PowerTech Energy Solutions
Conserve to Consume

Energy & Green Audit Report
Of
Sir Visvesvaraya Institute Of Technology, Nashik

Submitted By

PowerTech Energy Solutions

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ENERGY & GREEN AUDIT COMPLETION CERTIFICATE

This is to certify that following utility has carried out Energy & Green Audit as per guidelines laid down in The Energy Conservation Act, 2001 in the month of December 2017

Name of the Installation	Pravara Education Societies Sir Visvesvaraya Institute Of Technology, Nashik
Details of Facilities Audited	Main college building including laboratories, libraries, etc.
Date of Energy and Green Audit	08 December 2017
Name of Certified Energy Auditor	Mr. Swapnil Gaikwad
Certification No.	EA 20121
Validity of the Certificate	08 December 2018

Signature of Auditor

(Swapnil Gaikwad)

Executive Summary – Energy Audit

Sr. No	Area	Proposed Action	Expected Result	Monthly Energy Savings in kWh	Annual Reduction in CO_2 emission in Tons	Monthly Cost Savings in Rs	Investment in Rs.	Payback Period in Months
1	Lighting Recommendation 1	R Replace the existing 36 W FTL tube lights into 18 W LED tubes	• Total No. of light fittings = 325 Nos. • Total No. of Light fitting presently operated= 325 Nos. • Total No. of light fittings to be replace= 325Nos. • Present Energy Consumption = 1058 kWh • Expected Energy Consumption = 545 kWh • Total Energy Saved per Month = 1058-545= 513 kWh • Total Saving = 513 kWh • Monetary Savings = Rs.5166 • Investment = Rs.108460 • Simple Payback period = 21 Months	513	4.9	5166	108460	21
2	Lighting Recommendation -2	Replace the existing 2 X 36W PL lights into 2 X 18 W LED	• Total No. of CFL light fittings = 61 Nos. • Total No. of Light fitting presently operated= 61 Nos. • Total No. of light fittings to be replace= 61 Nos. • Present Energy Consumption = 410 kWh • Expected Energy Consumption = 198 kWh • Total Energy Saved per Month = 410-198= 211 kWh • Total Saving = 211 kWh • Monetary Savings = Rs.2132 • Investment = Rs.83450 • Simple Payback period = 39 Month	211	2.05	2132	83450	39

Sr. No	Area	Proposed Action	Expected Result	Monthly Energy Savings in kWh	Annual Reduction in CO_2 emission in Tons	Monthly Cost Savings in Rs	Investment in Rs.	Payback Period in Months
3	Fan Recommendation 1	Replace existing 75 watt conventional ceiling fans with 40 watt energy efficient fans	• Total No. of ceiling fans present = 392 Nos. • Total No. of ceiling fans presently operated= 392 Nos. • Total No. of ceiling fans to be replace= 392 Nos. • Present Energy Consumption = 14876kWh • Expected Energy Consumption = 763 kWh • Total Energy Saved per Month = 1486-763= 763 kWh • Total Saving = 763 kWh • Monetary Savings = Rs.7298 • Investment = Rs. 191910 • Simple Payback period = 26 Months	763	7.4	7298	191910	26
4	Pump Recommendation 1	Replace existing agricultural bore well pump with new energy efficient pump	• Total avg load of pump =6.2 kW • Current flow of pump = 1.9LPS ;Head =71.65 mtr • Expected new flow of pump = 2.4 LPS • Expected New Load pump = 4.26 kW • Present energy consumption of the pumps = 3788 kWh • Expected energy consumption of new pump = 2064 kWh • Expected savings =1132.2-216.68 =1724kWh • Monetary savings = Rs.16896 • Investment = 55000 • Payback period = 3.26 Months	1724	15.57	16896	55000	3.26
Total				**3211**	**29.92**	**31492**	**438810**	**13.93**

Executive Summary – Green Audit

Sr.No	Area	Observations	Remark
1	Tree Plantation	College has carried out tree plantation activity. Several type of trees has been planted by students and staffs	Good initiative taken by college toward green campus
2	Use of renewable energy – Solar PV system for power generation	Solar PV system of 100 kW has been installed by college to generate the electricity from solar energy. It helps to reduce 15 tons of CO2 emission annually	Good initiative taken by college towards use of renewable energy
3	Liquid Waste Management	At present, no any waste disposal system to reuse the waste water. Also no any standard operating procedure to dispose the chemicals used in laboratories	Sewage treatment plant can be installed in future to reuse the flushed water. Refer the guidelines mentioned in report for disposal of laboratory chemicals
4	E waste Management	At present, E -waste generated by college is sent to their Head office	College shall ensure that e-waste generated by them is channelised through collection centre or dealer of authorised producer or dismantler or recycler
5	Rain Water Harvesting	At present, rain water harvesting system is not available in the college campus. College has planned to make the system in coming months	Rain water harvesting system will help to make the water available in summer seasons Also same water can be used for gardening purpose
6	Plastic and Paper free campus	Till date, college has not issued any notification for plastic free and paper free campus. However staff and students are taking initiatives to reduce the use of plastic and papers in college campus	Management should make policy to avoid the use of plastic and paper wherever possible and publish to the student's staffs, etc.

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Acknowledgement

PowerTech Energy Solutions extends gratitude to Sir Visvesvaraya Institute Of Technology for extending us the opportunity to conduct the Energy & Green Audit.

We are thankful to the professors & supporting staff of the college for their transparency & consistent support in sharing relevant information and for providing data about policies and projects along with their other valuable information. This report would have not been possible without their support.

The study team would like to acknowledge the following distinguished personnel's of Sir Visvesvaraya Institute Of Technology in person for the diligent involvement and cooperation.

Prof. Dr. S.N. Shelke	Principal
Prof. Kiran Varade	Department of Electrical Engineering
Prof. Vishal Vaidya	Department of Electrical Engineering

About College

The Pravara Rural Education Society grew, fostered and evolved during the life time of Padmashri Dr. Vitthalrao Vikhe Patil. After him all the multifarious and multifaceted activities initiated by him are continued and infact, taken to greater height by the illustrious son Hon'ble Shri. E.V. alias Balasaheb Vikhe Patil, a veteran and Public Enterprises, Govt. Of India. The Seed laid by the Padmashriji is bloosming into sylvan symphony with a large chain of educational institutions through the meticulous planning and dynamic leadership of Shri Balasaheb Vikhe Patil 'the worthy son of worthy father'. He is taking keen interest in the progress of various institutions of various institution of Pravara Rural Education society and has taken up the Herculean task of modernizing the System and Processes. He has new knowledge with suitable blend of Indian culture and is working day and night to impart programmatic dimensions to Pravara Rural Education Society and the institution under this.

Mission

To recruit and retain well qualified motivated faculty and staff and provide adequate infrastructure, equipments and machinery. To provide amenities and sports facilities in harmony with nature. Nurture industry institute interaction to provide adequate exposure to the students to the world of work. Enrich library and provide latest teaching gadgets and process to promote effective teaching, learning. To provide holistic value based education and inculcate entrepreunal abilities so that the students are well groomed in knowledge, skills and values to have the ability to face the challenges of the corporate world and life.

Vision

Sir Visvesvaraya Institute of Technology is committed to usher in socio – economic transformation by providing inclusive innovative quality education of global standards to fully meet the expectations of the stake holders as initiated by the founding fathers.

Energy Audit

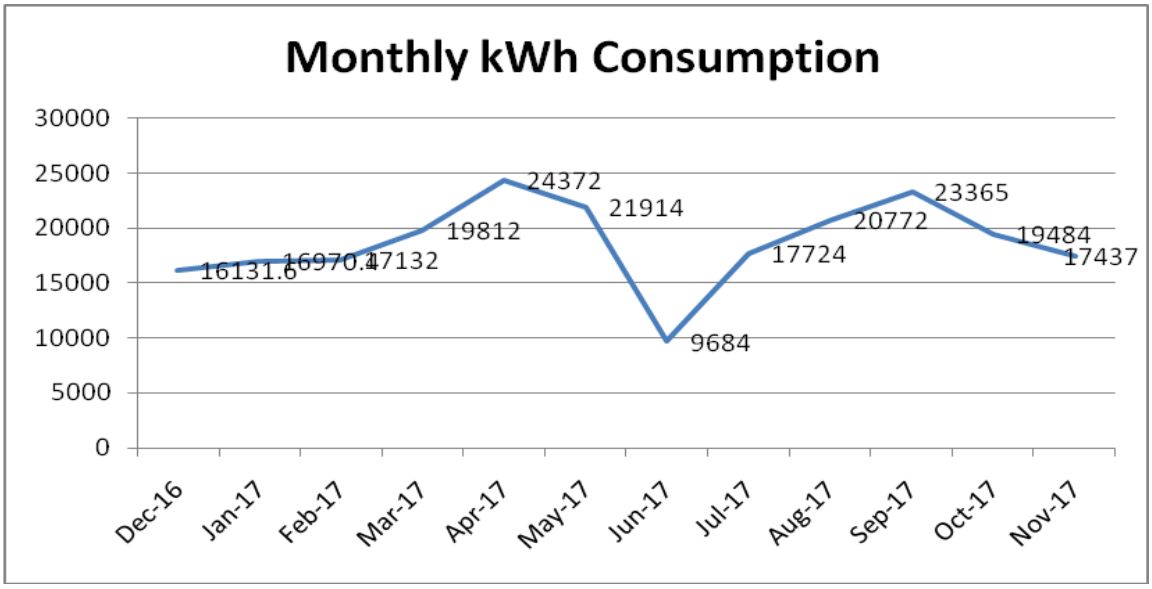
An energy audit is an inspection, survey and analysis of energy flows, for energy conservation in a building, process or system to reduce the amount of energy input into the system without negatively affecting the output(s). In commercial and industrial real estate, an energy audit is the first step in identifying opportunities to reduce energy expense and carbon footprints.

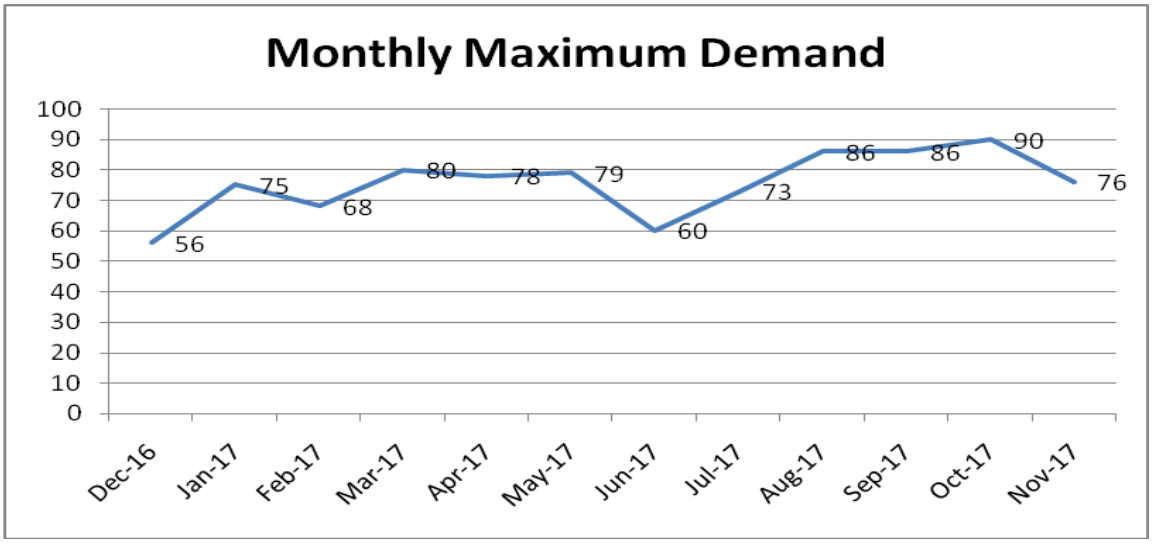
Electricity Bill Analysis

At present, one electricity meter is there for all campus

Bill analysis for consumer number 075949015560 shown below

Month	KWh Unit	Bill Demand	Max Demand	Energy Charges	Demand charges	P.F	Incent./ penalty	Bill Amt	Unit/Rate
Dec-16	16131.6	75	56	1,45,188	17,625	0.944	0	1,73,090	10.7
Jan-17	16970.4	75	75	1,52,730	17,625	0.958	-1,808.37	1,80,380	10.6
Feb-17	17132	75	68	1,83,699	17,625	0.975	-6,337.13	2,06,530	12.1
Mar-17	19812	80	80	1,73,245.50	18,935	0.960	-1,963.39	2,00,420	10.1
Apr-17	24372	78	78	2,21,348.40	19,500	0.954	0	2,03,410	8.3
May-17	21914	79	79	1,96,669.20	19,750	0.929	0	2,45,040	11.2
Jun-17	9684	75	60	79,060.80	18,750	0.918	0	1,05,630	10.9
Jul-17	17724	75	73	1,51,041.80	18,750	0.969	-3,306.68	1,63,360	9.2
Aug-17	20772	86	86	1,80,343.80	21,500	0.97	-4,233.98	2,09,050	10.1
Sep-17	23365	86	86	2,02,820.80	21,500	0.953	0	2,24,060	9.6
Oct-17	19484	90	90	1,50,295.60	22,500	0.935	0	1,66,390	8.5
Nov-17	17437	76	76	1,42,169.30	19,000	0.909	0	1,64,780	9.5
Avg	**18733**	**79**	**76**	**164884**	**19422**	**0.948**	**-1471**	**186845**	**10.07**




Monthly Maximum Demand
100
90
80
70
60
50
40
30
20
10
0
56
75
68
80
78
79
60
73
86
86
90
76
Dec-16
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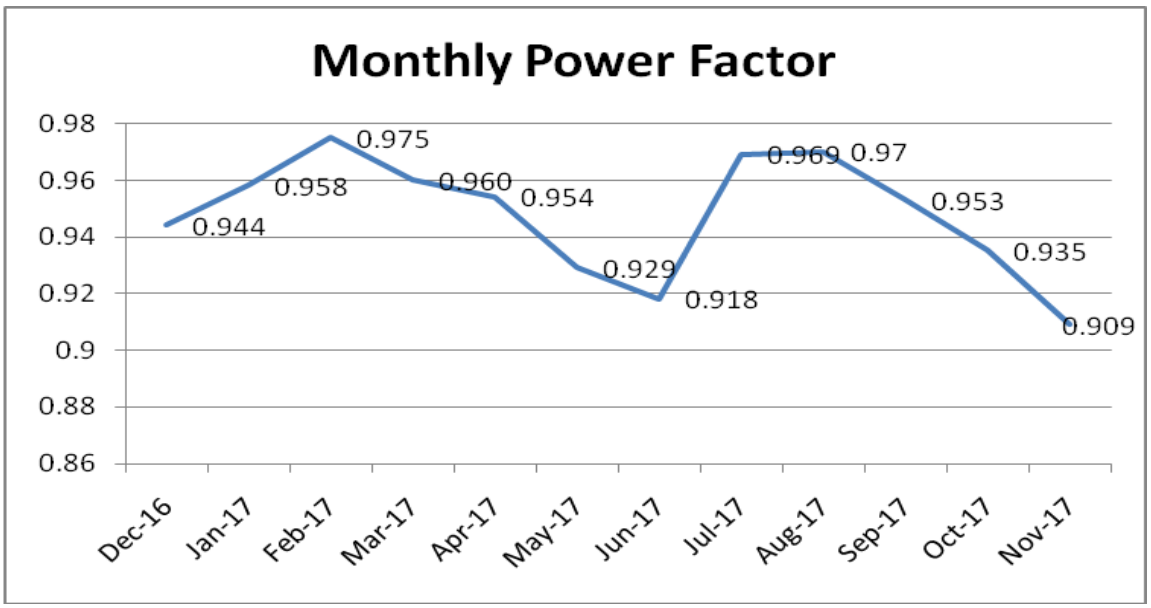
Jun-17
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17


Monthly Power Factor
0.98
0.96
0.94
0.92
0.9
0.88
0.86
0.944
0.958
0.975
0.960
0.954
0.929
0.918
0.969
0.97
0.953
0.935
0.909
Dec-16
Jan-17
Feb-17
Mar-17
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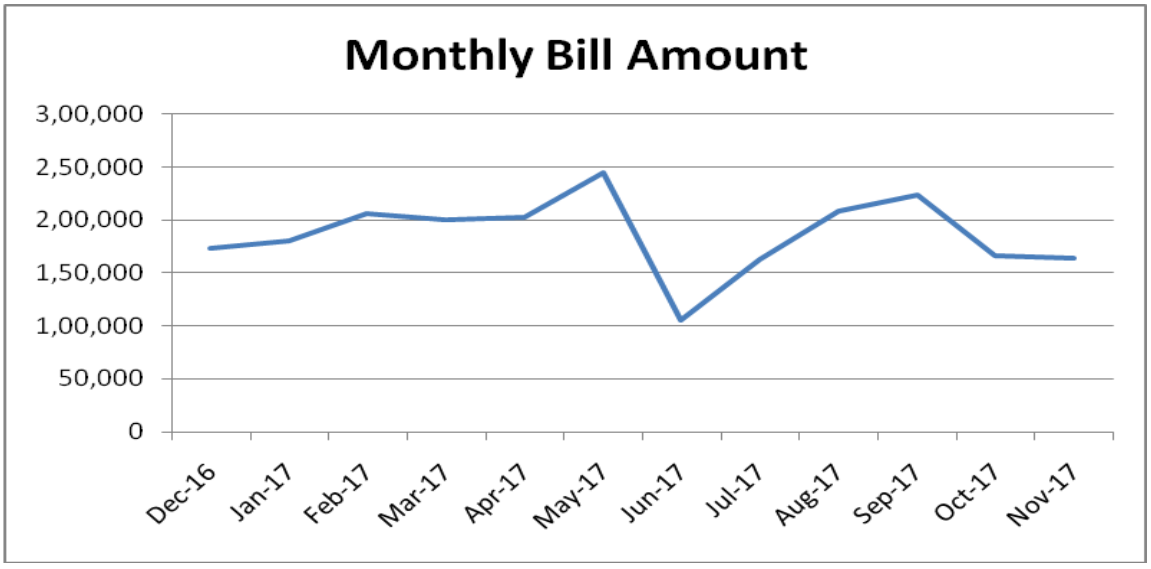
Jun-17
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17


Monthly Bill Amount
3,00,000
2,50,000
2,00,000
1,50,000
1,00,000
50,000
0
Dec-16
Jan-17
Feb-17
Mar-17
Apr-17
May-17
Jun-17
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17

Observations

- Monthly avergae energy consumption is 18733 kWh
- Monthly average maximum demand is 76 kVA
- Monthly average power factor is 0.948 which is on lower side. Improve the power factor to unity. Most of the time, college is not getting the benefit of power factor incentive in the bill. If college will maitain the power factor unity then college will get 7% incntive of on bill
- Monthly average electricity bill is Rs.186845/-
- Avg. unit rate is 10.07 Rs./kWh

Connected Load List

Area	Type	Total Qty	On	Off	Wattage	Load in kW	Daily Op hr	Mtly Op Hr	Daily kWh	Mthly kWh
Main Building										
High voltage engg lab.	T8 TL CC	3	3	0	40	0.12	6	150	0.72	18.0
High voltage engg lab.	Fan	3	3	0	75	0.225	6	150	1.35	33.8
Electrical Machine	T8 TL CC	2	2	0	40	0.08	6	150	0.48	12.0
Electrical Machine	Fan	3	3	0	75	0.225	6	150	1.35	33.8
Power Electronic lab	T8 TL CC	3	3	0	40	0.12	2	50	0.24	6
Power Electronic lab	Fan	3	3	0	75	0.225	2	50	0.45	11.25
Network analysis lab	T8 TL CC	2	2	0	40	0.08	3	75	0.24	6
Network analysis lab	Fan	3	3	0	75	0.225	3	75	0.68	16.875
Passage	T8 TL CC	3	3	0	40	0.12	3	75	0.36	9
1st Floor										
Class room no 3	T8 TL CC	2	2	0	40	0.08	3	75	0.24	6
Class room no 3	Fan	3	3	0	75	0.225	3	75	0.68	16.875
Class room no 2 B 104	T8 TL CC	3	3	0	40	0.12	3	75	0.36	9
Class room no 2 B 104	Fan	5	5	0	75	0.375	3	75	1.13	28.125
Class room 1 B 103	T8 TL CC	4	4	0	40	0.16	3	75	0.48	12
Class room 1 B 103	Fan	5	5	0	75	0.375	3	75	1.13	28.125
B 102 Tutorial	T8 TL CC	2	2	0	40	0.08	1	25	0.08	2
B 102 Tutorial	Fan	3	3	0	75	0.225	1	25	0.23	5.625

Area	Type	Total Qty	On	Off	Wattage	Load in kW	Daily Op hr	Mtly Op Hr	Daily kWh	Mthly kWh
Electrical HOD Office	T8 TL CC	2	2	0	40	0.08	2	50	0.16	4
Electrical HOD Office	Fan	2	2	0	75	0.15	2	50	0.3	7.5
B 110 Microprocessor Lab	T8 TL CC	3	3	0	40	0.12	1	25	0.12	3
B 110 Microprocessor Lab	Fan	1	1	0	75	0.075	1	25	0.08	1.875
Analog & Digital Electronics Lab	T8 TL CC	3	3	0	40	0.12	1	25	0.12	3
Analog & Digital Electronics Lab	Fan	2	2	0	75	0.15	1	25	0.15	3.75
B 108 Computer Programming Lab	T8 TL CC	1	1	0	40	0.04	1	25	0.04	1
B 108 Computer Programming Lab	Fan	2	2	0	75	0.15	1	25	0.15	3.75
B 107 Control System 1	T8 TL CC	2	2	0	40	0.08	2	50	0.16	4
B 107 Control System 1	Fan	1	1	0	75	0.075	2	50	0.15	3.75
2nd Floor										
Mechanical Operation Lab	Fan	2	2	0	75	0.15	2	50	0.3	7.5
Instrumental Lab	Fan	2	2	0	75	0.15	4	100	0.6	15
Process Dynamics Control Lab	Fan	2	2	0	75	0.15	4	100	0.6	15
Process Modeling & Simulation Lab	T8 TL CC	1	1	0	40	0.04	4	100	0.16	4
Process Modeling & Simulation Lab	Wall Fan	3	3	0	65	0.195	4	100	0.78	19.5
Block No 10	Fan	3	3	0	75	0.225	3	75	0.68	16.875
Block No 11	T8 TL CC	3	3	0	40	0.12	3	75	0.36	9
Block No 11	Fan	4	4	0	75	0.3	3	75	0.9	22.5

Area	Type	Total Qty	On	Off	Wattage	Load in kW	Daily Op hr	Mtly Op Hr	Daily kWh	Mthly kWh
Block No 12	T8 TL CC	3	3	0	40	0.12	4	100	0.48	12
Block No 12	Fan	4	4	0	75	0.3	4	100	1.2	30
B 203 Tutorial	T8 TL CC	1	1	0	40	0.04	2	50	0.08	2
B 203 Tutorial	Fan	2	2	0	75	0.15	2	50	0.3	7.5
HOD	T8 TL CC	1	1	0	40	0.04	4	100	0.16	4
HOD	Fan	2	2	0	75	0.15	4	100	0.6	15
B 201	T8 TL CC	2	2	0	40	0.08	6	150	0.48	12
B 201	Fan	2	2	0	75	0.15	6	150	0.9	22.5
Block No 13	T8 TL CC	3	3	0	40	0.12	3	75	0.36	9
Block No 13	Fan	4	4	0	75	0.3	3	75	0.9	22.5
Block No 14 Seminar Room	T8 TL CC	5	5	0	40	0.2	3	75	0.6	15
Block No 14 Seminar Room	Fan	4	4	0	75	0.3	3	75	0.9	22.5
Block No 15 B222	T8 TL CC	5	5	0	40	0.2	2	50	0.4	10
Block No 15 B222	Fan	4	4	0	75	0.3	2	50	0.6	15
B 221	Fan	1	1	0	75	0.075	5	125	0.38	9.375
Mass Transfer 1 Lab	Fan	3	3	0	75	0.225	4	100	0.9	22.5
B 216 project lab	Fan	1	1	0	75	0.075	2	50	0.15	3.75
Chemical Reaction Engineering Lab 2	Fan	2	2	0	75	0.15	2	50	0.3	7.5
3rd Floor										

Area	Type	Total Qty	On	Off	Wattage	Load in kW	Daily Op hr	Mtly Op Hr	Daily kWh	Mthly kWh
B 301 Central Library	PL-R-DL-2x18W	11	11	0	36	0.396	5	125	1.98	49.5
B 301 Central Library	PL-S-DL-2x36W (2X2)	34	34	0	72	2.448	5	125	12.2	306
B 301 Central Library	Fan	34	34	0	75	2.55	5	125	12.8	318.75
B 317 Network Lab	T8 TL CC	6	6	0	40	0.24	3	75	0.72	18
B 317 Network Lab	Fan	6	6	0	75	0.45	3	75	1.35	33.75
B 316 IT HOD	T8 TL CC	1	1	0	40	0.04	4	100	0.16	4
B 316 IT HOD	Fan	2	2	0	75	0.15	4	100	0.6	15
B 315	T8 TL CC	1	1	0	40	0.04	3	75	0.12	3
B 315	Fan	2	2	0	75	0.15	3	75	0.45	11.25
Block no 16	T8 TL CC	2	2	0	40	0.08	3	75	0.24	6
Block no 16	Fan	4	4	0	75	0.3	3	75	0.9	22.5
software Lab	T8 TL CC	2	2	0	40	0.08	3	75	0.24	6
software Lab	Fan	7	7	0	75	0.525	3	75	1.58	39.375
Hardware Lab	Fan	2	2	0	75	0.15	2	50	0.3	7.5
Block No. 17	T8 TL CC	1	1	0	40	0.04	1	25	0.04	1
Block No. 17	Fan	4	4	0	75	0.3	1	25	0.3	7.5
Multimedia Lab	T8 TL CC	2	2	0	40	0.08	3	75	0.24	6
Multimedia Lab	Fan	3	3	0	75	0.225	3	75	0.68	16.875

Area	Type	Total Qty	On	Off	Wattage	Load in kW	Daily Op hr	Mtly Op Hr	Daily kWh	Mthly kWh
Programming Lab	T8 TL CC	2	2	0	40	0.08	4	100	0.32	8
Programming Lab	Fan	6	6	0	75	0.45	4	100	1.8	45
4th Floor										
Programming Lab 1 & 2	T8 TL CC	2	2	0	40	0.08	4	100	0.32	8
Programming Lab 1 & 2	Fan	8	8	0	75	0.6	4	100	2.4	60
Unix Lab	T8 TL CC	1	1	0	40	0.04	3	75	0.12	3
Unix Lab	Fan	5	5	0	75	0.375	3	75	1.13	28.125
Multimedia Lab	T8 TL CC	1	1	0	40	0.04	2	50	0.08	2
Multimedia Lab	Fan	4	4	0	75	0.3	2	50	0.6	15
Digital MP Lab	T8 TL CC	1	1	0	40	0.04	1	25	0.04	1
Digital MP Lab	Fan	3	3	0	75	0.225	1	25	0.23	5.625
Data Base Lab SQL	T8 TL CC	1	1	0	40	0.04	1	25	0.04	1
Data Base Lab SQL	Fan	5	5	0	75	0.375	1	25	0.38	9.375
PG Coordinator (practice lab)	T8 TL CC	1	1	0	40	0.04	2	50	0.08	2
PG Coordinator (practice lab)	Fan	6	6	0	75	0.45	2	50	0.9	22.5
B 409 Tutorial Room	T8 TL CC	1	1	0	40	0.04	3	75	0.12	3
B 409 Tutorial Room	Fan	4	4	0	75	0.3	3	75	0.9	22.5
Network Lab	T8 TL CC	1	1	0	40	0.04	2	50	0.08	2
Network Lab	Fan	4	4	0	75	0.3	2	50	0.6	15
B 411 IT HOD	T8 TL CC	2	2	0	40	0.08	5	125	0.4	10

Area	Type	Total Qty	On	Off	Wattage	Load in kW	Daily Op hr	Mtly Op Hr	Daily kWh	Mthly kWh
B 411 IT HOD	Fan	2	2	0	75	0.15	5	125	0.75	18.75
B 412 Tutorial Room	Fan	2	2	0	75	0.15	1	25	0.15	3.75
Block No 18 Class Room 1	Bulb	2	2	0	60	0.12	2	50	0.24	6
Block No 18 Class Room 1	Fan	5	5	0	75	0.375	2	50	0.75	18.75
Block No 19	Bulb	4	4	0	60	0.24	2	50	0.48	12
Block No 19	Fan	5	5	0	75	0.375	2	50	0.75	18.75
Block No 20	T8 TL CC	2	2	0	40	0.08	2	50	0.16	4
Block No 20	Fan	2	2	0	75	0.15	2	50	0.3	7.5
Academic Building										
2nd floor										
Block No. 4	T8 TL CC	2	2	0	40	0.08	2	50	0.16	4
Block No. 4	Fan	9	9	0	75	0.675	2	50	1.35	33.75
HOD 1st Year Engg	T5 TL	2	2	0	28	0.056	4	100	0.22	5.6
HOD 1st Year Engg	Fan	2	2	0	75	0.15	4	100	0.6	15
Tutorial Room	Fan	1	1	0	75	0.075	4	100	0.3	7.5
SAFE Facility	T8 TL CC	1	1	0	40	0.04	3	75	0.12	3
SAFE Facility	Fan	2	2	0	75	0.15	3	75	0.45	11.25
Applied Chemistry Lab	T8 TL CC	3	3	0	40	0.12	2	50	0.24	6
Applied Chemistry Lab	Fan	6	6	0	75	0.45	2	50	0.9	22.5
A 314	T8 TL CC	1	1	0	40	0.04	2	50	0.08	2
A 314	Fan	1	1	0	75	0.075	2	50	0.15	3.75
A 315	T8 TL CC	1	1	0	40	0.04	2	50	0.08	2
A 315	Fan	1	1	0	75	0.075	2	50	0.15	3.75
1st Floor						0				

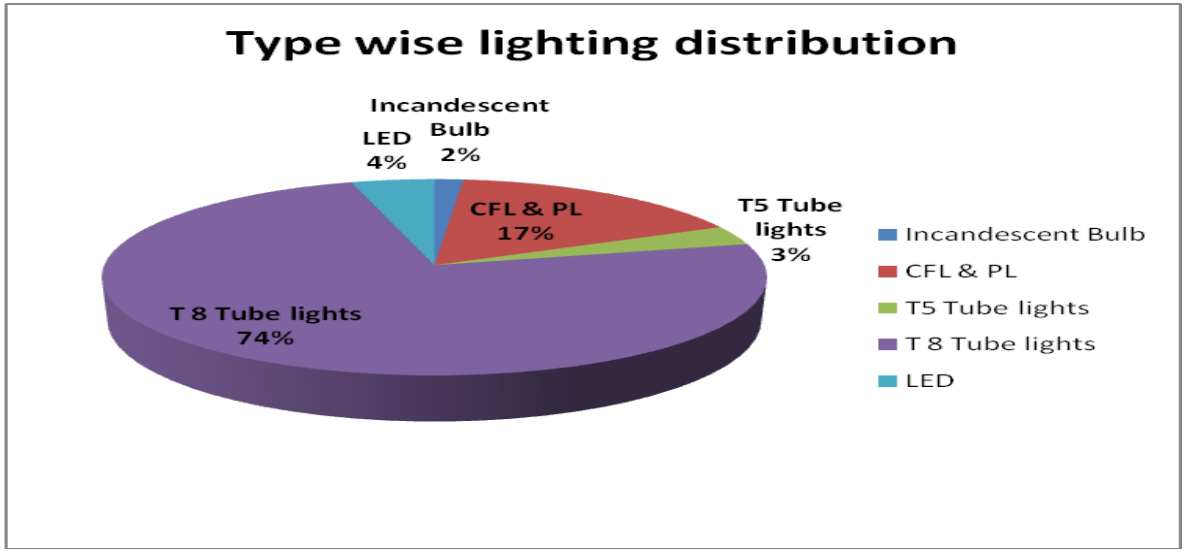
Area	Type	Total Qty	On	Off	Wattage	Load in kW	Daily Op hr	Mtly Op Hr	Daily kWh	Mthly kWh
Computer Lab	T8 TL CC	8	8	0	40	0.32	4	100	1.28	32
Computer Lab	Fan	8	8	0	75	0.6	4	100	2.4	60
HOD Cabin	T8 TL CC	6	6	0	40	0.24	4	100	0.96	24
HOD Cabin	Fan	1	1	0	75	0.075	4	100	0.3	7.5
Basic Electronic Lab	T8 TL CC	6	6	0	40	0.24	4	100	0.96	24
Basic Electronic Lab	Fan	6	6	0	75	0.45	4	100	1.8	45
Block No. 3	T8 TL CC	2	2	0	40	0.08	2	50	0.16	4
Block No. 3	Fan	4	4	0	75	0.3	2	50	0.6	15
Communication Engg Lab	T8 TL CC	2	2	0	40	0.08	1	25	0.08	2
Communication Engg Lab	Fan	2	2	0	75	0.15	1	25	0.15	3.75
P.G Lab	T8 TL CC	4	4	0	40	0.16	2	50	0.32	8
P.G Lab	Fan	7	7	0	75	0.525	2	50	1.05	26.25
Power Electronic lab	T8 TL CC	6	6	0	40	0.24	3	75	0.72	18
Power Electronic lab	Fan	2	2	0	75	0.15	3	75	0.45	11.25
microwave lab	T8 TL CC	9	9	0	40	0.36	3	75	1.08	27
microwave lab	Fan	11	11	0	75	0.825	3	75	2.48	61.875
Digital Electronic lab	T8 TL CC	3	3	0	40	0.12	3	75	0.36	9
Digital Electronic lab	Fan	5	5	0	75	0.375	3	75	1.13	28.125
Microprocessor Lab	T8 TL CC	3	3	0	40	0.12	2	50	0.24	6
Microprocessor Lab	Fan	6	6	0	75	0.45	2	50	0.9	22.5

Area	Type	Total Qty	On	Off	Wattage	Load in kW	Daily Op hr	Mtly Op Hr	Daily kWh	Mthly kWh
Ground Floor						0				
Block No 2	T8 TL CC	5	5	0	40	0.2	3	75	0.6	15
Block No 2	Fan	7	7	0	75	0.525	3	75	1.58	39.375
NAAC IQAC	T8 TL CC	1	1	0	40	0.04	2	50	0.08	2
NAAC IQAC	Fan	2	2	0	75	0.15	2	50	0.3	7.5
Block No. 1	T8 TL CC	2	2	0	40	0.08	3	75	0.24	6
Block No. 1	Fan	6	6	0	75	0.45	3	75	1.35	33.75
Training and Placement Cell	T8 TL CC	7	7	0	40	0.28	6	150	1.68	42
Training and Placement Cell	Fan	6	6	0	75	0.45	6	150	2.7	67.5
Seminar Hall	T8 TL CC	16	16	0	40	0.64	1	25	0.64	16
Seminar Hall	Fan	12	12	0	75	0.9	1	25	0.9	22.5
Electrical Room	Fan	1	1	0	75	0.075	24	600	1.8	45
Principles Cabin	PL-2x2-2x36W	4	4	0	72	0.288	6	150	1.73	43.2
Principles Cabin	Fan	1	1	0	75	0.075	6	150	0.45	11.25
Boardroom	PL-2x2-2x36W	8	8	0	72	0.576	0	0	0	0
Boardroom	CFL	3	3	0	12	0.036	0	0	0	0
Boardroom	AC	2	2	0	1200	2.4	0	0	0	0
Passage	PL-R-DL-12W	4	4	0	12	0.048	3	75	0.14	3.6
Administration Office	T8 TL CC	9	9	0	40	0.36	8	200	2.88	72
Administration Office	Fan	9	9	0	75	0.675	8	200	5.4	135

Area	Type	Total Qty	On	Off	Wattage	Load in kW	Daily Op hr	Mtly Op Hr	Daily kWh	Mthly kWh
Exam Control office	T8 TL CC	5	5	0	40	0.2	5	125	1	25
Exam Control office	Fan	5	5	0	75	0.375	5	125	1.88	46.875
Total						**16.709**			**47.6**	**1189**

Type wise lighting distribution in college

Type	Qty	kW
Incandescent Bulb	6	0.36
CFL & PL	64	3.79
T5 Tube lights	61	0.728
T 8 Tube lights	327	16.88
LED	24	1.035



Actual Load Measurement

The power logging is done at the mains of the 200 kVA transformer incoming.

The following parameters are logged.

Summary Table for Voltage and Current						
	Voltage (Volt)			Current (Amp)		
Phase	R Phase	Y Phase	B Phase	R Phase	Y Phase	B Phase
Min	236.5	237.6	236.1	37.7	50.1	41.3
Average	236.9	237.8	238.9	37.8	50.3	43.8
Max	237.2	238	239.1	38.2	50.6	46.2

Summary Tables For kW & Power Factor					
	Power (kW)				Power Factor
Phase	R Phase	Y Phase	B Phase	Total	Total
Min	8.85	11.80	9.63	30.29	0.988
Average	8.86	11.85	10.34	31.05	0.988
Max	8.88	11.91	10.92	31.72	0.989

Observations

- Average and maximum phase voltage is 238.9 volts and 239.1 volts respectively.
- Average and maximum load is 31.05 kW and 31.72 kW respectively
- Average and minimum power factor recorded is 0.988 and 0.989 respectively during recorded period

Harmonic Study

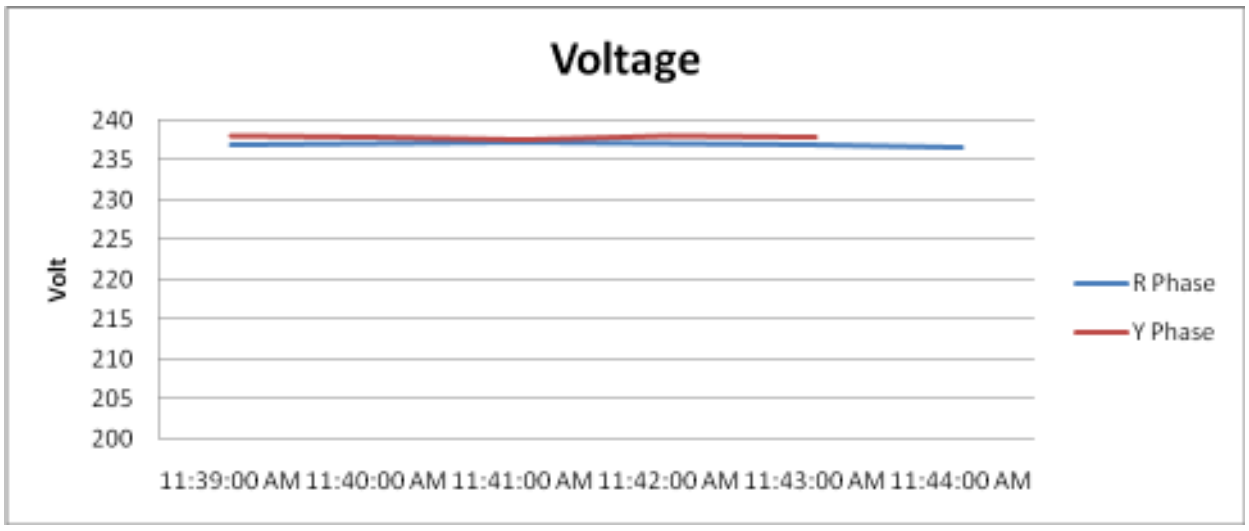
The Total Harmonic Distortions in main incomer are in the following table.

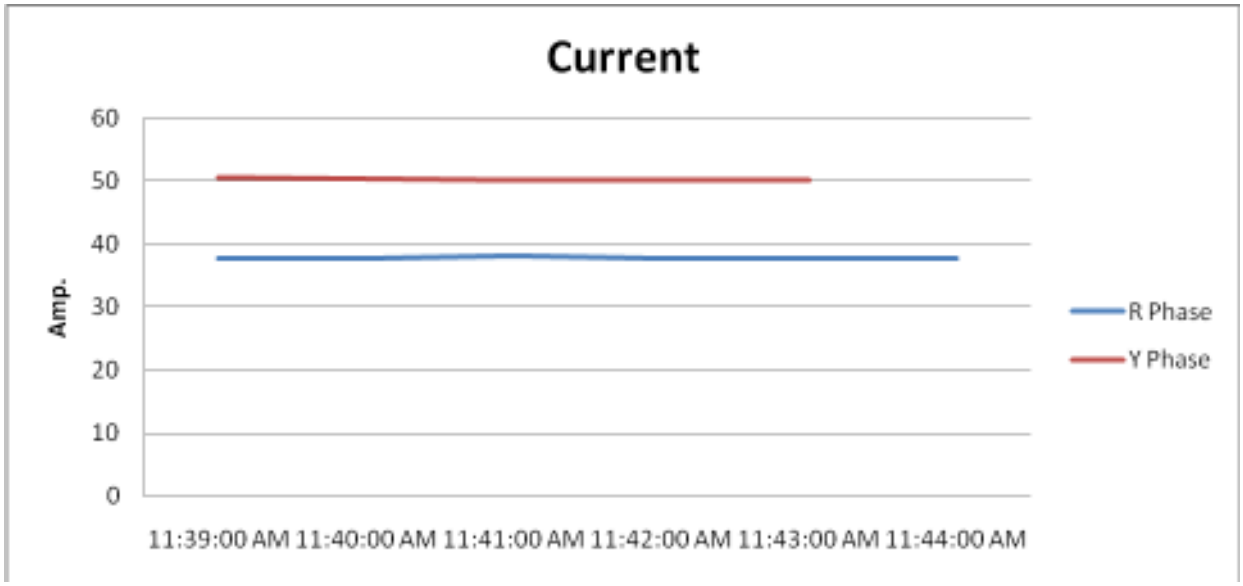
Total Harmonic Distortion						
	V_{THD}			I_{THD}		
	%			%		
Phase	R	Y	B	R	Y	B
Min	1.5	1.8	1.4	12.5	12.2	0
Average	1.55	1.86	1.6	12.667	12.3	0
Max	1.6	1.9	1.9	12.8	12.4	0

Observations

- Maximum voltage THD is 1.9% which is in the permissible limit of IEE 519 (i.e. 3%)
- Maximum current THD is 12.8% which is in the permissible limit of IEE 519 (i.e. 12%)

The monitored parameters of main incomer are also mentioned in line graph as shown below.

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50
40
30
20
10
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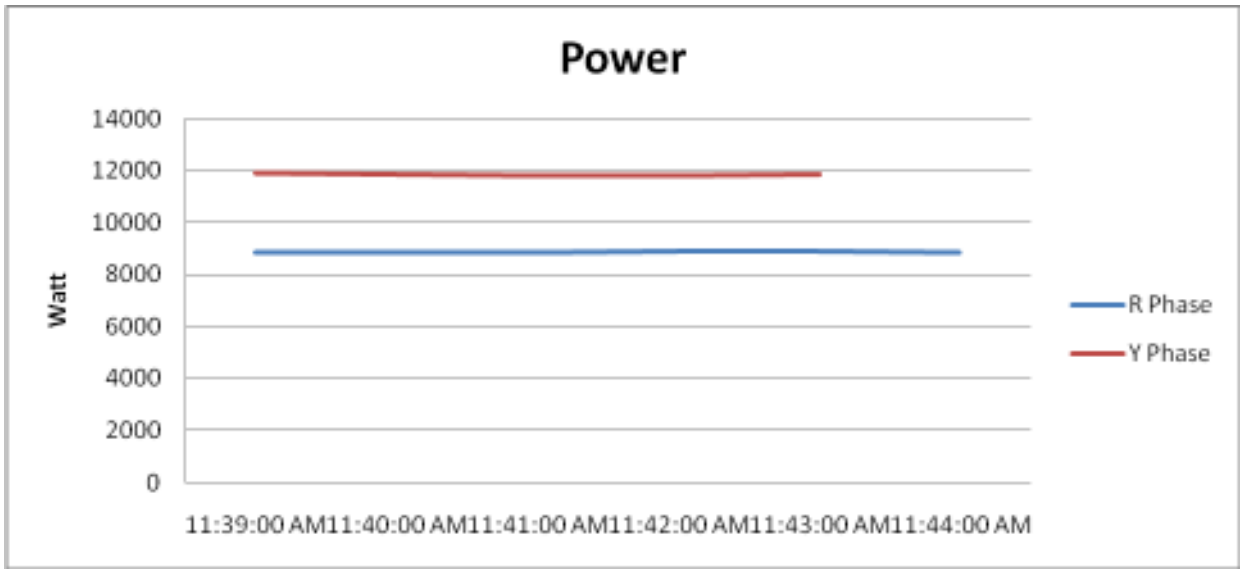
Amp.
11:39:00 AM 11:40:00 AM 11:41:00 AM 11:42:00 AM 11:43:00 AM 11:44:00 AM
R Phase
Y Phase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12000
10000
8000
6000
4000
2000
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Watt
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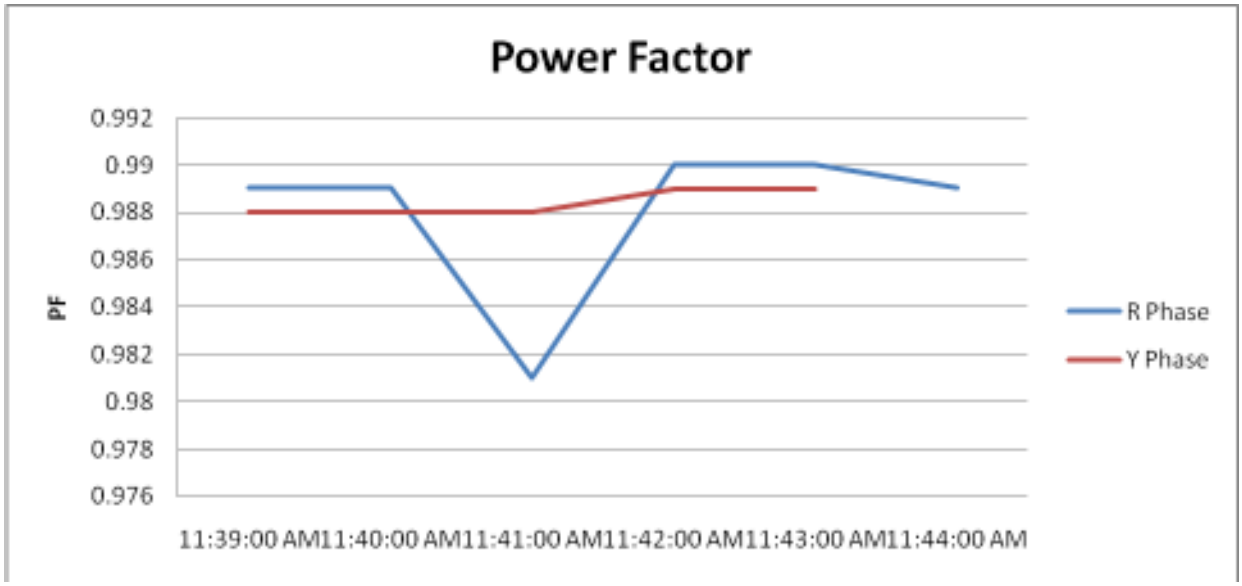
R Phase
Y Phase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0.986
0.984
0.982
0.98
0.978
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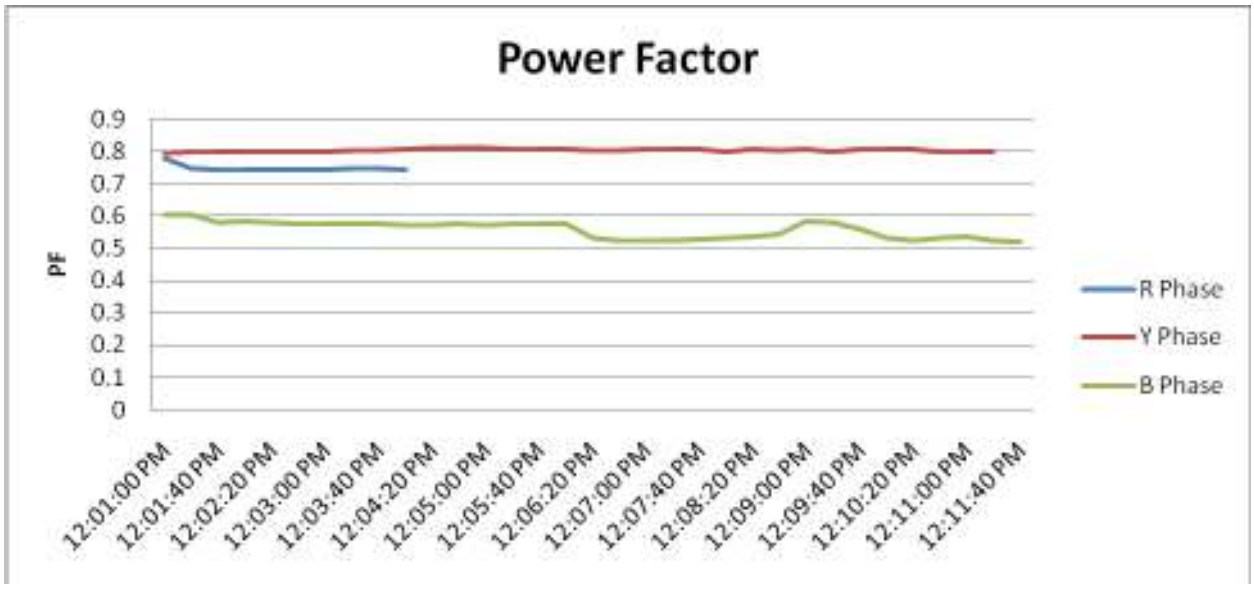
R Phase
Y Phase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0.6
0.5
0.4
0.3
0.2
0.1
0
PF
12:01:00 PM
12:01:40 PM
12:02:20 PM
12:03:00 PM
12:03:40 PM
12:04:20 PM
12:05:00 PM
12:05:40 PM
12:06:20 PM
12:07:00 PM
12:07:40 PM
12:08:20 PM
12:09:00 PM
12:09:40 PM
12:10:20 PM
12:11:00 PM
12:11:40 PM
R Phase
Y Phase
B Phase

Energy Saving Measure 1 – Replacement of conventional lighting system into LED

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
High voltage engg lab.	FTL-1x36W	3	3	1	36	6	0.108	16.524	1x18W Led Tube light	18	0.054	8.26	8.26	83	380	1140	13.7
Electrical Machine	FTL-1x36W	2	2	1	36	6	0.072	11.016	1x18W Led Tube light	18	0.036	5.51	5.51	55	380	760	13.7
Power Electronic lab	FTL-1x36W	3	3	1	36	2	0.108	5.508	1x18W Led Tube light	18	0.054	2.75	2.75	28	380	1140	41.1
Network analysis lab	FTL-1x36W	2	2	1	36	3	0.072	5.508	1x18W Led Tube light	18	0.036	2.75	2.75	28	380	760	27.4
Passage	FTL-1x36W	3	3	1	36	3	0.108	8.262	1x18W Led Tube light	18	0.054	4.13	4.13	42	380	1140	27.4
Class room no 3	FTL-1x36W	2	2	1	36	3	0.072	5.508	1x18W Led Tube light	18	0.036	2.75	2.75	28	380	760	27.4
Class room no 2 B 104	FTL-1x36W	3	3	1	36	3	0.108	8.262	1x18W Led Tube light	18	0.054	4.13	4.13	42	380	1140	27.4
Class room 1 B 103	FTL-1x36W	4	4	1	36	3	0.144	11.016	1x18W Led Tube light	18	0.072	5.51	5.51	55	380	1520	27.4

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
B 102 Tutorial	FTL-1x36W	2	2	1	36	1	0.072	1.836	No Change	36	0.072	1.84	0.00	0	0	0	0.0
Electrical HOD Office	FTL-1x36W	2	2	1	36	2	0.072	3.672	1x18W Led Tube light	18	0.036	1.84	1.84	18	380	760	41.1
B 110 Microprocessor Lab	FTL-1x36W	3	3	1	36	1	0.108	2.754	No Change	36	0.108	2.75	0.00	0	0	0	0.0
Analog & Digital Electronics Lab	FTL-1x36W	3	3	1	36	1	0.108	2.754	No Change	36	0.108	2.75	0.00	0	0	0	0.0
B 108 Computer Programming Lab	FTL-1x36W	1	1	1	36	1	0.036	0.918	No Change	36	0.036	0.92	0.00	0	0	0	0.0
B 107 Control System 1	FTL-1x36W	2	2	1	36	2	0.072	3.672	1x18W Led Tube light	18	0.036	1.84	1.84	18	380	760	41.1
Process Modeling & Simulation Lab	FTL-1x36W	1	1	1	36	4	0.036	3.672	1x18W Led Tube light	18	0.018	1.84	1.84	18	380	380	20.6
Block No 11	FTL-1x36W	3	3	1	36	3	0.108	8.262	1x18W Led Tube light	18	0.054	4.13	4.13	42	380	1140	27.4
Block No 12	FTL-1x36W	3	3	1	36	4	0.108	11.016	1x18W Led Tube light	18	0.054	5.51	5.51	55	380	1140	20.6
B 203 Tutorial	FTL-1x36W	1	1	1	36	2	0.036	1.836	1x18W Led	18	0.018	0.92	0.92	9	380	380	41.1

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
									Tube light								
HOD	FTL-1x36W	1	1	1	36	4	0.036	3.672	1x18W Led Tube light	18	0.018	1.84	1.84	18	380	380	20.6
B 201	FTL-1x36W	2	2	1	36	6	0.072	11.016	1x18W Led Tube light	18	0.036	5.51	5.51	55	380	760	13.7
Block No 13	FTL-1x36W	3	3	1	36	3	0.108	8.262	1x18W Led Tube light	18	0.054	4.13	4.13	42	380	1140	27.4
Block No 14 Seminar Room	FTL-1x36W	5	5	1	36	3	0.18	13.77	1x18W Led Tube light	18	0.09	6.89	6.89	69	380	1900	27.4
Block No 15 B222	FTL-1x36W	5	5	1	36	2	0.18	9.18	1x18W Led Tube light	18	0.09	4.59	4.59	46	380	1900	41.1
B 301 Central Library	PL-R-DL-2x18W	11	11	1	36	5	0.396	50.49	12w Led Down light	12	0.132	16.83	33.66	339	850	9350	27.6
B 301 Central Library	PL-S-DL-2x36W (2X2)	34	34	1	72	5	2.448	312.12	2x18W Led PL Retrofit	36	1.224	156.06	156.06	1572	1950	66300	42.2
B 317 Network Lab	FTL-1x36W	6	6	1	36	3	0.216	16.524	1x18W Led Tube light	18	0.108	8.26	8.26	83	380	2280	27.4

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
B 316 IT HOD	FTL-1x36W	1	1	1	36	4	0.036	3.672	1x18W Led Tube light	18	0.018	1.84	1.84	18	380	380	20.6
B 315	FTL-1x36W	1	1	1	36	3	0.036	2.754	1x18W Led Tube light	18	0.018	1.38	1.38	14	380	380	27.4
Block no 16	FTL-1x36W	2	2	1	36	3	0.072	5.508	1x18W Led Tube light	18	0.036	2.75	2.75	28	380	760	27.4
software Lab	FTL-1x36W	2	2	1	36	3	0.072	5.508	1x18W Led Tube light	18	0.036	2.75	2.75	28	380	760	27.4
Block No. 17	FTL-1x36W	1	1	1	36	1	0.036	0.918	No Change	36	0.036	0.92	0.00	0	0	0	0.0
Multimedia Lab	FTL-1x36W	2	2	1	36	3	0.072	5.508	1x18W Led Tube light	18	0.036	2.75	2.75	28	380	760	27.4
Programming Lab	FTL-1x36W	2	2	1	36	4	0.072	7.344	1x18W Led Tube light	18	0.036	3.67	3.67	37	380	760	20.6
Programming Lab 1 & 2	FTL-1x36W	2	2	1	36	4	0.072	7.344	1x18W Led Tube light	18	0.036	3.67	3.67	37	380	760	20.6
Unix Lab	FTL-1x36W	1	1	1	36	3	0.036	2.754	1x18W Led Tube light	18	0.018	1.38	1.38	14	380	380	27.4

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
Multimedia Lab	FTL-1x36W	1	1	1	36	2	0.036	1.836	1x18W Led Tube light	18	0.018	0.92	0.92	9	380	380	41.1
Digital MP Lab	FTL-1x36W	1	1	1	36	1	0.036	0.918	No Change	36	0.036	0.92	0.00	0	0	0	0.0
Data Base Lab SQL	FTL-1x36W	1	1	1	36	1	0.036	0.918	No Change	36	0.036	0.92	0.00	0	0	0	0.0
PG Coordinator (practice lab)	FTL-1x36W	1	1	1	36	2	0.036	1.836	1x18W Led Tube light	18	0.018	0.92	0.92	9	380	380	41.1
B 409 Tutorial Room	FTL-1x36W	1	1	1	36	3	0.036	2.754	1x18W Led Tube light	18	0.018	1.38	1.38	14	380	380	27.4
Network Lab	FTL-1x36W	1	1	1	36	2	0.036	1.836	1x18W Led Tube light	18	0.018	0.92	0.92	9	380	380	41.1
B 411 IT HOD	FTL-1x36W	2	2	1	36	5	0.072	9.18	1x18W Led Tube light	18	0.036	4.59	4.59	46	380	760	16.4
Block No 18 Class Room 1	Bulb	2	2	1	60	2	0.12	6.12	No Change	60	0.12	6.12	0.00	0	0	0	0.0
Block No 19	Bulb	4	4	1	60	2	0.24	12.24	No Change	60	0.24	12.24	0.00	0	0	0	0.0
Block No 20	FTL-1x36W	2	2	1	36	2	0.072	3.672	1x18W Led Tube light	18	0.036	1.84	1.84	18	380	760	41.1
Block No. 4	FTL-1x36W	2	2	1	36	2	0.072	3.672	1x18W Led	18	0.036	1.84	1.84	18	380	760	41.1

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
									Tube light								
HOD 1st Year Engg	T5 TL	2	2	1	28	4	0.056	5.712	No Change	28	0.056	5.71	0.00	0	0	0	0.0
SAFE Facility	FTL-1x36W	1	1	1	36	3	0.036	2.754	1x18W Led Tube light	18	0.018	1.38	1.38	14	380	380	27.4
Applied Chemistry Lab	FTL-1x36W	3	3	1	36	2	0.108	5.508	1x18W Led Tube light	18	0.054	2.75	2.75	28	380	1140	41.1
A 314	FTL-1x36W	1	1	1	36	2	0.036	1.836	1x18W Led Tube light	18	0.018	0.92	0.92	9	380	380	41.1
A 315	FTL-1x36W	1	1	1	36	2	0.036	1.836	1x18W Led Tube light	18	0.018	0.92	0.92	9	380	380	41.1
Computer Lab	FTL-1x36W	8	8	1	36	4	0.288	29.376	1x18W Led Tube light	18	0.144	14.69	14.69	148	380	3040	20.6
HOD Cabin	FTL-1x36W	6	6	1	36	4	0.216	22.032	1x18W Led Tube light	18	0.108	11.02	11.02	111	380	2280	20.6
Basic Electronic Lab	FTL-1x36W	6	6	1	36	4	0.216	22.032	1x18W Led Tube light	18	0.108	11.02	11.02	111	380	2280	20.6
Block No. 3	FTL-1x36W	2	2	1	36	2	0.072	3.672	1x18W Led	18	0.036	1.84	1.84	18	380	760	41.1

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
									Tube light								
Communication Engg Lab	FTL-1x36W	2	2	1	36	1	0.072	1.836	No Change	36	0.072	1.84	0.00	0	0	0	0.0
P.G Lab	FTL-1x36W	4	4	1	36	2	0.144	7.344	1x18W Led Tube light	18	0.072	3.67	3.67	37	380	1520	41.1
Power Electronic lab	FTL-1x36W	6	6	1	36	3	0.216	16.524	1x18W Led Tube light	18	0.108	8.26	8.26	83	380	2280	27.4
microwave lab	FTL-1x36W	9	9	1	36	3	0.324	24.786	1x18W Led Tube light	18	0.162	12.39	12.39	125	380	3420	27.4
Digital Electronic lab	FTL-1x36W	3	3	1	36	3	0.108	8.262	1x18W Led Tube light	18	0.054	4.13	4.13	42	380	1140	27.4
Microprocessor Lab	FTL-1x36W	3	3	1	36	2	0.108	5.508	1x18W Led Tube light	18	0.054	2.75	2.75	28	380	1140	41.1
Block No 2	FTL-1x36W	5	5	1	36	3	0.18	13.77	1x18W Led Tube light	18	0.09	6.89	6.89	69	380	1900	27.4
NAAC IQAC	FTL-1x36W	1	1	1	36	2	0.036	1.836	1x18W Led Tube light	18	0.018	0.92	0.92	9	380	380	41.1
Block No. 1	FTL-1x36W	2	2	1	36	3	0.072	5.508	1x18W Led	18	0.036	2.75	2.75	28	380	760	27.4

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
									Tube light								
Training and Placement Cell	FTL-1x36W	7	7	1	36	6	0.252	38.556	1x18W Led Tube light	18	0.126	19.28	19.28	194	380	2660	13.7
Seminar Hall	FTL-1x36W	16	16	1	36	1	0.576	14.688	No Change	36	0.576	14.69	0.00	0	0	0	0.0
Principles Cabin	PL-2x2-2x36W	4	4	1	72	6	0.288	44.064	2x18W Led PL Retrofit	36	0.144	22.03	22.03	222	1950	7800	35.2
Boardroom	PL-2x2-2x36W	8	8	1	72	0	0.576	0	No Change	72	0.576	0.00	0.00	0	0	0	0.0
Boardroom	CFL	3	3	1	12	0	0.036	0	No Change	12	0.036	0.00	0.00	0	0	0	0.0
Passage	PL-R-DL-12W	4	4	1	12	3	0.048	3.672	No Change	12	0.048	3.67	0.00	0	0	0	0.0
Administration Office	FTL-1x36W	9	9	1	36	8	0.324	66.096	1x18W Led Tube light	18	0.162	33.05	33.05	333	380	3420	10.3
Exam Control office	FTL-1x36W	5	5	1	36	5	0.18	22.95	1x18W Led Tube light	18	0.09	11.48	11.48	116	380	1900	16.4
Main Entrance	FTL-1x36W	5	5	1	36	6	0.18	27.54	1x18W Led Tube light	18	0.09	13.77	13.77	139	380	1900	13.7
Office	FTL-1x36W	8	8	1	36	8	0.288	58.752	1x18W Led Tube light	18	0.144	29.38	29.38	296	380	3040	10.3

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
Passage	FTL-1x36W	5	5	1	36	1	0.18	4.59	No Change	36	0.18	4.59	0.00	0	0	0	0.0
Training and Placement Cell	FTL-1x36W	2	2	1	36	3	0.072	5.508	1x18W Led Tube light	18	0.036	2.75	2.75	28	380	760	27.4
Exam Control office	FTL-1x36W	2	2	1	36	5	0.072	9.18	1x18W Led Tube light	18	0.036	4.59	4.59	46	380	760	16.4
Computer Center	FTL-1x36W	6	6	1	36	3	0.216	16.524	1x18W Led Tube light	18	0.108	8.26	8.26	83	380	2280	27.4
Principles Cabin	FTL-1x36W	4	4	1	36	4	0.144	14.688	1x18W Led Tube light	18	0.072	7.34	7.34	74	380	1520	20.6
microbiology	FTL-1x36W	4	4	1	36	4	0.144	14.688	1x18W Led Tube light	18	0.072	7.34	7.34	74	380	1520	20.6
Instrument Room	FTL-1x36W	3	3	1	36	3	0.108	8.262	1x18W Led Tube light	18	0.054	4.13	4.13	42	380	1140	27.4
Machine Room	FTL-1x36W	5	5	1	36	2	0.18	9.18	1x18W Led Tube light	18	0.09	4.59	4.59	46	380	1900	41.1
Staff Room	FTL-1x36W	7	7	1	36	8	0.252	51.408	1x18W Led Tube light	18	0.126	25.70	25.70	259	380	2660	10.3

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
Pharma Lab 2	FTL-1x36W	8	8	1	36	3	0.288	22.032	1x18W Led Tube light	18	0.144	11.02	11.02	111	380	3040	27.4
Pharm Lab	FTL-1x36W	5	5	1	36	6	0.18	27.54	1x18W Led Tube light	18	0.09	13.77	13.77	139	380	1900	13.7
Paharm Chemist Lab 1	FTL-1x36W	11	11	1	36	5	0.396	50.49	1x18W Led Tube light	18	0.198	25.25	25.25	254	380	4180	16.4
Class Room 1	FTL-1x36W	2	2	1	36	3	0.072	5.508	1x18W Led Tube light	18	0.036	2.75	2.75	28	380	760	27.4
Class Room 2	FTL-1x36W	2	2	1	36	3	0.072	5.508	1x18W Led Tube light	18	0.036	2.75	2.75	28	380	760	27.4
Pharmacology Lab	FTL-1x36W	3	3	1	36	4	0.108	11.016	1x18W Led Tube light	18	0.054	5.51	5.51	55	380	1140	20.6
Quality Assurance(Research lab)	FTL-1x36W	5	5	1	36	2	0.18	9.18	1x18W Led Tube light	18	0.09	4.59	4.59	46	380	1900	41.1
Biochemistry Lab	FTL-1x36W	5	5	1	36	4	0.18	18.36	1x18W Led Tube light	18	0.09	9.18	9.18	92	380	1900	20.6
Tutorial Room	FTL-1x36W	1	1	1	36	2	0.036	1.836	1x18W Led Tube	18	0.018	0.92	0.92	9	380	380	41.1

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
									light								
Library	FTL-2x36W	8	8	1	80	3	0.64	48.96	2x18W Led Tube Retrofit	36	0.288	22.03	26.93	271	400	3200	11.8
Tutorial Room	FTL-1x36W	4	4	1	36	4	0.144	14.688	1x18W Led Tube light	18	0.072	7.34	7.34	74	380	1520	20.6
human anatomy lab	FTL-1x36W	6	6	1	36	4	0.216	22.032	1x18W Led Tube light	18	0.108	11.02	11.02	111	380	2280	20.6
Class Room 3	FTL-1x36W	4	4	1	36	2	0.144	7.344	1x18W Led Tube light	18	0.072	3.67	3.67	37	380	1520	41.1
Class Room 4	FTL-1x36W	5	5	1	36	2	0.18	9.18	1x18W Led Tube light	18	0.09	4.59	4.59	46	380	1900	41.1
Pharmacology Lab	FTL-1x36W	4	4	1	36	3	0.144	11.016	1x18W Led Tube light	18	0.072	5.51	5.51	55	380	1520	27.4
Passage	FTL-1x36W	5	5	1	36	2	0.18	9.18	1x18W Led Tube light	18	0.09	4.59	4.59	46	380	1900	41.1
SUM		**392**					**16.08**				**9.11**	**763**	**725**	**7298**		**191910**	**26**

Lighting Recommendation -1

Replace the existing 36 W FTL tube lights into 18 W LED tubes

- Total No. of light fittings = 325 Nos.
- Total No. of Light fitting presently operated= 325 Nos.
- Total No. of light fittings to be replace= 325Nos.
- Present Energy Consumption = 1058 kWh
- Expected Energy Consumption = 545 kWh
- Total Energy Saved per Month = 1058-545= 513 kWh
- Total Saving = 513 kWh
- Monetary Savings = Rs.5166
- Investment = Rs.108460
- Simple Payback period = 21 Months

Lighting Recommendation -2

Replace the existing 2 X 36W PL lights into 2 X 18 W LED

- Total No. of CFL light fittings = 61 Nos.
- Total No. of Light fitting presently operated= 61 Nos.
- Total No. of light fittings to be replace= 61 Nos.
- Present Energy Consumption = 410 kWh
- Expected Energy Consumption = 198 kWh
- Total Energy Saved per Month = 410-198= 211 kWh
- Total Saving = 211 kWh
- Monetary Savings = Rs.2132
- Investment = Rs.83450
- Simple Payback period = 39 Month

Energy Saving Measure 2 – Replacement of conventional ceiling fans with energy efficient ceiling fans

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
High voltage engg lab.	FTL-1x36W	3	3	1	36	6	0.108	16.524	1x18W Led Tube light	18	0.054	8.26	8.26	83	380	1140	13.7
Electrical Machine	FTL-1x36W	2	2	1	36	6	0.072	11.016	1x18W Led Tube light	18	0.036	5.51	5.51	55	380	760	13.7
Power Electronic lab	FTL-1x36W	3	3	1	36	2	0.108	5.508	1x18W Led Tube light	18	0.054	2.75	2.75	28	380	1140	41.1
Network analysis lab	FTL-1x36W	2	2	1	36	3	0.072	5.508	1x18W Led Tube light	18	0.036	2.75	2.75	28	380	760	27.4
Passage	FTL-1x36W	3	3	1	36	3	0.108	8.262	1x18W Led Tube light	18	0.054	4.13	4.13	42	380	1140	27.4
Class room no 3	FTL-1x36W	2	2	1	36	3	0.072	5.508	1x18W Led Tube light	18	0.036	2.75	2.75	28	380	760	27.4
Class room no 2 B 104	FTL-1x36W	3	3	1	36	3	0.108	8.262	1x18W Led Tube light	18	0.054	4.13	4.13	42	380	1140	27.4
Class room 1 B 103	FTL-1x36W	4	4	1	36	3	0.144	11.016	1x18W Led Tube light	18	0.072	5.51	5.51	55	380	1520	27.4

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
B 102 Tutorial	FTL-1x36W	2	2	1	36	1	0.072	1.836	No Change	36	0.072	1.84	0.00	0	0	0	0.0
Electrical HOD Office	FTL-1x36W	2	2	1	36	2	0.072	3.672	1x18W Led Tube light	18	0.036	1.84	1.84	18	380	760	41.1
B 110 Microprocessor Lab	FTL-1x36W	3	3	1	36	1	0.108	2.754	No Change	36	0.108	2.75	0.00	0	0	0	0.0
Analog & Digital Electronics Lab	FTL-1x36W	3	3	1	36	1	0.108	2.754	No Change	36	0.108	2.75	0.00	0	0	0	0.0
B 108 Computer Programming Lab	FTL-1x36W	1	1	1	36	1	0.036	0.918	No Change	36	0.036	0.92	0.00	0	0	0	0.0
B 107 Control System 1	FTL-1x36W	2	2	1	36	2	0.072	3.672	1x18W Led Tube light	18	0.036	1.84	1.84	18	380	760	41.1
Process Modeling & Simulation Lab	FTL-1x36W	1	1	1	36	4	0.036	3.672	1x18W Led Tube light	18	0.018	1.84	1.84	18	380	380	20.6
Block No 11	FTL-1x36W	3	3	1	36	3	0.108	8.262	1x18W Led Tube light	18	0.054	4.13	4.13	42	380	1140	27.4
Block No 12	FTL-1x36W	3	3	1	36	4	0.108	11.016	1x18W Led Tube light	18	0.054	5.51	5.51	55	380	1140	20.6
B 203 Tutorial	FTL-1x36W	1	1	1	36	2	0.036	1.836	1x18W Led	18	0.018	0.92	0.92	9	380	380	41.1

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
									Tube light								
HOD	FTL-1x36W	1	1	1	36	4	0.036	3.672	1x18W Led Tube light	18	0.018	1.84	1.84	18	380	380	20.6
B 201	FTL-1x36W	2	2	1	36	6	0.072	11.016	1x18W Led Tube light	18	0.036	5.51	5.51	55	380	760	13.7
Block No 13	FTL-1x36W	3	3	1	36	3	0.108	8.262	1x18W Led Tube light	18	0.054	4.13	4.13	42	380	1140	27.4
Block No 14 Seminar Room	FTL-1x36W	5	5	1	36	3	0.18	13.77	1x18W Led Tube light	18	0.09	6.89	6.89	69	380	1900	27.4
Block No 15 B222	FTL-1x36W	5	5	1	36	2	0.18	9.18	1x18W Led Tube light	18	0.09	4.59	4.59	46	380	1900	41.1
B 301 Central Library	PL-R-DL-2x18W	11	11	1	36	5	0.396	50.49	12w Led Down light	12	0.132	16.83	33.66	339	850	9350	27.6
B 301 Central Library	PL-S-DL-2x36W (2X2)	34	34	1	72	5	2.448	312.12	2x18W Led PL Retrofit	36	1.224	156.06	156.06	1572	1950	66300	42.2
B 317 Network Lab	FTL-1x36W	6	6	1	36	3	0.216	16.524	1x18W Led Tube light	18	0.108	8.26	8.26	83	380	2280	27.4

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
B 316 IT HOD	FTL-1x36W	1	1	1	36	4	0.036	3.672	1x18W Led Tube light	18	0.018	1.84	1.84	18	380	380	20.6
B 315	FTL-1x36W	1	1	1	36	3	0.036	2.754	1x18W Led Tube light	18	0.018	1.38	1.38	14	380	380	27.4
Block no 16	FTL-1x36W	2	2	1	36	3	0.072	5.508	1x18W Led Tube light	18	0.036	2.75	2.75	28	380	760	27.4
software Lab	FTL-1x36W	2	2	1	36	3	0.072	5.508	1x18W Led Tube light	18	0.036	2.75	2.75	28	380	760	27.4
Block No. 17	FTL-1x36W	1	1	1	36	1	0.036	0.918	No Change	36	0.036	0.92	0.00	0	0	0	0.0
Multimedia Lab	FTL-1x36W	2	2	1	36	3	0.072	5.508	1x18W Led Tube light	18	0.036	2.75	2.75	28	380	760	27.4
Programming Lab	FTL-1x36W	2	2	1	36	4	0.072	7.344	1x18W Led Tube light	18	0.036	3.67	3.67	37	380	760	20.6
Programming Lab 1 & 2	FTL-1x36W	2	2	1	36	4	0.072	7.344	1x18W Led Tube light	18	0.036	3.67	3.67	37	380	760	20.6
Unix Lab	FTL-1x36W	1	1	1	36	3	0.036	2.754	1x18W Led Tube light	18	0.018	1.38	1.38	14	380	380	27.4

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
Multimedia Lab	FTL-1x36W	1	1	1	36	2	0.036	1.836	1x18W Led Tube light	18	0.018	0.92	0.92	9	380	380	41.1
Digital MP Lab	FTL-1x36W	1	1	1	36	1	0.036	0.918	No Change	36	0.036	0.92	0.00	0	0	0	0.0
Data Base Lab SQL	FTL-1x36W	1	1	1	36	1	0.036	0.918	No Change	36	0.036	0.92	0.00	0	0	0	0.0
PG Coordinator (practice lab)	FTL-1x36W	1	1	1	36	2	0.036	1.836	1x18W Led Tube light	18	0.018	0.92	0.92	9	380	380	41.1
B 409 Tutorial Room	FTL-1x36W	1	1	1	36	3	0.036	2.754	1x18W Led Tube light	18	0.018	1.38	1.38	14	380	380	27.4
Network Lab	FTL-1x36W	1	1	1	36	2	0.036	1.836	1x18W Led Tube light	18	0.018	0.92	0.92	9	380	380	41.1
B 411 IT HOD	FTL-1x36W	2	2	1	36	5	0.072	9.18	1x18W Led Tube light	18	0.036	4.59	4.59	46	380	760	16.4
Block No 18 Class Room 1	Bulb	2	2	1	60	2	0.12	6.12	No Change	60	0.12	6.12	0.00	0	0	0	0.0
Block No 19	Bulb	4	4	1	60	2	0.24	12.24	No Change	60	0.24	12.24	0.00	0	0	0	0.0
Block No 20	FTL-1x36W	2	2	1	36	2	0.072	3.672	1x18W Led Tube light	18	0.036	1.84	1.84	18	380	760	41.1
Block No. 4	FTL-1x36W	2	2	1	36	2	0.072	3.672	1x18W Led	18	0.036	1.84	1.84	18	380	760	41.1

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
									Tube light								
HOD 1st Year Engg	T5 TL	2	2	1	28	4	0.056	5.712	No Change	28	0.056	5.71	0.00	0	0	0	0.0
SAFE Facility	FTL-1x36W	1	1	1	36	3	0.036	2.754	1x18W Led Tube light	18	0.018	1.38	1.38	14	380	380	27.4
Applied Chemistry Lab	FTL-1x36W	3	3	1	36	2	0.108	5.508	1x18W Led Tube light	18	0.054	2.75	2.75	28	380	1140	41.1
A 314	FTL-1x36W	1	1	1	36	2	0.036	1.836	1x18W Led Tube light	18	0.018	0.92	0.92	9	380	380	41.1
A 315	FTL-1x36W	1	1	1	36	2	0.036	1.836	1x18W Led Tube light	18	0.018	0.92	0.92	9	380	380	41.1
Computer Lab	FTL-1x36W	8	8	1	36	4	0.288	29.376	1x18W Led Tube light	18	0.144	14.69	14.69	148	380	3040	20.6
HOD Cabin	FTL-1x36W	6	6	1	36	4	0.216	22.032	1x18W Led Tube light	18	0.108	11.02	11.02	111	380	2280	20.6
Basic Electronic Lab	FTL-1x36W	6	6	1	36	4	0.216	22.032	1x18W Led Tube light	18	0.108	11.02	11.02	111	380	2280	20.6
Block No. 3	FTL-1x36W	2	2	1	36	2	0.072	3.672	1x18W Led	18	0.036	1.84	1.84	18	380	760	41.1

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
									Tube light								
Communication Engg Lab	FTL-1x36W	2	2	1	36	1	0.072	1.836	No Change	36	0.072	1.84	0.00	0	0	0	0.0
P.G Lab	FTL-1x36W	4	4	1	36	2	0.144	7.344	1x18W Led Tube light	18	0.072	3.67	3.67	37	380	1520	41.1
Power Electronic lab	FTL-1x36W	6	6	1	36	3	0.216	16.524	1x18W Led Tube light	18	0.108	8.26	8.26	83	380	2280	27.4
microwave lab	FTL-1x36W	9	9	1	36	3	0.324	24.786	1x18W Led Tube light	18	0.162	12.39	12.39	125	380	3420	27.4
Digital Electronic lab	FTL-1x36W	3	3	1	36	3	0.108	8.262	1x18W Led Tube light	18	0.054	4.13	4.13	42	380	1140	27.4
Microprocessor Lab	FTL-1x36W	3	3	1	36	2	0.108	5.508	1x18W Led Tube light	18	0.054	2.75	2.75	28	380	1140	41.1
Block No 2	FTL-1x36W	5	5	1	36	3	0.18	13.77	1x18W Led Tube light	18	0.09	6.89	6.89	69	380	1900	27.4
NAAC IQAC	FTL-1x36W	1	1	1	36	2	0.036	1.836	1x18W Led Tube light	18	0.018	0.92	0.92	9	380	380	41.1
Block No. 1	FTL-1x36W	2	2	1	36	3	0.072	5.508	1x18W Led	18	0.036	2.75	2.75	28	380	760	27.4

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
									Tube light								
Training and Placement Cell	FTL-1x36W	7	7	1	36	6	0.252	38.556	1x18W Led Tube light	18	0.126	19.28	19.28	194	380	2660	13.7
Seminar Hall	FTL-1x36W	16	16	1	36	1	0.576	14.688	No Change	36	0.576	14.69	0.00	0	0	0	0.0
Principles Cabin	PL-2x2-2x36W	4	4	1	72	6	0.288	44.064	2x18W Led PL Retrofit	36	0.144	22.03	22.03	222	1950	7800	35.2
Boardroom	PL-2x2-2x36W	8	8	1	72	0	0.576	0	No Change	72	0.576	0.00	0.00	0	0	0	0.0
Boardroom	CFL	3	3	1	12	0	0.036	0	No Change	12	0.036	0.00	0.00	0	0	0	0.0
Passage	PL-R-DL-12W	4	4	1	12	3	0.048	3.672	No Change	12	0.048	3.67	0.00	0	0	0	0.0
Administration Office	FTL-1x36W	9	9	1	36	8	0.324	66.096	1x18W Led Tube light	18	0.162	33.05	33.05	333	380	3420	10.3
Exam Control office	FTL-1x36W	5	5	1	36	5	0.18	22.95	1x18W Led Tube light	18	0.09	11.48	11.48	116	380	1900	16.4
Main Entrance	FTL-1x36W	5	5	1	36	6	0.18	27.54	1x18W Led Tube light	18	0.09	13.77	13.77	139	380	1900	13.7
Office	FTL-1x36W	8	8	1	36	8	0.288	58.752	1x18W Led Tube light	18	0.144	29.38	29.38	296	380	3040	10.3

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
Passage	FTL-1x36W	5	5	1	36	1	0.18	4.59	No Change	36	0.18	4.59	0.00	0	0	0	0.0
Training and Placement Cell	FTL-1x36W	2	2	1	36	3	0.072	5.508	1x18W Led Tube light	18	0.036	2.75	2.75	28	380	760	27.4
Exam Control office	FTL-1x36W	2	2	1	36	5	0.072	9.18	1x18W Led Tube light	18	0.036	4.59	4.59	46	380	760	16.4
Computer Center	FTL-1x36W	6	6	1	36	3	0.216	16.524	1x18W Led Tube light	18	0.108	8.26	8.26	83	380	2280	27.4
Principles Cabin	FTL-1x36W	4	4	1	36	4	0.144	14.688	1x18W Led Tube light	18	0.072	7.34	7.34	74	380	1520	20.6
microbiology	FTL-1x36W	4	4	1	36	4	0.144	14.688	1x18W Led Tube light	18	0.072	7.34	7.34	74	380	1520	20.6
Instrument Room	FTL-1x36W	3	3	1	36	3	0.108	8.262	1x18W Led Tube light	18	0.054	4.13	4.13	42	380	1140	27.4
Machine Room	FTL-1x36W	5	5	1	36	2	0.18	9.18	1x18W Led Tube light	18	0.09	4.59	4.59	46	380	1900	41.1
Staff Room	FTL-1x36W	7	7	1	36	8	0.252	51.408	1x18W Led Tube light	18	0.126	25.70	25.70	259	380	2660	10.3

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
Pharma Lab 2	FTL-1x36W	8	8	1	36	3	0.288	22.032	1x18W Led Tube light	18	0.144	11.02	11.02	111	380	3040	27.4
Pharm Lab	FTL-1x36W	5	5	1	36	6	0.18	27.54	1x18W Led Tube light	18	0.09	13.77	13.77	139	380	1900	13.7
Paharm Chemist Lab 1	FTL-1x36W	11	11	1	36	5	0.396	50.49	1x18W Led Tube light	18	0.198	25.25	25.25	254	380	4180	16.4
Class Room 1	FTL-1x36W	2	2	1	36	3	0.072	5.508	1x18W Led Tube light	18	0.036	2.75	2.75	28	380	760	27.4
Class Room 2	FTL-1x36W	2	2	1	36	3	0.072	5.508	1x18W Led Tube light	18	0.036	2.75	2.75	28	380	760	27.4
Pharmacology Lab	FTL-1x36W	3	3	1	36	4	0.108	11.016	1x18W Led Tube light	18	0.054	5.51	5.51	55	380	1140	20.6
Quality Assurance(Research lab)	FTL-1x36W	5	5	1	36	2	0.18	9.18	1x18W Led Tube light	18	0.09	4.59	4.59	46	380	1900	41.1
Biochemistry Lab	FTL-1x36W	5	5	1	36	4	0.18	18.36	1x18W Led Tube light	18	0.09	9.18	9.18	92	380	1900	20.6
Tutorial Room	FTL-1x36W	1	1	1	36	2	0.036	1.836	1x18W Led Tube	18	0.018	0.92	0.92	9	380	380	41.1

Area	Type	Total Qty	On Qty	UF	Wattage	Daily Op hr	Load	Mthly KWh	Change	New Wattage	New Load	Mthly KWh	Saving KWh	Saving Rs	Unit Rate	Inv	Payback period in months
									light								
Library	FTL-2x36W	8	8	1	80	3	0.64	48.96	2x18W Led Tube Retrofit	36	0.288	22.03	26.93	271	400	3200	11.8
Tutorial Room	FTL-1x36W	4	4	1	36	4	0.144	14.688	1x18W Led Tube light	18	0.072	7.34	7.34	74	380	1520	20.6
human anatomy lab	FTL-1x36W	6	6	1	36	4	0.216	22.032	1x18W Led Tube light	18	0.108	11.02	11.02	111	380	2280	20.6
Class Room 3	FTL-1x36W	4	4	1	36	2	0.144	7.344	1x18W Led Tube light	18	0.072	3.67	3.67	37	380	1520	41.1
Class Room 4	FTL-1x36W	5	5	1	36	2	0.18	9.18	1x18W Led Tube light	18	0.09	4.59	4.59	46	380	1900	41.1
Pharmacology Lab	FTL-1x36W	4	4	1	36	3	0.144	11.016	1x18W Led Tube light	18	0.072	5.51	5.51	55	380	1520	27.4
Passage	FTL-1x36W	5	5	1	36	2	0.18	9.18	1x18W Led Tube light	18	0.09	4.59	4.59	46	380	1900	41.1
		392					16.08	1486			9.11	763	725	7298		191910	26

Fan Recommendation 1

Replace existing 75 watt conventional ceiling fans with 40 watt energy efficient fans

- Total No. of ceiling fans present = 392 Nos.
- Total No. of ceiling fans presently operated= 392 Nos.
- Total No. of ceiling fans to be replace= 392 Nos.
- Present Energy Consumption = 14876kWh
- Expected Energy Consumption = 763 kWh
- Total Energy Saved per Month = 1486-763= 763 kWh
- Total Saving = 763 kWh
- Monetary Savings = Rs.7298
- Investment = Rs. 191910
- Simple Payback period = 26 Months

Performance Assessment of Water Pumps

Sr.No.	Location	Pump	Flow (lps)	Head (mtr)	Pipe line size	pipe line length from supply to source(mtr)	Power Consumption (kW)	Daily Running Hrs	Mthly KWh	Water ConSN	Dia,mm	Velocity,m/s	HF,m	Total Head,m	Hyd kW	System Eff%
	SVIT Chicholi - Main Well	Submersible Pump - 15 HP	22.22	20	5" PVC	350.0	7.6	3.0	577.6	1920000.0	127	1.76	10.38	30.38	6.62	88%
	SVIT Chicholi - Agriculture bore	Bore well	1.9	71.65	2"PVC	200.0	6.2	24.0	3788.3	164160.0	50.00	0.97	4.59	76.23	1.42	23%
Sum									**11717**	**3162531**						

Pump Recommendation 1

Replace existing agricultural bore well pump with new energy efficient pump

- Total avg load of pump =6.2 kW
- Current flow of pump = 1.9LPS ;Head =71.65 mtr
- Expected new flow of pump = 2.4 LPS
- Expected New Load pump = 4.26 kW
- Present energy consumption of the pumps = 3788 kWh
- Expected energy consumption of new pump = 2064 kWh
- Expected savings =1132.2-216.68 =1724kWh
- Monetary savings = Rs.16896
- Investment = 55000
- Payback period = 3.26 Months

Requirements of NAAC

Alternative Energy Initiative

Percentage of power requirement met by renewable energy sources
= (Power requirement met by renewable energy sources / Total power requirement) X 100

= (2968/18773) X 100

= 15.9%

Percentage of lighting power requirement met through LED bulbs

Percentage of lighting power requirement met through LED bulbs
= (Lighting power requirement met through LED bulbs / Total lighting power requirement) X 100

= (1.035/ 22.79)

= 4.54 %

Green Audit

Green audit was initiated with the beginning of 1970s with the motive of inspecting the work conducted within the organizations whose exercises can cause risk to the health of inhabitants and the environment. It exposes the authenticity of the proclamations made by multinational companies, armies and national governments with the concern of health issues as the consequences of environmental pollution. It is the duty of organizations to carry out the Green Audits of their ongoing processes for various reasons such as; to make sure whether they are performing in accordance with relevant rules and regulations, to improve the procedures and ability of materials, to analyze the potential duties and to determine a way which can lower the cost and add to the revenue. Through Green Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out Green Audit. Some of the incidents like Bhopal Gas Tragedy (Bhopal; 1984), Chernobyl Catastrophe (Ukraine; 1986) and Exxon-Valdez Oil Spill (Alaska; 1989) have cautioned the industries that setting corporate strategies for environmental security elements have no meaning until they are implemented.

Green Audit is assigned to the Criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India that declares the institutions as Grade a, Grade B or Grade C according to the scores assigned at the time of accreditation.

The intention of organizing Green Audit is to upgrade the environment condition in and around the institutes, colleges, companies and other organizations. It is carried out with the aid of performing tasks like waste management, energy saving and others to turn into a better environmental friendly institute.

Goals of Green Audit

- The objective of carrying out Green Audit is securing the environment and cut down the threats posed to human health.
- To make sure that rules and regulations are taken care of
- To avoid the interruptions in environment that are more difficult to handle and their correction requires high cost.
- To suggest the best protocols for adding to sustainable development

Benefits of Green Audit

- It would help to shield the environment
- Recognize the cost saving methods through waste minimizing and managing
- Point out the prevailing and forthcoming complications
- Authenticate conformity with the implemented laws
- Empower the organizations to frame a better environmental performance
- It portrays a good image of a company which helps building better relationships with the group of stakeholders
- Enhance the alertness for environmental guidelines and duties

Initiatives by College towards Sustainable Environment

Tree Plantation

Tree-planting is the process of transplanting tree seedlings, generally for forestry, land reclamation, or landscaping purpose. It differs from the transplantation of larger trees in arboriculture, and from the lower cost but slower and less reliable distribution of tree seeds.

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.

Because trees remove carbon dioxide from the air as they grow, tree planting can be used as agro engineering 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 economy and social welfare due to increased number of jobs in farming and forestry.

College has planted the trees campus area to make it more environments friendly.

(Academic Year: 2016-17)

Name of Activity organized	**Tree Plantation**
Title of the Activity	**Tree Plantation**
Date of Activity organized	**01/7/2016**
Name of the coordinator of Activity	**Prof. R.D. Patil**
Place of the Activity	**SVIT, Campus**
No. of Participant (Student+ Staff)	**188**
Name of the sponsored organization	**Savitribai Phule Pune University**
Nature of sponsorship (Total Grants Received if any)	**21000**
Objective of the Activity	**To save environment , Reduce global warming**
Outcome of the Activity	**Improves Air quality ,reduces erosion and pollution**
News published (if any)	
Photo Gallery	

Photo-1 Tree Plantation

Photo-2 Tree Plantation

Photo-3 Tree Plantation

Activity Organized Report – Tree Plantation- 2017-18
(Academic Year: 2017-18)

Name of Activity organized	**Tree Plantation**
Title of the Activity	**Tree Plantation**
Date of Activity organized	**4/7/2017**
Name of the coordinator of Activity	**Prof. K.P. Tambe**
Place of the Activity	**SVIT, Campus**
No. of Participant (Student+ Staff)	**126**
Name of the sponsored organization	**Savitribai Phule Pune University**
Nature of sponsorship (Total Grants Received if any)	**Rs-21000/**
Objective of the Activity	**To save environment , Reduce global warming**
Outcome of the Activity	**Improves Air quality ,reduces erosion and pollution**
News published (if any)	
Photo Gallery	

Photo-1 Tree Plantation

Photo-2 Tree Plantation

Photo-3 Tree Plantation

Photo-4 Tree Plantation

Use of Solar PV System for power Generation

SVIT has installed 100kW solar PV plant to generate the electricity through solar energy. Solar power plant is generating almost 18000 units annually which results in reduction of 15 Tons of CO_2 emission

Following are the some actual images of installed solar PV plant

Scope for Improvement

Liquid Waste Management

The proper disposal of liquid waste is a must in order to maintain a good human and animal health. Because liquid waste has a high amount of dangerous compounds such as salts and metals, it is important for companies to get rid of it in a timely manner. Industrial wastes, including dangerous and hazardous liquids, can be disposed of by using a wide variety of techniques and methods.

Present Condition

There is an improvement opportunity for college. Sewage treatment facility can be provided to re-use the waste water for applications other than drinking. It is recommended that to make standard operating procedure (SOP) for disposal of chemicals which has been used in laboratories for practical purpose

Following details are given for guidance to dispose the laboratory chemical waste

Solution

Disposal Procedures for Laboratory Chemicals

It is the clear responsibility of all research workers to ensure the safe and correct disposal of all wastes produced in the course of their work. Improper and irresponsible disposal of chemical wastes down drains, to the Local Authority refuse collection, or into the atmosphere is forbidden by law.

Wash down drains with excess water

- Concentrated and dilute acids and alkalis
- Harmless soluble inorganic salts (including all drying agents such as CaCl2, MgSO4, Na2SO4, P2O5)
- Alcohols containing salts (e.g. from destroying sodium)
- Hypochlorite solutions from destroying cyanids, phosphines, etc.
- Fine (tlc grade) silica and alumina

It should be noted in particular that no material on the "Red List" should ever be washed down a drain. This list is as follows:

- compounds of the following elements:- antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, tellurium, thallium, tin, titanium, uranium, vanadium and zinc.
- organohalogen, organophosphorus or organonitrogen pesticides, triazine herbicides, any other biocides.
- cyanides
- mineral oils and hydrocarbons
- poisonous organosilicon compounds, metal phosphides and phosphorus element
- fluorides and nitrites

Incineration (Solvent Waste collection)

- all organic solvents including water miscible ones
- soluble organic waste including most organic solids
- paraffin and mineral oil (from oil baths and pumps)

Laboratory waste bins and controlled waste

All waste suitable for the Local Authority refuse collection, except recyclable paper and glass, is termed 'controlled waste'. Items in this category which includes dirty paper, plastic, rubber and wood, should generally be placed in the waste bins available in each laboratory and will be collected by the cleaners. However, each laboratory must also have a container for certain items which are not allowed to be put in the normal waste bins. In this special controlled waste container should be put:- all broken laboratory glassware, any sharp objects of metal or glass, all fine powders (preferably inside a bottle or jar) and dirty sample tubes or other items lightly contaminated with chemicals (but not any syringes or needles). Laboratory controlled waste containers must be emptied regularly and never allowed to overflow. Under no circumstances must any item of glass, sharp metal or fine powder ever be put in a normal laboratory waste bin. The tops must be removed from all bottles put out for disposal and there should be no detectable smell of chemials from any bottle put for disposal.

For more information, please visit

https://www.standrews.ac.uk/staff/policy/healthandsafety/publications/waste/waste-disposaloflaboratorywastesguidance/

E Waste Management

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 brominated 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.

College need to have E-waste management policy and all the E-waste disposals generated in the college campus should be disposed/ reuse as per standard procedures/norms

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.

Rain Water Harvesting

There is a good potential for rain water harvesting in a college. This water can be used for purposes like gardening, bores, wells, etc.

Feasibility study can be carried out to know the actual potential from rain water harvesting project

Plastic Free and Paper Free Campus

Concept of plastic free and paper free campus can be successfully implemented in the college. Management need to take initiative to make the policy for same. It will help to do reduce the use of plastic and papers which will be a good contribution towards sustainable environment