative & Sustainable Initiatives

1.2 Table No 1: General Details of College:

No	Head	Particulars
1	Name of Institution	STES's Smt. Kashibai Navale College of Engineering
2	Address	S. No. 44/1, Vadgaon (Bk.), Pune 411 041
3	Affiliation	Savitribai Phule Pune University

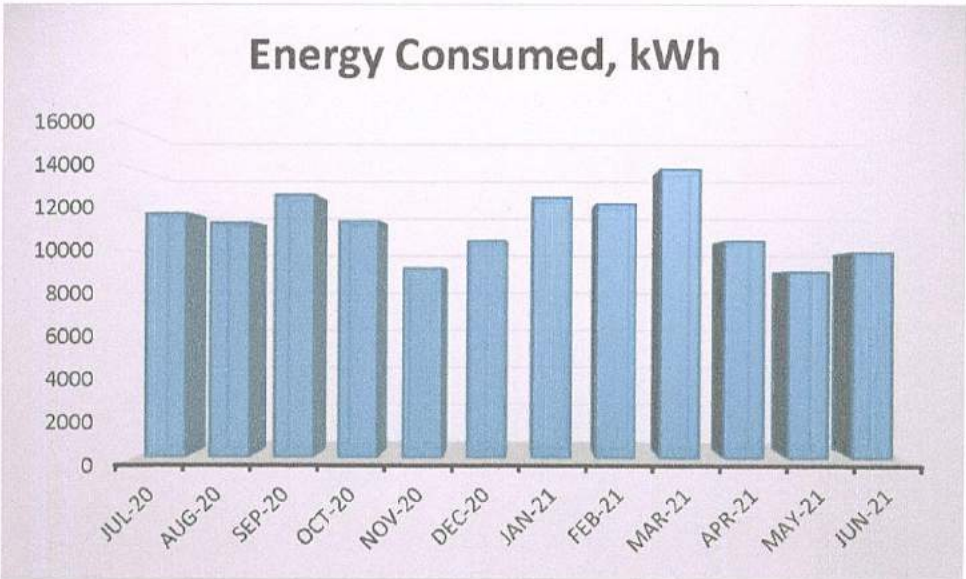
CHAPTER-II
STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No 2: Electrical Bill Analysis- 2020-21:

No	Month	Energy Consumed, kWh
1	Jul-20	11857
2	Aug-20	11423
3	Sep-20	12757
4	Oct-20	11500
5	Nov-20	9197
6	Dec-20	10515
7	Jan-21	12653
8	Feb-21	12355
9	Mar-21	14035
10	Apr-21	10525
11	May-21	9048
12	Jun-21	9986
13	Total	135849
14	Maximum	14035
15	Minimum	9048
16	Average	11272

To study the variation of Monthly Energy Consumption, kWh: Chart No 1:



Key Inference drawn:

From the above analysis, we present following important parameters:

Table No 3: Various Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh
1	Total	135849
2	Maximum	14035
3	Minimum	9048
4	Average	11272

CHAPTER III
CARBON FOOTPRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities. The College uses Electrical Energy for various Electrical gadgets.

Basis for computation of CO_2 Emissions:

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

Table No 4: Month wise CO_2 Emissions:

No	Month	Energy Consumed, kWh	CO2 Emissions, MT
1	Jul-20	11857	10.67
2	Aug-20	11423	10.28
3	Sep-20	12757	11.48
4	Oct-20	11500	10.35
5	Nov-20	9197	8.28
6	Dec-20	10515	9.46
7	Jan-21	12653	11.39
8	Feb-21	12355	11.12
9	Mar-21	14035	12.63
10	Apr-21	10525	9.47
11	May-21	9048	8.14
12	Jun-21	9986	8.99
13	Total	135849	122.26
14	Maximum	14035	12.63
15	Minimum	9048	8.14
16	Average	11272	10.14

Representation of Month wise CO_2 Emissions: Chart No 2:

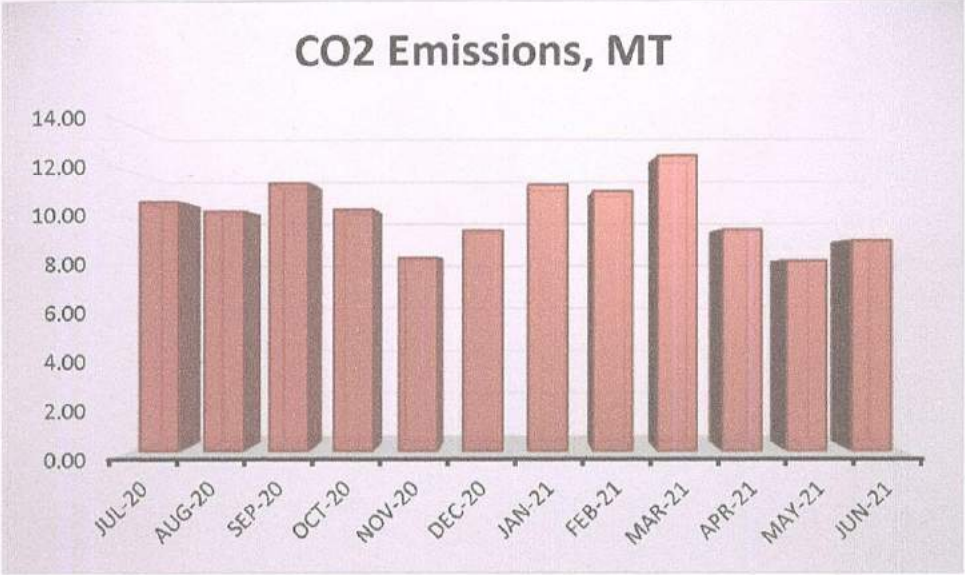


Table No 5: Various Important Parameters:

No	Parameter/ Value	Energy consumed, kWh	CO2 Emissions, MT
1	Total	135849	122.26
2	Maximum	14035	12.63
3	Minimum	9048	8.14
4	Average	11272	10.14

CHAPTER IV
STUDY OF USAGE OF RENEWABLE ENERGY

The College has total three Hostel Blocks, namely: Purandar & Shivneri for Boys and Chandrabhaga for Girls. In the following Table we present the Installed Capacity of Solar Thermal System.

Table No 6: Details of Solar Thermal Water Heating System installed:

No	Hostel Name	Installed Solar Thermal Water Heater System Capacity in LPD
A)	**Boy's Hostel Block**	
1	Purandar	14000
2	Shivneri	12000
B)	**Girl's Hostel Block**	
1	Chandrabhaga	8000
	TOTAL CAPACITY	**34000**

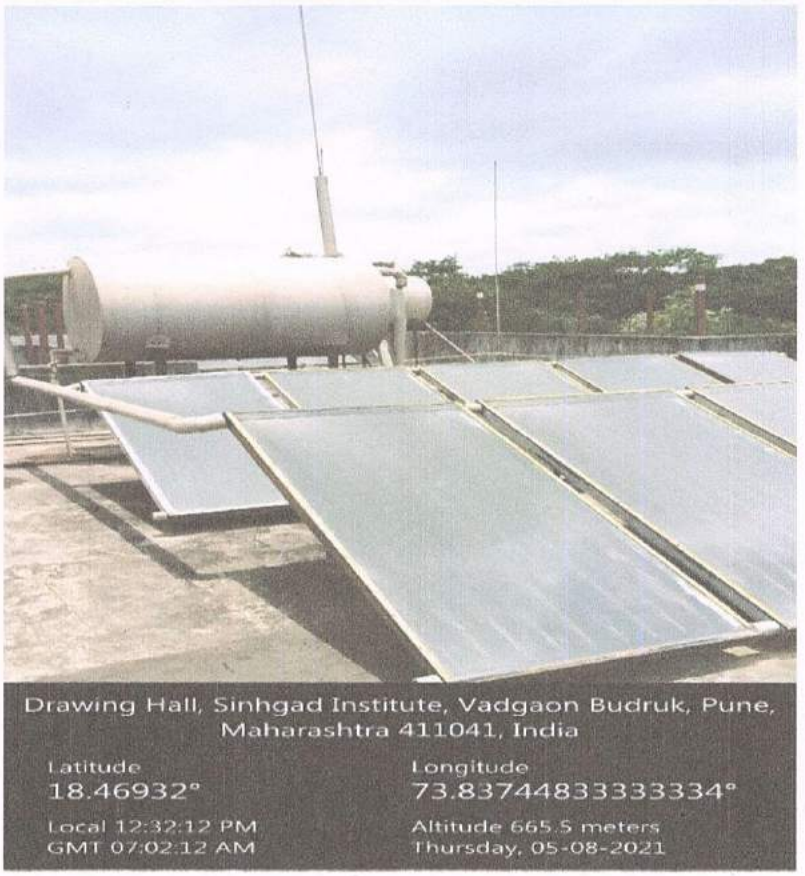
As per **MEDA** Guidelines, **100 LPD** Solar Thermal Water Heating System, saves **1500 kWh** of Electricity Energy per Annum. The College has installed: **34000 LPD** Solar Thermal Water Heating System.

In the following Table, we present the amount of Reduction in CO_2 Emissions, due to installation of the Solar Water Heater.

Table No 7: Computation of Reduction in CO_2 Emissions due to Solar Water Heater:

No	Particulars	Value	Unit
1	Total Solar Thermal Water Heating Capacity	34000	LPD
2	Electrical Energy Saved by 100 LPD System/Annum	1500	kWh
3	Electrical Energy Saved by 100 LPD System/Day	4	kWh
4	Electrical Energy Saved by 34000 LPD System/Day	1360	kWh
5	Approximate Usage Period in the Year:2020-21	25	Days
6	Capacity Utilization Factor	0.5	
7	Electrical Energy Saved in 2020-21 =(4) * (5) * (6)	17000	kWh
8	1 kWh of Electrical Energy is equal to	0.9	Kg of CO_2
9	**Reduction in CO_2 Emissions = (7) * (8) / 1000**	**15.30**	**MT**

Photograph of Solar Thermal Water Heating Plant:



CHAPTER V
STUDY OF WASTE MANAGEMENT

5.1 Solid Waste Management: The Dry recyclable Waste & Wet Waste are collected on daily basis, and further given to Authorized Waste Collector for further disposal/Recycling.

Photograph of Garbage Segregation Shed:

5.2 Liquid Waste Management: The College has installed a **275 KLPD** Capacity Sewage Treatment Plant, to handle the human waste generated in the College.

Photograph of Sewage Treatment Plant:

5.3 E-Waste Management:

All the internal communication is through emails and hardly any e-Waste is generated in the Day to Day operation of the College. Any E Waste generated is handed over to Authorized Agency for further disposal.

CHAPTER VI
RAIN WATER HARVESTING

The College has already installed Rain Water Harvesting Project. The water is used to enrich the underground water level.

Photograph of Rain Water Harvesting Pipe from Terrace:

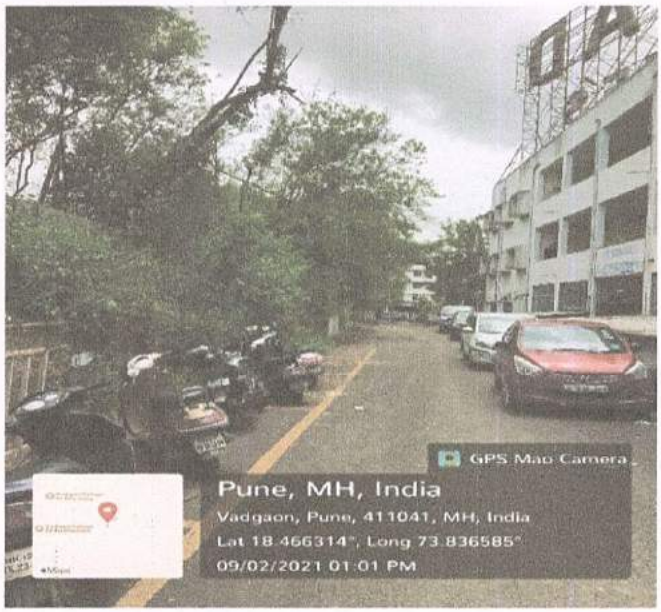
Photograph of Rain Water Harvesting Channel:

CHAPTER VII
STUDY OF GREEN PRACTICES

7.1 Pedestrian Friendly Roads:

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

Photograph of Internal Road inside the College Campus:



7.2 Green Landscaping with Trees and Plants:

The College has maintained plantation in the campus.

Photograph of Garden in the College campus:

7.3 Plastic Free Campus:

It is recommended to completely ban the usage of Single use Plastic in the College campus.

7.4 Paperless Office:

It is recommended to set a target for reduction in paper usage by 5% than the previous year.

CHAPTER VIII
STUY OF INNOVATIVE & SUSTAINABLE INITIATIVES

8.1 Provision of Ramp:

The College has made a provision of Ramp, for easy movement of Physically Handicapped students.

Photograph of Ramp:

8.2 Creation of Awareness among Stake Holders:

The College has taken up various measures to create Awareness for conserving the Natural resources, Reducing the Wastage and Recycling & Reuse.

Photograph of Display board for Importance of Resource Conservation:

8.3 Tree Plantation Drive:

The College took an initiative of Tree Plantation activities using NSS medium.

Photograph of Tree Plantation on Mahatma Gandhi Jayanti Day:

Photograph of Tree Plantation on Republic Day, 26th January 2021:

ENERGY AUDIT REPORT

of

Sinhgad Technical Education Society's
SMT. KASHIBAI NAVALE COLLEGE OF ENGINEERING,
S. 44/1, Vadgaon (Bk.), Pune 411 041

Sinhgad Institutes

Year: 2020-21

Prepared by

Enrich Consultants,

Yashashree, 26, Nirmal Bag Society

Near Muktangan English School, Parvati, Pune 411009

Phone: 09890444795, Email: enrichcons@gmail.com

MAHARASHTRA ENERGY DEVELOPMENT AGENCY
An ISO 9001 : 2000 Reg. no. : RQ 91 / 2462

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-14/1577 — 22nd April, 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 Enrich Consultants** Yashashree, Plot No. 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune - 411009.
Registration Category	:	*Empanelled Consultant for Energy Conservation Programme for Class 'A'*
Registration Number	:	***MEDA/ECN/2021-22/Class A/EA-03***

- 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 **21st April, 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)

ENRICH CONSULTANTS * Pune *

Enrich Consultants

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

Ref: EC/SKNCOE/01

Date: 8/9/2021

CERTIFICATE

This is to certify that we have conducted Energy Audit at Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, S. No. 44/1, Vadgaon (Bk.), Pune 411 041 in the year 2020-21.

The College has already adopted **Energy Efficient** Practices like:

- Usage of Energy Efficient LED Fittings
- Installation of **34000 LPD** Solar Thermal Water Heating System at Hostel blocks.
- Usage of BEE STAR Rated Equipment
- Maximum Usage of Day Lighting

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

For Enrich Consultants,

A Y Mehendale,
Certified Energy Auditor
EA-8192

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6	Study of Usage of LED Lights	23

ACKNOWLEDGEMENT

We at Enrich Consultants, Pune, express our sincere gratitude to the management of Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.), Pune, for awarding us the assignment of Energy Audit of their Vadgaon (Bk.) Campus for the Year: 2020-21.

We are thankful to:

- Dr. A. V. Deshpande, Principal
- Mrs. K. S. Borgave, Registrar
- Dr. Sanket Charkha, Assistant Professor

We are also thankful to various Head of Departments & other staff members for helping us during the field study.

EXECUTIVE SUMMARY

After the Field Study & Analysis, we present herewith important observations made during the assignment of Energy Audit.

1. STES's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.) Pune consumes Energy in the form of **Electrical Energy** used for various gadgets, Office & other facilities.

2. Present Energy Consumption:

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	135849	122.26
2	Maximum	14035	12.63
3	Minimum	9048	8.14
4	Average	11272	10.14

3. Various measures adopted for Energy Conservation:

The various projects already implemented by the College are

- Usage of LED Lights
- Installation of 34000 LPD Solar Thermal Water Heating System.

4. Usage of Alternate Energy Source:

The College has installed **34000 LPD** Solar Thermal Water Heating System at the Hostel Blocks. The Equivalent Electrical Energy Saved by the Solar Thermal Water Heating System is **17000 kWh** in the Year: 2020-21.

The percentage of usage of Alternate Energy to Annual Energy requirement is **11.12 %**.

5. Percentage of Lighting Power Requirements met by LED bulbs:

The annual lighting Load Demand is **36011.7 kWh**. The annual LED Lighting Load Demand is **972 kWh**. Therefore the percentage of usage of LED to the total annual lighting power requirement works out to be **2.70 %**

6. Notes & Assumptions:

1. **1 Unit** of Electrical Energy releases **0.9 Kg of CO_2** into atmosphere
2. Daily working hours-**5 Nos** (For Lighting Calculations)
3. Annual working Days-**180 Nos**

7. References:

1. For Computation of Energy Saved by Solar Thermal System: www.mahaurja.com
2. CO2 Emission: www.tatapoer.com

ABBREVIATIONS

STES	:	Sinhgad Technical Education Society
AC	:	Air conditioner
FTL	:	Fluorescent Tube Light
LED	:	Light Emitting Diode
kWh	:	kilo-Watt Hour
Qty	:	Quantity
W	:	Watt
kW	:	Kilo Watt
PC	:	Personal Computer
MT	:	Metric Ton
LPD	:	Liters Per Day

CHAPTER-I
INTRODUCTION

1.1 Objectives:

1. To study the Connected Load
2. To Study present level of Energy Consumption
3. To Study the present CO_2 emissions
4. To study Scope for usage of Renewable Energy
5. To study usage of LED Lighting

1.2 Table No 1: General Details of College:

No	Head	Particulars
1	Name of Institution	STES's Smt. Kashibai Navale College of Engineering
2	Address	S. No. 44/1, Vadgaon (Bk.), Pune 411 041
3	Affiliation	Savitribai Phule Pune University

CHAPTER-II
STUDY OF CONNECTED LOAD

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

2.1.1 Details of Tube Light Fittings & Fans at various locations: Table No 2:

No.	Location	FTL-51 W	FTL-40 W	20 W LED	Ceiling Fan	PC	Printer	LCD Projector
	Building-1							
	Lower Ground Floor-2							
1	RNAC Lab	4		3	4			
2	ML-6	3	3	1	8	2		
3	Seminar Hall	2	4	4	10			1
4	tutorial Room-2	51			2			
5	Staff Room							
6	Staff Room	1	5		4	3		
7	Sherje Sir (HOD) cabin	3	3	4	5			
8	UG Tuorial Room-1			4	2			
9	CI-21		3	1	4			1
10	UG Tutorial Room-6	2	3	1	4			1
11	UG Tutorial Room-3	4			2			1
12	Staff Room	1		1	2			1
13	Staff Room	1	1		2			
14	tutorial Room		4		4			
15	Metallurgy Lab	1	5	2	6			
16	CL-22	3	2		4			1
17	ICE lab	3	4	1	6			
18	Security Room		1		1			
19	Maintenance Room		2					
20	FM & Turbo Machine Lab	1	8	1				
21	CL-23	4	3		4			1
22	Stationary Room	3		1	2			

23	SOM Lab	4	6		6			
	Lower Ground Floor-1							
1	CL-14		6		4			1
2	CL-15		6		4			1
3	Metrology Lab		6		3	1		
4	CL-16		6		4			1
5	CL-17		6		4			1
6	Tutorial Room-1		3		2			
7	CL-18		7		4			1
8	MBA Tutorial Room-11		5		4			1
9	Tutorial Room-11		6		4			1
10	CL-13		6		4			1
11	Block-21	4			4			
12	ML-4	4	4					
13	Block-23		6		6			
14	UG Tutorial Room-10		4		4			
15	PG Tutorial Room-1		6		4			
16	ML-1		6	3	4	1		
17	ML-2		3	4	9	2		
18	ML-3	2	6	1	8	2		
19	Staff Room-2			1	1	1		
20	Staff Room -1			1	1			
	Ground Floor							
1	Project Lab			4	4	19		
2	Programming Lab		4	1	4	2	1	
3	IT-6		5	1	4	21		
4	DMS Lab		2	4		19		
5	Network Lab		5	1	4	22		
6	IT-4		5		4	22		
7	IT-5		7		6	18		

8	IT-3		4		6	19		
9	Staff Room		3	1	2	4	1	
10	HOD	2			2	1	1	
11	CL-2	3	3		4			1
12	Staff Room		2		2			
13	IT-1	4	1		4	30	1*+1	
14	CL-11	3	1		4	30		1
15	CL-1	3		1	4			1
16	CAD Lab-1	6			4	18		
17	CL-3	4		1	4			1
18	HOD (Barhade Sir office)	3		1	2	2	1	
	1st Floor							
1	CL-1	4	4		8			
2	CL-4	4			4			1
3	Tamboli Sir cabin			1	1	1		
4	CL-2	5			4	20		
5	Patil Sir cabin		3		2	1	1	
6	CL-5	4			4			1
7	Microprocessor Lab	2	6		6	16		
8	Honwadkar Sir cabin							
9	Mhastkar Sir cabin	3			2	1	1	
10	Board Room	1			1			
11	Pantary	1	1					
12	Deshpande Sir cabin	5			3	2		
13	Office-1	4			5	8	7	
14	Office-2	4	4			11	4	
15	CL-4	2	1		4	15		
16	Boys Common Room				7			
17	Language Lab	1	3		2	17		
18	Computer graphics Lab	3			4	16		

19	Tutorial Room-6	2	3		4			
20	Tutorial Room-5	4			4			1
21	CL-7	4			4			1
22	CL-4							
23	Store Room							
24	Operating system lab	2	1	1	4	20		
	2nd Floor							
1	CL-8	7			4			
2	CL-10	4			4			
3	Kosbatwar sir cabin		1		1	1		
4	Pingat Sir cabin		1		1	1		
5	programming Lab-1	6			4	18		
6	Language lab	2			2			
7	CL-11	3			4			
8	CL-9	6		2	5	18	1	
9	Software Engineering Lab	1	4		4	19	2	
10	Signal Processing Lab	5	4			19		
11	HOD Computer Engineering	4			2	1	1	
12	DBMS Lab	2			4	19	1	
13	CL-12	4			4			
14	CL-13	4			4			
15	CL-7	3	3		5	20		
16	CL-6	1	1	1	6	19		
17	Server Room							
18	CL-19		3		4			1
19	CL-13	3			4			1
20	CL-20		3		4			1
21	Research Centre Lab		4		4	27		
22	CL-5		4		4	20		
23	Tutorial Room-3		4		4			1

	Sub Total-Building-1	**239**	**249**	**54**	**375**	**549**	**22**	**27**
	Building-2							
	Ground Floor							
1	EL-3	2	4		5	9		
2	CL-24							
3	Tutorial Room-4							
4	CL-25	2	3		5			
5	EL-4	3	3		3			
6	EL-5	3	3		4			
7	CL-27	3	2		5			
8	EL-1	3	3		6	1		
9	EL-2	4	2		6	3	1	
10	Robotics Lab							
11	office							
12	IT-7	6			5	2		
13	EL-6	3	3		6	3	1	
14	CL-29	5			5			
15	CL-28	3	2		5			
16	CL-26	1	4		4			
	1st Floor							
1	CL-30	5			5			
2	IT-8+EL-7	6	6		9	21	1	
3	CL-31	4	1		5			1
4	EL-8	4	1		5			1
5	CL-32	5			5			1
6	HOD E&TC	1	1		2	2	2	
7	CL-33	3	2		5			
8	EL-9	8	4		11	29	2	
9	CL-34	3	1		5			1
10	CL-35	4	1		5			1
11	CL-36	4	1		5			
12	CL-37	5			5			1
13	EL-11	7	5		9	2	1	

	2nd Floor							
1	EL-13		5		2	1		
2	UG Tutorial Room-5	4	1		4	2		
3	CL-14	4	1		6	22	1	
4	EL-12	5			2			
5	CL-38	4	1		3			
6	Drawing Hall + HOD cabin	6	4		4	2	1	
7	CL-39	5	1		4			
8	CL-40	4	1		4			
9	Engineering Physics Lab I+II	3	4		10	1		
10	CL-41	4	1		5			
11	CL-42	3	2		4			
12	Seminar Hall -2	10			9			1
13	IT-9	5			4			
14	CL-15	5			5	1		
	3rd Floor							
1	CL-43	5			5			
2	CL-44	5			5			
3	EC Lab	10			12			
4	CL-12	5			6	5	5	
5	CL-45	4	1		5			
6	CL-46	5			5			
7	Engineering Science Dept. HOD	4			5	5	3	
8	Staff Room	5			5	1		
9	Computer Centre-1	10			11	51		
10	CL-47	3	2		5			
11	CL-48	4	1		5			
12	Research Centre Lab	4	1		5	40		
13	EL-14	3	2		5	35		
14	Computer Centre-II	6	1		11	55		

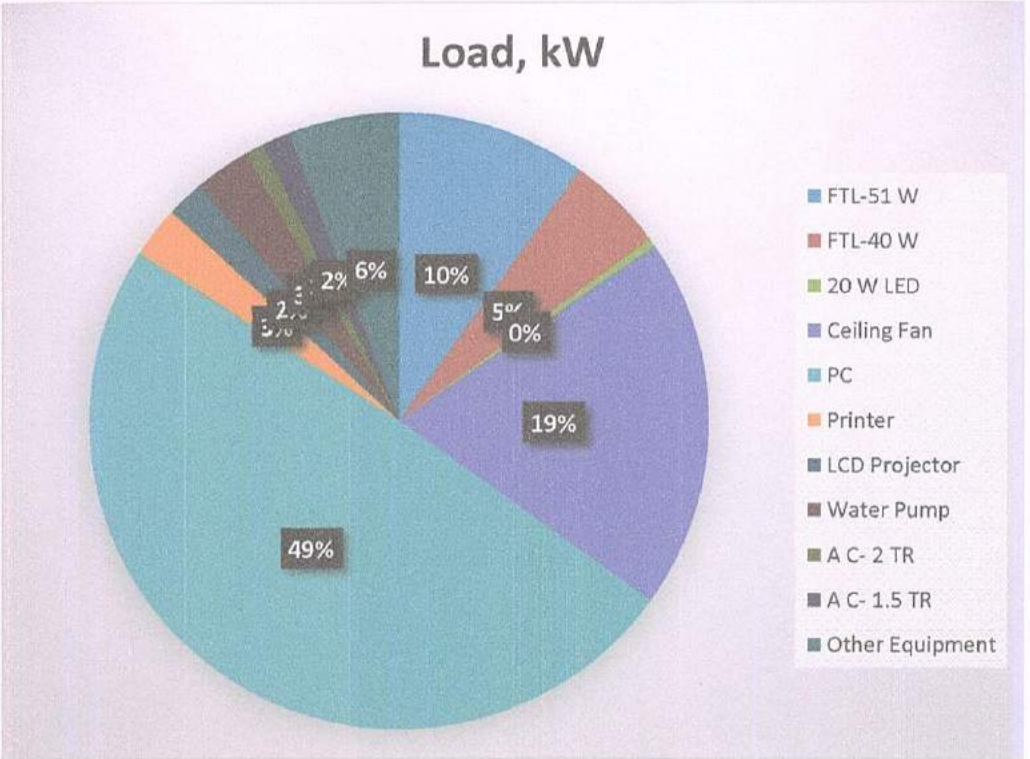
	4th Floor							
1	ML-13	5			6	2		
2	ML-12	5			5	1		
3	CL-49	4	1		5			
4	CL-50	4	1		5			
5	ML-11	7			9	5		
6	N.B. Patil Sir cabin	2			1	2		
7	CL-9	5			5			
	Sub Total-Building-2	**264**	**83**	**0**	**327**	**303**	**18**	**7**
	Grand Total	**503**	**332**	**54**	**702**	**852**	**40**	**34**

2.2 Details of Overall Connected Load: Table No 3:

No	Equipment	Qty	Load, W/Unit	Load, kW
1	FTL-51 W	503	51	25.65
2	FTL-40 W	332	40	13.28
3	20 W LED	54	20	1.08
4	Ceiling Fan	702	72	50.54
5	PC	852	150	127.8
6	Printer	40	175	7
7	LCD Projector	34	150	5.1
8	Water Pump	2	3730	7.46
9	A C- 2 TR	1	2600	2.6
10	A C- 1.5 TR	2	1950	3.9
11	Other Equipment	100	150	15
12	**Total**			**259**

We present the same in a PIE Chart as under:

2.3 Chart No-1: Overall Connected Load:



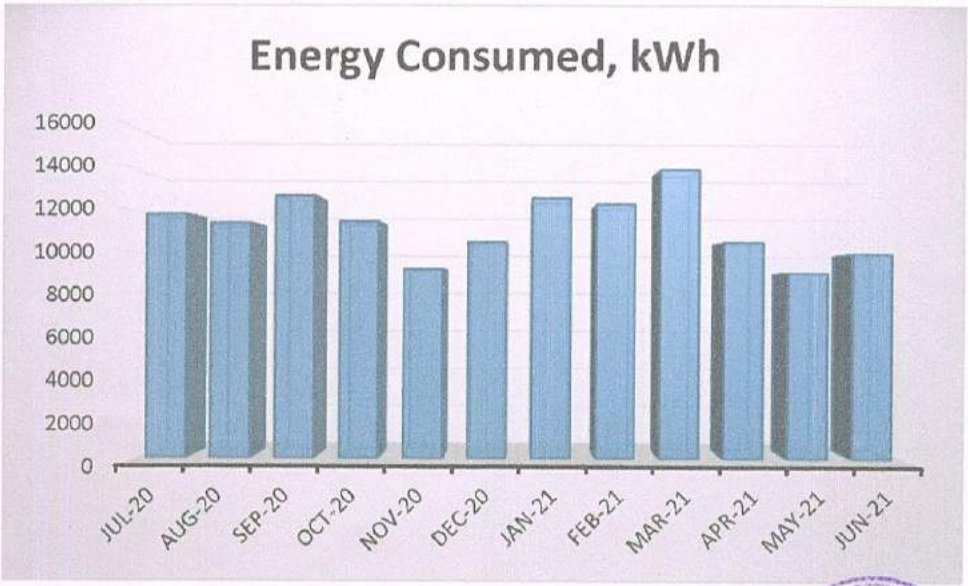
CHAPTER-III
STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No 4: Electrical Bill Analysis- 2020-21:

No	Month	Energy Consumed, kWh
1	Jul-20	11857
2	Aug-20	11423
3	Sep-20	12757
4	Oct-20	11500
5	Nov-20	9197
6	Dec-20	10515
7	Jan-21	12653
8	Feb-21	12355
9	Mar-21	14035
10	Apr-21	10525
11	May-21	9048
12	Jun-21	9986
13	Total	135849
14	Maximum	14035
15	Minimum	9048
16	Average	11272

To study the variation of Monthly Energy Consumption, kWh: Chart No 2:



Key Inference drawn:

From the above analysis, we present following important parameters:

Table No 5: Various Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh
1	Total	135849
2	Maximum	14035
3	Minimum	9048
4	Average	11272

CHAPTER-IV
CARBON FOOTPRINTING

4.1 A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities. The College uses Electrical Energy for various Electrical gadgets.

4.2 Basis for computation of CO_2 Emissions:

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

4.3 Table No 6: Month wise CO_2 Emissions:

No	Month	Energy Consumed, kWh	CO2 Emissions, MT
1	Jul-20	11857	10.67
2	Aug-20	11423	10.28
3	Sep-20	12757	11.48
4	Oct-20	11500	10.35
5	Nov-20	9197	8.28
6	Dec-20	10515	9.46
7	Jan-21	12653	11.39
8	Feb-21	12355	11.12
9	Mar-21	14035	12.63
10	Apr-21	10525	9.47
11	May-21	9048	8.14
12	Jun-21	9986	8.99
13	Total	135849	122.26
14	Maximum	14035	12.63
15	Minimum	9048	8.14
16	Average	11272	10.14

Representation of Month wise CO_2 Emissions: Chart No 3:

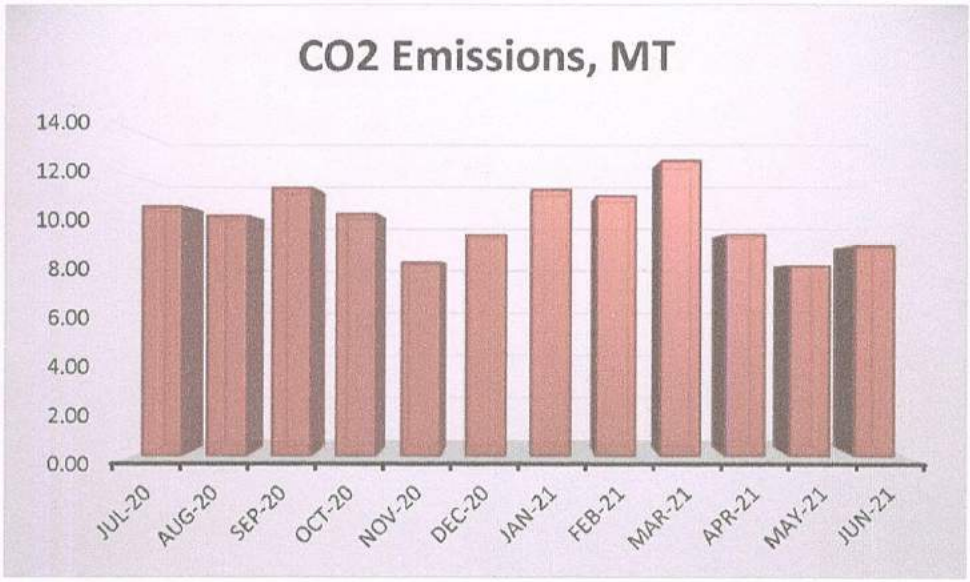


Table No 7: Various Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	135849	122.26
2	Maximum	14035	12.63
3	Minimum	9048	8.14
4	Average	11272	10.14

CHAPTER-V
STUDY OF USAGE OF ALTERNATE ENERGY

The College has total three Hostel Blocks, namely: Purandar & Shivneri for Boys and Chandrabhaga for Girls. In the following Table we present the Installed Capacity of Solar Thermal System.

Table No 8: Details of Solar Thermal Water Heating System installed:

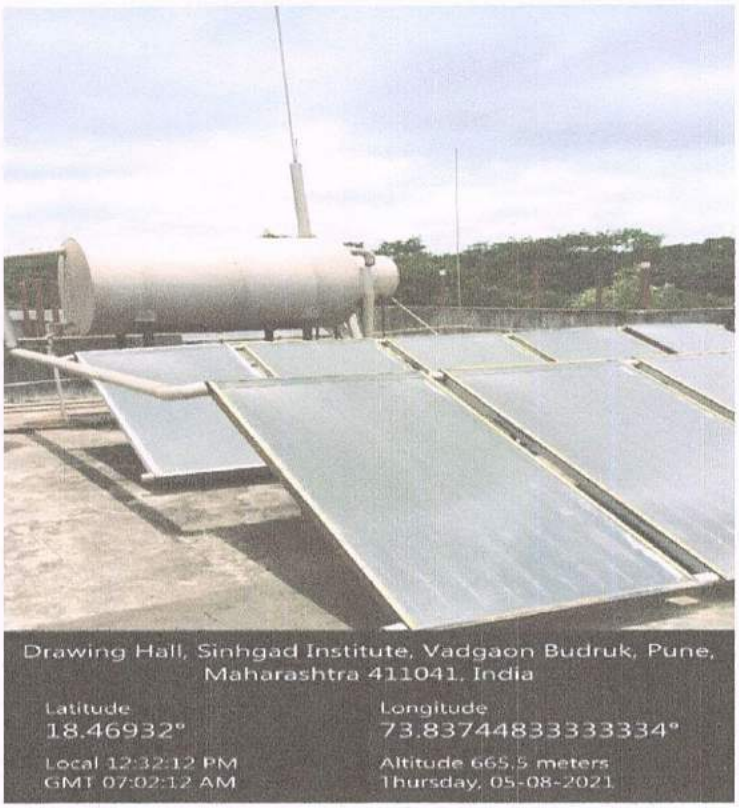
No	Hostel Name	Installed Solar Thermal Water Heater System Capacity in LPD
A)	**Boy's Hostel Block**	
1	Purandar	14000
2	Shivneri	12000
B)	**Girl's Hostel Block**	
1	Chandrabhaga	8000
	TOTAL CAPACITY	**34000**

In the following Table, we present the percentage of usage of Renewable Energy to Annual Power requirement.

Table No 9: Computation of Usage of Alternate Energy to Annual Power requirement:

No	Particulars	Value	Unit
1	Annual Energy Purchased from MSEDCL	**135849**	kWh
2	Total Solar Thermal Capacity	34000	LPD
3	Electrical Energy Saved by 100 LPD System/Annum	1500	kWh
4	Electrical Energy Saved by 100 LPD System/Day	4	kWh
5	Electrical Energy Saved by 34000 LPD System/Day	1360	kWh
6	Approximate Usage Period in the Year:2020-21	25	Days
7	Capacity Utilization Factor	0.5	
8	Electrical Energy Saved in 2020-21 =(4) * (5) * (6)	**17000**	kWh
9	Total Electrical Demand of College= **(1) + (8)**	**152849**	kWh
10	% of Usage of Alternate Energy = **(9)*100/(7)**	**11.12**	%

Photograph of Solar Thermal Water Heating System:



CHAPTER VI
STUDY OF USAGE OF LED LIGHTS

In the following Table, we present the percentage of annual Lighting load met by LED lights.
Table No 10 : Computation of % of Annual LED Lighting Load:

No	Particulars	Value	Unit
1	No of 51 W FTL Tubes	503	Nos
2	Electrical Load of 51 W FTL Tube	51	W/Unit
3	Total Load of 51 W FTL Tubes	**25.65**	kW
4	No of 40 W FTL Tubes	332	Nos
5	Electrical Load of 51 W FTL Tube	40	W/Unit
6	Total Load of 40 W FTL Tubes	**13.28**	kW
7	No of 20 W LED Tubes	54	Nos
8	Electrical Load of 20 W LED Tube	20	W/Unit
9	Total Load of 20 W LED Tubes	**1.08**	kW
10	Total Lighting Load = **3+6+9**	40.013	kW
11	Total LED Lighting Load = **9**	1.08	kW
12	Average Daily Operating Hours	5	Nos
13	Annual Working Days	180	Nos
14	Annual Total Lighting Load = **10*12*13**	36011.7	kWh
15	Annual LED Lighting Load = **11*12*13**	972	kWh
16	% of LED Lighting to Annual Lighting Load = **15*100/14**	**2.70**	%

ENVIRONMENTAL AUDIT REPORT

of

Sinhgad Technical Education Society's
SMT. KASHIBAI NAVALE COLLEGE OF ENGINEERING,
S. 44/1, Vadgaon (Bk.), Pune 411 041

Sinhgad Institutes

Year: 2020-21

Prepared by

Enrich Consultants,
Yashashree, 26, Nirmal Bag Society
Near Muktangan English School, Parvati, Pune 411009
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ENRICH CONSULTANTS * Pune *

MAHARASHTRA ENERGY DEVELOPMENT AGENCY
An ISO 9001 : 2000 Reg. no. : RQ 91 / 2462

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-14/1577 22nd April, 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 Enrich Consultants** Yashashree, Plot No. 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune - 411009.
Registration Category	:	*Empanelled Consultant for Energy Conservation Programme for Class 'A'*
Registration Number	:	***MEDA/ECN/2021-22/Class A/EA-03***

- 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 **21st April, 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)

ENRICH CONSULTANTS Pune

Enrich Consultants

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

Ref: EC/SKNCOE/20-21/03 Date: 8/9/2021

CERTIFICATE

This is to certify that we have conducted Environmental Audit at Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, S. No. 44/1, Vadgaon (Bk.), Pune 411 041 in the year 2020-21.

The College has already adopted **Environment Friendly** practices like:

- Usage of Energy Efficient LED Fittings
- Installation of Roof Top **34000 LPD Solar Thermal** Water Heating System
- Installation of **275 KLPD** Sewage Treatment Plant
- Segregation of Waste at source
- Installation of Rain Water Harvesting Project
- Tree Plantation by making use of the NSS platform

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

For Enrich Consultants,

A Y Mehendale,
Certified Energy Auditor
EA-8192

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ACKNOWLEDGEMENT

We at Enrich Consultants, Pune, express our sincere gratitude to the management of Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.), Pune, for awarding us the assignment of Environmental Audit of their Vadgaon Campus for the Year: 2020-21

We are thankful to:

- Dr. A. V. Deshpande, Principal
- Mrs. K. S. Borgave, Registrar
- Dr. Sanket Charkha, Assistant Professor

We are also thankful to various Head of Departments & other Staff members for helping us during the field study.

EXECUTIVE SUMMARY

After the Field measurements & analysis, we present herewith important observations made during the assignment of Environmental Audit.

1. **STES's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.) Pune** consumes Energy in the form of **Electrical Energy** used for various gadgets, Office & other facilities.

2. **Various Pollution caused due to College Activities:**

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

3. **Present Energy Consumption & CO_2 Emission:**

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	135849	122.26
2	Maximum	14035	12.63
3	Minimum	9048	8.14
4	Average	11272	10.14

4. **Usage of Renewable Energy & CO_2 Emission Reduction:**

The College has installed Roof Top **34000 LPD Solar Thermal Water Heating System** at the Hostel Blocks. On account of Usage of the Solar Heating System, the College has saved Electrical Energy of **17000 kWh** in the Year: 2020-21.

Due to installation of Solar PV Plant the annual Reduction in CO_2 Emissions is **15.30 MT**

5. **Various Indoor Air Quality Parameters:**

No	Parameter	Location/Value (Range)	Location/Value (Range)
		Building-1	Building-2
1	Air Quality Index (AQI)	24 to 40	26 to 40
2	PM 2.5	15 to 24	16 to 24
3	PM 10	16 to 25	19 to 23
4	Temperature, ^{0} C	23	23
5	Humidity, %	96 to 98	96 to 98
6	Lux Level	47 to 253	32 to 969
7	Sound Level, dB	47 to 67	48 to 55

6. Waste Management:

6.1 Solid Waste Management:

The Dry and Wet waste is segregated at the source and are handed over to Authorized Agency for further disposal/recycling.

6.2 Liquid Waste Management:

The College has installed Sewage Treatment Plant of Capacity **275 KLPD**. The treated Water is used for Gardening purpose.

6.3 E-Waste Management:

All the internal communication is through emails and hardly any E-Waste is generated in the Day to Day operation of the College. Any E Waste generated is handed over to Authorized Agency for further disposal.

7. Rain Water Harvesting:

The College has already installed **Rainwater Harvesting System** to collect the Rain Water collected at the Terrace. The Rain water collected is used to increase the underground Water level.

8. Eco Friendly Initiatives:

Tree Plantation: The College took an initiative of Tree Plantation in the campus.

9. Notes & assumptions:

1. **1 Unit** of Electrical Energy releases **0.9 Kg of CO_2** into atmosphere
2. **100 LPD** Solar Thermal System is equivalent to **1500 kWh** of Electrical Energy in a year.
3. Daily working hours-**6 Nos** (For Lighting Calculations)
4. Annual working Days-**180 Nos**

10. References:

1. For Electrical Energy Saved by Solar Thermal: www.mahaurja.com
2. For Various Indoor Air Parameters: www.ishrae.com
3. For AQI & Water Quality Standards: www.cpcb.com
4. For CO_2 calculations: www.tatapower.com

ABBREVIATIONS

STES	:	Sinhgad Technical Education Society
AQI	:	Air Quality Index
LED	:	Light Emitting Diode
kWh	:	kilo-Watt Hour
MT	:	Metric Ton
CO_2	:	Carbon Di Oxide
MEDA	:	Maharashtra Energy Development Agency
ISHRAE	:	The Indian Society of Heating, Refrigerating & Air conditioning Engineers
CPCB	:	Central Pollution Control Board
LPD	:	Liters Per Day
NSS	:	National Service Scheme
PM	:	Particulate Matter

CHAPTER-I
INTRODUCTION

1.1 Important Definitions:

1.1.1 Environment: Definition as per environment Protection Act: 1986

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

1.1.2. Environmental Audit: Definition:

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

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

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

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

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

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

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

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

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

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

1.2 Objectives:

1. To study present level of Energy Consumption
2. To Study the present CO_2 emissions
3. To Study Usage of Renewable Energy
4. To Study Waste Management Practices
5. To Study Rain Water Harvesting
6. To study Innovative Initiatives

1.3 Table No 4: General Details of College:

No	Head	Particulars
1	Name of Institution	STES's Smt. Kashibai Navale College of Engineering
2	Address	S. No. 44/1, Vadgaon (Bk.), Pune 411 041
3	Affiliation	Savitribai Phule Pune University

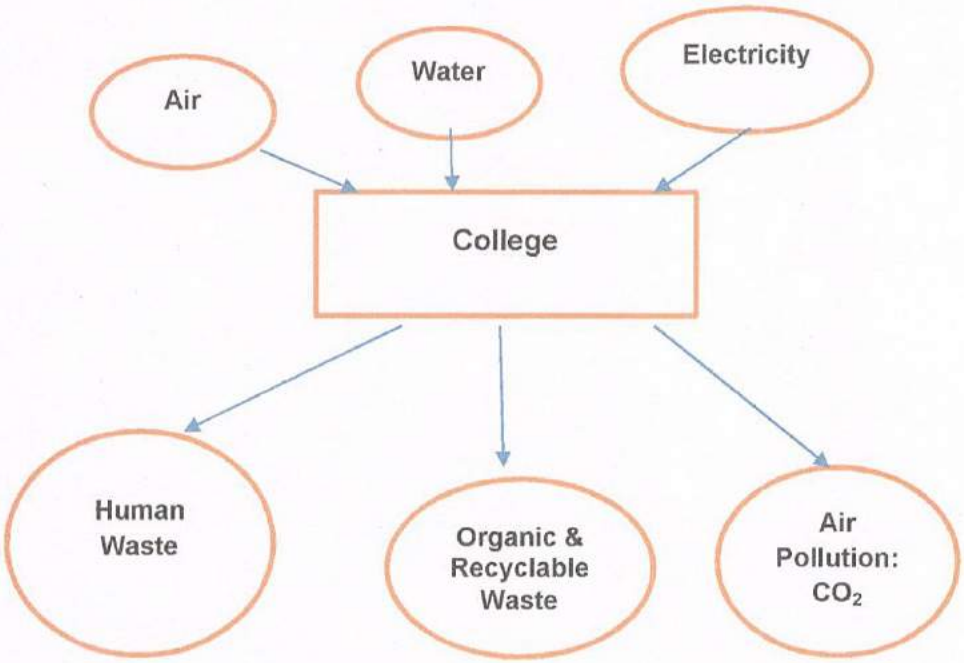
CHAPTER-II
STUDY OF CONSUMPTION OF VARIOUS RESOURCES

2.1 The Institute consumes following Natural/derived Resources:

1. Air
2. Water
3. Electrical Energy
4. Liquefied Petroleum Gas

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

2.2 Chart No: 1: Representation of College as System:



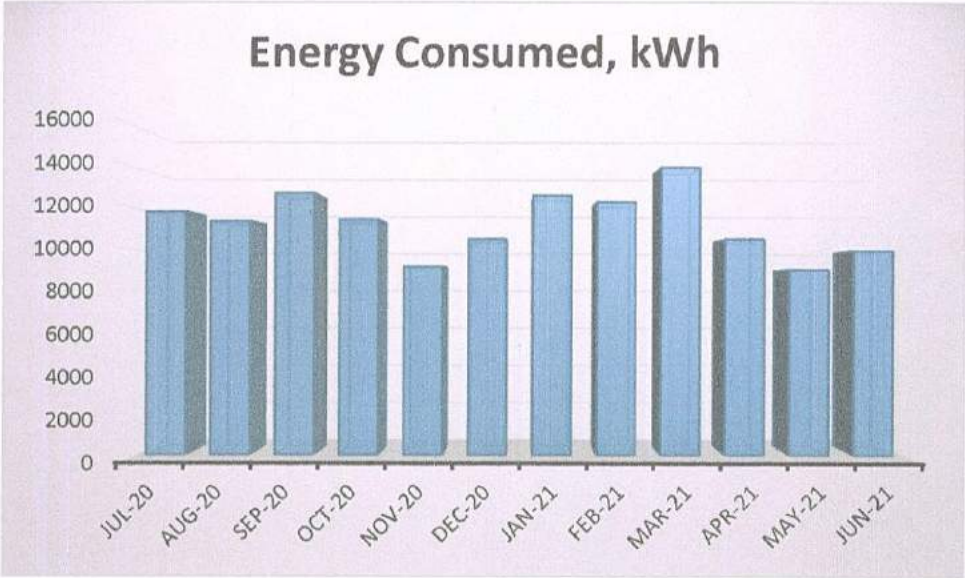
We compute the Generation of CO_2 on account of consumption of Electrical Energy as under.

Table No 5: Electrical Bill Analysis- 2020-21:

No	Month	Energy Consumed, kWh
1	Jul-20	11857
2	Aug-20	11423
3	Sep-20	12757
4	Oct-20	11500
5	Nov-20	9197
6	Dec-20	10515

7	Jan-21	12653
8	Feb-21	12355
9	Mar-21	14035
10	Apr-21	10525
11	May-21	9048
12	Jun-21	9986
13	Total	135849
14	Maximum	14035
15	Minimum	9048
16	Average	11272

To study the variation of Monthly Energy Consumption, kWh: Chart No 2:



Key Inference drawn:
From the above analysis, we present following important parameters:

Table No 6: Various Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh
1	Total	135849
2	Maximum	14035
3	Minimum	9048
4	Average	11272

CHAPTER III
STUDY OF CO_2 EMISSION

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities. The College uses Electrical Energy for various Electrical gadgets.

Basis for computation of CO_2 Emissions:

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

Table No 7: Month wise CO_2 Emissions:

No	Month	Energy Consumed, kWh	CO2 Emissions, MT
1	Jul-20	11857	10.67
2	Aug-20	11423	10.28
3	Sep-20	12757	11.48
4	Oct-20	11500	10.35
5	Nov-20	9197	8.28
6	Dec-20	10515	9.46
7	Jan-21	12653	11.39
8	Feb-21	12355	11.12
9	Mar-21	14035	12.63
10	Apr-21	10525	9.47
11	May-21	9048	8.14
12	Jun-21	9986	8.99
13	Total	135849	122.26
14	Maximum	14035	12.63
15	Minimum	9048	8.14
16	Average	11272	10.14

Representation of Month wise CO_2 Emissions: Chart No 3:

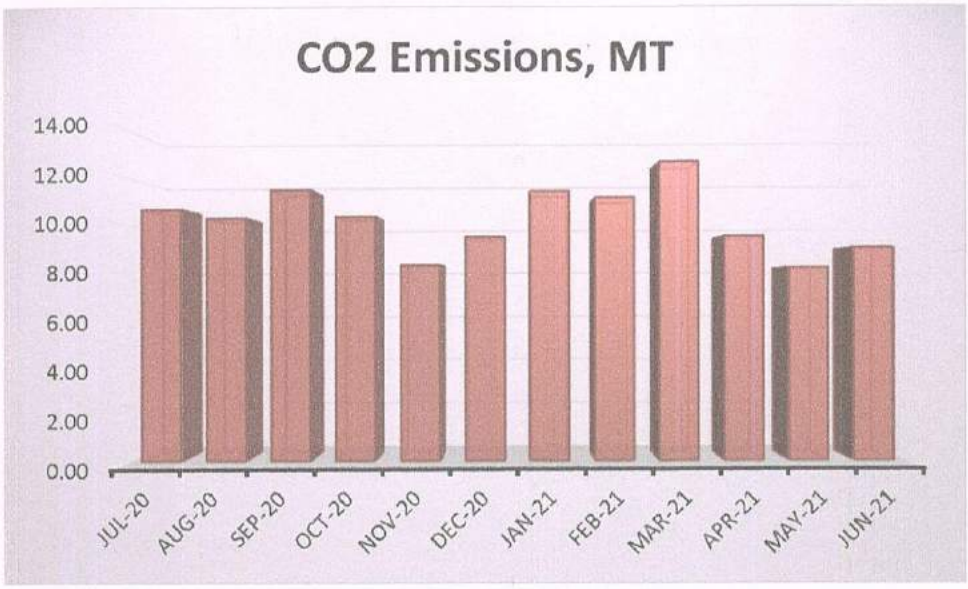


Table No 8: Various Important Parameters:

No	Parameter/ Value	Energy consumed, kWh	CO2 Emissions, MT
1	Total	135849	122.26
2	Maximum	14035	12.63
3	Minimum	9048	8.14
4	Average	11272	10.14

CHAPTER IV
STUDY OF CO_2 EMISSION REDUCTION

The College has total three Hostel Blocks, namely: Purandar & Shivneri for Boys and Chandrabhaga for Girls. In the following Table we present the Installed Capacity of Solar Thermal System.

Table No 9: Details of Solar Thermal Water Heating System installed:

No	Hostel Name	Installed Solar Thermal Water Heating Capacity in LPD
A)	**Boy's Hostel Block**	
1	Purandar	14000
2	Shivneri	12000
B)	**Girl's Hostel Block**	
1	Chandrabhaga	8000
	TOTAL CAPACITY	**34000**

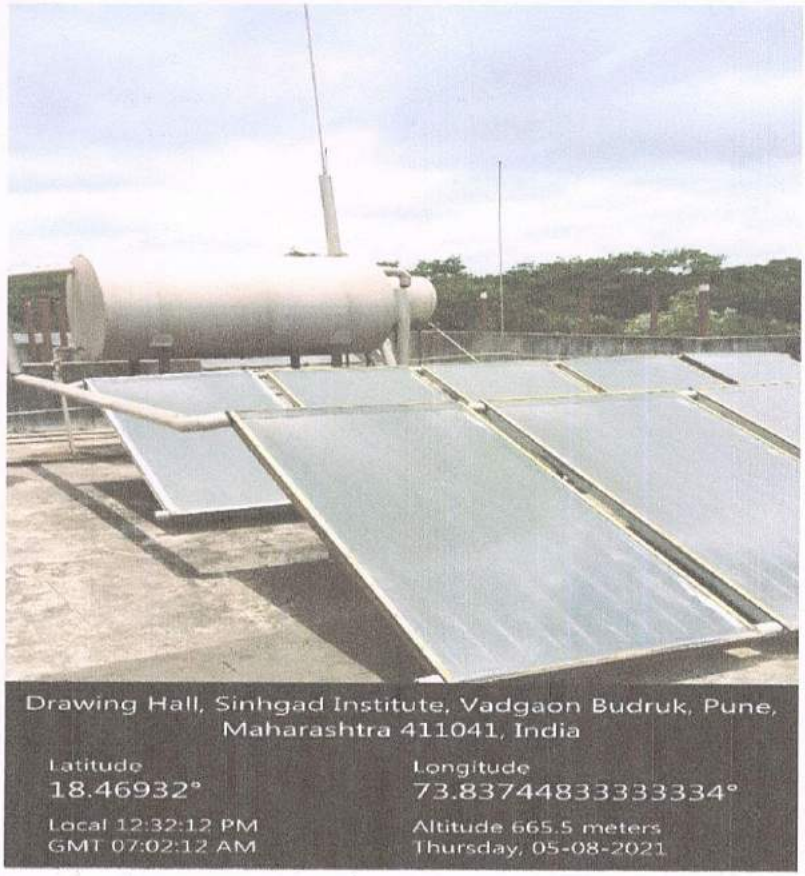
As per **MEDA** Guidelines, **100 LPD** Solar Thermal Water Heating System, saves **1500 kWh** of Electricity Energy per Annum. The College has installed: **34000 LPD** Solar Thermal Water Heating System.

In the following Table, we present the amount of Reduction in CO_2 Emissions, due to installation of the Solar Water Heater.

Table No 10: Computation of Reduction in CO_2 Emission due to Solar Water Heater:

No	Particulars	Value	Unit
1	Total Solar Thermal Water Heating Capacity	34000	LPD
2	Electrical Energy Saved by 100 LPD System/Annum	1500	kWh
3	Electrical Energy Saved by 100 LPD System/Day	4	kWh
4	Electrical Energy Saved by 34000 LPD System/Day	1360	kWh
5	Approximate Usage Period in the Year:2020-21	25	Days
6	Capacity Utilization Factor	0.5	
7	Electrical Energy Saved in 2020-21 =(4) * (5) * (6)	**17000**	kWh
8	1 kWh of Electrical Energy is equal to	0.9	Kg of CO_2
9	**Reduction in CO_2 Emissions = (7) * (8) / 1000**	**15.30**	**MT**

Photograph of Solar Thermal Water Heating Plant:



CHAPTER V
STUDY OF INDOOR AIR QUALITY PARAMETERS

5.1 Importance of Air Quality:

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

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

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

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

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

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

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

5.2 Air Quality Index:

An **Air Quality Index (AQI)** is a number used by government agencies to measure the **air pollution** levels and communicate it to the population. As the AQI increases, it means that a large percentage of the population will experience severe adverse health effects. The measurement of the **AQI** requires an **air monitor** and an **air pollutant** concentration over a specified **averaging period**.

We present herewith following important Parameters.

1. AQI- Air Quality Index
2. PM 2.5- Particulate Matter of Size 2.5
3. PM 2.5- Particulate Matter of Size 2.5
4. Temperature
5. Humidity
6. Lux Level
7. Sound Level

Table No 11: Indoor Air Quality Parameters:

No	Location	AQI	PM 2.5	PM 10	Temp	Humidity
	Buiding-1					
	Ground Floor -2					
1	Metallurgy Lab	40	24	22	23	98
2	UG Tutorial Room-8	25	15	16	23	98
3	Sherje Sir cabin	35	19	24	23	98
4	Staff Room	40	24	25	23	98
	Ground Floor -1					
1	ML-4	40	21	22	23	98
	Ground Floor					
1	Staff Room	26	16	21	23	97
2	IT-3	27	15	19	23	98
	1st Floor					
1	Patil Sir cabin	29	18	19	23	98
2	Office-1	32	21	23	23	97
3	Office-2	26	16	21	23	97
4	Vice Principal cabin	40	24	25	23	98
	2nd Floor					
1	CL-9	29	18	19	23	97
	Building-2					
	Ground Floor	40	24	22	23	96
	1st Floor	26	16	21	23	97
1	EL-8	29	18	19	23	97
3	HOD (E & TC)	30	21	23	22.5	97
4	EL-9					
	2nd Floor	29	18	19	23	97

	3rd Floor	26	16	21	23	97
1	Staff Room	27	19	21	22.5	97
	4th Floor	29	18	22	22	98

Table No 12: Indoor Lux & Sound Levels:

No	Location	Lux Level	Sound Level, dB
	Buiding-1		
	Ground Floor -2		
1	Metallurgy Lab	253	47
2	UG Tutorial Room-8	49	52
3	Sherje Sir cabin	75	67
		85	58
		120	59
4	Staff Room	81	54
	Ground Floor -1		
1	ML-4	96	57
	Ground Floor		
1	Staff Room	176	61
2	IT-3	87	55
		69	54
		47	55
3	Staff Room	269	54
	1st Floor		
1	Patil Sir cabin	156	60
2	Office-1	105	55
		102	51
		95	49
		135	51
		79	50
3	Office-2	196	54

4	Vice Principal cabin	106	53
	2nd Floor		
1	CL-9	71	59
2	CL-8	90	58
3	DBMS Lab	116	52
	Building-2		
	Ground Floor		
1	EL-5	61	55
2	EL-3	50	53
3	EL-2	92	48
	1st Floor		
1	EL-8	100	50
2	EL-7	32	54
3	HOD (E & TC)	133	53
4	EL-9	30	52
			55
	2nd Floor		
1	Engineering physics lab-II	969	48
	3rd Floor		
1	Staff Room	67	51
		46	54
1	HOD Department of Engineering Sciences	93	55
		262	52
	4th Floor		
1	N.B. Patil Sir cabin	104	49
		372	51
2	ML-2	91	55

CHAPTER VI
STUDY OF WASTE MANAGEMENT

6.1 Solid Waste Management: The Dry recyclable Waste & Wet Waste are collected on daily basis, and further given to Authorized Waste Collector for further disposal/Recycling.

Photograph of Garbage Segregation Shed:

6.2 Liquid Waste Management: The College has installed a **275 KLPD** Capacity Sewage Treatment Plant. The treated Water is used for Gardening purpose..

Photograph of Sewage Treatment Plant:

6.3 E-Waste Management: All the internal communication is through emails and hardly any e-Waste is generated in the Day to Day operation of the College. Any Waste generated is handed over to Authorized Agent for further disposal.

CHAPTER VII
RAIN WATER HARVESTING

The College has already installed Rain Water Harvesting Project. The water is used to enrich the underground water level.

Photograph of Rain Water Harvesting Pipe from Terrace:

Photograph of Rain Water Harvesting Channel:

CHAPTER VIII
STUDY OF ECO FRIENDLY INITIATIVES

8.1 Creation of Awareness among Stake Holders:

The College has taken up various measures to create Awareness for conserving the Natural resources, Reducing the Wastage and Recycling & Reuse.

Photograph of Display board for Importance of Resource Conservation:

8.2 Tree Plantation Drive:

The College took an initiative of Tree Plantation activities using NSS medium.

Photograph of Tree Plantation on Mahatma Gandhi Jayanti Day:

Photograph of Tree Plantation on Republic Day, 26th January 2021:

8.3 Plastic Free Campus:

It is recommended to completely ban the usage of Single use Plastic in the College campus.

8.4 Paperless Office:

It is recommended to set a target for reduction of paper y=usage by 5% lesser then the previous year.

ANNEXURE: VARIOUS AIR QUALITY, WATER QUALITY, NOISE & INDOOR COMFORT STANDARDS:

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

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

2. Recommended Water Quality Standards:

No	Designated Best Use	Criteria
1	Drinking Water Source without conventional Treatment but after disinfection	pH between **6.5 to 8.5** Dissolved Oxygen **6 mg/l or more**
2	Drinking water source after conventional treatment and disinfection	pH between **6 to 9** Dissolved Oxygen **4 mg/l or more**
3	Outdoor Bathing (Organized)	pH between **6.5 to 8.5** Dissolved Oxygen **5 mg/l or more**
4	Controlled Waste Disposal	pH between **6 to 8.5**

3. Recommended Noise Level Standards:

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

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

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

GREEN AUDIT REPORT

of

Sinhgad Technical Education Society's

SMT. KASHIBAI NAVALE COLLEGE OF ENGINEERING,

S. 44/1, Vadgaon (Bk.), Pune 411 041

Sinhgad Institutes

Year: 2019-20

Prepared by

Enrich Consultants,

Yashashree, 26, Nirmal Bag Society

Near Muktangan English School, Parvati, Pune 411009

Phone: 09890444795, Email: enrichcons@gmail.com

ENRICH CONSULTANTS Pune

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

Maharashtra Energy Development Agency
(A Government of Maharashtra undertaking)
2nd Floor, MHADA Commercial Complex, Opp. Tridal Nagar, Yerwada. Pune 411 006,
Ph No: 020-26614393/266144403
Email: eee@mahaurja.com. Web: www.mahaurja.com

ECN/2018-19/CR-05/4174

19th September , 2018

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	:	**Enrich Consultants** Yashashree, Plot No. 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune - 411009.
Registration Category	:	Empanelled *Consultant for Energy Conservation Programme*
Registration Number	:	***MEDA/ECN/CR-05/2018-19/EA-03***

- 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 the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **31st March 2021** 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.

19/9/18

(Smita Kudarikar)
General Manager (EC)

Enrich Consultants

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

Ref: EC/SKNCOE/19-20/02

Date: 15/9/2020

CERTIFICATE

This is to certify that we have conducted Green Audit at Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, S. No. 44/1, Vadgaon (Bk.), Pune 411 041 in the year 2019-20.

The College has already adopted **Green** practices like:

- Usage of Energy Efficient LED Fittings
- Installation of Roof Top **34000 LPD Solar Thermal** Water Heating System
- Installation of **275 KLPD** Sewage Treatment Plant
- Segregation of Waste at source
- Installation of Rain Water Harvesting Project
- Tree Plantation in the campus
- Maintenance of good internal roads in the campus

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

For Enrich Consultants,

A Y Mehendale,
Certified Energy Auditor
EA-8192

ENRICH CONSULTANTS Pune

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ACKNOWLEDGEMENT

We at Enrich Consultants, Pune, express our sincere gratitude to the management of Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.), Pune, for awarding us the assignment of Green Audit of their Vadgaon Campus for the Year: 2019-20.

We are thankful to:

- Dr. A. V. Deshpande, Principal
- Mrs. K. S. Borgave, Registrar
- Dr. Sanket Charkha, Assistant Professor

We are also thankful to various Head of Departments & other Staff members for helping us during the field study.

EXECUTIVE SUMMARY

After the Field measurements & analysis, we present herewith important observations made during the assignment of Green Audit.

1. STES's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.) Pune consumes Energy in the form of **Electrical Energy** used for various gadgets, Office & other facilities.

2. Present Energy Consumption & CO_2 Emission:

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	228017	182.41
2	Maximum	23270	18.62
3	Minimum	8965	7.17
4	Average	19001	15.20

3. Various measures adopted for Energy Conservation:

The various projects already implemented by the College are

- Usage of LED Lights
- Installation of **34000 LPD** Solar Thermal Water Heating System

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

The College has installed Roof Top **34000 LPD Solar Thermal Water Heating System** at the Hostel Blocks. The Equivalent Electrical Energy Saved due to usage of Solar Thermal Water Heating System is **146880 kWh**, in the Year: 2019-20.

Due to installation of Solar Water Heating System, the **Annual Reduction in CO_2 Emission** in the Year: 2019-20 is **117.50 MT.**

5. Waste Management:

5.1 Solid Waste Management: The Dry and Wet waste is segregated at the source and is handed over to Authorized Agency for further disposal/recycling.

5.2 Liquid Waste Management: The College has installed **275 KLPD** Sewage Treatment Plant. The treated Water is used for Gardening purpose.

5.3 E-Waste Management: All the internal communication is through emails and hardly any E-Waste is generated in the Day to Day operation of the College. Any E Waste generated is handed over to Authorized Agency for further disposal.

6. Rain Water Harvesting: The College has already installed **Rainwater Harvesting System** to collect the Rain Water collected at the Terrace. The Rain water collected is used to increase the underground Water level.

7. Green Practices:

- **Good Internal Roads:** The internal roads are good for easy movement of pedestrians
- **Internal Garden:** The College has a well maintained garden with various medicinal plants.

8. Innovative & Sustainable Initiatives:

- **Tree Plantation:** The College took an initiative of Tree Plantation on the occasion of Mahatma Gandhi Jayanti & Republic Day.
- **Cleanliness Drive:** It was conducted in the College campus
- **Rain Water Harvesting Drive:** It was conducted in the College campus

9. Notes & Assumptions:

1. **1 Unit** of Electrical Energy releases **0.8 Kg of CO_2** into atmosphere
2. Daily working hours-**5 Nos** (For Lighting Calculations)
3. Annual working Days-**180 Nos**

10. Reference:

- For Energy Saved by Solar Thermal Water Heating System: www.mahaurja.com

ABBREVIATIONS

STES	:	Sinhgad Technical Education Society
LED	:	Light Emitting Diode
kWh	:	kilo-Watt Hour
MT	:	Metric Ton
CO_2	:	Carbon Di Oxide
LPD	:	Liters Per Day
NSS	:	National Service Scheme
MEDA	:	Maharashtra Energy Development Agency

CHAPTER-I
INTRODUCTION

1.1 Objectives:

1. To study present level of Energy Consumption
2. To Study the present CO_2 emissions
3. To Study Usage of Renewable Energy
4. To Study Waste Management Practices
5. To Study Rain Water Harvesting
6. To Study Green Practices
7. To study Innovative & Sustainable Initiatives

1.2 Table No 1: General Details of College:

No	Head	Particulars
1	Name of Institution	STES's Smt. Kashibai Navale College of Engineering
2	Address	S. No. 44/1, Vadgaon (Bk.), Pune 411 041
3	Affiliation	Savitribai Phule Pune University

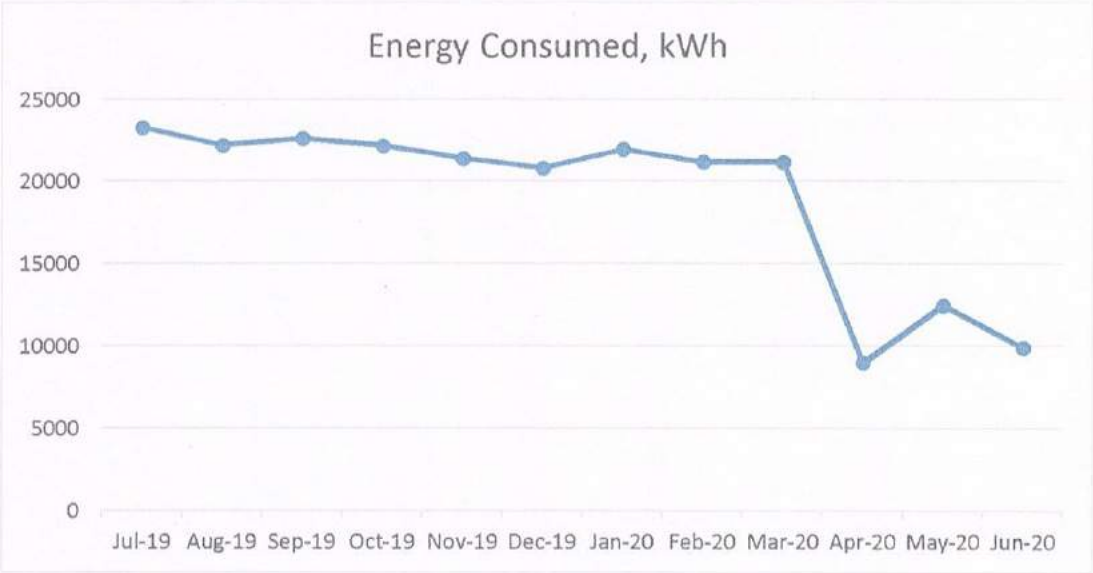
CHAPTER-II
STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No 2: Electrical Bill Analysis- 2019-20:

No	Month	Energy Consumed, kWh
1	Jul-19	23270
2	Aug-19	22200
3	Sep-19	22600
4	Oct-19	22152.9
5	Nov-19	21393.6
6	Dec-19	20816.7
7	Jan-20	21947
8	Feb-20	21183.4
9	Mar-20	21153.4
10	Apr-20	8964.7
11	May-20	12456
12	Jun-20	9879.6
13	Total	228017
14	Maximum	23270
15	Minimum	8965
16	Average	19001

To study the variation of Monthly Energy Consumption, kWh: Chart No 1:



Key Inference drawn:

From the above analysis, we present following important parameters:

Table No 3: Various Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh
1	Total	228017
2	Maximum	23270
3	Minimum	8965
4	Average	19001

CHAPTER III
CARBON FOOTPRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities. The College uses Electrical Energy for various Electrical gadgets.

Basis for computation of CO_2 Emissions:

- 1 Unit (kWh) of Electrical Energy releases **0.8 Kg of CO_2** into atmosphere

Table No 4: Month wise CO_2 Emissions:

No	Month	Energy Consumed, kWh	CO2 Emissions, MT
1	Jul-19	23270	18.62
2	Aug-19	22200	17.76
3	Sep-19	22600	18.08
4	Oct-19	22152.9	17.72
5	Nov-19	21393.6	17.11
6	Dec-19	20816.7	16.65
7	Jan-20	21947	17.56
8	Feb-20	21183.4	16.95
9	Mar-20	21153.4	16.92
10	Apr-20	8964.7	7.17
11	May-20	12456	9.96
12	Jun-20	9879.6	7.90
13	Total	228017	182.41
14	Maximum	23270	18.62
15	Minimum	8965	7.17
16	Average	19001	15.20

Representation of Month wise CO_2 Emissions: Chart No 2:

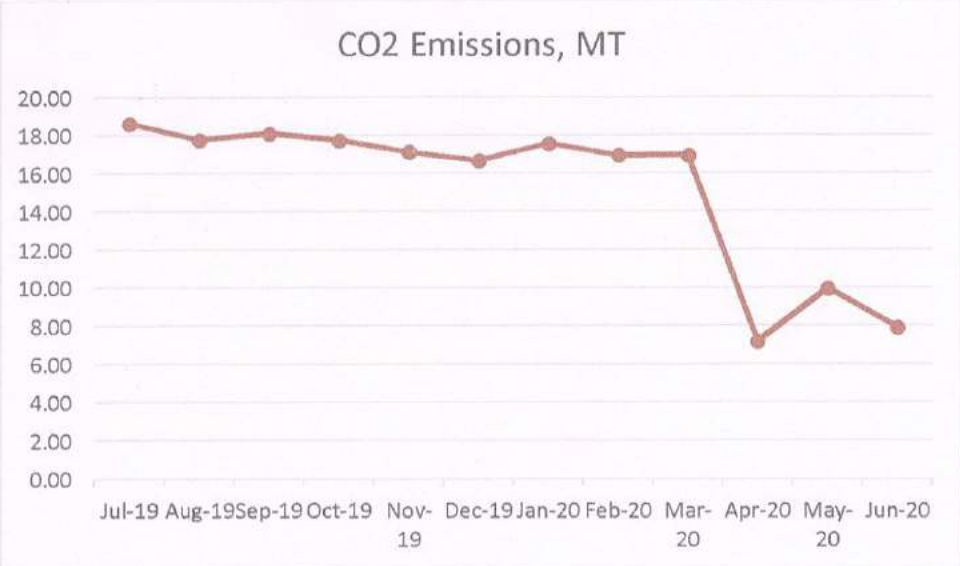


Table No 5: Various Important Parameters:

No	Parameter/ Value	Energy consumed, kWh	CO2 Emissions, MT
1	Total	228017	182.41
2	Maximum	23270	18.62
3	Minimum	8965	7.17
4	Average	19001	15.20

CHAPTER IV
STUDY OF USAGE OF RENEWABLE ENERGY

The College has total three Hostel Blocks, namely: Purandar & Shivneri for Boys and Chandrabhaga for Girls. In the following Table we present the Installed Capacity of Solar Thermal System.

Table No 6: Details of Solar Thermal Water Heating System installed:

No	Hostel Name	Installed Solar Thermal Water Heater System Capacity in LPD
A)	**Boy's Hostel Block**	
1	Purandar	14000
2	Shivneri	12000
B)	**Girl's Hostel Block**	
1	Chandrabhaga	8000
	TOTAL CAPACITY	**34000**

As per **MEDA** Guidelines, **100 LPD** Solar Thermal Water Heating System, saves **1500 kWh** of Electricity Energy per Annum. The College has installed: **34000 LPD** Solar Thermal Water Heating System.

In the following Table, we present the amount of Reduction in CO_2 Emissions, due to installation of the Solar Water Heater.

Table No 7: Computation of Reduction in CO_2 Emissions due to Solar Water Heater:

No	Particulars	Value	Unit
1	Total Solar Thermal Water Heating Capacity	**228017**	LPD
2	Electrical Energy Saved by 100 LPD System/Annum	1500	kWh
3	Electrical Energy Saved by 100 LPD System/Day	4	kWh
4	Electrical Energy Saved by 34000 LPD System/Day	1360	kWh
5	Approximate Usage Period in the Year:2020-21	135	Days
6	Capacity Utilization Factor	0.8	
7	Electrical Energy Saved in 2020-21 =(4) * (5) * (6)	146880	kWh
8	1 kWh of Electrical Energy is equal to	0.8	Kg of CO_2
9	**Reduction in CO_2 Emissions = (7) * (8) / 1000**	**117.50**	**MT**

CHAPTER V
STUDY OF WASTE MANAGEMENT

5.1 Solid Waste Management: The Dry recyclable Waste & Wet Waste are collected on daily basis, and further given to Authorized Waste Collector for further disposal/Recycling.

Photograph of Garbage Segregation Shed:

5.2 Liquid Waste Management: The College has installed a **275 KLPD** Capacity Sewage Treatment Plant, to handle the human waste generated in the College.

Photograph of Sewage Treatment Plant:

5.3 E-Waste Management:

All the internal communication is through emails and hardly any e-Waste is generated in the Day to Day operation of the College. Any E Waste generated is handed over to Authorized Agency for further disposal.

CHAPTER VI
RAIN WATER HARVESTING

The College has already installed Rain Water Harvesting Project. The water is used to enrich the underground water level.

Photograph of Rain Water Harvesting Pipe from Terrace:

CHAPTER VII
STUDY OF GREEN PRACTICES

7.1 Pedestrian Friendly Roads:

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

Photograph of Internal Road inside the College Campus:

7.2 Green Landscaping with Trees and Plants:

The College has maintained plantation in the campus.

Photograph of Garden in the College campus:

CHAPTER VIII
STUY OF SUSTAINABLE INITIATIVES

8.1 Tree Plantation Drive:
The College took an initiative of Tree Plantation activities using NSS medium.
Photograph of Tree Plantation at Taljai:

Cleanliness Drive: It was arranged in the College Campus.
Photograph of Cleanliness Drive:

Rain Water Harvesting Activity:

It was conducted in the College campus.

Photograph of Rain Water harvesting Work:

ENERGY AUDIT REPORT

of

Sinhgad Technical Education Society's
SMT. KASHIBAI NAVALE COLLEGE OF ENGINEERING,
S. 44/1, Vadgaon (Bk.), Pune 411 041

Sinhgad Institutes

Year: 2019-20

Prepared by

Enrich Consultants,

Yashashree, 26, Nirmal Bag Society
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Phone: 09890444795, Email: enrichcons@gmail.com

Maharashtra Energy Development Agency
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ECN/2018-19/CR-05/4174

19th September , 2018

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	:	**Enrich Consultants** Yashashree, Plot No. 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune - 411009.
Registration Category	:	Empanelled *Consultant for Energy Conservation Programme*
Registration Number	:	***MEDA/ECN/CR-05/2018-19/EA-03***

- 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 the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **31st March 2021** 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.

19/9/18

(Smita Kudarikar)
General Manager (EC)

ENRICH CONSULTANTS Pune

Enrich Consultants

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

Ref: EC/SKNCOE/19-20/01

Date: 15/9/2020

CERTIFICATE

This is to certify that we have conducted Energy Audit at Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, S. No. 44/1, Vadgaon (Bk.), Pune 411 041 in the year 2019-20.

The College has already adopted **Energy Efficient** Practices like:

- Usage of Energy Efficient LED Fittings
- Installation of **34000 LPD** Solar Thermal Water Heating System at Hostel blocks.
- Usage of BEE STAR Rated Equipment
- Maximum Usage of Day Lighting

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

For Enrich Consultants,

A Y Mehendale,
Certified Energy Auditor
EA-8192

ENRICH CONSULTANTS * Pune *

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4	Study of Carbon Foot printing	19
5	Study for Scope for Usage of Alternate Energy	21
6	Study of Usage of LED Lights	23

ACKNOWLEDGEMENT

We at Enrich Consultants, Pune, express our sincere gratitude to the management of Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.), Pune, for awarding us the assignment of Energy Audit of their Vadgaon (Bk.) Campus for the Year: 2019-20.

We are thankful to:

- Dr. A. V. Deshpande, Principal
- Mrs. K. S. Borgave, Registrar
- Dr. Sanket Charkha, Assistant Professor

We are also thankful to various Head of Departments & other staff members for helping us during the field study.

EXECUTIVE SUMMARY

After the Field Study & Analysis, we present herewith important observations made during the assignment of Energy Audit.

1. STES's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.) Pune consumes Energy in the form of **Electrical Energy** used for various gadgets, Office & other facilities.

2. Present Energy Consumption:

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	228017	182.41
2	Maximum	23270	18.62
3	Minimum	8965	7.17
4	Average	19001	15.20

3. Various measures adopted for Energy Conservation:

The various projects already implemented by the College are

- Usage of LED Lights
- Installation of **34000 LPD** Solar Thermal Water Heating System.

4. Usage of Alternate Energy Source:

The College has installed **34000 LPD** Solar Thermal Water Heating System at the Hostel Blocks. The Equivalent Electrical Energy Saved by the Solar Thermal Water Heating System is **146880 kWh** in the Year: 2019-20.

The percentage of usage of Alternate Energy to Annual Energy requirement is **39.18 %**.

5. Percentage of Lighting Power Requirements met by LED bulbs:

The annual lighting Load Demand is **27144 kWh**. The annual LED Lighting Load Demand is **594 kWh**. Therefore the percentage of usage of LED to the total annual lighting power requirement works out to be **2.19 %**

6. Notes & Assumptions:

1. **1 Unit** of Electrical Energy releases **0.8 Kg of CO_2** into atmosphere
2. Daily working hours-**5 Nos** (For Lighting Calculations)
3. Annual working Days-**135 Nos**

7. References:

1. For Computation of Energy Saved by Solar Thermal System: www.mahaurja.com

ABBREVIATIONS

STES	:	Sinhgad Technical Education Society
AC	:	Air conditioner
FTL	:	Fluorescent Tube Light
LED	:	Light Emitting Diode
kWh	:	kilo-Watt Hour
Qty	:	Quantity
W	:	Watt
kW	:	Kilo Watt
PC	:	Personal Computer
MT	:	Metric Ton
LPD	:	Liters Per Day

CHAPTER-I
INTRODUCTION

1.1 Objectives:

1. To study the Connected Load
2. To Study present level of Energy Consumption
3. To Study the present CO_2 emissions
4. To study Scope for usage of Renewable Energy
5. To study usage of LED Lighting

1.2 Table No 1: General Details of College:

No	Head	Particulars
1	Name of Institution	STES's Smt. Kashibai Navale College of Engineering
2	Address	S. No. 44/1, Vadgaon (Bk.), Pune 411 041
3	Affiliation	Savitribai Phule Pune University

CHAPTER-II
STUDY OF CONNECTED LOAD

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

2.1.1 Details of Tube Light Fittings & Fans at various locations: Table No 2:

No.	Location	FTL-51 W	FTL-40 W	20 W LED	Ceiling Fan	PC	Printer	LCD Projector
	Building-1							
	Lower Ground Floor-2							
1	RNAC Lab	4		3	4			
2	ML-6	3	3	1	8	2		
3	Seminar Hall	2	4	4	10			1
4	tutorial Room-2	51			2			
5	Staff Room							
6	Staff Room	1	5		4	3		
7	Sherje Sir (HOD) cabin	3	5	2	5			
8	UG Tuorial Room-1		2	2	2			
9	CI-21		3	1	4			1
10	UG Tutorial Room-6	2	3	1	4			1
11	UG Tutorial Room-3	4			2			1
12	Staff Room	1		1	2			1
13	Staff Room	1	1		2			
14	tutorial Room		4		4			
15	Metallurgy Lab	1	7		6			
16	CL-22	3	2		4			1
17	ICE lab	3	4	1	6			
18	Security Room		1		1			
19	Maintenance Room		2					
20	FM & Turbo Machine Lab	1	8	1				
21	CL-23	4	3		4			1
22	Stationary Room	3		1	2			

23	SOM Lab	4	6		6			
	Lower Ground Floor-1							
1	CL-14		6		4			1
2	CL-15		6		4			1
3	Metrology Lab		6		3	1		
4	CL-16		6		4			1
5	CL-17		6		4			1
6	Tutorial Room-1		3		2			
7	CL-18		7		4			1
8	MBA Tutorial Room-11		5		4			1
9	Tutorial Room-11		6		4			1
10	CL-13		6		4			1
11	Block-21	4			4			
12	ML-4	4	4					
13	Block-23		6		6			
14	UG Tutorial Room-10		4		4			
15	PG Tutorial Room-1		6		4			
16	ML-1		6	3	4	1		
17	ML-2		5	2	9	2		
18	ML-3	2	6	1	8	2		
19	Staff Room-2			1	1	1		
20	Staff Room -1			1	1			
	Ground Floor							
1	Project Lab		2	2	4	19		
2	Programming Lab		4	1	4	2	1	
3	IT-6		5	1	4	21		
4	DMS Lab		2	4		19		
5	Network Lab		5	1	4	22		
6	IT-4		5		4	22		
7	IT-5		7		6	18		

8	IT-3		4		6	19		
9	Staff Room		3	1	2	4	1	
10	HOD	2			2	1	1	
11	CL-2	3	3		4			1
12	Staff Room		2		2			
13	IT-1	4	1		4	30	1*+1	
14	CL-11	3	1		4	30		1
15	CL-1	3		1	4			1
16	CAD Lab-1	6			4	18		
17	CL-3	4		1	4			1
18	HOD (Barhade Sir office)	3		1	2	2	1	
	1st Floor							
1	CL-1	4	4		8			
2	CL-4	4			4			1
3	Tamboli Sir cabin			1	1	1		
4	CL-2	5			4	20		
5	Patil Sir cabin		3		2	1	1	
6	CL-5	4			4			1
7	Microprocessor Lab	2	6		6	16		
8	Honwadkar Sir cabin							
9	Mhastkar Sir cabin	3			2	1	1	
10	Board Room	1			1			
11	Pantary	1	1					
12	Deshpande Sir cabin	5			3	2		
13	Office-1	4			5	8	7	
14	Office-2	4	4			11	4	
15	CL-4	2	1		4	15		
16	Boys Common Room				7			
17	Language Lab	1	3		2	17		
18	Computer graphics Lab	3			4	16		

19	Tutorial Room-6	2	3		4			
20	Tutorial Room-5	4			4			1
21	CL-7	4			4			1
22	CL-4							
23	Store Room							
24	Operating system lab	2	1	1	4	20		
	2nd Floor							
1	CL-8	7			4			
2	CL-10	4			4			
3	Kosbatwar sir cabin		1		1	1		
4	Pingat Sir cabin		1		1	1		
5	programming Lab-1	6			4	18		
6	Language lab	2			2			
7	CL-11	3			4			
8	CL-9	6		2	5	18	1	
9	Software Engineering Lab	1	4		4	19	2	
10	Signal Processing Lab	5	4			19		
11	HOD Computer Engineering	4			2	1	1	
12	DBMS Lab	2			4	19	1	
13	CL-12	4			4			
14	CL-13	4			4			
15	CL-7	3	3		5	20		
16	CL-6	1	1	1	6	19		
17	Server Room							
18	CL-19		3		4			1
19	CL-13	3			4			1
20	CL-20		3		4			1
21	Research Centre Lab		4		4	27		
22	CL-5		4		4	20		
23	Tutorial Room-3		4		4			1

	Sub Total-Building-1	**239**	**259**	**44**	**375**	**549**	**22**	**27**
	Building-2							
	Ground Floor							
1	EL-3	2	4		5	9		
2	CL-24							
3	Tutorial Room-4							
4	CL-25	2	3		5			
5	EL-4	3	3		3			
6	EL-5	3	3		4			
7	CL-27	3	2		5			
8	EL-1	3	3		6	1		
9	EL-2	4	2		6	3	1	
10	Robotics Lab							
11	office							
12	IT-7	6			5	2		
13	EL-6	3	3		6	3	1	
14	CL-29	5			5			
15	CL-28	3	2		5			
16	CL-26	1	4		4			
	1st Floor							
1	CL-30	5			5			
2	IT-8+EL-7	6	6		9	21	1	
3	CL-31	4	1		5			1
4	EL-8	4	1		5			1
5	CL-32	5			5			1
6	HOD E&TC	1	1		2	2	2	
7	CL-33	3	2		5			
8	EL-9	8	4		11	29	2	
9	CL-34	3	1		5			1
10	CL-35	4	1		5			1
11	CL-36	4	1		5			
12	CL-37	5			5			1
13	EL-11	7	5		9	2	1	

	2nd Floor							
1	EL-13		5		2	1		
2	UG Tutorial Room-5	4	1		4	2		
3	CL-14	4	1		6	22	1	
4	EL-12	5			2			
5	CL-38	4	1		3			
6	Drawing Hall + HOD cabin	6	4		4	2	1	
7	CL-39	5	1		4			
8	CL-40	4	1		4			
9	Engineering Physics Lab I+II	3	4		10	1		
10	CL-41	4	1		5			
11	CL-42	3	2		4			
12	Seminar Hall -2	10			9			1
13	IT-9	5			4			
14	CL-15	5			5	1		
	3rd Floor							
1	CL-43	5			5			
2	CL-44	5			5			
3	EC Lab	10			12			
4	CL-12	5			6	5	5	
5	CL-45	4	1		5			
6	CL-46	5			5			
7	Engineering Science Dept. HOD	4			5	5	3	
8	Staff Room	5			5	1		
9	Computer Centre-1	10			11	51		
10	CL-47	3	2		5			
11	CL-48	4	1		5			
12	Research Centre Lab	4	1		5	40		
13	EL-14	3	2		5	35		
14	Computer Centre-II	6	1		11	55		

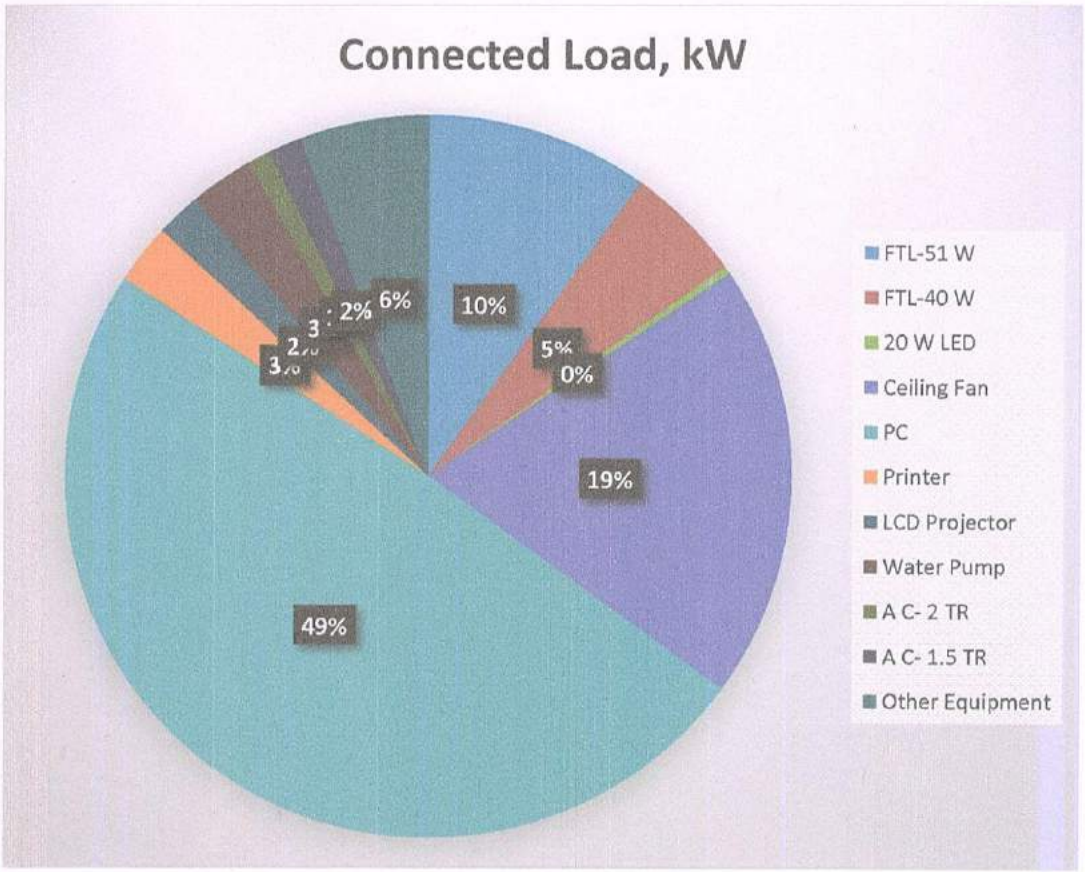
	4th Floor							
1	ML-13	5			6	2		
2	ML-12	5			5	1		
3	CL-49	4	1		5			
4	CL-50	4	1		5			
5	ML-11	7			9	5		
6	N.B. Patil Sir cabin	2			1	2		
7	CL-9	5			5			
	Sub Total-Building-2	**264**	**83**	**0**	**327**	**303**	**18**	**7**
	Grand Total	**503**	**342**	**44**	**702**	**852**	**40**	**34**

2.2 Details of Overall Connected Load: Table No 3:

No	Equipment	Qty	Load, W/Unit	Load, kW
1	FTL-51 W	503	51	25.65
2	FTL-40 W	342	40	13.68
3	20 W LED	44	20	0.88
4	Ceiling Fan	702	72	50.54
5	PC	852	150	127.8
6	Printer	40	175	7
7	LCD Projector	34	150	5.1
8	Water Pump	2	3730	7.46
9	A C- 2 TR	1	2600	2.6
10	A C- 1.5 TR	2	1950	3.9
11	Other Equipment	100	150	15
12	**Total**			**260**

We present the same in a PIE Chart as under:

2.3 Chart No-1: Overall Connected Load:



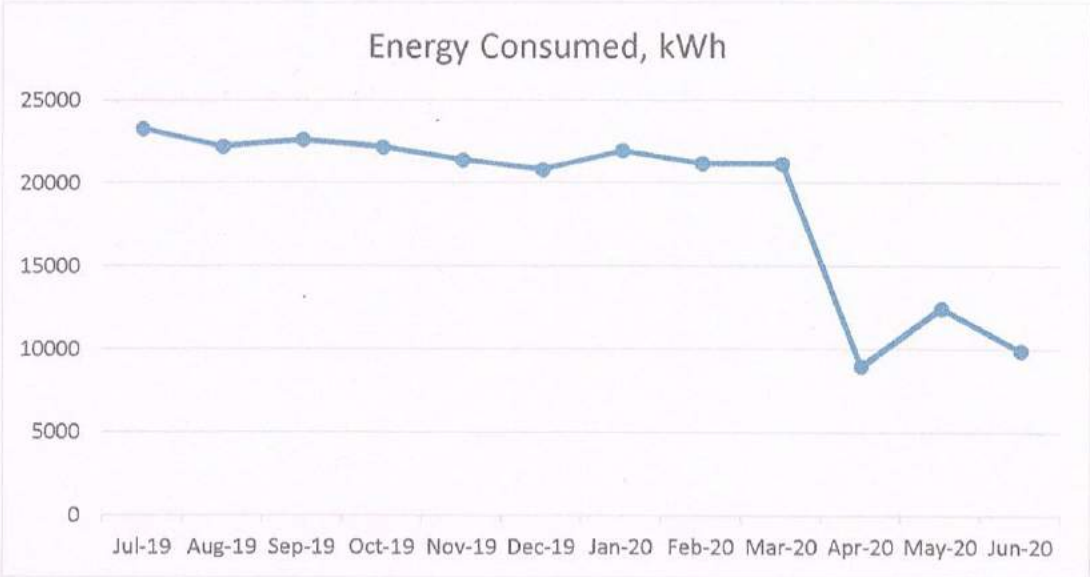
CHAPTER-III
STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No 4: Electrical Bill Analysis- 2019-20:

No	Month	Energy Consumed, kWh
1	Jul-19	23270
2	Aug-19	22200
3	Sep-19	22600
4	Oct-19	22152.9
5	Nov-19	21393.6
6	Dec-19	20816.7
7	Jan-20	21947
8	Feb-20	21183.4
9	Mar-20	21153.4
10	Apr-20	8964.7
11	May-20	12456
12	Jun-20	9879.6
13	Total	228017
14	Maximum	23270
15	Minimum	8965
16	Average	19001

To study the variation of Monthly Energy Consumption, kWh: Chart No 2:



Key Inference drawn:

From the above analysis, we present following important parameters:

Table No 5: Various Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh
1	Total	228017
2	Maximum	23270
3	Minimum	8965
4	Average	19001

CHAPTER-IV
CARBON FOOTPRINTING

4.1 A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities. The College uses Electrical Energy for various Electrical gadgets.

4.2 Basis for computation of CO_2 Emissions:

- 1 Unit (kWh) of Electrical Energy releases **0.8 Kg of CO_2** into atmosphere

4.3 Table No 6: Month wise CO_2 Emissions:

No	Month	Energy Consumed, kWh	CO2 Emissions, MT
1	Jul-19	23270	18.62
2	Aug-19	22200	17.76
3	Sep-19	22600	18.08
4	Oct-19	22152.9	17.72
5	Nov-19	21393.6	17.11
6	Dec-19	20816.7	16.65
7	Jan-20	21947	17.56
8	Feb-20	21183.4	16.95
9	Mar-20	21153.4	16.92
10	Apr-20	8964.7	7.17
11	May-20	12456	9.96
12	Jun-20	9879.6	7.90
13	Total	228017	182.41
14	Maximum	23270	18.62
15	Minimum	8965	7.17
16	Average	19001	15.20

Representation of Month wise CO_2 Emissions: Chart No 3:

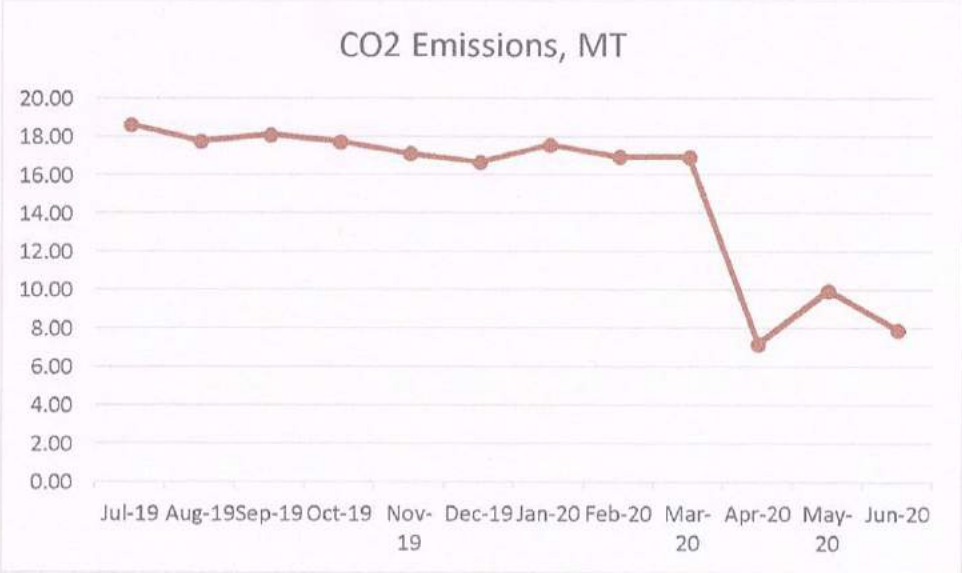


Table No 7: Various Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	228017	182.41
2	Maximum	23270	18.62
3	Minimum	8965	7.17
4	Average	19001	15.20

CHAPTER-V
STUDY OF USAGE OF ALTERNATE ENERGY

The College has total three Hostel Blocks, namely: Purandar & Shivneri for Boys and Chandrabhaga for Girls. In the following Table we present the Installed Capacity of Solar Thermal System.

Table No 8: Details of Solar Thermal Water Heating System installed:

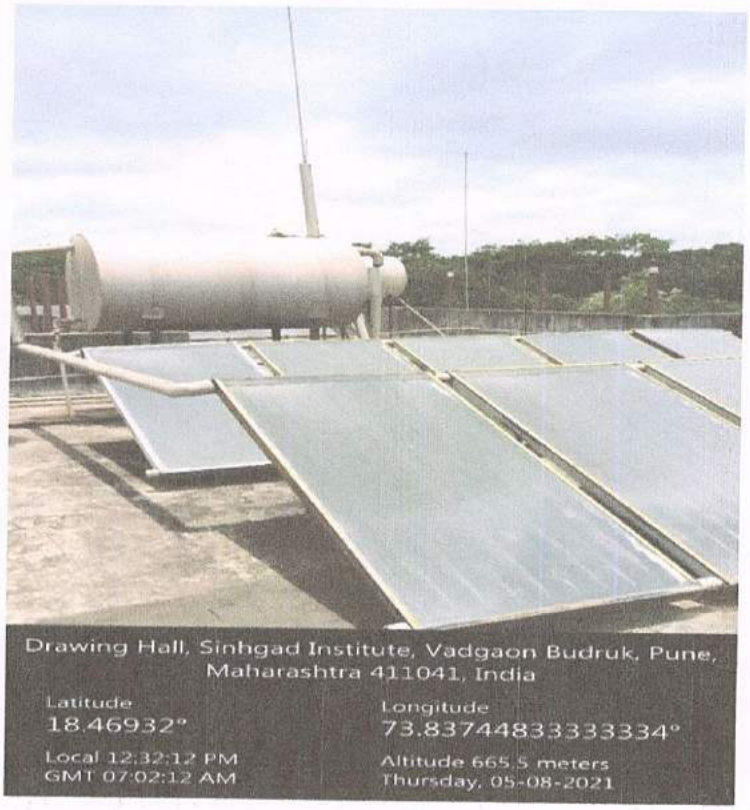
No	Hostel Name	Installed Solar Thermal Water Heater System Capacity in LPD
A)	**Boy's Hostel Block**	
1	Purandar	14000
2	Shivneri	12000
B)	**Girl's Hostel Block**	
1	Chandrabhaga	8000
	TOTAL CAPACITY	**34000**

In the following Table, we present the percentage of usage of Renewable Energy to Annual Power requirement.

Table No 9: Computation of Usage of Alternate Energy to Annual Power requirement:

No	Particulars	Value	Unit
1	Annual Energy Purchased from MSEDCL	**228017**	kWh
2	Total Solar Thermal Capacity	34000	LPD
3	Electrical Energy Saved by 100 LPD System/Annum	1500	kWh
4	Electrical Energy Saved by 100 LPD System/Day	4	kWh
5	Electrical Energy Saved by 34000 LPD System/Day	1360	kWh
6	Approximate Usage Period in the Year:2019-20	135	Days
7	Capacity Utilization Factor	0.8	
8	Electrical Energy Saved in 2020-21 =(4) * (5) * (6)	**146880**	kWh
9	Total Electrical Demand of College= **(1) + (8)**	**374897**	kWh
10	% of Usage of Alternate Energy = **(9)*100/(7)**	**39.18**	%

Photograph of Solar Thermal Water Heating System:



CHAPTER VI
STUDY OF USAGE OF LED LIGHTS

In the following Table, we present the percentage of annual Lighting load met by LED lights.
Table No 10 : Computation of % of Annual LED Lighting Load:

No	Particulars	Value	Unit
1	No of 51 W FTL Tubes	503	Nos
2	Electrical Load of 51 W FTL Tube	51	W/Unit
3	Total Load of 51 W FTL Tubes	**25.65**	kW
4	No of 40 W FTL Tubes	342	Nos
5	Electrical Load of 51 W FTL Tube	40	W/Unit
6	Total Load of 40 W FTL Tubes	**13.68**	kW
7	No of 20 W LED Tubes	44	Nos
8	Electrical Load of 20 W LED Tube	20	W/Unit
9	Total Load of 20 W LED Tubes	**0.88**	kW
10	Total Lighting Load = **3+6+9**	**40.213**	kW
11	Total LED Lighting Load = **9**	**1.08**	kW
12	Average Daily Operating Hours	**5**	Nos
13	Annual Working Days	**135**	Nos
14	Annual Total Lighting Load = **10*12*13**	**27144**	kWh
15	Annual LED Lighting Load = **11*12*13**	**594**	kWh
16	% of LED Lighting to Annual Lighting Load = **15*100/14**	**2.19**	%

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Year: 2019-20

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MAHARASHTRA ENERGY DEVELOPMENT AGENCY

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Ph No: 020-26614393/266144403
Email: eec@mahaurja.com, Web: www.mahaurja.com

ECN/2018-19/CR-05/4174 — 19th September , 2018

CERTIFICATE OF REGISTRATION
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Registration Number	:	***MEDA/ECN/CR-05/2018-19/EA-03***

- 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 the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **31st March 2021** 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.

19/9/18

(Smita Kudarikar)
General Manager (EC)

ENRICH CONSULTANTS Pune

Enrich Consultants

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

Ref: EC/SKNCOE/19-20/03 Date: 15/9/2020

CERTIFICATE

This is to certify that we have conducted Environmental Audit at Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, S. No. 44/1, Vadgaon (Bk.), Pune 411 041 in the year 2019-20.

The College has already adopted **Environment Friendly** practices like:

- Usage of Energy Efficient LED Fittings
- Installation of Roof Top **34000 LPD Solar Thermal** Water Heating System
- Installation of **275 KLPD** Sewage Treatment Plant
- Segregation of Waste at source
- Installation of Rain Water Harvesting Project
- Tree Plantation by making use of the NSS platform

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

For Enrich Consultants,

A Y Mehendale,
Certified Energy Auditor
EA-8192

ENRICH CONSULTANTS * Pune *

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ACKNOWLEDGEMENT

We at Enrich Consultants, Pune, express our sincere gratitude to the management of Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.), Pune, for awarding us the assignment of Environmental Audit of their Vadgaon Campus for the Year: 2019-20

We are thankful to:

- Dr. A. V. Deshpande, Principal
- Mrs. K. S. Borgave, Registrar
- Dr. Sanket Charkha, Assistant Professor

We are also thankful to various Head of Departments & other Staff members for helping us during the field study.

EXECUTIVE SUMMARY

After the Field measurements & analysis, we present herewith important observations made during the assignment of Environmental Audit.

1. STES's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.) Pune consumes Energy in the form of **Electrical Energy** used for various gadgets, Office & other facilities.

2. Various Pollution caused due to College Activities:

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

3. Present Energy Consumption & CO_2 Emission:

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	228017	182.41
2	Maximum	23270	18.62
3	Minimum	8965	7.17
4	Average	19001	15.20

4. Usage of Renewable Energy & CO_2 Emission Reduction:

The College has installed Roof Top **34000 LPD Solar Thermal Water Heating System** at the Hostel Blocks. On account of Usage of the Solar Heating System, the College has saved Electrical Energy of **146880 kWh** in the Year: 2019-20.

Due to installation of Solar PV Plant the annual Reduction in CO_2 Emissions is **117.50 MT**

5. Waste Management:

5.1 Solid Waste Management:

The Dry and Wet waste is segregated at the source and are handed over to Authorized Agency for further disposal/recycling.

5.2 Liquid Waste Management:

The College has installed Sewage Treatment Plant of Capacity **275 KLPD**. The treated Water is used for Gardening purpose.

5.3 E-Waste Management:

All the internal communication is through emails and hardly any E-Waste is generated in the Day to Day operation of the College. Any E Waste generated is handed over to Authorized Agency for further disposal.

6. Rain Water Harvesting:

The College has already installed **Rainwater Harvesting System** to collect the Rain Water collected at the Terrace. The Rain water collected is used to increase the underground Water level.

7. Eco Friendly Initiatives:

- **Tree Plantation:** The College took an initiative of Tree Plantation on the occasion of Mahatma Gandhi Jayanti & Republic Day.
- **Cleanliness Drive:** It was conducted in the College campus
- **Rain Water Harvesting Drive:** It was conducted in the College campus

8. Notes & assumptions:

1. **1 Unit** of Electrical Energy releases **0.8 Kg of CO_2** into atmosphere
2. **100 LPD** Solar Thermal System is equivalent to **1500 kWh** of Electrical Energy in a year.
3. Daily working hours-5 **Nos** (For Lighting Calculations)
4. Annual working Days-**135 Nos**

9. References:

1. For Electrical Energy Saved by Solar Thermal: www.mahaurja.com

ABBREVIATIONS

STES	:	Sinhgad Technical Education Society
LED	:	Light Emitting Diode
kWh	:	kilo-Watt Hour
MT	:	Metric Ton
CO_2	:	Carbon Di Oxide
MEDA	:	Maharashtra Energy Development Agency
LPD	:	Liters Per Day
NSS	:	National Service Scheme

CHAPTER-I
INTRODUCTION

1.1 Important Definitions:

1.1.1 Environment: Definition as per environment Protection Act: 1986

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

1.1.2. Environmental Audit: Definition:

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

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

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

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

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

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

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

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

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

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

1.2 Objectives:

1. To study present level of Energy Consumption
2. To Study the present CO_2 emissions
3. To Study Usage of Renewable Energy
4. To Study Waste Management Practices
5. To Study Rain Water Harvesting
6. To study Innovative Initiatives

1.3 Table No 4: General Details of College:

No	Head	Particulars
1	Name of Institution	STES's Smt. Kashibai Navale College of Engineering
2	Address	S. No. 44/1, Vadgaon (Bk.), Pune 411 041
3	Affiliation	Savitribai Phule Pune University

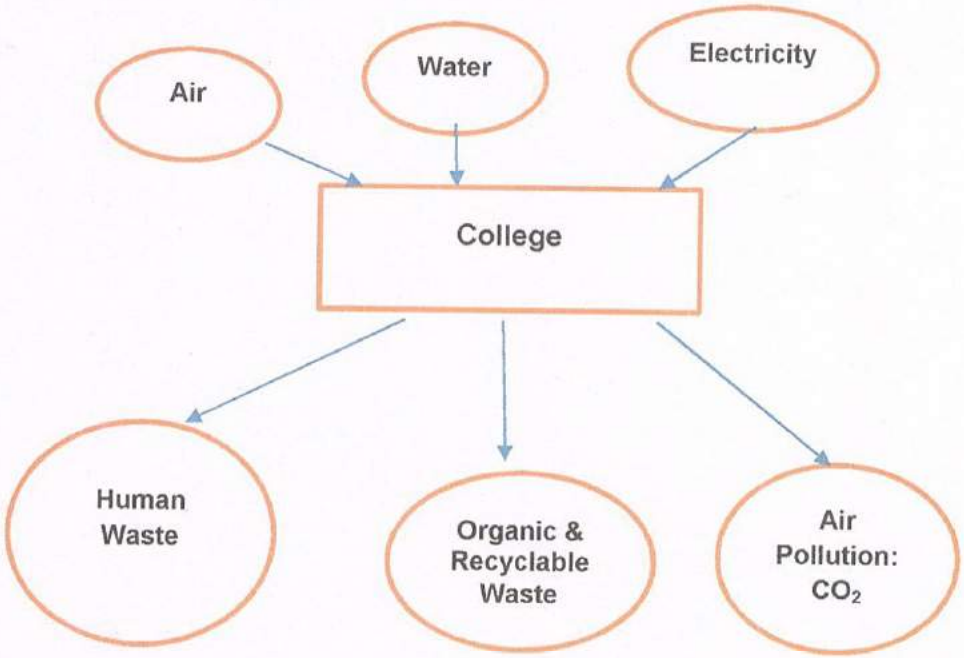
CHAPTER-II
STUDY OF CONSUMPTION OF VARIOUS RESOURCES

2.1 The Institute consumes following Natural/derived Resources:

1. Air
2. Water
3. Electrical Energy
4. Liquefied Petroleum Gas

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

Chart No: 1: Representation of College as System:



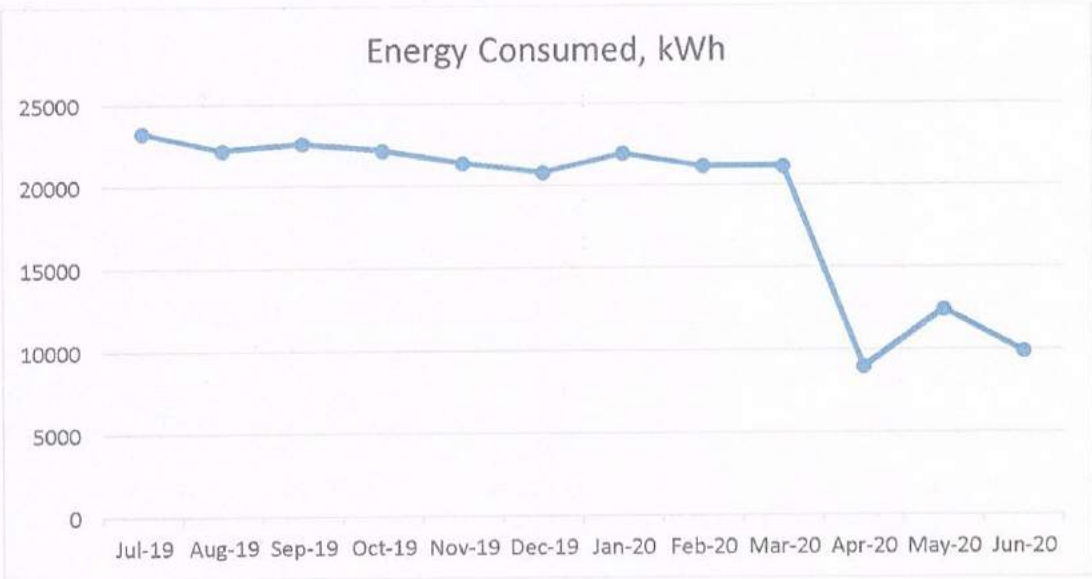
We compute the Generation of CO_2 on account of consumption of Electrical Energy as under.

Table No 5: Electrical Bill Analysis- 2019-20:

No	Month	Energy Consumed, kWh
1	Jul-19	23270
2	Aug-19	22200
3	Sep-19	22600
4	Oct-19	22152.9
5	Nov-19	21393.6
6	Dec-19	20816.7

7	Jan-20	21947
8	Feb-20	21183.4
9	Mar-20	21153.4
10	Apr-20	8964.7
11	May-20	12456
12	Jun-20	9879.6
13	Total	228017
14	Maximum	23270
15	Minimum	8965
16	Average	19001

To study the variation of Monthly Energy Consumption, kWh: Chart No 2:



Key Inference drawn:

From the above analysis, we present following important parameters:

Table No 6: Various Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh
1	Total	228017
2	Maximum	23270
3	Minimum	8965
4	Average	19001

CHAPTER III
STUDY OF CO_2 EMISSION

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities. The College uses Electrical Energy for various Electrical gadgets.

Basis for computation of CO_2 Emissions:

- 1 Unit (kWh) of Electrical Energy releases **0.8 Kg of CO_2** into atmosphere

Table No 7: Month wise CO_2 Emissions:

No	Month	Energy Consumed, kWh	CO2 Emissions, MT
1	Jul-19	23270	18.62
2	Aug-19	22200	17.76
3	Sep-19	22600	18.08
4	Oct-19	22152.9	17.72
5	Nov-19	21393.6	17.11
6	Dec-19	20816.7	16.65
7	Jan-20	21947	17.56
8	Feb-20	21183.4	16.95
9	Mar-20	21153.4	16.92
10	Apr-20	8964.7	7.17
11	May-20	12456	9.96
12	Jun-20	9879.6	7.90
13	Total	228017	182.41
14	Maximum	23270	18.62
15	Minimum	8965	7.17
16	Average	19001	15.20

Representation of Month wise CO_2 Emissions: Chart No 3:

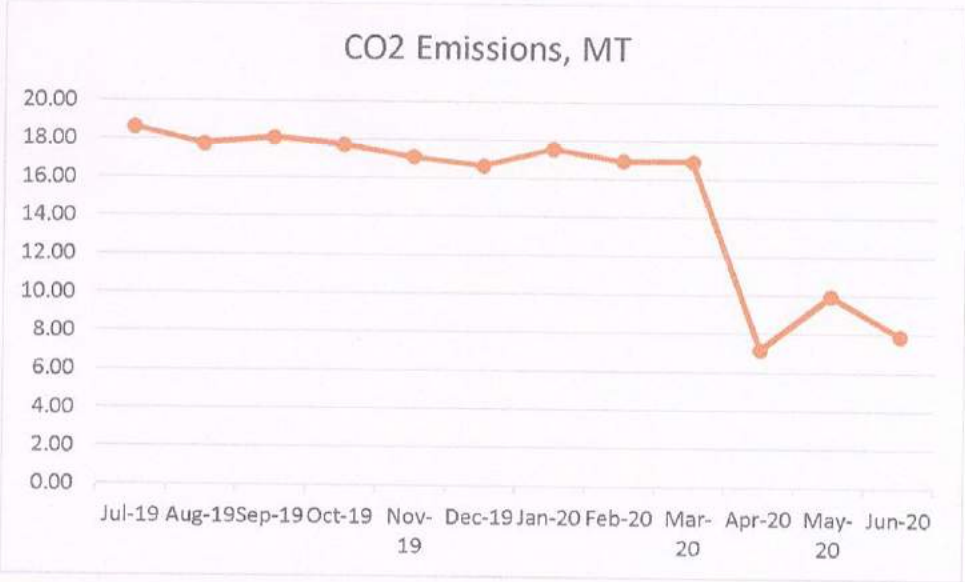


Table No 8: Various Important Parameters:

No	Parameter/ Value	Energy consumed, kWh	CO2 Emissions, MT
1	Total	228017	182.41
2	Maximum	23270	18.62
3	Minimum	8965	7.17
4	Average	19001	15.20

CHAPTER IV
STUDY OF CO_2 EMISSION REDUCTION

The College has total three Hostel Blocks, namely: Purandar & Shivneri for Boys and Chandrabhaga for Girls. In the following Table we present the Installed Capacity of Solar Thermal System.

Table No 9: Details of Solar Thermal Water Heating System installed:

No	Hostel Name	Installed Solar Thermal Water Heating Capacity in LPD
A)	**Boy's Hostel Block**	
1	Purandar	14000
2	Shivneri	12000
B)	**Girl's Hostel Block**	
1	Chandrabhaga	8000
	TOTAL CAPACITY	**34000**

As per **MEDA** Guidelines, **100 LPD** Solar Thermal Water Heating System, saves **1500 kWh** of Electricity Energy per Annum. The College has installed: **34000 LPD** Solar Thermal Water Heating System.

In the following Table, we present the amount of Reduction in CO_2 Emissions, due to installation of the Solar Water Heater.

Table No 10: Computation of Reduction in CO_2 Emission due to Solar Water Heater:

No	Particulars	Value	Unit
1	Total Solar Thermal Water Heating Capacity	**228017**	LPD
2	Electrical Energy Saved by 100 LPD System/Annum	1500	kWh
3	Electrical Energy Saved by 100 LPD System/Day	4	kWh
4	Electrical Energy Saved by 34000 LPD System/Day	1360	kWh
5	Approximate Usage Period in the Year:2020-21	135	Days
6	Capacity Utilization Factor	0.8	
7	Electrical Energy Saved in 2020-21 =(4) * (5) * (6)	146880	kWh
8	1 kWh of Electrical Energy is equal to	0.8	Kg of CO_2
9	**Reduction in CO_2 Emissions = (7) * (8) / 1000**	**117.50**	**MT**

CHAPTER V
STUDY OF WASTE MANAGEMENT

5.1 Solid Waste Management: The Dry recyclable Waste & Wet Waste are collected on daily basis, and further given to Authorized Waste Collector for further disposal/Recycling.

Photograph of Garbage Segregation Shed:

5.2 Liquid Waste Management: The College has installed a **275 KLPD** Capacity Sewage Treatment Plant. The treated Water is used for Gardening purpose..

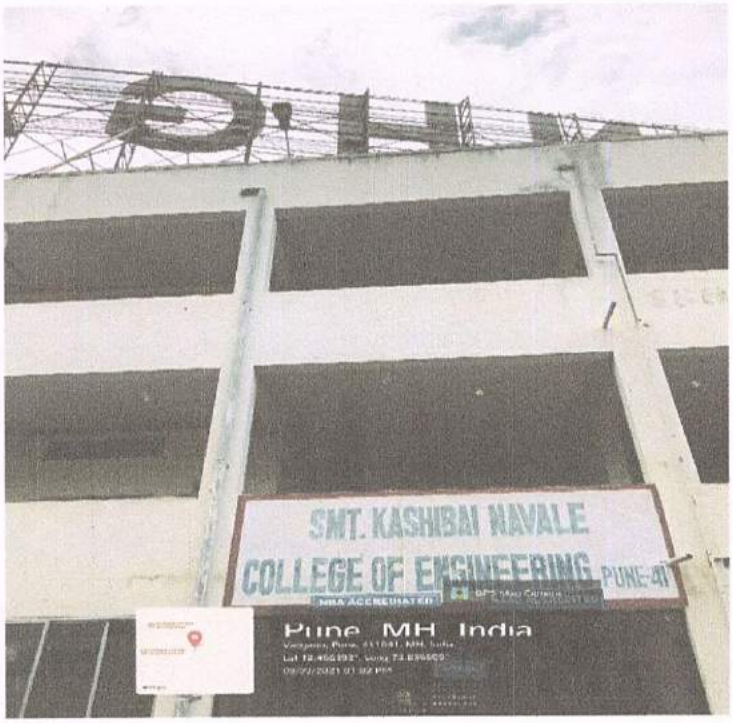
Photograph of Sewage Treatment Plant:

5.3 E-Waste Management: All the internal communication is through emails and hardly any e-Waste is generated in the Day to Day operation of the College. Any Waste generated is handed over to Authorized Agent for further disposal.

CHAPTER VI
RAIN WATER HARVESTING

The College has already installed Rain Water Harvesting Project. The water is used to enrich the underground water level.

Photograph of Rain Water Harvesting Pipe from Terrace:



CHAPTER VII
STUDY OF ECO FRIENDLY INITIATIVES

7.1 Tree Plantation Drive:
The College took an initiative of Tree Plantation activities using NSS medium.
Photograph of Tree Plantation at Taljai:

7.2 Cleanliness Drive: It was arranged in the College Campus.

Photograph of Cleanliness Drive:

7.3 Rain Water Harvesting Activity:

It was conducted in the College campus.

Photograph of Rain Water harvesting Work:

GREEN AUDIT REPORT

of

Sinhgad Technical Education Society's

SMT. KASHIBAI NAVALE COLLEGE OF ENGINEERING,

S. 44/1, Vadgaon (Bk.), Pune 411 041

Sinhgad Institutes

Year: 2018-19

Prepared by

Enrich Consultants,

Yashashree, 26, Nirmal Bag Society

Near Muktangan English School, Parvati, Pune 411009

Phone: 09890444795, Email: enrichcons@gmail.com

ENRICH CONSULTANTS Pune

Maharashtra Energy Development Agency
(A Government of Maharashtra undertaking)
2nd Floor, MHADA Commercial Complex, Opp. Tridal Nagar, Yerwada, Pune 411 006,
Ph No: 020-26614393/266144403
Email: cee@mahaurja.com, Web: www.mahaurja.com

ECN/2018-19/CR-05/4174

19th September , 2018

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	:	**Enrich Consultants** Yashashree, Plot No. 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune - 411009.
Registration Category	:	Empanelled *Consultant for Energy Conservation Programme*
Registration Number	:	***MEDA/ECN/CR-05/2018-19/EA-03***

- 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.
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19/9/18

(Smita Kudarikar)
General Manager (EC)

ENRICH CONSULTANTS PUNE

Enrich Consultants

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

Ref: EC/SKNCOE/18-19/02 Date: 30/8/2019

CERTIFICATE

This is to certify that we have conducted Green Audit at Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, S. No. 44/1, Vadgaon (Bk.), Pune 411 041 in the year 2018-19.

The College has already adopted **Green** practices like:

- Usage of Energy Efficient LED Fittings
- Installation of Roof Top **34000 LPD Solar Thermal** Water Heating System
- Installation of **275 KLPD** Sewage Treatment Plant
- Segregation of Waste at source
- Installation of Rain Water Harvesting Project
- Tree Plantation in the campus
- Maintenance of good internal roads in the campus

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

For Enrich Consultants,

A Y Mehendale,
Certified Energy Auditor
EA-8192

ENRICH CONSULTANTS Pune

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4	Study of Usage of Renewable Energy	14
5	Study of Waste Management	15
6	Study of Rain Water Harvesting	16
7	Study of Green Practices	17
8	Study of Innovative & sustainable Initiatives	18

ACKNOWLEDGEMENT

We at Enrich Consultants, Pune, express our sincere gratitude to the management of Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.), Pune, for awarding us the assignment of Green Audit of their Vadgaon Campus for the Year: 2018-19.

We are thankful to:

- Dr. A. V. Deshpande, Principal
- Mrs. K. S. Borgave, Registrar
- Dr. Sanket Charkha, Assistant Professor

We are also thankful to various Head of Departments & other Staff members for helping us during the field study.

EXECUTIVE SUMMARY

After the Field measurements & analysis, we present herewith important observations made during the assignment of Green Audit.

1. STES's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.) Pune consumes Energy in the form of **Electrical Energy** used for various gadgets, Office & other facilities.

2. Present Energy Consumption & CO_2 Emission:

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	265003	212.00
2	Maximum	27596	22.08
3	Minimum	12701	10.16
4	Average	22083.5	17.67

3. Various measures adopted for Energy Conservation:

The various projects already implemented by the College are

- Usage of LED Lights
- Installation of **34000 LPD** Solar Thermal Water Heating System

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

The College has installed Roof Top **34000 LPD Solar Thermal Water Heating System** at the Hostel Blocks. The Equivalent Electrical Energy Saved due to usage of Solar Thermal Water Heating System is **122400 kWh**, in the Year: 2018-19.

Due to installation of Solar Water Heating System, the **Annual Reduction in CO_2 Emissions** is **97.92 MT.**

5. Waste Management:

5.1 Solid Waste Management: The Dry and Wet waste is segregated at the source and is handed over to Authorized Agency for further disposal/recycling.

5.2 Liquid Waste Management: The College has installed **275 KLPD** Sewage Treatment Plant. The treated Water is used for Gardening purpose.

5.3 E-Waste Management: All the internal communication is through emails and hardly any E-Waste is generated in the Day to Day operation of the College. Any E Waste generated is handed over to Authorized Agency for further disposal.

6. Rain Water Harvesting: The College has already installed **Rainwater Harvesting System** to collect the Rain Water collected at the Terrace. The Rain water collected is used to increase the underground Water level.

7. Green Practices:

- **Good Internal Roads:** The internal roads are good for easy movement of pedestrians
- **Internal Garden:** The College has a well maintained garden with various medicinal plants.

8. Innovative & Sustainable Initiatives:

- **Provision of Ramp:** The College has a ramp, for easy movement of physically disabled students.
- **Cleanliness Drive:** The College took an initiative of Cleanliness Drive in the College campus.
- **Making of Continuous Contour Trenches:** These were made in the adopted Guhini Village in Pune District, under the NSS platform.

9. Notes & Assumptions:

1. 1 Unit of Electrical Energy releases 0.8 Kg of CO_2 into atmosphere
2. Daily working hours-6 Nos (For Lighting Calculations)
3. Annual working Days-180 Nos

10. References:

- For Energy Saved by Solar Thermal Water Heating System: www.mahaurja.com

ABBREVIATIONS

STES	:	Sinhgad Technical Education Society
LED	:	Light Emitting Diode
kWh	:	kilo-Watt Hour
MT	:	Metric Ton
CO_2	:	Carbon Di Oxide
LPD	:	Liters Per Day
NSS	:	National Service Scheme
MEDA	:	Maharashtra Energy Development Agency

CHAPTER-I
INTRODUCTION

1.1 Objectives:

1. To study present level of Energy Consumption
2. To Study the present CO_2 emissions
3. To Study Usage of Renewable Energy
4. To Study Waste Management Practices
5. To Study Rain Water Harvesting
6. To Study Green Practices
7. To study Innovative & Sustainable Initiatives

1.2 Table No 1: General Details of College:

No	Head	Particulars
1	Name of Institution	STES's Smt. Kashibai Navale College of Engineering
2	Address	S. No. 44/1, Vadgaon (Bk.), Pune 411 041
3	Affiliation	Savitribai Phule Pune University

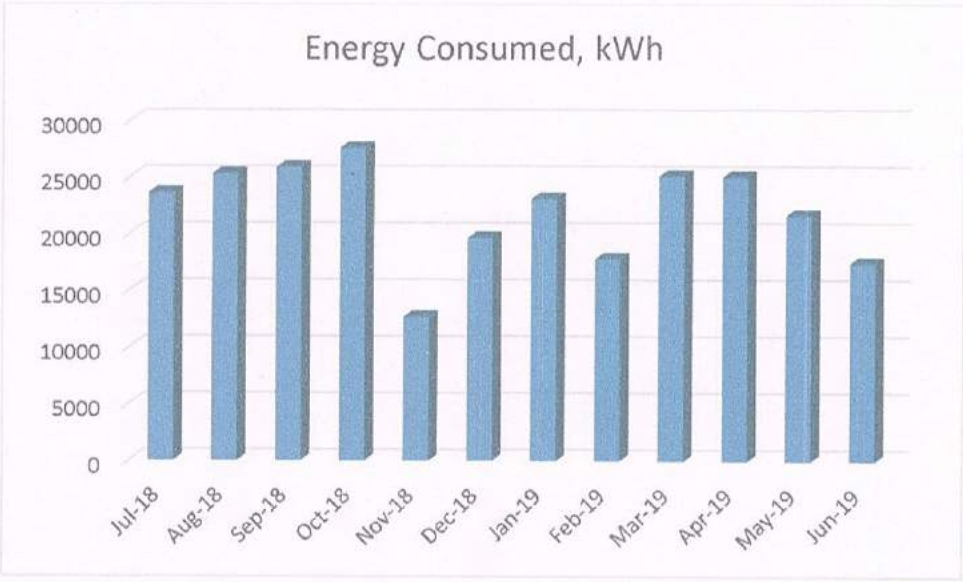
CHAPTER-II
STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No 2: Electrical Bill Analysis- 2018-19:

No	Month	Energy Consumed, kWh
1	Jul-18	23654
2	Aug-18	25303
3	Sep-18	25888
4	Oct-18	27596
5	Nov-18	12701
6	Dec-18	19651
7	Jan-19	23118
8	Feb-19	17812
9	Mar-19	25109
10	Apr-19	25061
11	May-19	21667
12	Jun-19	17443
13	Total	265003
14	Maximum	27596
15	Minimum	12701
16	Average	22083.5

To study the variation of Monthly Energy Consumption, kWh: Chart No 1:



Key Inference drawn:
From the above analysis, we present following important parameters:

Table No 3: Various Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh
1	Total	265003
2	Maximum	27596
3	Minimum	12701
4	Average	22083.5

CHAPTER III
CARBON FOOTPRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities. The College uses Electrical Energy for various Electrical gadgets.

Basis for computation of CO_2 Emissions:

- 1 Unit (kWh) of Electrical Energy releases **0.8 Kg of CO_2** into atmosphere

Table No 4: Month wise CO_2 Emissions:

No	Month	Energy Consumed, kWh	CO2 Emissions, MT
1	Jul-18	23654	18.92
2	Aug-18	25303	20.24
3	Sep-18	25888	20.71
4	Oct-18	27596	22.08
5	Nov-18	12701	10.16
6	Dec-18	19651	15.72
7	Jan-19	23118	18.49
8	Feb-19	17812	14.25
9	Mar-19	25109	20.09
10	Apr-19	25061	20.05
11	May-19	21667	17.33
12	Jun-19	17443	13.95
13	Total	265003	212.00
14	Maximum	27596	22.08
15	Minimum	12701	10.16
16	Average	22083.5	17.67

Representation of Month wise CO_2 Emissions: Chart No 2:

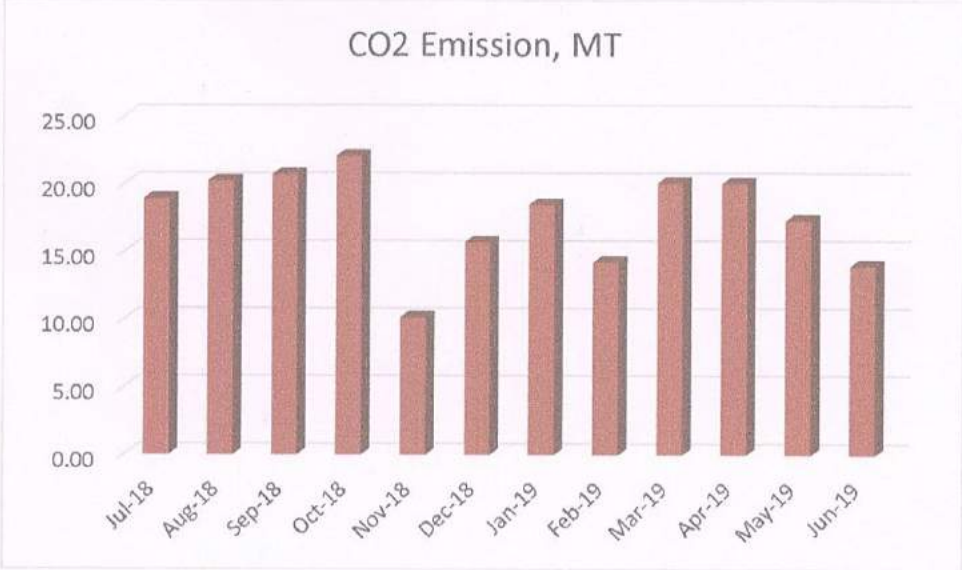


Table No 5: Various Important Parameters:

No	Parameter/ Value	Energy consumed, kWh	CO2 Emissions, MT
1	Total	265003	212.00
2	Maximum	27596	22.08
3	Minimum	12701	10.16
4	Average	22083.5	17.67

CHAPTER IV
STUDY OF USAGE OF RENEWABLE ENERGY

The College has total three Hostel Blocks, namely: Purandar & Shivneri for Boys and Chandrabhaga for Girls. In the following Table we present the Installed Capacity of Solar Thermal System.

Table No 6: Details of Solar Thermal Water Heating System installed:

No	Hostel Name	Installed Solar Thermal Water Heater System Capacity in LPD
A)	**Boy's Hostel Block**	
1	Purandar	14000
2	Shivneri	12000
B)	**Girl's Hostel Block**	
1	Chandrabhaga	8000
	TOTAL CAPACITY	**34000**

As per **MEDA** Guidelines, **100 LPD** Solar Thermal Water Heating System, saves **1500 kWh** of Electricity Energy per Annum. The College has installed: **34000 LPD** Solar Thermal Water Heating System.

In the following Table, we present the amount of Reduction in CO_2 Emissions, due to installation of the Solar Water Heater.

Table No 7: Computation of Reduction in CO_2 Emissions due to Solar Water Heater:

No	Particulars	Value	Unit
1	Total Solar Thermal Water Heating Capacity	34000	LPD
2	Electrical Energy Saved by 100 LPD System/Annum	1500	kWh
3	Electrical Energy Saved by 100 LPD System/Day	4	kWh
4	Electrical Energy Saved by 34000 LPD System/Day	1360	kWh
5	Approximate Usage Period in the Year:2020-21	180	Days
6	Capacity Utilization Factor	0.8	
7	Electrical Energy Saved in 2020-21 =(4) * (5) * (6)	195400	kWh
8	1 kWh of Electrical Energy is equal to	0.8	Kg of CO_2
9	**Reduction in CO_2 Emissions = (7) * (8) / 1000**	**156.67**	**MT**

CHAPTER V
STUDY OF WASTE MANAGEMENT

5.1 Solid Waste Management: The Dry recyclable Waste & Wet Waste are collected on daily basis, and further given to Authorized Waste Collector for further disposal/Recycling.

Photograph of Garbage Segregation Shed:

5.2 Liquid Waste Management: The College has installed a **275 KLPD** Capacity Sewage Treatment Plant, to handle the human waste generated in the College.

Photograph of Sewage Treatment Plant:

5.3 E-Waste Management:

All the internal communication is through emails and hardly any e-Waste is generated in the Day to Day operation of the College. Any E Waste generated is handed over to Authorized Agency for further disposal.

CHAPTER VI
RAIN WATER HARVESTING

The College has already installed Rain Water Harvesting Project. The water is used to enrich the underground water level.

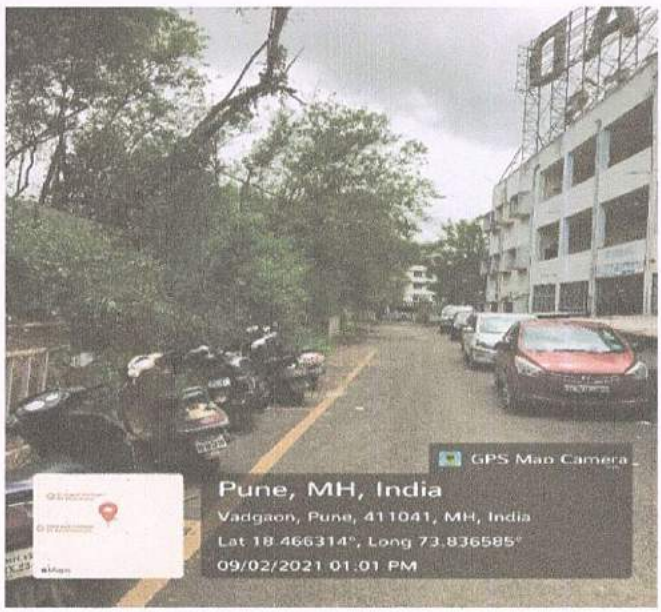
Photograph of Rain Water Harvesting Pipe from Terrace:

CHAPTER VII
STUDY OF GREEN PRACTICES

7.1 Pedestrian Friendly Roads:

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

Photograph of Internal Road inside the College Campus:



7.2 Green Landscaping with Trees and Plants:

The College has maintained plantation in the campus.

Photograph of Garden in the College campus:

CHAPTER VIII
STUY OF INNOVATIVE & SUSTAINABLE INITIATIVES

8.1 Provision of Ramp:

The College has made a provision of Ramp, for easy movement of Physically Handicapped students.

Photograph of Ramp:

8.2 Cleanliness Drive:

Cleanliness Drive was organized in the campus.

Photograph of Cleanliness Drive:

8.3 Making of Continuous contour Trenches:

Continuous Contour Trenches were created in the adopted Guhini Village in Pune District.

Photograph of Continuous Contour Trenches:

ENRICH CONSULTANTS * Pune *

ENERGY AUDIT REPORT

of

Sinhgad Technical Education Society's
SMT. KASHIBAI NAVALE COLLEGE OF ENGINEERING,
S. 44/1, Vadgaon (Bk.), Pune 411 041

Sinhgad Institutes

Year: 2018-19

Prepared by

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

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

Maharashtra Energy Development Agency
(A Government of Maharashtra undertaking)
2nd Floor, MHADA Commercial Complex, Opp. Tridal Nagar, Yerwada, Pune 411 006,
Ph No: 020-26614393/266144403
Email: eee@mahaurja.com, Web: www.mahaurja.com

ECN/2018-19/CR-05/4174 19th September , 2018

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	:	**Enrich Consultants** Yashashree, Plot No. 26, Nirmal Bag Society, Near Muktangan English School, Parvati, Pune - 411009.
Registration Category	:	Empanelled *Consultant for Energy Conservation Programme*
Registration Number	:	***MEDA/ECN/CR-05/2018-19/EA-03***

- 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 the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.
- This empanelment is valid till **31st March 2021** 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.

19/9/18
(Smita Kudarikar)
General Manager (EC)

ENRICH CONSULTANTS Pune

Enrich Consultants

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

Ref: EC/SKNCOE/18-19/01

Date: 30/8/2019

CERTIFICATE

This is to certify that we have conducted Energy Audit at Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, S. No. 44/1, Vadgaon (Bk.), Pune 411 041 in the year 2018-19.

The College has already adopted **Energy Efficient** Practices like:

- Usage of Energy Efficient LED Fittings
- Installation of **34000 LPD** Solar Thermal Water Heating System at Hostel blocks.
- Usage of BEE STAR Rated Equipment
- Maximum Usage of Day Lighting

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

For Enrich Consultants,

A Y Mehendale,
Certified Energy Auditor
EA-8192

ENRICH CONSULTANTS Pune

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ACKNOWLEDGEMENT

We at Enrich Consultants, Pune, express our sincere gratitude to the management of Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.), Pune, for awarding us the assignment of Energy Audit of their Vadgaon (Bk.) Campus for the Year: 2018-19.

We are thankful to:

- Dr. A. V. Deshpande, Principal
- Mrs. K. S. Borgave, Registrar
- Dr. Sanket Charkha, Assistant Professor

We are also thankful to various Head of Departments & other staff members for helping us during the field study.

EXECUTIVE SUMMARY

After the Field Study & Analysis, we present herewith important observations made during the assignment of Energy Audit.

1. STES's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.) Pune consumes Energy in the form of **Electrical Energy** used for various gadgets, Office & other facilities.

2. Present Energy Consumption:

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	265003	212.00
2	Maximum	27596	22.08
3	Minimum	12701	10.16
4	Average	22083.5	17.67

3. Various measures adopted for Energy Conservation:

The various projects already implemented by the College are

- Usage of LED Lights
- Installation of **34000 LPD** Solar Thermal Water Heating System.

4. Usage of Alternate Energy Source:

The College has installed **34000 LPD** Solar Thermal Water Heating System at the Hostel Blocks. The Equivalent Electrical Energy Saved by the Solar Thermal Water Heating System is **195840 kWh** in the Year: 2018-19.

The percentage of usage of Alternate Energy to Annual Energy requirement is **42.50 %**.

5. Percentage of Lighting Power Requirements met by LED bulbs:

The annual lighting Load Demand is **36011.7 kWh**. The annual LED Lighting Load Demand is **972 kWh**. Therefore the percentage of usage of LED to the total annual lighting power requirement works out to be **2.70 %**

6. Notes & Assumptions:

1. **1 Unit** of Electrical Energy releases **0.9 Kg of CO_2** into atmosphere
2. Daily working hours-**5 Nos** (For Lighting Calculations)
3. Annual working Days-**180 Nos**

7. Reference:

1. For Computation of Energy Saved by Solar Thermal System: www.mahaurja.com

ABBREVIATIONS

STES	:	Sinhgad Technical Education Society
AC	:	Air conditioner
FTL	:	Fluorescent Tube Light
LED	:	Light Emitting Diode
kWh	:	kilo-Watt Hour
Qty	:	Quantity
W	:	Watt
kW	:	Kilo Watt
PC	:	Personal Computer
MT	:	Metric Ton
LPD	:	Liters Per Day

CHAPTER-I
INTRODUCTION

1.1 Objectives:

1. To study the Connected Load
2. To Study present level of Energy Consumption
3. To Study the present CO_2 emissions
4. To study Scope for usage of Renewable Energy
5. To study usage of LED Lighting

1.2 Table No 1: General Details of College:

No	Head	Particulars
1	Name of Institution	STES's Smt. Kashibai Navale College of Engineering
2	Address	S. No. 44/1, Vadgaon (Bk.), Pune 411 041
3	Affiliation	Savitribai Phule Pune University

CHAPTER-II
STUDY OF CONNECTED LOAD

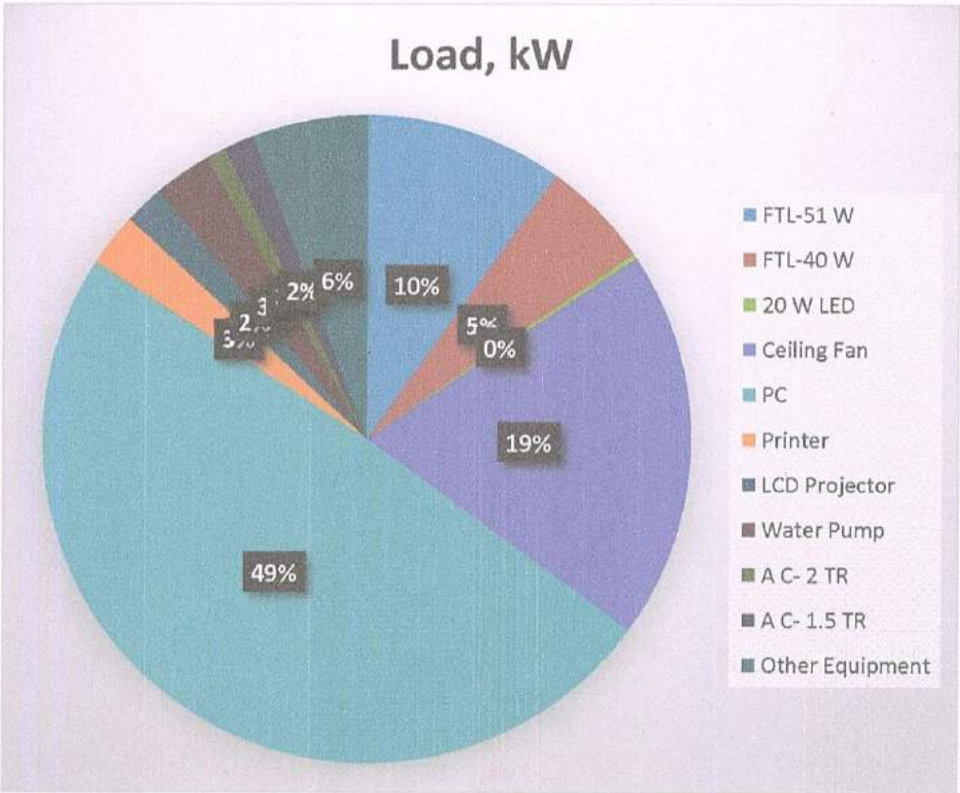
In this chapter, we present the details of various Electrical loads as under

2.1.1 Details of Overall Connected Load: Table No 2:

No	Equipment	Qty	Load, W/Unit	Load, kW
1	FTL-51 W	503	51	25.65
2	FTL-40 W	352	40	14.08
3	20 W LED	34	20	0.68
4	Ceiling Fan	702	72	50.54
5	PC	852	150	127.8
6	Printer	40	175	7
7	LCD Projector	34	150	5.1
8	Water Pump	2	3730	7.46
9	A C- 2 TR	1	2600	2.6
10	A C- 1.5 TR	2	1950	3.9
11	Other Equipment	100	150	15
12	**Total**			**260**

We present the same in a PIE Chart as under:

2.3 Chart No-1: Overall Connected Load:



CHAPTER-III

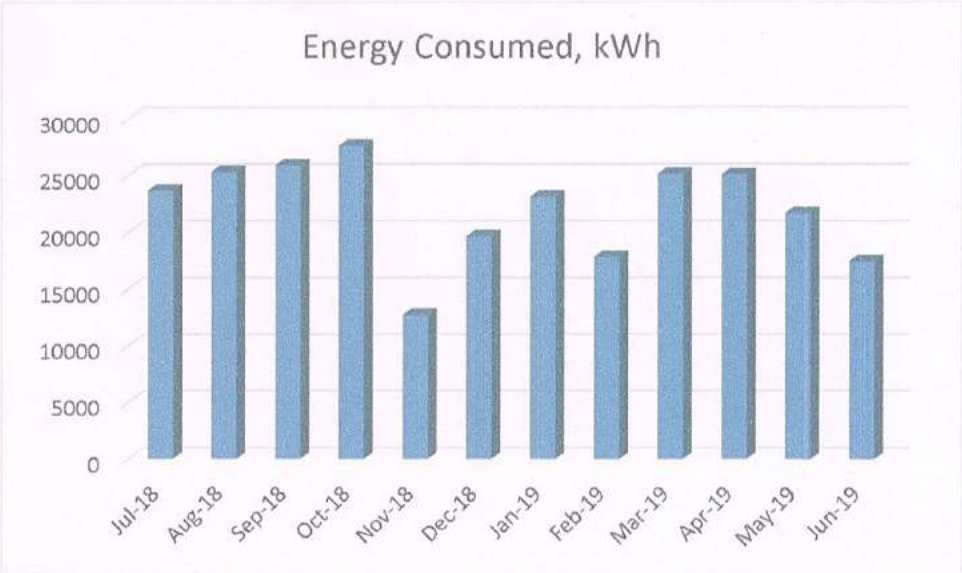
STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No 3: Electrical Bill Analysis- 2018-19:

No	Month	Energy Consumed, kWh
1	Jul-18	23654
2	Aug-18	25303
3	Sep-18	25888
4	Oct-18	27596
5	Nov-18	12701
6	Dec-18	19651
7	Jan-19	23118
8	Feb-19	17812
9	Mar-19	25109
10	Apr-19	25061
11	May-19	21667
12	Jun-19	17443
13	Total	265003
14	Maximum	27596
15	Minimum	12701
16	Average	22083.5

To study the variation of Monthly Energy Consumption, kWh: Chart No 2:



Key Inference drawn:
From the above analysis, we present following important parameters:

Table No 4: Various Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh
1	Total	265003
2	Maximum	27596
3	Minimum	12701
4	Average	22083.5

CHAPTER-IV
CARBON FOOTPRINTING

4.1 A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities. The College uses Electrical Energy for various Electrical gadgets.

4.2 Basis for computation of CO_2 Emissions:

- 1 Unit (kWh) of Electrical Energy releases **0.8 Kg of CO_2** into atmosphere

4.3 Table No 5: Month wise CO_2 Emissions:

No	Month	Energy Consumed, kWh	CO2 Emissions, MT
1	Jul-18	23654	18.92
2	Aug-18	25303	20.24
3	Sep-18	25888	20.71
4	Oct-18	27596	22.08
5	Nov-18	12701	10.16
6	Dec-18	19651	15.72
7	Jan-19	23118	18.49
8	Feb-19	17812	14.25
9	Mar-19	25109	20.09
10	Apr-19	25061	20.05
11	May-19	21667	17.33
12	Jun-19	17443	13.95
13	Total	265003	212.00
14	Maximum	27596	22.08
15	Minimum	12701	10.16
16	Average	22083.5	17.67

Representation of Month wise CO_2 Emissions: Chart No 3:

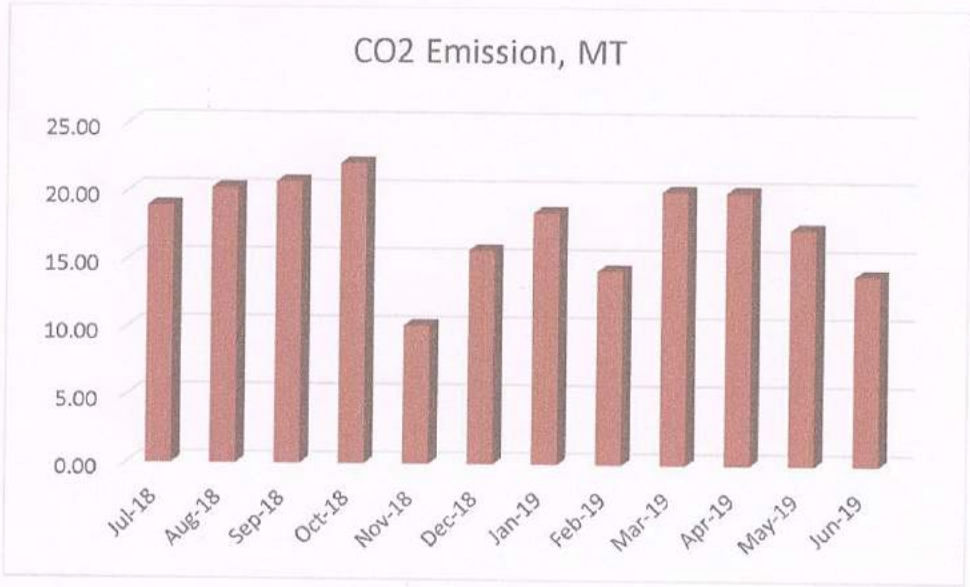


Table No 6 : Various Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	265003	212.00
2	Maximum	27596	22.08
3	Minimum	12701	10.16
4	Average	22083.5	17.67

CHAPTER-V
STUDY OF USAGE OF ALTERNATE ENERGY

The College has total three Hostel Blocks, namely: Purandar & Shivneri for Boys and Chandrabhaga for Girls. In the following Table we present the Installed Capacity of Solar Thermal System.

Table No 7: Details of Solar Thermal Water Heating System installed:

No	Hostel Name	Installed Solar Thermal Water Heater System Capacity in LPD
A)	**Boy's Hostel Block**	
1	Purandar	14000
2	Shivneri	12000
B)	**Girl's Hostel Block**	
1	Chandrabhaga	8000
	TOTAL CAPACITY	**34000**

In the following Table, we present the percentage of usage of Renewable Energy to Annual Power requirement.

Table No 8 : Computation of Usage of Alternate Energy to Annual Power requirement:

No	Particulars	Value	Unit
1	Annual Energy Purchased from MSEDCL	**265003**	kWh
2	Total Solar Thermal Capacity	34000	LPD
3	Electrical Energy Saved by 100 LPD System/Annum	1500	kWh
4	Electrical Energy Saved by 100 LPD System/Day	4	kWh
5	Electrical Energy Saved by 34000 LPD System/Day	1360	kWh
6	Approximate Usage Period in the Year:2018-19	180	Days
7	Capacity Utilization Factor	0.8	
8	Electrical Energy Saved in 2020-21 =(4) * (5) * (6)	**195840**	kWh
9	Total Electrical Demand of College= **(1) + (8)**	**460843**	kWh
10	% of Usage of Alternate Energy = **(9)*100/(7)**	**42.50**	%

Photograph of Solar Thermal Water Heating System:

CHAPTER VI
STUDY OF USAGE OF LED LIGHTS

In the following Table, we present the percentage of annual Lighting load met by LED lights.
Table No 9 : Computation of % of Annual LED Lighting Load:

No	Particulars	Value	Unit
1	No of 51 W FTL Tubes	503	Nos
2	Electrical Load of 51 W FTL Tube	51	W/Unit
3	Total Load of 51 W FTL Tubes	**25.65**	kW
4	No of 40 W FTL Tubes	352	Nos
5	Electrical Load of 51 W FTL Tube	40	W/Unit
6	Total Load of 40 W FTL Tubes	**14.08**	kW
7	No of 20 W LED Tubes	34	Nos
8	Electrical Load of 20 W LED Tube	20	W/Unit
9	Total Load of 20 W LED Tubes	**0.68**	kW
10	Total Lighting Load = **3+6+9**	40.413	kW
11	Total LED Lighting Load = **9**	0.68	kW
12	Average Daily Operating Hours	5	Nos
13	Annual Working Days	180	Nos
14	Annual Total Lighting Load = **10*12*13**	36372	kWh
15	Annual LED Lighting Load = **11*12*13**	612	kWh
16	% of LED Lighting to Annual Lighting Load = **15*100/14**	**1.68**	%

GREEN AUDIT REPORT

of

Sinhgad Technical Education Society's
SMT. KASHIBAI NAVALE COLLEGE OF ENGINEERING,
S. 44/1, Vadgaon (Bk.), Pune 411 041

Sinhgad Institutes

Year: 2017-18

Prepared by

Enrich Consultants,
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Near Muktangan English School, Parvati, Pune 411009
Phone: 09890444795, Email: enrichcons@gmail.com

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

Maharashtra Energy Development Agency
(A Government of Maharashtra undertaking)
2nd Floor, MHADA Commercial Complex, Opp. Tridal Nagar, Yerwada, Pune 411 006
Ph No: 020-26614393/266144403, Fax No: 020-26615031
Email: econ@mahaurja.com , Web: www.mahaurja.com

ECN/2017-18/CR-01/5726 30th November 2017

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 under Save Energy Programme of MEDA.

Name and Address of the firm	:	Enrich Consultants Yashashree, Plot No. 26,Nirmal Baug Society,Parvati, Pune - 411009.
Registration Category	:	Empanelled *Consultant for Save Energy Programme.*
Registration Number	:	***MEDA/ECN/CR-01/2017-18/EA-37***

- The Save Energy 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 the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.
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- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

30/11

(Smita Kudarikar)
Manager (EC)

Enrich Consultants

Yashashree, 26, Nirmal Bag Society,
Near Muktangan English School, Parvati, Pune 411 009
Tel: 020-24220747 Email: enrichcons@gmail.com

Ref: EC/SKNCOE/17-18/02

Date: 8/9/2018

CERTIFICATE

This is to certify that we have conducted Green Audit at Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, S. No. 44/1, Vadgaon (Bk.), Pune 411 041 in the year 2017-18.

The College has already adopted **Green** practices like:

- Usage of Energy Efficient LED Fittings
- Installation of Roof Top **34000 LPD Solar Thermal** Water Heating System
- Installation of **275 KLPD** Sewage Treatment Plant
- Segregation of Waste at source
- Installation of Rain Water Harvesting Project
- Tree Plantation in the campus
- Maintenance of good internal roads in the campus

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

For Enrich Consultants,

A Y Mehendale,
Certified Energy Auditor
EA-8192

ENRICH CONSULTANTS * Pune *

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6	Study of Rain Water Harvesting	16
7	Study of Green Practices	17
8	Study of Innovative & Sustainable Initiatives	18

ACKNOWLEDGEMENT

We at Enrich Consultants, Pune, express our sincere gratitude to the management of Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.), Pune, for awarding us the assignment of Green Audit of their Vadgaon Campus for the Year: 2017-18.

We are thankful to:

- Dr. A. V. Deshpande, Principal
- Mrs. K. S. Borgave, Registrar
- Dr. Sanket Charkha, Assistant Professor

We are also thankful to various Head of Departments & other Staff members for helping us during the field study.

EXECUTIVE SUMMARY

After the Field measurements & analysis, we present herewith important observations made during the assignment of Green Audit.

1. STES's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.) Pune consumes Energy in the form of **Electrical Energy** used for various gadgets, Office & other facilities.

2. Present Energy Consumption & CO_2 Emission:

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	312619	250.10
2	Maximum	31317	25.05
3	Minimum	22408	17.93
4	Average	26051.5	20.84

3. Various measures adopted for Energy Conservation:

The various projects already implemented by the College are

- Usage of LED Lights
- Installation of **34000 LPD** Solar Thermal Water Heating System

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

The College has installed Roof Top **34000 LPD Solar Thermal Water Heating System** at the Hostel Blocks. The Equivalent Electrical Energy Saved due to usage of Solar Thermal Water Heating System is **208080 kWh**, in the Year: 2017-18.

Due to installation of Solar Water Heating System, the Annual Reduction in CO_2 Emissions is **166.46 MT.**

5. Waste Management:

5.1 Solid Waste Management: The Dry and Wet waste is segregated at the source and is handed over to Authorized Agency for further disposal/recycling.

5.2 Liquid Waste Management: The College has installed **275 KLPD** Sewage Treatment Plant. The treated Water is used for Gardening purpose.

5.3 E-Waste Management: All the internal communication is through emails and hardly any E-Waste is generated in the Day to Day operation of the College. Any E Waste generated is handed over to Authorized Agency for further disposal.

6. Rain Water Harvesting: The College has already installed **Rainwater Harvesting System** to collect the Rain Water collected at the Terrace. The Rain water collected is used to increase the underground Water level.

7. Green Practices:

- **Good Internal Roads:** The internal roads are good for easy movement of pedestrians
- **Internal Garden:** The College has a well maintained garden with various medicinal plants.

8. Innovative & Sustainable Initiatives:

- Provision of Ramp for physically disabled members
- Tree Plantation: Was carried out at Taljai and Donaje Village
- Cleanliness Drive: Was done in Ambegaon
- Construction of a Bandhara: At Donaje Village
- Making of Continuous Contour Trenches in Donaje Village

9. Notes & Assumptions:

1. **1 Unit** of Electrical Energy releases **0.8 Kg of CO_2** into atmosphere
2. Daily working hours-**6 Nos** (For Lighting Calculations)
3. Annual working Days-**180 Nos**

10. References:

- For Energy Saved by Solar Thermal Water Heating System: www.mahaurja.com

ABBREVIATIONS

STES	:	Sinhgad Technical Education Society
LED	:	Light Emitting Diode
kWh	:	kilo-Watt Hour
MT	:	Metric Ton
CO_2	:	Carbon Di Oxide
LPD	:	Liters Per Day
NSS	:	National Service Scheme
MEDA	:	Maharashtra Energy Development Agency

CHAPTER-I
INTRODUCTION

1.1 Objectives:

1. To study present level of Energy Consumption
2. To Study the present CO_2 emissions
3. To Study Usage of Renewable Energy
4. To Study Waste Management Practices
5. To Study Rain Water Harvesting
6. To Study Green Practices
7. To study Innovative & Sustainable Initiatives

1.2 Table No 1: General Details of College:

No	Head	Particulars
1	Name of Institution	STES's Smt. Kashibai Navale College of Engineering
2	Address	S. No. 44/1, Vadgaon (Bk.), Pune 411 041
3	Affiliation	Savitribai Phule Pune University

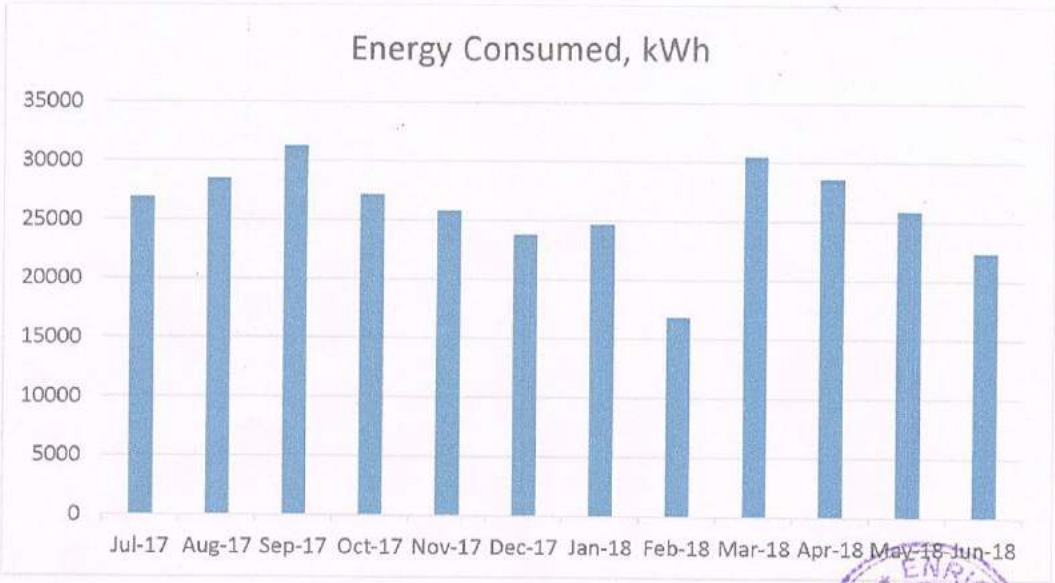
CHAPTER-II
STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No 2: Electrical Bill Analysis- 2017-18:

No	Month	Energy Consumed, kWh
1	Jul-17	26959
2	Aug-17	28496
3	Sep-17	31317
4	Oct-17	27211
5	Nov-17	25793
6	Dec-17	23796
7	Jan-18	24746
8	Feb-18	16853
9	Mar-18	30521
10	Apr-18	28592
11	May-18	25927
12	Jun-18	22408
13	Total	312619
14	Maximum	31317
15	Minimum	22408
16	Average	26051.5

To study the variation of Monthly Energy Consumption, kWh: Chart No 1:



Key Inference drawn:
From the above analysis, we present following important parameters:

Table No 3: Various Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh
1	Total	312619
2	Maximum	31317
3	Minimum	22408
4	Average	26051.5

CHAPTER III
CARBON FOOTPRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities. The College uses Electrical Energy for various Electrical gadgets.

Basis for computation of CO_2 Emissions:

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

Table No 4: Month wise CO_2 Emissions:

No	Month	Energy Consumed, kWh	CO_2 Emissions, MT
1	Jul-17	26959	21.57
2	Aug-17	28496	22.80
3	Sep-17	31317	25.05
4	Oct-17	27211	21.77
5	Nov-17	25793	20.63
6	Dec-17	23796	19.04
7	Jan-18	24746	19.80
8	Feb-18	16853	13.48
9	Mar-18	30521	24.42
10	Apr-18	28592	22.87
11	May-18	25927	20.74
12	Jun-18	22408	17.93
13	Total	312619	250.10
14	Maximum	31317	25.05
15	Minimum	22408	17.93
16	Average	26051.5	20.84

Representation of Month wise CO_2 Emissions: Chart No 2:

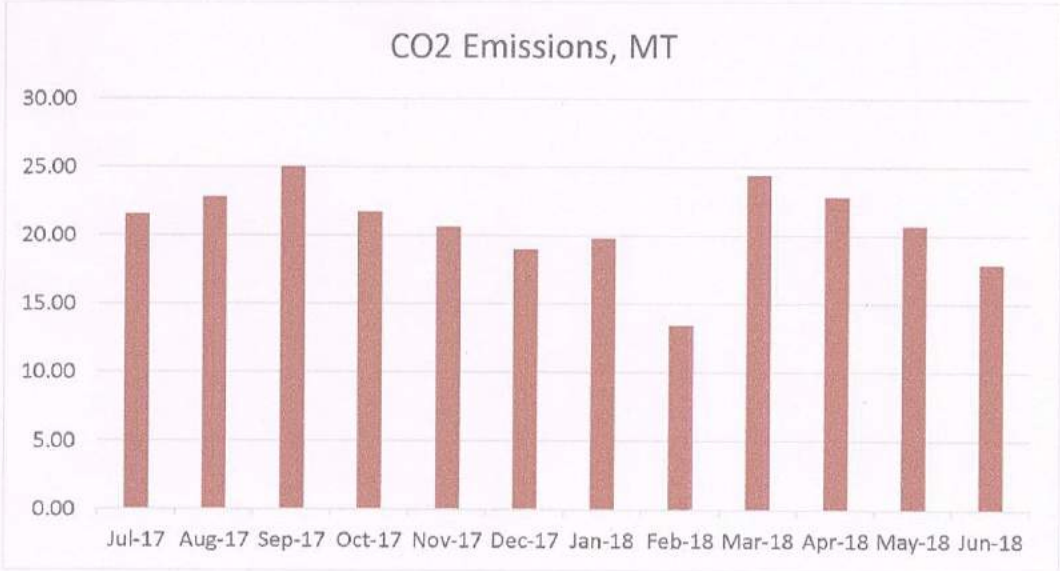


Table No 5: Various Important Parameters:

No	Parameter/ Value	Energy consumed, kWh	CO2 Emissions, MT
1	Total	312619	250.10
2	Maximum	31317	25.05
3	Minimum	22408	17.93
4	Average	26051.5	20.84

CHAPTER IV
STUDY OF USAGE OF RENEWABLE ENERGY

The College has total three Hostel Blocks, namely: Purandar & Shivneri for Boys and Chandrabhaga for Girls. In the following Table we present the Installed Capacity of Solar Thermal System.

Table No 6: Details of Solar Thermal Water Heating System installed:

No	Hostel Name	Installed Solar Thermal Water Heater System Capacity in LPD
A)	**Boy's Hostel Block**	
1	Purandar	14000
2	Shivneri	12000
B)	**Girl's Hostel Block**	
1	Chandrabhaga	8000
	TOTAL CAPACITY	**34000**

As per **MEDA** Guidelines, **100 LPD** Solar Thermal Water Heating System, saves **1500 kWh** of Electricity Energy per Annum. The College has installed: **34000 LPD** Solar Thermal Water Heating System.

In the following Table, we present the amount of Reduction in CO_2 Emissions, due to installation of the Solar Water Heater.

Table No 7: Computation of Reduction in CO_2 Emissions due to Solar Water Heater:

No	Particulars	Value	Unit
1	Total Solar Thermal Water Heating Capacity	34000	LPD
2	Electrical Energy Saved by 100 LPD System/Annum	1500	kWh
3	Electrical Energy Saved by 100 LPD System/Day	4	kWh
4	Electrical Energy Saved by 34000 LPD System/Day	1360	kWh
5	Approximate Usage Period in the Year:2020-21	25	Days
6	Capacity Utilization Factor	0.5	
7	Electrical Energy Saved in 2020-21 =(4) * (5) * (6)	208080	kWh
8	1 kWh of Electrical Energy is equal to	0.9	Kg of CO_2
9	**Reduction in CO_2 Emissions = (7) * (8) / 1000**	**166.46**	**MT**

CHAPTER V
STUDY OF WASTE MANAGEMENT

5.1 Solid Waste Management: The Dry recyclable Waste & Wet Waste are collected on daily basis, and further given to Authorized Waste Collector for further disposal/Recycling.

Photograph of Garbage Segregation Shed:

5.2 Liquid Waste Management: The College has installed a **275 KLPD** Capacity Sewage Treatment Plant, to handle the human waste generated in the College.

Photograph of Sewage Treatment Plant:

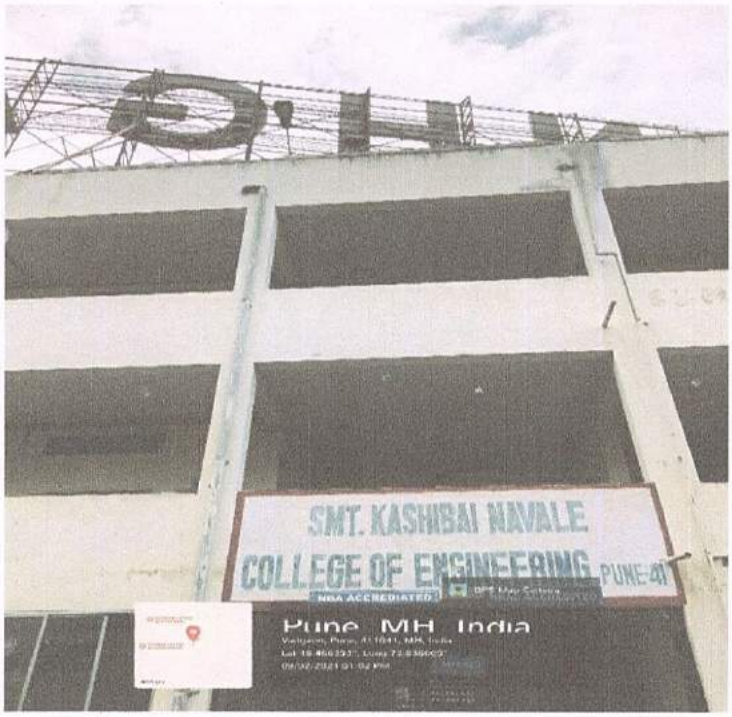
5.3 E-Waste Management:

All the internal communication is through emails and hardly any e-Waste is generated in the Day to Day operation of the College. Any E Waste generated is handed over to Authorized Agency for further disposal.

CHAPTER VI
RAIN WATER HARVESTING

The College has already installed Rain Water Harvesting Project. The water is used to enrich the underground water level.

Photograph of Rain Water Harvesting Pipe from Terrace:

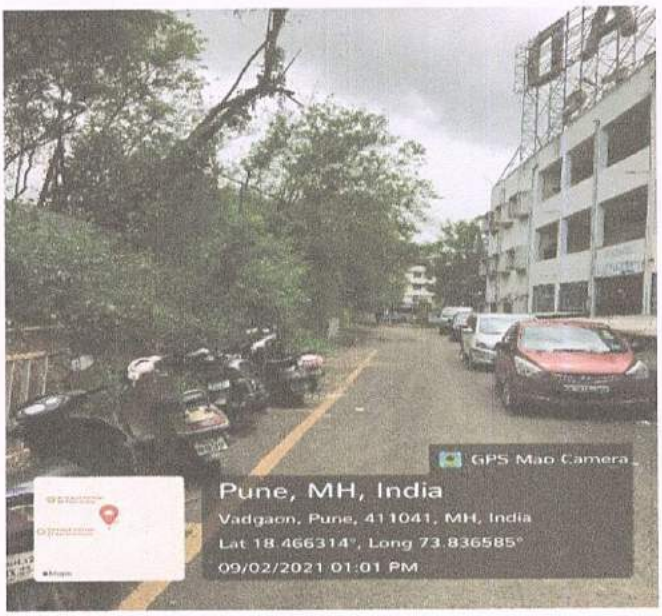


CHAPTER VII
STUDY OF GREEN PRACTICES

7.1 Pedestrian Friendly Roads:

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

Photograph of Internal Road inside the College Campus:



7.2 Green Landscaping with Trees and Plants:

The College has maintained plantation in the campus.

Photograph of Garden in the College campus:

CHAPTER VIII
STUY OF INNOVATIVE & SUSTAINABLE INITIATIVES

8.1 Provision of Ramp:

The College has made a provision of Ramp, for easy movement of Physically Handicapped students.

Photograph of Ramp:

8.2 Tree Plantation Drive:

The College took an initiative of Tree Plantation activities using NSS medium. It was done at Donaje Village and Talajai.

Photograph of Tree Plantation:

8.3 Cleanliness Drive:

A Cleanliness Drive was conducted at Ambegaon, Pune

Photograph of Cleanliness Drive:

8.4 Construction of Bandhara at Donaje Village:

A Banshara was constructed in the Village.

Photograph of Bandhara:

8.5 Making of Continuous Contour Trenches:

For arresting the rain water falling on the Hill and thereby increasing the underground water level, continuous contour trenches were constructed on the Hill slopes.

Photograph of Continuous Contour Trenches:

ENRICH CONSULTANTS * Pune *

ENERGY AUDIT REPORT

of

Sinhgad Technical Education Society's
SMT. KASHIBAI NAVALE COLLEGE OF ENGINEERING,
S. 44/1, Vadgaon (Bk.), Pune 411 041

Sinhgad Institutes

Year: 2017-18

Prepared by

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

ENRICH CONSULTANTS * Pune *

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

Maharashtra Energy Development Agency
(A Government of Maharashtra undertaking)
2nd Floor, MHADA Commercial Complex, Opp. Tridal Nagar, Yerwada, Pune 411 006
Ph No: 020-26614393/266144403, Fax No: 020-26615031
Email: econ@mahaurja.com , Web: www.mahaurja.com

ECN/2017-18/CR-01/5726 30th November 2017

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 under Save Energy Programme of MEDA.

Name and Address of the firm	:	Enrich Consultants Yashashree, Plot No. 26,Nirmal Baug Society,Parvati, Pune - 411009.
Registration Category	:	Empanelled *Consultant for Save Energy Programme.*
Registration Number	:	***MEDA/ECN/CR-01/2017-18/EA-37***

- The Save Energy 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 the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.
- This empanelment is valid upto **3 year** from the date of registration, to carry out energy audits under the Save Energy Programme of MEDA.
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

30/11

(Smita Kudarikar)
Manager (EC)

Enrich Consultants

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

Ref: EC/SKNCOE/17-18/01 Date: 8/9/2018

CERTIFICATE

This is to certify that we have conducted Energy Audit at Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, S. No. 44/1, Vadgaon (Bk.), Pune 411 041 in the year 2017-18.

The College has already adopted **Energy Efficient** Practices like:

- Usage of Energy Efficient LED Fittings at some places
- Installation of **34000 LPD** Solar Thermal Water Heating System at Hostel blocks.
- Usage of BEE STAR Rated Equipment
- Maximum Usage of Day Lighting

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

For Enrich Consultants,

A Y Mehendale,
Certified Energy Auditor
EA-8192

ENRICH CONSULTANTS Pune

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4	Study of Carbon Foot printing	12
5	Study of Usage of Alternate Energy	14
6	Study of Usage of LED Lights	16

ACKNOWLEDGEMENT

We at Enrich Consultants, Pune, express our sincere gratitude to the management of Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.), Pune, for awarding us the assignment of Energy Audit of their Vadgaon (Bk.) Campus for the Year: 2017-18.

We are thankful to:

- Dr. A. V. Deshpande, Principal
- Mrs. K. S. Borgave, Registrar
- Dr. Sanket Charkha, Assistant Professor

We are also thankful to various Head of Departments & other staff members for helping us during the field study.

EXECUTIVE SUMMARY

After the Field Study & Analysis, we present herewith important observations made during the assignment of Energy Audit.

1. STES's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.) Pune consumes Energy in the form of **Electrical Energy** used for various gadgets, Office & other facilities.

2. Present Energy Consumption:

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	312619	250.10
2	Maximum	31317	25.05
3	Minimum	22408	17.93
4	Average	26051.5	20.84

3. Various measures adopted for Energy Conservation:

The various projects already implemented by the College are

- Usage of LED Lights at some locations
- Installation of **34000 LPD** Solar Thermal Water Heating System.

4. Usage of Alternate Energy Source:

The College has installed **34000 LPD** Solar Thermal Water Heating System at the Hostel Blocks. The Equivalent Electrical Energy Saved by the Solar Thermal Water Heating System is **208080 kWh** in the Year: 2017-18.

The percentage of usage of Alternate Energy to Annual Energy requirement is **39.96 %**.

5. Percentage of Lighting Power Requirements met by LED bulbs:

The annual lighting Load Demand is **36552 kWh**. The annual LED Lighting Load Demand is **432 kWh**. Therefore the percentage of usage of LED to the total annual lighting power requirement works out to be **1.18 %**

6. Notes & Assumptions:

1. **1 Unit** of Electrical Energy releases **0.8 Kg of CO_2** into atmosphere
2. Daily working hours-**5 Nos** (For Lighting Calculations)
3. Annual working Days-**180 Nos**

7. References:

1. For Computation of Energy Saved by Solar Thermal System: www.mahaurja.com
2. CO2 Emission: www.tatapoer.com

ABBREVIATIONS

STES	:	Sinhgad Technical Education Society
AC	:	Air conditioner
FTL	:	Fluorescent Tube Light
LED	:	Light Emitting Diode
kWh	:	kilo-Watt Hour
Qty	:	Quantity
W	:	Watt
kW	:	Kilo Watt
PC	:	Personal Computer
MT	:	Metric Ton
LPD	:	Liters Per Day

CHAPTER-I
INTRODUCTION

1.1 Objectives:

1. To study the Connected Load
2. To Study present level of Energy Consumption
3. To Study the present CO_2 emissions
4. To study Scope for usage of Renewable Energy
5. To study usage of LED Lighting

1.2 Table No 1: General Details of College:

No	Head	Particulars
1	Name of Institution	STES's Smt. Kashibai Navale College of Engineering
2	Address	S. No. 44/1, Vadgaon (Bk.), Pune 411 041
3	Affiliation	Savitribai Phule Pune University

CHAPTER-II
STUDY OF CONNECTED LOAD

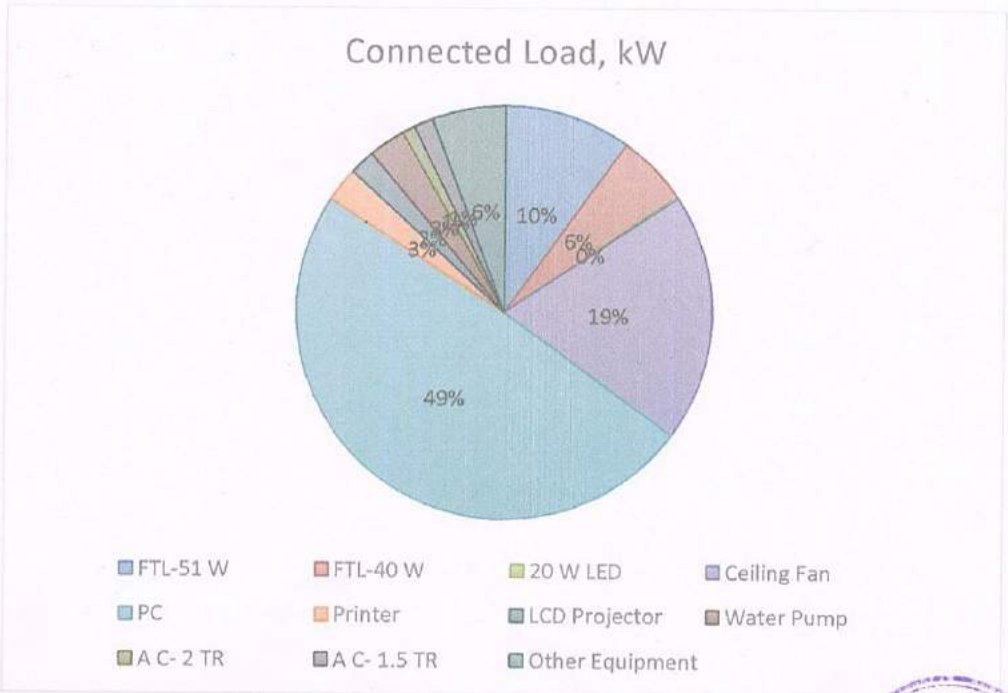
In this chapter, we present the details of various Electrical loads as under

2.1.1 Details of Overall Connected Load: Table No 2:

No	Equipment	Qty	Load, W/Unit	Load, kW
1	FTL-51 W	503	51	25.65
2	FTL-40 W	362	40	14.48
3	20 W LED	24	20	0.48
4	Ceiling Fan	702	72	50.54
5	PC	852	150	127.8
6	Printer	40	175	7
7	LCD Projector	34	150	5.1
8	Water Pump	2	3730	7.46
9	A C- 2 TR	1	2600	2.6
10	A C- 1.5 TR	2	1950	3.9
11	Other Equipment	100	150	15
12	**Total**			**260**

We present the same in a PIE Chart as under:

2.3 Chart No-1: Overall Connected Load:



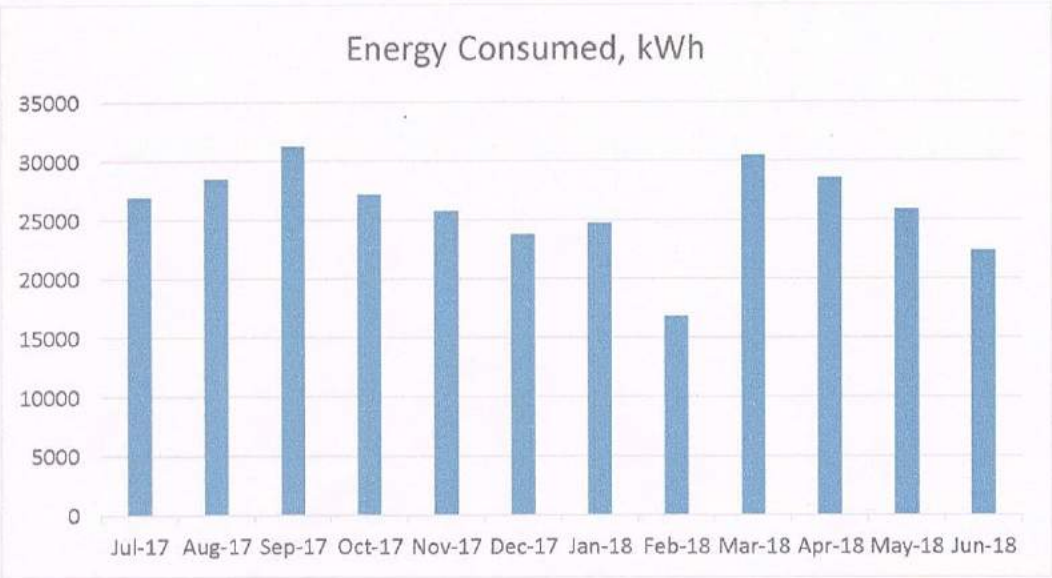
CHAPTER-III
STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No 3: Electrical Bill Analysis- 2017-18:

No	Month	Energy Consumed, kWh
1	Jul-17	26959
2	Aug-17	28496
3	Sep-17	31317
4	Oct-17	27211
5	Nov-17	25793
6	Dec-17	23796
7	Jan-18	24746
8	Feb-18	16853
9	Mar-18	30521
10	Apr-18	28592
11	May-18	25927
12	Jun-18	22408
13	Total	312619
14	Maximum	31317
15	Minimum	22408
16	Average	26051.5

To study the variation of Monthly Energy Consumption, kWh: Chart No 2:



Key Inference drawn:

From the above analysis, we present following important parameters:

Table No 4: Various Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh
1	Total	312619
2	Maximum	31317
3	Minimum	22408
4	Average	26051.5

CHAPTER-IV
CARBON FOOTPRINTING

4.1 A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities. The College uses Electrical Energy for various Electrical gadgets.

4.2 Basis for computation of CO_2 Emissions:

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

4.3 Table No 5 : Month wise CO_2 Emissions:

No	Month	Energy Consumed, kWh	CO_2 Emissions, MT
1	Jul-17	26959	21.57
2	Aug-17	28496	22.80
3	Sep-17	31317	25.05
4	Oct-17	27211	21.77
5	Nov-17	25793	20.63
6	Dec-17	23796	19.04
7	Jan-18	24746	19.80
8	Feb-18	16853	13.48
9	Mar-18	30521	24.42
10	Apr-18	28592	22.87
11	May-18	25927	20.74
12	Jun-18	22408	17.93
13	Total	312619	250.10
14	Maximum	31317	25.05
15	Minimum	22408	17.93
16	Average	26051.5	20.84

Representation of Month wise CO_2 Emissions: Chart No 3:

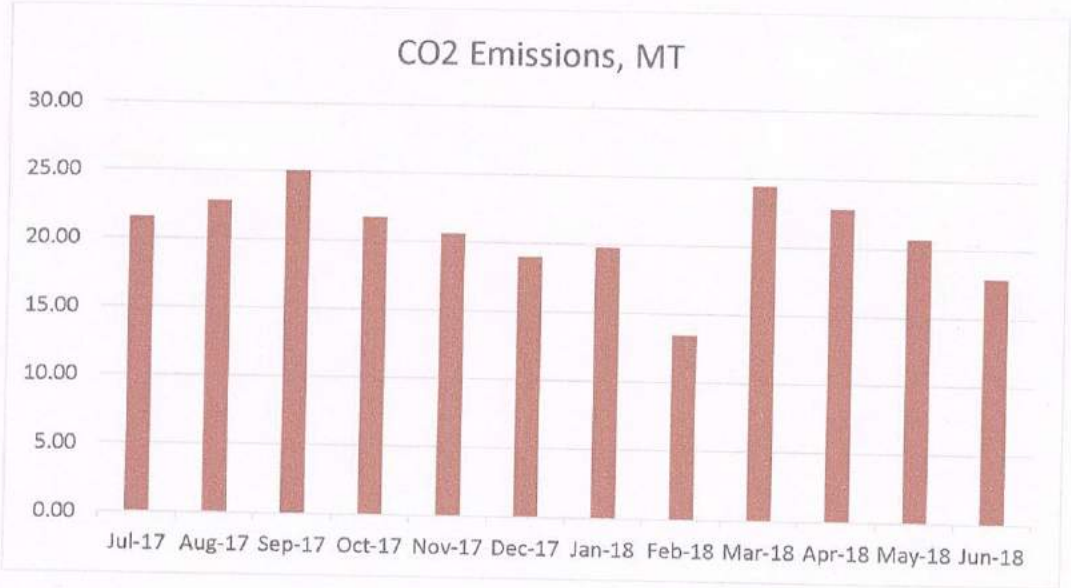


Table No 6: Various Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	312619	250.10
2	Maximum	31317	25.05
3	Minimum	22408	17.93
4	Average	26051.5	20.84

CHAPTER-V
STUDY OF USAGE OF ALTERNATE ENERGY

The College has total three Hostel Blocks, namely: Purandar & Shivneri for Boys and Chandrabhaga for Girls. In the following Table we present the Installed Capacity of Solar Thermal System.

Table No 7 : Details of Solar Thermal Water Heating System installed:

No	Hostel Name	Installed Solar Thermal Water Heater System Capacity in LPD
A)	**Boy's Hostel Block**	
1	Purandar	14000
2	Shivneri	12000
B)	**Girl's Hostel Block**	
1	Chandrabhaga	8000
	TOTAL CAPACITY	**34000**

In the following Table, we present the percentage of usage of Renewable Energy to Annual Power requirement.

Table No 8 : Computation of Usage of Alternate Energy to Annual Power requirement:

No	Particulars	Value	Unit
1	Annual Energy Purchased from MSEDCL	**312619**	kWh
2	Total Solar Thermal Capacity	34000	LPD
3	Electrical Energy Saved by 100 LPD System/Annum	1500	kWh
4	Electrical Energy Saved by 100 LPD System/Day	4	kWh
5	Electrical Energy Saved by 34000 LPD System/Day	1360	kWh
6	Approximate Usage Period in the Year:2017-18	180	Days
7	Capacity Utilization Factor	0.85	
8	Electrical Energy Saved in 2020-21 =(4) * (5) * (6)	**208080**	kWh
9	Total Electrical Demand of College= **(1) + (8)**	**520699**	kWh
10	% of Usage of Alternate Energy = **(9)*100/(7)**	**39.96**	%

Photograph of Solar Thermal Water Heating System:

CHAPTER VI
STUDY OF USAGE OF LED LIGHTS

In the following Table, we present the percentage of annual Lighting load met by LED lights.
Table No 9 : Computation of % of Annual LED Lighting Load:

No	Particulars	Value	Unit
1	No of 51 W FTL Tubes	503	Nos
2	Electrical Load of 51 W FTL Tube	51	W/Unit
3	Total Load of 51 W FTL Tubes	**25.65**	kW
4	No of 40 W FTL Tubes	362	Nos
5	Electrical Load of 51 W FTL Tube	40	W/Unit
6	Total Load of 40 W FTL Tubes	**14.48**	kW
7	No of 20 W LED Tubes	24	Nos
8	Electrical Load of 20 W LED Tube	20	W/Unit
9	Total Load of 20 W LED Tubes	**0.48**	kW
10	Total Lighting Load = **3+6+9**	40.613	kW
11	Total LED Lighting Load = **9**	0.48	kW
12	Average Daily Operating Hours	5	Nos
13	Annual Working Days	180	Nos
14	Annual Total Lighting Load = **10*12*13**	36552	kWh
15	Annual LED Lighting Load = **11*12*13**	432	kWh
16	% of LED Lighting to Annual Lighting Load = **15*100/14**	**1.18**	**%**

GREEN AUDIT REPORT

of

Sinhgad Technical Education Society's

SMT. KASHIBAI NAVALE COLLEGE OF ENGINEERING,

S. 44/1, Vadgaon (Bk.), Pune 411 041

Sinhgad Institutes

Year: 2016-17

Prepared by

Enrich Consultants,

Yashashree, 26, Nirmal Bag Society

Near Muktangan English School, Parvati, Pune 411009

Phone: 09890444795, Email: enrichcons@gmail.com

ENRICH CONSULTANTS Pune

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

An ISO 9001 : 2000 Reg. no. : RQ 91 / 2462

Maharashtra Energy Development Agency
(A Government of Maharashtra Institution)
2nd Floor, MHADA Commercial Complex, Opp. Tridal Nagar, Yerwada, Pune 411 006
Ph No: 020-26614393/266144403, Fax No: 020-26615031
Email: econ@mahaurja.com , Web: www.mahaurja.com

ECN/2014-15/CR-10/6038 14 November, 2014

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 under Save Energy Programme of MEDA.

Name and Address of the firm	:	Enrich Consultants Yashashree, Plot No. 26, Nirmal Baug Society, Parvati, Pune - 411009.
Registration Category	:	*Empanelled Consultant for Save Energy Programme.*
Registration Number	:	***MEDA/ECN/CR-10/2014-15/ EA-37***

- The Save Energy 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.
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- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

Hemant H. L. Patil

(Hemant H. Patil)
Manager (EC)

ENRICH CONSULTANTS Pune

Enrich Consultants

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

Ref: EC/SKNCOE/02 Date: 20/9/2017

CERTIFICATE

This is to certify that we have conducted Green Audit at Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, S. No. 44/1, Vadgaon (Bk.), Pune 411 041 in the year 2016-17.

The College has already adopted **Green** practices like:

- Installation of Roof Top **34000 LPD Solar Thermal** Water Heating System
- Installation of **275 KLPD** Sewage Treatment Plant
- Segregation of Waste at source
- Installation of Rain Water Harvesting Project
- Tree Plantation in the campus
- Maintenance of good internal roads in the campus

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

For Enrich Consultants,

A Y Mehendale,
Certified Energy Auditor
EA-8192

ENRICH CONSULTANTS * Pune *

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8	Study of Innovative & Sustainable Initiatives	18

ACKNOWLEDGEMENT

We at Enrich Consultants, Pune, express our sincere gratitude to the management of Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.), Pune, for awarding us the assignment of Green Audit of their Vadgaon Campus for the Year: 2016-17.

We are thankful to:

- Dr. A. V. Deshpande, Principal
- Mrs. K. S. Borgave, Registrar
- Dr. Sanket Charkha, Assistant Professor

We are also thankful to various Head of Departments & other Staff members for helping us during the field study.

EXECUTIVE SUMMARY

After the Field measurements & analysis, we present herewith important observations made during the assignment of Green Audit.

1. STES's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.) Pune consumes Energy in the form of **Electrical Energy** used for various gadgets, Office & other facilities.

2. Present Energy Consumption & CO_2 Emission:

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	324416	259.53
2	Maximum	31268	25.01
3	Minimum	22745	18.20
4	Average	27035	21.63

3. Various measures adopted for Energy Conservation:

The various projects already implemented by the College are

- Installation of **34000 LPD** Solar Thermal Water Heating System

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

The College has installed Roof Top **34000 LPD Solar Thermal Water Heating System** at the Hostel Blocks. The Equivalent Electrical Energy Saved due to usage of Solar Thermal Water Heating System is **195840 kWh,** in the Year: 2016-17.

Due to installation of Solar Water Heating System, the Annual Reduction in CO_2 Emissions is **156.67 MT.**

5. Waste Management:

5.1 Solid Waste Management: The Dry and Wet waste is segregated at the source and is handed over to Authorized Agency for further disposal/recycling.

5.2 Liquid Waste Management: The College has installed **275 KLPD** Sewage Treatment Plant. The treated Water is used for Gardening purpose.

5.3 E-Waste Management: All the internal communication is through emails and hardly any E-Waste is generated in the Day to Day operation of the College. Any E Waste generated is handed over to Authorized Agency for further disposal.

6. Rain Water Harvesting: The College has already installed **Rainwater Harvesting System** to collect the Rain Water collected at the Terrace. The Rain water collected is used to increase the underground Water level.

7. Green Practices:

- **Good Internal Roads:** The internal roads are good for easy movement of pedestrians
- **Internal Garden:** The College has a well maintained garden with various medicinal plants.

8. Innovative & Sustainable Initiatives:

- **Provision of Ramp:** The College has a ramp, for easy movement of physically disabled students.
- **Tree Plantation:** The College took an initiative of Tree Plantation at Chakan Village, under NSS Initiative.
- **Celebration of Swatch Bharat Abhiyan:** Cleanliness Drive was carried out in the campus, under the Swatch Bharat Abhiyan.
- **Construction of Bandhara & Cleanliness Drive:** These activities were carried out under the NSS Camp.

9. Notes & Assumptions:

1. **1 Unit** of Electrical Energy releases **0.8 Kg of CO_2** into atmosphere
2. Daily working hours-**6 Nos** (For Lighting Calculations)
3. Annual working Days-**180 Nos**

10. References:

- For Energy Saved by Solar Thermal Water Heating System: www.mahaurja.com

ABBREVIATIONS

STES	:	Sinhgad Technical Education Society
LED	:	Light Emitting Diode
kWh	:	kilo-Watt Hour
MT	:	Metric Ton
CO_2	:	Carbon Di Oxide
LPD	:	Liters Per Day
NSS	:	National Service Scheme
MEDA	:	Maharashtra Energy Development Agency

CHAPTER-I
INTRODUCTION

1.1 Objectives:

1. To study present level of Energy Consumption
2. To Study the present CO_2 emissions
3. To Study Usage of Renewable Energy
4. To Study Waste Management Practices
5. To Study Rain Water Harvesting
6. To Study Green Practices
7. To study Innovative & Sustainable Initiatives

1.2 Table No 1: General Details of College:

No	Head	Particulars
1	Name of Institution	STES's Smt. Kashibai Navale College of Engineering
2	Address	S. No. 44/1, Vadgaon (Bk.), Pune 411 041
3	Affiliation	Savitribai Phule Pune University

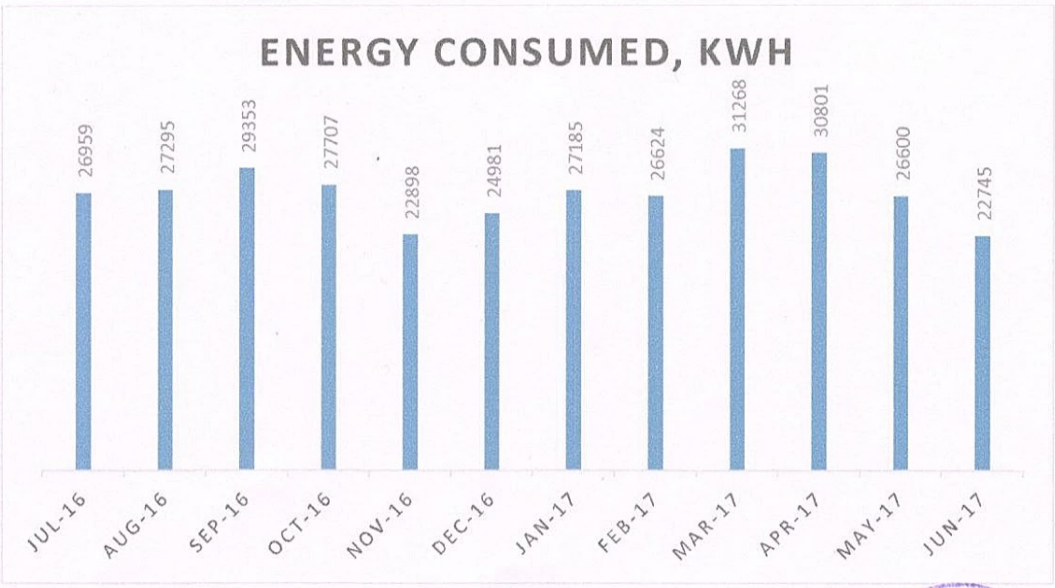
CHAPTER-II
STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No 2: Electrical Bill Analysis- 2016-17:

No	Month	Energy Consumed, kWh
1	Jul-16	26959
2	Aug-16	27295
3	Sep-16	29353
4	Oct-16	27707
5	Nov-16	22898
6	Dec-16	24981
7	Jan-17	27185
8	Feb-17	26624
9	Mar-17	31268
10	Apr-17	30801
11	May-17	26600
12	Jun-17	22745
13	Total	324416
14	Maximum	31268
15	Minimum	22745
16	Average	27035

To study the variation of Monthly Energy Consumption, kWh: Chart No 1:



Key Inference drawn:

From the above analysis, we present following important parameters:

Table No 3: Various Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh
1	Total	324416
2	Maximum	31268
3	Minimum	22745
4	Average	27035

CHAPTER III
CARBON FOOTPRINTING

A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities. The College uses Electrical Energy for various Electrical gadgets.

Basis for computation of CO_2 Emissions:

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

Table No 4: Month wise CO_2 Emissions:

No	Month	Energy Consumed, kWh	CO_2 Emissions, MT
1	Jul-16	26959	21.57
2	Aug-16	27295	21.84
3	Sep-16	29353	23.48
4	Oct-16	27707	22.17
5	Nov-16	22898	18.32
6	Dec-16	24981	19.98
7	Jan-17	27185	21.75
8	Feb-17	26624	21.30
9	Mar-17	31268	25.01
10	Apr-17	30801	24.64
11	May-17	26600	21.28
12	Jun-17	22745	18.20
13	Total	324416	259.53
14	Maximum	31268	25.01
15	Minimum	22745	18.20
16	Average	27035	21.63

Representation of Month wise CO_2 Emissions: Chart No 2:

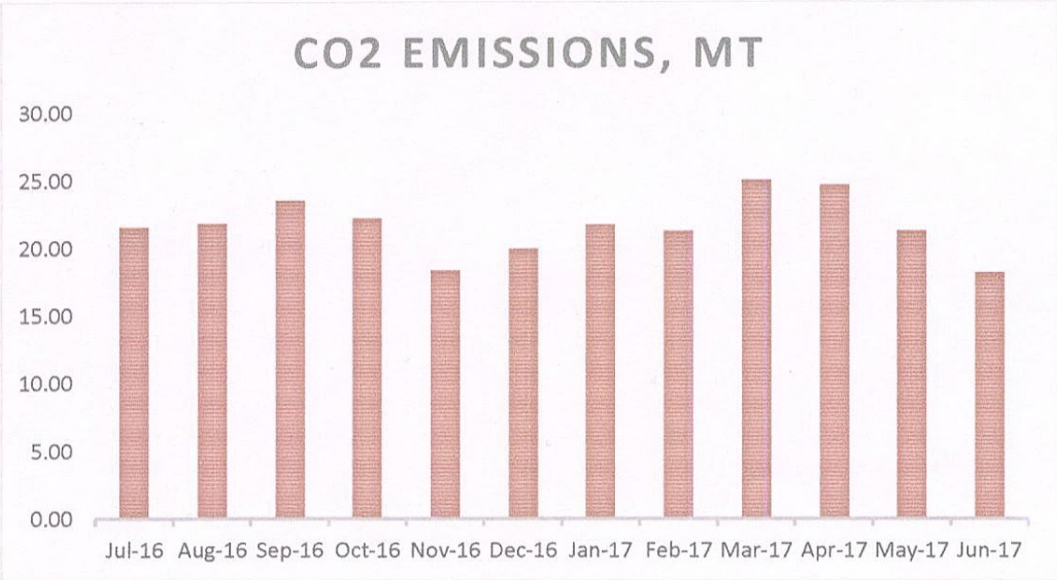


Table No 5: Various Important Parameters:

No	Parameter/ Value	Energy consumed, kWh	CO2 Emissions, MT
1	Total	324416	259.53
2	Maximum	31268	25.01
3	Minimum	22745	18.20
4	Average	27035	21.63

CHAPTER IV
STUDY OF USAGE OF RENEWABLE ENERGY

The College has total three Hostel Blocks, namely: Purandar & Shivneri for Boys and Chandrabhaga for Girls. In the following Table we present the Installed Capacity of Solar Thermal System.

Table No 6: Details of Solar Thermal Water Heating System installed:

No	Hostel Name	Installed Solar Thermal Water Heater System Capacity in LPD
A)	**Boy's Hostel Block**	
1	Purandar	14000
2	Shivneri	12000
B)	**Girl's Hostel Block**	
1	Chandrabhaga	8000
	TOTAL CAPACITY	**34000**

As per **MEDA** Guidelines, **100 LPD** Solar Thermal Water Heating System, saves **1500 kWh** of Electricity Energy per Annum. The College has installed: **34000 LPD** Solar Thermal Water Heating System.

In the following Table, we present the amount of Reduction in CO_2 Emissions, due to installation of the Solar Water Heater.

Table No 7: Computation of Reduction in CO_2 Emissions due to Solar Water Heater:

No	Particulars	Value	Unit
1	Total Solar Thermal Water Heating Capacity	34000	LPD
2	Electrical Energy Saved by 100 LPD System/Annum	1500	kWh
3	Electrical Energy Saved by 100 LPD System/Day	4	kWh
4	Electrical Energy Saved by 34000 LPD System/Day	1360	kWh
5	Approximate Usage Period in the Year:2020-21	180	Days
6	Capacity Utilization Factor	0.8	
7	Electrical Energy Saved in 2020-21 =(4) * (5) * (6)	195840	kWh
8	1 kWh of Electrical Energy is equal to	0.8	Kg of CO_2
9	**Reduction in CO_2 Emissions = (7) * (8) / 1000**	**156.67**	**MT**

CHAPTER V
STUDY OF WASTE MANAGEMENT

5.1 Solid Waste Management: The Dry recyclable Waste & Wet Waste are collected on daily basis, and further given to Authorized Waste Collector for further disposal/Recycling.

5.2 Liquid Waste Management: The College has installed a **275 KLPD** Capacity Sewage Treatment Plant, to handle the human waste generated in the College.

Photograph of Sewage Treatment Plant:

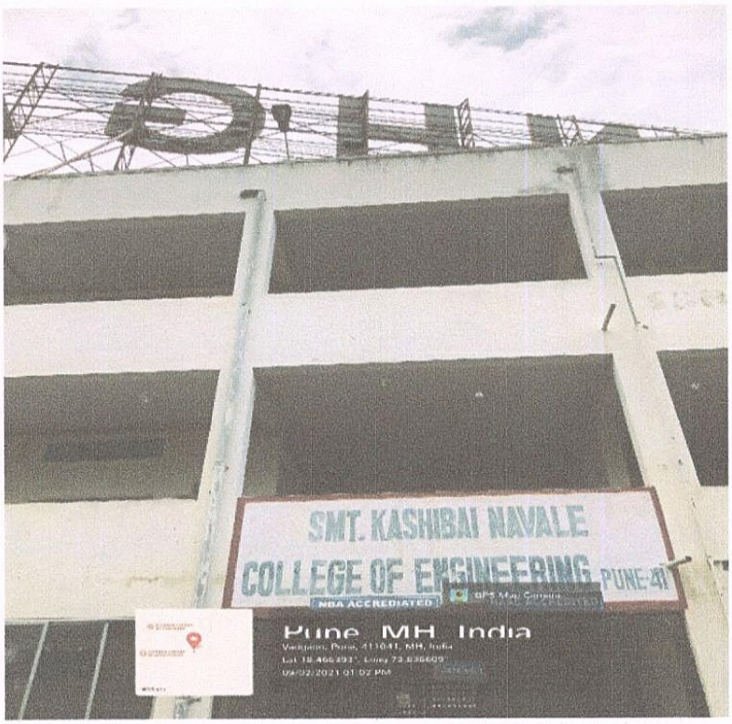
5.3 E-Waste Management:

All the internal communication is through emails and hardly any e-Waste is generated in the Day to Day operation of the College. Any E Waste generated is handed over to Authorized Agency for further disposal.

CHAPTER VI
RAIN WATER HARVESTING

The College has already installed Rain Water Harvesting Project. The water is used to enrich the underground water level.

Photograph of Rain Water Harvesting Pipe from Terrace:

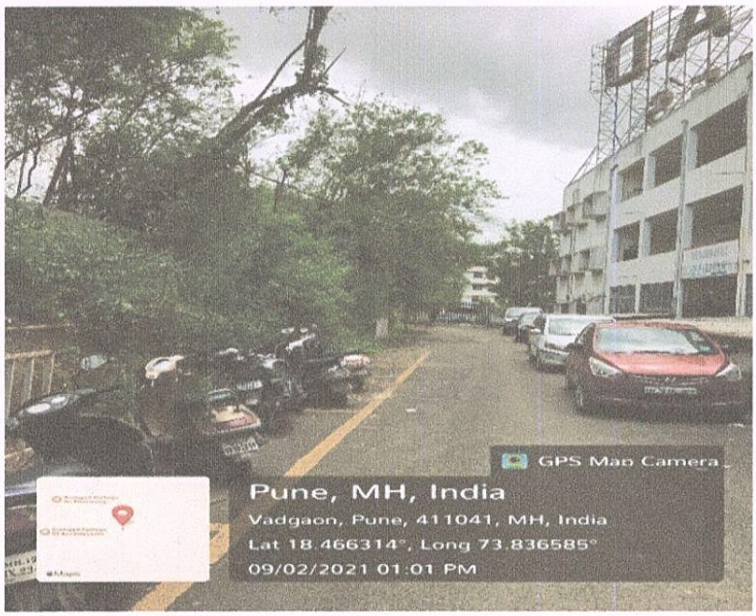


CHAPTER VII
STUDY OF GREEN PRACTICES

7.1 Pedestrian Friendly Roads:

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

Photograph of Internal Road inside the College Campus:



7.2 Green Landscaping with Trees and Plants:

The College has maintained plantation in the campus.

Photograph of Garden in the College campus:

CHAPTER VIII
STUY OF INNOVATIVE & SUSTAINABLE INITIATIVES

8.1 Provision of Ramp:

The College has made a provision of Ramp, for easy movement of Physically Handicapped students.

Photograph of Ramp:

8.2 Tree Plantation Drive:

The College took an initiative of Tree Plantation activities using NSS medium.

Photograph of Tree Plantation at Chakan Village:

8.3 Celebration of Swatch Bharat Abhiyan:

Under the Swatch Bharat Abhiyan Cleanliness drive was celebrated in the campus on 10/8/2016.

Photograph of Swatch Bharat Abhiyan in the campus:

8.4 NSS Special Camp:

A Special NSS camp was arranged. The major activities were:

- Construction of a Bandhara
- Cleanliness Drive.

Photograph of Construction of a Bandhara:

Photograph of Cleanliness Drive:

ENRICH CONSULTANTS * Pune *

ENERGY AUDIT REPORT

of

Sinhgad Technical Education Society's

SMT. KASHIBAI NAVALE COLLEGE OF ENGINEERING,

S. 44/1, Vadgaon (Bk.), Pune 411 041

Sinhgad Institutes

Year: 2016-17

Prepared by

Enrich Consultants,

Yashashree, 26, Nirmal Bag Society

Near Muktangan English School, Parvati, Pune 411009

Phone: 09890444795, Email: enrichcons@gmail.com

ENRICH CONSULTANTS Pune

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

An ISO 9001 : 2000 Reg. no. : RQ 91 / 2462

Maharashtra Energy Development Agency
(A Government of Maharashtra Institution)
2nd Floor, MHADA Commercial Complex, Opp. Tridal Nagar, Yerwada, Pune 411 006
Ph No: 020-26614393/266144403, Fax No: 020-26615031
Email: econ@mahaurja.com , Web: www.mahaurja.com

ECN/2014-15/CR-10/6038 14 November, 2014

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 under Save Energy Programme of MEDA.

Name and Address of the firm	:	Enrich Consultants Yashashree, Plot No. 26, Nirmal Baug Society, Parvati, Pune - 411009.
Registration Category	:	*Empanelled Consultant for Save Energy Programme.*
Registration Number	:	***MEDA/ECN/CR-10/2014-15/ EA-37***

- The Save Energy 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 the firm at any time without giving any prior information and canceling the registration, if the information is found incorrect.
- This empanelment is valid upto **3 years** from the date of registration, to carry out energy audits under the Save Energy Programme of MEDA.
- The Director General, MEDA reserves the right to cancel the registration at any time without assigning any reasons thereof.

Hemant H. Patil

(Hemant H. Patil)
Manager (EC)

ENRICH CONSULTANTS * Pune *

Enrich Consultants

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

Ref: EC/SKNCOE/01 Date: 20/9/2017

CERTIFICATE

This is to certify that we have conducted Energy Audit at Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, S. No. 44/1, Vadgaon (Bk.), Pune 411 041 in the year 2016-17.

The College has already adopted **Energy Efficient** Practices like:

- Installation of **34000 LPD** Solar Thermal Water Heating System at Hostel blocks.
- Usage of BEE STAR Rated Equipment
- Maximum Usage of Day Lighting

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

For Enrich Consultants,

A Y Mehendale,
Certified Energy Auditor
EA-8192

ENRICH CONSULTANTS Pune

INDEX

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3	Study of Present Energy Consumption	10
4	Study of Carbon Foot printing	12
5	Study for Usage of Alternate Energy	14
6	Study of Usage of LED Lights	15

ACKNOWLEDGEMENT

We at Enrich Consultants, Pune, express our sincere gratitude to the management of Sinhgad Technical Education Society's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.), Pune, for awarding us the assignment of Energy Audit of their Vadgaon (Bk.) Campus for the Year: 2016-17.

We are thankful to:

- Dr. A. V. Deshpande, Principal
- Mrs. K. S. Borgave, Registrar
- Dr. Sanket Charkha, Assistant Professor

We are also thankful to various Head of Departments & other staff members for helping us during the field study.

EXECUTIVE SUMMARY

After the Field Study & Analysis, we present herewith important observations made during the assignment of Energy Audit.

1. STES's Smt. Kashibai Navale College of Engineering, Vadgaon (Bk.) Pune consumes Energy in the form of **Electrical Energy** used for various gadgets, Office & other facilities.

2. Present Energy Consumption:

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	324416	259.53
2	Maximum	31268	25.01
3	Minimum	22745	18.20
4	Average	27035	21.63

3. Various measures adopted for Energy Conservation:

The various projects already implemented by the College are

- Installation of **34000 LPD** Solar Thermal Water Heating System.

4. Usage of Alternate Energy Source:

The College has installed **34000 LPD** Solar Thermal Water Heating System at the Hostel Blocks. The Equivalent Electrical Energy Saved by the Solar Thermal Water Heating System is **195840 kWh** in the Year: 2016-17.

The percentage of usage of Alternate Energy to Annual Energy requirement is **37.64 %**.

5. Percentage of Lighting Power Requirements met by LED bulbs:

At present there are no LED Light fittings installed in the campus. Hence the percent of LED Light to Annual Lighting Load stands to be zero percent.

6. Notes & Assumptions:

1. **1 Unit** of Electrical Energy releases **0.9 Kg of CO_2** into atmosphere
2. Daily working hours-**5 Nos** (For Lighting Calculations)
3. Annual working Days-**180 Nos**

7. References:

1. For Computation of Energy Saved by Solar Thermal System: www.mahaurja.com

ABBREVIATIONS

STES	:	Sinhgad Technical Education Society
AC	:	Air conditioner
FTL	:	Fluorescent Tube Light
LED	:	Light Emitting Diode
kWh	:	kilo-Watt Hour
Qty	:	Quantity
W	:	Watt
kW	:	Kilo Watt
PC	:	Personal Computer
MT	:	Metric Ton
LPD	:	Liters Per Day

CHAPTER-I
INTRODUCTION

1.1 Objectives:

1. To study the Connected Load
2. To Study present level of Energy Consumption
3. To Study the present CO_2 emissions
4. To study Scope for usage of Renewable Energy
5. To study usage of LED Lighting

1.2 Table No 1: General Details of College:

No	Head	Particulars
1	Name of Institution	STES's Smt. Kashibai Navale College of Engineering
2	Address	S. No. 44/1, Vadgaon (Bk.), Pune 411 041
3	Affiliation	Savitribai Phule Pune University

CHAPTER-II
STUDY OF CONNECTED LOAD

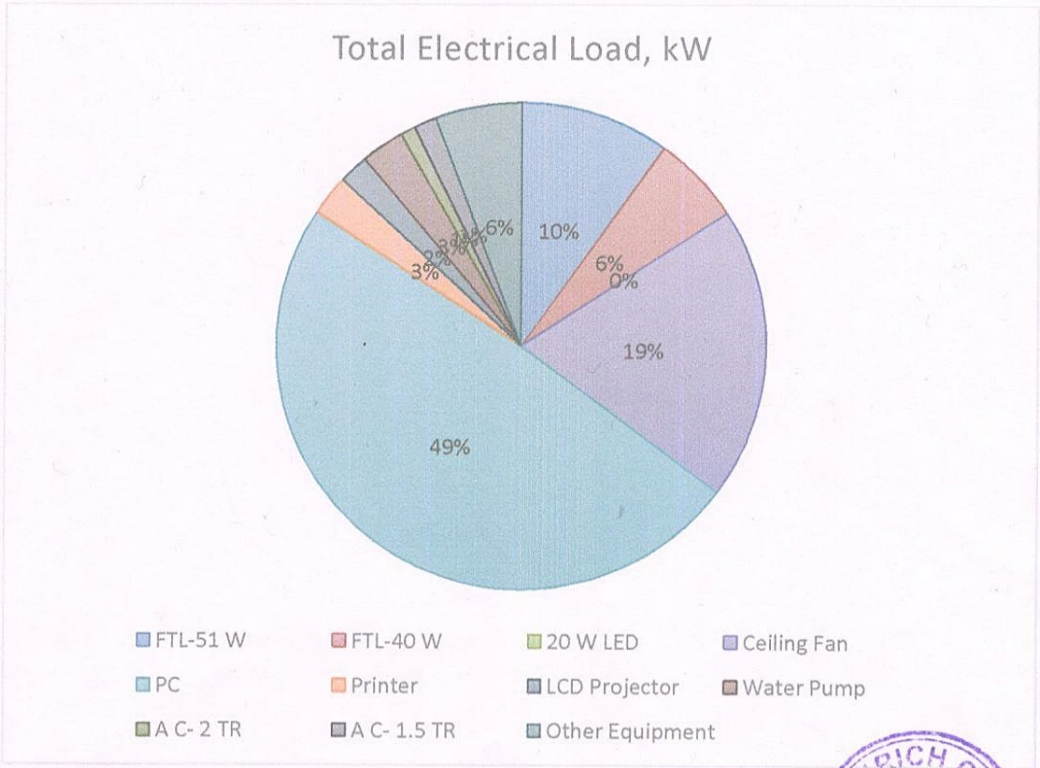
In this chapter, we present the details of various Electrical loads as under

2.1.1 Details of Tube Light Fittings & Fans at various locations: Table No 2:

No	Equipment	Qty	Load, W/Unit	Load, kW
1	FTL-51 W	503	51	25.65
2	FTL-40 W	386	40	15.44
3	Ceiling Fan	702	72	50.54
4	PC	852	150	127.8
5	Printer	40	175	7
6	LCD Projector	34	150	5.1
7	Water Pump	2	3730	7.46
8	A C- 2 TR	1	2600	2.6
9	A C- 1.5 TR	2	1950	3.9
10	Other Equipment	100	150	15
11	Total			**260**

We present the same in a PIE Chart as under:

2.3 Chart No-1: Overall Connected Load:



CHAPTER-III
STUDY OF PRESENT ENERGY CONSUMPTION

In this chapter, we present the analysis of last year Electricity Bills

Table No 3: Electrical Bill Analysis- 2016-17:

No	Month	Energy Consumed, kWh
1	Jul-16	26959
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3	Sep-16	29353
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11	May-17	26600
12	Jun-17	22745
13	Total	324416
14	Maximum	31268
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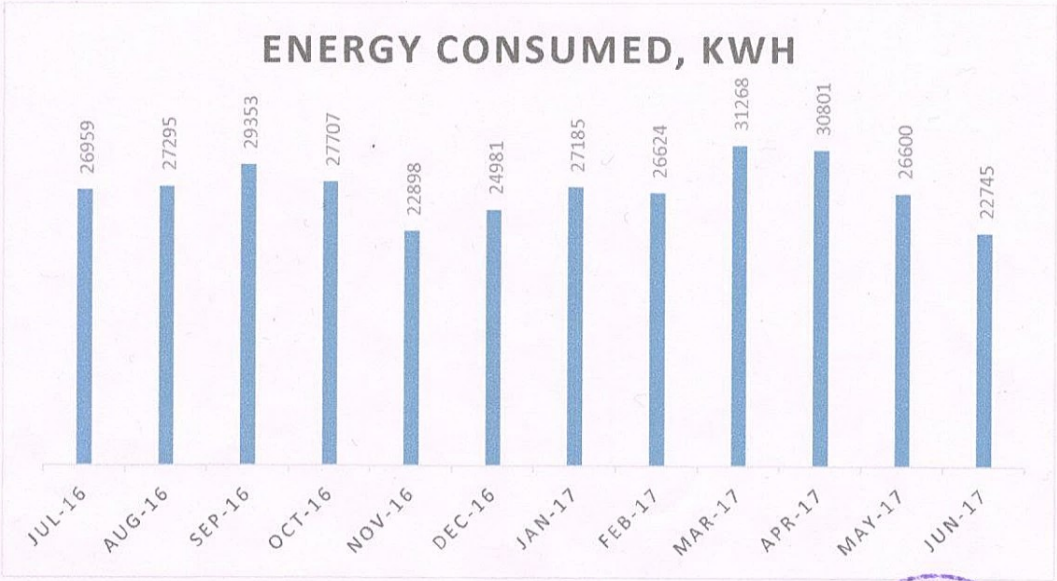
16	Average	27035

To study the variation of Monthly Energy Consumption, kWh: Chart No 2:



Key Inference drawn:
From the above analysis, we present following important parameters:

Table No 4: Various Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh
1	Total	324416
2	Maximum	31268
3	Minimum	22745
4	Average	27035

CHAPTER-IV
CARBON FOOTPRINTING

4.1 A Carbon Foot print is defined as the Total Greenhouse Gas emissions, emitted due to various activities.

In this we compute the emissions of Carbon-Di-Oxide, by usage of the various forms of Energy used by the College for performing its day to day activities. The College uses Electrical Energy for various Electrical gadgets.

4.2 Basis for computation of CO_2 Emissions:

- 1 Unit (kWh) of Electrical Energy releases **0.8 Kg of CO_2** into atmosphere

4.3 Table No 5: Month wise CO_2 Emissions:

No	Month	Energy Consumed, kWh	CO_2 Emissions, MT
1	Jul-16	26959	21.57
2	Aug-16	27295	21.84
3	Sep-16	29353	23.48
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5	Nov-16	22898	18.32
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13	Total	324416	259.53
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Representation of Month wise CO_2 Emissions: Chart No 3:

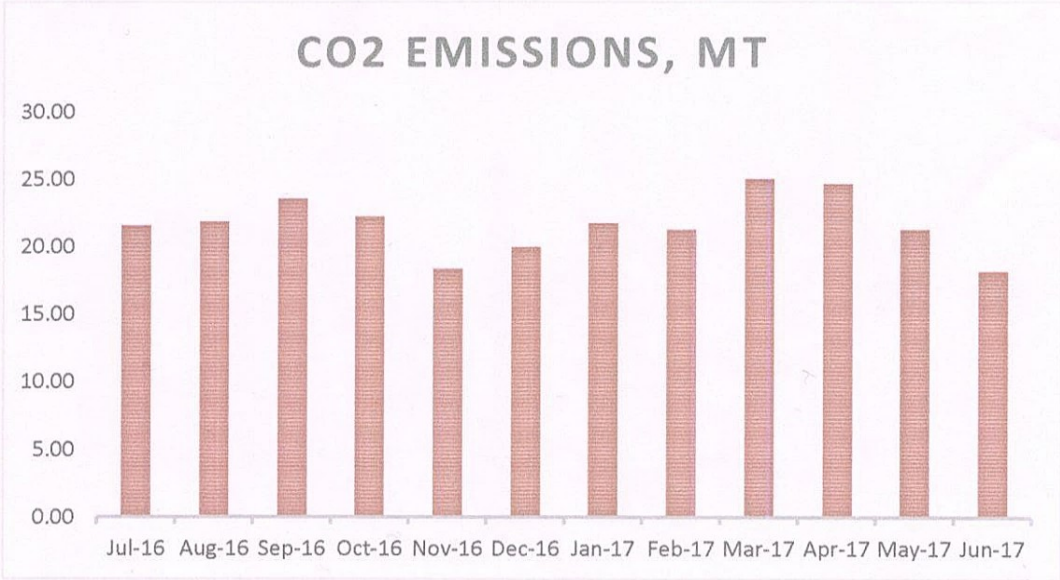

Table No 6: Various Important Parameters:

No	Parameter/ Value	Energy Consumed, kWh	CO_2 Emissions, MT
1	Total	324416	259.53
2	Maximum	31268	25.01
3	Minimum	22745	18.20
4	Average	27035	21.63

CHAPTER-V
STUDY OF USAGE OF ALTERNATE ENERGY

The College has total three Hostel Blocks, namely: Purandar & Shivneri for Boys and Chandrabhaga for Girls. In the following Table we present the Installed Capacity of Solar Thermal System.

Table No 7: Details of Solar Thermal Water Heating System installed:

No	Hostel Name	Installed Solar Thermal Water Heater System Capacity in LPD
A)	**Boy's Hostel Block**	
1	Purandar	14000
2	Shivneri	12000
B)	**Girl's Hostel Block**	
1	Chandrabhaga	8000
	TOTAL CAPACITY	**34000**

In the following Table, we present the percentage of usage of Renewable Energy to Annual Power requirement.

Table No 8 : Computation of Usage of Alternate Energy to Annual Power requirement:

No	Particulars	Value	Unit
1	Annual Energy Purchased from MSEDCL	**324416**	kWh
2	Total Solar Thermal Capacity	34000	LPD
3	Electrical Energy Saved by 100 LPD System/Annum	1500	kWh
4	Electrical Energy Saved by 100 LPD System/Day	4	kWh
5	Electrical Energy Saved by 34000 LPD System/Day	1360	kWh
6	Approximate Usage Period in the Year:2016-17	180	Days
7	Capacity Utilization Factor	0.8	
8	Electrical Energy Saved in 2020-21 =(4) * (5) * (6)	**195840**	kWh
9	Total Electrical Demand of College= **(1) + (8)**	**520256**	kWh
10	% of Usage of Alternate Energy = **(9)*100/(7)**	**37.64**	%

CHAPTER VI
STUDY OF USAGE OF LED LIGHTS

At present there are no LED Light fittings installed in the campus. Hence the percent of LED Light to Annual Lighting Load stands to be zero percent.

- Green audit
- Energy audit
- Environment audit
- Clean and green campus recognitions / awards
- Beyond the campus environmental promotion activities

Smt. Kashibai Navale College of Engineering ★ Vadgaon(Bk.) Pune-41.

PRINCIPAL
Smt. Kashibai Navale
College of Engineering
Vadgaon(Bk.), Pune-41.

SINHGAD TECHNICAL EDUCATION SOCIETY

VADGAON – AMBEGAON CAMPUS, PUNE

Sinhgad Institutes

STES / Director / 2017-18 Date : 21.08.2017

To,

All Directors / Principals of Colleges / Institutes / Schools
of Vadgaon & Ambegaon Campuses

Chief Rector, Sinhgad Boys Hostels

Rector, Girls Hostels

DETAILS OF ELECTRICITY CONSUMPTION IN RESPECT OF VADGAON-AMBEGAON CAMPUS

1. Kindly refer to the attached format in respect of *Pune Solar City Program* of Pune Municipal Corporation, Pune.

2. You are hereby directed to submit the necessary information in respect of your institution in the attached format.

3. The information should reach this office **on or before 22.08.2017 at 03.00pm**, without fail.

Dr. A. V. Deshpande
Director
STES, Vadgaon(Bk)

Copy to :-

Resident Officer - for necessary action in respect of Vadgaon & Ambegaon Campuses.

Mr. Fernandis S R - for necessary action in respect of Vadgaon & Ambegaon campuses.
Jr. Electrical Engineer

Smt. Kashibai Navale College of Engineering Pune-41.

PRINCIPAL
Smt. Kashibai Navale
College of Engineering

Smt. Kashibai Navale College of Engineering Vadgaon(Bk.) Pune-41.

Pune Municipal Corpration

PUNE SOLAR CITY PROGRAM

ICLEI
Local Governments for Sustainability
ICLEI- SOUTH ASIA

COMMERCIAL SECTOR

No.	Name: Smt. Kashibai Navale COR	AREA
	Address 44/1, opp Sinhgad Road Vadgaon. Pune-41	
	Contact Number 020 - 24354938	

Sr. No.	Items	Particulars	Remarks
1	Name of commercial establishment		
2	Type of commercial activity		
3	Commercial category		
4	Type of business		
5	Number of employees/workers	4p 23	
6	Total area of the premise		
7	Total built-up area		
8	Amount of LPG used for cooking, water heating		
9	Amount of fuel wood used for cooking, water heating, room heating		
10	Any other fuel like coal / kerosene used for cooking, room heating etc.		
11	Average electricity used per month (Amount of bill paid per month)		
13	Average Load shedding/ power outage per day:		
14	How they cope up with load shedding/ power outage		
15	Standby power supply system:		
16	If Inverter is used, Capacity of Inverter (KVA) and connected load (kW):		
17	If Diesel Generator set is used capacity of DG set and diesel / month		
19	Any Renewable Energy system installed in the house?		
20	Amount of waste generated per day. Kind of waste?		

Project Manager
18.8.17
Sir
The information as applicable for your Campus (may be filled in the attached proforma and sent to us latest by 23.8.17

Dir (Campus)
Vadgaon Campus
18/8/17

Smt. Kashibai Navale College of Engineering Vadgaon(Bk.) Pune-41.

PRINCIPAL
Smt. Kashibai Navale College of Engineering
Vadgaon

S. No.	Appliances	Quantity	Watt	Hours of operation	Star ratin g
1	Air conditioners - Tonnage capacity	5		Served 24 hrs	
2	TV (New/ Old)	1	100 W	4 hrs.	
3	Ceiling fans (new/ Old)	[illegible]	60 w	8 hrs.	
4	Pedestal fan [Hall Wounted]	1			
5	Desert coolers	—			
6	Tube lights	[illegible]	40	9 hrs.	
7	Bulbs	18		8 hrs	
8	CFLs	3			
9	Outdoor lights/street lights	—			
10	Corridor and common area lights	[illegible]	40		
11	Computers	868	60	5 hrs.	
12	Printers	5		1 hrs.	
13	Xerox machines	3			
14	Scanners	5			
15	Projectors	49	100	4 hrs	
16	Refrigerator	1			
17	Geyser auto clave				
18	Immersion heater				
19	Cooking heaters/ rice cooker / Microwave	3		10 min.	
20	Room Heater				
21	Water pump	2			
22	Water purifier [Water coolers]	247	3000	24 Hours 02 hrs	
23	Tandoor				
24	Chimney (Electric / Other)				
25	Coffee Vending machine	1		10 to 15 min.	
26	Cooking Gas				
27	Ironing Press				
28	Others			1 Hrs	
	1 Bench Drill Machine	01	1000	1 Hrs.	
	2 Electrical		3 kV	240 cyls	
	3 physics		2 kV		
	4 Chemistry		2 kV		
	5 Electronics		1 K		

COPY OF ELECTRICITY BILLS

Smt. Kashibai Navale College of Engineering Vadgaon(Bk.) Pune-41.

PRINCIPAL
Smt. Kashibai Navale
College of Engineering
Vadgaon(Bk.), Pune-41.

office

S. No.	Appliances	Quantity	Watt	Hours of operation	Star rating
1	Air conditioners - Tonnage capacity	4+1		seven hours	hard
2	TV (New/ Old)	—			
3	Ceiling fans (new/ Old)	20			
4	Pedestal fan / wall mounted	1		9 hrs	
5	Desert coolers	—			
6	Tube lights	25		9 hrs	
7	Bulbs	—			
8	CFLs	03		9 hrs	
9	Outdoor lights/street lights				
10	Corridor and common area lights				
11	Computers	2 hrs		9 hrs	
12	Printers	13		*	
13	Xerox machines	1		*	
14	Scanners	1		*	
15	Projectors				
16	Refrigerator	4		24 hrs	
17	Geyser auto clave				
18	Immersion heater				
19	Cooking heaters/ rice cooker / Microwave				
20	Room Heater				
21	Water pump				
22	Water purifier				
23	Tandoor				
24	Chimney (Electric / Other)				
25	Coffee Vending machine				
26	Cooking Gas				
27	Ironing Press				
28	Others				
	1				
	2				
	3				
	4				
	5				
COPY OF ELECTRICITY BILLS					

Smt. Kashibai Navale College of Engineering Vadgaon(Bk.) Pune-41.

PRINCIPAL
Smt. Kashibai Navale
College of Engineering
Vadgaon(Bk.), Pune

EX.72

S. No.	Appliances	Quantity	Watt	Hours of operation	Star rating
1	Air conditioners - Tonnage capacity	—			
2	TV (New/ Old)	6	100W	4 Hrs	
3	Ceiling fans (new/ Old)	193	60		
4	Pedestal fan	—			
5	Desert coolers	—			
6	Tube lights	229	40	4 Hrs	
7	Bulbs	8		8 Hrs	
8	CFLs	—			
9	Outdoor lights/street lights	—			
10	Corridor and common area lights	72	40	6 Hrs	
11	Computers	187	60	4 Hrs	
12	Printers	14		1 Hour	
13	Xerox machines	—			
14	Scanners	—			
15	Projectors	10	100	4 Hrs	
16	Refrigerator	—			
17	Geyser auto clave	—			
18	Immersion heater	—			
19	Cooking heaters/ rice cooker / Microwave	—			
20	Room Heater	—			
21	Water pump	—			
22	Water purifier	2		2Hx7	
23	Tandoor	—			
24	Chimney (Electric / Other)	—			
25	Coffee Vending machine	—			
26	Cooking Gas	—			
27	Ironing Press	—			
28	Others				
	1 Water cooler	2	3000	1 Hrs	
	2 Bench Drill Machine	01	~~750~~ 1000	1 Hrs	
	3				
	4				
	5				
COPY OF ELECTRICITY BILLS					

Forwarded to SM Kale

Sagar 23/8/17

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SINHGAD INSTITUTES - SMT KASHIBAI NAVALE COLLEGE OF ENGINEERING, VADGAON BK. CAMPUS, PUNE

7.1.6

S. No.	Appliances	Quantity	Watt	Hours of operation	Star rating
1	Air conditioners - Tonnage capacity	—			
2	TV (New/ Old)	—			
3	Ceiling fans (new/ Old)	134	500	4 hrs	
4	Pedestal fan	—			
5	Desert coolers	—			
6	Tube lights	176	40	6 hrs	
7	Bulbs	—			
8	CFLs	—			
9	Outdoor lights/street lights	—			
10	Corridor and common area lights	24	40	3 hrs	
11	Computers	285		6 hrs	
12	Printers	10		3 hrs	
13	Xerox machines (BCIID)	01		4 hrs	
14	Scanners	01		1/2 hrs	
15	Projectors	11		4 hrs	
16	Refrigerator	—			
17	Geyser auto clave	—			
18	Immersion heater	—			
19	Cooking heaters/ rice cooker / Microwave	01	1000	1/2 hrs	
20	Room Heater	—			
21	Water pump	—			
22	Water purifier	02		24 hrs	
23	Tandoor	—			
24	Chimney (Electric / Other)	—			
25	Coffee Vending machine	—			
26	Cooking Gas	—			
27	Ironing Press	—			
28	Others	—			
	1	—			
	2	—			
	3	—			
	4	—			
	5				
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23/08/17
COMP. DEPT.

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7.1.6

I.T. Dept

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S. No.	Appliances	Quantity	Watt	Hours of operation	Star rating
1	Air conditioners - Tonnage capacity	00			
2	TV (New/ Old)	00			
3	Ceiling fans (new/ Old) (old.)	93	75W.	06	
4	Pedestal fan	00			
5	Desert coolers	00			
6	Tube lights	65	40W	07	
7	Bulbs	00			
8	CFLs	00			
9	Outdoor lights/street lights	00			
10	Corridor and common area lights				
11	Computers				
12	Printers	03		01	
13	Xerox machines	00			
14	Scanners				
15	Projectors				
16	Refrigerator				
17	Geyser auto clave				
18	Immersion heater				
19	Cooking heaters/ rice cooker / Microwave				
20	Room Heater				
21	Water pump				
22	Water purifier				
23	Tandoor	00			
24	Chimney (Electric / Other)	00			
25	Coffee Vending machine	00			
26	Cooking Gas	00			
27	Ironing Press	00			
28	Others	00			
	1	00			
	2	00			
	3	00			
	4	00			
	5	00			
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MECHANICAL DEPT. Date: 23/08/2017

S. No.	Appliances	Quantity	Watt	Hours of operation	Star rating
1	Air conditioners - Tonnage capacity	—	—	—	—
2	TV (New/ Old) New (Bcud)	01	1000	01 Hrs	—
3	Ceiling fans (new/ Old)	174		06 Hrs	—
4	Pedestal fan	—	—	—	—
5	Desert coolers	—	—	—	—
6	Tube lights	277	40	06 Hrs	—
7	Bulbs	01	50	02 Hrs	—
8	CFLs	—	—	—	—
9	Outdoor lights/street lights	—	—	—	—
10	Corridor and common area lights	—	—	—	—
11	Computers	109	—	08 Hrs	—
12	Printers	07	—	03 Hrs	—
13	Xerox machines (Bcud)	01	—	02 Hrs	—
14	Scanners	01	—	04 Hrs	—
15	Projectors	09	—	03 Hrs	—
16	Refrigerator	—	—	—	—
17	Geyser auto clave	—	—	—	—
18	Immersion heater	—	—	—	—
19	Cooking heaters/ rice cooker / Microwave	01	1000 watt	1/2 Hrs	—
20	Room Heater	—	—	—	—
21	Water pump	02	—	3 Hrs/year	—
22	Water purifier	03	—	8 Hrs	
23	Tandoor	—	—	—	—
24	Chimney (Electric / Other)	—	—	—	—
25	Coffee Vending machine	—	—	—	—
26	Cooking Gas	—	—	—	—
27	Ironing Press	—	—	—	—
28	Others	—	—	—	—
	1				
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7.1.6

~~E~~ MBA :

S. No.	Appliances	Quantity	Watt	Hours of operation	Star rating
1	Air conditioners - Tonnage capacity	—	—	—	—
2	TV (New/ Old)	—	—	—	—
3	Ceiling fans (~~new~~/ Old)	07	55	05	—
4	Pedestal fan	—	—	—	—
5	Desert coolers	—	—	—	—
6	Tube lights	08	40	08	—
7	Bulbs	—	—	—	—
8	CFLs	—	—	—	—
9	Outdoor lights/street lights	—	—	—	—
10	Corridor and common area lights	—	—	—	—
11	Computers	07	300	08	—
12	Printers	01	250	08	—
13	Xerox machines	—	—	—	—
14	Scanners	—	—	—	—
15	Projectors	02	200	05	—
16	Refrigerator	—	—	—	—
17	Geyser auto clave	—	—	—	—
18	Immersion heater	—	—	—	—
19	Cooking heaters/ rice cooker / Microwave	—	—	—	—
20	Room Heater	—	—	—	—
21	Water pump	—	—	—	—
22	Water purifier		—	—	—
23	Tandoor	—	—	—	—
24	Chimney (Electric / Other)	—	—	—	—
25	Coffee Vending machine	—	—	—	—
26	Cooking Gas	—	—	—	—
27	Ironing Press	—	—	—	—
28	Others				
	1				
	2				
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	5				
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FR

S. No.	Appliances	Quantity	Watt	Hours of operation	Star rating
1	Air conditioners - Tonnage capacity				
2	TV (New/ Old)				
3	Ceiling fans (new/ Old)	181		8 hrs	
4	Pedestal fan				
5	Desert coolers				
6	Tube lights	185		8 hrs	
7	Bulbs	10		3	
8	CFLs				
9	Outdoor lights/street lights				
10	Corridor and common area lights	36		8	
11	Computers	80		8	
12	Printers	3		2	
13	Xerox machines				
14	Scanners				
15	Projectors	12		8	
16	Refrigerator				
17	Geyser auto clave				
18	Immersion heater				
19	Cooking heaters/ rice cooker / Microwave				
20	Room Heater				
21	Water pump				
22	Water purifier	3		8	
23	Tandoor				
24	Chimney (Electric / Other)				
25	Coffee Vending machine				
26	Cooking Gas				
27	Ironing Press				
28	Others				
	1 Electrical		3 kw	2×0.5×8	
	2 Physics		1 KW	20×1×18	
	3 Chemistry		2 kw	2×0.1×18	
	4 Elevator		1 K	1×0.1×18	
	5				
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Pune Municipal Corpration

PUNE SOLAR CITY PROGRAM

ICLEI
Local Governments for Sustainability
ICLEI- SOUTH ASIA

COMMERCIAL SECTOR

No.	Name: SINHGAD TECHNICAL EDUCATION SOCIETY Address 44/1 Vadgaon BK Pune-41 Contact Number	AREA

Sr. No.	Items	Particulars	Remarks
1	Name of commercial establishment	SINHGAD TECHNICAL EDUCATION SOCIETY	
2	Type of commercial activity	EDUCATIONAL INSTITUTE	
3	Commercial category	EDUCATIONAL INSTITUTE	
4	Type of business	EDUCATIONAL INSTITUTE	
5	Number of employees/workers	1698	
6	Total area of the premise	21.46 Hector	
7	Total built-up area	125656.01 Sqmtrs	
8	Amount of LPG used for cooking, water heating (Mess Only.)	250 to 270 LPG Per Month	
9	Amount of fuel wood used for cooking, water heating, room heating	NO	
10	Any other fuel like coal / kerosene used for cooking, room heating etc.	No	
11	Average electricity used per month (Amount of bill paid per month)	30,51,000=00	
13	Average Load shedding/ power outage per day:	1 hrs 40 min per day	
14	How they cope up with load shedding/ power outage	Diesel Generator	
15	Standby power supply system:	D.G. Set	
16	If Inverter is used, Capacity of Inverter (KVA) and connected load (kW):	List Attached.	
17	If Diesel Generator set is used capacity of DG set and diesel / month	① 500KVA - 1200 ltrs (Per month) ② 125 KVA - 800 ltrs (Per month)	
19	Any Renewable Energy system installed in the house?		
20	Amount of waste generated per day. Kind of waste?	Wet Garbage - 120 to 125 M TON/DAY Dry Garbage - 60 to 65 M TON/DAY (Vadgaon & Ambegaon)	

Director
Sinhgad Technical Education Society
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SINHGAD INSTITUTES - SMT KASHIBAI NAVALE COLLEGE OF ENGINEERING, VADGAON BK. CAMPUS, PUNE

7.1.6

S. No.	Appliances	Quantity	Watt	Hours of operation	Star rating
1	Air conditioners Tonnage capacity	70	1800W		
2	TV (New/ Old)	155	200W		
3	Ceiling fans (new/ Old)	4251	80W		
4	Pedestal fan	18	65W		
5	Desert coolers	12	70W		
6	Tube lights	6083	40W		
7	Bulbs	1043	40W		
8	CFLs	43	20W		
9	Outdoor lights/street lights	332	250W		
10	Corridor and common area lights	423	40W		
11	Computers	2448	250W		
12	Printers	174	350W		
13	Xerox machines	16	1500W		
14	Scanners	33	50W		
15	Projectors	113	300W		
16	Refrigerator	229	350W		
17	Geyser auto clave	118	3000W		
18	Immersion heater	9	1000W		
19	Cooking heaters/ rice cooker / Microwave	39	3000W		
20	Room Heater	2	500W		
21	Water pump				
22	Water purifier & Water Cooler	75	400W		
23	Tandoor	1	2500W		
24	Chimney (Electric / Other)	10	1500W		
25	Coffee Vending machine	3	750W		
26	Cooking Gas				
27	Ironing Press	2	500W		
28	Others				
	1 List attached.				
	2				
	3				
	4				
	5				
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OTHERS

Sr. No	APPLIANCES	CAPACITY	QTY	Watt
1	Deep freez		13	1100
2	ATM Machine		5	750
3	EXHAUST FAN		36	80
4	DISTILLATION		6	220
5	HOT AIR OVEN		10	220
6	WATER DISTILLATION UNIT		6	220
7	HOT PLATES		5	220
8	COMPRESSOR		2	13428
9	STABILITY CHAMBER		1	220
10	DISSOLUTION APPARATUS		1	220
11	BEN MARY		9	1500
12	INSECT KILLER		24	40
13	MIXER		5	350
14	GRINDER		8	750
15	ATTA MACHINE		3	750
16	GRAVY MACHINE		5	750
17	Water Pump	12.5 HP	1	9325
		15 HP	3	11190
		5 HP	1	3730
		3 HP	72	2238
		2 HP	9	1492
		1 HP	4	746
		41 HP	1	30586
		52 HP	2	38792
		62 HP	2	46252
		25 HP	2	18650
		7.5 HP	2	5595
		10 HP	2	7460

UPS LIST	RATING	QUANTITY
1	10 KVA	1
2	5 KVA	1
	3 KVA	1
	500 VA	23
	15 KVA	2
	50 KVA	1
	25 KVA	1
	6 KVA	2
	1 KVA	4
	0.600 KVA	3
	0.800 KVA	1
	2 KVA	1
	2.5 KVA	1

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Pune Municipal Corpration

PUNE SOLAR CITY PROGRAM

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ICLEI- SOUTH ASIA

COMMERCIAL SECTOR

No.	Name: SINHGAD TECHNICAL EDUCATION SOCIETY Address Ambegaon BK Pune Contact Number	AREA

Sr. No.	Items	Particulars	Remarks
1	Name of commercial establishment	SINHGAD TECHNICAL EDUCATION SOCIETY	
2	Type of commercial activity	EDUCATIONAL INSTITUTE	
3	Commercial category	EDUCATIONAL INSTITUTE	
4	Type of business	EDUCATIONAL INSTITUTE	
5	Number of employees/workers	1209	
6	Total area of the premise	11 Hector 81.21 AAR	
7	Total built-up area	187491.86 sqmtrs	
8	Amount of LPG used for cooking, water heating (Mess Only)	550 to 600 LPG Per Month	
9	Amount of fuel wood used for cooking, water heating, room heating	No	
10	Any other fuel like coal / kerosene used for cooking, room heating etc.	No	
11	Average electricity used per month (Amount of bill paid per month)	21,72,900=00	
13	Average load shedding/ power outage per day:	1 hrs 40min per day	
14	How they cope up with load shedding/ power outage	Diesel Genrator	
15	Standby power supply system:	D.G. Set	
16	If Inverter is used, Capacity of Inverter (KVA) and connected load (kW):	List Attached.	
17	If Diesel Generator set is used capacity of DG set and diesel / month	① 500KVA - 80ltrs (Per Month) ② 500KVA - 80ltrs (Per Month)	
19	Any Renewable Energy system installed in the house?		
20	Amount of waste generated per day. Kind of waste?		

Director
Sinhgad Technical Education Society
Vadgaon(Bk.), Pune - 411 041

Executive Engineer
ELECTRICAL OFFICER

Smt. Kashibai Navale College of Engineering
Vadgaon(Bk.)
Pune-41.

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Vadgaon(Bk.), Pune-41

SINHGAD TECHNICAL EDUCATION SOCIETY

VADGAON – AMBEGAON CAMPUS, PUNE

Sinhgad Institutes

STES / Director / 2017-18 Date : 21.08.2017

To,

All Directors / Principals of Colleges / Institutes / Schools
of Vadgaon & Ambegaon Campuses

Chief Rector, Sinhgad Boys Hostels

Rector, Girls Hostels

DETAILS OF ELECTRICITY CONSUMPTION IN RESPECT OF VADGAON-AMBEGAON CAMPUS

1. Kindly refer to the attached format in respect of *Pune Solar City Program* of Pune Municipal Corporation, Pune.

2. You are hereby directed to submit the necessary information in respect of your institution in the attached format.

3. The information should reach this office **on or before 22.08.2017 at 03.00pm,** without fail.

Dr. A. V. Deshpande
Director
STES, Vadgaon(Bk)

Copy to :-

Resident Officer	-	for necessary action in respect of Vadgaon & Ambegaon Campuses.
Mr. Fernandis S R Jr. Electrical Engineer	-	for necessary action in respect of Vadgaon & Ambegaon campuses.

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Swimming Pool, Vadgaon Campus

1. **Swimming Pool Timings**:-

Sr. No.	Description	Old Timings	Changed Timings
1.	Boys Students	Sun to Wed – 07.00am to 09.00am	07.00am to 10.00am
2.	Girls Students	Thurs & Fri - 07.00am to 09.00am Fri & Sun – 03.00pm to 05.00pm	04.00pm to 07.00pm

Note - (i) Present Closed Day - Monday
(ii) Remain functional on all Holidays also.

2. **Present Manpower** - Swimming Pool Attendant- 01 No.
Sweeper (Male) - 01 No.

3. **Work Schedule** - 12 hours (plus 30 - 45 Minutes more)

4. **Present work profile**

(i) Swimming Pool Attendant

(a) Swimming Pool Cleaning / Maintenance (05 Hours)
(b) Register Entries – In / Out
(c) Life Guard
(d) Rachana Farm House Swimming Pool cleaning and Maintenance
(e) Minor work of SSDPS, Vadgaon

(iii) Sweeper

(a) Cleaning works to include toilets, changing rooms and adjacent areas.
(b) Assist in above works.
(c) In / Out entries.

5. **Major Problems (due to change in time)**

(i) Long Working hours – 12 hours and 30 Minutes
(ii) Leaves / Holidays not adjusted
(iii) No time for Rachana Farm Swimming Pool maintenance

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6. **Manpower required for smooth functioning with changed time** :-

Sr. No.	Working Hours	Swimming Pool Attendants	Sweepers	Remarks
1.	**07.00am to 03.30pm** (08 hours & 30 minutes)	02 (Male)	01 (Male)	Swimming Pool Attendants will also lookafter Swimming Pool of Rachana Farm House, as per fix schedule / as needed.
2.	**03.30pm to 07.30pm** (04 Hours)	01 (Female)	01 (Female)	Both staffs may be deputed from Girls Hostels during said period

7. **Responsibilities** :-

(a) Swimming Pool Attendant (Male) -

(i) Swimming Pool Cleaning & Maintenance
(ii) Register Entries – In / Out
(iii) Life Guard
(iv) Rachana Farm House Swimming Pool cleaning and Maintenance
(v) Minor works of SSDPS, Vadgaon
(vi) Leaves / W-Offs / Holidays / outside works adjustment (within)
(vii) Overall responsibility of both Swimming Pools

(b) Sweeper (Male) -

(i) All cleaning works to include toilets, changing rooms and adjacent areas.
(ii) To assist Swimming Pool Attendants in all works.

(c) Swimming Pool Attendant (Female) -

(i) Allowing Entries (Checking of Identity Cards – In/Out)
(ii) Life Guard (able to swim atleast)
(iii) Overall supervision

(d) Sweeper (Female) -

(i) All cleaning works to include toilets, changing rooms and adjacent areas.
(ii) To assist Swimming Pool Attendant in all works.
(iii) Closing of Swimming Pool & submission of keys.

Note :- Charge of Swimming Pool will be handed over between (1) & (2) @ Para No. 6

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National Service Scheme (NSS)2020-2021

TREE PLANTATION DRIVE

"Plant a tree and get oxygen for free."

On the occasion of the Republic day (26th January 2021), a tree plantation drive was conducted by the NSS unit of Smt.Kashibai Navale College of Engineering, Pune at the Taljai Hills. The activity initiated at 9:15 A.M. All the volunteers gathered at the parking of SKNCOE new building. Thereafter, all the volunteers sang the National Anthem with great pride and energy in themselves. Then, all the volunteers departed for the Taljai Hills in the group as per assigned to them. Also, each and every group of the volunteers was assigned a group leader.

The chief guests for the activity were Dr.A.V.Deshpande (Principal, SKNCOE), Dr.K.R.Borole (Vice-Principal, SKNCOE) and the HoD's, Dr. Nitin Sherje, Dr. Parikshit Mahale, Prof.Mahesh Alandkar, Dr.Sonal Jagtaap and Prof.Ravi Borhade.The activity was followed by the guidance of the Program Officer Prof.Sanjay Pingat Sir. Punctuality was given at most importance. In total, 42 volunteers took part in this activity and 16 saplings were planted.The saplings of Hibiscus, River Tamarind and others, were planted in this activity. Each group had

their group leaders those who kept on guiding them throughout the session. All the volunteers were give demo by the group leaders and then activity was started by the new recruits.Great efforts were made by all the volunteers to make the activity successful. Discipline was very well maintained by complete unit. After the tree plantation session, they had experience sharing session in which the feedback given by the volunteers were remarkable.

The happiness of planting the trees was seen on their faces. The session successful ended by the guidance of Prof. S. P. Pingat Sir. Youth empowerment was clearly illustrated by the NSS volunteers by their work.

FEW CLICKS FROM THE ACTIVITY

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National Service Scheme (NSS)2020-2021

TREE PLANTATION ACTIVITY

As we all know, the whole world is facing the problem of global warming and to recover from such a problem, planting trees has become one of the most important aspect for the current situation. Trees are the foremost source for production of oxygen and they also help us to reduce the level of carbon dioxide.

The NSS unit of SKNCOE organized Tree Plantation activity on the auspicious occasion of Gandhi Jayanti from the duration of 1st of October to 3rd of October 2020. The activity took place in the personal premises of volunteers due to COVID-19 outbreak.

Under the virtual guidance of Program Officer S.P.Pingat Sir, total 65 trees were planted by the volunteers, following all the safety guidelines during the pandemic. Also each and every volunteer holds the responsibility to nourish and maintain the allocated plant.

All the volunteers had definitely felt happy and had a proud moment for them happy and experience proud after the plantation, as it really feels great to do even a little positive thing in the contribution of nature.Hence the activity came to a

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successful end as we know, "***Great things are not done by impulse, but by a series of small things brought together.***"

SOME CLICKS OF THE ACTIVITY

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National Service Scheme (NSS) 2019-2020

TREE PLANTATION ACTIVITY

"If you plant a tree, you plant a life" and so was done by the NSS unit of Smt. Kashibai Navale College of Engineering Pune on 6th July at Taljai. The activity started at 8:30 am and all the volunteers were prepared to achieve the target of planting 100 trees on Taljai hills. There were total 70 volunteers. The activity was open to all. It was good to see huge number of non - NSS members as well.

All volunteers gathered near SKNCOE new building and groups were formed so as to maintain the discipline. All groups were given different names of trees like Chandan, Banyan, Babul, Neem, Bamboo, etc. so as to keep the volunteers acquainted with names of different trees. All the groups were provided with the tree saplings of Sarval, Chinch and Karvand. The tree saplings were]

provided by the forest department by Ghadge mam.

Each group had their group leaders those who kept on guiding them throughout the session. Great efforts were made by all the volunteers to make the activity successful. Discipline was very well maintained by complete unit.

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And they all completed the target of planting 100 tress. After the tree plantation session, they had experience sharing session in which the feedback given by the volunteers were remarkable. The happiness of planting the trees was seen on their faces. The session successful ended by the guidance of Prof. Pingat Sir. Youth empowerment was clearly illustrated by the NSS volunteers by their work.

NSS volunteers planting a sapling

NSS Volunteers after activity is successfully completed

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National Service Scheme (NSS) 2019-2020

RAJGAD TREK & CLEANLINESS ACTIVITY

"The Best View Comes After The Hardest Climb" and so was done by the NSS unit of Smt. Kashibai Navale College of Engineering Pune On the occasion of Mahatma Gandhi Jayanti on 2nd October at Rajgad Fort (The First Capital Of Swarajya). The activity started at 6:00 am and all the volunteers were prepared to trekking of fort and also for its cleaning. There were total 80 volunteers. All volunteers gathered near SKNCOE new building and groups were formed so as to maintain the discipline. Then, almost at 6:30am we started our Journey towards the fort by bus. And Around 11:00 am, we reached there. We Started our trek and at 1:00 pm, we were on the top of Rajgad fort. On the fort all volunteers get forward for Our Main Motive of Cleanliness Activity at Rajgad Fort. Great efforts were made by all the volunteers to make the activity successful. Discipline was very well maintained by complete unit. And they all completed the trek and cleanliness activity.

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NSS Volunteers After Cleaning the Rajgad Fort

The happiness and also little bit tiredness of Trekking was seen on their faces. This activity successfully ended by the guidance of our program officer Prof. Pingat Sir. Youth empowerment was clearly illustrated by the NSS volunteers by their work.

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NSS Volunteers after activity is successfully completed

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National Service Scheme (NSS)2019-2020

TREE PLANTATION

(VIRTUAL ACTIVITY DURING COVID-19)

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With this thought NSS unit of Smt. Kashibai Navale College of engineering, Pune took an initiative and implemented an idea of Tree Plantation on the occasion of World Environment Day in collaboration with Kartavya Welfare Trust and STES NSS units. This activity Started on 7th June 2020 under the guidance of program officer of NSS SKNCOE Prof. Sanjay Pingat Sir.

This year due to this pandemic we can't go out so we came up with different manner by taking #treeplantationchallenge. In this activity all the volunteers were asked to plant a tree or make a seed balls and sow it nearby house with all safety precautions and then take a photo or video and posting it on social media with "@nss_skncoe" tag. Also, volunteers were asked to nominate their friends to do the same. Process of making seed balls was also explained through the video andppt.

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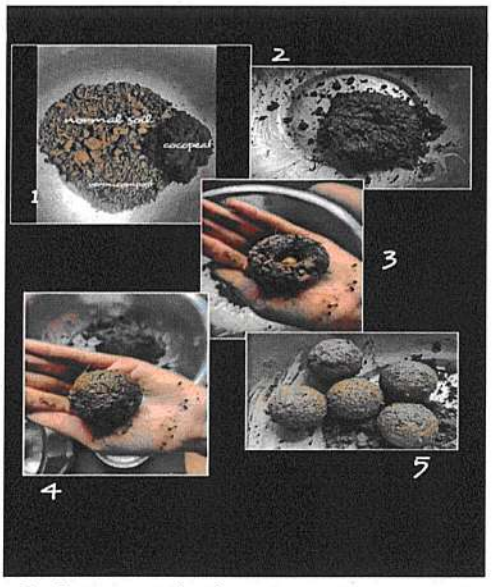
will definitely help to nature growth. Thus, Tree Plantation activity was great success and inspired others to serve nature.



Few Glimpses of the activity.

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National Service Scheme (NSS) 2019-2020

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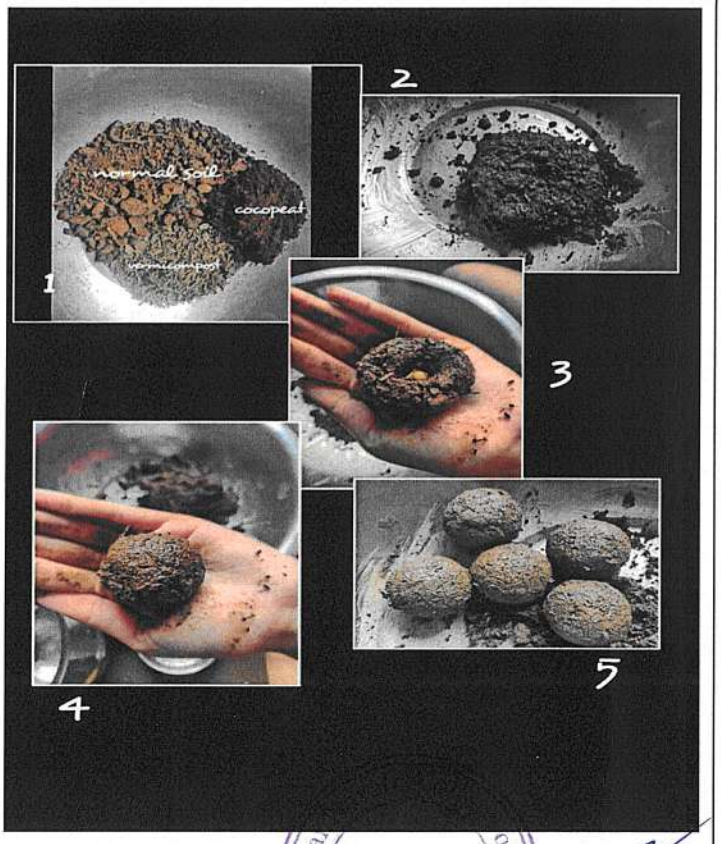

Some Glimpse of activity

BE SOCIAL, BE HAPPY

॥ सेवा परमो धर्म ॥

THANK YOU...!!!

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National Service Scheme (NSS) 2019-2020

SINHGAD FORT

(CLEANLINESS & CONSERVATION ACTIVITY)

On 23rd February 2020, Savitribai Phule Pune University along with NSS organized an activity of "SINHGAD CLEANLINESS AND CONSERVATION" at the SINHGAD fort.

So, as per the guidelines given by SPPU, the NSS unit of SKNCOE was present at the base of the SINHGAD fort at 7:00 A.M., many other units of NSS from different colleges were also present for the same activity as the activity was conducted by SPPU. Then, all the volunteers started trekking on the fort. Each and every volunteer was energetically and enthusiastically ready to be the part of the activity. The dignitaries for the activity also were present for the trek along with the volunteers. All the volunteers reached the top of the fort at nearby 9:00 A.M.. A function was organized by SPPU at the top of the fort to guide all the volunteers about the activity. The main motto behind conducting this activity is to conserve the historical places in our country. So SPPU initiated for the cause with this activity. For the activity near about 1300 volunteers were present representing NSS.

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Volunteers Enthusiastically Taking Part In a Activity

For the guidance of the activity, dignitaries present for the function were SPPU Vice-Chancellor('KULGURU') Dr. Nitin R. Karmalkar, Program Co-Ordinator of SPPU NSS Dr. Prabhakar Desai and many other dignitaries were present. Dr. Nitin R. Karmalkar Sir shared his words of wisdom with all the volunteers and explained about the motto behind this activity. Dr. Prabhakar Desai Sir explained about the activity and guided the volunteers.

A "POWADA" session was also conducted for the volunteers to enlighten the pride in volunteers about the great personalities who had fought for the "**SWARAJ**". For the volunteers refreshment was also organized. Then all the volunteers were distributed t-shirts and caps. Then all the volunteers worked for the cleanliness of the Fort. Near about 20 bags of garbage were gathered by all the volunteers present for the activity. Even though it was noon, each and every volunteer worked enthusiastically. The total no. of volunteers from NSS SKNCOE were 24. Each and every volunteer worked enthusiastically though it be for the trek or the activity of cleanliness. A small felicitation program was also organized by the dignitaries to felicitate our unit of NSS SKNCOE.

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The presence of our Program Co-Ordinator Mr. Sanjay Pingat Sir and Staff Co-Ordinator Mr. Ranaware Sir was valuable as they also guided us throughout the activity and shared their words with all the volunteers.

Felicitation By Dignitaries Of SPPU NSS.

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Sinhgad Institutes

Sinhgad Technical Education Society's

Smt. KashibaiNavale College of Engineering

Department of Engineering Sciences

Vadgaon Bk. Pune 411041

NOTICE

02.08.2019

All Students of First year Engineering are hereby informed that **Campus Cleaning and Tree Plantation arranged under Induction Program** is being scheduled on **10.08.2019 & 15.08.2019**

It is organized by **SKNCOE FE Engineering Science Department.** The other details as mentioned.

The topic of the Event: **Campus Cleaning and Tree Plantation arranged under Induction Program**

Date: **10.08.2019&15.08.2019**

Time:**08:30 AM to 04:00 PM.**

Venue: **College Campus & Taljai Hill**

Students of All divisions to attend the same.

Signed By

Dr S.A. Sawant
Organizer

Smt. Kashibai Navale College of Engineering Vadgaon (Bk.) Pune - 41.

Head of Department
Engineering Science Department

Head of Department
Engineering Science Department
Smt. Kashibai Navale College
of Engineering, Vadgaon, Pune - 41.

Sinhgad Institutes

Sinhgad Technical Education Society's

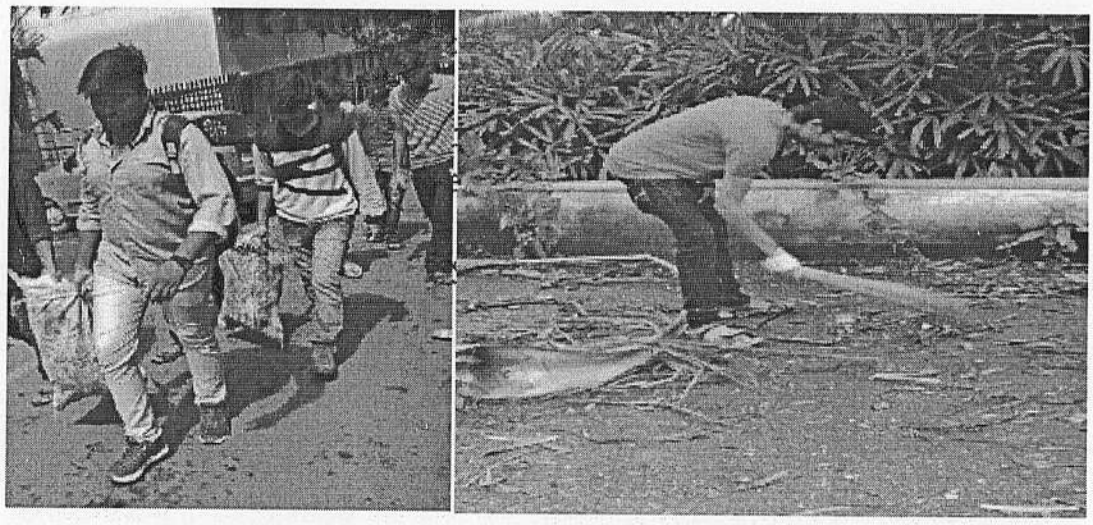
Smt. Kashibai Navale College of Engineering

Department of Engineering Sciences

Vadgaon Bk. Pune 411041

Sr. No	Particulars	Description
1	Institute – Department	SKNCOE- Dept. of Engineering Sciences
2	Academic Year	A.Y. 2019 – 2020
3	Batch or Participants	First Year
4	Name of Event	**Campus Cleaning and Tree Plantation**
5	Date of Event	10.08.2019 and 15.08.2019
6	Time of Event	08:30 AM to 05:00 PM
7	Venue	College Campus
8	Topic or Theme	**Cleaning and Tree Plantation**
9	Faculty Coordinator	Dr. S.A. Sawant and Prof. N.B.Patil.
10	Name & Profile of Guest	-
11	Number of Participants	337/408

Supporting Photographs of Participant in Campus Cleaning



Head of Department
Engineering Science Department
Smt. Kashibai Navale College of Engineering, Vadgaon, Pune-41.

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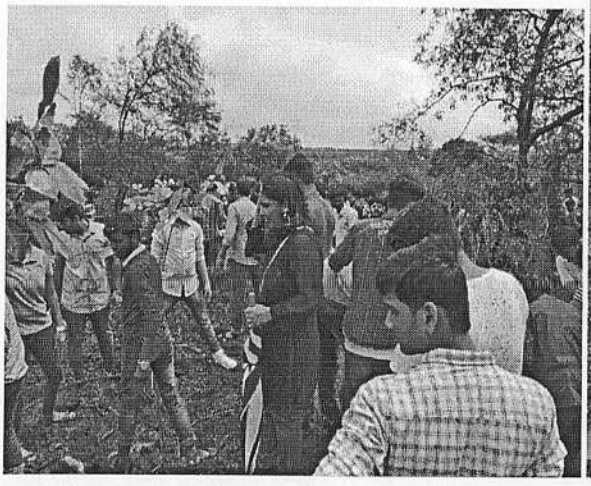

Signed By

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Smt. Kashibai Navale College
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Smt. Kashibai Navale College of Engineering, Pune-41

National Service Scheme (NSS)2019-2020

TREE PLANTATION

(VIRTUAL ACTIVITY DURING COVID-19)

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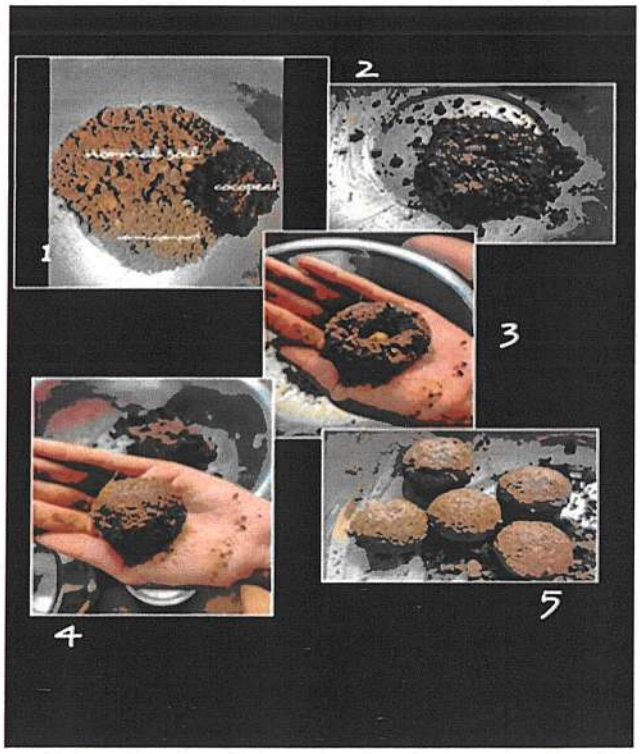
7.1.5



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Tree Plantation :

Importance of trees to our mother earth is guided by volunteers. Main focus was not only to plant the trees but harvesting it in the future.

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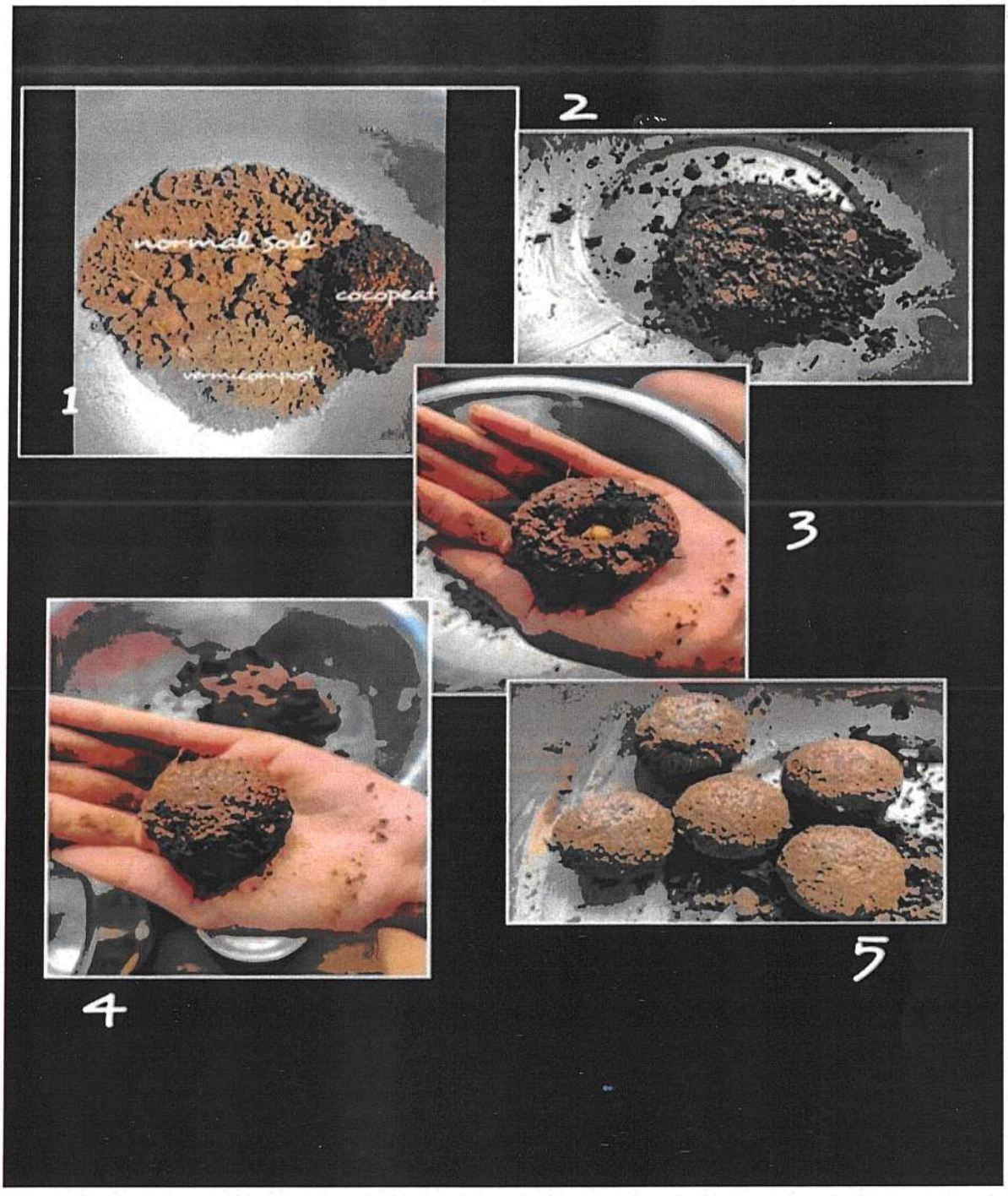

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Smt. Kashibai Navale College of Engineering
Vadgaon(Bk.)
Pune-41.

PRINCIPAL
Smt. Kashibai Navale
College of Engineering

To,

Date 26/09/2016

श्री. पांचुक सर,
इस्टेट मॅनेजर.
सिंहगड टेक्निकल एज्युकेशन सोसा.
वडगाव व अंबेगाव बुद्रुक पुणे

Pl. circulate

Subject: Awareness rally to follow traffic rules on 6th October 2016

Dear Sir,

Pune is well known for its beauty, greenery, culture, education and sports. The achievements of Punekars in these fields are recognized and celebrated nationally and internationally. Although we are extremely proud of the city and its achievements, we will also agree that the livability and vibrancy of this beautiful city needs upliftment.

Our daily commute, be it just down the street for some last minute errands, or perhaps across the city for work, leaves us frustrated, exhausted and irritated. Cases of road rage are on the rise while respect for fellow road users is on the decline. Economically and technologically we have made a lot of progress but how did we go from a society of culture to predominantly a bunch of unruly aggressive law breaking individuals? Can we honestly claim that we are the torch bearers for the state and country when it comes to culture and civic sense? Is Pune really the cultural capital of Maharashtra?

Looking at the current state of affairs on Pune's roads, with its ruthless disobedience for basic traffic rules, one would wonder...are all Punekars this way? Does lawlessness, irrationality and volatility define a true Punekar? The answer is 'NO'. Although it may appear that the general public continues to display a blatant disregard to traffic rules, there are number of Punekars who continuously abide by the rules (even in the absence of law enforcement). Unfortunately, this minority which follows traffic rules is constantly made to feel that they are the ones at fault. This has to change and everyone of us wants' this change. To make the beginning, We request your support in this endeavour!

To initiate this transformation, let us come together in large numbers to demonstrate our willingness to bring about a revolution. Let us stand together all across the city to form the Longest Human Chain Taking a Pledge to Follow Traffic Rules. The time for change is now. Pune Traffic Police would like to invite you to spare Morning 9 am to 11 am clock of your time on 6th October to display your solidarity with the cause of making Pune a civilised rule abiding society.

Details of this program will follow. We look forward to your attendance in making this event a grand success.

We request you to block 6th October 2016 and the best 2 hours time of your officers/members/students / staff.

Let us all together, start a journey, to make our Pune, an ideal city which follows traffic rules.

Regards,

Dr. Pravin Mundhe
DCP- Traffic, Pune City

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Hôble Founder President STES
for your information & necessary action please.

22/09/16

Panchal 26/9/16
P. A. Panchal
Registrar/Estate Manager
...ation Society

Kashibai Navale College of Engineering
Vadgaon(Bk.)
Pune-41.

opy to Director STES

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NSS volunteers planting a sapling NSS Volunteers after activity is successfully completed

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7.1.5

Cyclothon Pune

NSS SKNCOE Cyclothon Season 2, Pune. 7th October 2018

National Service Scheme (NSS) unit of Smt. Kashibai Navale College of Engineering, volunteered the Cyclothon Season 2 Pune organized by "Lok baradari Mitra Mandal, Savitribai Phule Pune University and National Service Scheme". It is imperative to mention that this event was conducted in SP college, Tilak Road. As volunteers of NSS Unit SKNCOE regularly organize different activities in and around the campus, this time the volunteers planned to be volunteer for Cyclothon Pune organized in SP College. The objective of this activity was to direct cyclers, provide refreshments and help them in every possible way.

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NSS volunteers holding direction sign board

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7.1.5

TRAFFIC MANAGEMENT and

Road Safety Awareness Drive

NSS SKNCOE conducted **Traffic management and awareness drive** on **13th ,22nd ,23rd September 2018** in collaboration with Maharashtra police.

Day 1,13th September 2018

The activity was venued near **Vadgoan bridge.** Inspite of having a government holiday on 13th our NSS not only actively participated in it ,but worked with full determination and enthusiasm

On 13th Sept. volunteers reported at 10:30 a.m. near cultural centre where all the instructions were given. After having a small breakfast all the volunteers marched towards **PMT bus stand**. All the

volunteers eagerly waited for bus for more than one hour under a small tree situated near bus stop to hide themselves from 11 passed sun.

After reporting, volunteers were provided with a **whistle** and divided into a group of 7. Every group had different location under surveillance. Situations like public not listening, vehicles not clearing the place etc. arrived where managing was a bit tougher. Unity of volunteers along with police support helped them to keep every situation under control

Volunteer managing traffic at Vadgoan bridge

Everyone worked from 12:30 p.m.to 3 p.m. without any break in between under bright sunny afternoon. Meanwhile Prof. **Prasad**

Bhosale joined us. Looking at our persistence and determination police officers arranged a **treat of samosas** at the end.

NSS Volunteers enjoying the treat

Day 2 ,22 September 2018

The venue for 2nd day spread from **Brahma Hotel ,Sinhgad road to Dhayari village**. Activity started at 4.30 pm after getting instructions from PSI Bhosale sir.

Spots covered

1. Brahma hotel, Sinhgad road
2. Ganga Bhagyoday
3. Vadgoan Phata
4. Vadgoan bridge
5. Dhayari Phata

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6. Ladli dukan
7. Kaka halwai
8. Tarangan building
9. Galli no 24
10. Mukta Garden
11. Bhavani sweet Chowk

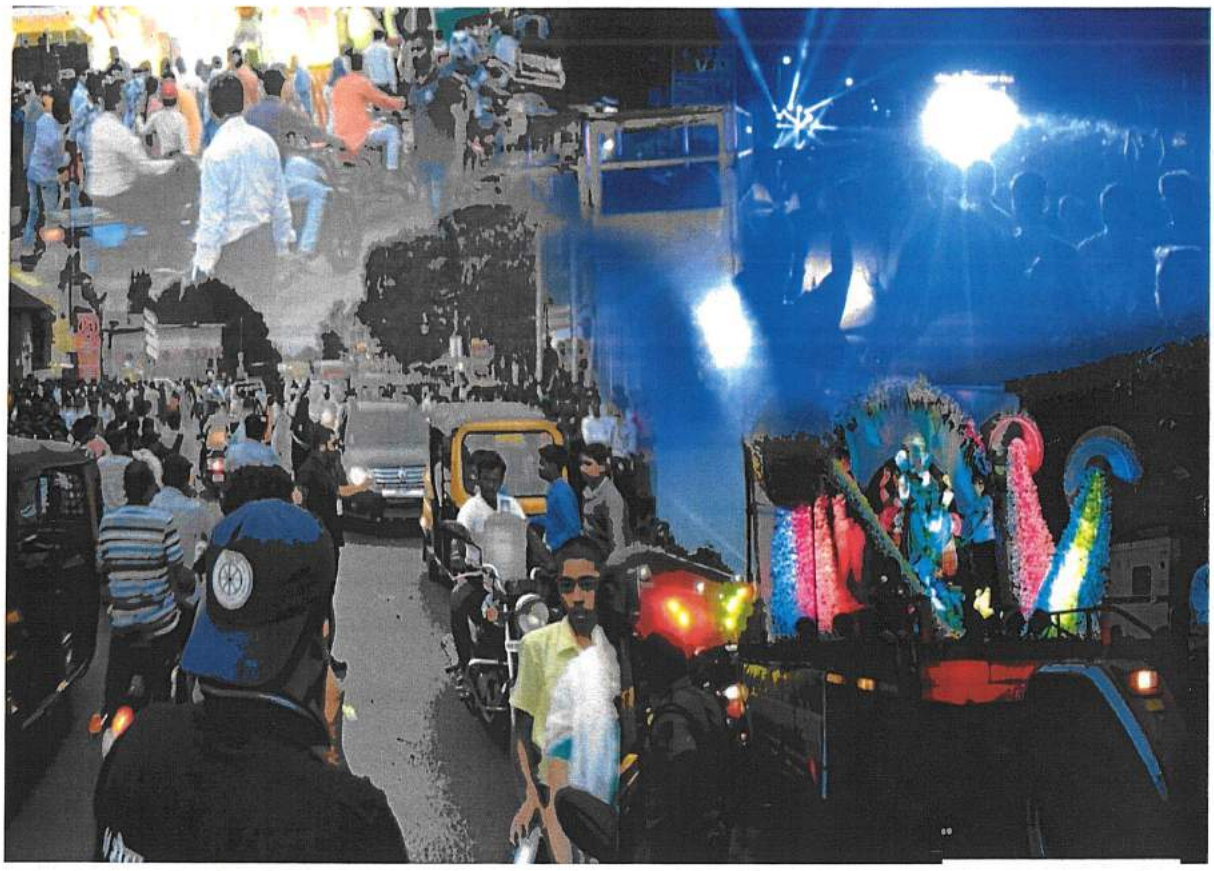
A total of 52 volunteers were involved covering 11 different spots.

Volunteers were divided according to the spot and density of traffic dynamically.

PSI Bhosale sir Instructing volunteers

7.1.5

The Ganpati Miravnuk started around 5 pm. Dhol Tasha pathaks and DJ systems attracted huge amount of public on road. This increased traffic and even road blocks at certain spots. According to the instructions volunteers started their work. Immense crowd at certain spots tested volunteer's patients and handing capability. Coordinating with police, volunteers were able to clear the traffic and give path for Ganpati miravnuk.



Volunteers managing traffic

Volunteer's affection into the job made them forget about activity's end time.

Volunteers making way for bus

Due to immense traffic and small road college buses were unable to move. Volunteers made path for buses to move. By 9.30pm everyone reached campus

Day 3 ,23rd September 2019

Ganpati Visarjan day. Area- **Saras baug to Balshivaji chawk**. As the venue was the center of attraction for public and transport ,immense traffic was awaiting to be cleared.

Spots covered

1. Balshivaji chawk Dattawadi

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Vadgaon(Bk.), Pune-41.

2. Nathpe chawk
3. Dandekar pul
4. Nasi fadke chawk
5. Savarkar chawk
6. Sarasbaug

Volunteers motivated and guided by police officers

Even though activity started at 5 p.m., but the real task began at 6.30. Slowly, the crowd started gathering, traffic increased. People form all around Pune were passing by these spots. Volunteers remained focused and, gave path to Ganpati Mandals. Directed vehicles towards non busy lanes.

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Volunteer managing traffic

As time passed traffic increased, but volunteers were on, doing their best they can. As volunteers were bounded by time, they had to leave the place by 8.30 p.m. Buses collected the volunteers from all the spots and set off for the campus.

Smt. Kashibai Navale College of Engineering, Pune-41

National Service Scheme (NSS) 2019-2020

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7.1.5

Swacch Bharat Abhiyaan-10th August, 2016

स्वच्छ भारत

एक कदम स्वच्छता की ओर

Under the Swacch Bharat Abhiyaan, the entire campus of Smt. Kashibai Navale College of Engineering was cleaned by the NSS volunteers from our college under the guidance of the program officer Prof. S. P. Pingat.

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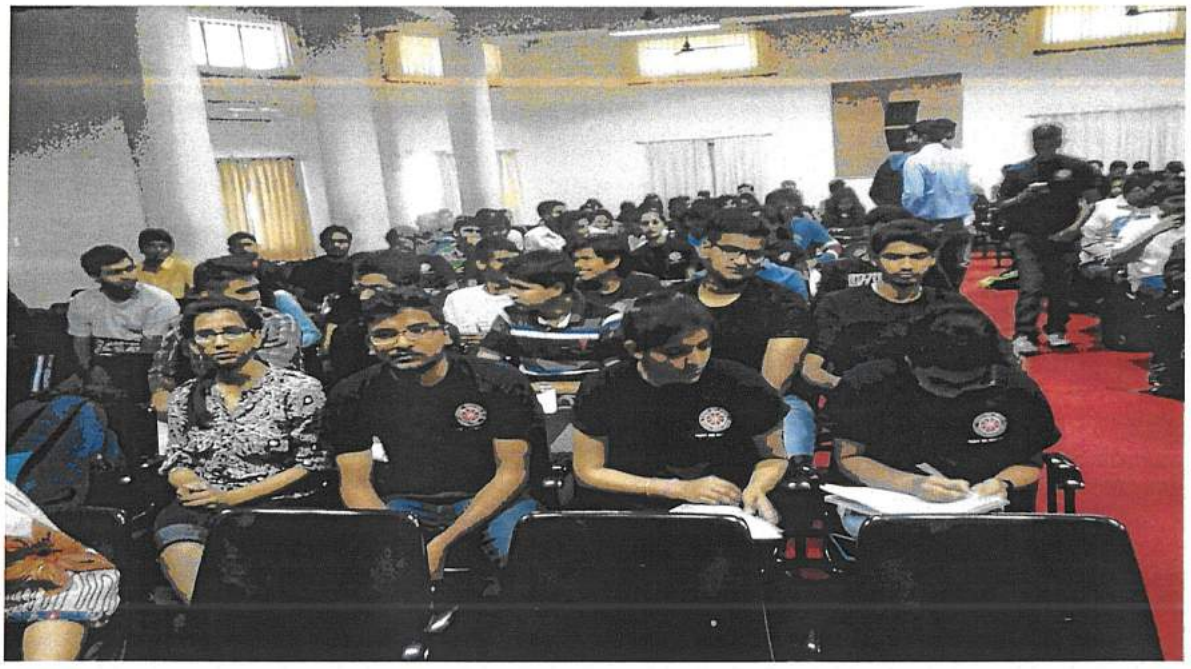
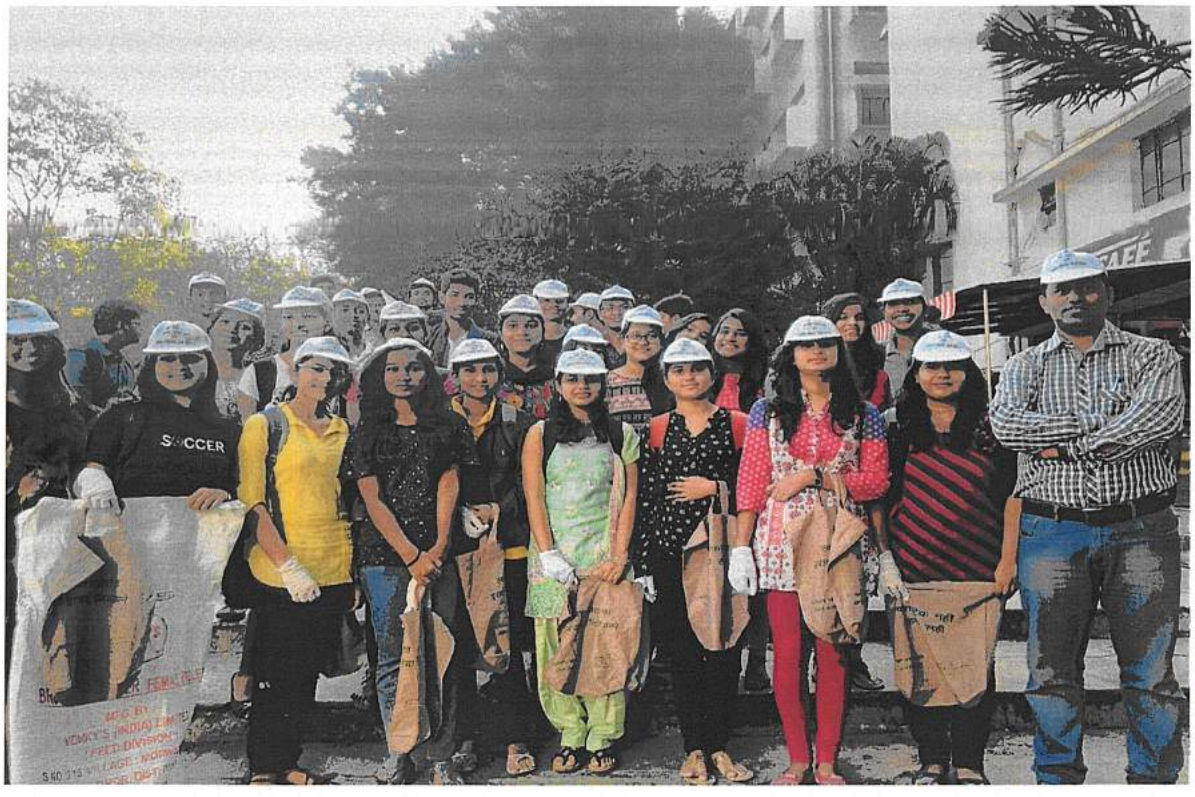
7.1.5





Tree Plantation Drive

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College of Engineering

The N.S.S unit of SKNCOE organized a Tree Plantation drive on 3rd July, 2017 as a part of recruitment process. Plantations were done parallely at 2 locations the NSS adopted village Donaje, and Taljaai area. 364 plantations were done by the Volunteers of N.S.S

All the volunteers gathered at SKN parking at 8:15 am. The volunteers were in huge number. Around 200 volunteers participated in the plantation drive. They were split into two groups. One group set off to work and Donaje while the other worked at Taljaai.

7.1.5

The volunteers worked with great enthusiasm. Humanchain was created at Taljaai location to transport the saplings from office to the planting location. Holes were dig by the volunteers for plantation and then the saplings were planted.

100+ plantations were done at Taljaai location. In Donaje, around

250 plantations were done.

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The plantation drive was a great success. The overall drive was co-ordinated by student co-ordinators Vedant Ghate, Bhushan Shimpi, Sanket Bhandare,Sujit Bidawe, Sushant Shelke, Nikita Mane and Nirupkumar Satpathy under the guidance of Prof. S.P. Pingat sir. The volunteers lived upto the motto "Not Me ButYou".

29thSeptember 2017

The NSS unit of SKNCOE organised a cleanliness campaign at

Ambegaon (Bk.),Pune. Volunteers of the NSS unit planed the campaign and actively participated . Volunteers started work at 7 am under the supervision of Prof. Sanjay Pingat (program officer NSS SKNCOE). Morning walkers also appreciated the activity by the NSS unit. In a span of three hours, students picked up wrappers, bottles, straws and dry/useless vegetation.

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7.1.5

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7.1.5

Tree Plantation Drive (Donaje)

The N.S.S. unit of Smt. Kashibai Navale College of Engineering Pune organized tree plantation drive on 10th July ,2019 at Donaje village. We 50 volunteers with the help of villagers planed tree plantation. Total 70 plants were planted.

All the N.S.S. volunteers gathered at SKN parking with all tools around 8 o'clock. All the N.S.S. volunteers were very excited for the tree plantation drive. All volunteers were divided into 2 groups for travelling to Donaje. First.

We reached Donaje village around 10 am. Then each group had given a guideline by the coordinators. Coordinator gave the information to volunteers as well as villagers about Donaje area and importance of tree plantation.

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7.1.5

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7.1.5

Tree Plantation Drive (Taljai)

The N.S.S. unit of Smt. Kashibai Navale College of Engineering Pune organized tree plantation drive on 24th and 25th July ,2019 at the location Taljai. There were total 78 volunteers. Total 300 bamboo trees were planted. On 24th July tree plantation drive was from 9.30 a.m. to 3 p.m. and on 25th July from 3 p.m. to 6 p.m.

All the N.S.S. students gathered in huge number near S.K.N.C.O.E. new building for the further tree plantation drive. All the N.S.S. volunteers were very excited for the tree plantation drive. Then the volunteers reached at the Taljai for tree plantation.

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7.1.5

All volunteers were spitted into groups for the further work. Firstly, everyone gave their introduction. Then, each group had given a guidance by the coordinators.

Coordinator gave the information about Taljai area and importance of tree plantation. Then Holes were dig by the volunteers for plantation.

Coordinators practically gave guidance about how to plant tree. All the N.S.S. volunteers planted trees with great enthusiasm and happiness.

After that everyone shared their experience about tree plantation drive.The tree plantation drive was successfully completed under the guidance of Prof. Mr. Pingat sir.

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PRINCIPAL, Smt. Kashibai Navale College of Engineering Vadgaon(Bk.), Pune-41

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7.1.5

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Pune-41.

PRINCIPAL
Smt. Kashibai Navale
College of Engineering

CLEANLINESS DRIVE

PRINCIPAL
Smt. Kashibai Navale
College of Engineering

7.1.5

Tree Plantation- 1st July, 2016

Tree Plantation event was held by the NSS unit of Smt. Kashibai Navale College Of Engineering, on 1st July 2016, at the Chakan Village, under the guidance of program officer.

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7.1.5

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Smt. Kashibai Navale College of Engineering

National Service Scheme (NSS) 2016-17

Tree Plantation Drive

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Vadgaon(Bk.), Pune-41.

Tree Plantation- 1st July, 2016

Tree Plantation event was held by the NSS unit of Smt. Kashibai Navale College Of Engineering, on 1st July 2016, at the Chakan Village, under the guidance of program officer.

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The tree plantation activity was conducted by the state government in collaboration with various organisation on the same day all over the state. We were invited to the plantation site along with many other educational institutes like schools and junior colleges.

We reached the spot early in the morning and then were served breakfast before we were allotted areas to plant the provided saplings. The transport to reach the location was provided by the college authorities in form of school buses on the institute.

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This activity was conducted on the 1st of July 2016 and was attended by the NSS unit of many colleges. We learned valuable gardening skills from the volunteers present there to guide us on the process of planting the saplings.

The activity laid the foundation for further such activities in the monsoon season to supplement the efforts to save the environment and counter climate change. The event played an important role in making students realise the power of actions, regardless of their size and grandeur.

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TRAFFIC DAY REPORT

6th October,2016 was observed as Traffic Management Day by the N.S.S. unit of SKNCOE.Traffic is managed at Sinhgad Road especially near Dandekar Chowk.The activity is conducted with the help of Pune Traffic Police Unit and also N.S.S. units of other colleges in Pune.

The activity began at 10am.We arrived at Sinhgad Road by college bus.There were more than 50 NSS volunteers present.Head of Pune Traffic Police Inspector was present at the occasion and also prominent social workers were present.

As it said the activity was mainly organized by Pune Traffic Police and to become part of this activity the NSS units of college all around pune were invited to help around and to make the activity worth.Traffic police helped NSS volunteers to manage traffic and to aware people who was not wearing Helmet.They cleared various doubts regarding traffic,safety while driving vehicles that people don't follow these days.

Driving Two-wheelers without Helmets and four wheelers without Seat belt actually comes under insensibility and ignorance and these things should strictly observed and implemented.As part of NSS Unit we successfully achieved to do that.We created **Human Chain** on the road to support activity.**Human Chain** was the enthusiastic initiative to draw attention of community,people who were not wearing helmets and those who were not following traffic rules. The **Human Chain** was upto 1.5 kms.long on Sinhgad Road.

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Volunteers were motivation for community and everyone contributed their efforts.Through posters and slogans we created awareness among people.Batches and Stickers were distributed among volunteers.After activity we went to college and held a play to create awareness about minimum vehicles driving and about use of pollution.Volunteers put their thoughts in sensible way to present the ideas about minimum polluion and green environment.Volunteers put up their thoughts for achieving effective traffic management.There were many college students who witnessed the play and appreciate about all the activity and initiatives taken.

The Traffic Management And Awareness activity was a great success.The event was well managed by student co-ordinators Vedant Ghate,Bhushan Shimpi and Shubham Phoujdar.General guidance for the drive was given to the volunteers by Prof.Pingat Sir.Around 50 Volunteers were present for the event.The Traffic Management and Awareness Day was celebrated in true sense and enthusiasm.Most importantly, **"NOT ME BUT YOU"**motto fully upheld by volunteers.

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Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

NOTICE

22.02.2018

All Students of Mechanical Dept. of Mechanical Engg. Dept of SKNCOE, Vadgaon Bk, Pune are hereby informed that, **"Visit to Pune Machine tool event 2018"** will be scheduled on 28/02/2018.

Note- All coordinators should present at 7.00 am in college.

Prof. A. R. Attar
Coordinator

SEAL

Signed By

Dr. N. P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune-41.

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Sinhgad Technical Education Society's

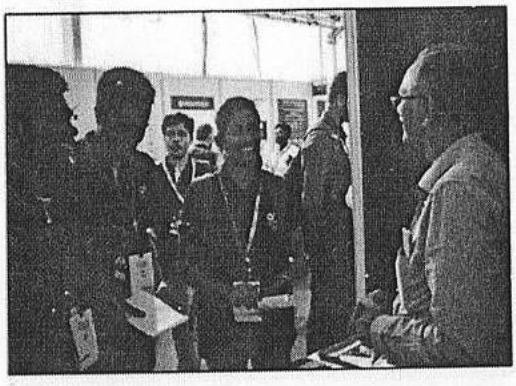
Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

Sr. No	Particulars	Description
1	Institute – Department	SKNCOE-Mechanical Engg. Dept.
2	Academic Year	A.Y. 2017 – 2018
3	Batch or Participants	TE, BE Mechanical Engg Dept
4	Name of Event	**Pune Machine Tool Event 2018**
5	Date of Event	28.02.2018
6	Time of Event	10.00 AM
7	Venue	-
8	Topic or Theme	NA
9	Faculty Coordinator	NSS Team
10	Name & Profile of Guest	NA
11	Number of Participants	51

Supporting Photographs of Guest or Participant



Prof. G. B. Firme
Coordinator

Smt. Kashibai Navale College of Engineering Pune-41. SEAL

Signed By

Dr. N.P. Sherje
Head of Department
Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
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Vadgaon Bk. Pune 411041

NOTICE

02/10/2016

All Students TE and BE of Mechanical Engineering Dept. of SKNCOE Pune, are hereby informed that, "**Traffic Management Day**" is being scheduled on **06/10/2016.** It is organized by SKNCOE Mechanical Dept.

Venue- Sinhgad Road Area, Pune

Prof. S.M.Jadhav
Coordinator

Smt. Kashibai Navale College of Engineering Pune-41. SEAL

Signed By

Dr. N. P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
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Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

Sr. No	Particulars	Description
1	Institute – Department	SKNCOE-Mechanical Engg. Dept.
2	Academic Year	A.Y. 2016 – 2017
3	Batch or Participants	TE, BE Mechanical Engg Dept
4	Name of Event	**Traffic Managment Day**
5	Date of Event	06.10.2016
6	Time of Event	8.00 AM
7	Venue	Sinhgad Road, Dandekar Chouk
8	Topic or Theme	NA
9	Faculty Coordinator	NSS Team
10	Name & Profile of Guest	NA
11	Number of Participants	50

Supporting Photographs of Guest or Participant

Prof. S.M.Jadhav
Coordinator

Smt. Kashibai Navale College of Engineering Pune-41. SEAL

Dr. N.P. Sherje
Head of Department
Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of Engineering, Pune-41.

PRINCIPAL
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Sinhgad Institutes

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Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

NOTICE

03.06.2020

All Students of Mechanical Engineering Dept. of SKNCOE, Vadgaon Bk, Pune are hereby informed that, "**Tree Plantation Drive**" will be organized by NSS Team of SKNCOE Pune on 07/06/2020 at 10.00 am.

Venue- ZOOM (Online Mode)

Link will be shared on Your Official Group.

Prof. A. R. Attar
Coordinator

Smt. Kashibai Navale College of Engineering Pune-41. SEAL

Signed By

Dr. N. P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune-41.

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Sinhgad Institutes

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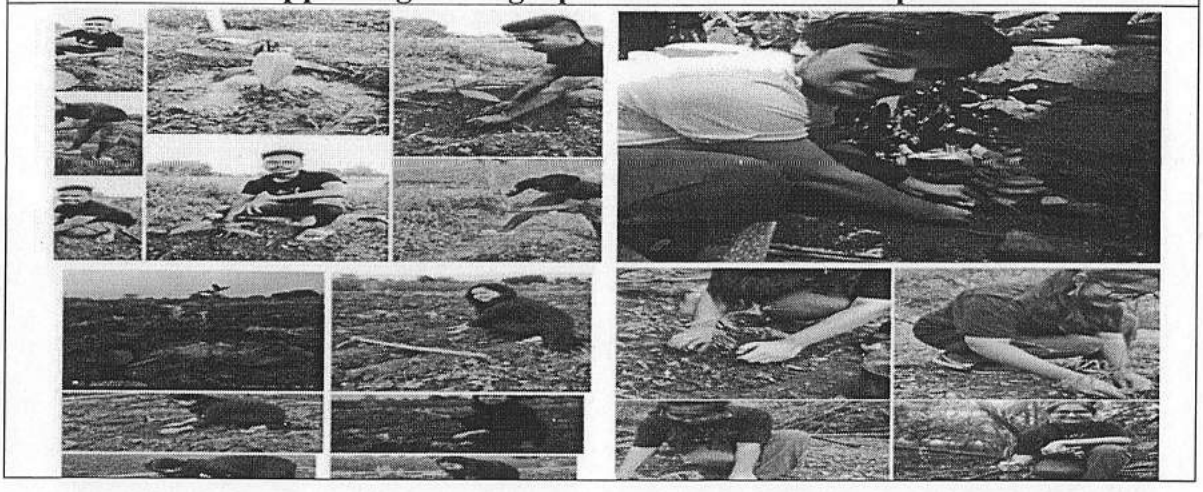
Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

Sr. No	Particulars	Description
1	Institute – Department	SKNCOE-Mechanical Engg. Dept.
2	Academic Year	A.Y. 2020 – 2021
3	Batch or Participants	TE, BE Mechanical Engg Dept
4	Name of Event	**Tree Plantation Drive**
5	Date of Event	07.06.2020
6	Time of Event	10.00AM
7	Venue	Students Home
8	Topic or Theme	NA
9	Faculty Coordinator	NSS Team
10	Name & Profile of Guest	NA
11	Number of Participants	145

Supporting Photographs of Guest or Participant



Signed By

Prof. A.R. Attar
Coordinator

Smt. Kashibai Navale College of Engineering Pune-41. SEAL

Dr. N.P. Sherje

Head of Department
Associate Professor & Head
Dept. of Mechanical Engg.
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NOTICE

028.09.2020

All Students of Mechanical Engineering Dept. of SKNCOE, Vadgaon Bk, Pune are hereby informed that, "**Tree Plantation Drive**" will be organized under PRAYAS from 01/10/2020 to 03/10/2020.

Venue- ZOOM (Online Mode)

Link will be shared on Your Official Group.

Prof. G. B. Firme
Coordinator

SEAL

Signed By

Dr. N. P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
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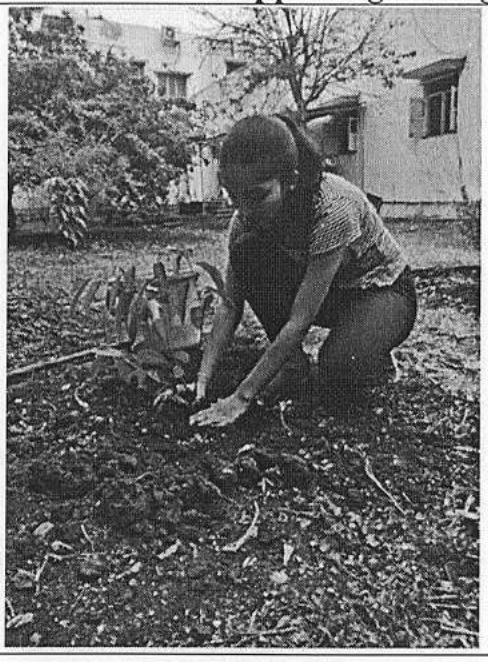
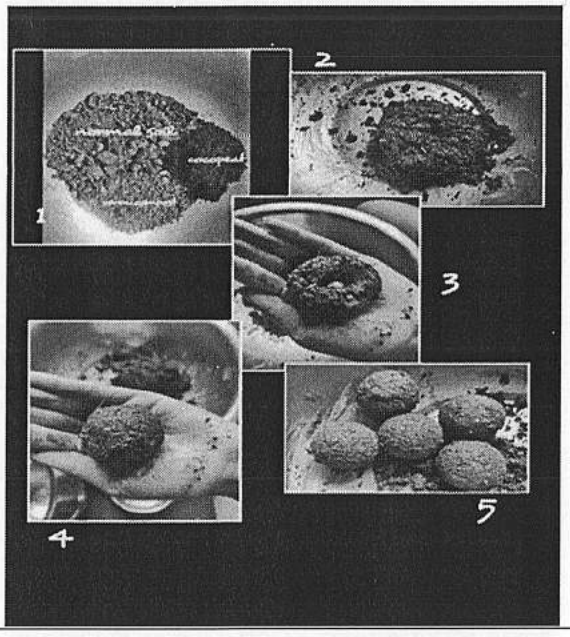
Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

Sr. No	Particulars	Description
1	Institute – Department	SKNCOE-Mechanical Engg. Dept.
2	Academic Year	A.Y. 2020– 2021
3	Batch or Participants	TE, BE Mechanical Engg Dept
4	Name of Event	**Tree Plantation Drive**
5	Date of Event	01.10.2020 to 03.10.2020
6	Time of Event	10.00AM
7	Venue	Students Home
8	Topic or Theme	NA
9	Faculty Coordinator	NSS Team
10	Name & Profile of Guest	NA
11	Number of Participants	65

Supporting Photographs of Guest or Participant





Prof. A.R.Attar
Coordinator

Signed By

Dr. N.P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
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Engineering, Pune-41.

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Sinhgad Institutes

Sinhgad Technical Education Society's

Smt. Kashibai Navale College of Engineering

Department of Management Studies

Vadgaon Bk. Pune 411041

NOTICE

03.07.2020

All Students of Mechanical Dept. are hereby informed that Webinar on **"Active Safety functions in Modern Vehicles"** is being scheduled on 06/07/2020 from **11:00 AM to 01:30 PM.**

It is organized by **SKNCOE Mechanical Dept**. The Other Details as mentioned.

The topic of the session: "Active Safety functions in Modern Vehicles"

Speaker Name: Mr Onkar Dighe (senior engineer in active safety function dept in BOSCH Chassis System, India)

Date: 06/07/2020

Time: **11:00 AM to 01:30 PM.**

Mode of Session: Virtual via ZOOM Meeting

Students of All Specialization to attend the same.

Prof. G. B. Firme
Coordinator

SEAL

Signed By

Dr. N. P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of Engineering, Pune-41.

PRINCIPAL
Smt. Kashibai Navale College of Engineering Vadgaon (Bk.)

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Sinhgad Technical Education Society's

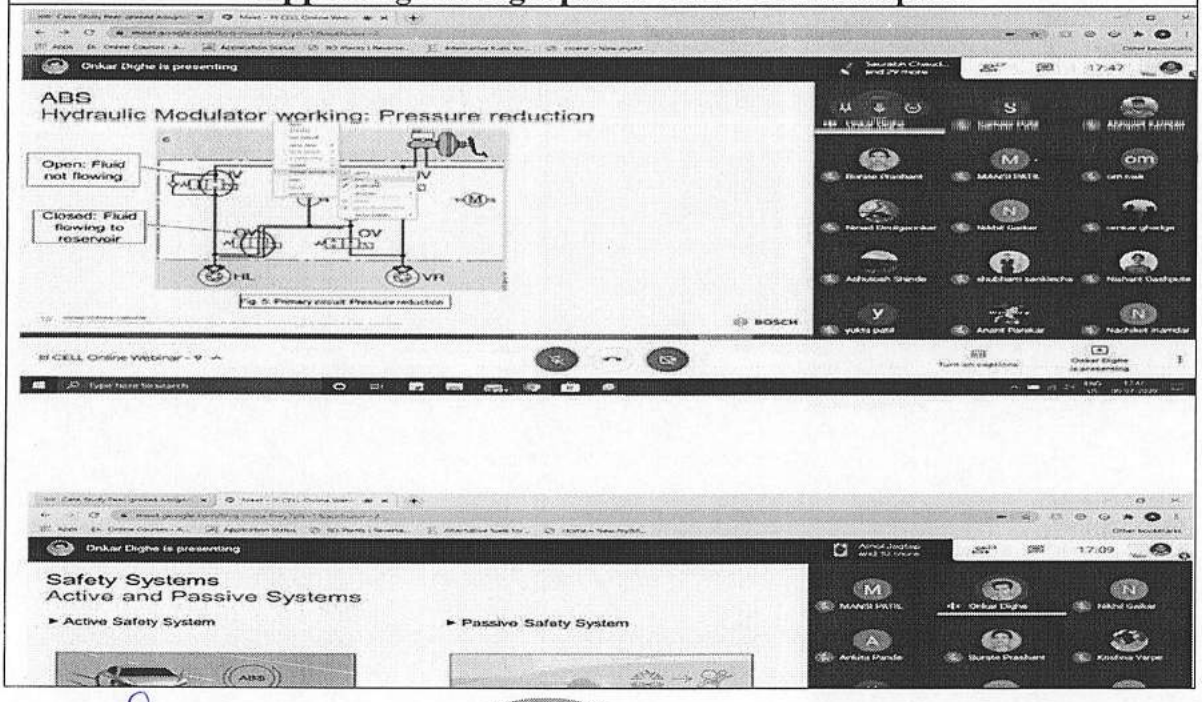
Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

Sr. No	Particulars	Description
1	Institute – Department	SKNCOE-Mechanical Engg. Dept.
2	Academic Year	A.Y. 2020 – 2021
3	Batch or Participants	Mechanical Engg Dept
4	Name of Event	**Online Internship on Active Safety functions in Modern Vehicles**
5	Date of Event	06.07.2020
6	Time of Event	10.00 AM
7	Venue	online
8	Topic or Theme	NA
9	Faculty Coordinator	NSS Team
10	Name & Profile of Guest	NA
11	Number of Participants	50

Supporting Photographs of Guest or Participant



Prof. G. B. Firme
Coordinator

SEAL

Dr. N.P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of Engineering, Pune-41

Sinhgad Institutes

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Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

NOTICE

11.08.2019

All Students of Mechanical Engineering Dept. of SKNCOE, Vadgaon Bk, Pune are hereby informed that, "**Tree Plantation Drive"** will be organized by NSS Team of SKNCOE Pune on 15/08/2019 at 10.00 am. All students are hereby requested to be present.

Venue- Bhorwadi

Prof. G. B. Firme
Coordinator

SEAL

Signed By

Dr. N. P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune-41.

PRINCIPAL
Smt. Kashibai Navale
College of Engineering
Vadgaon

Sinhgad Institutes

Sinhgad Technical Education Society's

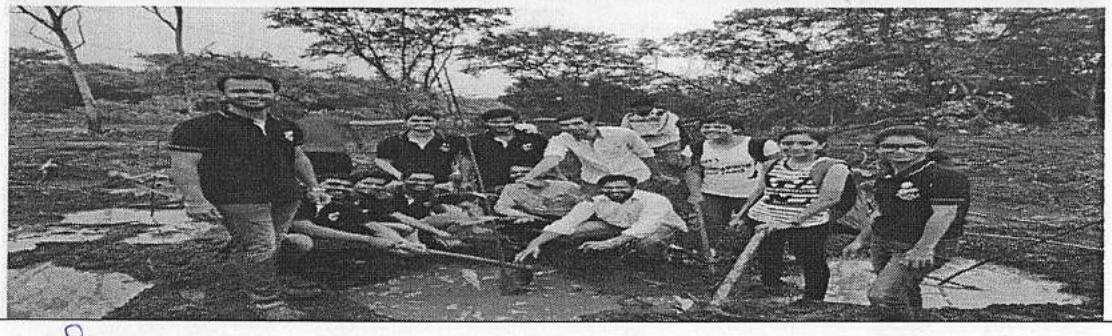
Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

Sr. No	Particulars	Description
1	Institute – Department	SKNCOE-Mechanical Engg. Dept.
2	Academic Year	A.Y. 2019 – 2020
3	Batch or Participants	TE, BE Mechanical Engg Dept
4	Name of Event	**Tree Plantation Drive**
5	Date of Event	15.08.2019
6	Time of Event	10.00AM
7	Venue	Donje Village Area
8	Topic or Theme	NA
9	Faculty Coordinator	NSS Team
10	Name & Profile of Guest	NA
11	Number of Participants	45

Supporting Photographs of Guest or Participant



Prof. G. B. Firme
Coordinator

Signed By

Dr. N.P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
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Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

NOTICE

01.07.2019

All Students of Mechanical Engineering Dept. of SKNCOE, Vadgaon Bk, Pune are hereby informed that, "**Tree Plantation Drive**" will be organized by NSS Team of SKNCOE Team on 06/07/2019 at 10.00 am. All students are hereby requested to be present.

Venue- Jambhulwadi

Prof. G. B. Firme
Coordinator

Signed By

Dr. N. P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune-41.

PRINCIPAL
Smt. Kashibai Navale
College of Engineering
Vadgaon(Bk.), Pune-41.

Sinhgad Institutes

Sinhgad Technical Education Society's

Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

Sr. No	Particulars	Description
1	Institute – Department	SKNCOE-Mechanical Engg. Dept.
2	Academic Year	A.Y. 2019– 2020
3	Batch or Participants	TE, BE Mechanical Engg Dept
4	Name of Event	**Tree Plantation Drive**
5	Date of Event	06.07.2019
6	Time of Event	10.00AM
7	Venue	NA
8	Topic or Theme	NA
9	Faculty Coordinator	NSS Team
10	Name & Profile of Guest	NA
11	Number of Participants	56

Supporting Photographs of Guest or Participant

Prof. G. B. Firme
Coordinator

Signed By

Dr. N.P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of Engineering, Pune-41.

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Smt. Kashibai Navale College of Engineering
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Sinhgad Institutes

Sinhgad Technical Education Society's

Smt. Kashibai Navale College of Engineering

Department of Management Studies

Vadgaon Bk. Pune 411041

NOTICE

20.07.2018

All Students of Mechanical Engg. Dept. of SKNCOE Pune are hereby informed that the session on **"Traffic Management"** is being scheduled on 25/09/2019 at 11.00am.

It is organized by **SKNCOE Mechanical Dept**. The Other Details as mentioned.

Venue- Seminar Hall

The topic of the session: "Guest Lecture on Traffic Managament"

Special Guest Name: Police Inspector Rajesh Puranik Sir

Date: 25/09/2019

Prof. R. R. Yenare
Coordinator

Smt. Kashibai Navale College of Engineering Pune-41. SEAL

Dr. N. P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune-41.

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Sinhgad Technical Education Society's

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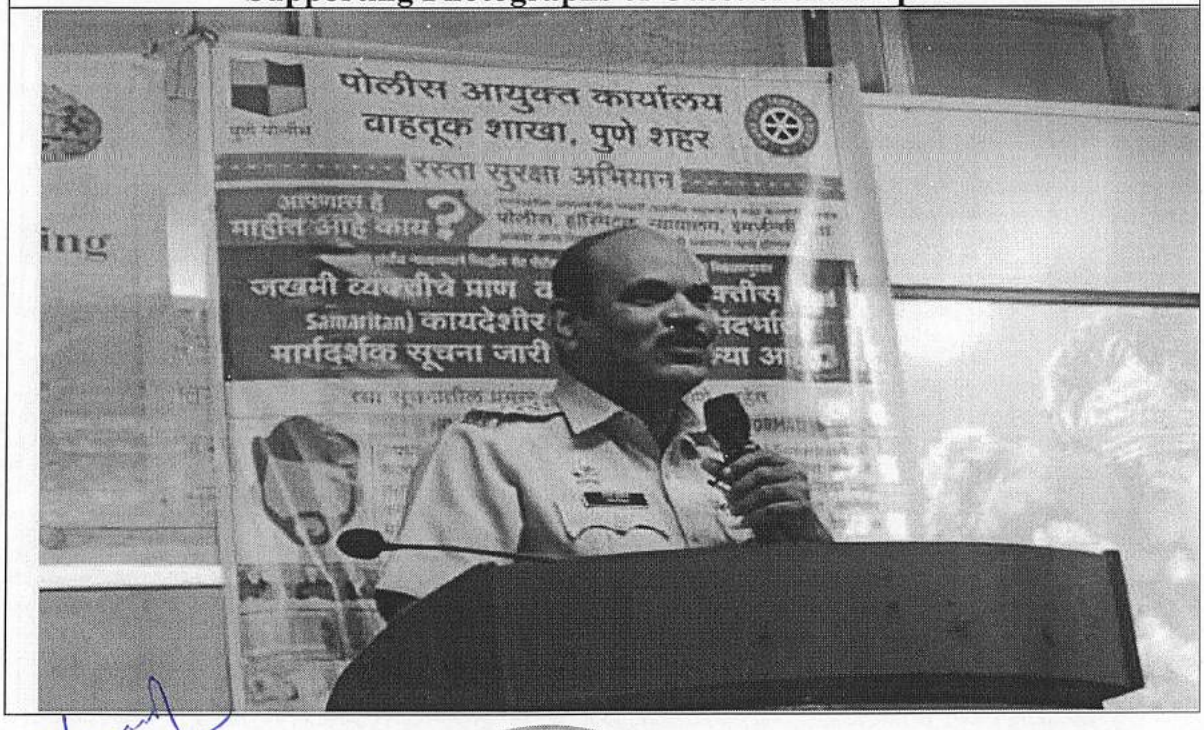
Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

Sr. No	Particulars	Description
1	Institute – Department	SKNCOE-Mechanical Engg. Dept.
2	Academic Year	A.Y. 2019– 2020
3	Batch or Participants	TE, BE Mechanical Engg Dept
4	Name of Event	**Guest Lecture on Traffic Management**
5	Date of Event	25.09.2019
6	Time of Event	10.00 AM
7	Venue	Seminar Hall
8	Topic or Theme	NA
9	Faculty Coordinator	NSS Team
10	Name & Profile of Guest	NA
11	Number of Participants	25

Supporting Photographs of Guest or Participant



Prof. R.R.Yenare
Coordinator

Smt. Kashibai Navale College of Engineering Pune-41. SEAL

Dr. N.P. Sherje
Associate Professor & Head
Head of Department
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of Engineering, Pune-41.

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College of Engineering
Vadgaon(Bk.)

Sinhgad Institutes

Sinhgad Technical Education Society's

Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

NOTICE

06.07.2019

All Students of Mechanical Engineering Dept. of SKNCOE, Vadgaon Bk, Pune are hereby informed that, "**Tree Plantation Drive"** will be organized by NSS Team of SKNCOE Pune on 10/07/2019 at 10.00 am. All students are hereby requested to be present.

Venue- Jambhulwadi Village

Prof. S. S. Waybase
Coordinator

Smt. Kashibai Navale College of Engineering * Pune-41. SEAL

Signed By

Dr. N. P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune-41.

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Sinhgad Institutes

Sinhgad Technical Education Society's

Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

Sr. No	Particulars	Description
1	Institute – Department	SKNCOE-Mechanical Engg. Dept.
2	Academic Year	A.Y. 2018 – 2019
3	Batch or Participants	TE, BE Mechanical Engg Dept
4	Name of Event	**Tree Plantation Drive**
5	Date of Event	10.07.2019
6	Time of Event	10.00AM
7	Venue	Taljai Village Area
8	Topic or Theme	NA
9	Faculty Coordinator	NSS Team
10	Name & Profile of Guest	NA
11	Number of Participants	50

Supporting Photographs of Guest or Participant

Prof. S.S.waybase
Coordinator

SEAL

Signed By

Dr. N.P. Sherje
Head of Department

Dept. of Mechanical Engg.
Smt. Kashibai Navale College of Engineering, Pune-41

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Vadgaon(Bk.), Pune-41.

Sinhgad Institutes

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Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

NOTICE

20.07.2019

All Students of Mechanical Engineering Dept. of SKNCOE, Vadgaon Bk, Pune are hereby informed that, "**Tree Plantation Drive**" will be organized by NSS Team of SKNCOE Team on 25/07/2019 at 10.00 am. All students are hereby requested to be present.

Venue- Taljai

Prof. S. S. Waybase
Coordinator

Smt. Kashibai Navale College of Engineering * Pune-41. SEAL

Signed By

Dr. N. P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune-41.

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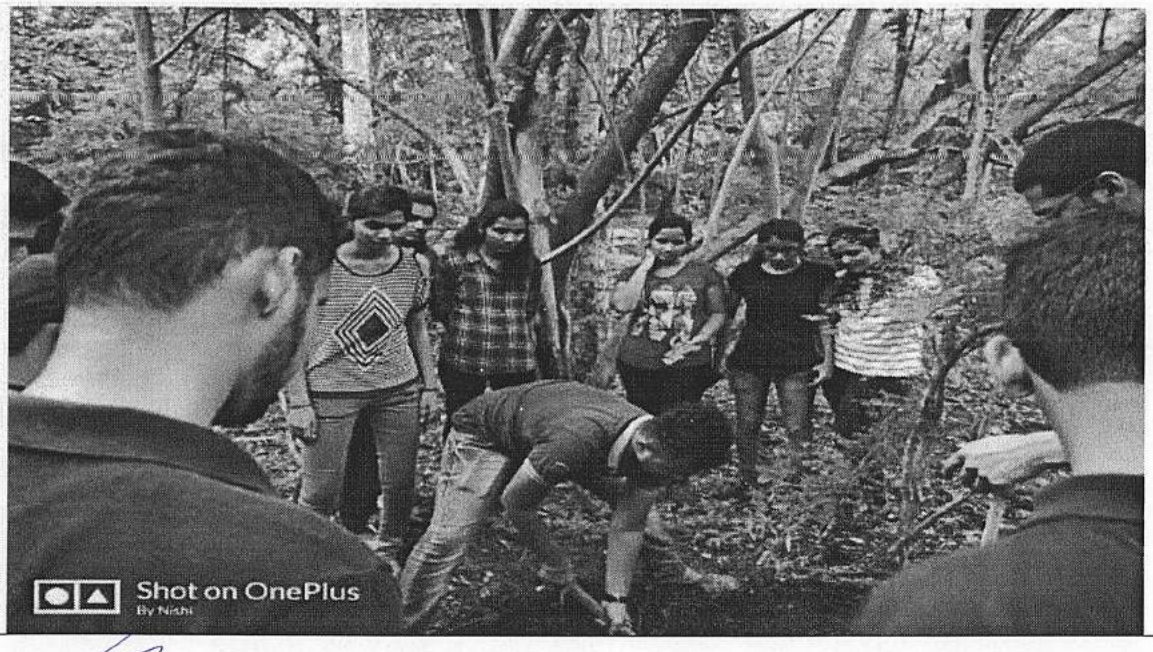
Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

Sr. No	Particulars	Description
1	Institute – Department	SKNCOE-Mechanical Engg. Dept.
2	Academic Year	A.Y. 2018 – 2019
3	Batch or Participants	TE, BE Mechanical Engg Dept
4	Name of Event	**Tree Plantation Drive**
5	Date of Event	25.07.2019
6	Time of Event	10.00AM
7	Venue	Donje Village Area
8	Topic or Theme	NA
9	Faculty Coordinator	NSS Team
10	Name & Profile of Guest	NA
11	Number of Participants	78

Supporting Photographs of Guest or Participant



Prof. S.S.waybase
Coordinator

Signed By

Dr. N.P. Sherje
Head of Department

Smt. Kashibai Navale College of Engineering Pune-41. SEAL

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
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Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

NOTICE

17/09/2019

All Students of Mechanical Engineering Dept. of SKNCOE Pune, are hereby informed that, **"Traffic Management and Road safety"** activity is being scheduled on **22/09/2019.** It is organized by NSS Team of Mechanical Dept. of SKNCOE Mechanical Dept.

Venue- Sinhgad Road Area

Signed By

Prof. S. S. Waybase
Coordinator

SEAL

Dr. N. P. Sherje
Head of Department
Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune-41.

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Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

Sr. No	Particulars	Description
1	Institute – Department	SKNCOE-Mechanical Engg. Dept.
2	Academic Year	A.Y. 2018 – 2019
3	Batch or Participants	SE, TE, BE Mechanical Engg Dept
4	Name of Event	**Traffic Management and Road Safety**
5	Date of Event	22.09.2019
6	Time of Event	8.00 AM
7	Venue	Dandekar Chauk
8	Topic or Theme	NA
9	Faculty Coordinator	NSS Team
10	Name & Profile of Guest	NA
11	Number of Participants	78

Supporting Photographs of Guest or Participant

PSI Bhosale sir Instructing volunteers

Prof. S.S.waybase
Coordinator

SEAL

Dr. N.P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune-41.

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Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

Sinhgad Institutes

NOTICE

10.12.2018

All Students of Mechanical Dept. of Smt. Kashibai Navale College of Engineering, Vadgaon Bk, Pune are hereby informed that, **"Auto Car Performance Show 2018 Exhibition"** program will be organized on 15/12/2018.

Prof. R.R. Yenare
Coordinator

Smt. Kashibai Navale College of Engineering Pune-41 SEAL

Signed By

Dr. N. P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune-41.

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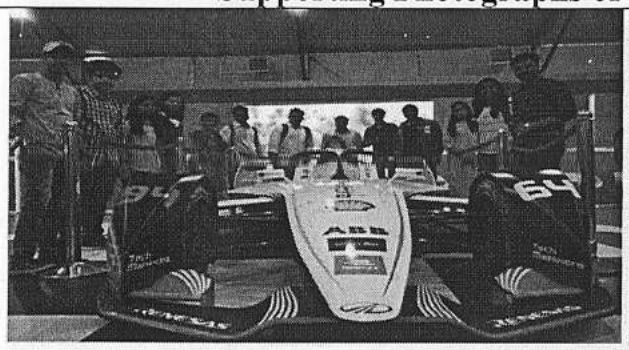
Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

Sr. No	Particulars	Description
1	Institute – Department	SKNCOE-Mechanical Engg. Dept.
2	Academic Year	A.Y. 2018 – 2019
3	Batch or Participants	TE, BE Mechanical Engg Dept
4	Name of Event	**Auto Car Performance Show 2018 Exhibition**
5	Date of Event	15.12.2018
6	Time of Event	10.00 AM
7	Venue	IIT Bombay
8	Topic or Theme	NA
9	Faculty Coordinator	NSS Team
10	Name & Profile of Guest	NA
11	Number of Participants	12

Supporting Photographs of Guest or Participant



Prof. S.S.Waybase
Coordinator

Smt. Kashibai Navale College of Engineering Pune-41. SEAL

Signed By

Dr.N.P.Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune-41.

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Smt. Kashibai Navale
College of Engineering
Vadgaon (Bk.), Pune-41

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Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

NOTICE

01.02.2019

All Students of Mechanical Dept. of Smt. Kashibai Navale College of Engineering, Vadgaon Bk, Pune are hereby informed that, **"Pune Machine Tool Expo"** visit under III Cell will be scheduled on 06/02/2019.

Venue- Shivaji Nagar Pune

Prof. S. S. Waybase
Coordinator

Smt. Kashibai Navale College of Engineering Pune-41. SEAL

Signed By

Dr. N. P. Sherje

Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune-41.

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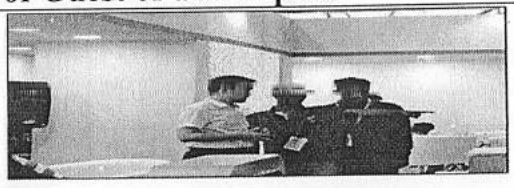
Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

Sr. No	Particulars	Description
1	Institute – Department	SKNCOE-Mechanical Engg. Dept.
2	Academic Year	A.Y. 2018 – 2019
3	Batch or Participants	TE, BE Mechanical Engg Dept
4	Name of Event	**Pune Machine Tool Expo**
5	Date of Event	06.02.2019
6	Time of Event	10.00 AM
7	Venue	Sinhgad Fort Pune
8	Topic or Theme	NA
9	Faculty Coordinator	Prof. Firme Sir
10	Name & Profile of Guest	NA
11	Number of Participants	35

Supporting Photographs of Guest or Participant



Prof. S.S.waybase
Coordinator

Smt. Kashibai Navale College of Engineering Pune-41. SEAL

Signed By

Dr. N.P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune-41

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Smt. Kashibai Navale
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Vadgaon(Bk.), Pune-41.

Sinhgad Institutes

Sinhgad Technical Education Society's

Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

NOTICE

28.06.2017

All Students of Mechanical Engineering Dept. of SKNCOE, Vadgaon Bk, Pune are hereby informed that, "**Tree plantation drive**" will be organized on 03/07/2017 at 10.00 am. All students are hereby requested to be present.

Venue- Donje Village

Prof. S. S. Waybase
Coordinator

Smt. Kashibai Navale College of Engineering * Pune-41. SEAL

Signed By

Dr. N. P. Sherje

Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune-41.

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Smt. Kashibai Navale
College of Engineering
Vadgaon (Bk.), Pune-41.

Sinhgad Institutes

Sinhgad Technical Education Society's

Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

Sr. No	Particulars	Description
1	Institute – Department	SKNCOE-Mechanical Engg. Dept.
2	Academic Year	A.Y. 2017 – 2018
3	Batch or Participants	TE, BE Mechanical Engg Dept
4	Name of Event	**Tree Plantation Drive**
5	Date of Event	03.07.2017
6	Time of Event	10.00AM
7	Venue	Donje Village Area
8	Topic or Theme	NA
9	Faculty Coordinator	Prof. Pingat Sir
10	Name & Profile of Guest	NA
11	Number of Participants	56

Supporting Photographs of Guest or Participant

Prof. S.S.waybase
Coordinator

SEAL

Signed By

Dr. N.P. Sherje
Head of Department
Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune-41.

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Smt. Kashibai Navale
College of Engineering
Vadgaon(B.K.), Pune-41.

Sinhgad Institutes

Sinhgad Technical Education Society's

Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

NOTICE

26.06.2016

All Students of Mechanical Engineering Dept. of SKNCOE, Vadgaon Bk, Pune are hereby informed that, "**Tree plantation drive**" will be organized on 01/07/2016 in Chakan area at 10.00 am. All students are hereby requested to be present.

Venue- Chakan, Pune

Prof. S. M. Jadhav
Coordinator

SEAL

Signed By

Dr. N. P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune-41.

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Vadgaon, Pune-41.

Sinhgad Institutes

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Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

Sr. No	Particulars	Description
1	Institute – Department	SKNCOE-Mechanical Engg. Dept.
2	Academic Year	A.Y. 2016 – 2017
3	Batch or Participants	TE, BE Mechanical Engg Dept
4	Name of Event	**Tree Plantation Drive**
5	Date of Event	01.07.2016
6	Time of Event	10.00AM
7	Venue	Chakan Area
8	Topic or Theme	NA
9	Faculty Coordinator	Prof. Pingat Sir
10	Name & Profile of Guest	NA
11	Number of Participants	70

Supporting Photographs of Guest or Participant

Prof. S.M.Jadhav
Coordinator

SEAL

Dr. N.P. Sherje

Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune-41.

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Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

NOTICE

22.02.2017

All Students of Smt. Kashibai Navale College of Engineering, Vadgaon Bk, Pune are hereby informed that, **"Tree Plantation Drive"** Program will be organized under PRAYAS Team of SKNCOE on 27/02/2017. All Mentors are hereby requested to be present at 8.00 am.

Venue- Taljai Village, Pune

Prof. A. R. Attar
Coordinator

SEAL

Signed By

Dr. N. P. Sherje
Head of Department

Dept. of Mechanical Engg.
Smt. Kashibai Navale College of Engineering, Pune-41.

PRINCIPAL
Smt. Kashibai Navale College of Engineering Vadgaon(Bk.), Pune-41.

Sinhgad Institutes

Sinhgad Technical Education Society's

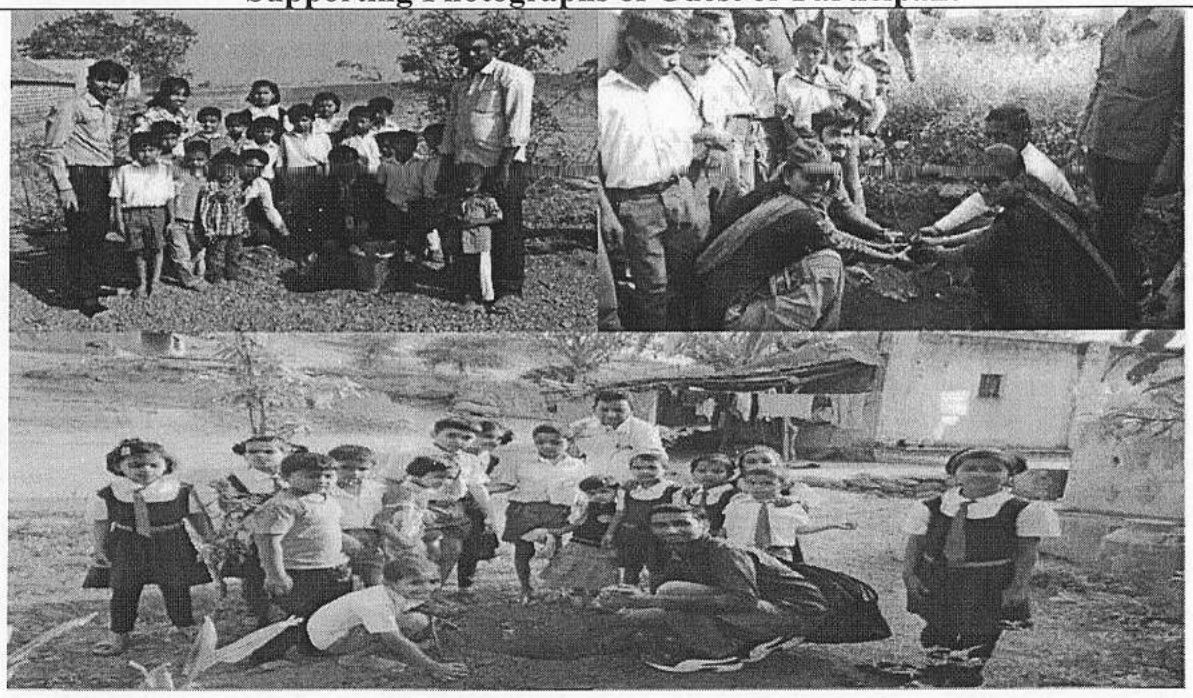
Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

Sr. No	Particulars	Description
1	Institute – Department	SKNCOE-Mechanical Engg. Dept.
2	Academic Year	A.Y. 2016 – 2017
3	Batch or Participants	TE, BE Mechanical Engg Dept
4	Name of Event	**Tree Plantation PRAYAS**
5	Date of Event	27.02.2017
6	Time of Event	10.00 AM
7	Venue	Khadakwasla
8	Topic or Theme	NA
9	Faculty Coordinator	Prof.Pacharne sir
10	Name & Profile of Guest	NA
11	Number of Participants	150

Supporting Photographs of Guest or Participant



Prof. A.R.Attar
Coordinator

SEAL

Dr. N.P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune-41.

Sinhgad Institutes

Sinhgad Technical Education Society's

Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

NOTICE

11.08.2019

All Students of Mechanical Dept. of Smt. Kashibai Navale College of Engineering, Vadgaon Bk, Pune are hereby informed that, **"Cleanliness Drive"** Program will be organized in our college campus on 15/08/2019. All NSS Mentors are hereby requested to be present at 8.00 am.

Venue- Collage Campus, SKNCOE Pune

Prof. S. S. Waybase
Coordinator

Smt. Kashibai Navale College of Engineering Pune-41. SEAL

Signed By

Dr. N. P. Sherje
Head of Department
Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune 41.

PRINCIPAL
Smt. Kashibai Navale
College of Engineering
Vadgaon

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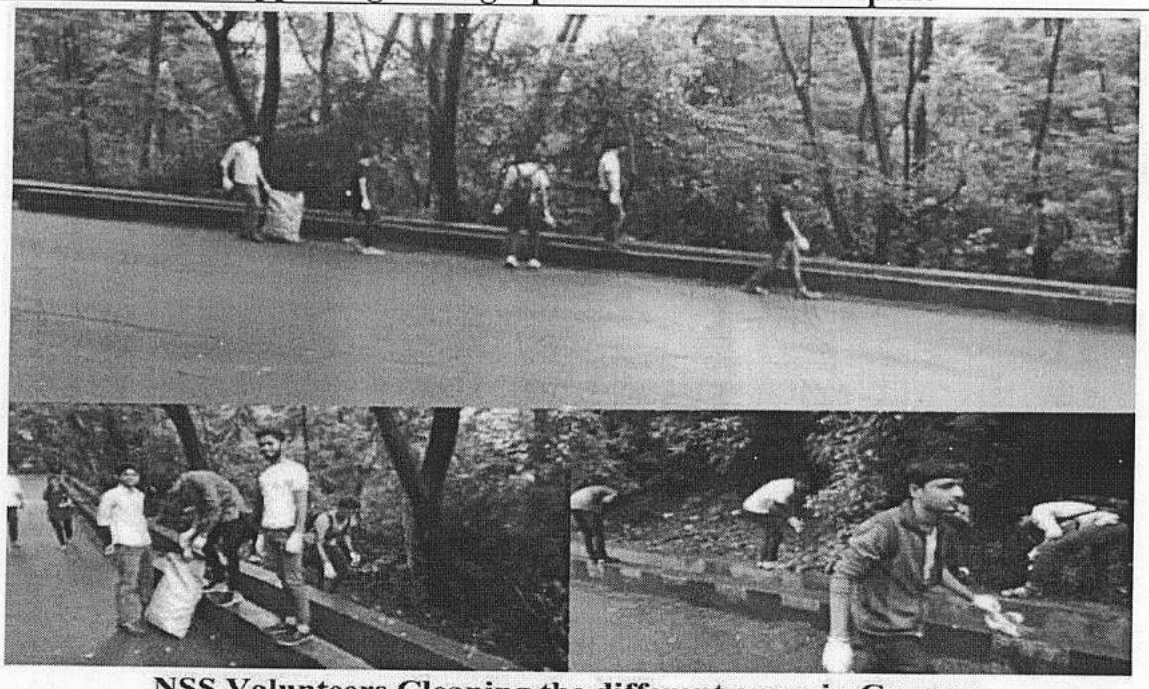
Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

Sr. No	Particulars	Description
1	Institute – Department	SKNCOE-Mechanical Engg. Dept.
2	Academic Year	A.Y. 2018– 2019
3	Batch or Participants	TE, BE Mechanical Engg Dept
4	Name of Event	**Cleanliness Drive**
5	Date of Event	15.08.2019
6	Time of Event	10.00 AM
7	Venue	Sinhagad College Campus
8	Topic or Theme	NA
9	Faculty Coordinator	NA
10	Name & Profile of Guest	NA
11	Number of Participants	90

Supporting Photographs of Guest or Participant



NSS Volunteers Cleaning the different areas in Campus

Prof. S.S.waybase
Coordinator

Smt. Kashibai Navale College of Engineering Pune-41 SEAL

Dr. N.P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of Engineering, Pune-41

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Vadgaon(Bk.), Pune-41

Sinhgad Institutes

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Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

NOTICE

15.02.2017

All Students of Smt. Kashibai Navale College of Engineering, Vadgaon Bk, Pune are hereby informed that, **"Cleanliness Drive"** Program will be organized in our college campus on 18/02/2017. All NSS Mentors are hereby requested to be present at 7.00 am.

Venue- College Campus, SKNCOE Pune

Prof. G. B. Firme
Coordinator

SEAL

Signed By

Dr. N. P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune-41

PRINCIPAL
Smt. Kashibai Navale
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Vadgaon Bk. Pune-41

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Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

Sr. No	Particulars	Description
1	Institute – Department	SKNCOE-Mechanical Engg. Dept.
2	Academic Year	A.Y. 2016 – 2017
3	Batch or Participants	TE, BE Mechanical Engg Dept
4	Name of Event	**Cleanliness Drive**
5	Date of Event	18.02.2017
6	Time of Event	10.00 AM
7	Venue	Sinhgad Fort
8	Topic or Theme	NA
9	Faculty Coordinator	Prof.Pacharne sir
10	Name & Profile of Guest	NA
11	Number of Participants	47

Supporting Photographs of Guest or Participant

Prof. G. B. Firme
Coordinator

SEAL

Dr. N.P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of Engineering, Pune-41.

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Vadgaon(Bk.), Pune-41.

Sinhgad Institutes

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Smt. Kashibai Navale College of Engineering

Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

NOTICE

22.09.2017

All Students of Mechanical Dept. of Smt. Kashibai Navale College of Engineering, Vadgaon Bk, Pune are hereby informed that, **"Cleanliness Drive"** Program will be organized in our college campus on 29/09/2017. All NSS Mentors are hereby requested to be present at 7.00 am.

Venue- College Campus SKNCOE

Prof. S. S. Waybase
Coordinator

SEAL

Signed By

Dr. N. P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of
Engineering, Pune-41.

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Smt. Kashibai Navale
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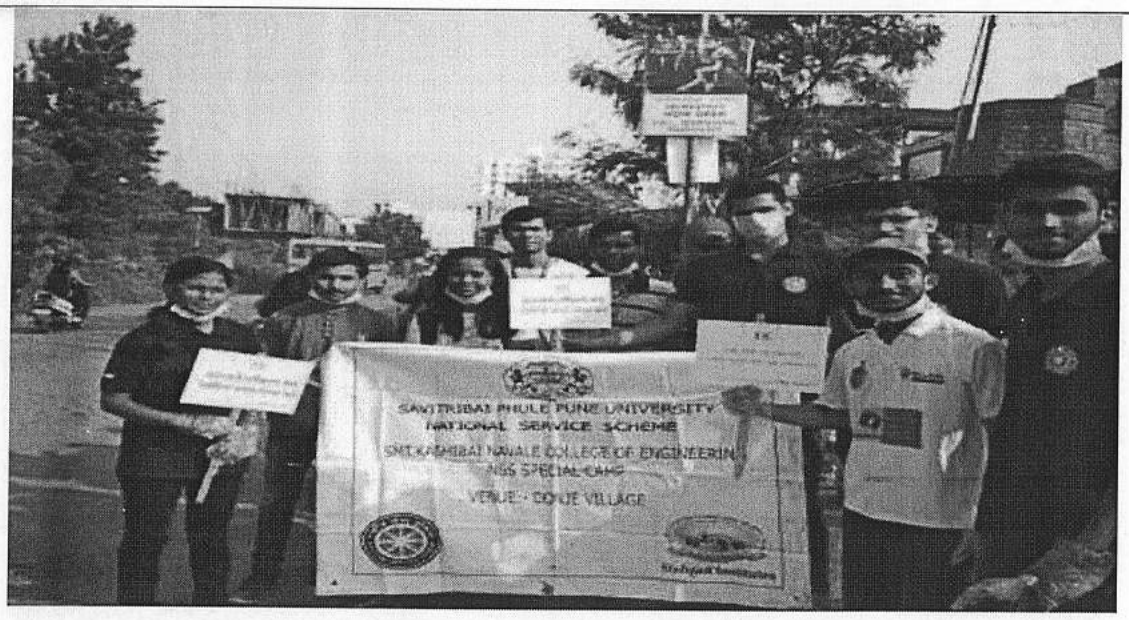
Department of Mechanical Engineering

Vadgaon Bk. Pune 411041

Sr. No	Particulars	Description
1	Institute – Department	SKNCOE-Mechanical Engg. Dept.
2	Academic Year	A.Y. 2017 – 2018
3	Batch or Participants	TE, BE Mechanical Engg Dept
4	Name of Event	**Cleanliness Drive**
5	Date of Event	29.09.2017
6	Time of Event	10.00 AM
7	Venue	Sinhgad Fort
8	Topic or Theme	NA
9	Faculty Coordinator	NSS TEAM
10	Name & Profile of Guest	NA
11	Number of Participants	78

Supporting Photographs of Guest or Participant



Prof. S.S.waybase
Coordinator

SEAL

Dr. N.P. Sherje
Head of Department

Associate Professor & Head
Dept. of Mechanical Engg.
Smt. Kashibai Navale College of Engineering, Pune-41.

Smt. Kashibai Navale College of Engineering Vadgaon(Bk.), Pune-41.

Sinhgad Institutes

Sinhgad Technical Education Society's

Smt. KashibaiNavale College of Engineering

Department of Engineering Sciences

Vadgaon Bk. Pune 411041

NOTICE

31.07.2018

All Students of First year Engineering are hereby informed that **CAMPUS CLEANING ACTIVITY** is being scheduled on **Saturday, 04.08.2018.**

It is organized by**SKNCOE FE Engineering Science Dept.**The Other Details as mentioned.

The topic of the Event: **Campus Cleaning**

Date: **Saturday, 04.08.2018**

Time:**10:30 AM to 04:30 PM.**

Venue: College Campus

Students of All divisions to attend the same.

Signed By

Prof S. P. Bhilare
Organizer

Smt. Kashibai Navale College of Engineering Vadgaon (Bk.) Pune - 41.

Head of Department
Engineering Science Department

Head of Department
Engineering Science Department
Smt. Kashibai Navale College
of Engineering, Vadgaon, Pune - 41.

Sinhgad Institutes

Sinhgad Technical Education Society's

Smt. Kashibai Navale College of Engineering

Department of Engineering Sciences

Vadgaon Bk. Pune 411041

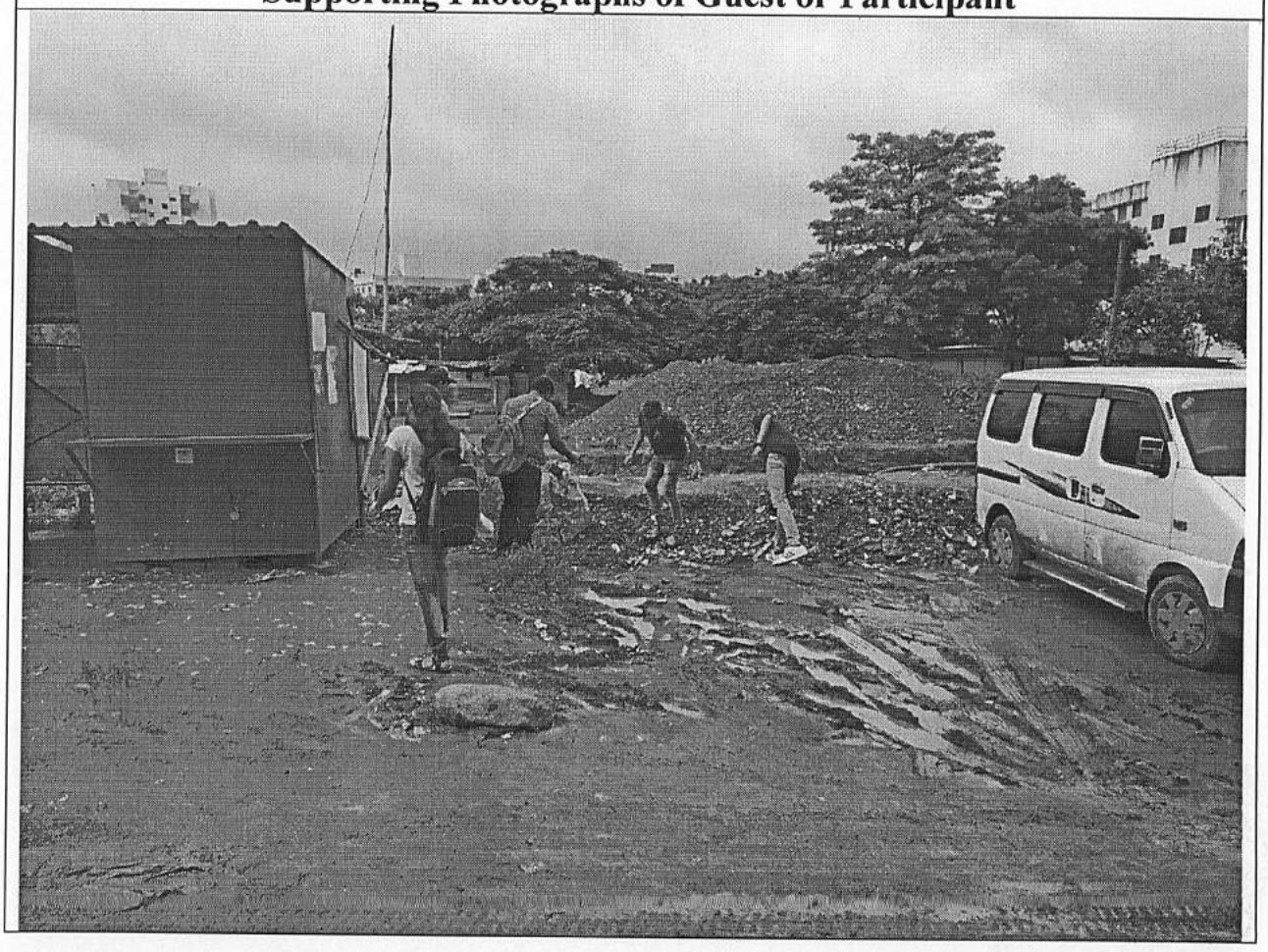
Sr. No	Particulars	Description
1	Institute – Department	SKNCOE- Dept. of Engineering Sciences
2	Academic Year	A.Y. 2018 – 2019
3	Batch or Participants	First Year
4	Name of Event	**Campus Cleaning**
5	Date of Event	04.08.2018
6	Time of Event	10:30 AM to 04:30 PM
7	Venue	College Campus
8	Topic or Theme	**Cleaning**
9	Faculty Coordinator	Prof. S.P. Bhilare
10	Name & Profile of Guest	-
11	Number of Participants	410

Head of Department
Engineering Science Department
Smt. Kashiba. Navale College
of Engineering, Vadgaon, Pune -41.

PRINCIPAL
Smt. Kashibai Navale
College of Engineering
Vadgaon(Bk.), Pune-41.

Smt. Kashibai Navale College of Engineering
Vadgaon(Bk.)
Pune-41.

Supporting Photographs of Guest or Participant



Head of Department
Engineering Science Department
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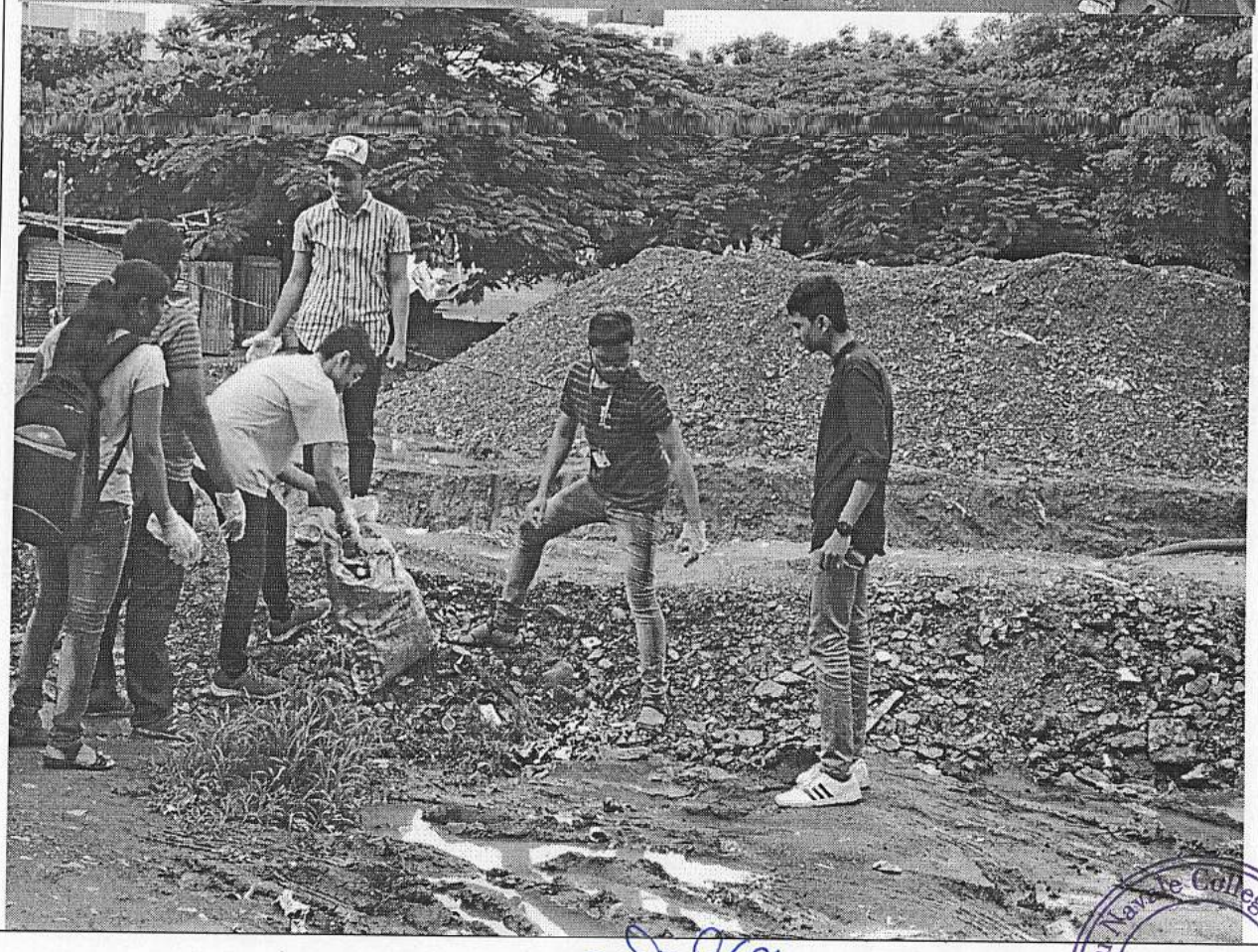
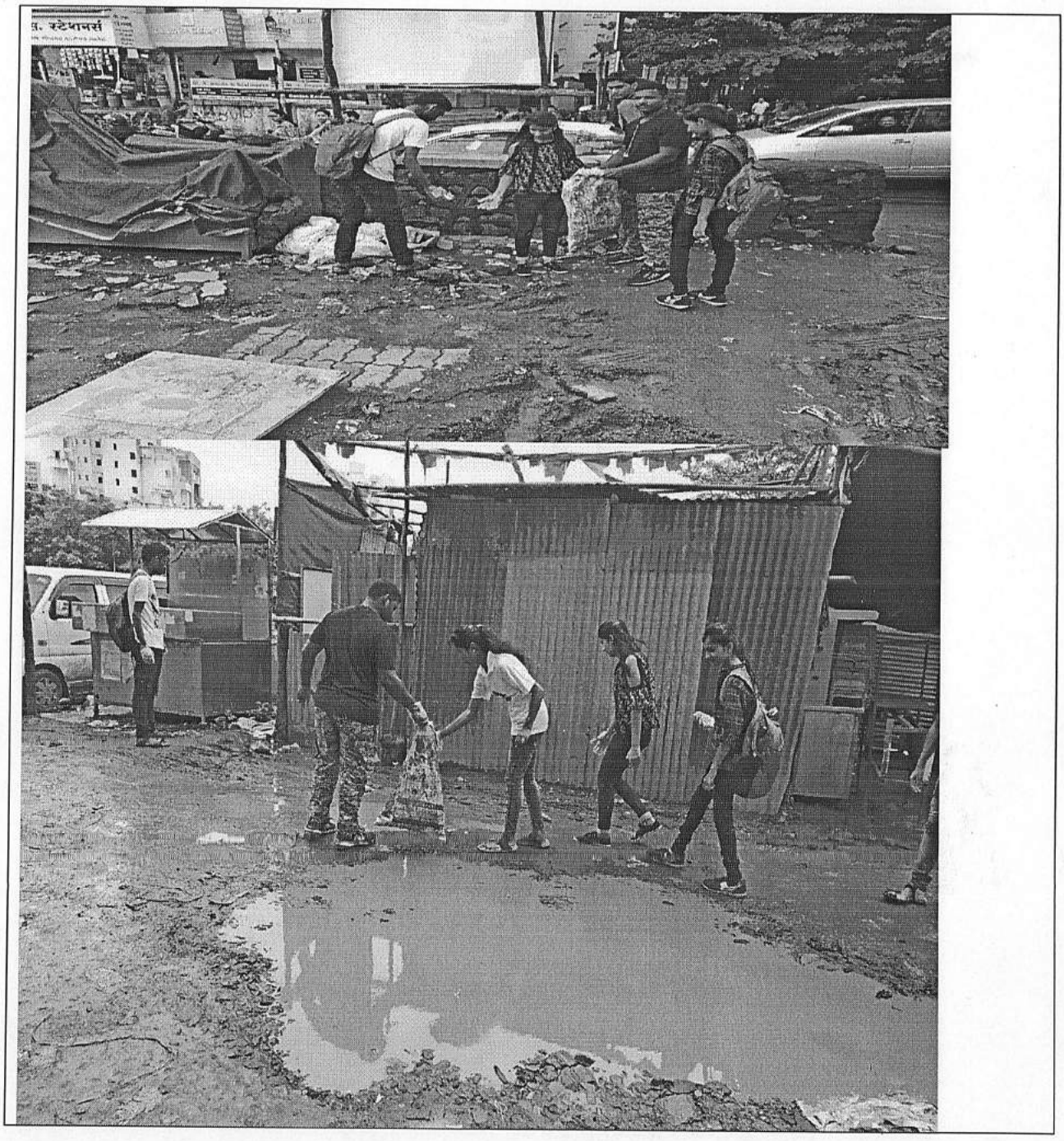
of Engineering, Vadgaon, Pune-41.

Smt. Kashibai Navale College of Engineering
Vadgaon(Bk.)
Pune-41.



Head of Department
Engineering Science Department
Smt. Kashibai Navale College
of Engineering, Vadgaon, Pune - 41.

Smt. Kashibai Navale College of Engineering
Vadgaon(Bk.)
Pune-41.



Signed By

Prof. S.P.Bhilare
Organizer

Smt. Kashibai Navale College of Engineering
Vadgaon (Bk.)
Pune - 41.

Head of Department
Engineering Science Department

Head of Department
Engineering Science Department
Smt. Kashibai Navale College
of Engineering, Vadgaon, Pune - 41.