



Estd. 2002

**SMT. RAJMATI NEMGONDA
PATIL KANYA
MAHAVIDYALAYA,
SANGLI**

2021-2022

ENERGY AUDIT REPORT



**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 reveals 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 2021-2022. 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.



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

**Environmental and Civil
Engineering Solutions**



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

Green Audit Team

Mr. Nikhil N. Kamble

PhD (Sustainability), M. Tech. (Env. Eng.)

Mr. Smithesh L. Bhatt

B. E. (Civil. Eng.)

Miss. Maithilee N. Kamble

M.B.A, B. Tech. (Mech. Eng.)

Mrs. Seema N. Kamble

Director, ECS, B. E. (Electrical)



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


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.

Considering the present environmental problems of pollution and excess use of natural resources, Hon. Prime Minister, Shri. Narendra Modiji has declared the Mission of Swachh Bharat Abhiyan. Also, University Grants Commission has mentioned “Green Campus, Clean Campus” mission mandatory for all higher educational institutes. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

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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Smt. Rajmati Nemgonda Patil
Kanya Mahavidyalaya, (Arts, Commerce
& Science) Nemirnagar, Sangli

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,



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Smt. Rajmati-Nemgonda-Patil
Kanya Mahavidyalaya, (Arts, Commerce
& Science) Nemgondapur, Sangli

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'.

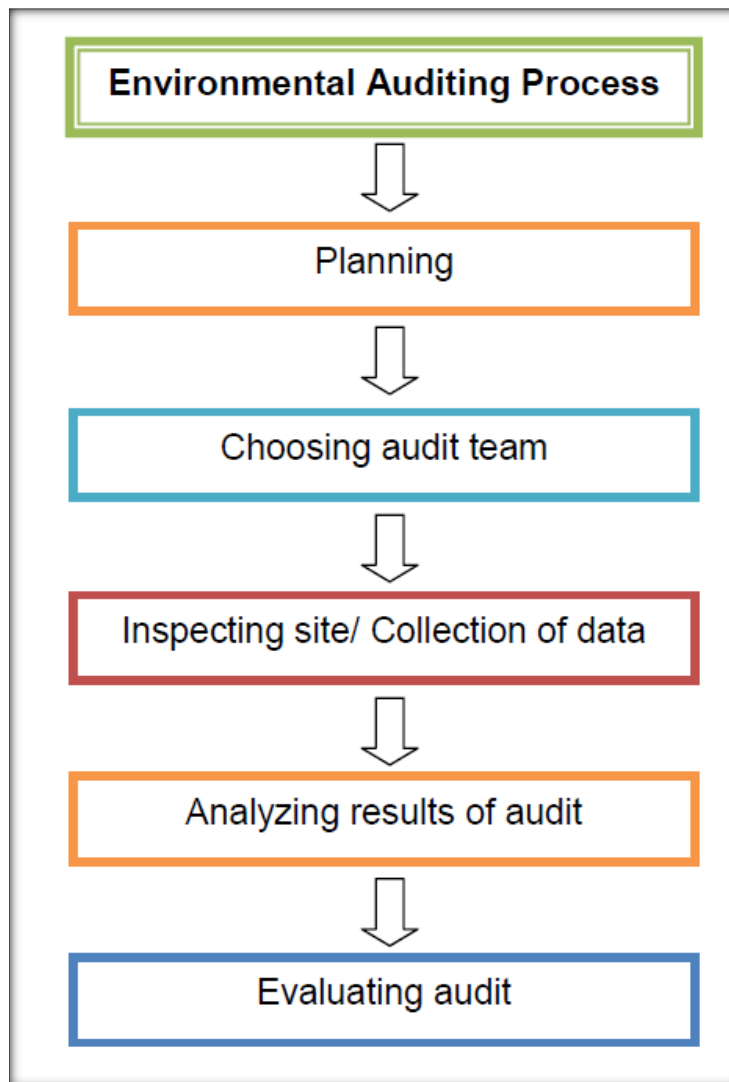
Mission Statement

“Excellence Educational Development to become highly qualified women who could able to meet the needs of all human activities.”




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Methodology:

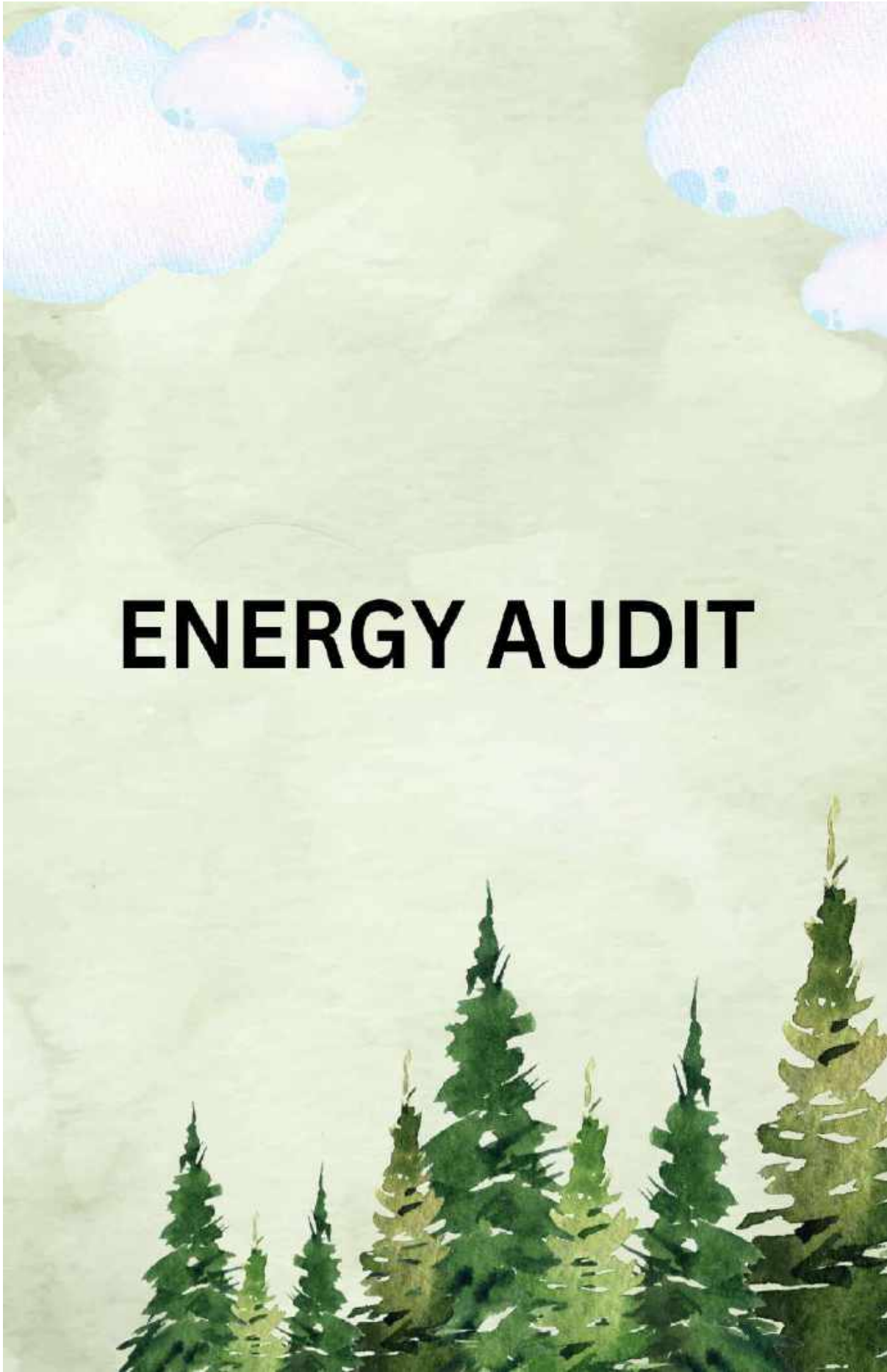


Audits to be carried out:

- 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




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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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 Smt. Rajmati Nemgonda Patil
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 & Science) Neminathnagar, Sangli

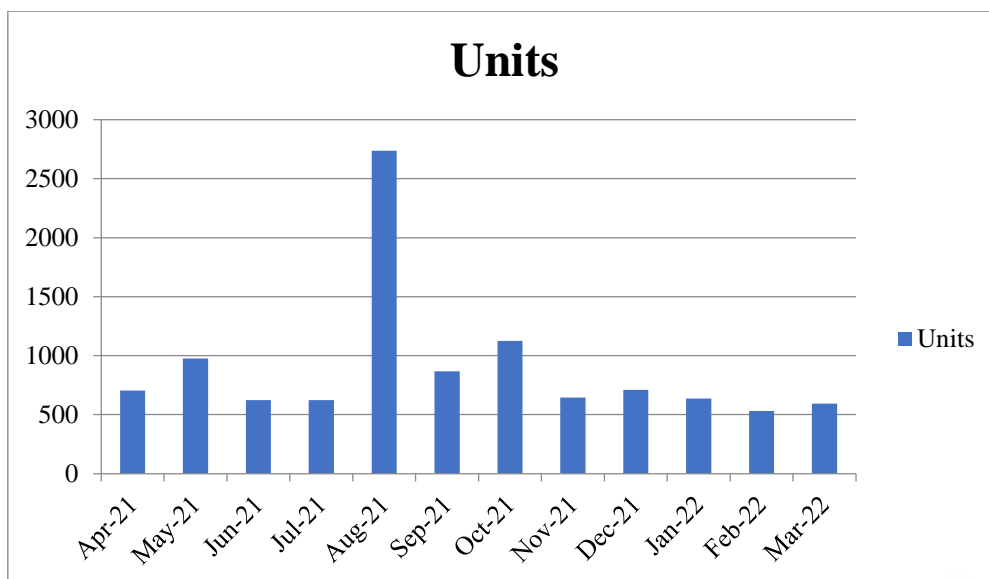
Bill analysis:

Unit analysis for academic year 2021-2022.

Sr. No.	Month	Consumption (Kw)
1	Apr-21	704
2	May-21	976
3	Jun-21	624
4	Jul-21	624
5	Aug-21	2736
6	Sep-21	868
7	Oct-21	1124
8	Nov-21	645
9	Dec-21	710
10	Jan-22	636
11	Feb-22	532
12	Mar-22	594

Unit Analysis:

After analysing the bill the average cost expenditure of the institute on energy is about 897.75 Units



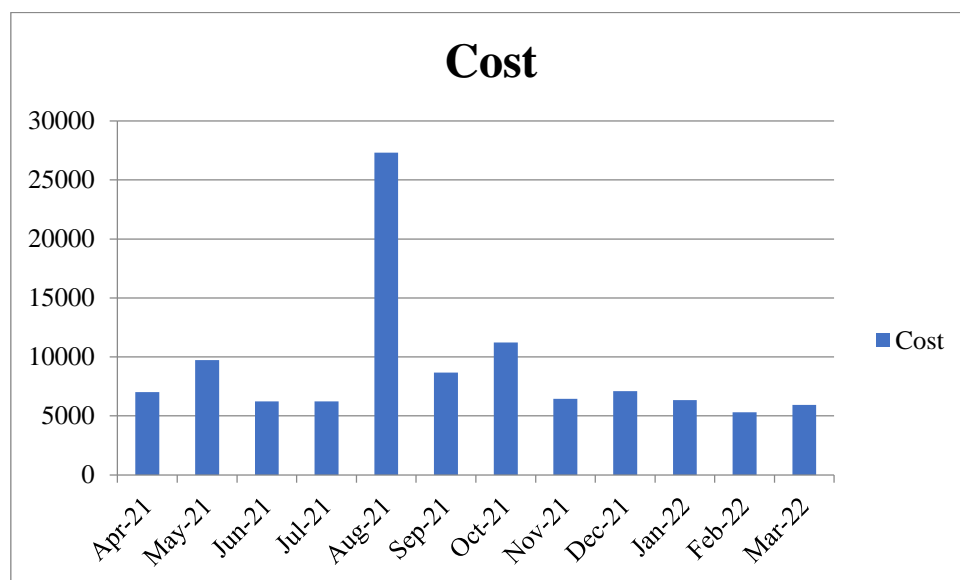
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Cost Analysis for academic year 2021-2022.

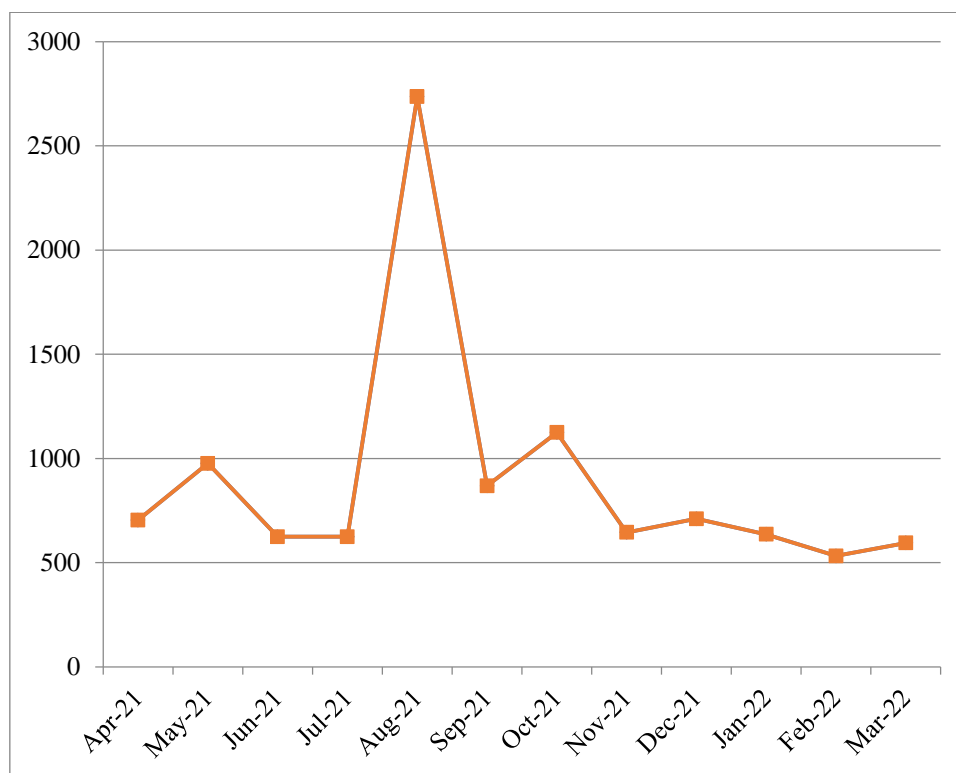
Sr. No.	Month	Cost (Rs)
1	Apr-22	7025.92
2	May-22	9740.48
3	Jun-22	6227.52
4	Jul-22	6227.52
5	Aug-22	27305.28
6	Sep-22	8662.64
7	Oct-22	11217.52
8	Nov-22	6437.1
9	Dec-22	7085.8
10	Jan-23	6347.28
11	Feb-23	5309.36
12	Mar-23	5928.12

Consumption analysis:

After analysing the bill the average energy consumption of the institute is about 8959.57 Rs




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 Smt. Rajmati Nemgonda Patil
 Kanya Mahavidyalaya, (Arts, Commerce
 & Science) Nemainathnagar, Sangli

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.



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

Analysis

Sr. No.	Section	LUX reading	ILER	Condition
1	Library	141	0.70	Good
2	Study room	138	0.70	Good
3	Classroom B1	161	0.76	Good
4	Computer lab	177	0.71	Good
5	Office	165	0.72	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

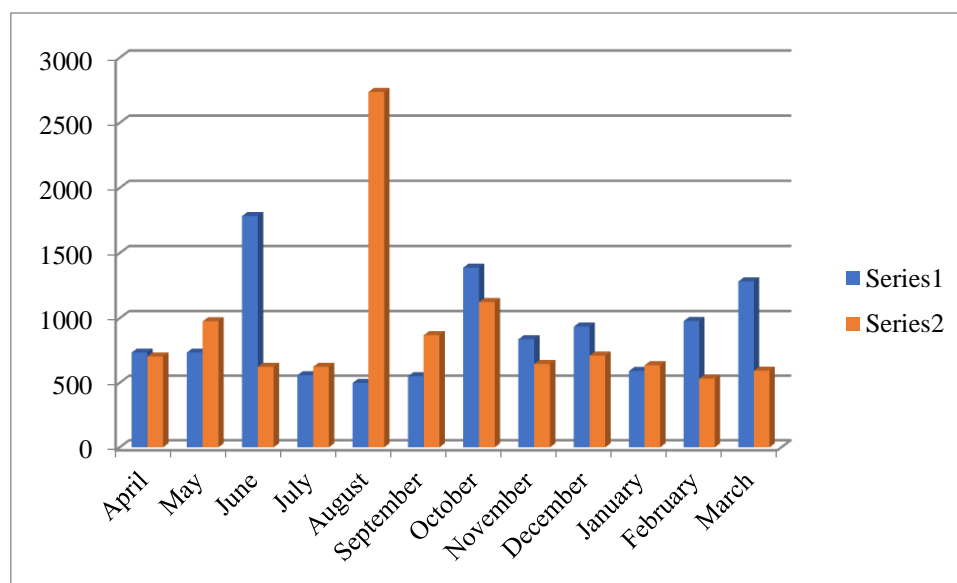


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Comparison of Electricity Consumption

This section presents comparison of electricity consumption. Comparison of 2021-2022 electricity consumption is done with 2020-2021 electricity data.

Month	Consumption (Kw)	Month	Consumption (Kw)
Apr-20	734	Apr-21	704
May-20	734	May-21	976
Jun-20	1784	Jun-21	624
Jul-20	558	Jul-21	624
Aug-20	499	Aug-21	2736
Sep-20	550	Sep-21	868
Oct-20	1388	Oct-21	1124
Nov-20	837	Nov-21	645
Dec-20	935	Dec-21	710
Jan-21	591	Jan-22	636
Feb-21	978	Feb-22	532
Mar-21	1282	Mar-22	594



Considering the consumption background the average consumption in the year 2021-2022 is 897 units and consumption in the year 2021-2022 is 905 units. Comparing both the consumption in 2021-2022 has decreased by 8 units.



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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



M. S. Patil





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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



Nikhil N Kamble
CEO

Seema N Kamble
Director

Academic year
2021-2022



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Kanya Mahavidyalaya, (Arts, Commerce
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