ENERGY AUDIT REPORT

PUNE DISTRICT DISTRICT ASSOCIATION'S

SETH GOVIND RAGHUNATH SABLE COLLEGE OF PHARMACY

SASWAD, DISTRICT – PUNE

Swarna Nagari, Pune district, Saswad, Maharashtra 412301

Phone No: 02115-222212

E-mail Id: sgrs_poly@yahoo.co.in

Website: http://www.pdeasgrsdpharm.edu.in/

Conducted and Submitted by

ENERFUTURE TECHNOLOGY PRIVATE LIMITED

301, Above Ekbote Hospital,

Revenue Colony, J.M.Road,

Pune-411005

Website: http://www.ienerfuture.com

E-mail: info@enerfutureindia.com

Telephone: +91- 9960041642, 9405065597

2019-20

ENERFUTURE

CERTIFICATE

ENERFUTURE TECHNOLOGY PRIVATE LIMITED

Verified and Certified that

PDEA

PUNE DISTRICT DISTRICT ASSOCIATION'S

SETH GOVIND RAGHUNATH SABLE COLLEGE OF PHARMACY SASWAD, DISTRICT – PUNE

Swarna Nagari, Saswad, District - Pune, Maharashtra 412301

Phone No: 02115-222212

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Website: http://www.pdeasgrsdpharm.edu.in/

has carried out

Energy Audit

as per guidelines laid down in the Energy Conservation Act, 2001, Ministry of Power, Government of India in 2020-21.

ENERFUTURE TECHNOLOGY PRIVATE LIMITED ★ PUNE ★

Vinay Mulay
M.Tech (Energy Studies)
Certified Energy Auditor
BEE, EA-10853
Lead Auditor, ISO-500001

Chetan Nemade
M.Tech (Energy Studies),
LLB, ADIS
Certified Energy Manager
BEE, EA-22697

Yogesh Kuwar
M.Tech (Energy Studies), PGDELP
Certified Energy Manager
BEE, EA-33078
IGBCTM AP, AA02EEK7

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ACKNOWLEDGEMENT

Enerfuture Technology Private Limited thanks the management of Seth Govind Raghunath Sable College of Pharmacy, Saswad, District- Pune for assigning this important work of Energy Audit of Seth Govind Raghunath Sable College of Pharmacy, Saswad, District- Pune

Energy Audit study is a joint venture exercise of consultant and college account and contain energy usage without sacrificing the purpose of energy use.

Contribution of college's team is equally important in this venture. Team of technical experts from Enrfuture Technology Private Limited is grateful to all the following personnel of Seth Govind Raghunath Sable College of Pharmacy, Saswad, District- Pune for their kind cooperation, furnishing required data, analysis report and support offered during our visit.

Name	Designation
Dr Rajashri Sunil Chavan	Principal
Dr Smita Pawar	Vice-Principal
Mr Jitendra Shinde	HOD, Pharmaceutics
Mrs Jayashri Jagtap	IQAC Coordinator
Mr Dipak Gadekar	Electrician

We are also thankful to the other staff members who were actively involved while taking measurements and conducting field study.

STUDY TEAM

Sr No	Name	Qualification
1	Mr. Chetan Nemade	M.Tech (Energy Studies), Advance Diploma in Industrial Safety (ADIS), LLB(pursuing), BEE Certified Energy Manager
2	Mr Vinay Mulay	M.Tech (Energy Studies), ISO 50001 Lead Auditor, BEE Accredited Energy Auditor
3	Mr Swapnil Gaikwad	M.Tech (Energy Studies), ISO 50001 Lead Auditor , BEE Certified Energy Auditor
4	Mr YogeshKuwar	M.Tech (Energy Studies), IGBC, Post Graduate Diploma in Environmental law and Policy (PGDELP), BEE Certified Energy Manager
5	Mr Swapnil bedre	BE Mechanical

LIST OF INSTRUMENTS USED

1. Single Phase Power Analyzer
2. Ultrasonic Water Flow meter
3. Distance Meter (Bosch)
4. Lux meter (Meco)
5. TD meter
6. CO2 meter
7. Air quality measure meter
8. Sound meter

CONTENTS

EXCECUTIVE SUMMARY

Sr no	Location	Area	Proposed Action	Expected Result	Saving Potential	Monetary Saving	Investment	Simple Payback Period
				monthly	kWh	INR	INR	months
1	College building	Lightning recommendations	Replace existing old conventional 1x36W and 2x11W, FTL, PL with new energy efficient 1x18W, 1x10W LED tube light battens, bulbs etc	Existing lighting consumption= 595.65kWh Expected energy consumption= 350.1kWh Total energy saved per month=595.65-350.1=245.55kWh	245.55	2455.50	44,959	17.50
	College building	Fan recommendations	Replace existing old conventional fans which consumes 70W with new energy efficient fans which consumes 28W(18W & 8W for exhaust fan)	Existing fan consumption= 239.80kWh Expected energy consumption= 93.78kWh Total energy saved per month=239.80-93.78=146.02kWh	146.02	1460.20	4,61,600	316.12
2	College building	Water pumping system	Replace old less efficient water pumps with new energy efficient pumps- S.S.	Existing water pump consumption= 108kWh Expected energy consumption= 75.60Wh	32.40	324	25,000	77.16

			body	Total energy saved per month=108-75.60=32.40kWh				
6	College building	AC	Replaced old windows AC with new energy efficient BEE star rating inverter based technology AC	Average monthly consumption of AC= 48.6	14.58	-	-	-
8	College building	Bio-gas plant	Installed the bio-gas plant at canteen to save LPG cylinders	-	1 LPG cylinder	1000	-	-

COLLEGE INTRODUCTION

INTRODUCTION

Late Shri Govind Sable was born on 6th March 1913. He had to face a number of hardships during his formative years, but his belief in the virtue of honesty and hard work did not decline. He entered into a business with help of benevolent guidance of Shri Annasaheb Waghire. Together they set up an enviable enterprise. Shri Govind Sable, a kind hearted man, with the desire to do something for the poor, started helping the society by improving the living standards of his on work force. His regard for education led to his association with Pune District Education Association, an organization involved in education of the rural masses.

It was due to his magnanimous help that the college of Pharmacy came up at Saswad.
Late Shri Govind Seth Sable, a hard working businessman with a penchant for social work, went for his heavenly abode on 9th Oct.94. To keep his passion for excellence, the "Govind Seth Sable Memorial Award" is presented ritually, every year on 9th Oct. at an especially organized function on this day.

The award is presented to the deserving student at the hands of an eminent pharmacy professional. Though the college arranges a number of lectures by knowledgeable resource persons throughout the year, a special seminar is organized after the Award presentation ceremony on 9th October every year. The seminar, that has participation of specially invited speakers, is generally based on the latest developments in the Pharmacy field. The college has been very fortunate to have excellent speakers for the programme.

ABOUT COLLEGE

Our college was established in June 1991. The College was established, keeping in view the fact that there was no college of higher education within the fast developing area. The major population in this area comes from middle class and is economically weak. There are four higher secondary school in this area.
Access to higher education was a problem for these students especially for girls since other senior colleges were more than 10 Kms. away from town. Our institute has been imparting education to the rural. Today we have adequate number of classrooms, laboratories, computer centre with ample number of computers. We have competent faculty and efficient administration tradition.

VISION

To achieve the standards of excellence which will be benchmark for diploma pharmacy institutes.

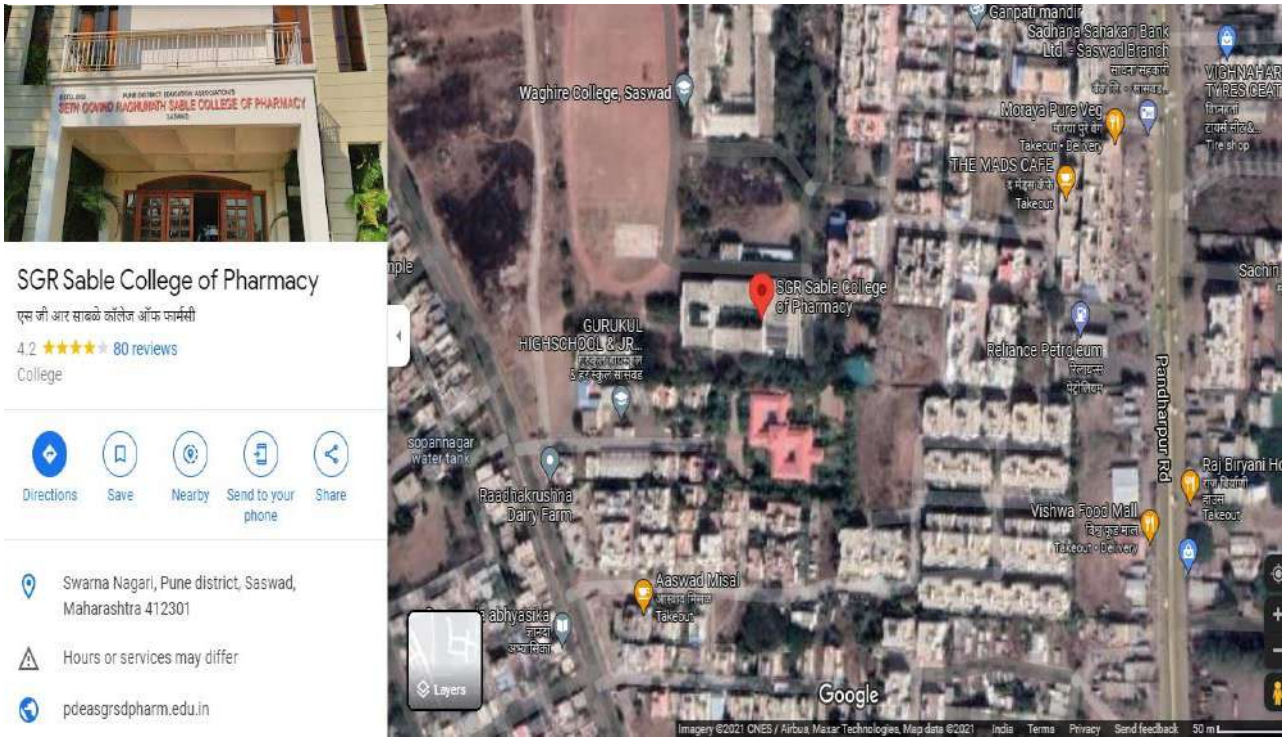
MISSION

- To provide state of art infrastructure to facilitate acquisition of knowledge about pharmacy to meet high standards of education.

- To empower students through modern pedagogical methods by competent faculty and skilled supportive team.

- To flourish budding pharmacist with good communication skill, social & professional ethics for prosperity of community.

LOCATION


SETH GOVIND RADHUMATH SABLE COLLEGE OF PHARMACY
SGR Sable College of Pharmacy
एस जी आर साबळे कॉलेज ऑफ फार्मसी
4.2 80 reviews
College
Directions
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Swarna Nagari, Pune district, Saswad, Maharashtra 412301
Hours or services may differ
pdeasgrsdpharm.edu.in
Waghire College, Saswad
Sadhana Sahakari Bank Ltd. - Saswad Branch
Moraya Pure Veg
Takeout · Delivery
THE MADS CAFE
Takeout
SGR Sable College of Pharmacy
GURUKUL HIGHSCHOOL & JR...
Reliance Petroleum
Pandharpur Rd
sopannagar water tank
Raadhakrushna Dairy Farm
Vishwa Food Mall
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ELECTRICITY BILL SUMMARY

Seth Govind Raghunath Sable College of Pharmacy (Polytechnic) has one MSEDCL three phase LT electricity connections in the main college building.

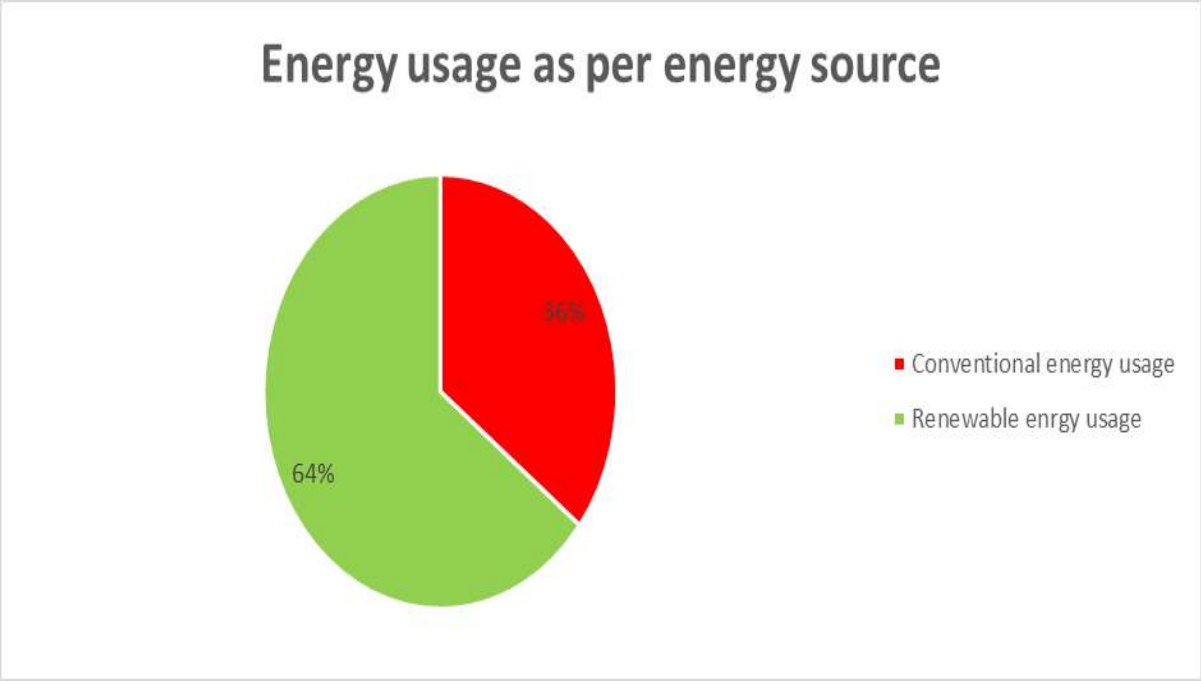
10 kWp Solar Photovoltaic System is installed on existing MSEDCL energy meter solar generation.

The major electricity consumption in college building is lighting, fans, AC as well as water pumping during college hours.

ELECTRICITY BILL SUMMARY

1. MAIN COLLEGE ELECTRICITY BILL SUMMARY

Meter No	187271749433							
BU	4509							
Tariff	LT-VII-B-I Public services <20kW							
Connected load	10							kW
Contract demand	10							KVA
	Total units	Export units	Import units	Generation units	Banked	Electricity duty	Total bill	Average unit rate
	kWh	kWh	kWh	kWh	kWh	INR	INR/month	INR/kWh
Oct-19	489	369	858	1016	0	0	3540	7.24
Nov-19	331	396	727	917	0	0	2513.63	7.59
Dec-19	0	625	512	1120	113	0	362	
Jan-20	0	517	513	1093	117	0	362	
Feb-20	0	493	591	1118	19		362	
Mar-20	132	479	630	1207	0	0	1220.05	9.24
Apr-20	0	672	640	1371	32	0	362	
May-20	0	713	652	1171	93	0	373	
Jun-20	0	669	603	1032	159	0	373	
Jul-20	32	470	661	994	0	0	573	17.91
Aug-20	197	398	595	931	0	0	1604.33	8.14
Sep-20	0	537	339	539	198	0	373	



OBSERVATION

1. Total monthly energy consumption of the college is approximate 575 units.
2. Total monthly billing is INR 6,000/-
3. 10 kWp Solar PV system with net meter is installed in college building as a renewable energy source.
4. Excess genera ration of solar units are feedback to grid system.

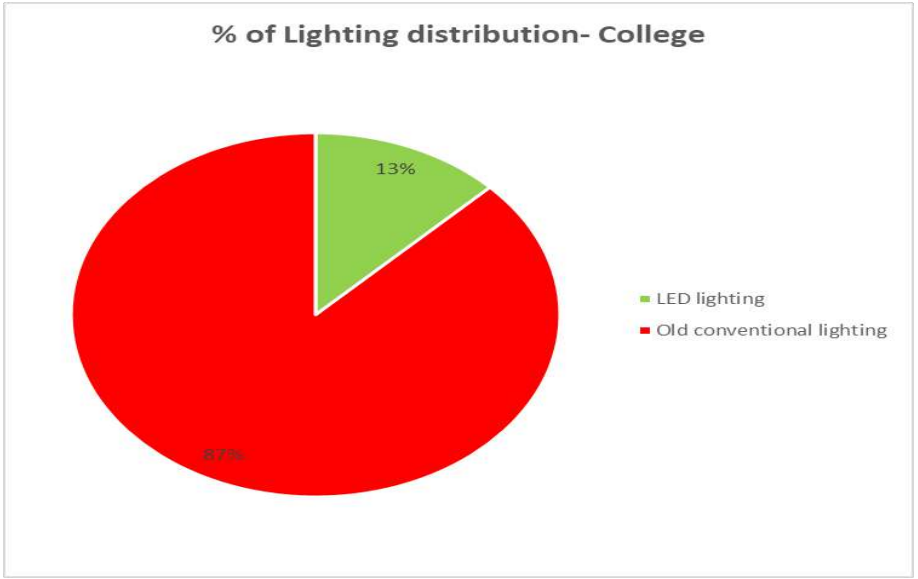
ENERGY PERFORMANCE ASSESSMENT OF LIGHTING

COLLEGE BUILDING AND OTHERS

OBSERVATION

College has installed new energy efficient LED lighting in the college building. There are old conventional lightings are also in the college in use.

Type	Quantity	kW load	% of load
LED lighting	35	0.63	12.64
Old conventional lighting	242	8.71	87.36
Total	**277**	**9.34**	**100**



PERFORMANCE ASSESSMENT OF LIGHTING SYSTEM

Floor	Name	Light Type	Type	Qty	Wattage	Hours of usage	No of Days in a month	Monthly consumption
				Nos	watt	hrs	days	kWh/day
Ground	All Passage	LED	1x18W	25	18	2	25	22.50
	College office	LED	1x18W	4	18	4	25	7.20
		FTL	1x36W	2	36	4	25	7.20
	Principal office	PL	1x11W	6	11	4	25	6.60
		FTL	1x36W	2	36	4	25	7.20
	Library	LED	1x18W	2	18	4	25	3.60
		FTL	1x36W	18	36	4	25	64.80
	Conference hall	PL	1x11W	9	11	2	25	4.95
	Store rooms	FTL	1x36W	5	36	2	25	9.00
	Gymkhana	FTL	1x36W	2	36	2	25	3.60
	Class rooms	FTL	1x36W	2	36	2	25	3.60
	Lab 7,8	FTL	1x36W	7	36	2	25	12.60
	Animal house	FTL	1x36W	9	36	2	25	16.20
	House keeping	FTL	1x36W	2	36	2	25	3.60
	Director room	PL	1x11W	2	11	2	25	1.10
	Lecture hall 1,2	FTL	1x36W	12	36	2	25	21.60
	Seminar hall	FTL	1x36W	13	36	2	25	23.40
	M.Pharm lab	FTL	1x36W	9	36	2	25	16.20
	Central instrumentation facility	FTL	1x36W	2	36	2	25	3.60

	P'cognosy research lab	FTL	1x36W	9	36	2	25	16.20
	Girl's common room	FTL	1x36W	6	36	2	25	10.80
	New exam room	FTL	1x36W	1	36	2	25	1.80
First floor	Lab 1,2,3,4	FTL	1x36W	50	36	2	25	90.00
	NAAC room	FTL	1x36W	2	36	2	25	3.60
	Industrial lab	FTL	1x36W	27	36	2	25	48.60
	Class rooms 1,2	FTL	1x36W	15	36	2	25	27.00
	Exam room	FTL	1x36W	3	36	2	25	5.40
	Lab 7,8	FTL	1x36W	15	36	2	25	27.00
	Sick room	FTL	1x36W	1	36	2	25	1.80
	Computer lab	PL	1x11W	34	11	2	25	18.70
		FTL	1x36W	2	36	2	25	3.60
	NSS room	FTL	1x36W	1	36	2	25	1.80
	Lab reasearch pharmaceutics	FTL	1x36W	6	36	2	25	10.80
	Lab M Pharm pharmaceutics	FTL	1x36W	7	36	2	25	12.60
	Pharmaceutics lab	FTL	1x36W	5	36	2	25	9.00
Second floor	Boy's common room	FTL	1x36W	2	36	2	25	3.60
	Pharmacognosy lab	FTL	1x36W	4	36	2	25	7.20
	Pharmacognosy research lab	FTL	1x36W	4	36	2	25	7.20
	Reasearch pharma lab	FTL	1x36W	9	36	2	25	16.20
	Class room	FTL	1x36W	3	36	2	25	5.40
	Girl's common room	FTL	1x36W	2	36	2	25	3.60
	Tutorial room	FTL	1x36W	3	36	2	25	5.40
	Pharmacology lab	FTL	1x36W	11	36	2	25	19.80

ENERGY SAVING MEASURES

Floor	Name	Change	New wattage	New used Qty	New monthly consumption	Monthly saving	Total investment
			watt	nos	kWh/month	kWh/month	INR
Ground	All Passage	No change	18	25	22.50	0.00	0
	College office	No change	18	4	7.20	0.00	1000
		LED-1x18W	18	2	3.60	3.60	0
	Principal office	LED-1x18W	18	6	10.80	-4.20	0
		LED-1x18W	18	2	3.60	3.60	500
	Library	No change	18	2	3.60	0.00	500
		LED-1x18W	18	18	32.40	32.40	4500
	Conference hall	LED-1x18W	18	9	8.10	-3.15	0
	Store rooms	LED-1x18W	18	5	4.50	4.50	0
	Gymkhana	LED-1x18W	18	2	1.80	1.80	500
	Class rooms	LED-1x18W	18	2	1.80	1.80	0
	Lab 7,8	LED-1x18W	18	7	6.30	6.30	1750
	Animal house	LED-1x18W	18	9	8.10	8.10	0
	House keeping	LED-1x18W	18	2	1.80	1.80	0
	Director room	LED-1x18W	18	2	1.80	-0.70	500
	Lecture hall 1,2	LED-1x18W	18	12	10.80	10.80	3000
	Seminar hall	LED-1x18W	18	13	11.70	11.70	0
	M.Pharm lab	LED-1x18W	18	9	8.10	8.10	2250

	Central instrumentation facility	LED-1x18W	18	2	1.80	1.80	500
	P'cognosy research lab	LED-1x18W	18	9	8.10	8.10	2250
	Girl's common room	LED-1x18W	18	6	5.40	5.40	1500
	New exam room	LED-1x18W	18	1	0.90	0.90	0
First floor	Lab 1,2,3,4	LED-1x18W	18	50	45.00	45.00	12500
	NAAC room	LED-1x18W	18	2	1.80	1.80	400
	Industrial lab	LED-1x18W	18	27	24.30	24.30	0
	Class rooms 1,2	LED-1x18W	18	15	13.50	13.50	0
	Exam room	LED-1x18W	18	3	2.70	2.70	750
	Lab 7,8	LED-1x18W	18	15	13.50	13.50	0
	Sick room	LED-1x18W	18	1	0.90	0.90	250
	Computer lab	LED-1x18W	18	34	30.60	-11.90	6800
		LED-1x18W	18	2	1.80	1.80	0
	NSS room	LED-1x18W	18	1	0.90	0.90	0
	Lab research pharmaceutics	LED-1x18W	18	6	5.40	5.40	0
	Lab M Pharm pharmaceutics	LED-1x18W	18	7	6.30	6.30	0
	Pharmaceutics lab	LED-1x18W	18	5	4.50	4.50	0
Second floor	Boy's common room	LED-1x18W	18	2	1.80	1.80	0
	Pharmacognosy lab	LED-1x18W	18	4	3.60	3.60	0
	Pharmacognosy research lab	LED-1x18W	18	4	3.60	3.60	0
	Research pharma lab	LED-1x18W	18	9	8.10	8.10	9
	Class room	LED-1x18W	18	3	2.70	2.70	0
	Girl's common room	LED-1x18W	18	2	1.80	1.80	0
	Tutorial room	LED-1x18W	18	3	2.70	2.70	750
	Pharmacology lab	LED-1x18W	18	11	9.90	9.90	2750

Total lighting savings- College building		
Monthly consumption	595.65	kWh/month
New monthly consumption	350.1	kWh/month
New monthly saving	245.55	kWh/month
New monthly saving	2455.5	INR/month
Total Investment	42959	INR
Payback period	**17.50**	**months**

ENERGY SAVING MEASURES- OTHER RECOMMENDATIONS

College can installed motions sensor LED tube lights or bulbs where lighting is on for maximum period and occupancy or motion is less. This save additional energy by automatic switching of lighting.

ENERGY PERFORMANCE ASSESSMENT OF FAN

COLLEGE BUILDING AND OTHERS

OBSERVATION

College has installed old conventional induction motor fan which consumes 65W at full speed. It is recommended that replace old fan which are operated maximum usage per day with new energy efficient fan which consumes 28W at full speed. Also exhaust fan of 50W with 18W energy efficient fans.

ENERGY SAVING MEASURES

Building	Name	Qty	Wattage	Hours of usage	No of Days in a month	Monthly consumption	New wattage	New monthly consumption	Monthly saving	Investment	Payback period
		Nos	watt	hrs	days	kWh/day	watt	kWh/month	kWh/month	INR	months
Ground	College office	4	70	4	15	16.80	28	6.72	10.08	2800	111.11
	Library	16	70	4	15	67.20	28	26.88	40.32	2800	111.11
	Store rooms	3	70	1	15	3.15	28	1.26	1.89	2800	444.44
	Gymkhana	2	70	1	15	2.10	28	0.84	1.26	2800	444.44
	Lab 7,8	2	70	1	15	2.10	18	0.54	1.56	2800	358.97
	Animal house	3	70	1	15	3.15	28	1.26	1.89	2800	444.44
	House keeping	1	70	1	15	1.05	18	0.27	0.78	2800	358.97
	Lecture hall 1,2	9	70	1	15	9.45	28	3.78	5.67	2800	444.44
	Seminar hall	6	70	1	15	6.30	28	2.52	3.78	2800	444.44
	M.Pharm lab	5	70	1	15	5.25	28	2.10	3.15	2800	444.44

	Central intrumentation facility	1	70	1	15	1.05	28	0.42	0.63	2800	444.44
	P'cognosy reasearch lab	5	70	1	15	5.25	28	2.10	3.15	2800	444.44
	Girl's common room	1	70	1	15	1.05	28	0.42	0.63	2800	444.44
	New exam room	2	70	1	15	2.10	28	0.84	1.26	2800	444.44
First floor	Lab 1,2,3,4	11	70	1	15	11.55	28	4.62	6.93	2800	444.44
	NAAC room	2	70	1	15	2.10	28	0.84	1.26	2800	444.44
	Indusrrial lab	2	70	1	15	2.10	28	0.84	1.26	2800	444.44
	Class rooms 1,2	12	70	1	15	12.60	28	5.04	7.56	2800	444.44
	Exam room	3	70	1	15	3.15	28	1.26	1.89	2800	444.44
	Lab 7,8	7	70	1	15	7.35	28	2.94	4.41	2800	444.44
	Sick room	1	70	0.5	15	0.53	28	0.21	0.32	2800	888.89
	Computer lab	10	70	1	15	10.50	28	4.20	6.30	2800	444.44
	NSS room	1	70	1	15	1.05	28	0.42	0.63	2800	444.44
	Lab reasearch pharmaceutics	3	70	1	15	3.15	28	1.26	1.89	2800	444.44
	Lab M Pharm pharmaceutics	3	70	1	15	3.15	28	1.26	1.89	2800	444.44
	Pharmaceutics lab	2	70	1	15	2.10	28	0.84	1.26	2800	444.44
Second floor	Boy's common room	1	70	1	15	1.05	28	0.42	0.63	2800	444.44
	Pharmacognosy lab	1	70	1	15	1.05	28	0.42	0.63	2800	444.44

	Pharmacognosy reasearch lab	1	70	1	15	1.05	28	0.42	0.63	2800	444.44
	Reasearch pharma lab	3	70	1	15	3.15	28	1.26	1.89	2800	444.44
	Class room	1	70	1	15	1.05	28	0.42	0.63	2800	444.44
	Girl's common room	2	70	1	15	2.10	28	0.84	1.26	2800	444.44
	Tutorial room	3	70	1	15	3.15	28	1.26	1.89	2800	444.44
	Pharmacology lab	5	70	1	15	5.25	28	2.10	3.15	2800	444.44
	All exhaust fans	48	50	1	15	36.00	18	12.96	23.04	1800	375.00

Monthly consumption		
New monthly consumption	239.80	kWh/month
New monthly saving	93.78	kWh/month
New monthly saving	146.02	kWh/month
Total Investment	1460.2	INR/month
	461600	INR
Payback period	**316.12**	**months**

ENERGY PERFORMANCE ASSESSMENT OF WATER PUMPING

OBSERVATION

1. There are mainly two pumps operated in college.
2. Daily operation of the pump usage is about 1 hours.
3. Existing submersible pumps are old with less efficient.

ELECTRICAL READINGS OF THE PUMPS

Particulars	Operating hours	Voltage	Current	Power	PF
	Hours/day	V	A	kW	
Water Pump- 1	1	242	9.1	2.22	0.991
Water Pump- 2	1	240.5	9.5	2.1	0.985

SAVINGS MEASURES

Particulars-Total water pump savings		
Total monthly consumption	108	kWh/month
New monthly consumption	75.60	kWh/month
Total saving kWh	32.40	kWh/month
Total saving INR	324.00	INR/month
Total Investment	25000	INR/month
Payback period	**77.16**	**months**

RECOMMENDATION

It is recommended that replaced old less efficient water pump with new efficient water pump which saves up to 30% energy save.

ENERGY PERFORMANCE ASSESSMENT OF AC

OBSERVATION

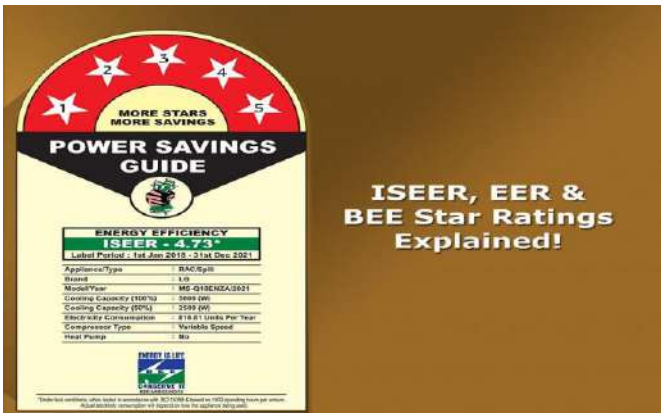
1. In college old window split AC are used for air conditioning purpose.
2. There is no annual maintenance of AC for cleaning of filters etc
3. Existing old AC are not energy efficient BEE star rating

SAVINGS MEASURES

Particulars-Total AC savings		
Total number of old AC	36	nos
Total monthly consumption	48.6	kWh/month
New monthly consumption	34.02	kWh/month
Total saving kWh	14.58	kWh/month
Total saving INR	145.80	INR/month

RECOMMENDATION

It is recommended that replaced old window split AC with new efficient BEE star rating AC with inverter technology which saves up to 10-20% energy save.



BIO-GAS PLANT

INTRODUCTION

Bio-Gas Generation Plant - 10g/day- At canteen

Biogas is a mixture of gases, primarily consisting of methane and carbon dioxide, produced from raw materials such as agricultural waste, manure, municipal waste, plant material, sewage, green waste or food waste. It is a renewable energy source.

Biogas is produced by anaerobic digestion with anaerobic organisms or methanogen inside an anaerobic digester, bio digester or a bioreactor.

Biogas is primarily methane (CH_4) and carbon dioxide (CO_2) and may have small amounts of hydrogen sulphide (H_2S), moisture and siloxanes. The gases methane, hydrogen, and carbon monoxide (CO) can be combusted or oxidized with oxygen. This energy release allows biogas to be used as a fuel; it can be used in fuel cells and for any heating purpose, such as cooking. It can also be used in a gas engine to convert the energy in the gas into electricity and heat.

Biogas can be compressed after removal of Carbon dioxide, the same way as natural gas is compressed to CNG, and used to power motor vehicles. In the United Kingdom, for example, biogas is estimated to have the potential to replace around 17% of vehicle fuel. It qualifies for renewable energy subsidies in some parts of the world. Biogas can be cleaned and upgraded to

natural gas standards, when it becomes bio-methane. Biogas is considered to be a renewable resource because its production-and-use cycle is continuous, and it generates no net carbon dioxide. As the organic material grows, it is converted and used. It then regrows in a continually repeating cycle. From a carbon perspective, as much carbon dioxide is absorbed from the atmosphere in the growth of the primary bio-resource as is released, when the material is ultimately converted to energy

Biogas in India has been traditionally based on dairy manure as feed stock and these "gobar" gas plants have been in operation for a long period of time, especially in rural India. In the last 2–3 decades, research organisations with a focus on rural energy security have enhanced the design of the systems resulting in newer efficient low cost designs such as the Deenabandhu model.

The Deenabandhu Model is a new biogas-production model popular in India. (Deenabandhu means "friend of the helpless.") The unit usually has a capacity of 2 to 3 cubic metres. It is constructed using bricks or by a ferrocement mixture. In India, the brick model costs slightly more than the ferrocement model; however, India's Ministry of New and Renewable Energy offers some subsidy per model constructed.

Biogas which is mainly methane/natural gas can also be used for generating protein rich cattle, poultry and fish feed in villages economically by cultivating Methylococcus capsulatus bacteria culture with tiny land and water foot print. The carbon dioxide gas produced as by product from these plants can be put to use in cheaper production of algae
oil or spirulina from algaculture particularly in tropical countries like India which can displace the prime position of crude oil in near future. Union government of India is implementing many schemes to utilise productively the agro waste or biomass in rural areas to uplift rural economy and job potential. With these plants, the non-edible biomass or waste of edible biomass is converted in to high value products without any water pollution or greenhouse gas (GHG) emissions.

LPG (Liquefied Petroleum Gas) is a key source of cooking fuel in urban India and its prices have been increasing along with the global fuel prices. Also the heavy subsidies provided by the successive governments in promoting LPG as a domestic cooking fuel has become a financial burden renewing the focus on biogas as a cooking fuel alternative in urban establishments. This has led to the development of prefabricated digester for modular deployments as compared to RCC and cement structures which take a longer duration to construct. Renewed focus on process technology like the Biourja process model has enhanced the stature of medium and large scale anaerobic digester in India as a potential alternative to LPG as primary cooking fuel

OBSERVATION

1. College hast common canteen with other institutes in the premises.
2. College canteen produces daily 10 kg of waste.
3. Currently there is LPG gas cylinders are used for cooking purpose in the canteen.

SAVINGS

Saving due to Bio gas plant		
Capacity of bio gas plant	10	kg/day
Waste generated	10	kg/day
Approximate bio gas generation	1	m3/day
Approximate bio gas generation	30	m3/month
Equivalent LPG gas saved	12	kg/month
Approximate LPG cylinder saved	1.0	nos
Cost saved	**1000.00**	**INR/month**

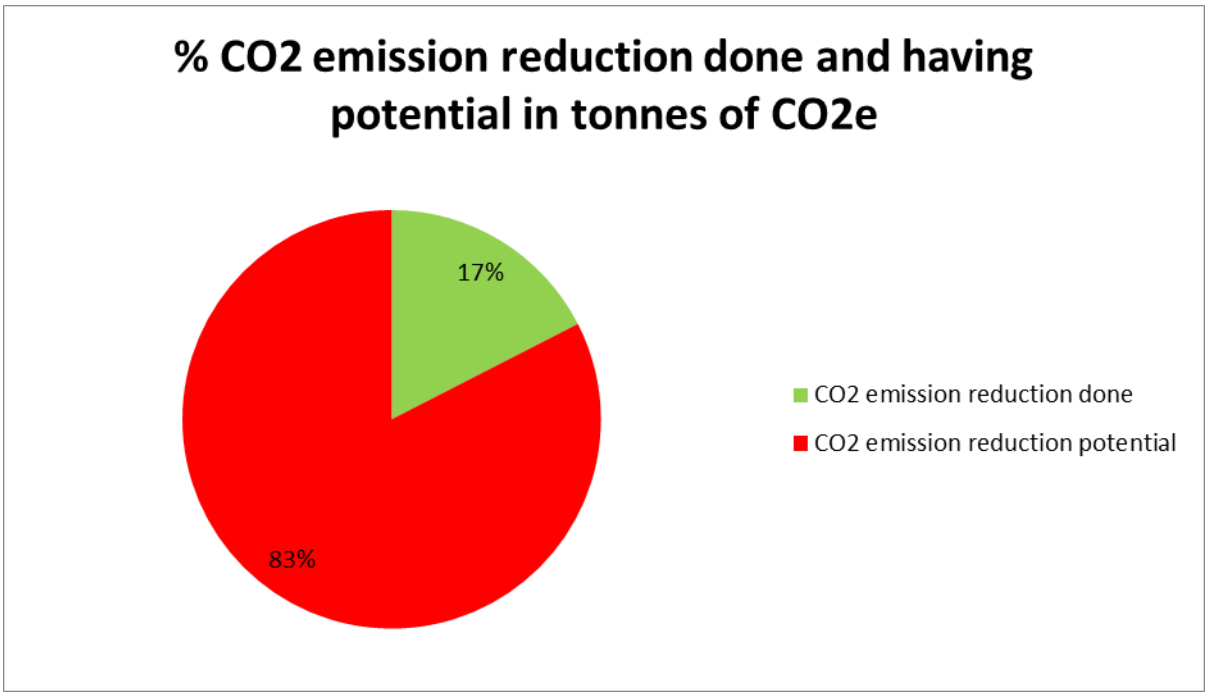
RECOMMENDATION

It is recommended that to install 10 kg/day capacity of Bio-gas plant at the canteen to produce the bio gas for canteen cooking purposes. It helps to reduce LPG cost and reduction of CO2 gas emission reduction.

CO_2 EMISSION REDUCTION

Particulars		
Energy saved by new energy efficient technology	3.5	kWh/month
Energy saved by energy efficient technology	42	kWh/year
Energy saved by renewable energy	1042	kWh/month
Energy saved by renewable energy	12504	kWh/year
CO2 emission reduction done	10.66	tonnes of CO2e

Particulars		
Energy saving potential by energy saving/conservation	388	kWh/month
Energy saving potential by energy saving/conservation	4656	kWh/year
CO2 emission reduction potential	3.96	tonnes of CO2e



ENERGY CONSERVATION BY SAVING OF WATER

1. TAP WATER REDUCER

Conventional Tap water system	Tap water system with Reducer
	
Existing tap water system uses more water while during purpose of washing of utensils, hands etc in college.	**Used reducer to tap water for purpose of washing of utensils, hands etc which reduces flow of water and ultimately saves the water.**
⃠	√

RECOMMENDATION

It is recommended that to use water reducer for water taping for save the water.

ANNEXTURE

ENERGY EFFICIENT FANS

ATOMBERG TECHNOLOGIES	
	**28 watts**
	**18watts or 8 watts as per size and load**

ENERGY EFFICIENT LIGHTING

LED Lightings	
	**18 watts, 9 watts, 5 watts** **Companies:** **1. Wipro** **2. Osram** **3. Syska** **4. Philips** **etc**
	
	**Motion/Heat sensor bulbs** **Companies:** **1. Orient electric** **2. Halonix** **etc**

ENERGY EFFICIENT INVERTER AC

ENERGY EFFICIENT INVERTER AC	
	**Companies:** **1. Daikin** **2. Mitsubishi Electric** **3. LG** **etc**
	

GREEN/ENVIRONMENT AUDIT REPORT

PUNE DISTRICT DISTRICT ASSOCIATION'S

SETH GOVIND RAGHUNATH SABLE COLLEGE OF PHARMACY

SASWAD, DISTRICT – PUNE

Swarna Nagari, Pune district, Saswad, Maharashtra 412301

Phone No: 02115-222212

E-mail Id: sgrs_poly@yahoo.co.in

Website: http://www.pdeasgrsdpharm.edu.in/

Conducted and Submitted by

ENERFUTURE TECHNOLOGY PRIVATE LIMITED

301, Above Ekbote Hospital,

Revenue Colony, J.M.Road,

Pune-411005

Website: http://www.ienerfuture.com

E-mail: info@enerfutureindia.com

Telephone: +91- 9960041642, 9423180029

2019-20

ENERFUTURE

CERTIFICATE

ENERFUTURE TECHNOLOGY PRIVATE LIMITED

Verified and Certified that

PDEA

PUNE DISTRICT DISTRICT ASSOCIATION'S

SETH GOVIND RAGHUNATH SABLE COLLEGE OF PHARMACY SASWAD, DISTRICT – PUNE

Swarna Nagari, Saswad, District - Pune, Maharashtra 412301

Phone No: 02115-222212

E-mail Id: sgrs_poly@yahoo.co.in

Website: http://www.pdeasgrsdpharm.edu.in/

has carried out

Green/Environment Audit

as per guidelines laid down in the Indian Standards and Codes in 2020-21.

ENERFUTURE TECHNOLOGY PRIVATE LIMITED ★ PUNE ★

Vinay Mulay
M.Tech (Energy Studies)
Certified Energy Auditor
BEE, EA-10853
Lead Auditor, ISO-500001

Chetan Nemade
M.Tech (Energy Studies),
LLB, ADIS
Certified Energy Manager
BEE, EA-22697

Yogesh Kuwar
M.Tech (Energy Studies), PGDELP
Certified Energy Manager
BEE, EA-33078
IGBCTM AP, AA02EEK7

ENERFUTURE

www.ienerfuture.com

ACKNOWLEDGEMENT

Enerfuture Technology Private Limited thanks the management of Seth Govind Raghunath Sable College of Pharmacy, Saswad, District- Pune for assigning this important work of Green Audit of Seth Govind Raghunath Sable College of Pharmacy, Saswad, District- Pune

Green audit is defined as a formal examination of practices adopted and their effects on the environment, by an organization. It is also widely known as Environmental Audit.

The aim of the Green Audit is to review the overall environment management systems. Depending on the types of standards and the focus of the audit, there are different types of environmental audits.

Organizations now recognize the importance of environmental matters and accepts that their environment performance should be scrutinized to understand its impact and to take remedial measures to lessen it.

Environmental auditing is used to:

1. Investigate
2. Understand and
3. Identify

These are then used to help in improving existing human activities, with the aim of reducing the adverse effects of these activities on the environment.

An environment auditor studies an organization’s environment effects in a systematic and documented manner and produces an environmental audit report.

Green audit for an educational institution mainly examines the following systems

1. Renewable/ green energy usage
2. Water management
3. Biodiversity
4. Health and safety management
5. Sanitation management
6. Adopted Green practices

Contribution of college's team is equally important in this venture. Team of technical experts from Enrfuture Technology Private Limited is grateful to all the following personnel of Seth Govind Raghunath Sable College of Pharmacy, Saswad, District- Pune for their kind cooperation, furnishing required data, analysis report and support offered during our visit

Name	Designation
Dr Rajashri Sunil Chavan	Principal
Dr Smita Pawar	Vice-Principal
Mr Jitendra Shinde	HOD, Pharmaceutics
Mrs Jayashri Jagtap	IQAC Coordinator
Mr Dipak Gadekar	Electrician

We are also thankful to the other staff members who were actively involved while taking measurements and conducting field study.

STUDY TEAM

Sr No	Name	Qualification
1	Mr. Chetan Nemade	M.Tech (Energy Studies), Advance Diploma in Industrial Safety (ADIS), LLB(pursuing), BEE Certified Energy Manager
2	Mr Vinay Mulay	M.Tech (Energy Studies), ISO 50001 Lead Auditor, BEE Accredited Energy Auditor
3	Mr Swapnil Gaikwad	M.Tech (Energy Studies), ISO 50001 Lead Auditor , BEE Certified Energy Auditor
4	Mr YogeshKuwar	M.Tech (Energy Studies), IGBC, Post Graduate Diploma in Environmental law and Policy (PGDELP), BEE Certified Energy Manager
5	Mr Swapnil bedre	BE Mechanical

LIST OF INSTRUMENTS USED

1. Single Phase Power Analyzer
2. Ultrasonic Water Flow meter
3. Distance Meter (Bosch)
4. Lux meter (Meco)
5. TD meter
6. CO2 meter
7. Air quality measure meter
8. Sound meter

CONTENTS

EXCECUTIVE SUMMARY

Sr No	Location	Area	Objective/Purpose	Recommendation/Status
1	College main building	Solar Photovoltaic System- with Net meter	To generate electrical energy by renewable sources and reduce the CO2 emissions	**Implemented**
2	College canteen	Bio-Gas generation plant- 10kg/day	Utilised organic food generated in the hostel mess to generate bio-gas for cooking purpose. This saves conventional fuel LPG and ultimately reduce the CO2 and Greenhouse gases emissions	**Can be Implemented**
3	College campus	Composting	Reduces the landfill pollution and green-house gases reduction. Also produce bio- fertiliser compost to trees in the college campus	**Implemented**
4	College campus	Effluent/Sewage Treatment Plant(ETP/STP)	To treat the sewage water and reuse for gardening purpose	**Can be implement**
5	College campus	Water Drip Irrigation System	To save the water and for gardening purpose to maintain the trees	**Implemented**
6	College campus	Tap water reducers	To save the water	**Can be implement**
		Hands free water tap system	This saves the water and also good for personal health protection to avoid frequent hand touching to water taps.	**Need to be implement**

7	College campus	Rain water harvesting	Save water. Increases the groundwater recharge.	**Implemented**
8	College buildings/campus	Air Comfort/ Quality	Air quality for human being comfort	**Aspirational**
9	College buildings/campus	Sound Comfort/ Quality	Sound quality or comfort for human being comfort	**Within permissible limits**
10	College buildings/campus	Daylight Comfort/Illumination	Daylight illumination for human being comfort	**Within permissible limits**
11	College buildings/campus	Health safety management	Electrical safety- electrical wiring, connections etc	**Need to be improve**
			Fire safety- number of fire extinguishers are placed in college campus	**Good**
			First aid with sick room with Doctor availability - immediate first aid if accident occurs	**Placed in the college**
12	College buildings/campus	No vehicle day	Save the conventional fuel and reduces the CO2 emissions.	**Can be implement**
13	College buildings/campus	Waste management- E-waste	Reduce the CO2 emissions by recycling of solid waste. Also Save environment from hazardous materials.	**Regularly implemented and maintained every month.**
		Waste management- Solid waste	Reduce the CO2 emissions by recycling of solid waste	**Regularly implemented and maintained every month.**

		Waste management- Liquid	Reduce the landfill pollution	**Regularly implemented**
15	College buildings/campus	Tree plantation/ Green belt cover	To increase the forest cover. Reduce the Air, Noise pollution, reduce CO2 emissions etc	**Regularly implemented and taken programmes**
16	College buildings/campus	Health awareness programmes	Physical fitness and health awareness programme for students, teaching staff etc for good health and physical fitness practices, No smoking zone etc	**Regularly taken programmes**
18	College buildings/campus	Plastic free campaign	Save environment from non-recycling and hazardous materials.	**Taken initiative for implementation**
19	College buildings/campus	Energy efficient or Innovative techniques	To save the electricity and reduction of CO2 emissions	**Partially implemented**

COLLEGE INTRODUCTION

INTRODUCTION

Late Shri Govind Sable was born on 6th March 1913. He had to face a number of hardships during his formative years, but his belief in the virtue of honesty and hard work did not decline. He entered into a business with help of benevolent guidance of Shri Annasaheb Waghire. Together they set up an enviable enterprise. Shri Govind Sable, a kind hearted man, with the desire to do something for the poor, started helping the society by improving the living standards of his on work force. His regard for education led to his association with Pune District Education Association, an organization involved in education of the rural masses.

It was due to his magnanimous help that the college of Pharmacy came up at Saswad.
Late Shri Govind Seth Sable, a hard working businessman with a penchant for social work, went for his heavenly abode on 9th Oct.94. To keep his passion for excellence, the "Govind Seth Sable Memorial Award" is presented ritually, every year on 9th Oct. at an especially organized function on this day.

The award is presented to the deserving student at the hands of an eminent pharmacy professional. Though the college arranges a number of lectures by knowledgeable resource persons throughout

the year, a special seminar is organized after the Award presentation ceremony on 9th October every year. The seminar, that has participation of specially invited speakers, is generally based on the latest developments in the Pharmacy field. The college has been very fortunate to have excellent speakers for the programme.

ABOUT COLLEGE

Our college was established in June 1991. The College was established, keeping in view the fact that there was no college of higher education within the fast developing area. The major population in this area comes from middle class and is economically weak. There are four higher secondary school in this area.
Access to higher education was a problem for these students especially for girls since other senior colleges were more than 10 Kms. away from town. Our institute has been imparting education to the rural. Today we have adequate number of classrooms, laboratories, computer centre with ample number of computers. We have competent faculty and efficient administration tradition.

VISION

To achieve the standards of excellence which will be benchmark for diploma pharmacy institutes.

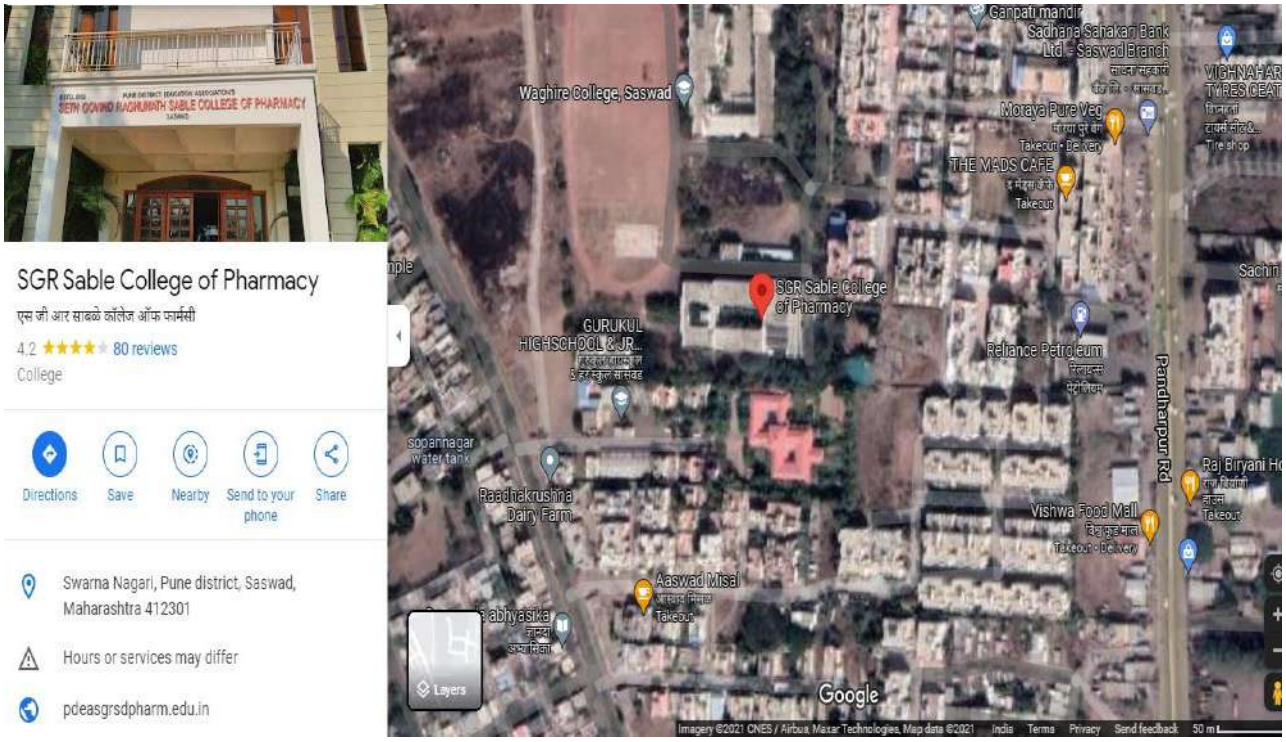
MISSION

- To provide state of art infrastructure to facilitate acquisition of knowledge about pharmacy to meet high standards of education.

- To empower students through modern pedagogical methods by competent faculty and skilled supportive team.

- To flourish budding pharmacist with good communication skill, social & professional ethics for prosperity of community.

LOCATION


SETH GOVIND RAGHUNATH SABLE COLLEGE OF PHARMACY
SGR Sable College of Pharmacy
एस जी आर साबळे कॉलेज ऑफ फार्मसी
4.2 80 reviews
College
Directions
Save
Nearby
Send to your phone
Share
Swarna Nagari, Pune district, Saswad, Maharashtra 412301
Hours or services may differ
pdeasgrsdpharm.edu.in
Waghire College, Saswad
Ganpati mandir
Sadhana Sahakari Bank Ltd. - Saswad Branch
Morava Pure Veg
Takeout · Delivery
THE MADS CAFE
Takeout
SGR Sable College of Pharmacy
GURUKUL HIGHSCHOOL & JR...
Reliance Petroleum
Pandharpur Rd
sopannagar water tank
Raadhakrushna Dairy Farm
Vishwa Food Mall
Takeout · Delivery
Aaswad Misal
Takeout
Layers
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RENEWABLE ENERGY SYSTEMS

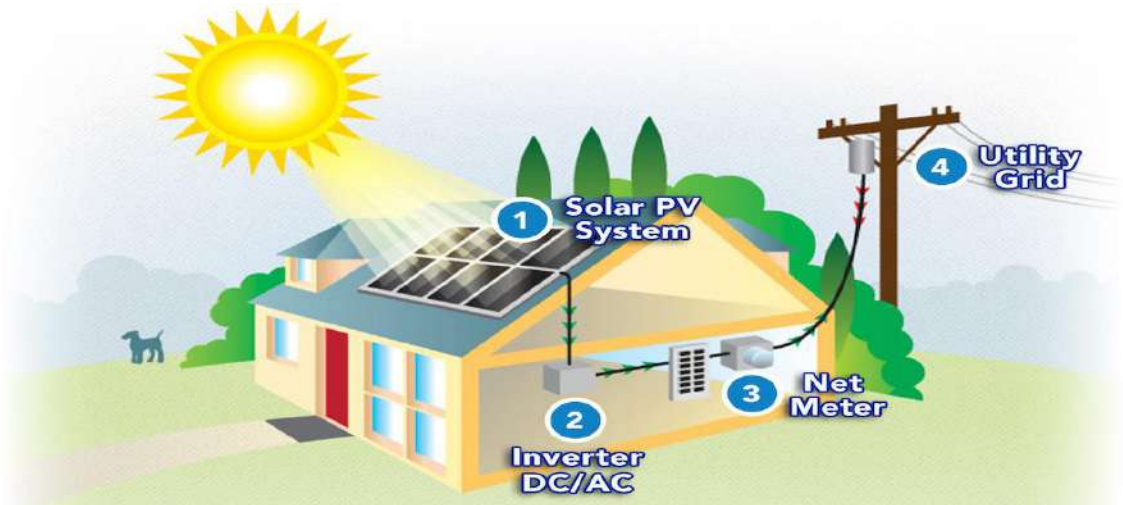
1. SOLAR PHOTOVOLTAIC SYSTEM- WITH NET METER

INTRODUCATION

Solar photovoltaic system- with Net meter

Maharashtra Government has new solar energy policy name as “Rooftop Solar with Net Meter system”. Maharashtra government encourages to install rooftop solar PV system with net meters at available roof top of consumers. This helps to reduce the burden on existing conventional fuel fired power plants in the country.

Solar Rooftop Net meter system helps consumers to reduce the electricity consumption in the electricity bill due to net meter.



OBSERVATION

1. In college building rooftop, there is Solar Photovoltaic system with net meter is installed for the purpose of solar unit generation in the college.
2. College efficiently uses the existing system to reduce the electricity consumption.

Solar photovoltaic system- 10 kWp College Building

CO2 EMISSION REDUCTION

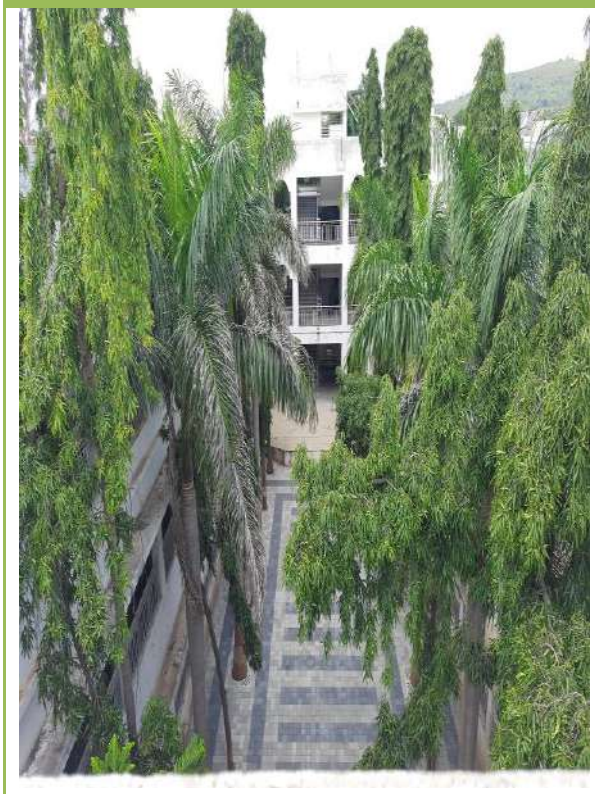
Solar Photovoltaic System- with net meter		
Total capacity of Solar PV system	10	kWp
Units generation per month	1042	kWh/month
Units generation per year	12504	kWh/year
CO2 emission reduction/year	10.63	tonnes of CO2e

WASTE MANAGEMENT SYSTEMS

1. COMPOSTING GENERATION

OBSERVATION

1. In college premises and around there are number of trees are planted which generates considerable amount of organic waste in the premises.
2. This great volume of waste resulted into the positive idea of the construction of the Composting Plant in the college campus.
3. The college regularly collects all the waste from the campus and stores it in the cement concrete
4. Composting Tank having 3.5m length x 2.5m width x 1m height having the storage capacity of 8.75 tons of organic material which is used as fertilizer for growing plants in the college campus.
5. This composting plant has helped to keep the college campus clean and also provided fertilizer for campus trees, plants and botanical garden in our college.
6. It has proved very effective to maintain the cycle to green wastes.
7. College also have developed Medical plants garden in the college premises.

Number of Trees	Medical Plants Garden
	
Number of trees in the college premises	Medical plants gardens in the college

Composting Plant – 8.75 tonne capacity

2. BIO-GAS GENERATION

INTRODUCATION

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OBSERVATION

1. In the college canteen approximately 10kg kitchen waste is generated daily.
2. Currently there is no any bio gas plant for generation of bio gas in the college.

RECOMMENDATION

1. It is recommended that installed the small capacity of bio gas plant at college canteen for production of bio gas from kitchen waste generated daily.
2. Produced bio gas can be used for small purposes in the canteen instead of LPG which saves monthly approximate one cylinder of INR1,000/-

Bio-Gas Generation Plant - 10g/day- At canteen

SAVINGS MEASURES

SAVINGS DUE TO BIO GAS PLANT

Saving due to Bio gas plant		
Capacity of bio gas plant	10	kg/day
Waste generated	10	kg/day
Approximate bio gas generation	1	m3/day
Approximate bio gas generation	30	m3/month
Equivalent LPG gas saved	12	kg/month
Approximate LPG cylinder saved	1.0	nos
Cost saved	**1000.00**	**INR/month**

WATER QUALITY AND MANAGEMENT SYSTEMS

1. TDS LEVEL OF WATER

INTRODUCTION

The water we drink contains essential salts and minerals like calcium, potassium and magnesium, besides hydrogen and oxygen.

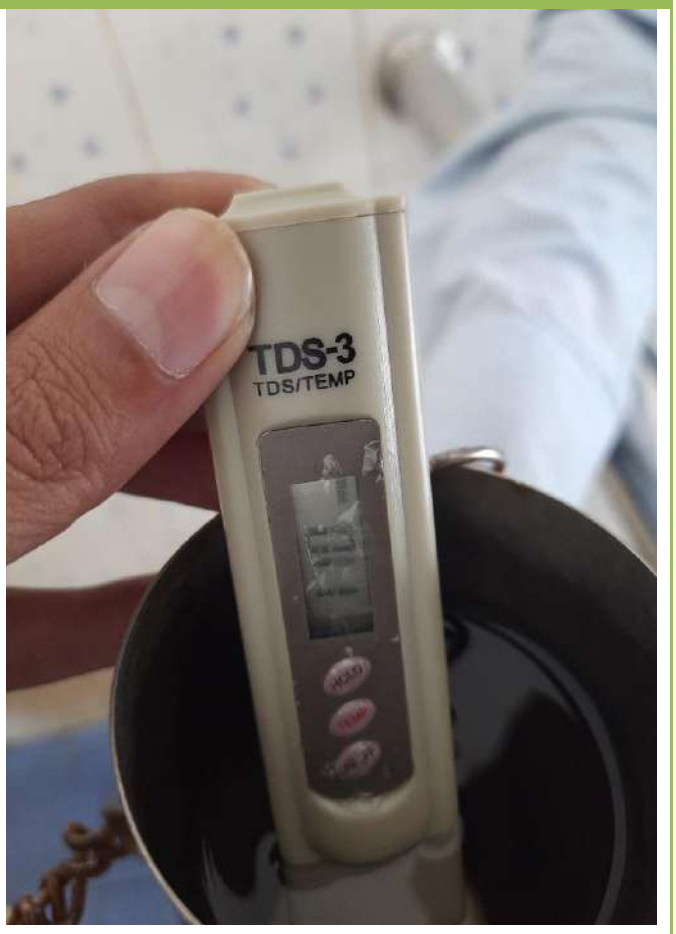
These minerals make up the acceptable levels of TDS (Total Dissolved Solids). Besides, these minerals, the source water contains heavy impurities like arsenic, antimony, lead, iron, etc. It also includes carbonates, fluorides, sulphides and other salts picked along the way. These contaminates enhance the TDS levels to unacceptable levels.

BIS (Bureau of Indian Standards) determines the TDS acceptability levels in drinking water. In India, drinking water can contain TDS up to 500 ppm. BIS has constituted the following table that could clarify the matters further.

TDS level (PPM)	Reasons for acceptability or non-acceptance	
less than 50	Unacceptable	The water with these TDS level does not contain the minerals required for healthy growth
50 - 150	Acceptable	Such TDS levels are usually due to minor industrial contamination
150 - 250	Acceptable	BIS considers water with this TDS levels as the healthiest of all because it is excellent for cardiovascular health
250 - 350	Acceptable	Many areas in India depends on groundwater or bore wells for their water requirements. This water contains essential minerals hence is in acceptance range
350 - 500	Fair	The maximum TDS levels acceptable for human consumption is 500
above 500 - 1200	Not Acceptable	BIS does not recommend ant TS level above 500 as fit for human consumption. However, water with TDS levels up to 1200 can be subjected to purification using Reverse Osmosis(RO) technology to eliminate TDS and bring it down to acceptable levels

OBSERVATION

1. Drinking water requirement of college is fulfil by corporation water.
2. Domestic water requirement of college is also fulfil by corporation water.
3. For drinking water purposes, college uses aqua guard system to filtration.
4. TDS level of drinking water and domestic water as:

TDS level of water	
	
Domestic water	**Drinking water**
√- Acceptable	**√- Acceptable**

	TDS	Acceptability
	ppm	
Drinking water	110	Acceptable
TDS monitoring system	120	Acceptable

2. RAIN WATER HARVESTING- COLLEGE PREMISES

INTRODCTION

Water scarcity is serious problem throughout the summer in rural community. The conventional water resources like well, river, and reservoirs are inadequate to fulfill water demand due to unbalanced rainfall in our area. While rain water harvesting (RWH) investigates a new water sources. The aim of Rain Water Harvesting (RWH) is to use rainwater and thus taking close to the concept of nature conservation. Rain Water Harvesting is a technology used to collect, convey and store rain water for later use from relative clean surface such as roof.

GOAL

1. To collect, convey & Store rain water for later use.
2. To fight again water scarcity in college campus.
3. To meet the increasing demand of water in the college campus.
4. To reduce soil erosion due to running rain water.
5. To raise underground water level.
6. To reduce the runoff water which chokes the drains?
7. To avoid the flooding of roads and its damage.
8. To reduce groundwater pollution.
9. To supply water for plants in the campus in summer.

OBSERVATION

1. The college has rain water harvesting system in the college campus.
2. The rain water collected through network of PVC pipe line which outlets into open well with proper land slope.
3. The size of well is 3.4m X 3m X 2.5m depth having more than 25500 liters of water storing capacity.
4. This is used for watering the tree and plants in the campus through drip irrigation system.

Rain water harvesting of college premises

College's centralised rainwater harvesting of college premises

Rain water harvesting PVC pipelines of college building

Rainwater harvesting pipelines of college building

3. DRIP IRRIGATION SYSTEM

OBSERVATION

1. College has number of trees in the college premises.
2. Conventional water system requires huge amount of water for trees.
3. But college has installed the drip irrigation system for gardening purposes to save the water quantity.

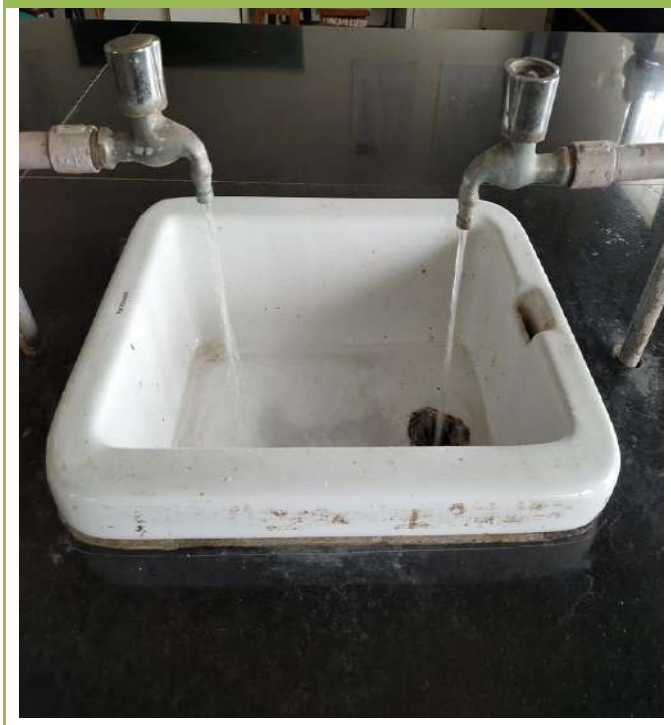
Water Drip Irrigation System

Drip irrigation system for gardening purpose to save the water quantity
√

4. WATER TAP REDUCER

OBSERVATION

1. College has conventional water tap system in the area like bathrooms, toilets, laboratories etc.
2. Conventional water tap system consumes or requires more water for the purpose of washings, cleanings etc.

Conventional Tap water system	Tap water system with Reducer
	
Existing tap water system uses more water while during purpose of washing of utensils, hands etc in college.	**Used reducer to tap water for purpose of washing of utensils, hands etc which reduces flow of water and ultimately saves the water.**
⃠	√

RECOMMENDATION

It is recommended that use the water reducer for water taping system. This helps saving the volume of water and subsequently energy cost of pumping also.

AIR QUALITY

INTRODUCTION

Indoor air is considered to be healthy when the air does not contains contamination in harmful concentrations and is acceptable when the majority of people feel satisfied. A human being breathes about 12,000 litres of air every day and is vital for our health. Exposure to hazardous airborne agents present in indoor space causes adverse effects such as respiratory and cardiovascular diseases, allergy and irritation of the respiratory tract and possibly leads to cancer.

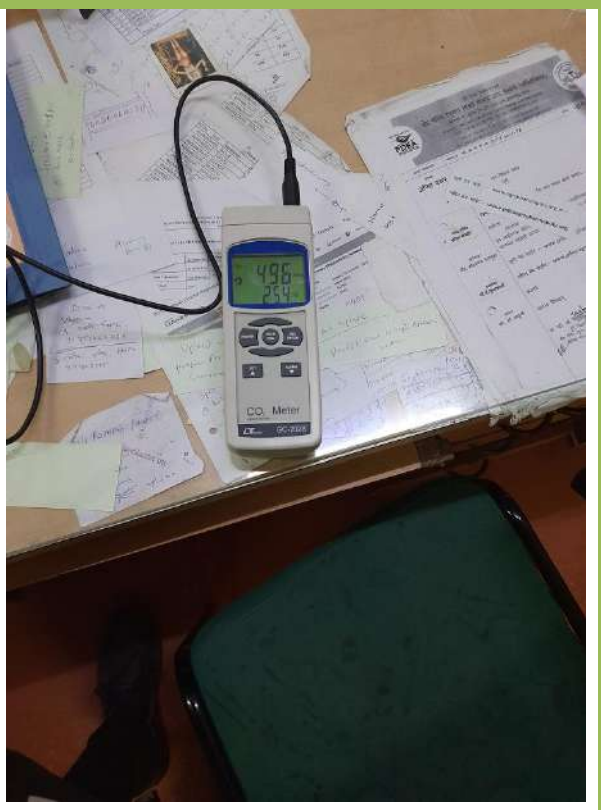
Main source of indoor air pollutants are from outdoor air, household cooking (especially cooking with biomass or frying), tobacco smoking, polluted ambient air, cleaning agents, resuspension of dust during the cleaning activities, construction materials and paints, copy machines and printers as well as other human activities. Ambient air pollutant sources are vehicle emissions, thermal power plants, biomass burnings, construction work, unattended debris, open sewage pipes, fossil fuel based power generation and various industrial processes etc.

Threshold values for indoor air quality parameters				
Parameters	**Classification**			
	Class A	**Class B**	**Class C**	
Level	**Aspirational**	**Acceptable**	**Marginally acceptable**	
CO2	Ambient+350	Ambient+500	Ambient+700	ppm
PM2.5	<15	<25	<25	ppm
PM10	<50	<100	<100	ppm
HCHO	30			ppm
TVOC	<200	<400	<500	ppm
Occupational satisfaction	**90**	**80**	**-**	**%**

OBSERVATION

1. In college over all air quality is at good/ aspirational level.
2. Only the places where large amount of sanitizers are used level of TVOC and HCHO are at higher side which are not acceptable.

Cantal Instrumentation lab	Admin office
	
√-Aspirational	⃠-Not Acceptable
*PM2.5 and PM10 values are in acceptable limits.	

Cantal Instrumentation lab	Admin office
	
√-Aspirational	√-Aspirational

Location	Library	Admin office	Reading hall	B.Pharmacy chemistry lab	
CO2	467	496	487	368	ppm
PM2.5	10	11	10	9	ppm
PM10	11	11	11		ppm
HCHO	4	**146**	5	9	ppm
TVOC	0	**999**	10	2	ppm
Level	**Aspirational**	**Not-acceptable**	**Aspirational**	**Aspirational**	

Location	Computer lab	Class room	Central instrumentation lab	
CO2	481	366	407	ppm
PM2.5	8	9	10	ppm
PM10	9	10	11	ppm
HCHO	33	39	79	ppm
TVOC	0	2	172	ppm
Level	**Aspirational**	**Aspirational**	**Aspirational**	

RECOMMENDATION

- Level of HCHO and HVOC are at not acceptable at admin office. It is recommended that use of hand sanitizer should be optimum.

SOUND COMFORT/QUALITY

INTRODUCTION

Noise is unwanted sound. Ambient noise is all encompassing noise associated with any given environment and is usually a composite of sounds from many sources near and far. Any abnormal sound which irritates human being is called as noise pollution.

Noise is one of the undesirable products of technological civilization. Admits this civilization wherever we go, noise surrounds us. The roar of traffic, the passage of trains and aeroplanes, the bustle of crowds and the working of industry and the public utilities deafens our ears. Even home is invaded by noise. The noise from whatever source it comes from is undoubtedly, physiologically as well as psychologically harmful. Invading environment in dangerous proportions, it is an invisible but insidious form of pollutant Noise as a potentially harmful pollutant is being recognised as a great nuisance these days affecting the quality of the particularly, in urban areas.

The Environment (Protection) Act, 1986, under Sec. 6 has mentioned “Rules to regulate environment (Protection) Act, 1986, under Sec. 6 has mentioned “Rules to regulate environmental pollution”. This section has explained the maximum allowable limits of concentrations of various environmental pollutants (including noise) for different areas.

Air quality standards in respect of Noise			
Area code	**Category of Area/ Zone**	**Limits/Levels**	
		Day Time	**Night Time**
A	Industrial area	75	70
B	Commercial area	65	55
C	Residential area	55	45
D	Silence zone	50	40

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OBSERVATION

Location	Limits	Limits/Levels
	dB	
Office	63.6	permissible limits
Laboratory	45.5	permissible limits

Class room	46.0	permissible limits
Outdoor	57	permissible limits

Cantal Instrumentation lab	Admin office
	
√-within permissible limits	√-within permissible limits

DAY LIGHT ILLUMINATION/COMFORT

INTRODUCTION

Light has significant impact on many body functions, including the nervous system, circadian rhythms, pituitary gland, endocrine system, pineal gland and alertness as these are affected by different wavelengths of light.

Variations over time in lighting conditions, in terms of intensity, illumination levels, distribution, ambient lighting and colour temperature, can stimulate alertness and well-being of people.

Threshold IL luminance level		
Building type	**Type of space**	**IL luminance**
		Lux
Schools	Classrooms	500
	Corridors	100
	Teachers rooms	300
	Libraries	500
	Offices	300

OBSERVATION

- Daylight utilisation due to infrastructure of college building is very good.
- Due to good day light utilisation energy consumption of lighting is very less or optimum in the college building.

Location	IL luminance	Limits/Levels
	Lux	
Library	*86	permissible limits
Reading hall	*72	permissible limits
Admin office	*98	permissible limits
B.Pharmacy chemistry lab	*326	permissible limits
Computer lab	*152	permissible limits
Class room	*243	permissible limits
Central instrumentation lab	*131	permissible limits
* values are measured in daylights and given standard values of lux are with lightings		

B.Pharmacy chemistry lab	Class room
	
√-within permissible limits	√-within permissible limits

HEALTH AND SAFETY MANAGEMENT AND INFRASTRUCTURE

1. COLLEGE INFRASTRUCTURE

INTRODUCTION

College campus comprises of various buildings as main college building, new science building, canteen, assembly hall etc. Parking area, central playing ground and one number of underground water tank bodies for storage of water.

The existing campus of college is one of the most student friendly work environment.

OBSERVATION

Sr. No.	Locations	Space
1	College building	Spacious
2	Hostel	Spacious
3	Canteen	Spacious
4	Library & Reading hall	Spacious
5	Laboratories	Spacious
6	Class rooms	Spacious
7	Parking Area	Spacious
8	Passage	Spacious
9	Toilet Blocks	Spacious
10	Staircase	Spacious
11	College premises	Spacious

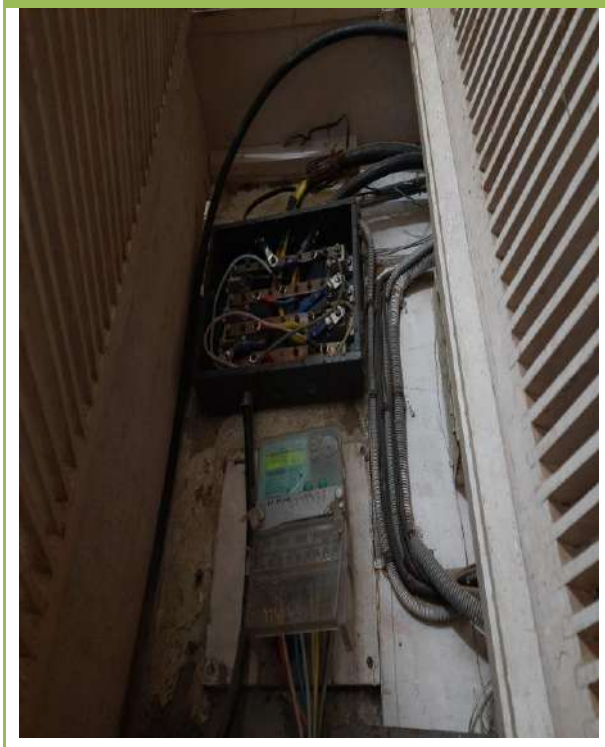
ASSESSMENT OF COLLGE CAMPUS BUILDING INFRASTRUCTURE

Sr No	Locations	Space	Ventilation	Natural Light	Cleanliness	Remark
1	College building	Spacious	Very Good	Very Good	Good	
2	Hostel	Spacious	Very Good	Very Good	Good	
3	Canteen	Spacious	Very Good	Very Good	Good	
4	Library & Reading hall	Spacious	Very Good	Very Good	Good	
5	Laboratories	Spacious	Very Good	Very Good	Good	
6	Class rooms	Spacious	Very Good	Very Good	Good	
7	Parking Area	Spacious	Very Good	Very Good	Good	
8	Passage	Spacious	Very Good	Very Good	Good	
9	Toilet Blocks	Spacious	Very Good	Very Good	Good	
10	Staircase	Spacious	Very Good	Very Good	Good	
11	College premises	Spacious	Very Good	Very Good	Good	

2. HEALTH AND SAFETY MANAGEMENT

OBSERVATION

1. Regular cleaning of college campus and toilets is done by the cleaning. This involves dusting, floor cleaning and toilets cleanings.
2. Garden and parking area is also kept clean by staffs.
3. Cleaning equipment and washing liquids are provided to the cleaning staff.
4. College has placed first aid and sick room with doctor availability in the college to get immediate treatments if any accidents occurred.
5. There are number of fire extinguishers are placed in college campus building for fire safety purpose. There maintenance and renew dates are on time.
6. Open wiring and not properly addressed cable wiring have been observed in college, that may lead to short circuits as well as from electrical safety it is dangerous.
7. Also electrical connections are hanging at some places. So it is an urgent repair and corrected.

Electrical safety	
Electrical bus bar panel	**Energy meter box**
	
Electrical connections and wiring are not as per standards. Need to be maintained and improve	**Energy meter box are opened. Need to be closed.**
⃠- Dangerous	**⃠- Dangerous**

Electrical safety

Electrical connections and unwanted materials

Electrical connections are not as per standards and properly.

Electrical connections should be as per standards of electrical safety.

⃠- Dangerous

Fire safety- Fire Extinguishers	
	
Fire extinguisher's maintenance due date is up to date.	College has placed number of fire extinguishers at various places in the college campus.
√- Good	√- Good

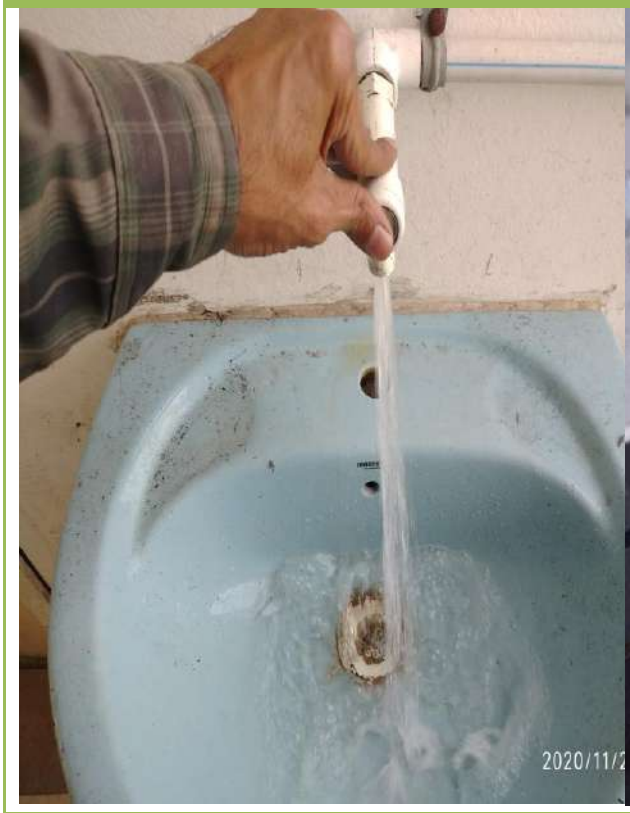
Fire safety- Fire Extinguishers- Location

Fire extinguishers is placed inside the library which is to be placed outside the library gate.

⃠- Dangerous

Health safety	
Dust bins	**College prmises**
	
Dust bins are placed in college campus	**College premises is neat and clean from health safety**
√- Good	**√- Good**

Health safety	
No smoking zone	**Hand sanitizer usage**
	
College has implemented No smoking zone policy in the premises	**College uses hand sanitizers in the premises due to CORONA pandemic situation.**
√- Good	**√- Good**

Health safety	
Conventional water taping system	**Hands free water taping system**
	
College have currently conventional water taping system	**College can adopts hands free water taping system. This saves the water and also good for personal health protection to avoid frequent hand touching to water taps.**
Existing	**Recommended**

Health safety- First Aid cum Sick Room

College has separate First Aid cum Sick Room with doctor availability in the college.

√- Good

RECOMMENDATIONS

Sr No	Points	Actions need to be done
1	Electrical wiring	Wiring should be properly dressed
2	Electrical wiring connection, hanging etc	Wiring connection should be appropriate and not any hanging of live connections
3	Electrical panel rooms	Electrical panel room should cleaned and remove all unwanted materials.
4	Conventional water taping system	College can adopts hands free water taping system. This saves the water and also good for personal health protection to avoid frequent hand touching to water taps.
5	Fire extinguishers	Placed fire extinguishers at such place where it can be easily accessible during emergency like outside the class rooms, laboratories, offices etc

NO VEHICLE DAY INITIATIVE

OBSERVATION

1. Many of the college students and staff use the private or own vehicle to come college.
2. It contributes the CO2 emission due to burning of petrol or diesel in the vehicles.

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RECOMMENDATIONS

- It is recommended that college has took the initiative of “No Vehicle Day” once a week in the college to contributes towards CO2 emission reduction.

CO2 REDUCTIN SAVINGS

Particulars		
Number of vehicles in college premises	100	nos
Average running of vehicle	2.5	km/vehicle
Average fuel required	125	litres/day
Average cost of fuel	5625	INR/day
Number of Saturday per month	4	nos
Average fuel save	500	litres/month
Average cost save	22500	INR/month
Average CO2 emission reduction per month	0.34	tonnes of CO2e
Average CO2 emission reduction per year	4.02	tonnes of CO2e

OTHER ENERGY EFFICIENT, GREEN, HEALTH, WASTE PRACTICES BY THE COLLEGE MANAGEMENT

1. LIQUID WASTE MANAGEMENT

INTRODUCTION

Sewage treatment is the process of removing contaminants from municipal wastewater, containing mainly household sewage plus some industrial wastewater. Physical, chemical, and biological processes are used to remove contaminants and produce treated wastewater (or treated effluent) that is safe enough for release into the environment. A by-product of sewage treatment is a semi-solid waste or slurry, called sewage sludge. The sludge has to undergo further treatment before being suitable for disposal or application to land.

Sewage treatment may also be referred to as wastewater treatment. However, the latter is a broader term that can also refer to industrial wastewater. For most cities, the sewer system will also carry a proportion of industrial effluent to the sewage treatment plant that has usually received pre-treatment at the factories to reduce the pollutant load. If the sewer system is a combined sewer, then it will also carry urban runoff (storm water) to the sewage treatment plant. Sewage water can travel towards treatment plants via piping and in a flow aided by gravity and pumps. The first part of the filtration of sewage typically includes a bar screen to filter solids and large objects that are then collected in dumpsters and disposed of in landfills. Fat and grease are also removed before the primary treatment of sewage.

The College does not produce any hazardous waste material in the College campus using chemical and compounds with high risk of intensity and side effects. Therefore, the question of hazardous waste management does not arise at all.

OSERVATION

1. In college there is not many any hazardous liquid waste generation.
2. College has taken initiative to separate Biological waste generated in the laboratories.
3. Biological waste disposed of separately by college to avoid any environmental damage.

Liquid waste management system

RECOMMENDATION

- College can also impalement the naturally treated Effluent/Sewage treatment Plant in the college.
- As naturally treated is also requires very less energy consumption to treat the effluent or sewage water.

2. E-WASTE MANAGEMENT

INTRODUCTION

Electronic waste or e-waste describes discarded electrical or electronic devices. Used electronics which are destined for reuse, resale, salvage, recycling, or disposal are also considered e-waste. Informal processing of e-waste in developing countries can lead to adverse human health effects and environmental pollution.

Electronic scrap components, such as CPUs, contain potentially harmful components such as lead, cadmium, beryllium, or brominates flame retardants. Recycling and disposal of e-waste may involve significant risk to health of workers and communities in developed countries and great care must be taken to avoid unsafe exposure in recycling operations and leaking of materials such as heavy metals from landfills and incinerator ashes.

The environmental impact of the processing of different electronic waste components

E-Waste Component	Process Used	Potential Environmental Hazard
Cathode ray tubes (used in TVs, computer monitors, ATM, video cameras, and more)	Breaking and removal of yoke, then dumping	Lead, barium and other heavy metals leaching into the ground water and release of toxic phosphor
Printed circuit board (image behind table – a thin plate on which chips and other electronic components are placed)	De-soldering and removal of computer chips; open burning and acid baths to remove metals after chips are removed.	Air emissions and discharge into rivers of glass dust, tin, lead, brominated dioxin, beryllium cadmium, and mercury
Chips and other gold plated components	Chemical stripping using nitric and hydrochloric acid and burning of chips	PAHs, heavy metals, brominated flame retardants discharged directly into rivers acidifying fish and flora. Tin and lead contamination of surface and groundwater. Air emissions of brominated dioxins, heavy metals, and PAHs
Plastics from printers, keyboards, monitors, etc.	Shredding and low temp melting to be reused	Emissions of brominated dioxins, heavy metals, and hydrocarbons
Computer wires	Open burning and stripping to remove copper	PAHs released into air, water, and soil.

OBSERVATION

1. The quantity of the e-waste produced in the College is systematically disposed of.
2. The College is aware that e-waste is hazardous to the environment and health of the people and it needs to be recycled or disposed in appropriate ways.
3. Every year or two, e-waste is collected and sent off for further recycling and appropriate disposal through the electronic equipment's distributer M/S Sunny Waste Paper Merchant at Pune.
4. He repairs and maintains the College electronic equipment for smooth functioning.
5. The College has disposed of the E-waste material through an authorized agency and obtained a receipt of the same with a certificate from M/S Sunny Waste Paper Merchant at Pune.

E-Waste Management- Certificate

।। बहुजन हिताय । बहुजन सुखाय ।।

पुणे जिल्हा शिक्षण मंडळ, पुणे

४८/१ अ, एरंडवणा, पौड रोड, पुणे - ४११ ०३८

☎: २५४३४५७०/२५४८६३२७/२५४३८३२८/२५४३७३४१/२५४५१८०

फॅक्स : २५४३८७०५ इमेल : honsecretary@pdeapune.org

रजिस्टर्ड अंडर सोसायटीज रजिस्ट्रेशन ॲक्ट १८६० व पब्लिक ट्रस्ट ॲक्ट १९५० (नोंदणी क्र. एफ-९९)

जा.क्रं.पुजिशिमं./ मालमत्ता विभाग/ ई-स्क्रॅप /२०२०-२१/ 50-11 दि. 21 SEP 2020

प्रति,

मा. व्यवस्थापक,
सनी वेस्ट पेपर मर्चंट,
आकाशवाणी, हडपसर, पुणे.
(मो.क्र. ९९७०५१६१७२/९८५०१४४३७३/७०५७९७९१९१)

विषय : संस्थेच्या शाखांमधील ई-स्क्रॅप साहित्य खरेदीबाबत. ...

संदर्भ : आपले दि. १५/०९/२०२० रोजीचे दरपत्रक.

वरील विषयास व संदर्भिय दरपत्रकास अनुसरून तुम्ही संस्थेच्या शाखांमधील ई-स्क्रॅप साहित्य मिळावे म्हणून दरपत्रक सादर केलेले होते आपले दरपत्रक या कार्यालयाकडून मंजूर करण्यात येत असून तुमची सन २०२०-२१ या वर्षाकरीता संस्थेच्या शाखांमधील ई-स्क्रॅप साहित्य खरेदी करण्याकरिता नियुक्ती करण्यात आलेली आहे. सोबत जोडलेल्या दरपत्रकानुसार शाखांमध्ये जावून ई-स्क्रॅप साहित्य खरेदी करावे. ई-स्क्रॅप साहित्य खरेदीसाठी आपण इलेक्ट्रॉनिक वजन काट्याचाच वापर करावा. ई-स्क्रॅप खरेदीपोटी झालेल्या व्यवहाराची रक्कम रोख स्वरूपात/ऑनलाईन पद्धतीने/डी.डी. स्वरूपात त्याच दिवशी शाखाप्रमुखांकडे द्यावी व दिलेल्या रक्कमेची पावती घ्यावी. तुमच्या वजन काट्यात दोष आढळल्यास तुम्हांस दिलेले ई-स्क्रॅप साहित्य खरेदीचे काम त्वरीत बंद करण्यात येईल. तसेच ई-स्क्रॅप साहित्य खरेदीमध्ये वेळोवेळी होणारी दरवाढ तुमच्यावर लागू राहिल तसेच दर कमी झाल्यास मान्य दरपत्रकामध्ये कोणताही फेरबदल होणार नाही व मान्य दरपत्रकाप्रमाणेच ई-स्क्रॅप खरेदीचे काम करावे लागेल याची नोंद घ्यावी.

कळावे.

मानद सचिव
पुणे जिल्हा शिक्षण मंडळ, पुणे.

प्रत :
मा. शाखाप्रमुख,
पुणे जिल्हा शिक्षण मंडळ, पुणे
सर्व शाखा यांचेकडे पुढील कार्यवाहीसाठी रवाना -

आपल्या शाखेतील ई-स्क्रॅप खरेदीसाठी सनी वेस्ट पेपर मर्चंट, आकाशवाणी, हडपसर, पुणे यांची नियुक्ती केलेली असून त्यांना सोबत जोडलेल्या मान्य दरपत्रकानुसार शाखेतील ई-स्क्रॅप साहित्य देण्यात यावे.

ई-स्क्रॅप साहित्य विक्री करण्याकरिता शाखा पातळीवर शाखाप्रमुख, एक जेष्ठ शिक्षक, एक जेष्ठ लेखनिक व एक सेवक यांची कमिटी करून या सर्वांसमक्ष ई-स्क्रॅप साहित्य विक्रीचा व्यवहार करण्यात यावा. ई-स्क्रॅप विक्रीकरीता वापरण्यात येणारा इलेक्ट्रॉनिक काटा बरोबर (योग्य) असल्याची खात्री करावी. संबंधितांकडून ई-स्क्रॅप साहित्य विक्रीपोटी होणारी रक्कम रोख स्वरूपात/डी.डी./ऑनलाईन स्वरूपात त्याच दिवशी घेऊन संबंधित बँक खात्यावर जमा करावी. तसेच ई-स्क्रॅप विक्रीच्या सर्व व्यवहाराची तपशीलवार माहिती संस्था कार्यालयाकडे पाठविण्यात यावी.

कळावे.

मानद सचिव
पुणे जिल्हा शिक्षण मंडळ, पुणे.

Malmatta Vibhag Letters. 2020-2021/Yande.

3. SOLID WASTE MANAGEMENT (SCRAPS LIKE PLASTIC, PAPER ETC)

INTRODUCTION

College have good policy and maintained the record for solid waste generated in the college like old newspapers, books, scrap boxes, etc.

OBSERVATION

1. College has given solid waste generated like papers, metal scrap etc to the authorised recycle for proper channelling the solid waste.
2. This helps to reduce the CO2 emission reduction due to recycling of the solid waste.
6. Paper etc solid waste is maintained by authorised waste dealer M/S Sunny Waste Paper Merchant at Pune.

4. TREE PLANTATION, SOIL CONSERVATION

INTRODUCTION

Tree-planting is the process of transplanting tree seedlings, generally for forestry, land reclamation, or landscaping purpose

In silviculture the activity is known as reforestation, or afforestation, depending on whether the area being planted has or has not recently been forested. It involves planting seedlings over an area of land where the forest has been harvested or damaged by fire, disease or human activity. Tree planting is carried out in many different parts of the world, and strategies may differ widely across nations and regions and among individual reforestation companies. Tree planting is grounded in forest science, and if performed properly can result in the successful regeneration of a deforested area. Reforestation is the commercial logging industry's answer to the large-scale destruction of old growth forests, but a planted forest rarely replicates the biodiversity and complexity of a natural forest.[citation needed]

Because trees remove carbon dioxide from the air as they grow, tree planting can be used as a geoengineering technique to remove CO
2 from the atmosphere. Desert greening projects are also motivated by improved biodiversity and reclamation of natural water systems, but also improved economic and social welfare due to an increased number of jobs in farming and forestry.

Canopies in tropical and temperate forests can be important habitats for many animals and plants. A dense canopy cover will let little light reach the ground and will lower temperatures.
The canopy protects the ground from the force of rainfall and makes wind force more moderate

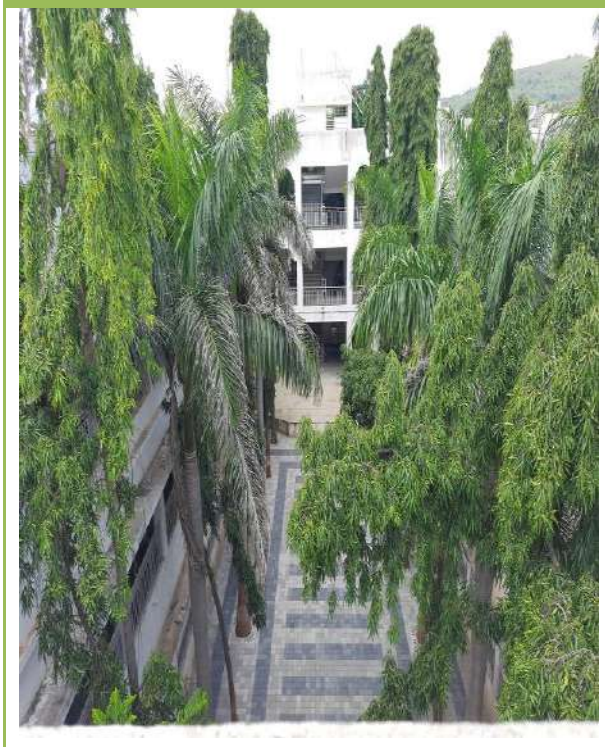
OSERVATION

1. In the college premises there are number of trees which are maintained by the college.
2. College also taken awareness programme on Tree plantation by conducting “Tree Plantation General Knowledge Drawing Competition” in the college.
3. College also uses drip water irrigation system to save the water and optimum use.

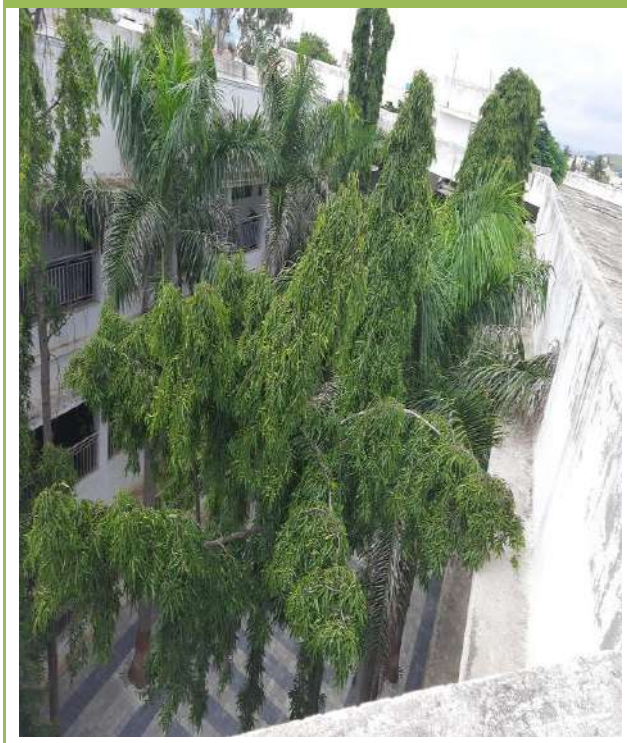
Tree Plantation Programme

Tree Plantation General Knowledge Drawing Competition

Trees in college campus



Trees in college campus



5. PLASTIC AND PAPER FREE CAMPAIGN

INTRODUCTION

As single used plastic is hazardous to the environment as it is once used cannot be recycled. Also paper is used in college for various purposes like student assignments, official works etc.

OBSERVATION

1. College has taken very good initiative for plastic free campus.

Plastic free campaign initiative – Plastic free zone

College has taken good initiative for Plastic Free Campus zone.
√- Good

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