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Smt. Rajmati Nemgonda Patil Kanya Mahavidyalaya, Sangli

ENERGY AUDIT REPORT

2020-2021

ENVIRONMENTAL & CIVIL ENGINEERING SOLUTIONS

ISO 9001:2015, IEC 17025: 2017

Editorial

In the Era of global warming and climate change every citizen has to reduce their own carbon foot prints to tackle with the adverse impacts of climate change. A green audit of any academic institution revels ways in which we can reduce energy consumption, water use and reduction in emission of carbon dioxide in the environment. It is a process to look into and ask ourselves whether we are also contributing to the degradation of the environment and if so, in what manner and how we can minimize this contribution and bring down to zero and preserve our environment for future generation.

Smt. Rajmati Nemgonda Patil Kanya Mahavidyalaya, Sangli administration has already taken a step towards the green approach and conducted Energy audit of campus in the year 2020-2021. The responsibility of carrying out the scientific green audit was given to Environmental and Civil Engineering Solutions. The organization has followed the rules and regulation of Ministry of Environment and Forest, Govt. of India and Central Pollution Control Board, New Delhi.

During the preparation of the Audit Report Hon. Principal, Dean Academics and IQAC encouraged us with their full support and the audit team wants to mention a warm vote of thanks towards them.

Environmental & Civil Engineering Solutions ECS Sangli.

Nikhil N. Kamble
(C.E.O and Head)

Environmental and Civil Engineering Solutions

LES

Offg. PRINCIPAL
Smt. Rajmati Nemgonda Patil Kanya Mahavidyalaya, (Arts,Commerce & Science) Naminathnagar,Sangli.

ACKNOWLEDGEMENT

We express our gratitude for calling upon us for this audit, mainly the Principal and all other staff members, who were ever helpful and supported us with all the inputs needed for this audit. We thank all the teaching, non-teaching and students for helping us in conducting this audit.

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Introduction:

The modernization and industrialization are the two important outputs of twentieth century which have made human life more luxurious and comfortable. Simultaneously, they are responsible for voracious use of natural resources, exploitation of forests and wildlife, producing massive solid waste, polluting the scarce and sacred water resources and finally making our mother Earth ugly and inhospitable. Today, people are getting more familiar to the global issues like global warming, greenhouse effect, ozone depletion and climate change etc. Now, it is considered as a final call by mother Earth to walk on the path of sustainable development. The time has come to wake up, unite and combat together for sustainable environment.

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

Educational institutions now a day are becoming more sensitive to environmental factors and more concepts are being introduced to make them eco-friendly. To preserve the environment within the campus, various viewpoints are applied by the several educational institutes to solve their environmental problems such as promotion of the energy savings, recycle of waste, water reduction, water harvesting etc... The activities pursued by the university can also create a variety of adverse environmental impacts. Environmental auditing is a process whereby an organization's environmental performance is tested against its environmental policies and objectives.

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Overview of Institute:

Smt. Rajmati Nemgonda Patil Kanya Mahavidyalaya, Sangli was established in the year of 2002.

The Latthe Education Society was established on 13th June 1951, with the aim of widespread of Education. Presently, it has nourished into 36 branches from K. G. to P. G. in different faculties and courses with the intake of 25000 students. In Higher Education it embraces Arts, Commerce, Science, Law, Medical, Engineering, Agriculture, Technology discipline. The society has earned the name and fame through its yeomen services during last six decades. The society is pacing with the time by implementing innovative programmes such as Latthe pattern for academic excellence, Award Scheme, Night Study Circle, Latthe Festival, Earn and Learn Scheme, Latthe Career Academy, Computer Academy etc.

Presently, the college offers 2 under graduate courses & 3 certificate courses. It is a well-equipped college. It has own laurels for the academic excellence & performance in sports & NSS. The college has also maintained high standards in discipline & in general administration. The administrative body of the institution monitors & supports the activities conducted by faculty & the students. The college is settled in the heart of the city in cream area which is very convenient to all students to come & fro. The college has three storeyed building consisting all the infrastructure facilities such as library, 12 classrooms, playground, office, internet connection. The main infrastructure has 4032.18 sq meter area. The college

library is well furnished & ventilated. Many reference books & textbooks are made available to students. There is a computer centre for all students.

Objectives of the College:

- To impart education and guidance to the Girl Students of Sangli and surrounding villages.
- To encourage and develop the students and give boost to their all-round development.
- To disseminate the knowledge and promote the art and culture in rural and urban areas.
- To identify and cultivate talent and to train right kind of leadership in every walks of life.
- To arrange educational facilities in Higher Education to the different working / employed students from the poor sections of the society.
- To educate and train the girls to self - help and prepare them for self - employment.
- To encourage them to be self - reliant in education through the 'Earn and Learn scheme'.

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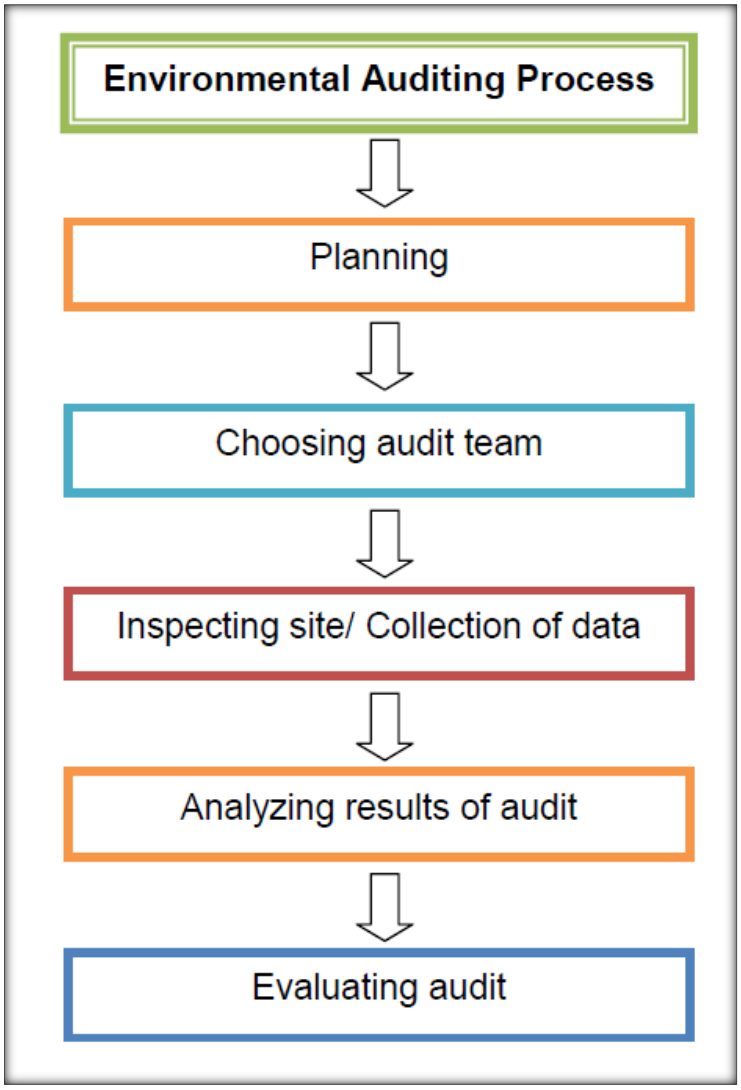
Methodology:



Audits to be carried out:

- Energy audit

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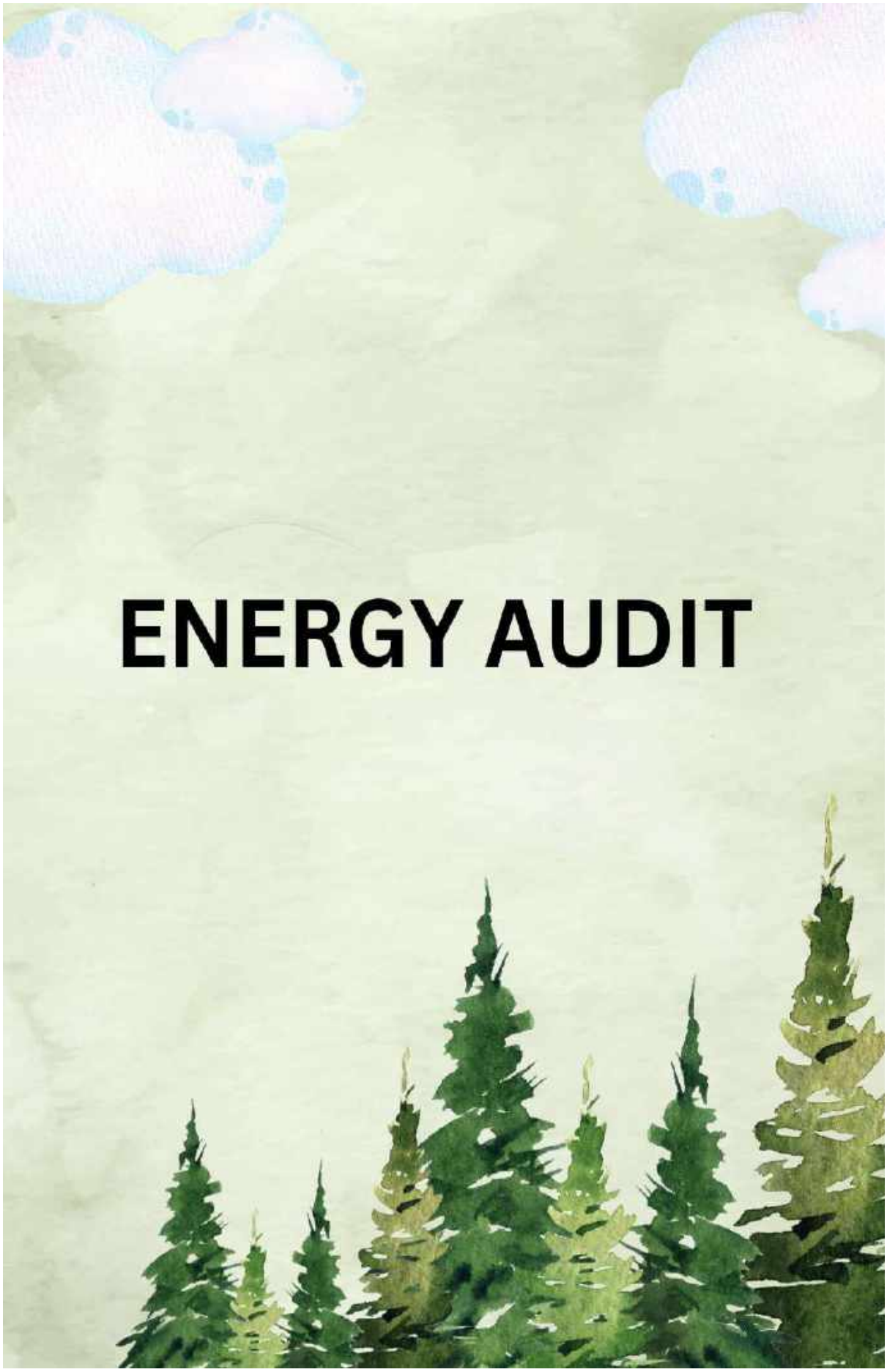

ENERGY AUDIT

Energy Audit

A nation is tiring to advance in quantity and quality to the spread of education among the common India and development of their intelligence. In India the entire field of education and other fields of intelligent activities had been monopolized by a handful of men before independence. But today we are marching towards the desirable status of a developed nation with fast strides. But the development should be a sustained one. For achieving such an interminable development energy management is essential. As far as concerning electricity crisis, we are facing lack of electricity during office work.

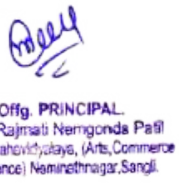
So, institutional management is taking design regarding production of electricity and saving electricity for Eco social aspect. Energy requirement of India is growing and incomplete domestic fossil fuel treasury. The country has motivated strategy to enlarge its renewable energy resources and policy to establish the nuclear power plants. India increases the involvement of nuclear power to largely electrical energy development facility from 4.2% to 9%. India's industrial demand accounted for 35% of electrical power requirement, domestic household use accounted for 28%, agriculture 21%, commercial 9%, and public lighting and other miscellaneous applications accounted for the rest.

Energy conservation means reduction in energy consumption without making any sacrifice of quantity or quality. A successful energy management program begins with energy conservation; it will lead to adequate rating of equipment's, using high efficiency equipment and change of habits which causes enormous wastages of energy. By observing all these study lack of electricity and huge electricity demands. It is necessary to plan to be self-sufficient in electricity requirement.

Connection details:

Institute receives electricity from MSEB i.e. Maharashtra State Electricity Distribution Co. Ltd. Following are the details about connection.

- **Type of connection:** LT
- **Tariff:** 73 / LT-X B I
- **Contract demand:** 9.60 Kw
- **Feeder voltage:** 11 KW
- **Type:** 3 Phase



Tariff Structure:

As per Distribution Company, HT and LT consumers have an option to take Time of Day (TOD) tariff instead of the normal tariff. Under TOD tariff electricity consumption and maximum demand in respect of HT consumers for different periods of the day i.e. normal period, peak load period and off-peak load period could be recorded by installing TOD meter. The maximum demand and consumption recorded in different periods could be billed on the following rates of the tariff applicable.

TOD Tariffs	Rate % (Rs./Unit)
0000 Hrs- 0600 Hrs & 2200 Hrs- 2400 Hrs	-1.500
0600 Hrs- 0900 Hrs & 1200 Hrs- 1800 Hrs	0.000
0900 Hrs- 1200 Hrs	0.800
1800 Hrs- 2200 Hrs	1.100

Power Factor:

Power Factor (PF) is an indicator of efficient utilization of power. In an AC (Alternating Current) electrical power system, PF is defined as the ratio of real power flowing to the load, to the apparent power in the circuit and is a dimensionless number.

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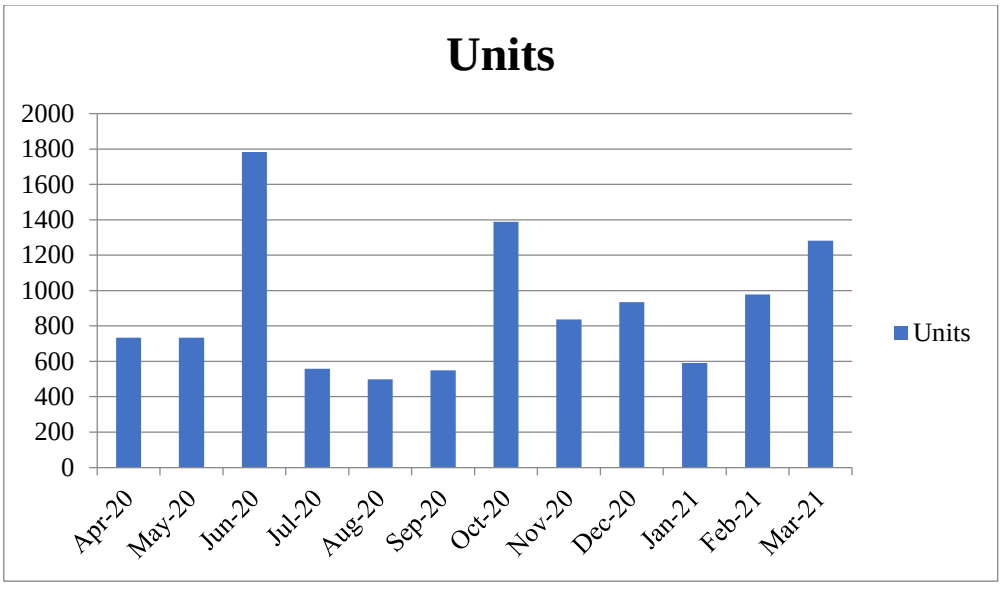
Bill analysis:

Unit analysis for academic year 2020-2021.

Sr. No.	Month	Consumption (Kw)
1	**Apr-20**	734
2	**May-20**	734
3	**Jun-20**	1784
4	**Jul-20**	558
5	**Aug-20**	499
6	**Sep-20**	550
7	**Oct-20**	1388
8	**Nov-20**	837
9	**Dec-20**	935
10	**Jan-21**	591
11	**Feb-21**	978
12	**Mar-21**	1282

Unit Analaysis:

After analysisng the bill the average cost expenditure of the institute on energy is about 905.83 Units



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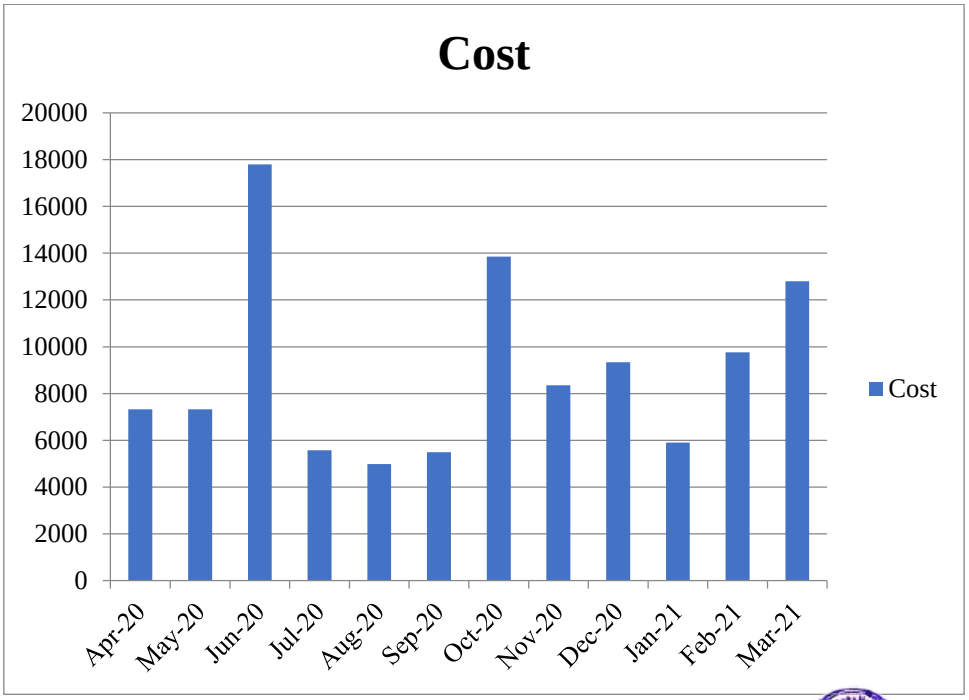
Cost Analysis for academic year 2020-2021.

Sr. No.	Month	Cost (Rs)
1	**Apr-20**	7325.32
2	**May-20**	7325.32
3	**Jun-20**	17804.32
4	**Jul-20**	5568.84
5	**Aug-20**	4980.02
6	**Sep-20**	5489
7	**Oct-20**	13852.24
8	**Nov-20**	8353.26
9	**Dec-20**	9331.3
10	**Jan-21**	5898.18
11	**Feb-21**	9760.44
12	**Mar-21**	12794.36

Consumption analysis:

After analysisng the bill the average energy consumption of the institute is about 9040.20 Rs



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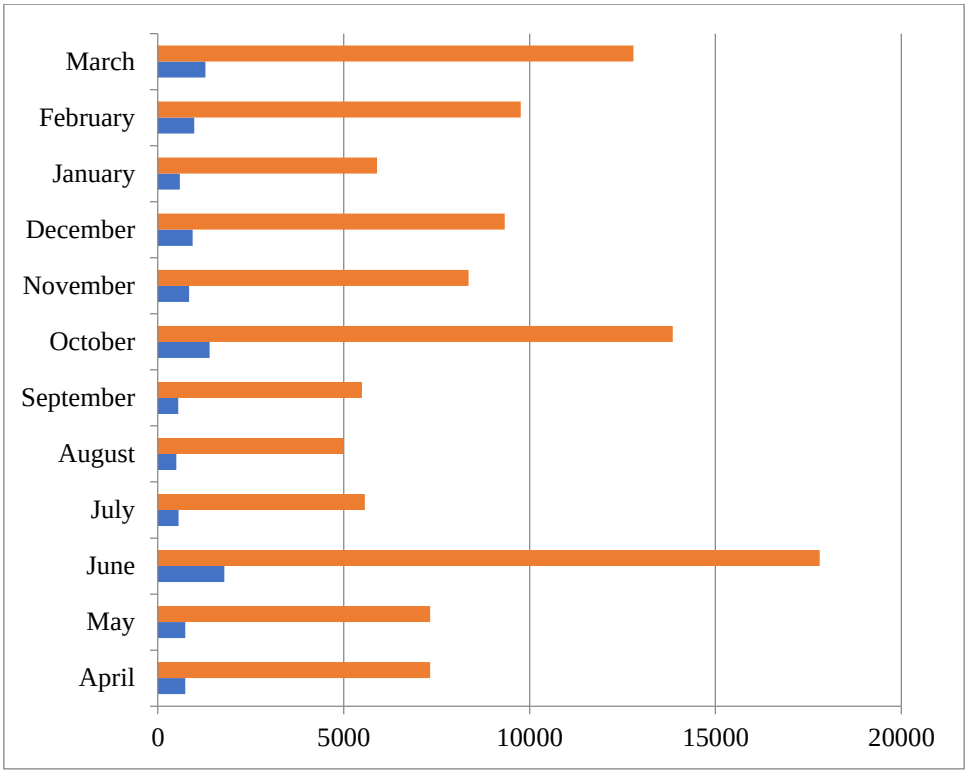
Cost VS Consumption:



ILER analysis:

Lighting is provided in industries, commercial buildings, indoor and outdoor for providing comfortable working environment. The primary objective is to provide the required lighting effect for the lowest installed load i.e. highest lighting at lowest power consumption. The purpose of performance test is to calculate the installed efficacy in terms of lux/watt/m² (existing or design) for general lighting installation. The calculated value can be compared with the norms for specific types of interior installations for assessing improvement options.

Range	Condition
0.5 or less	Urgent activity required (UAR)
0.51 - 0.70	Review Suggested (RS)
0.70- above	Good

ILER analysis for various sections in the institute were carried out. Firstly using LUX meter illumination was measured and then numerical analysis was carried out. ILER gives idea about lighting conditions and measured regarding improving them.

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Analysis

Sr. No.	Section	LUX reading	ILER	Condition
1	Library	157	0.73	Good
2	Study room	155	0.71	Good
3	Classroom B1	162	0.74	Good
4	Computer lab	162	0.70	Good
5	Office	171	0.70	Good

Reasons for Good ILER:

- Proper placement of windows and doors so that natural light is available well.
- Good ventilation system.

Details of light fittings:

Below table shows the main fitting details in the institute building.

Energy	Count
LED	34
Fans	33
PC	46
Printer	4
Zerox machine	1

Details of PC, CPU, Keyboard and Mouse in Computer lab

Lab Name	EQUIPMENTS		Count
Computer lab 1	1	Monitor	35
		CPU	35
		Keyboard	35
		Mouse	35
Computer lab 2	2	Monitor	8
		CPU	8
		Keyboard	8
		Mouse	8
Office	3	Monitor	4
		CPU	4
		Keyboard	4
		Mouse	4
Study Room	4	Projector	1
Library	5	Projector	1

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CERTIFICATE
OF ENVIRONMENT
AUDIT
Presented to :
Smt. Rajmati Nemgonda Patil Kanya
Mahavidyalaya, Sangli
Our team of Environmental Engineers have analyzed
Environment-friendly practices followed by the Institution
Environmental & Civil Engineering Solutions
ECS
Sangli
Nikhil N Kamble
CEO
Seema N Kamble
Director
Academic year
2020-2021
LES
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